ERRATA TO ACCOMPANY NATIONAL BUREAU OF STANDARDS
NATIONAL STANDARD REFERENCE DATA SERIES 40
A MULTIPLET TABLE OF ASTROPHYSICAL INTEREST

The attached page 76, REVISED MULTIPLET TABLE replaces page 76 in Part 1--Table of Multiplets in the above publication. Insert the accompanying new page 76 in your copy, and indicate this change by pen and ink on the original page 76. Please note that this change applies to Part 1 of this publication.

153.03
5-16-72

REVISED MULTIPLET TABLE

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Ref	Int	EP Low	EP High	J	Multiplet (No)
B	(10)	3.66	5.26	3-3	$z^3D^\circ-e^3D$
B	(10)	3.69	5.28	2-2	(156)
B	(7)	3.82	5.45	1-1	
B	(9)	3.66	5.28	3-2	
P		3.69	5.45	2-1	
B	(4)	3.69	5.26	2-3	
B	(2)	3.82	5.28	1-2	
B	(2)	3.66	5.46	3-2	$z^3D^\circ-e^1D$
B	3	3.69	5.46	2-2	(157)
B	(2)	3.82	5.46	1-2	
E	(1)	3.66	6.06	3-4	$z^3D^\circ-e^5F$
E	(1)	3.69	6.15	2-3	(158)
B	(2)	3.69	6.32	2-2	
B	(2)	3.82	6.26	1-1	
P		3.66	6.22	3-2	
E	(1)	3.69	6.26	2-1	
B	5	3.66	6.07	3-2	$z^3D^\circ-e^3P$
B	4	3.69	6.07	2-1	(159)
P		3.82	6.21	1-0	
E	(1)	3.69	6.07	2-2	
E	(1)	3.82	6.07	1-1	
B	4	3.66	6.07	3-4	$z^3D^\circ-e^3G$
B	(2)	3.69	6.26	2-3	(160)
B	10	3.66	6.08	3-3	$z^3D^\circ-f^3D$
B	10	3.69	6.09	2-2	(161)
B	(1)	3.82	6.26	1-1	
E	(1)	3.69	6.26	2-1	
E	(1)	3.82	6.09	1-2	
B	15	3.66	6.09	3-4	$z^3D^\circ-e^3F$
B	12	3.69	6.09	2-3	(162)
B	3	3.82	6.28	1-2	
B	(2)	3.66	6.09	3-3	
E	(1)	3.69	6.28	2-2	
P		3.66	6.28	3-2	
B	4	3.66	6.23	3-4	$z^3D^\circ-f^3F$
B	3	3.69	6.33	2-3	(163)
B	3	3.82	6.42	1-2	
E	(1)	3.66	6.33	3-3	
B	(3)	3.69	6.42	2-2	
P		3.69	6.24	2-1	$z^3D^\circ-e^1P$
B	(2)	3.82	6.24	1-1	(164)
B	(3)	3.66	6.26	3-4	$z^3D^\circ-e^1G$ (165)
P		3.66	6.27	3-2	$z^3D^\circ-f^1D$
B	(4)	3.82	6.27	1-2	(166)
P	(1)	3.66	6.28	3-3	$z^3D^\circ-e^1F$
B	(2)	3.69	6.28	2-3	(167)
B	2	3.66	6.44	3-3	$z^3D^\circ-g^3D$
B	(3)	3.69	6.45	2-2	(168)
B	(2n)	3.82	6.63	1-1	
B	(3)	3.66	6.45	3-2	
E	(2n)	3.69	6.44	2-3	
P		3.69	6.74	2-1	$z^3D^\circ-f^3S$
P		3.82	6.74	1-1	(169)
B	3n	3.66	6.75	3-3	$z^3D^\circ-h^3D$
D	(1n)	3.69	6.76	2-2?	(170)
P		3.69	6.75	2-3	
B	8n	3.66	6.76	3-4	$z^3D^\circ-h^3F$
D	6n	3.69	6.76	2-3	(171)
E	(1)	3.82	6.95	1-2	
B	3	3.66	7.00	3-2	$z^3D^\circ-f^3P$ (172)
B	2	3.66	7.01	3-4	$z^3D^\circ-i^3F$
B	4	3.82	7.24	1-2	(173)
B	3	3.69	7.24	2-2	
B	2n	3.66	7.05	3-3	$z^3D^\circ-i^3D$ (174)
G	(1)	3.82	6.06	4-4	$z^3G^\circ-e^5F$
B	(2)	3.82	6.06	5-4	(175)
P	(1)	3.82	6.07	4-5	$z^3G^\circ-e^3G$
G	(1)	3.92	6.07	3-4	(176)
B	8	3.82	6.23	5-4	$z^3G^\circ-f^3F$
B	4	3.82	6.33	4-3	(177)
B	4	3.92	6.42	3-2	
D	(2)	3.82	6.23	4-4	
B	(3)	3.92	6.33	3-3	
P		3.92	6.23	3-4	
B	15	3.82	6.70	5-4	$z^3G^\circ-g^3F$
B	8	3.82	6.70	4-3	(178)
B	(2n)	3.92	6.90	3-2	
B	(3)	3.82	6.70	4-4	
F	(2)	3.92	6.70	3-3	
B	2	3.82	6.86	4-3	$z^3G^\circ-f^1F$
B	(2)	3.92	6.86	3-3	(179)
P	Ni	3.82	6.99	5-6	$z^3G^\circ-e^3H$
B	5	3.82	7.12	4-5	(180)
B	3n	3.92	7.22	3-4	
P		3.82	7.22	4-4	
B	(5)	3.82	7.01	5-5	$z^3G^\circ-g^3G$
B	(2)	3.82	7.13	4-4	(181)
P		3.82	7.13	5-4	
F	(3)	3.82	7.01	4-5	
F	(3)	3.92	7.13	3-4	

<u>Ni I</u> continued

Laboratory I A	Ref	Int	EP Low	EP High	J	Multiplet (No)
3734.827	B	4	3.82	7.13	5-6	$z^3G^\circ-e^5H$
3629.906	B	5	3.82	7.22	4-5	(182)
3668.216	B	3	3.92	7.29	3-4	
3723.38	P		3.82	7.14	4-5	$z^3G^\circ-e^5G$
3715.499	B	2	3.82	7.14	5-5	(183)
3724.26	P		3.92	7.24	3-3	
3657.698	D	2	3.92	7.30	3-2	
*3233.174	B	4	3.82	7.63	5-5	$z^3G^\circ-h^3G$ (184)
3221.273	B	5	3.82	7.65	5-6?	$z^3G^\circ-f^3H$ (185)
8637.04	A	15	3.83	5.26	3-3	$z^1F^\circ-e^3D$
8501.81	G	(2)	3.83	5.28	3-2	(186)
7555.60	B	5	3.83	5.46	3-2	$z^1F^\circ-e^1D$ (187)
5537.11	G	(1)	3.83	6.06	3-4	$z^1F^\circ-e^5F$
5175.78	P		3.83	6.22	3-2	(188)
5514.80	G	(1)	3.83	6.07	3-2	$z^1F^\circ-e^3P$ (189)
5510.001	B	4	3.83	6.07	3-4	$z^1F^\circ-e^3G$
5088.534	B	(2)	3.83	6.26	3-3	(190)
5480.893	B	(2)	3.83	6.08	3-3	$z^1F^\circ-f^3D$ (191)
5462.487	B	4	3.83	6.09	3-4	$z^1F^\circ-e^3F$
5468.101	B	(2)	3.83	6.09	3-3	(192)
4930.821	D	(1)	3.83	6.33	3-3	$z^1F^\circ-f^3F$
4758.42	E	(1)	3.83	6.42	3-2	(193)
5081.111	B	25	3.83	6.26	3-4	$z^1F^\circ-e^1G$ (194)
5048.851	B	4	3.83	6.28	3-3	$z^1F^\circ-e^1F$ (195)
4399.607	B	3	3.83	6.64	3-2	$z^1F^\circ-g^1D$ (196)
4072.913	B	(2)	3.83	6.86	3-3	$z^1F^\circ-f^1F$ (197)
3974.650	B	10n	3.83	6.94	3-4	$z^1F^\circ-f^1G$ (198)
3962.12	B	3n	3.83	6.95	3-3	$z^1F^\circ-g^1F$ (199)
8954.65	A	2	3.88	5.26	2-3	$z^1D^\circ-e^3D$
8809.47	A	30	3.88	5.28	2-2	(200)
*7890.22	B	(3)	3.88	5.45	2-1	
7797.62	B	3	3.88	5.46	2-2	$z^1D^\circ-e^1D$ (201)
5288.21	P		3.88	6.22	2-2	$z^1D^\circ-e^5F$
5179.136	B	(2)	3.88	6.26	2-1	(202)
5642.660	B	(1)	3.88	6.07	2-2	$z^1D^\circ-e^3P$
5638.82	G	(1)	3.88	6.07	2-1	(203)
5197.165	B	2	3.88	6.26	2-3	$z^1D^\circ-e^3G$ (204)
5607.05	G	(1)	3.88	6.08	2-3	$z^1D^\circ-f^3D$
5589.384	B	2	3.88	6.09	2-2	(205)
5186.592	B	(2)	3.88	6.26	2-1	
5593.735	B	4	3.88	6.09	2-3	$z^1D^\circ-e^3F$
5155.140	B	4	3.88	6.28	2-2	(206)
5032.748	B	(1n)	3.88	6.33	2-3	$z^1D^\circ-f^3F$
4853.30	P		3.88	6.42	2-2	(207)
5235.45	E	2	3.88	6.24	2-1	$z^1D^\circ-e^1P$ (208)
5176.565	B	5	3.88	6.27	2-2	$z^1D^\circ-f^1D$ (209)
5155.764	B	9	3.88	6.28	2-3	$z^1D^\circ-e^1F$ (210)
4460.570	B	(3)	3.88	6.64	2-2	$z^1D^\circ-g^1D$ (211)
4142.184	B	(2)	3.88	6.86	2-3	$z^1D^\circ-f^1F$ (212)
10193.25	A	100	4.07	5.28	1-2	$z^1P^\circ-e^3D$
8982.35	A	2	4.07	5.45	1-1	(213)
8862.59	A	100	4.07	5.46	1-2	$z^1P^\circ-e^1D$ (214)
5628.347	B	(3)	4.07	6.26	1-1	$z^1P^\circ-e^5F$ (215)
6259.615	B	2	4.07	6.04	1-1	$z^1P^\circ-e^3S$ (216)
*6180.093	B	(1n)	4.07	6.07	1-2	$z^1P^\circ-e^3P$
6175.424	B	8	4.07	6.07	1-1	(217)
5780.77	G	(1)	4.07	6.21	1-0	
*6116.181	B	6n	4.07	6.09	1-2	$z^1P^\circ-f^3D$
5637.121	B	2	4.07	6.26	1-1	(218)
5600.038	B	(4)	4.07	6.28	1-2	$z^1P^\circ-e^3F$ (219)
5694.998	B	6	4.07	6.24	1-1	$z^1P^\circ-e^1P$ (220)
5625.326	B	4	4.07	6.27	1-2	$z^1P^\circ-f^1D$ (221)
5411.227	B	4	4.07	6.35	1-0	$z^1P^\circ-e^1S$ (222)
4629.98	P		4.07	6.74	1-1	$z^1P^\circ-f^3S$ (223)
10378.62	A	100	4.07	5.26	4-3	$y^3F^\circ-e^3D$
10330.23	A	50	4.09	5.28	3-2	(224)
9520.06	A	100	4.15	5.45	2-1	
10530.53	A	20	4.09	5.26	3-3	
10891.25	A	2	4.15	5.28	2-2	
8965.94	A	50	4.09	5.46	3-2	$y^3F^\circ-e^1D$
9385.62	A	10	4.15	5.46	2-2	(225)

<u>Ni I</u> continued

Laboratory I A	Ref	Int	EP Low	EP High	J	Multiplet (No)
6452.77	G	(1)	4.07	5.98	4-5	$y^3F^\circ-e^5F$
6258.591	B	2	4.09	6.06	3-4	(226)
6183.892	D	(1)	4.15	6.15	2-3	
6204.640	B	2	4.07	6.06	4-4	
5998.86	G	(1)	4.09	6.15	3-3	
5973.66	G	(1)	4.15	6.22	2-2	
6230.115	B	2	4.09	6.07	3-2	$y^3F^\circ-e^3P$
6424.905	B	(2n)	4.15	6.07	2-1	(227)
6176.813	C	12	4.07	6.07	4-5	$y^3F^\circ-e^3G$
6223.994	B	3	4.09	6.07	3-4	(228)
5857.755	B	7	4.15	6.26	2-3	
*6170.568	B	(3)	4.07	6.07	4-4	
5691.52	G	(1)Fe?	4.09	6.26	3-3	
6133.948	H	(1n)	4.07	6.08	4-3	$y^3F^\circ-f^3D$
6165.18	P		4.09	6.09	3-2	(229)
6186.740	B	2	4.09	6.08	3-3	
6360.798	B	(5)	4.15	6.09	2-2	
6111.06	B	2n	4.07	6.09	4-4	$y^3F^\circ-e^3F$
*6170.568	B	(3)	4.09	6.09	3-3	(230)
6118.06	G	(1)	4.07	6.09	4-3	
5641.112	D	(1)	4.09	6.28	3-2	
6163.42	B	5n	4.09	6.09	3-4	
6366.483	B	4	4.15	6.09	2-3	
5715.086	B	6	4.07	6.33	4-4	$y^3F^\circ-f^3F$
5494.890	B	2	4.09	6.33	3-3	(231)
m5424.56	P	Ni	4.15	6.42	2-2	
5453.255	B	(2)	4.07	6.33	4-3	
5281.692	B	(2)	4.09	6.42	3-2	
5760.847	B	4	4.09	6.23	3-4	
5649.697	B	2	4.15	6.33	2-3	
5682.204	B	8	4.09	6.26	3-4	$y^3F^\circ-e^1G$ (232)
5666.78	P		4.09	6.27	3-2	$y^3F^\circ-f^1D$
*5831.624	B	2	4.15	6.27	2-2	(233)
5641.880	B	(4)	4.09	6.28	3-3	$y^3F^\circ-e^1F$
5805.233	B	5	4.15	6.28	2-3	(234)
4701.536	B	3	4.07	6.70	4-4	$y^3F^\circ-g^3F$
4729.291	B	(2)	4.09	6.70	3-3	(235)
*4490.541	B	(3)	4.15	6.90	2-2	
4698.408	B	(2)	4.07	6.70	4-3	
4732.465	B	3	4.09	6.70	3-4	
4843.53	P		4.15	6.70	2-3	
4450.301	B	(2)	4.09	6.86	3-3	$y^3F^\circ-f^1F$
4551.236	B	(3)	4.15	6.86	2-3	(236)
4236.372	B	(2)	4.09	7.00	3-2	$y^3F^\circ-f^3P$
4138.52	F	(2)	4.15	7.13	2-1	(237)
4201.723	B	5	4.07	7.01	4-4	$y^3F^\circ-i^3F$
*4022.052	B	(2)	4.09	7.16	3-3	(238)
3995.83	P		4.15	7.24	2-2	
4195.531	B	4	4.07	7.01	4-5	$y^3F^\circ-g^3G$
4051.18	P		4.09	7.13	3-4	(239)
4025.114	B	(3)	4.07	7.14	4-4	$y^3F^\circ-f^5F$
3924.18	P		4.09	7.23	3-3	(240)
3938.76	P		4.15	7.28	2-2	
*4022.052	B	(2)	4.07	7.14	4-5	$y^3F^\circ-e^5G$ (241)
10979.87	A	5	4.14	5.26	3-3	$y^3D^\circ-e^3D$
11588.73	P		4.22	5.28	2-2	(242)
10302.61	A	50	4.25	5.45	1-1	
10762.24	A	2	4.14	5.28	3-2	
10048.60	A	10	4.22	5.45	2-1	
11927.89	P		4.25	5.28	1-2	
9898.90	A	40	4.22	5.46	2-2	$y^3D^\circ-e^1D$
10145.37	A	20	4.25	5.46	1-2	(243)
6414.603	B	(5)	4.14	6.06	3-4	$y^3D^\circ-e^5F$
6272.650	D	(1)	4.25	6.22	1-2	(244)
6142.047	D	(1)	4.14	6.15	3-3	
6177.49	E	(1)	4.22	6.22	2-2	
6119.780	B	(2)	4.25	6.26	1-1	
6759.41	G	(1)	4.22	6.04	2-1	$y^3D^\circ-e^3S$ (245)
6384.697	B	(5n)	4.14	6.07	3-2	$y^3D^\circ-e^3P$
6661.39	B	(3)	4.22	6.07	2-1	(246)
6300.363	D	(1)	4.25	6.21	1-0	
6378.263	B	5	4.14	6.07	3-4	$y^3D^\circ-e^3G$
6053.680	B	2	4.22	6.26	2-3	(247)
6339.148	B	7	4.14	6.08	3-3	$y^3D^\circ-f^3D$
6592.472	D	(3)	4.22	6.09	2-2	(248)
6130.174	B	(3)	4.25	6.26	1-1	
6316.61	G	(1g?)	4.14	6.09	3-2	
6039.312	H	(1n)	4.22	6.26	2-1	
6617.14	P		4.22	6.08	2-3	
6700.90	G	(1)	4.25	6.09	1-2	
m6314.67	P	Ni	4.14	6.09	3-4	$y^3D^\circ-e^3F$
6598.594	B	(4)	4.22	6.09	2-3	(249)
6086.290	B	5n	4.25	6.28	1-2	
6322.165	B	(3)	4.14	6.09	3-3	
5996.74	B	3n	4.22	6.28	2-2	
m5892.76	P	Ni	4.14	6.23	3-4	$y^3D^\circ-f^3F$
*5831.624	B	2	4.22	6.33	2-3?	(250)
5669.945	B	(3)	4.25	6.42	1-2	
5614.790	B	5	4.14	6.33	3-3	
5592.146	D	(1)	4.22	6.42	2-2	
5392.371	B	(2)	4.14	6.42	3-2	

UNITED STATES DEPARTMENT OF COMMERCE • Maurice H. Stans, *Secretary*
NATIONAL BUREAU OF STANDARDS • Lewis M. Branscomb, *Director*

A Multiplet Table of Astrophysical Interest

Revised Edition

Part I—Table of Multiplets

Part II—Finding List of All Lines in the Table of Multiplets

Charlotte E. Moore

Office of Standard Reference Data
National Bureau of Standards
Washington, D.C. 20234

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FOREWORD

The National Standard Reference Data System provides effective access to the quantitative data of physical science, critically evaluated and compiled for convenience, and readily accessible through a variety of distribution channels. The System was established in 1963 by action of the President's Office of Science and Technology and the Federal Council for Science and Technology, with responsibility to administer it assigned to the National Bureau of Standards.

The System now comprises a complex of data centers and other activities, carried on in academic institutions and other laboratories both in and out of government. The independent operational status of existing critical data projects is maintained and encouraged. Data centers that are components of the NSRDS produce compilations of critically evaluated data, critical reviews of the state of quantitative knowledge in specialized areas, and computations of useful functions derived from standard reference data. In addition, the centers and projects establish criteria for evaluation and compilation of data and make recommendations on needed improvements in experimental techniques. They are normally closely associated with active research in the relevant field.

The technical scope of the NSRDS is indicated by the principal categories of data compilation projects now active or being planned; nuclear properties, atomic and molecular properties, solid state properties, thermodynamic and transport properties, chemical kinetics, and colloid and surface properties and mechanical properties.

The NSRDS receives advice and planning assistance from the National Research Council of the National Academy of Sciences-National Academy of Engineering. An overall Review Committee considers the program as a whole and makes recommendations on policy, long-term planning, and international collaboration. Advisory Panels, each concerned with a single technical area, meet regularly to examine major portions of the program, assign relative priorities, and identify specific key problems in need of further attention. For selected specific topics, the Advisory Panels sponsor subpanels which make detailed studies of users' needs, the present state of knowledge, and existing data resources, as a basis for recommending one or more data compilation activities. This assembly of advisory services contributes greatly to the guidance of NSRDS activities.

The NSRDS-NBS series of publications is intended primarily to include evaluated reference data and critical reviews of long-term interest to the scientific and technical community.

LEWIS M. BRANSCOMB, *Director*

AUTHOR'S FOREWORD

The present Multiplet Table was first published in 1945 by the Princeton University Observatory; it has not yet n superseded. In 1959 it was reprinted as Technical Note 36 of the National Bureau of Standards. This issue is w out of print and is being reprinted as NSRDS-NBS 40.

The format is not being changed. In the present publication a special note has been added in the heading for se spectra included in "Selected Tables of Atomic Spectra," NSRDS-NBS 3, to indicate the existence of a Revised ltiplet Table.

gust 2, 1971

ABSTRACT

Pending the completion of a current edition, the 1945 Multiplet Table is being reprinted here to meet continuing demands. The leading lines in 196 atomic spectra of 85 chemical elements are listed in related groups called multiplets. Estimated intensities, excitation potentials and multiplet designations are given for the individual lines, and each multiplet is assigned a number. An extensive bibliography covers the source material used for the compilation.

The Table is presented in two parts:

Part I includes the multiplets, with the spectra of each element being given in order of increasing ionization, and the elements in order of increasing atomic number.

Part II is a Finding List in which all the lines in Part I are entered in order of increasing wavelength, with their multiplet numbers.

The range of the Table is from 2951 Å to 13164 Å. A supplementary table of "Forbidden Lines" extends from 2972 Å to 12645 Å.

Key words: Atomic spectra, multiplet table; finding list, atomic spectra; multiplet table; spectra, atomic.

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Editorial Note—Spectra in Technical Note 36 (PB151395), for which revised data are given in NSRDS–NBS 3*

Page	Spectrum	Reference
2	C I	SEE REVISION IN NSRDS-NBS 3, Section 3, November 1970.
2	C II	
3	C III	
3	C IV	
New	C V	SEE Section 3, November 1970.
6	N IV	SEE REVISION IN NSRDS-NBS 3, Section 4, August 1971.
6	N V	
New	N VI	SEE Section 4, August 1971.
New	N VII	
15	Si I	SEE REVISION IN NSRDS-NBS 3, Section 2, November 1967.
16	Si II	SEE REVISION IN NSRDS-NBS 3, Section 1, June 1965.
16	Si III	
17	Si IV	

			Correction
Part I	2	He II	λ 6570.0 Ref. A has been corrected to λ 6527.10 Ref. P.
Part II	*76*	*He II*	*λ 6570.0 has been corrected to λ 6527.10.*

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* See List of Publications in the National Standard Reference Data Series at the back of this book for information about obtaining these publications.

Author's Note on the Reprinting of the 1945 Princeton Multiplet Table: U.S. Department of Commerce, N.B.S. Tech. Note 36, (PB151395), 1959

The Multiplet Table that first appeared as Contributions from the Princeton University Observatory No. 20, 1945, is still a standard reference source used by astrophysicists, physicists, chemists, and many others. To date it has not been superseded and it continues to be in steady demand, although it is seriously in need of revision.

In 1959 this table was reprinted as U.S. Department of Commerce, National Bureau of Standards Technical Note 36 (PB151395). This issue is now out of print.

In view of the continuing requests, the Office of Standard Reference Data has decided to reprint Technical Note 36 as National Standard Reference Data Series-National Bureau of Standards, NSRDS-NBS 40, 1971, Parts I and II.

Similarly, Volumes I, II, and III of "Atomic Energy Levels," Circular of the National Bureau of Standards 467 are being reprinted in the same series, NSRDS-NBS 35, Parts I, II, III.

The present rapid technological advances by the astrophysicist in observing celestial spectra have created an urgent need for a current Multiplet Table of Astrophysical Interest. The correct interpretation of these spectra depends directly on the laboratory analyses of optical spectra. A critical compilation of spectroscopic data that provides the leading lines of individual atomic and ionic spectra of the more abundant elements, over the range from the x-ray to the microwave region is essential. In preparing such a table an effort should be made to envisage future developments in observing celestial spectra over this range and to design laboratory programs that will provide the requisite data.

Many gaps exist in our knowledge of atomic and ionic spectra. Sources that will produce clearly separated spectra in all stages of ionization for the elements H to Ni will be needed. Some of the less complex spectra can be traced along isoelectronic sequences, while more complex spectra have line lists containing thousands of lines. Encouraging progress is being made in the laboratory, where excellent spectrographs and carefully controlled sources can produce spectra that far outweigh the observations quoted in 1945.

Although it is not yet possible to provide a complete revision of this 1945 edition, current Multiplet Tables together with corresponding revised tables of Atomic Energy Levels are available for selected spectra. They are being published by the National Bureau of Standards under the title "Selected Tables of Atomic Spectra, Atomic Energy Levels and Multiplet Tables," as Sections of NSRDS-NBS 3. Section 1 contains these data for the spectra Si II, Si III, Si IV; Section 2 for Si I; Section 3 for C I, C II, C III, C IV, C V, C VI; Section 4 for N IV, N V, N VI, N VII. Similar tables for N I, N II, N III are in course of preparation as Section 5. A number of additional spectra are partially completed for inclusion in this series. These new Multiplet Tables cover the entire observed range of individual spectra, and, therefore, supersede not only the 1945 Multiplet Table, but also the Ultraviolet Multiplet Table which appeared as Circular of the National Bureau of Standards 488, Section 1, 1950; Section 2, 1952; Sections 3, 4, 5, 1962.

In the present reprinted issue of the Princeton Table, the individual spectra that have been revised are clearly indicated. Readers are urged to use the revised data for the spectra thus marked and to note further such revisions of selected spectra as they appear in this series.

This work advances slowly, although a number of revised analyses of spectra have been published that supersede the 1945 data. A bibliography in the National Bureau of Standards Special Publication 306, Sections 1, 2, 3, 4, 1968-1969, provides reference material on individual spectra to about July 1968, continuing from the reference listings given in the Volumes on Atomic Energy Levels.

The most serious need for revision is perhaps in the infrared data. Current references to work on the spectra H I to Ni I in the range > 7000 Å may be found in a forthcoming publication of the Proceedings of the Seventeenth International Astrophysical Symposium, on "Astronomical Spectra in the Infrared and Microwave Regions," held at the Institut d'Astrophysique, Université de Liège, Cointe-Ougrée, Belgium, June 28-30, 1971.

Washington, D.C.
August 2, 1971

CHARLOTTE E. MOORE

Part I—Table of Multiplets

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PREFACE

The preparation of a Multiplet Table that will meet the needs of all astrophysicists both now and in the future is an almost overwhelming undertaking. The most eminent workers would have to exercise careful judgment in handling the spectroscopic literature today. The writer has been bold enough to attempt it, only because of the many requests for a revision of the earlier Table and the enthusiasm with which it was received in spite of its many faults. Admittedly the present work is far from ideal. With all its limitations, however, it could never have been published without a vast amount of collaboration. The generosity and encouragement of spectroscopists and astrophysicists both at home and abroad has been the inspiration for this book. No two people would present the same choice of material, and the writer feels that her judgment has been far from adequate for this task. Whatever usefulness the volume may have is due to the many workers who have stood by, ready to supply material, to discuss puzzling questions and to offer the most valuable suggestions.

Since 1932 work on spectrum analysis has progressed so speedily that the *selection of data useful to the astrophysicist* has been one of the major problems. Requests for an entirely complete Multiplet Table have been received, but the purpose of this work has been to provide a book whose scope is limited—one that contains *astrophysically* useful data but is not unwieldy because of the inclusion of other material from the vast storehouse of spectroscopic literature now accessible. The bibliography should be consulted by those who desire more complete Tables of Multiplets.

More work of astrophysical importance remains to be done, chiefly on the spectra of the rare-earths and on the second spark spectra in general. It is hoped that a supplement can be prepared to cover these spectra and that a large part of the present work will prove to be definitive.

This book has been brought to a conclusion during the second world war. Consequently, restrictions of all kinds have been imposed and assistance has been limited. A very careful attempt has been made to prepare the manuscript accurately. The writer believes, however, that errors have inevitably been made in the compiling and editing of more than 25,750 spectral lines, for the work has been done with the minimum amount of clerical aid. She relies upon the users to detect serious errors and report them to her so that a list of errata may be published. Suggestions will be welcome.

Mention has been made of the cordial cooperation experienced from the beginning of this work. It could not now have been brought to a conclusion without the hearty and enthusiastic support of Henry Norris Russell, the author of the first list of multiplets of astrophysical importance. He has generously offered his valuable collection of data on spectra and has been ever ready to help in spite of the many complications that have arisen in carrying out such an extensive program.

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April 3, 1945

A MULTIPLET TABLE OF ASTROPHYSICAL INTEREST

PART I

TABLE OF MULTIPLETS

I. INTRODUCTION

1. The detailed interpretation of stellar spectra demands of the laboratory investigators an ever increasing amount of careful work on spectrum analysis. With the impetus provided by Hund's theory, remarkably rapid strides have been made. Additional encouragement, particularly in handling complex spectra, has resulted from the great development of mechanical devices to decrease the enormous labor of measuring and reducing spectrograms. The valuable machine developed by Harrison at the Massachusetts Institute of Technology for this purpose has already proven its worth and promises much more in the future.

2. From an astrophysical point of view there is a definite need for a compendium of multiplets. The manuscript lists prepared for the present work have been almost continuously on loan to various investigators.

Spectrum analysis has not been carried far enough to compile a completely satisfactory Table. So many spectra have been analyzed, however, that to wait for perfection is to retard scientific progress. For many spectra "prediction" may be invoked to extend the existing lists of observed laboratory lines, and this has been done throughout the work. Three general classes of lines are tabulated: those observed in the laboratory; predicted "permitted" lines calculated from combinations among spectroscopic term values; and predicted "forbidden" lines.

3. A complete multiplet table would be welcomed by many scientists. It is not the purpose of the present work to furnish this. The range of wave-lengths is roughly from λ2950 to λ13000. The violet limit is imposed by the ozone in our atmosphere, which cuts off stellar observations beyond this region. In the infra-red the scarcity and inaccuracy of laboratory wave-lengths have made it necessary to predict many lines.

Even within these limits, only the lines thought to be useful in the interpretation of astronomical spectra are listed. These are selected from the elements sufficiently abundant to appear in stellar spectra, and from only those stages of ionization and types of excitation which are to be expected.

4. The importance of handling the various laboratory spectra by multiplets was stressed in 1925 by Russell,[1] who published the original multiplet table under the title "A List of Ultimate and Penultimate Lines of Astrophysical Interest." Useful as it was, this soon proved to be incomplete, not only because it was intentionally limited, but also because more data were becoming available. Work on spectrum analysis was proceeding so rapidly that an extension of his list was imperative.

5. When the writer was at the Mount Wilson Observatory in 1931 she prepared a solar multiplet table for private use in revising and extending the identification of lines in the solar and sun-spot spectra. This manuscript was constantly used by astronomers. In response to requests for copies, the laboratory data for light elements present in early type stars were added and a limited edition was printed in 1933.[2] This edition was out of date and out of print almost immediately—the demand for it had not been anticipated. To meet the situation the present book was planned; it is the first book designed from the start as a multiplet table for astrophysicists. For this reason, solar wave-lengths and intensities are excluded. It is essentially a manual of laboratory data needed by astronomers.

6. In the Multiplet Table (Part I) the *elements* are arranged in order of increasing atomic number. For each spectrum of each element the *multiplets* are listed in order of increasing energy level (see § 27 for details), and are numbered for reference. While such an arrangement is useful in studying stellar spectra, it introduces one serious disadvantage. The search for a *particular line* is laborious. This has been a widespread and an entirely justified criticism of the earlier Table. A Finding List has, therefore, been prepared and forms Part II of this Contribution. Here every line in the Revised Multiplet Table (hereinafter referred to as the R M T), is entered in order of wave-length, listing the spectrum to which the line belongs, and the number of the multiplet containing it.

II. THE MULTIPLET TABLE—General Considerations

7. The astronomical spectra forming the basis of selection of the elements, spectra and lines included, fall into several general classes. The sun receives first consideration. The observed solar spectrum now extends from λ2914* to λ13495, which accounts for the range covered in this Table. In addition, the spot and chromospheric spectra, stellar spectra of every type from Wolf-Rayet stars down through M-stars, including giants and dwarfs, spectra of novae and nebulae, and of the corona must be taken into account.

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[1] *Mt. Wilson Contr.* No. 286; *Ap.* J. **61**, 223, 1925.

[2] A Multiplet Table of Astrophysical Interest, Princeton 1933.

* Accurate measures have not been made to the violet of λ2949.

8. The astrophysical importance of a spectrum depends upon the abundance of the element in the most favor-le celestial sources, and the number and excitation potentials of the lines in the visible region. Almost all of the ments of atomic number 1-30 (*H-Zn*) have, on this account, preference over those that follow. The analyses of eir arc spectra are almost all adequate for astrophysical purposes.

For the first spark spectra, which on the whole are more important, the analyses are fairly complete (except for *n* II and *Co* II) The lists for these spectra in the R M T include all but the weakest observed lines except for a *w* elements of low abundance.

The second spark spectra are less completely analyzed in the two short periods. In the first long period *Fe* III complete and only a beginning has been made for any of the rest.

Detailed knowledge of spectra of more highly ionized atoms is confined to a few of the lighter elements.

9. The spectra of the elements from *Ga* to *Ba* are on the average considerably richer, and much less completely alyzed; but these elements are decidedly less abundant and the existing data are usually, though not always, fairly equate for astrophysical purposes.

10. The rare earths, which are no rarer than neighboring elements in cosmical abundance, usually have rich ectra, which adds to their significance. The arc spectra rarely appear. The first spark spectra are important in many ars, and lines of the second spark spectra of several of them have recently been identified.[1] Analysis of the third spectra barely begun; for the second spectra it is well advanced for six of these elements and well begun for four more.

The lists given here for the rare earths are approximately definitive for *La* II, *Eu* II and *Lu* II. It is hoped that eatly improved data for the others will be available in the near future. Extended tables for rare earths are likely form the larger part of a supplement to the R M T.

11. The elements from *Hf* onward are of low abundance, and the data for them, though incomplete, meet most trophysical needs tolerably.

I. BASIS OF SELECTION

12. The Short Periods (*H-A*).

These spectra are so important in the hotter stars that the lists are entirely or almost complete for all degrees f ionization included, except for a few elements of low cosmic abundance.

The spectra of Wolf-Rayet stars,[2, 3] novae and nebulae contain many "predicted" lines of these elements, not et observed in the laboratory. For many light elements more predicted lines could probably have been included advantage. More accurate values of predicted wave-lengths could also have been given, particularly in the spark ectra of *C*, *N*, and *O*. The precedent set by Edlén in his work on *Wolf-Rayet*[3] stars was followed. In many cases e term separations are known with sufficient accuracy to justify predictions to 0.1 A, although he uses no decimals. se of the photographic method of reproduction for this book has prevented all but the most necessary alterations f the original manuscript. Changes later realized to be improvements have been omitted because of this restriction.

13. Bowen's[4] work naturally forms the guide for selecting material related to ***nebular*** spectra. The leading ebular lines are due to forbidden lines of the light elements. In anticipation of future needs, the lists of forbidden nes have, however, been greatly extended throughout the first long period.

14. No particular type of stellar spectrum has influenced the choice of lines from the first spark spectra of light lements. The lists have not been restricted to include only those lines known to be present in the stars. The bundance of the element has been the chief factor considered in omitting lines. For elements known to be fairly bundant, favorable predicted lines have been added. The lists are as extensive as the present state of analysis ermits.

15. For some years Mr. H. D. Babcock at Mount Wilson, has been preparing for publication a monograph on he Infra-Red Solar Spectrum. His work now covers the interval λλ6600–13495 and includes approximately 7300 nes. The leading accessible lines of the arc spectra of most of the light elements lie in this interval. For example, nportant solar lines are unquestionably due to *H*, *C* I, *N* I, *O* I, *Mg* I, *Si* I, *P* I, and *S* I. In fact, the presence of hosphorus could not be detected until the solar observations were extended to the infra-red. The present Table as been compiled with Mr. Babcock's work especially in mind.

For unblended lines the solar wave-lengths in this region are far more accurate than many laboratory measures. *i* affords an excellent illustration. The lines are sharp in the sun and the term separations among solar wave-

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[1] Swings, *Ap. J.* **100**, 132, 1944.
[2] Payne, *Zeit. fur Ap.* **7**, 1, 1933.
[3] Edlén, *Zeit. fur Ap.* **7**, 378, 1933.
[4] *Rev. Mod. Phys.* **8**, 55 (No. 2), 1936.

numbers are so consistent that accurate solar term values can be calculated. These term values have been very useful in predicting wave-lengths. Similarly, the triplet and singlet "F" series of *Mg* I were extended with the aid of solar data.[1] The constancy of the term separations proves beyond doubt the correctness of the identifications.

16. The First Long Period (*K-Kr*).

The elements in the first long period from *K* through *Ni* constitute by far the major portion of this book (pp. 23–77), on account of the complexity of their spectra. Generally speaking, the arc and first spark spectra are well analyzed except for those mentioned in § 8. Many lines of these spectra (as far as *Cu*) are present throughout the entire range of the solar and sun-spot spectra, the flash spectrum, stellar spectra like those of γ Cygni and α Persei, and later type stars.

The only second spark spectrum in this group that can be given completely is that of *Fe* III. Astronomers eagerly await the definitive analysis of the rest.

17. The spectrum of *Fe* I deserves special mention. Although the importance of the analysis has long been realized, a complete monograph of this spectrum has only recently been published.[2] Practically every known line of *Fe* I is present in the sun. An amazing number of predicted lines agree well with solar wave-lengths. A statistical study of these coincidences indicates that most of them are real. For the statistical work the predicted lines were graded as "good," "fair," or "poor." The grades were based on the behavior of all the lines of each multiplet in the solar spectrum, the agreement in wave-length, and other factors. Only the "good" and "fair" lines have been published to date. Since the grading was severe, and since predicted wave-lengths are much in demand, many of the lines graded "poor," but considered useful to other workers, have been retained in the R M T.

18. The Second Long Period (*Rb-Xe*).

These elements are observed chiefly in the solar and sun-spot spectra and later dwarf stars. Except for *Y* II and *Zr* II the lists are restricted to the lines from low atomic energy levels. They are, however, more extensive than in the earlier Multiplet Table and slightly longer than are necessary to meet present needs.

19. Forbidden lines are assuming more and more significance in astronomical sources. A special section of the R M T (pp. 100–110) and one of the Finding List (pp. 87–96) are devoted to them. It is extremely difficult to predict what the future needs will be.

To list the array of possible predicted lines even among only abundant elements would be prohibitive. The present selection has been based largely on suggestions made by Dr. P. Swings. He was planning to publish a paper on this subject, but this was unknown to the writer when she was confronted with the problem of including them in the R M T. He generously suggested that they be given here instead of in a separate paper, and has examined the manuscript carefully. The author is extremely fortunate to have had the benefit of his extensive knowledge of both the theoretical and astrophysical aspects of forbidden lines while preparing this section of the Table. Details are discussed later in § 44.

IV. GENERAL ARRANGEMENT OF THE MULTIPLET TABLE

20. The foregoing remarks serve only as the most general guide to the scope of the material presented here. The book is colored throughout by individual judgment in the editing of spectroscopic literature. A serious attempt has been made to limit it in such a manner that it will be a useful astrophysical handbook. Even so, it is now more than twice the size of the earlier edition.

21. The elements in the R M T are discussed in order of increasing atomic number, and the spectra of each element in order of increasing ionization.

Table 1 gives a convenient arrangement of the Periodic Table of the elements. This Table is self-explanatory. The atomic number and chemical symbol of each element are given and elements with similar spectra in the short and long periods are connected by diagonal lines.

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[1] Russell, Babcock and Moore, *Phys. Rev.* (2) **46**, 826 (No. 9), 1934. Babcock and Moore, *Ap. J.* **101**, 374, 1945.

[2] Russell, Moore and Weeks, *Trans. Am. Phil. Soc.* **34**, 111 (Part 2), 1944.

Table 1

The Periodic Table [1]

st riod	1 H	2 He																
cond riod	3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne										
ird riod	11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 A										
urth riod	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
fth riod	37 Rb	38 Sr	39 Y	40 Zr	41 Cb	42 Mo	43 (Ma)	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
xth riod	55 Cs	56 Ba	57* La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85	86 Rn
venth riod	87	88 Ra	89 Ac	90 Th	91 Pa	92 U												

* Atomic numbers 58–71—Rare Earths. See below.

are arths	58 Ce	59 Pr	60 Nd	61 (Il)	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu

In Table 2 the elements are listed in the alphabetical order of their names. The successive columns contain, spectively, the name, the chemical symbol, and the atomic number of each element.

Table 2

Alphabetical List of Elements

Name	Symbol	Atomic No.	Name	Symbol	Atomic No.	Name	Symbol	Atomic No.
tinium	Ac	89	Chlorine	Cl	17	Holmium	Ho	67
uminium	Al	13	Chromium	Cr	24	Hydrogen	H	1
timony	Sb	51	Cobalt	Co	27	(Illinium	Il	61)†
gon	A	18	Columbium	Cb	41	Indium	In	49
rsenic	As	33	Copper	Cu	29	Iodine	I	53
arium	Ba	56	Dysprosium	Dy	66	Iridium	Ir	77
ryllium	Be	4	Erbium	Er	68	Iron	Fe	26
ismuth	Bi	83	Europium	Eu	63	Krypton	Kr	36
ron	B	5	Fluorine	F	9	Lanthanum	La	57
romine	Br	35	Gadolinium	Gd	64	Lead	Pb	82
admium	Cd	48	Gallium	Ga	31	Lithium	Li	3
aesium	Cs	55	Germanium	Ge	32	Lutecium	Lu	71
alcium	Ca	20	Gold	Au	79	Magnesium	Mg	12
arbon	C	6	Hafnium	Hf	72	Manganese	Mn	25
erium	Ce	58	Helium	He	2	(Masurium	Ma	43)†

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† Not isolated.

[1] International Chemical Symbols—1941.

TABLE 2—Continued

Name	Symbol	Atomic No.	Name	Symbol	Atomic No.	Name	Symbol	Atomic No.
Mercury	Hg	80	Radium	Ra	88	Tellurium	Te	52
Molybdenum	Mo	42	Radon	Rn	86	Terbium	Tb	65
Neodymium	Nd	60	Rhenium	Re	75	Thallium	Tl	81
Neon	Ne	10	Rhodium	Rh	45	Thorium	Th	90
Nickel	Ni	28	Rubidium	Rb	37	Thulium	Tm	69
Nitrogen	N	7	Ruthenium	Ru	44	Tin	Sn	50
Osmium	Os	76	Samarium	Sm	62	Titanium	Ti	22
Oxygen	O	8	Scandium	Sc	21	Tungsten	W	74
Palladium	Pd	46	Selenium	Se	34	Uranium	U	92
Phosphorus	P	15	Silicon	Si	14	Vanadium	V	23
Platinum	Pt	78	Silver	Ag	47	Xenon	Xe	54
Polonium	Po	84	Sodium	Na	11	Ytterbium	Yb	70
Potassium	K	19	Strontium	Sr	38	Yttrium	Y	39
Praseodymium	Pr	59	Sulphur	S	16	Zinc	Zn	30
Protoactinium	Pa	91	Tantalum	Ta	73	Zirconium	Zr	40

22. Headings.

Each spectrum of each element for which multiplets are given, begins with a heading containing four entries: the ionization potential, an astrophysical grade of the analysis, a grade of the list, expressing the fraction of classified lines listed, and finally, the date of completion of the manuscript of that spectrum. For example, *Cr* I (p. 37) starts with the heading

Cr I   I P 6.74   Anal A   List B   March 1941.

23. The Ionization Potential.

For arc spectra many of these have been taken from the list published by Meggers in 1941.[1] For the first spark spectra he has kindly furnished a similar list [2] which has been extensively used. The monograph by Edlén [3] has furnished many more, but the values have been recalculated using the factor 0.00012345 instead of the one he used (see § 35). Edlén's unpublished values are quoted [4] for *Ne*. For many other elements the I P has been obtained from the limits published in the papers on analysis, as for Edlén's results. The list by Boyce [5] is frequently quoted, particularly in the section dealing with Forbidden Lines. Those interested in the source are advised to consult the part of the bibliography pertaining to analysis (Tables 9 and 10), or one of the above mentioned general lists.

24. The completeness of analysis from the standpoint of the astrophysicist (§§ 8–11) is indicated by four grades. "Anal A" signifies that practically all the important lines of wave-length > 2950 are classified, "Anal B" that only a small fraction remain unclassified, "Anal C" that a considerable proportion are unclassified and "Anal D" that the analysis is seriously incomplete.

This rating necessarily involves a large amount of opinion and should not be given too much weight. No two appraisements would agree completely. Its purpose is to indicate the present state of analysis with regard to the needs of the astronomer.

From the viewpoint of the physicist, the state of the *term* analysis of the various spectra has been similarly summarized elsewhere by means of grades A, B, C etc. With the aid of Hund's theory the physicist can compare the number of predicted and observed *terms* and assign a grade accordingly, whether or not most of the leading lines occur in a given region of the spectrum. Both Boyce [5] and Shenstone [6] have published extensive surveys.

On account of the different viewpoints, the two grades are often not identical for the same spectrum.

25. A similar grading "List A, B, C, or D" is introduced to indicate the percentage of classified lines of a given spectrum included in the R M T. Since all lines of each spectrum considered are not equally useful to the astrophysicist, the omissions have been much more drastic in some cases than in others. For example, practically every

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[1] *Journ. Opt. Soc. Am.* **31**, 39 (No. 1), 1941.
[2] Unpublished material, April 1941.
[3] *Nova Acta Regiæ Societatis Scientiarum Upsaliensis* (IV) **9**, No. 6, 1933.
[4] Communicated by Swings in a letter, March 1945.
[5] *Rev. Mod. Phys.* **13**, 1 (No. 1), 1941.
[6] Reports on Progress in Physics **5**, 210, 1939.

line of *Fe* I observed in the laboratory is present or accounted for in the solar spectrum.[1] This applies to weak as well as strong lines. Hence, all classified lines of *Fe* I to the red of λ2950 are entered and the list entry in the heading is "List A". Most of the spark spectra of the first long period are in this class, unless the element is scarce in stars. For many spark spectra most of the observed lines are in the violet and ultra-violet. In such cases the list may be very short, although graded "List A". This means that only a small fraction of the total number of observed classified lines lie in the region considered in this book.

When all but the weakest classified lines are given, the list is graded "B". The spectra of *Na* I and *Mg* I illustrate "List B", the higher series members having been omitted as unimportant. In anticipation of requests for more material, the general policy has been to include slightly more than is necessary. Since all classified lines are not given, however, the list cannot be graded "A".

"List C" denotes that most of the strong lines are entered: "List D", that only the leading strong lines are given.

In grading the *lists*, unclassified lines have not been given consideration (although the stronger ones are listed after the multiplets of a spectrum). The purpose of this grading is to enable the reader to judge how many classified lines have been omitted, regardless of whether or not the *analysis* is complete. Thus for *Co* II few lines are classified, but all these are listed.. Hence this element is in the class "Anal C, List A."

26. The last entry at the head of each spectrum gives the month and year in which that section of manuscript was completed. This work has extended over such a long period that the date of publication does not apply even approximately to the date at which some spectra were last examined. It is hoped that the lists are up to date, but if important references have been missed, or if existing unpublished material should replace that included here, the writer invites such suggestions.

V. ARRANGEMENT OF THE MULTIPLETS OF EACH SPECTRUM

27. Reference must be made to some details of spectrum analysis in order to discuss the plan of presentation adopted here. In brief, the atoms of a gas, when excited by radiation, absorb certain wave-lengths corresponding to transitions of their outer electrons from lower energy levels to higher ones. From differences in the wave numbers of the observed lines, energy levels can be worked out, each line being produced by a transition between two such levels. Related *levels* are grouped accordingly to well known rules to form spectroscopic *terms*. Transitions between *terms* give rise to groups of related lines called *multiplets*.

In the RMT the terms of each spectrum have been arranged in order of increasing value of the component of *lowest* energy. This defines the relative level of the term, starting with the lowest term zero. The excitation potentials (columns 4 and 5) express in electron volts the values of the energy levels of those term components involved in the production of each line (see §35).

To illustrate, the lowest term of *Fe* I is a^5D. This term is made up of five energy levels whose E P's are respectively 0.00, 0.05, 0.09, 0.11 and 0.12. The next term is a^5F. Here the components have E P's 0.86, 0.91, 0.95, 0.99 and 1.01. For the purposes of this book the terms are considered in order of the lowest level of each, i.e. a^5D 0.00, a^5F 0.86 etc. This is to avoid confusion in spectra whose term values overlap seriously.

In each spectrum all multiplets with the same low term are in one group. The various groups are listed in the order of increasing value of the low terms. Within a group (which represents the combinations of a given low term with higher terms) the multiplets follow the order of increasing high term values.

For example, all combinations from a^5D of *Fe* I (Multiplets 1–11) form the first group. These multiplets are listed in order of increasing high E P, 2.39, 2.82, 2.93, 3.20 etc. The next low term is a^5F. The combinations from this term form the next group (Multiplets 12–31) etc.

In certain multiplets, the lowest components of one or both of the terms involved are not represented. This does not alter the arrangement.

Whenever the low level changes, the break in the continuity is indicated by three long dashes between the groups. For *Fe* I the first of these occurs between multiplets 11 and 12.

When terms are widely separated this arrangement results in listing the multiplets from a given low term in the order of decreasing wave-length of the leading line of each multiplet, since increasing energy of the high terms automatically results in increasing wave number, or decreasing wave-length.

The wave-length criterion alone was used for part of the R M T until the overlapping of terms in some complex spectra of the first long period introduced serious complications of arrangement. Then the more rigorous procedure

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[1] Russell, Moore and Weeks, *Trans. Am. Phil. Soc.* **34** (Part 2), 111, 1944.

described above was adopted. Some spectra had been typed before the strictly orderly listing was put into effect. Owing to the excessive amount of labor involved in making such minor changes, slight irregularities of arrangement have not been corrected. For the greater part of the Table, however, the multiplets are in orderly array.

28. The energy *levels* that are grouped to form spectroscopic *terms* are defined by inner quantum numbers, commonly known as J-values. The terms have *multiplicities* (which are either all odd or all even in a given spectrum), and are further defined by azimuthal quantum numbers L which have the values 1, 2, 3 etc. for terms labeled S, P, D, F, G, H, I, K. The complete multiplet designation of any line includes all of these quantities for both the lower and upper energy level involved in the production of the line.

In the R M T a simplified plan has been adopted. The inner quantum numbers are listed separately from the rest of the designation, in column six, under the heading J. The J-value belonging to the lower term comes first and is followed by that of the higher term. In the next column, headed "Multiplet Desig" the spectroscopic designation of the lower term is always stated first, followed by a dash, then that of the higher term. For example, in multiplet No. 5 of *Fe* I the first line, 3719.935 has J-values 4–5. The rest of the designation is a^5D-z^5F°. In the complete notation the "4" appears as the subscript of a^5D and 5 as that of z^5F°, i.e. a^5D_4-$z^5F^\circ_5$. The complete designation of the second line λ3737.133, is a^5D_3-$z^5F^\circ_4$ etc. The "a" and "z" merely distinguish these ^5D and $^5F^\circ$ terms from others of the same type. This notation is discussed later in § 38. For both terms the superscript 5 denotes the multiplicity.

"Permitted" lines occur among combinations between two sets of terms, one "odd" and the other "even". The superscript "°" attached to ^5F tells that this is the odd term. When both terms belong to the same set (odd or even), the lines are commonly called "Forbidden".

Within a multiplet the arrangement of the individual lines is governed by the J-values. Each multiplet is entered as if it were written in multiplet array, i. e. the lines on the main diagonal come first, then the strongest satellite lines, then the next strongest etc. This is best illustrated by considering the inner quantum numbers, J, of each type of spectroscopic term. For convenience the J-values of all terms from S through I, of multiplicities 1–11 and 2–10 are given in Table 3, which applies equally to odd or even terms.

Even multiplicites are on the left and odd on the right half of the table. The types of terms (in order of increasing L value) S, P, D, F, G, H, I are in the vertical column on the left.

To arrange any multiplet in standard array, such as Multiplet No. 5 of *Fe* I, a^5D-z^5F°, find the J-values of the two types of terms (odd or even) from Table 3. The term ^5D is listed under multiplicity 5, and entry D on the left (J-values are 4, 3, 2, 1, 0). The term $^5F^\circ$ has J-values 5, 4, 3, 2, 1. Write these arrays as follows, with the *low* term *horizontally* arranged, and the *high* one *vertically* arranged:

a^5D z^5F°	$^5D_4$	$^5D_3$	$^5D_2$	$^5D_1$	$^5D_0$
$^5F^\circ_5$	x_1				
$^5F^\circ_4$	y_1	x_2			
$^5F^\circ_3$	z_1	y_2	x_3		
$^5F^\circ_2$		z_2	y_3	x_4	
$^5F^\circ_1$			z_3	y_4	x_5

TABLE 3

J-VALUES OF SPECTROSCOPIC TERMS

Multiplicity		2	4	6	8	10	1	3	5	7	9	11
L	Term											
1	S	½	1½	2½	3½	4½	0	1	2	3	4	5
2	P	1½	2½	3½	4½	5½	1	2	3	4	5	6
		½	1½	2½	3½	4½		1	2	3	4	5
			½	1½	2½	3½		0	1	2	3	4
3	D	2½	3½	4½	5½	6½	2	3	4	5	6	7
		1½	2½	3½	4½	5½		2	3	4	5	6
			1½	2½	3½	4½		1	2	3	4	5
			½	1½	2½	3½			1	2	3	4
				½	1½	2½			0	1	2	3
4	F	3½	4½	5½	6½	7½	3	4	5	6	7	8
		2½	3½	4½	5½	6½		3	4	5	6	7
			2½	3½	4½	5½		2	3	4	5	6
			1½	2½	3½	4½			2	3	4	5
				1½	2½	3½			1	2	3	4
				½	1½	2½				1	2	3
					½	1½				0	1	2
5	G	4½	5½	6½	7½	8½	4	5	6	7	8	9
		3½	4½	5½	6½	7½		4	5	6	7	8
			3½	4½	5½	6½		3	4	5	6	7
			2½	3½	4½	5½			3	4	5	6
				2½	3½	4½			2	3	4	5
				1½	2½	3½				2	3	4
					1½	2½				1	2	3
					½	1½					1	2
						½					0	1
6	H	5½	6½	7½	8½	9½	5	6	7	8	9	10
		4½	5½	6½	7½	8½		5	6	7	8	9
			4½	5½	6½	7½		4	5	6	7	8
			3½	4½	5½	6½			4	5	6	7
				3½	4½	5½			3	4	5	6
				2½	3½	4½				3	4	5
					2½	3½				2	3	4
					1½	2½					2	3
						1½					1	2
						½						1
												0
7	I	6½	7½	8½	9½	10½	6	7	8	9	10	11
		5½	6½	7½	8½	9½		6	7	8	9	10
			5½	6½	7½	8½		5	6	7	8	9
			4½	5½	6½	7½			5	6	7	8
				4½	5½	6½			4	5	6	7
				3½	4½	5½				4	5	6
					3½	4½				3	4	5
					2½	3½					3	4
						2½					2	3
						1½						2
												1

Only those combinations between the low and high terms, for which J changes by O or ±1 are "permitted". This rule restricts the number of lines to be expected to those denoted by x, y, and z, where the subscripts 1, 2, 3 represent decreasing J-values. The main diagonal lines are x_1–x_5. The first satellites are y_1–y_4 and the second satellites, z_1–z_3.

In the R M T, the lines on the main diagonal are listed first, in order of decreasing J-values. From the example, the first lines entered are those in the positions x_1, x_2, x_3, x_4, x_5 in the Multiplet. The line at x_1 has the designation a^5D_4–$z^5F^\circ_5$, at x_2 a^5D_3–$z^5F^\circ_4$ etc. In the R M T the lines of this multiplet appear in the following order:

	λ	J	Desig	
x_1	3719.935	4–5	a^5D–z^5F°	Main Diagonal
x_2	3737.133	3–4	"	
x_3	3745.561	2–3	"	
x_4	3748.264	1–2	"	
x_5	3745.901	0–1	"	
y_1	3679.915	4–4	"	First Satellites
y_2	3705.567	3–3	"	
y_3	3722.564	2–2	"	
y_4	3733.319	1–1	"	
z_1	3649.304	4–3	"	Second Satellites
z_2	3683.054	3–2	"	
z_3	3707.828	2–1	"	

An example of a symmetrical multiplet should also be given. Multiplet No. 12 of *Cr* II (p. 43) has the designation a^4P–z^4P°. Since the multiplicity (4) and type of term (P) are identical for both terms, the J-values are also identical. From Table 3 the J-values for a ^4P term are 2½, 1½, ½.

a^4P \ z^4P°	$^4P_{2½}$	$^4P_{1½}$	$^4P_{½}$
$^4P^\circ_{2½}$	x_1	y_1	
$^4P^\circ_{1½}$	$\mathbf{y_1}$	x_2	y_2
$^4P^\circ_{½}$		$\mathbf{y_2}$	x_3

Here both sets of satellites involve the same J-values, 1½–2½, ½–1½ and 2½–1½, 1½–½. Throughout the R M T for such cases, combinations in which J-values read from *larger* J to *smaller* J are entered first. Here, for example the pair 2½–1½, 1½–½ (y_1 and y_2 in bold face type above), precede the pair with J-values 1½–2½, ½–1½ respectively.

According to elementary theory the leading line of the principal diagonal is the strongest in the multiplet, and first satellites are stronger than the second, while the two sets of satellites in a symmetrical multiplet are comparable.[1]

In the majority of spectra intersystem combinations occur, i.e. those in which the multiplicities of the terms differ by 2 or even 4, as for example multiplets 1 and 332 of *Fe* I, a^5D–z^7D° and z^7F°–e^3G respectively. These multiplets often include strong lines, particularly for the heavier elements. The rule $\Delta J = 0$ or ±1 is strictly observed but there are no known formulae for the prediction of intensities, which are often apparently erratic. When intersystem lines are strong, intensities in regular multiplets often deviate from the formulae. The intersystem multiplets are arranged in the R M T on the "diagonal" basis described above, so far as irregularities permit.

29. For all types of multiplets the reader must bear in mind that the arrays described above, and the J-values in Table 3 give all the possible permitted *theoretical* transitions.

In many cases the R M T does not give theoretically complete multiplets. Reasons for this are:

1. When the strongest lines of a multiplet are likely to be very weak in astrophysical sources, the weaker ones have been deliberately omitted even though they may have been observed in the laboratory. Omissions are indicated by a "†" following the "Multiplet Designation".

2. Individual lines in a multiplet are sometimes much fainter than theoretically expected and have never been observed. Sequences along the diagonals are thus broken. For such lines predicted positions are given only when it is believed that they *may* be observable astrophysically.

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[1] For details see Russell, *Mt. Wilson Contr.* No. 537; *Ap. J.* **83**, 129, 1936.

3. In some cases one or more components of a spectroscopic term have not yet been indentified.

Such cases may be detected by comparing the column headed J for a given multiplet with the theoretical array ermitted lines, just described.

30. For the more important spectra, limited lists of the leading unclassified lines follow the multiplets. The I T is not designed as a source for the investigator who is interested primarily in unclassified lines.

Three general factors have controlled the selection: the abundance of the element in astronomical sources, the le of the analysis and the accuracy of the laboratory material. Under "Anal A" more lines will be unclassified a complex spectrum like *Fe* I than for a simpler spectrum, but the percentage of strong lines will be small. Under ıal B" there will be more and stronger unclassified lines than if the grade were A, etc.

If A. S. King has made a temperature classification of the spectrum the leading unclassified lines can be readily sen from his lists. In such cases his temperature class follows the intensity in the R M T

Among arc spectra the lists of unclassified lines are longest for *N* I, *Ti* I, *Cr* I, *Mn* I, *Fe* I, *Ni* I, *Tm* I. Only a lines are listed for *Si* I, *S* I, *Ca* I, *Sc* I, *V* I, *Co* I, *Y* I, *Lu* I, and none for any other elements.

For first spark spectra the lists of unclassified lines may be summarized as follows:

ıited	*Si* II, *A* II, *Fe* II, *Cb* II, *La* II, *Nd* II, *Sm* II, *Gd* II, *Tm* II.
y limited	*O* II, *S* II, *Cl* II, *Ti* II, *V* II, *Cr* II, *Y* II, *Zr* II, *Ce* II, *Pr* II, *Eu* II, *Hf* II.
asures inadequate	*Mn* II, *Co* II, *Ni* II.

Lists are given for only five "third" spectra: *C* III (where a dubious classification has been suggested for the s) *N* III, *Si* III, *S* III and *Fe* III. The only one of any length is that of *Fe* III.

For some spark spectra, notably *La* II and *Fe* III it is not certain that the separation of the lines in different tes of ionization is definitive. This is mentioned in the R M T under these spectra. For many spectra the aration is so uncertain that no unclassified lines have been included. For no spectrum is a complete list given.

31. A few notes are appended to the list of multiplets for certain spectra. These fall into two classes: those ıling with notation (see § 37), and those dealing with fine structure. This book does not discuss fine structure or ope effects in any detail. Those spectra in which the fine structure or isotope effects should be called especially he attention of the astrophysicist have this fact mentioned, as follows:

Li II	Very wide fine structure
Mg I, *Al* II	Fine structure
Hg I, *Tl* I	Many lines show fine structure
He II, *Bi* I	Wide fine structure.

COLUMNS OF THE TABLE OF MULTIPLETS

32. Wave-length.

The data for each spectrum are given in seven columns. The first contains the *laboratory* wave-length in I A ts. In the earlier edition solar wave-lengths were listed for all but the lighter elements (see § 5). Since any ar line may be a blend, it was decided to replace this entry by laboratory material. An effort has been made to ct the best available wave-length for each line. The individual lists are far from homogeneous—there is often enormous range in accuracy among the lines of a given spectrum.

The reference from which each line has been taken is indicated in column two, by the letters A, B, C etc. Table p. xxiv), contains the number of the reference in the bibliography to which the letters refer. The letter "P" in this ımn denotes throughout that the wave-length is predicted from the laboratory term values, which may be found the references to analysis, Table 9 (p. xxvii).

The order of the letters represents roughly the estimated precision of the measures, but this must not be interted too literally because some investigators have measured only limited regions of a spectrum. Consequently, eral accurate sources may be used within a multiplet. Furthermore, the letters A, B, etc. denote very different rees of accuracy for different spectra. While the earlier letters of the alphabet are the more favored choices, it ıld be erroneous to conclude that the letters are arranged strictly according to the writer's rating of the accuracy he measures.

33. Symbols in the R M T.

Since most of the symbols occur in column one, they will all be described here.

Wave-length column:

// This symbol follows the wave-length of the "Raie Ultime" as determined from observations in the laboratory. High transition probabilities as well as low energy levels are involved, and they do not always come from the lowest levels. When the known *Raies Ultimes* are to the violet of λ2950 they are not included in the R M T. With the exception of Eu II[1] they are all quoted from Meggers [2], who generously furnished the data on first spark spectra [3] in advance of publication.

* An asterisk precedes the wave-length throughout the R M T to denote a blend. If no symbol follows the wave-length, the line is blended with another line in the same spectrum. For example, the line *2970.106 appears in multiplets 10 and 11 of *Fe* I.

An "*" is also used to denote blended intensities. For symbols in the intensity column see § 34G.

§ This symbol follows the wave-length (an "*" always preceding) to indicate a blend of an arc and spark line; or of two spark lines of the same element in spectra of different degrees of ionization. When this pair of symbols appears with an arc line it denotes that the arc line is blended with a line in the first spark spectrum of the element. Similarly, if it appears with a line in a first spark spectrum, the spark line is blended with an arc line of that element. Examples:

Fe I Multiplet No. 28 *3116.633§—Blend of *Fe* I and *Fe* II.

Cr II Multiplet No. 4 *3349.34§—Blend of *Cr* II and *Cr* I.

All uses of pairs of symbols not covered by the general cases of blends of arc lines with those in the first spark spectra or vice-versa, as described above, are summarized in Table 4, where another pair of symbols "* and §§" is also introduced.

TABLE 4

SYMBOLS DENOTING BLENDS—SPECIAL CASES

Spectrum	* and §	* and §§
C II	....	C II and C III
C III	....	C III " C II
P II	P II and P III	P II " P IV
P III	P III " P II	P III " P IV
P IV	P IV " P III	P IV " P II
S II	S II " S III	
S III	S III " S II	
K III	K III " K II	
Fe II	....	Fe II " Fe III
Fe III	Fe III " Fe II	Fe III " Fe I

Column one of Table 4 indicates the spectrum in which the symbols are found. Columns two and three of the Table contain the pairs of symbols used and the meaning of each. For example:

C II Multiplet No. 45 *4368.14§§—Blend of *C* II and *C* III.

S II Multiplet No. 50 *3860.64§—Blend of *S* II and *S* III.

The symbols mentioned above apply to blended lines which have come to the attention of the writer, but doubtless many more blends exist than are thus noted. A careful examination of the Finding List should reveal any important blends, but this list was prepared after the R M T was typed, and consequently could not be used to check the thoroughness with which the blended lines are marked.

m An "m" preceding the wave-length indicates that the line is masked (see § 34F).

† This symbol follows the Multiplet Designation to call attention to the fact that not all the lines observed in the multiplet are listed in the R M T. The violet limit λ2950 explains the omission of some strong lines. Most of the omitted lines are too faint to be of astrophysical importance.

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[1] Russell, Unpublished material.
[2] Meggers, *Journ. Opt. Soc. Am.* **31**, 39 (No. 1), 1941.
[3] April 1941.

34. Intensity.

Column three contains the estimated laboratory intensity. It has been included only because of persistent uests. The intensities must be used with great caution not only because of the glaring lack of homogeneity in the imates, but also on account of the difference in the intensity scales used by various investigators.

For each spectrum the writer has tried to adopt the best existing set of estimates made by a good observer who covered a long range of wave-length. In the red, the intensities by Meggers and Kiess have been the first choice. the visible, the arc intensities by A. S. King are given for arc spectra and for first spark spectra of the rare earths. other spark spectra, spark intensities have been used.

When the intensities of the lines of a spectrum are taken from one or two main references they are not given arentheses. If only a few intensities are from one source, or if the listed ones are probably on a very different le from the majority used for a spectrum, parentheses are used. In general, the parentheses denote that the ensity is not the first or second choice. Table 8, Page xxvi, gives the references from which the intensities have n taken. The reader is warned not to assume that the wave-length and intensity come from the same reference. is may be the case, but frequently it is not.

The intensity column contains several types of notes discussed below under entries A to G:

A The letters used to describe the intensities are as follows:

d	Double
g	Ghost; g coin Ghost coincident; gn Ghost near
l	Shaded to longer wave-length [1]
n	Diffuse (without structure) or hazy
N	Very diffuse (without structure) or very hazy
p	Part of band
r	Narrow self-reversal
R	Wide self-reversal
s	Shaded to shorter wave-length (noted by "v" or "nv" in some papers)[1]
tr	Trace
w	Wide (fine structure type), broad or complex
W	Very wide (fine structure type) or very broad

B The intensity column is often blank for predicted lines because most of them have not been observed in the oratory. If the predicted position is assumed to be more accurate than the measured one, the laboratory intensity iven with a predicted wave-length.

C A dash indicates that the line is so faint that no laboratory intensity has been assigned, except for *H*, *D* and II, where no intensities are listed.

D "Forb" indicates that the line is forbidden but has been observed in the laboratory. Lines due to Stark Effect thus marked.

E Familiar "names" of selected lines are included:

Series Names:		
	H	Hα, Hβ etc.
	D	Dα, Dβ "
Fraunhofer Names:		
	He I	D$_3$
	Na I	D$_1$ and D$_2$
	Ca II	H and K

F When an important line is masked, "m" precedes the wave-length, the predicted position of the masked line iven, and the spectrum to which the masking line belongs, is noted by the chemical symbol in the intensity column. Roman numerals have been omitted except for masked lines of *Fe* III. If for example "*Fe*" or "*Ti*" appears in intensity column, the line in question is masked by *Fe* I or *Ti* I the "I" being omitted because of the limited ce in this column. Similarly, a "+" is mostly used for first spark spectra in place of "II," although the contional use of Roman numerals is fully recognized.

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[1] Recommended by the International Astronomical Union—*Trans. Intern. Astr. Union* 6, 100, 1938.

G Symbols in the intensity column:

* Blended Intensity

⊙ Predicted line of *Fe* I present in the solar spectrum; ⊙? denotes that the solar identification as *Fe* I is subject to some question.

35. Columns four and five give the low and high excitation potentials (E P) of the levels involved in the production of the line (see § 27). Some E P's are given in parentheses in the R M T to denote that they are not accurately known.

In analyzing a spectrum it often happens that two or more sets of terms of different multiplicity exist that are unconnected, since no intersystem combinations have been detected. If long series, whose correctness is unquestionable, can be found, the limits furnish a fairly accurate determination of the relative positions of the different types of terms. This is the case for *Be* I, *B* II, *C* III, *O* III, and *O* IV, but no symbol has been introduced to indicate that intersystem combinations have not been observed.

The limits are less accurate for *N* II, *N* IV, *O* II, *O* V and *F* II. The E P's affected by this are in parentheses.

For *Ce* II, two sets of terms are well known but they are unconnected. For this reason the lines are listed in two Groups, I and II. Within each group the relative values of the E P's are correct, but the terms in Group I are believed to be lower than those in Group II by about 0.6 volt.[1] In Group II all values are, therefore, enclosed in parentheses.

For *Ce* III parentheses are used because the lowest level may not have been found.

For *Si* II, *P* III and *Mn* II some terms are established by their internal separations, but are entirely unconnected with the rest of the terms. Here the E P columns contain question marks.

In the earlier Multiplet Table all E P's were obtained by multiplying the term values in cm^{-1} by the factor 0.00012345. An improved value of this factor, 0.00012336, was published by Birge[2] in 1929. Since then he has announced that 0.00012395 is more nearly correct[3]. This last change deserves serious consideration—it involves a change in "e", the charge on the electron, which will doubtless be carefully checked experimentally in the near future. The change is surprisingly large and affects many calculations of an astrophysical nature.

Although it is wrong, in principle, to perpetuate the use of an incorrect value of a fundamental physical constant, the old value 0.00012345 has been used throughout the R M T in calculating the E P's (and I P's for which the limits were known. See § 23). The reason is threefold:

1. The errors in stellar temperatures and other quantities based on observational data far exceed those introduced by the change in this factor.

2. Until a definitive value of the constant is available it has seemed an unjustifiable expenditure of time and money to revise the extensive calculations, many of which had already been done with the oldest value.

3. The change in the value of "e" enters into so many calculations, that to recalculate the E P's and I P's is far from sufficient. As soon as the new value is confirmed without likelihood of further change, it should be used in *all* calculations of astrophysical importance.

The last two columns contain J-values and Multiplet Designations. These have already been discussed in § 28, but a few comments are in order. When levels of a term are so close that they are unresolved, all the J-values for the term should be listed. This is impossible because of limited space, and consequently the column headed J is frequently blank or has the J-value of only one level entered.

The multiplet numbers which appear in parentheses under the Multiplet Designation are reference numbers to be used in locating any line. (See §6). In each spectrum the numbers start with "1." All lines in a multiple have the same multiplet number. These numbers are entered in the Finding List.

VII. SPECTROSCOPIC NOTATION

The notation used in the column headed "Multiplet Designation" differs for spectra which contain conspicuous series and for the complex spectra which do not.

A. *Series Spectra*

36. For many elements the spectra become more complex as the degree of ionization decreases. The terms o each spectrum are the parent terms or "limits" of the terms in the spectrum of the next lower degree of ionization The addition of s, p, d, f, etc. electrons to each limit produces arrays of terms accurately predictable from theory.

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[1] Harrison, Albertson and Hosford, *Journ. Opt. Soc. Am.* **31**, 439 (No. 6), 1941.

[2] *Phys. Rev. Suppl.* **1**, 62 (No. 1), 1929.

[3] *Rev. Mod. Phys.* **13**, 237 (No. 4), 1941; *Reports on Progress in Physics* **8**, 131, 1941.

The simplest case is illustrated by *O* vi. Here the lowest term of *O* vii, $1s^2\ ^1S$, is so much lower than any other no other limit need be considered. The addition of a "running" s, p, d, f . . . electron to this state produces s of doublet S, P°, D, F° . . . terms in *O* vi. In this case the electron and the terms are of the same type. For ıple, the ground term of *O* vi is $1s^2 2s\ ^2S$, and the next term $1s^2 2p\ ^2P^\circ$. The term type and total quantum num- ɔf the running electron suffice to define the configuration. In the R M T the notation 2^2S, 2^2P° etc. is used in tra of this type. To illustrate, Multiplet No. 1 of *Li* i has the designation 2^2S–2^2P°. (Other features of the tion are discussed in §28 and in Table 3).

The case of *O* v is more complicated because 2^2P° of *O* vi is not much higher than 2^2S and terms from both ts are important. The addition of a running electron to these limits gives the following terms:

Limit	$1s^2 2s$	^2S		$1s^2 2p$	$^2P^\circ$					
Added Electron	Config	Terms		Config	Terms					
3s	$1s^2 2s3s$	^1S	^3S	$1s^2 2p3s$	$^1P^\circ$		,	$^3P^\circ$		
3p	$1s^2 2s3p$	$^1P^\circ$	$^3P^\circ$	$1s^2 2p3p$	^1S	^1P	^1D ,	^3S	^3P	^3D
3d	$1s^2 2s3d$	^1D	^3D	$1s^2 2p3d$	$^1P^\circ$	$^1D^\circ$	$^1F^\circ$,	$^3P^\circ$	$^3D^\circ$	$^3F^\circ$

configuration is $1s^2 2s^2$ gives only ^1S; and $1s^2 2p^2$ only $^1S\ ^1D\ ^3P$.

It appears from this array that if the terms having the limit 2^2S in *O* vi are labeled 3^1S, 3^3S, 3^1P°, 3^3P°, 3^1D, 3^3D, those from 2^2P° are labeled $3s\,^1P^\circ$, $3s\,^3P^\circ$, $3p\,^1S$ . . . . . $3d\,^1P^\circ$ no ambiguity occurs. This notation has been ɔted in the R M T for a number of spectra in which two limits, one odd and one even, had to be considered.

When two or more of the effective limits are all even or all odd an addition to this notation is necessary. For ıs derived from the lowest of such a group of limits, the running electron is given as before; for those derived ı the next higher limit a prime is affixed; and for those from the limit above this a double prime. Where the ıst limit is an S term, the type of the electron and of the term itself are the same, and the former is omitted. example, the limiting terms in *O* ii are $^4S^\circ$, $^2D^\circ$ and $^2P^\circ$ in order. The addition of a 3p electron to these gives ɔng others) the terms in *O* i here called 3^5P from $^4S^\circ$, $3p'\ ^3D$ from $^2D^\circ$ and $3p''\ ^3D$ from $^2P^\circ$.

In several spectra there remain terms which cannot be described by this scheme: but it has been found possible ive a special abbreviated form of the configuration notation, etc. which make their nature intelligible to one ed in the theory of spectral structure.

There is at present no general agreement regarding the use of abbreviated notation of this sort. The notation adopted has been largely influenced by the limitations of the photographic process—and is not presented as an l system—but it illustrates the glaring need for the preparation and general adoption of a better one.

37. Special Cases.

The notation used in the R M T for *Ne* i, *Na* ii, *A* i, *K* ii and *Ca* iii deserves special mention. Paschen's nota- formerly used for spectra of this type defined the total quantum number and the type of electron, but introduced cripts that were not inner quantum numbers. A revised notation which is given in detail by Bacher and Goud- [1] is adopted here. The levels with "s" electrons were called by Paschen s_2, s_3, s_4 and s_5; those with "p" electrons p_1 to p_{10} etc. In this book the subscripts used by Paschen have been omitted but the rest of his notation is ined with numbers assigned to the levels, in order of increasing values for the lowest group of levels of each type. the members of a series have the same number, but with this arrangement homologous levels which have the e J-values for different elements are not always assigned the same index number. *Ne* i illustrates the changes:

Ne i Notation

Paschen	Revised	Paschen	Revised
		......	......
$3s_5$	3s 1°	......	......
$3s_4$	3s 2°	$4d_6$	4d 1°
......	......	$4d_5$	4d 2°
$3p_{10}$	3p 1	$4d'_4$	4d 3°
$3p_9$	3p 2	$4d_4$	4d 4°
$3p_8$	3p 3	......	......

Atomic Energy States, McGraw Hill, New York, London, 1932.

Most of the levels for spectra of this type are not grouped into terms and consequently multiplets in the ordinary sense cannot be listed. Arbitrary groups of lines have been formed and numbered to facilitate the search for a given line. In *Ne* I for example, all important lines from the level 3s 1° combining with "3p" levels have multiplet number 1; those from 3s 1° combining with 4p levels have multiplet number 2 etc.

B. Complex Spectra

38. In the majority of complex spectra the terms are so numerous that it is impracticable to designate them by their configurations. For these spectra the prefixes a, b, c, d are assigned to the low terms of each type and z, y, x etc. to those which combine with them. In *Fe* I, for example, the lowest ^{3}F term is a^{3}F, the next higher one b^{3}F etc. There are ten ^{3}G° terms. They are labeled z^{3}G°, y^{3}G° . . . . q^{3}G°. In Multiplet No. 449 the designation is b^{3}G-t^{3}G°. Here the low term is the second ^{3}G term as indicated by the prefix "b". The high term is the seventh odd ^{3}G term, as indicated by "t".

39. In many complex spectra it is impossible to group all known levels into spectroscopic terms. These miscellaneous levels are assigned numbers, and the superscript "°" if they belong to the odd set. Many combinations between terms and miscellaneous levels are given in the R M T and assigned multiplet numbers. For example, the designation of multiplet number 450 of *Fe* I is b^{3}G–12°.

Numbered levels are numerous in spectra of the rare earths. The arrangement is similar to that described in § 27, i.e. the lines from a given low term are listed in order of increasing E P of the numbered levels.

In *Sm* II only the low levels have been grouped into terms. All high levels are numbered odd levels. In the R M T the combinations of the separate components of the low terms with arbitrarily grouped odd levels are assigned multiplet numbers. For example, the combinations of a^{8}F$_{1/2}$ with the levels labeled 1°, 2°, 5°, 23°, 35°, 37° have multiplet number 1. The E P's increase for the various groups similarly to those in spectra with regular terms, as discussed in §27.

VIII. SPECIAL NOTES ON INDIVIDUAL SPECTRA

40. *H*
D
He II

The wave-lengths listed for these spectra have been calculated for the center of gravity of the lines taking into account the fine structure, and using the values of R_H, R_D and R_{He} respectively, given by Birge in 1941 [1]. These computations were made by Dr. J. E. Mack for inclusion here. The writer is deeply indebted to Dr. Mack for his cordial cooperation in furnishing this unpublished material.

No intensities have been included for these spectra.

O II Improved term values are needed. The writer has constructed the multiplets from Edlén's term list. Measures by different investigators are discordant, and considerable editing has been done especially in the interpretation of blends.

For the sextet terms the configuration in abbreviated form is used to indicate that the terms are from the high limit sp^3 ^{5}S° in *O* III, namely: sp^{3}3p ^{6}P, sp^{3}3d ^{6}D°, sp^{3}4s ^{6}S°.

Na I The fine structure components of D_1 and D_2 have been measured with the interferometer by Meissner and Luft [2], as follows:

	D_1	D_2
	5895.9316	5889.9579
	5895.9103	5889.9380
Center of Gravity	5895.9236	5889.9504

The measures listed in the R M T are taken from a source where the lines appeared as impurities, since it was thought that for astrophysical purposes these measures might be preferable to those of the fine structure components.

The two lines λ11403 and λ11381 were also measured as impurities.

Improved laboratory intensities are needed for *Na* I.

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[1] *Rev. Mod. Phys.* **13**, 233 (No. 4), 1941.

[2] *Ann. der Phys.* (5) **29**, 698, 1937.

Na II The changes made in the Paschen notation for *Na* II have been discussed in § 37. Some *terms* are also known in this spectrum, and two types of notation appear. The lines are listed in order of increasing low level and these *levels* combine with the *terms*. Although no complete multiplets are listed, multiplet numbers have been assigned as usual. For example, multiplet No. 17 is 3p 9–4s^{3}P°. In spectra of this type no attempt has been made to indicate omitted lines by the use of a "†". The "List D" indicates that only the leading lines are listed.

Mg I Two sets of series, 3^{1}D–^{1}F° and 3^{3}D–^{3}F° have been extended by the use of infra-red solar wave-lengths from Babcock's Table (see § 15)[1]. This has been done on the assumption that the ^{1}F° and ^{3}F° terms are coincident, as Paschen suggested for the first members of the series. The predicted wave-lengths in the R M T are obtained from solar term values. The series appear to be so well confirmed that the solar wave-lengths are preferable to the predicted ones, but for uniformity, no exception has been made for these series lines of *Mg* I.

In Multiplets 7, 8 and 9 the J-values and designation apply to all three lines entered. In each case singlet combinations are involved. Normally one one line is observed in a combination of this type, but the fine structure components of each line are listed.

Al II The G and H terms given by Paschen and Ritschl[2] are in both cases assumed to be coincident singlet and triplet terms. When combinations of these terms with singlet terms are listed in the R M T, ^{1}G or ^{1}H° has been used in place of ^{1,3}G or ^{1,3}H°. Similarly, the last three entries are given as singlet combinations, but in reality they are probably singlet and triplet combinations. Double multiplicities for unresolved terms have not been used in the R M T.

Si II Owing to the use of the photographic method of publication, it has been impossible to add lines without retyping one or more pages. One predicted multiplet of *Si* II has been omitted which should possibly have been inserted.

I A	Ref	E P Low	E P High	J	Multiplet Desig
4075.81	P	9.80	12.82	2½–1½	3^{2}D–5^{2}P°
4077.09	P	9.79	12.82	1½– ½	
4073.05	P	9.79	12.82	1½–1½	

P III The multiplets are listed slightly out of order, but it was thought unnecessary to retype the page on this account.

S II The measures by different observers are very discordant. This spectrum needs thorough observation. Accurate wave-lengths, intensity estimates and term values, and further analysis are desirable.

A II This spectrum is fairly well analyzed but needs careful editing before a definitive analysis can be published. Rosenthal[3] has measured many lines and from his measures alone a consistent set of term values could probably be calculated. The lists of classified lines are not homogeneous and a larger residual in the observed minus calculated wave number must be permitted than for most spectra. The multiplets listed in the R M T appear to be fairly satisfactory in spite of the inaccurate term values.

One term, labeled a^{2}P by de Bruin is puzzling because it has no configuration assignment. It has been retained, but needs to be checked carefully when the analysis is carried further. This is the only case where both the running electron notation and the prefix "a" appear in a given spectrum.

Ca I
Ca II Although the analyses of these spectra are almost completed, the spectra require further laboratory observation. Accurate wave-lengths, especially of the fainter lines are urgently needed. It is surprisingly difficult to obtain accordant term values. The interferometer measures made at Allegheny furnish an excellent starting point, but these spectra still invite the attention of the laboratory investigator, from the violet through the infra-red.

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cock and Moore, *Ap. J.* **101**, 374, 1945.

n. *der Phys.* (5) **18**, 867, 1933.

n. *der Phys.* (5) **4**, 49, 1930.

Sc II Multiplet No. 9. Enter intensity 2 for λ3923.503.

41. *Fe* I The rigorous arrangement of multiplets described in § 27 applies only approximately to *Fe* I. In this spectrum the multiplet numbers reach 1352 but this figure is not definitive. Owing to an extension of the analysis which altered some term assignments, a number of multiplets were rearranged after the lines and multiplet numbers had been entered and checked in the Finding List.

All the revisions were entered in the R M T. For unchanged multiplets the original multiplet numbers were retained. The revised multiplets were inserted as nearly as possible in the correct place and assigned the available numbers, or to avoid duplication, a number followed by "a". As a result of these changes the multiplets do not always have consecutive numbers and some numbers are omitted. The renumbering of all the multiplets entailed so many changes in the Finding List that it was not undertaken.

In three multiplets of *Fe* I, Nos. 3, 7 and 81, an "R" is entered under the multiplet number. A line has been inadvertently omitted from each of these multiplets. The omitted lines are listed on page 65 at the end of the *Fe* I multiplets, and preceding the list of unclassified lines.

In multiplet No. 78, columns one and two, λ3497.137 V should read 3497.15 P.

Multiplet No. 1151 should be rejected; λ4618.568 is erroneous.

Ni I Attention has been called to the fact that the intensities in Multiplet No. 62 are not so abnormal as indicated here. It has been impossible to insert revised estimates.

Rh II The use of the symbol "†" to denote omitted lines has not been checked owing to the lack of a complete line list. It has been assumed from the term lists that the fainter members of the multiplets thus marked have been observed.

Ce II The lack of connection between Groups I and II has been mentioned (§ 35). It is assumed that the terms in Group I are the lower set.

The prefixes a, b and c etc. have been assigned to the low set of terms of each Group. There can be no ambiguity because in Group I the low set is even, while in Group II it is odd.

W II All the miscellaneous levels published by Laun[1] have been numbered in order. These numbers are used in the R M T in place of Laun's notation.

IX. SPECTRA OMITTED FROM THE R M T.

These may be grouped in several general classes.

42. Spectra of probable astrophysical importance for which there is no analysis to date.

These spectra are mentioned in the R M T in the appropriate place with the remark "No Analysis" and the date. If A. S. King has assigned a Temperature Class to the lines, this fact is noted. For example: page 86, *Ce* I No Analysis May 1942 (Temperature Class). The spectra in this class are listed in Table 5.

TABLE 5

SPECTRA OMITTED FROM R M T

NO ANALYSIS

Spectrum	Ref. to Temp. Class	Spectrum	Ref. to Temp. Class
Ce I	215	Dy I	217
Pr I	215	Dy II	217, 229
Nd I	219	Ho I	217
Tb I	217	Ho II	217
Tb II	217	Th I	123

All but *Th* I have been observed by A.S. King. The bibliography numbers of the references to the work on temperature classification are entered in column two.

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[1] *Bur. St. Journ. Res.* **21**, 207 (RP 1125), 1938.

43. Analyzed spectra having lines observed in the visible region, but omitted from the R M T as unimportant trophysically.

These spectra are mentioned in the R M T with the remark "See Introduction". They are listed in Table 6 ith numbers from the bibliography referring to the papers on analysis.

TABLE 6

SPECTRA OMITTED FROM R M T

NOT OF ASTROPHYSICAL INTEREST

Spectrum	Ref. to Analysis	Spectrum	Ref. to Analysis	Spectrum	Ref. to Analysis
B I[1]	16, 89	Rb II	238	Cs II	309, 405
F IV	84	Pd II	384, 24	Ta II	192
F VI	83, 87	Ag II	383, 24	Pt II	387
Cl IV	31, 32	Cd II	372, 401	Au II	324
Ga II	376	In II	317	Hg II	313
Se II	244	Sb II	236	Tl II	106
Br I	194	I I	107, 69, 325	Pb II	80
Br II	232	I II	232	Bi II	64, 115
Kr I	274, 276, 165	Xe I	156	Rn I	329
Kr II	53	Xe II	155	Th III	54

The low abundance of these elements in celestial sources, and the high E P of the lines in the visible region have een the determining factors for omission.

44. There are three types of spectra for which little or nothing is known:

Er, *U*. Lines have been observed in spectra of these elements, but the spectra of various degrees of ionization ave not been separated.

Te II, *Re* II, *Os* II, *Ir* II, *Po*, *Ac*, *Pa*. The writer has found no references to work on these spectra.

Ma, *Il*, 85, 87. There is nothing known about these elements. It appears doubtful whether they have been ccessfully isolated.

No reference is made in the body of the R M T to those spectra whose leading lines are in the region to the iolet of λ2950, since this is a book designed for astrophysical use. Selected spectra of this type are included in the ction dealing with Forbidden Lines (see § 45 and pp. 100–110).

. FORBIDDEN LINES

45. The author of a "Multiplet Table of Astrophysical Interest" published in 1945 is obliged to consider the robable importance of the forbidden lines of *all abundant* elements. This is indicated by the work of Bowen on ebular lines, of Edlén on coronal lines, and of Swings, Merrill and others on various astronomical spectra.

Following the body of the R M T is a Table of Forbidden Lines of Astrophysical Interest (pp. 100–110). This able is arranged in detail similarly to the R M T. The lines in a multiplet are listed by diagonals and the multiplets re listed in the order described in § 27. In order to avoid duplication, all multiplets of forbidden lines have an "F" llowing the multiplet number, 1F, 2F etc. Unlike the R M T, the headings for each spectrum contain only the ame of spectrum and the I P. No grading of analysis or list has been attempted and no date of completion of the anuscript is given. All of this section has been written between January and May 1945.

In preparing this manuscript the writer has been most cordially assisted by Dr. Swings. He has edited the lists nd offered many valuable suggestions concerning the limitations of the Table. No explicit statement can be made to the principles of selection adopted, but severe restrictions have been necessary in complex spectra because of e great array of possible forbidden transitions. For simple spectra only a limited number of transitions occurs, ut as the complexity increases the number increases rapidly. The general principles followed are:

A Only transitions from metastable states are forbidden. Consequently only the lowest terms in a spectrum e considered.

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[1] Lines of B I have not been observed in the visible, but should exist.

B The lists are restricted to multiplets involving likely combinations as regards multiplicity and azimuthal quantum numbers, except for those in which the lowest terms are involved. In *Fe* II, for example, many more combinations and more unlikely combinations from the lowest term, a^{6}D are listed than from higher terms.

C Transitions involving $\Delta J = \pm 2$ as well as $\Delta J = 0$ or ± 1 are listed for the multiplets most likely to be important.

D The high E P is limited to about 4.0 for the most abundant elements and to about 3.5 for arc spectra of these elements.

E The lists have been extended to include lines that may be important in the red and infra-red. Forbidden lines of neutral atoms are included only for the most abundant elements.

The multiplets listed must be interpreted with caution, because of these restrictions. If complete multiplet arrays are written up from Table 3, lines omitted from any multiplet among the forbidden lines can be detected. Those interested in longer lists must construct them from the term lists given in the papers on the analysis of each spectrum (Table 10 p. xxix).

The great majority of forbidden lines are predicted from the term values. If accurate *measures* have been obtained, they are entered with a letter indicating the source, as follows:

N	Nebular	*N* II, *O* II, *O* III, *Ne* III, *Ne* V, *S* II
L	Laboratory	*O* I
A	Auroral	*O* I
C	Coronal	Entered under the predicted positions of lines of highly ionized *Fe* and *Ni*

When term values permit, the wave-lengths of predicted lines have been calculated to two decimal places. For some spectra the term values are not accurately known, but the internal separations are well established. For these the position is given to 0.1 A. For the most inaccurate wave-lengths no decimals are recorded and in very dubious cases a "?" follows the wave-length.

Some I P's and some predicted wave-lengths have been obtained by interpolation or extrapolation along the isoelectronic sequences. These are:

Term				I P	
Sp	Term	Sp	Term	Sp	Sp
Cl II	^1S	Ca VII	^1S	Ca V	Fe X
S XII	^2P	Ca XV	^3P	Sc VI	Fe XI
A III	^1S	Fe XV	$^3P^o$	V VIII	Fe XIII
A XI	^3P	Ni XII	$^2P^o$	Cr VIII	Fe XIV
A XIV	$^2P^o$	Ni XIII	^3P, ^1D	Cr IX	Fe XV
K V	$^2P^o$ $^2D^o$	Ni XV	^3P	Mn IX	Co XI
K VI	^1S	Ni XVI	$^2P^o$	Mn X	Ni XIII
					Ni XV

As in the body of the R M T, E P's in parentheses denote that the terms involved do not have observed connections with the rest of the terms of the spectrum.

Dr. Swings has pointed out that forbidden lines are essentially emission lines, and therefore, astrophysically the high E P is the important one. For this reason the multiplets of a spectrum should be listed by high E P rather than by low E P (§ 27). It is fully recognized that emission lines are better handled in this order and it is hoped that all multiplets having the same high term can be readily selected in any spectrum. The arrangement by low terms has been adopted merely for the sake of uniformity.

Another highly significant comment has been made by Dr. Swings [1], namely, that "certain forbidden transitions that are not directly observable may play a role in astronomy, for example, by flourescence excitation, ionization or dissociation."

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[1] Letter, May 1945.

The importance of lines in the extreme violet such as λ303.7 of *He* II, λ303.7 and λ374.4 of *O* III and the pair at 374.4 of *N* III, in producing the nebular lines has been fully discussed by Bowen[1]. The violet limit, λ2950, imposed ı this book has excluded both permitted and forbidden lines in the violet that are extremely important in the inter-retation of forbidden lines observed in astronomical spectra. Readers are, therefore, urged to consult the individual apers on this subject, as it has been regarded as beyond the scope of the present work.

I DETAILS OF PUBLICATION

The preparation of the manuscript of this book has covered such a long period of time that the typing has been one as various spectra were finished, which is not in the order of increasing atomic number. It has been practically npossible to terminate every section of the manuscript at the end of a typed page. Some important insertions have lso broken the continuity of typing. Consequently, the pages are frequently unequal in length and some have large aps. No serious effort has been made to avoid irregularities of this kind, for two reasons: first, the retyping and echecking of these large pages in order to adjust spacing has seemed an unjustifiable procedure, particularly since here is always the chance of introducing new errors in handling so much tabular data; second, the blank spaces may rove to be useful for notes.

Doubtless there are more serious irregularities, namely inconsistencies in notation of similar spectra. During he course of the work the manuscript has been widely distributed to interested investigators. To date it has never all een assembled in one place. The writer has been unable to remember all the details connected with each spectrum, ut has proceeded on the assumption that minor irregularities would not impair the value of the R M T so seriously s the delays required to correct all of them.

46. One of the purposes of this book has been to provide adequate material for fairly definitive identifications f solar lines. Mention has been made of the forthcoming publication by Babcock and others on the Infra-Red olar Spectrum λλ6600–13495 (§§ 7, 15). A similar program covering the violet solar spectrum is being carried on t Mount Wilson by Babcock. The writer has been working on the identifications of the solar lines throughout the ntire solar spectrum, with the aid of the manuscript of the R M T. The publication of the results to the violet of 6600 has been postponed in order to complete the present book. It is planned to publish them as soon as possible.

II. BIBLIOGRAPHY

Following the text is a Bibliography in which all references used in the preparation of this book are listed in the lphabetical order of the names of the authors. Each reference is assigned a number for purposes of cross reference.

47. In the R M T (excluding the section on Forbidden Lines) each spectrum has three sets of references: one iving the sources from which the wave-lengths have been taken—Table 7; one giving the first, second, etc. choices f references for intensity estimates—Table 8; and one referring to papers on analysis—Table 9.

The Tables are arranged similarly. In each, the first column gives the chemical symbol of the element and the pectrum (I = arc, II first spark etc.), the second the number with which to enter the Bibliography. In Table 7 the letters , B, C, etc. are taken from column 2 of the R M T for each spectrum. In Table 8 the first choice for intensity is dicated in column one, the second in column two etc. In general, reference numbers are in italics when the intensiies from the reference are in parentheses in the R M T (see § 34). Table 9 does not list choices. It contains references to papers on analysis that were used in compiling the R M T.

Table 10 gives the sources used for analysis of spectra contained in the Table of Forbidden Lines. It is arranged milarly to Table 9.

Following the Bibliography are an index by pages, and one by elements arranged in the alphabetical order of the emical symbols.

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[1] *Ap. J.* 81, 1, 1935.

TABLE 7

REFERENCES—WAVE-LENGTH

Sp	A	B	C	D	E	F	G	H	I	J	K	L
H	243											
D	243											
He I	263	299	319	174	275							
He II	243											
Li I	206	175	149									
Li II	378	404										
Be I	318	315	149									
Be II	318											
B II	81											
B III	81											
C I	185	300	169	160	370							
C II	122	81	89									
C III	81	121										
C IV	81											
N I	93	78	160	370								
N II	20	125	120									
N III	124	81										
N IV	126	81										
O I	98	263	127	116	316	128						
O II	20	118	301									
O III	119	86	302									
O IV	81	126	86									
O V	81											
O VI	81											
F I	88											
F II	73											
F III	72	85										
Ne I	162	277	154	276	311	263						
Ne II	52											
Na I	149	116	263	298	259	338						
Na II	130	393										
Mg I	295	314	141	261	116							
Mg II	116											
Al I	403	315	116	319	310							
Al II	319	377										
Al III	312											
Si I	186											
Si II	117											
Si III	117											
Si IV	117	101										
P I	180											
P II	133	181	70									
P III	133											
P IV	133											
P V	133											
S I	297	129										
S II	157	19	158	25	136							
S III	157	159										
S IV	303											
Cl I	182											
Cl II	195											
Cl III	31	27										
A I	277	154	263									
A II	340	18	48	47								
A III	49	51										
A IV	50											
K I	149	403	263	259	88	116	108	380				
K II	46											
K III	47a	51a										
Ca I	403	66	259	369	373	241	374					
Ca II	168	403	66	375	390							
Ca III	11											
Sc I	245	253	349									
Sc II	245	253										
Sc III	172											
Ti I	178	65	185	282	245	201	212	348	199	172	177	21
Ti II	178	65	245	201	347	172						
Ti IV	364											
V I	264	368	245	242	266	213	109					
V II	266											
Cr I	183	184	245	142	204 213	173						
Cr II	184	245	142	110								
Mn I	260	245	246	131								
Mn II	67 68	245	108									
Fe I *												
Fe II	76	222	55									
Fe III	103	102	222									
Co I	56	282	245	280	71	230	62	147				
Co II	255											
Ni I	282	245	178	143	109	146	280	398				
Ni II	252	245	111									
Cu I	58											
Cu II	137											
Zn I	149											
Zn II	149	319										
Ga I	402											
Ge I	188	245										
Ge II	188	235										
As I	273											
As II	328											
Se I	189											
Rb I	149	333										
Sr I	399	245	116									
Sr II	399											
Y I	254	245										
Y II	254	351	245									
Zr I	197	282										
Zr II	196											
Cb I	283											
Cb II	283											

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* See references for Fe I at end of Table 7.

TABLE 7—Continued

REFERENCES—WAVE-LENGTH

Sp	A	B	C	D	E
lo I	326	176	113		
lo II	245	113			
u I	245				
u II	272				
h I	304				
h II	150				
d I	256	109			
g I	149				
d I	149	163			
ı I	402				
ı I	265				
ı II	248				
ɔ I	279				
e I	189				
s I	259	149			
a I	400				
a II	400	245	259	330	
a I	258				
a II	258				
a III	258				

Sp	A	B	C	D	E
Ce II	144	9	245		
Ce III	362				
Pr II	339	245			
Nd II	10	245	219		
Sm I	{221 4}	{221 2}			
Sm II	221				
Eu I	223				
Eu II	223				
Gd I	225				
Gd II	225				
Tm I	268				
Tm II	269	{268 224			
Yb I	291				
Yb II	291				
Lu I	288				
Lu II	288				
Hf I	287				
Hf II	289				

Sp	A	B	C	D	E
Ta I	200				
W I	22				
W II	239				
Re I	257				
Os I	245				
Ir I	6				
Pt I	109				
Au I	324				
Hg I	396	166			
Tl I	307	109			
Pb I	149	135			
Bi I	214	17			
Ra I	332				
Ra II	331				
Th II	250				

p	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Q	R	S	T	U	V	W	X	Y
: I	164	161	278	185	262	282	59	167	14	371	57	281	220	{139 138}†	280	15	227	77	391	247	55	171	379†	74

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† These references have been used for lines to the violet of the range covered in the RMT, but are included for completeness.

TABLE 8

REFERENCES—INTENSITY

Sp	Reference Numbers	Sp	Reference Numbers	Sp	Reference Numbers
He I	263 275 *174 116 319*	A II	340	Ru II	272
Li I	113 *175*	A III	49 51	Rh I	105
Li II	378 404	A IV	50	Pd I	256
Be I	315 318	K I	259 116 *88 108*	Ag I	389
Be II	318	K II	410 *46*	Cd I	173
B II	81	K III	47a 51a	In I	402
B III	81	Ca I	207 259 *369 241 374*	Sn I	265
C I	185 300 169 *160 370*	Ca II	259 207 *375 390 66*	Sn *II*	248
C II	81 *122*	Ca III	11	Sb I	279
C III	81	Sc I	210 *253 349 367*		
C IV	81	Sc II	253 *365*	Te I	189
N I	93 78 *160* 370	Sc III	*172*	Cs I	259 *245*
N II	20 125 120	Ti I	185 282 212 203 *348 199 172*	Ba I	207 *259*
N III	124 81	Ti II	347	Ba II	207 *259 330*
N IV	81	Ti IV	364	La I	228 *258*
O I	98 263 127 *116 128*	V I	264 213 204	La II	258
O II	20 118 301	V II	266	La III	258
O III	119 86 *302*	Cr I	183 184 *204 213*	Ce II	215 *144 9 245*
O IV	81 *126*	Cr II	184	Ce III	362
O V	81	Mn I	260 209 *131 61 113*	Pr II	215 *339*
O VI	81	Mn II	67 68 *108*	Nd II	219 *10*
F I	88	Fe I	185 282 220 211 202 227 *59 57*	Sm I	221
F II	73		*281 280 55 15 77 391 171 74*	Sm II	221
F III	72 85	Fe II	76 222 *55*	Eu I	223
Ne I	263 276 *311*	Fe III	103 102	Eu II	223
Ne II	52	Co I	205 208 282 *280 71 56 230 62 147*	Gd I	225
Na I	*259 172 116*	Co II	255	Gd II	225
Na II	130 393	Ni I	208 205 282 *143 109 146 280 398 245*	Tm I	268
Mg I	261 207 *295 314 170*	Ni II	252 382	Tm II	269 268 224
Mg II	116	Cu I	58	Yb I	291
		Cu II	137		
Al I	315 116 319 *310*			Yb II	291
Al II	319 377	Zn I	149	Lu I	288
Al III	312	Zn II	372	Lu II	288
Si I	186	Ga I	402 174	Hf I	216
Si II	117	Ge I	188 *132*	Hf II	289
Si III	117	Ge II	188 *235*	Ta I	200
Si IV	117 101	As I	273	W I	218 *22*
P I	180	As II	328	W II	239
P II	133 *181*	Se I	189	Re I	257
P III	133	Rb I	172	Os I	245
		Sr I	207 259		
P IV	133			Ir I	6
P V	133	Sr II	207 259	Pt I	109
S I	297 *129*	Y I	228	Au I	324
S II	25 19 *136*	Y II	254 *351*	Hg I	112 108
S III	157 *159*	Zr I	228 282 *197*	Tl I	109
S IV	303	Zr II	196	Pb I	109 *271*
Cl I	182	Cb I	283	Bi I	308 *17*
Cl II	195	Cb II	283	Ra I	332
Cl III	31 27	Mo I	326 176 *113*	Ra II	331
A I	263 276 *293 294*	Mo II	113	Th II	226
		Ru I	251 *109*		

TABLE 9

REFERENCES—ANALYSIS

p	Reference Numbers	Sp	Reference Numbers
	243 23 116	S II	157 19 158 25 136
	243 23	S III	157 159 136 337
e I	16 45 319 263 275 134	S IV	303 27 29
e II	243 23	Cl I	182 193 92
I	116 16 206	Cl II	195 96
II	16 81	Cl III	31 27
e I	318 315	Cl IV	31 32
e II	318	A I	154 276 42 16 293 294
I	16 89	A II	92 42 48 47
II	81 89	A III	49 51 42 44 96
III	81	A IV	42 50
I	81 300	K I	116 88
II	81 89	K II	46 28 105
III	81 89 82	K III	47a 92
IV	81 82	Ca I	373 369 259 116
I	104 78 160	Ca II	375 346 390
II	89 81 125 120	Ca III	28 16
III	89 81	Sc I	365
IV	89 81 82	Sc II	365 285
V	81 82	Sc III	364 392
I	98	Ti I	348 355 282 185 178
II	86 81 350 118	Ti II	347
III	95 81 119 86 302	Ti IV	364
IV	81 82	V I	286 305
V	81 82	V II	284
VI	81 82	Cr I	179 183 187 346
I	88	Cr II	184
II	85 73	Mn I	61 79 260 346
III	85 30 72	Mn II	67 68
IV	84	Fe I	363a
VI	83 87	Fe II	75 76 94 139
e I	154 41 276 16 311	Fe III	103 102
e II	41 52	Co I	363
a I	298 338 116	Co II	114
a II	130 393 16	Ni I	352
g I	295 296 314 345	Ni II	382 233
g II	116 16	Cu I	381
I	315 319	Cu II	386
II	319 377	Zn I	149 116
III	312 16	Zn II	319 372
I	186	Ga I	116
II	117 29 16	Ga II	376
III	117 29	Ge I	188 327
IV	117 101	Ge II	188 234
I	180 335	As I	273
II	26 335 336	As II	140 328
III	29 303 336	Se I	343
IV	29 336	Se II	244
V	336 40	Br I	194
I	297 342	Br II	232

TABLE 9—Continued

REFERENCES—ANALYSIS

Sp	Reference Numbers
Kr I	274 276 165
Kr II	53
Rb I	116
Rb II	238
Sr I	116 369 399
Sr II	116 259 399
Y I	285
Y II	285
Zr I	197 282
Zr II	196
Cb I	290
Cb II	290
Mo I	63 191
Mo II	190
Ru I	394 145
Ru II	272 292
Rh I	395 304
Rh II	150
Pd I	385
Pd II	384 24
Ag I	388
Ag II	383 24
Cd I	116 16
Cd II	372 401
In I	116
In II	317
Sn I	265
Sn II	248
Sb I	279
Sb II	236
Te I	341
I I	107 69 325
I II	232
Xe I	156
Xe II	155
Cs I	116
Cs II	309 405
Ba I	400 344 353
Ba II	330 400
La I	366
La II	366
La III	366
Ce II	144 7 9
Ce III	362
Pr II	339 356
Nd II	10
Sm I	2 4
Sm II	3
Eu I	361
Eu II	360
Gd I	2 357 358
Gd II	8 358
Tm I	270
Tm II	270 269
Yb I	291 359
Yb II	291 359
Lu I	288 267
Lu II	288
Hf I	287
Hf II	289
Ta I	192
Ta II	192
W I	237
W II	239
Re I	257
Os I	1 5
Ir I	6
Pt I	240 148
Pt II	387
Au I	324 306
Au II	324
Hg I	16
Hg II	313
Tl I	116
Tl II	106
Pb I	16
Pb II	80
Bi I	16
Bi II	64 115
Rn I	329
Ra I	332 354
Ra II	331
Th II	249 250
Th III	54

TABLE 10

REFERENCES—FORBIDDEN LINES

Sp	Reference Numbers	Sp	Reference Numbers	Sp	Reference Numbers
Be I	318 315	Ca VI	33	Fe XIV	97
C I	81	Ca VII	337	Fe XV	90
N I	104	Ca XII	97	Co II	114
N II	81 43 409	Ca XIII	97	Co VI	37
O I	98 13 151	Ca XV	97	Co VII	12
O II	81 409	Sc II	365	Co VIII	60
O III	81 409	Sc III	364	Co XI	92
F II	85	Sc VI	91 231	Ni I	352
F III	85	Sc VII	231	Ni II	382 233
F IV	84	Ti I	348	Ni VII	322
Ne III	41 43 409	Ti II	347	Ni VIII	12
Ne IV	320	Ti III	364	Ni IX	60
Ne V	100 320 35 397	Ti VII	231 91	Ni XII	97
Na IV	393	Ti VIII	231	Ni XIII	97
Na V	393	V II	284	Ni XV	97
Mg VI	393	V III	407	Ni XVI	97
Al VII	393	V IV	406	Cu II	386
Si I	186	V VIII	91	Kr III	152
P I	180 335	Cr I	179 183 187	Sr II	116 259 399
P II	26 335 336	Cr II	184	Y II	285
S I	96 342 33	Cr III	36	Y V	321
S II	157 19 158 25 136 409	Cr IV	36 38	Zr II	196
S III	157 159 136 337	Cr V	406	Zr III	198
S VIII	97 337	Cr VIII	92	Zr VI	321
S XII	97	Cr IX	91	Xe II	155
Cl II	96 195	Mn II	67 68	Xe III	99 153
Cl III	31 27	Mn IV	36	La II	366
Cl IV	31 32	Mn V	34 38	La III	366
A III	96	Mn VI	60	Eu II	360
A IV	42 50	Mn IX	92		
A V	323 334	Mn X	91		
A X	97	Fe I	363a		
A XI	97	Fe II	75 76 94 139		
A XIV	97	Fe III	103 102		
K IV	96 33	Fe V	36		
K V	33	Fe VI	34 38		
K VI	337 408 334	Fe VII	39		
Ca I	373 369 259 116	Fe X	92 97		
Ca II	375	Fe XI	91 97		
Ca V	96 33 91	Fe XIII	97		

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INDEX—By Pages

Forbidden Lines

REVISED MULTIPLET TABLE

INDEX--By Elements

Forbidden Lines

REVISED MULTIPLET TABLE

54 Anal A List A June 1942

tory .ef	Int	E P Low	E P High	J	Multiplet (No)
A	H_α	10.15	12.04	—	$2^2P^o-3^2D$ etc
A	H_β	10.15	12.69	—	(1) 4^2D etc
A	H_γ	10.15	13.00	—	5^2D etc
A	H_δ	10.15	13.16	—	6^2D etc
A	H_ϵ	10.15	13.26	—	7^2D etc
A	H_8	10.15	13.33	—	$2^2P^o-8^2D$ etc
A	H_9	10.15	13.37	—	(2) 9^2D etc
A	H_{10}	10.15	13.40	—	10^2D etc
A	H_{11}	10.15	13.43	—	11^2D etc
A	H_{12}	10.15	13.45	—	12^2D etc
A	H_{13}	10.15	13.46	—	$2^2P^o-13^2D$ etc
A	H_{14}	10.15	13.47	—	(3) 14^2D etc
A	H_{15}	10.15	13.48	—	15^2D etc
A	H_{16}	10.15	13.49	—	16^2D etc
A	H_{17}	10.15	13.49	—	17^2D etc
A	H_{18}	10.15	13.50	—	$2^2P^o-18^2D$ etc
A	H_{19}	10.15	13.50	—	(4) 19^2D etc
A	H_{20}	10.15	13.51	—	20^2D etc
A	H_{21}	10.15	13.51	—	21^2D etc
A	H_{22}	10.15	13.51	—	22^2D etc
A	H_{23}	10.15	13.51	—	$2^2P^o-23^2D$ etc
A	H_{24}	10.15	13.52	—	(5) 24^2D etc
A	H_{25}	10.15	13.52	—	25^2D etc
A	H_{26}	10.15	13.52	—	26^2D etc
A	H_{27}	10.15	13.52	—	27^2D etc
A	H_{28}	10.15	13.52	—	$2^2P^o-28^2D$ etc
A	H_{29}	10.15	13.52	—	(6) 29^2D etc
A	H_{30}	10.15	13.52	—	30^2D etc
A	H_{31}	10.15	13.53	—	31^2D etc
A	H_{32}	10.15	13.53	—	32^2D etc
A	H_{33}	10.15	13.53	—	33^2D etc
A	H_{34}	10.15	13.53	—	$2^2P^o-34^2D$ etc
A	H_{35}	10.15	13.53	—	(7) 35^2D etc
A	H_{36}	10.15	13.53	—	36^2D etc
A	H_{37}	10.15	13.53	—	37^2D etc
A	H_{38}	10.15	13.53	—	38^2D etc
A		10.15	13.54		Limit
A	—	12.04	13.00	—	$3^2D-5^2F^o$ etc
A	—	12.04	13.16	—	(8) 6^2F^o etc
A	—	12.04	13.26	—	7^2F^o etc
A	—	12.04	13.33	—	8^2F^o etc
A	—	12.04	13.37	—	9^2F^o etc
A	—	12.04	13.40	—	$3^2D-10^2F^o$ etc
A	—	12.04	13.43	—	(9) 11^2F^o etc
A	—	12.04	13.45	—	12^2F^o etc
A	—	12.04	13.46	—	13^2F^o etc
A	—	12.04	13.47	—	14^2F^o etc
A	—	12.04	13.48	—	$3^2D-15^2F^o$ etc
A	—	12.04	13.49	—	(10) 16^2F^o etc
A	—	12.04	13.49	—	17^2F^o etc
A	—	12.04	13.50	—	18^2F^o etc
A	—	12.04	13.50	—	19^2F^o etc
A	—	12.04	13.51	—	$3^2D-20^2F^o$ etc
A	—	12.04	13.51	—	(11) 21^2F^o etc
A	—	12.04	13.51	—	22^2F^o etc
A	—	12.04	13.51	—	23^2F^o etc
A	—	12.04	13.52	—	24^2F^o etc
A	—	12.04	13.52	—	$3^2D-25^2F^o$ etc
A	—	12.04	13.52	—	(12) 26^2F^o etc
A	—	12.04	13.52	—	27^2F^o etc
A	—	12.04	13.52	—	28^2F^o etc
A	—	12.04	13.52	—	29^2F^o etc
A	—	12.04	13.52	—	$3^2D-30^2F^o$ etc
A	—	12.04	13.53	—	(13) 31^2F^o etc
A	—	12.04	13.53	—	32^2F^o etc
A	—	12.04	13.53	—	33^2F^o etc
A	—	12.04	13.53	—	34^2F^o etc
A	—	12.04	13.53	—	$3^2D-35^2F^o$ etc
A	—	12.04	13.53	—	(14) 36^2F^o etc
A	—	12.04	13.53	—	37^2F^o etc
A	—	12.04	13.53	—	38^2F^o etc
A	—	12.04	13.54	—	Limit

3.54 Anal A List B June 1942

tory .ef	Int	E P Low	E P High	J	Multiplet (No)
A	D_α	10.16	12.04	—	$2^2P^o-3^2D$ etc
A	D_β	10.16	12.70	—	(1) 4^2D etc
A	D_γ	10.16	13.00	—	5^2D etc
A	D_δ	10.16	13.17	—	6^2D etc
A	D_ϵ	10.16	13.27	—	7^2D etc
A	D_8	10.16	13.33	—	8^2D etc
A	—	12.04	13.00	—	$3^2D-5^2F^o$ etc
A	—	12.04	13.17	—	(2) 6^2F^o etc
A	—	12.04	13.27	—	7^2F^o etc
A	—	12.04	13.33	—	8^2F^o etc

P 24.48 Anal A List B Jan 1943

tory .ef	Int	E P Low	E P High	J	Multiplet (No)
A	2500	19.73	20.87	1-2	$2^3S-2^3P^o$
A	1500	19.73	20.87	1-1	(1)
A	500	19.73	20.87	1-0	
B	(10) (7) (3)	19.73	22.91	2 1-1 0	$2^3S-3^3P^o$ (2)

He I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3187.743	B	(8)	19.73	23.61	—	$2^3S-4^3P^o$ (3)
5015.675	B	(6)	20.53	22.99	0-1	$2^1S-3^1P^o$ (4)
3964.727	B	(4)	20.53	23.64	0-1	$2^1S-4^1P^o$ (5)
3613.641	B	(3)	20.53	23.94	0-1	$2^1S-5^1P^o$ (6)
3447.594	D	(2)	20.53	24.11	0-1	$2^1S-6^1P^o$ (7)
3354.550	D	(2)	20.53	24.21	0-1	$2^1S-7^1P^o$ (8)
3296.786	D	(1)	20.53	24.27	0-1	$2^1S-8^1P^o$ (9)
7065.188	B	(5)	20.87	22.62	2,1-1	$2^3P^o-3^3S$
7065.719	D	(1)	20.87	22.62	0-1	(10)
5875.618	B	(10)D_3	20.87	22.97	2-	$2^3P^o-3^3D$
5875.650	D		20.87	22.97	1-	(11)
5875.989	D	(1)	20.87	22.97	0-	
4713.143	B	(3)	20.87	23.49	2,1-1	$2^3P^o-4^3S$
4713.373	D	(1)	20.87	23.49	0-1	(12)
4517.43	P	Forb	20.87	23.61	2-	$2^3P^o-4^3P^o$ (13)
4471.477	B	(6)	20.87	23.63	2,1-	$2^3P^o-4^3D$
4471.688	D	(1)	20.87	23.63	0-	(14)
4469.92	P	Forb	20.87	23.63	2-	$2^3P^o-4^3F^o$ (15)
4120.812	B	(3)	20.87	23.87	2,1-1	$2^3P^o-5^3S$
4120.993	D	(1)	20.87	23.87	0-1	(16)
4045.16	P	Forb	20.87	23.92	2-	$2^3P^o-5^3P^o$ (17)
4026.189	B	(5)	20.87	23.94	2,1-	$2^3P^o-5^3D$
4026.362	D	(1)	20.87	23.94	0-	(18)
4025.49	P	Forb	20.87	23.94	2-	$2^3P^o-5^3F^o$ (19)
3867.477	D	(2)	20.87	24.07	2,1-1	$2^3P^o-6^3S$
3867.631	D	(1)	20.87	24.07	0-1	(20)
3839.47	P	Forb	20.87	24.10	2-	$2^3P^o-6^3P^o$ (21)
3819.606	B	(4)	20.87	24.11	2,1-	$2^3P^o-6^3D$
3819.761	D	(1)	20.87	24.11	0-	(22)
3819.25	P	Forb	20.87	24.11	2-	$2^3P^o-6^3F^o$ (23)
3732.861	C	(1)	20.87	24.18	2,1-1	$2^3P^o-7^3S$
3732.992	D	(1)	20.87	24.18	0-1	(24)
3705.003	B	(3)	20.87	24.21	2,1-	$2^3P^o-7^3D$
3705.140	C	(1)	20.87	24.21	0-	(25)
3704.79	P	Forb	20.87	24.21	2-	$2^3P^o-7^3F^o$ (26)
3651.971	D	(1)	20.87	24.25	2,1-1	$2^3P^o-8^3S$
3652.119	D	(1)	20.87	24.25	0-1	(27)
3634.235	D	(2)	20.87	24.27	2,1-	$2^3P^o-8^3D$
3634.373	D	(1)	20.87	24.27	0-	(28)
3634.10	P	Forb	20.87	24.27	2-	$2^3P^o-8^3F^o$ (29)
3599.304	D	(1)	20.87	24.30	2,1-1	$2^3P^o-9^3S$
3599.442	D	(1)	20.87	24.30	0-1	(30)
3587.252	D	(2)	20.87	24.31	2,1-	$2^3P^o-9^3D$
3587.396	D	—	20.87	24.31	0-	(31)
3587.16	P	Forb	20.87	24.31	2-	$2^3P^o-9^3F^o$ (32)
3562.950	D	(1)	20.87	24.34	—	$2^3P^o-10^3S$ (33)
3554.394	D	(1)	20.87	24.35	2,1-	$2^3P^o-10^3D$
3554.524	D	(1)	20.87	24.35	0-	(34)
3536.820	D	(1)	20.87	24.36	—	$2^3P^o-11^3S$ (35)
3530.487	D	(1)	20.87	24.37	—	$2^3P^o-11^3D$ (36)
3517.327	D	(1)	20.87	24.38	—	$2^3P^o-12^3S$ (37)
3512.511	D	(1)	20.87	24.39	—	$2^3P^o-12^3D$ (38)
3502.381	D	(1)	20.87	24.40	—	$2^3P^o-13^3S$ (39)
3498.641	D	(1)	20.87	24.40	—	$2^3P^o-13^3D$ (40)
3490.62	D	(1)	20.87	24.41	—	$2^3P^o-14^3S$ (41)
3487.721	D	(1)	20.87	24.41	—	$2^3P^o-14^3D$ (42)
3478.97	D	(1)	20.87	24.42	—	$2^3P^o-15^3D$ (43)
3471.80	D	(1)	20.87	24.43	—	$2^3P^o-16^3D$ (44)
7281.349	B	(3)	21.13	22.82	1-0	$2^1P^o-3^1S$ (45)
6678.149	B	(6)	21.13	22.97	1-2	$2^1P^o-3^1D$ (46)
5047.736	B	(2)	21.13	23.57	1-0	$2^1P^o-4^1S$ (47)
4921.929	B	(4)	21.13	23.63	1-2	$2^1P^o-4^1D$ (48)
4920.35	P	Forb	21.13	23.64	1-3	$2^1P^o-4^1F^o$ (49)
4437.549	B	(1)	21.13	23.91	1-0	$2^1P^o-5^1S$ (50)
4387.928	B	(3)	21.13	23.94	1-2	$2^1P^o-5^1D$ (51)

He I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4168.971	D	(1)	21.13	24.09	1-0	$2^1P^o-6^1S$ (52)
4143.759	B	(2)	21.13	24.11	1-2	$2^1P^o-6^1D$ (53)
4023.986	D	(1)	21.13	24.19	1-0	$2^1P^o-7^1S$ (54)
4009.270	D	(1)	21.13	24.21	1-2	$2^1P^o-7^1D$ (55)
4007.81	P	Forb	21.13	24.21	1-1	$2^1P^o-7^1P^o$ (56)
3935.914	D	(1)	21.13	24.26	1-0	$2^1P^o-8^1S$ (57)
3926.530	D	(1)	21.13	24.27	1-2	$2^1P^o-8^1D$ (58)
3878.180	D	(1)	21.13	24.31	1-0	$2^1P^o-9^1S$ (59)
3871.819	D	(1)	21.13	24.31	1-2	$2^1P^o-9^1D$ (60)
3838.094	D	(1)	21.13	24.34	1-0	$2^1P^o-10^1S$ (61)
3833.574	D	(1)	21.13	24.35	1-2	$2^1P^o-10^1D$ (62)
3805.765	D	(1)	21.13	24.37	1-2	$2^1P^o-11^1D$ (63)
3784.886	D	(1)	21.13	24.39	1-2	$2^1P^o-12^1D$ (64)
3768.81	D	(1)	21.13	24.40	1-2	$2^1P^o-13^1D$ (65)
3756.10	D	(1)	21.13	24.41	1-2	$2^1P^o-14^1D$ (66)
9463.57	C	60	22.62	23.92	—	$3^3S-5^3P^o$ (67)
8361.77	C	(4)	22.62	24.10	—	$3^3S-6^3P^o$ (68)
7816.16	C	(4)	22.62	24.20	—	$3^3S-7^3P^o$ (69)
11012.97	A	30	22.82	23.94	0-1	$3^1S-5^1P^o$ (70)
9603.50	E	6	22.82	24.11	0-1	$3^1S-6^1P^o$ (71)
11969.07	A	20	22.91	23.94	—	$3^3P^o-5^3D$ (72)
10667.60	A	30	22.91	24.07	—	$3^3P^o-6^3S$ (73)
10311.18	C	40	22.91	24.11	—	$3^3P^o-6^3D$
10311.37	C		22.91	24.11	—	(74)
9702.66	*E*	*10*	*22.91*	*24.18*	—	$3^3P^o-7^3S$ (75)
9516.51	C	30	22.91	24.21	—	$3^3P^o-7^3D$
9516.66	C		22.91	24.21	—	(76)
9063.40	E	6	22.91	24.27	—	$3^3P^o-8^3D$ (77)
10996.55	A	5	22.97	24.10	—	$3^3D-6^3P^o$ (78)
10912.92	A	100	22.97	24.11	—	$3^3D-6^3F^o$ (79)
10072.10	E	2	22.97	24.20	—	$3^3D-7^3P^o$ (80)
10027.73	E	40	22.97	24.21	—	$3^3D-7^3F^o$ (81)
9526.17	E	10	22.97	24.27	—	$3^3D-8^3F^o$ (82)
9210.28	E	6	22.97	24.31	—	$3^3D-9^3F^o$ (83)
10916.98	A	50	22.97	24.11	2-3	$3^1D-6^1F^o$ (84)
10031.16	E	15	22.97	24.21	2-3	$3^1D-7^1F^o$ (85)
9529.27	E	4	22.97	24.27	2-3	$3^1D-8^1F^o$ (86)
11225.83	A	6	22.99	24.09	1-0	$3^1P^o-6^1S$ (87)
11044.95	A	40	22.99	24.11	1-2	$3^1P^o-6^1D$ (88)
10138.50	E	10	22.99	24.21	1-2	$3^1P^o-7^1D$ (89)
9625.80	E	3	22.99	24.27	1-2	$3^1P^o-8^1D$ (90)

He II I P 54.17 Anal A List A June 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4685.682	A	—	48.16	50.80	—	$3^2D-4^2F^o$ e
3203.104	A	—	48.16	52.02	—	(1) 5^2F^o e
10123.61	A	—	50.80	52.02	—	$4^2F^o-5^2G$ e
6560.099	A	—	50.80	52.68	—	(2) 6^2G e
5411.524	A	—	50.80	53.08	—	7^2G e
4859.323	A	—	50.80	53.34	—	8^2G e
4541.59	A	—	50.80	53.51	—	9^2G e
4338.67	A	—	50.80	53.64	—	$4^2F^o-10^2G$
4199.83	A	—	50.80	53.74	—	(3) 11^2G
4100.04	A	—	50.80	53.81	—	12^2G
4025.60	A	—	50.80	53.86	—	13^2G
3968.43	A	—	50.80	53.91	—	14^2G
3923.48	A	—	50.80	53.94	—	$4^2F^o-15^2G$
3887.44	A	—	50.80	53.97	—	(4) 16^2G
3858.07	A	—	50.80	54.00	—	17^2G
3833.80	A	—	50.80	54.02	—	18^2G
3813.50	A	—	50.80	54.03	—	19^2G
3796.33	A	—	50.80	54.05	—	$4^2F^o-20^2G$
3781.68	A	—	50.80	54.06	—	(5) 21^2G
3644.47	A	—	50.80	54.18	—	Limi

He II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
11626.40	A	—	52.02	53.08	—	$5^2G-7^2H^\circ$ etc
9344.93	A	—	52.02	53.34	—	(6) 8^2H° etc
8236.77	A	—	52.02	53.51	—	9^2H° etc
7592.74	A	—	52.02	53.64	—	10^2H° etc
7177.50	A	—	52.02	53.74	—	11^2H° etc
6890.88	A	—	52.02	53.81	—	$5^2G-12^2H^\circ$ etc
6683.2	A	—	52.02	53.86	—	(7) 13^2H° etc
6527.10	P	—	52.02	53.91	—	14^2H° etc
6406.3	A	—	52.02	53.94	—	15^2H° etc
6310.8	A	—	52.02	53.97	—	16^2H° etc
6233.8	A	—	52.02	54.00	—	17^2H° etc
6170.6	A	—	52.02	54.02	—	$5^2G-18^2H^\circ$ etc
6118.2	A	—	52.02	54.03	—	(8) 19^2H° etc
6074.1	A	—	52.02	54.05	—	20^2H° etc
6036.7	A	—	52.02	54.06	—	21^2H° etc
5694.46	A	—	52.02	54.18	—	Limit

Wide Fine Structure

Li I   I P 5.37   Anal A   List B   Jan 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6707,74 //	A	1000R	0.00	1.84	½-1½	$2^2S-2^2P^\circ$
6707.89	A		0.00	1.84	½- ½	(1)
3232.61	B	50R	0.00	3.82	—	$2^2S-3^2P^\circ$ (2)
8126.52	B	(500)	1.84	3.36	—	$2^2P^\circ-3^2S$ (3)
6103.642	C	500R	1.84	3.86	—	$2^2P^\circ-3^2D$ (4)
4971.92	B	10r	1.84	4.32	—	$2^2P^\circ-4^2S$ (5)
4602.99	D	100R	1.84	4.52	—	$2^2P^\circ-4^2D$ (6)

Li II   I P 75.31   Anal A   List D   Jan 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5483.55 to 5485.65	A	10	58.77	61.02	—	$2^3S-2^3P^\circ$ (1)
3684.1	B	2	68.48	71.83	—	$3^3S-4^3P^\circ$ (2)
4156.3	B	0.5	68.98	71.95	0-1	$3^1S-4^1P^\circ$ (3)
4881.3	B	2.5	69.07	71.60	—	$3^3P^\circ-4^3S$ (4)
4325.7	B	3	69.07	71.92	—	$3^3P^\circ-4^3D$ (5)

Very wide fine structure

Be I   I P 9.28   Anal A   List C   Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3321.347	A	30	2.71	6.43	2-1	$2^3P^\circ-3^3S$
3321.086	A	20	2.71	6.43	1-1	(1)
3321.013	A	10	2.71	6.43	0-1	
8254.10	B	10	5.25	6.75	1-0	$2^1P^\circ-3^1S$ (2)
4572.671	C	15	5.25	7.95	1-2	$2^1P^\circ-3^1D$ (3)
4407.911	B	10	5.25	8.05	1-0	$2^1P^\circ-4^1S$ (4)
3813.402	B	15	5.25	8.49	1-2	$2^1P^\circ-4^1D$ (5)
3736.280	B	10	5.25	8.56	1-0	$2^1P^\circ-5^1S$ (6)
3515.538	B	12	5.25	8.77	1-2	$2^1P^\circ-5^1D$ (7)

Be II   I P 18.13   Anal A   List D   Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3130.416//	A	50	0.00	3.94	½-1½	$2^2S-2^2P^\circ$
3131.064	A	30	0.00	3.94	½- ½	(1)
3274.640	A	10	10.89	14.66	—	$3^2S-4^2P^\circ$ (2)
5270.843	A	12	11.91	14.25	1½- ½	$3^2P^\circ-4^2S$
5270.322	A	10	11.91	14.25	½- ½	(3)
4361.025	A	10	11.91	14.74	1½-	$3^2P^\circ-4^2D$
4360.690	A	9	11.91	14.74	½-	(4)
3241.835	A	10	11.91	15.72	1½- ½	$3^2P^\circ-5^2S$ † (5)
4673.462	A	20	12.10	14.75	—	$3^2D-4^2P^\circ$ (6)

B I   See introduction

B II   I P 25.02   Anal B   List D   Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3451.41	A	10	9.06	12.64	1-2	$2^1P^\circ-2p^2\ ^1D$ (1)
4121.95	A	7	18.60	21.59	—	$3^3D-4^3F^\circ$ (2)

B III   I P 37.77   Anal A   List B   Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4243.60	A	3d	29.98	32.89	—	$4^2P^\circ-5^2D$ (1)
4487.46	A	5d	30.14	32.89	—	$4^2D-5^2F^\circ$ (2)
4497.58	A	10d	30.15	32.89	—	$4^2F^\circ-5^2G$ (3)

REVISED
See NSRDS-NBS 3, Section 3, 1970

C I   I P 11.20   Anal B   List A   March 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
10691.36	A	50	7.46	8.61	2-3	$3s^3P^\circ-3p^3D$
10683.18	A	25	7.45	8.61	1-2	(1)
10685.44	A	10	7.45	8.60	0-1	
10729.59	A	8	7.46	8.61	2-2	
10707.44	A	8	7.45	8.60	1-1	
10754.09	P		7.46	8.60	2-1	
9658.49	A	2	7.46	8.73	2-1	$3s^3P^\circ-3p^3S$
9620.86	A	1	7.45	8.73	1-1	(2)
9603.09	A	0	7.45	8.73	0-1	
9094.89	A	25	7.46	8.81	2-2	$3s^3P^\circ-3p^3P$
9078.32	A	6	7.45	8.81	1-1	(3)
9111.85	A	10	7.46	8.81	2-1	
9088.57	A	8	7.45	8.81	1-0	
9061.48	A	15	7.45	8.81	1-2	
9062.53	A	10	7.45	8.81	0-1	
5041.66	B	3	7.46	9.90	2-3	$3s^3P^\circ-4p^3D$
•5039.05	B	3	7.45 7.45	9.90 9.90	1-2 0-1	(4)
4826.73	B	1	7.46	10.01	2-1	$3s^3P^\circ-4p^3S$
4817.33	B	1	7.45	10.01	1-1	(5)
4812.84	E	(1)	7.45	10.01	0-1	
4771.72	B	4	7.46	10.04	2-2	$3s^3P^\circ-4p^3P$
4766.62	B	2	7.45	10.04	1-1	(6)
4775.87	B	3	7.46	10.04	2-1	
4770.00	B	2	7.45	10.04	1-0	
•4762.41	B	4	7.45 7.45	10.04 10.04	1-2 0-1	
4065.1	C	2	7.46	10.49	2-3?	$3s^3P^\circ-5p^3D$
•4064.2	C	1	7.45 7.45	10.49 10.49	1-2? 0-1?	(7)
10653.6	D	(50)	7.65	8.81	1-1	$3s^1P^\circ-3p^3P$ (8)
9405.77	A	20	7.65	8.96	1-2	$3s^1P^\circ-3p^1D$ (9)
8335.19	A	10	7.65	9.13	1-0	$3s^1P^\circ-3p^1S$ (10)
5380.242	B	8	7.65	9.95	1-1	$3s^1P^\circ-4p^1P$ (11)
5052.122	B	6	7.65	10.09	1-2	$3s^1P^\circ-4p^1D$ (12)
4932.00	B	5	7.65	10.15	1-0	$3s^1P^\circ-4p^1S$ (13)
4371.33	C	4	7.65	10.47	1-1	$3s^1P^\circ-5p^1P$ (14)
4352.1	C	1	7.65	10.49	1-2?	$3s^1P^\circ-5p^3D$ (15)
4268.99	C	2	7.65	10.54	1-2	$3s^1P^\circ-5p^1D$ (16)
4231.35	C	1	7.65	10.57	1-0	$3s^1P^\circ-5p^1S$ (17)
5793.51	E	(3)	7.91	10.04	3-2	$2p^3\ ^3D^\circ-4p^3P$
5801.17	E	(2)	7.91	10.04	2-1	(18)
5805.76	E	(1)	7.91	10.04	1-0	
11330.36	A	1	8.50	9.59	1-2	$3p^1P-3d^1D^\circ$ (19)
10548.0	E	(60)	8.50	9.67	1-1	$3p^1P-4s^1P^\circ$ (20)
6828.5	C	0	8.50	10.31	1-2	$3p^1P-4d^1D^\circ$ (21)
6587.75	C	4	8.50	10.37	1-1	$3p^1P-4d^1P^\circ$ (22)
•11894.9	D	(200)	8.61 8.61	9.65 9.64	3-2 2-1	$3p^3D-4s^3P^\circ$ (23)
11880.4	D	(15)	8.60	9.64	1-0?	
11849.3	D	(10)	8.61	9.65	2-2	
11863.0	D	(15)	8.61	9.64	1-1	
•11754.0	D	(600)	8.61 8.61	9.66 9.66	3-4 2-3	$3p^3D-3d^3F^\circ$ (24)
11747.5	D	(300)	8.60	9.65	1-2	
11801.8	D	(10)	8.61	9.66	3-3	
•11667.1	D	(100)	8.61	9.67	3-3	$3p^3D-3d^3D^\circ$
11631.59?	P		8.61	9.67	2-2	(25)
11609.91?	P		8.60	9.67	1-1	
11676.99?	P		8.61	9.67	3-2	
11638.60?	P		8.61	9.67	2-1	
11619.0	D	(30)	8.61	9.67	2-3	
11602.94?	P		8.60	9.67	1-2	
7118.5	E	(6d)	8.61	10.34	—	$3p^3D-4d^3F^\circ$ (26)

C I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
13164.1	D	(100)	8.73	9.67	1-1	$3p^3$ (
12521.0	D	(30)	8.73	9.72	1-1	$3p^3$ (
•11667.1	D	(100)	8.73	9.79	1-2	$3p^3$
11656.0	D	(200)	8.73	9.79	1-1	(
12614.8	D	(200)	8.81	9.79	2-2	$3p^3$
•12565.0	D	(30)	8.81	9.79	1-1	(
12602.6	D	(40)	8.81	9.79	2-1	
•12565.0	D	(30)	8.81	9.79	1-0	
12582.3	D	(40)	8.81	9.79	1-2	
12551.0	D	(50)	8.81	9.79	0-1	
8018	E	(1d)	8.81	10.35	—	$3p^3$ (
7850	E	(1d)	8.81	10.38	—	$3p^3$ (

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See NSRDS-NBS 3, Section 3,

C II   I P 24.28   Anal A   List A   Feb 194

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4744.90	B	1	13.66	16.26	1½-1½	$2p^2$
4738.11	B	0	13.66	16.26	½- ½	
6578.03	A	10	14.39	16.26	½-1½	3^2S
6582.85	A	9	14.39	16.26	½- ½	
7236.19	A	8d	16.26	17.97	1½-2½	3^2P
7231.12	A	7d	16.26	17.97	½-1½	
3920.677	A	10	16.26	19.41	1½- ½	3^2P
3918.977	A	9	16.26	19.41	½- ½	
5889.97	A	4	17.97	20.06	2½-1½	3^2D
5891.65	A	3	17.97	20.06	1½- ½	
4267.27	A	20	17.97	20.86	2½-3½	3^2D
4267.02	A	19	17.97	20.86	1½-2½	
3361.09	A	3	17.97	21.64	2½-1½	3^2D
3361.75	A	2	17.97	21.64	1½- ½	
2992.63	A	5d	17.97	22.09	—	3^2D
3165.51	A	4	18.57	22.47	2½-1½	$2p^3$
3167.95	A	3	18.58	22.47	1½- ½	
3165.99	B	1	18.58	22.47	1½-1½	
5536.0	B	1d	19.41	21.64	½-	4^2S (
5336.7	B	0dd	20.06	22.38	1½- ½	4^2P (
5121.69	A	1	20.06	22.47	1½-1½	4^2P (
3832.12	B	2d	20.06	23.28	1½-2½	4^2P
3836.10	B	1d	20.06	23.28	½-1½	(
6783.75	A	(6)	20.62	22.44	2½-3½	$3s^4$
6779.74	A	(4)	20.61	22.44	1½-2½	(
6780.27	A	(2)	20.61	22.43	½-1½	
6800.50	A	(3)	20.62	22.44	2½-2½	
6791.30	A	(3)	20.61	22.43	1½-1½	
6787.09	A	(2)	20.61	22.43	½- ½	
6812.19	A	(0)	20.62	22.43	2½-1½	
6798.04	A	(1)	20.61	22.43	1½- ½	
5662.51	A	(4)	20.62	22.80	2½-1½	$3s^4$
5648.08	A	(3)	20.61	22.80	1½-1½	(
5640.50	A	(2)	20.61	22.80	½-1½	
5145.16	A	(5)	20.62	23.02	2½-2½	$3s^4$
5139.21	A	(1)	20.61	23.02	1½-1½	(
5137.26	A	(0)	20.61	23.01	½- ½	
5151.08	A	(3d?)	20.62	23.02	2½-1½	
5143.49	A	(2)	20.61	23.01	1½- ½	
5133.29	A	(2)	20.61	23.02	1½-2½	
5132.96	A	(3)	20.61	23.02	½-1½	
5033.2	B	1d	20.83	23.28	1½-2½	$2p^3$
5037.0	B	0d	20.83	23.28	½-1½	(
3871.62	B	2	20.83	24.02	1½- ½	$2p^3$
3868.84	B	1	20.83	24.02	½- ½	(
6115.21	A	0	22.00	24.02	1½- ½	$3s^2$ (
•7119.45	A	(2)	22.44	24.17	3½-4½	$3p^4$
7115.13	A	(2)	22.44	24.17	2½-3½	(
•7112.36	A	(1)	22.43 22.43	24.17 24.17	1½-2½ ½-1½	
7133.52	A	(0)	22.44	24.17	3½-3½	
7125.49	A	(0)	22.44	24.17	2½-2½	
•7119.45	A	(2)	22.43	24.17	1½-1½	
6750.22	A	(2)	22.44	24.27	3½-3½	$3p^4$
6738.36	A	(1)	22.44	24.27	2½-2½	(
6730.79	A	(0)	22.43	24.27	1½-1½	
•6726.84	A	(0)	22.43	24.26	½- ½	
6754.75	A	(0)	22.44	24.27	3½-2½	
6742.05	A	(0)	22.44	24.27	2½-1½	
•6733.56	A	(0)	22.43 22.44	24.26 24.27	1½- ½ 2½-3½	
•6726.84	A	(0)	22.43	24.27	1½-2½	

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ratory		E P		J	Multiplet
Ref	Int	Low	High		(No)
A	(2)	22.44	24.55	3½-2½	$3p^4D-3d^4P^\circ$ (22)
A	(1)	22.44	24.55	2½-1½	
A	(0)	22.43	24.55	1½- ½	
A	(0)	22.44	24.55	2½-2½	
A	(1)	22.43	24.55	1½-1½	
A	(0)	32.43	24.55	½- ½	
A	(4)	22.44	25.88	3½-2½	$3p^4D-4s^4P^\circ$ (23)
A	(2)	22.44	25.87	2½-1½	
		22.43	25.87	1½- ½	
A	(1)	22.44	25.88	2½-2½	
A	(2)	22.43	25.87	1½-1½	
A	(1)	22.43	25.87	½- ½	
B	0	22.43	25.88	1½-2½	
A	(2)	22.43	25.87	½-1½	
A	3	22.47	24.50	1½-2½	$3p^2P-3d^2D^\circ$ (24)
A	2	22.47	24.50	½-1½	
A	0	22.47	24.50	1½-1½	
A	2	22.47	24.96	1½-1½	$3p^2P-3d^2P^\circ$ (25)
B	1	22.47	24.96	½- ½	
B	0d	22.47	24.96	1½- ½	
		22.47	24.96	½-1½	
A	(1n)	22.80	24.55	1½-2½	$3p^4S-3d^4P^\circ$ (26)
A	(1n)	22.80	24.55	1½-1½	
A	(0n)	22.80	24.55	1½- ½	
A	(2)	22.80	25.88	1½-2½	$3p^4S-4s^4P^\circ$ (27)
A	(1)	22.80	25.87	1½-1½	
A	(0)	22.80	25.87	1½- ½	
B	4	23.02	25.88	2½-2½	$3p^4P-4s^4P^\circ$ (28)
B	0	23.02	25.87	1½-1½	
B	2	23.02	25.87	2½-1½	
		23.02	25.87	1½- ½	
B	2	23.02	25.88	1½-2½	
B	2	23.01	25.87	½-1½	
B	0d	23.28	27.34	—	$3p^2D-4d^2F^\circ$ (29)
A	(2)	24.17	26.52	4½-3½	$3d^4F^\circ-4p^4D$ (30)
A	(3)	24.17	26.52	3½-2½	
		24.17	26.51	2½-1½	
		24.17	26.51	1½- ½	
A	(0)	24.17	26.52	3½-3½	
A	(1)	24.17	26.52	2½-2½	
C	0	24.17	27.29	3½-3½	$3d^4F^\circ-4f^2F$ (31)
C	0	24.17	27.29	2½-2½	
C	0	24.17	27.29	2½-3½	
A	2	24.17	27.30	4½-4½	$3d^4F^\circ-4f^4F$ (32)
B	1	24.17	27.30	3½-3½	
C	0	24.17	27.30	—	
C	0	24.17	27.30	2½-3½	
A	8	24.17	27.36	4½-5½	$3d^4F^\circ-4f^4G$ (33)
A	7	24.17	27.35	3½-4½	
A	6	24.17	27.35	2½-3½	
A	6	24.17	27.35	1½-2½	
B	1	24.17	27.35	4½-4½	
B	1	24.17	27.35	3½-3½	
B	1	24.17	27.35	2½-2½	
A	(0)	24.27	26.52	3½-3½	$3d^4D^\circ-4p^4D$ (34)
B	1	24.27	26.71	3½-2½	$3d^4D^\circ-4p^4P$ (35)
B	0	24.27	26.71	2½-1½	
B	7	24.27	27.30	3½-4½	$3d^4D^\circ-4f^4F$ (36)
A	6	24.27	27.30	2½-3½	
A	5	24.27	27.30	—	
A	3	24.27	27.37	3½-3½	$3d^4D^\circ-4f^4D$ (37)
B	1d	24.27	27.37	2½-2½	
C	0	24.27	27.37	1½-1½	
C	00	24.27	27.37	2½-3½	
C	0	24.27	27.37	1½-2½	
C	00	24.26	27.37	½-1½	
C	0	24.27	27.38	2½-1½	$3d^4D^\circ-4f^2D$ (38)
C	0	24.27	27.37	2½-2½	
A	5	24.50	27.29	2½-3½	$3d^2D^\circ-4f^2F$ (39)
A	5	24.50	27.29	1½-2½	
C	4	24.50	27.30	2½-3½	$3d^2D^\circ-4f^4F$ (40)
C	1	24.50	27.37	2½-2½	$3d^2D^\circ-4f^4D$ (41)
B	1	24.50	27.37	2½-2½	$3d^2D^\circ-4f^2D$ (42)
B	1	24.50	27.38	1½-1½	
B	1d	24.50	28.54	—	$3d^2D^\circ-5f^2F$ (43)

C II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
5907.36	A	(1)	24.55	26.64	2½-1½	$3d^4P^\circ-4p^4S$ (44)
5914.92	A	(0)	24.55	26.64	1½-1½	
5919.60	A	(0)	24.55	26.64	½-1½	
4374.28	A	5	24.55	27.37	2½-3½	$3d^4P^\circ-4f^4D$ (45)
4372.49	A	4	24.55	27.37	1½-2½	
4371.59	A	3	24.55	27.37	½-1½	
*4368.14§§	B	4d	24.55	27.37	—	
4376.78	C	2d	24.55	27.37	1½-2½	$3d^4P^\circ-4f^2D$ (46)
3059.24	B	0d	24.55	28.58	2½-3½	$3d^4P^\circ-5f^4D$ (47)
4734.75	B	2d	24.69	27.29	3½-3½	$3d^2F^\circ-4f^2F$ (48)
4727.21	B	1d	24.68	27.29	2½-2½	
4630.52	C	1d	24.69	27.36	3½-4½	$3d^2F^\circ-4f^4G$ (49)
4625.71	C	1d	24.68	27.35	2½-3½	
4618.85	A	5d	24.69	27.36	—	$3d^2F^\circ-4f^2G$ (50)
5119.55	A	2	24.96	27.37	1½-2½	$3d^2P^\circ-4f^2D$ (51)
5114.07	A	2	24.96	27.38	½-1½	

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See NSRDS-NBS 3, Section 3, 1970

C III I P 47.67 Anal B List A Feb 1943

I A	Ref	Int	Low	High	J	Multiplet (No)
4647.40	A	20	29.39	32.05	1-2	$3^3S-3^3P^\circ$ (1)
4650.16	A	19	29.39	32.05	1-1	
4651.35	A	18	29.39	32.05	1-0	
5696.0	A	8	31.97	34.13	1-2	$3^1P^\circ-3^1D$ (2)
6744.2	P		38.05	39.88	2-3	$3s^3P^\circ-3p^3D$ (3)
6730.7	P		38.04	39.87	1-2	
6727.1	P		38.04	39.87	0-1	
5272.56	B	2	38.05	40.39	2-1	$3s^3P^\circ-3p^3S$ (4)
*5253.55§§	A	1	38.04	40.39	1-1	
5244.5	A	0	38.04	40.39	0-1	
4665.90	A	6	38.05	40.69	2-2	$3s^3P^\circ-3p^3P$ (5)
4673.91	A	4	38.05	40.69	2-1	
4663.53	A	4	38.05	40.69	1-0	
3262.23	A	1	38.19	41.97	1-2	$4^3S-3d^3P^\circ$ (6)
3259.44	A	0	38.19	41.98	1-1	
3257.90	A	0	38.19	41.98	1-0	
4325.70	A	8	38.27	41.12	1-2	$3s^1P^\circ-3p^1D$ (7)
3170.16	A	1d	38.48	42.37	0-1	$4^1S-5^1P^\circ$ (8)
4516.93	A	4	39.22	41.95	2-1	$4^3P^\circ-5^3S$ (9)
4516.02	A	3	39.22	41.95	1,0-1	
3609.61	A	5	39.22	42.64	2-3	$4^3P^\circ-5^3D$ (10)
3608.96	A	4	39.22	42.64	—	
4247.56	A	1	39.47	42.37	1-1	$3p^1P-5^1P^\circ$ (11)
3703.52	A	2	39.47	42.80	1-1	$3p^1P-3d^1P^\circ$ (12)
6156.6	P		39.67	41.67	3-3	$4^3D-3d^3D^\circ$ (13)
6155.4	P		39.67	41.67	2-2	
6154.4	P		39.66	41.67	1-1	
4388.24	A	2	39.67	42.48	3-2	$4^3D-5^3P^\circ$ (14)
4383.24	A	1	39.67	42.48	2-1,2	
4379.97	A	0	39.66	42.48	1-0,1	
3889.18	B	4	39.67	42.84	3-4	$4^3D-5^3F^\circ$ (15)
3885.99	B	3	39.67	42.84	2-3	
3883.80	A	2	39.66	42.84	1-2	
4070.30	B	10	39.74	42.77	4-5	$4^3F^\circ-5^3G$ (16)
4068.97	B	9	39.74	42.77	3-4	
4067.87	A	9	39.74	42.77	2-3	
4122.05	A	3	39.80	42.79	1-2	$4^1P^\circ-5^1D$ (17)
4187.05	A	10	39.84	42.78	3-4	$4^1F^\circ-5^1G$ (18)
6871.7	P		39.88	41.67	3-3	$3p^3D-3d^3D^\circ$ (19)
6862.9	P		39.87	41.67	2-2	
6857.3	P		39.87	41.67	1-1	

C III continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
5894.1	P		39.88	41.97	3-2	$3p^3D-3d^3F$ (20)
5871.6	P		39.87	41.98	2-1	
5857.9	P		39.87	41.98	1-0	
4162.80	A	5	39.88	42.84	3-4	$3p^3D-5^3F^\circ$ (21)
4156.50	A	4	39.87	42.84	2-3	
4152.43	A	3	39.87	42.84	1-2	
5827.1	A	1	40.02	42.14	2-3	$4^1D-3d^1F^\circ$ (22)
5249.6	A	0	40.02	42.37	2-1	$4^1D-5^1P^\circ$ (23)
4056.06	A	5	40.02	43.07	2-3	$4^1D-5^1F^\circ$ (24)

Lines attributed to C III--Classification dubious

I A	Ref	Int
4593.47	A	2d
*4368.14§§	A	4d
4361.85	A	2
4001.56	A	0d
3999.92	A	0d

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See NSRDS-NBS 3, Section 3, 197

C IV I P 64.22 Anal A List A Feb 1943

I A	Ref	Int	Low	High	J	Multiplet (No)
5801.51	A	4	37.39	39.51	½-1½	$3^2S-3^2P^\circ$ (1)
5812.14	A	3	37.39	39.51	½- ½	
3936	P		54.98	58.12	½-	$5^2S-6^2P^\circ$ (2)
5023	P		55.41	57.87	1½- ½	$5^2P^\circ-6^2S$ (3)
5021	P		55.41	57.87	½- ½	
4441.81	A	0d	55.41	58.19	—	$5^2P^\circ-6^2D$ (4)
4789	P		55.54	58.12	—	$5^2D-6^2P^\circ$ (5)
4647	P		55.54	58.19	—	$5^2D-6^2F^\circ$ (6)
4665	P		55.54	58.19	—	$5^2F^\circ-6^2D$ (7)
4658.64	A	5d	55.54	58.20	—	$5^2F^\circ-6^2G$ e (8)
4660	P		55.55	58.19	—	$5^2G-6^2F^\circ$ (9)
6592	P		57.87	59.74	½-	$6^2S-7^2P^\circ$ (10)
4217	P		57.87	60.80	½-	$6^2S-8^2P^\circ$ (11)
4737	P		58.19	60.80	—	$6^2D-8^2P^\circ$ (12)

N I I P 14.49 Anal B List B Feb 1944

I A	Ref	Int	Low	High	J	Multiplet (No)
8680.24	A	10	10.29	11.71	2½-3½	$3s^4P-3p^4D^\circ$ (1)
8683.38	A	8	10.29	11.71	1½-2½	
8686.13	A	7	10.28	11.70	½-1½	
8718.82	A	6	10.29	11.71	2½-2½	
8711.69	A	7	10.29	11.70	1½-1½	
8703.24	A	6	10.28	11.70	½- ½	
8747.35	A	0	10.29	11.70	2½-1½	
8728.88	A	1	10.29	11.70	1½- ½	
8216.28	A	6	10.29	11.79	2½-2½	$3s^4P-3p^4P^\circ$ (2)
8210.64	A	2	10.29	11.79	1½-1½	
8200.31	A	1	10.28	11.79	½- ½	
8242.34	A	4	10.29	11.79	2½-1½	
8223.07	A	4	10.29	11.79	1½- ½	
8184.80	A	4	10.29	11.79	1½-2½	
8187.95	A	4	10.28	11.79	½-1½	
7468.29	A	10	10.29	11.94	2½-1½	$3s^4P-3p^4S^\circ$ (3)
7442.28	A	8	10.29	11.94	1½-1½	
7423.63	A	7	10.28	11.94	½-1½	
4253.28	B	4	10.29	13.19	2½-3½	$3s^4P-4p^4D^\circ$ (4)
*4254.7	D	4	10.29	13.19	1½-2½	
			10.28	13.18	½-1½	
4223.04	B	5	10.29	13.21	2½-2½	$3s^4P-4p^4P^\circ$ (5)
4230.35	D	4	10.29	13.21	2½-1½	
4224.74	B	4	10.29	13.21	1½- ½	
4214.73	B	5	10.29	13.21	1½-2½	
4215.92	B	2	10.28	13.21	½-1½	
4151.46	B	12	10.29	13.26	2½-1½	$3s^4P-4p^4S^\circ$ (6)
4143.42	P		10.29	13.26	1½-1½	
4137.63	B	7	10.28	13.26	½-1½	

REVISED MULTIPLET TABLE

N I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
9392.80	A	1	10.64	11.96	1½-2½	$3s^2P-3p^2D^\circ$
9386.79	A	0	10.63	11.95	½-1½	(7)
9460.66	P	(25)	10.64	11.95	1½-1½	
8629.24	A	8	10.64	12.07	1½-1½	$3s^2P-3p^2P^\circ$
8594.01	A	6	10.63	12.07	½- ½	(8)
8655.88	A	3	10.64	12.07	1½- ½	
8567.74	A	4	10.63	12.07	½-1½	
4935.03	B	10	10.64	13.14	1½- ½	$3s^2P-4p^2S^\circ$
4914.90	B	5	10.63	13.14	½- ½	(9)
4109.98	B	12	10.64	13.65	1½-2½	$3s^2P-3p'\ ^2D^\circ$
4099.94	B	9	10.63	13.64	½-1½	(10)
4114.00	B	6	10.64	13.64	1½-1½	
3830.39	B	9	10.64	13.87	1½-1½	$3s^2P-3p'\ ^2P^\circ$
3822.07	B	6	10.63	13.86	½- ½	(11)
3834.24	B	4	10.64	13.86	1½- ½	
3818.27	B	2	10.63	13.87	½-1½	
11564.8	C	(50)	10.88	11.94	2½-1½	$sp^4\ ^4P-3p^4S^\circ$
11628.0	C	(80)	10.88	11.94	1½-1½	(12)
11656.0	C	(200)	10.88	11.94	½-1½	
5328.70	B	5	10.88	13.19	2½-3½	$sp^4\ ^4P-4p^4D^\circ$†
5356.77	B	5	10.88	13.19	1½-2½	(13)
5372.66	B	3d	10.88	13.18	½-1½	
5281.18	B	3	10.88	13.21	2½-2½	$sp^4\ ^4P-4p^4P^\circ$†
						(14)
9060.6	C	(350)	11.55	12.91	½-1½	$3p^2S^\circ-3d^2P$
9028.9	C	(50)	11.55	12.92	½- ½	(15)
6008.48	B	10	11.55	13.61	½-1½	$3p^2S^\circ-4d^2P$
5999.47	B	6	11.55	13.61	½- ½	(16)
11294.0	C	(125)	11.71	12.81	3½-2½	$3p^4D^\circ-4s^4P$
11313.8	C	(30)	11.71	12.80	2½-1½	(17)
11329.0	C	(200)	11.70	12.79	1½- ½	
11237.5	C	(10)	11.71	12.81	2½-2½	
*10113.4	C	(900)	11.71	12.93	3½-4½?	$3p^4D^\circ-3d^4F$
			11.71	12.93	2½-3½?	(18)
			11.70	12.92	1½-2½?	
			11.70	12.92	½-1½?	
10164.5	C	(30)	11.71	12.93	3½-3½?	
10147.3	C	(40)	11.71	12.92	2½-2½?	
9862.5	C	(60)	11.71	12.96	3½-3½	$3p^4D^\circ-3d^4D$
9821.8	C	(10)	11.71	12.96	2½-2½	(19)
6644.96	B	9	11.71	13.57	3½-2½	$3p^4$
6653.41	B	5	11.71	13.56	2½-1½	(
6656.61	B	1	11.70	13.56	1½- ½	
6622.53	B	3	11.71	13.57	2½-2½	
6637.01	B	4	11.70	13.56	1½-1½	
6646.52	B	2	11.70	13.56	½- ½	
6482.74	B	9	11.71	13.62	3½-4½	$3p^4$
6484.88	B	9	11.71	13.61	2½-3½	(
6483.75	B	3	11.70	13.61	1½-2½	
6481.73	B	2	11.70	13.60	½-1½	
6506.45	B	0	11.71	13.61	3½-3½	
6499.52	B	3	11.71	13.61	2½-2½	
6491.28	B	3	11.70	13.60	1½-1½	
*6468.32	B	4	11.71	13.62	3½-3½	$3p^4$
			11.71	13.62	2½-2½	(
6457.93	B	3	11.70	13.61	1½-1½	
6441.70	B	5	11.71	13.63	3½-2½	$3p^4$
6437.01	B	4	11.70	13.62	1½- ½	(
6420.47	B	3	11.71	13.63	2½-2½	
5616.54	B	5	11.71	13.91	3½-2½	$3p^4$
5623.20	B	4	11.71	13.90	2½-1½	(
5625.43	B	2	11.70	13.90	1½- ½	

nued

atory Ref	Int	E P Low	High	J	Multiplet (No)
B	9	11.71	13.93	3½-4½?	$3p^4D^\circ-5d^4F$ (25)
B	9	11.71	13.92	2½-3½?	
B	3	11.71	13.94	3½-2½	$3p^4D^\circ-5d^4P$ (26)
C	(100)	11.79	12.81	2½-2½	$3p^4P^\circ-4s^4P$ (27)
C	(8)	11.79	12.80	1½-1½	
C	(75)	11.79	12.80	2½-1½	
C	(20)	11.79	12.81	1½-2½	
C	(75)	11.79	12.80	½-1½	
C	(125)	11.79	12.96	2½-3½	$3p^4P^\circ-3d^4D$ (28)
C	(70)	11.79	12.96	1½-2½	
C	(60)	11.79	12.96	2½-2½	
B	4	11.79	13.57	2½-2½	$3p^4P^\circ-5s^4P$† (29)
B	1	11.79	13.56	2½-1½	
B	1	11.79	13.57	1½-2½	
B	4	11.79	13.62	2½-3½	$3p^4P^\circ-4d^4D$ (30)
B	4	11.79	13.62	1½-2½	
B	9	11.79	13.63	2½-2½	$3p^4P^\circ-4d^4P$ (31)
B	6	11.79	13.62	½-½	
B	4	11.79	13.63	1½-2½	
B	3	11.79	13.62	1½-½	
B	6	11.79	13.91	2½-2½	$3p^4P^\circ-6s^4P$† (32)
B	2	11.79	13.90	1½-1½	
B	2	11.79	13.90	2½-1½	
B	2	11.79	13.91	1½-2½	
B	4	11.79	13.94	2½-2½	$3p^4P^\circ-5d^4P$ (33)
C	(100)	11.94	12.96	1½-2½?	$3p^4S^\circ-3d^4P$ (34)
C	(75)	11.94	12.95	1½-1½?	
C	(150)	11.94	12.95	1½-½?	
B	2	11.94	14.00	1½-2½	$3p^4S^\circ-7s^4P$ (35)
C	(350)	11.96	12.95	2½-3½	$3p^2D^\circ-3d^2F$ (36)
C	(200)	11.95	12.94	1½-2½	
C	(40)	11.96	12.94	2½-2½	
C	(60)	11.96	12.98	2½-2½	$3p^2D^\circ-3d^2D$ (37)
C	(30)	11.95	12.98	1½-1½	
C	(10)	11.96	12.98	2½-1½	

Unclassified Lines Attributed to N I

Ref	Int
B	4
B	5
B	7
B	10
B	5
B	5
B	4
B	6
B	4
B	4
B	5
B	4

P 29.49 Anal B List A Oct 1943

Ref	Int	E P Low	High	J	Multiplet (No)
C	4	17.80	20.32	2-1	$2p^3\ {}^1D^\circ-3p^1P$ (1)
C	5	18.39	20.32	1-1	$3s^3P^\circ-3p^1P$ (2)
C	0	18.38	20.32	0-1	
C	10	18.40	20.58	2-3	$3s^3P^\circ-3p^3D$ (3)
C	8	18.39	20.56	1-2	
C	6	18.38	20.56	0-1	
C	6	18.40	20.56	2-2	
C	6	18.39	20.56	1-1	
C	2	18.40	20.56	2-1	
C	8	18.40	20.85	2-1	$3s^3P^\circ-3p^3S$ (4)
C	6	18.39	20.85	1-1	
C	2	18.38	20.85	0-1	
A	10	18.40	21.07	2-2	$3s^3P^\circ-3p^3P$ (5)
A	6	18.39	21.06	1-1	
A	8	18.40	21.06	2-1	
A	7	18.39	21.06	1-0	
A	8	18.39	21.07	1-2	
A	7	18.38	21.06	0-1	
A	6	18.39	21.51	1-2	$3s^3P^\circ-3p^1D$ (6)
C	3	18.39	22.01	1-0	$3s^3P^\circ-3p^1S$ (7)
C	8	18.42	20.32	1-1	$3s^1P^\circ-3p^1P$ (8)
C	4	18.42	20.56	1-2	$3s^1P^\circ-3p^3D$ (9)
C	3	18.42	20.56	1-1	
C	3	18.42	20.85	1-1	$3s^1P^\circ-3p^3S$ (10)
C	2	18.42	21.07	1-2	$3s^1P^\circ-3p^3P$ (11)
C	2	18.42	21.06	1-1	
C	2	18.42	21.06	1-0	
A	10	18.42	21.51	1-2	$3s^1P^\circ-3p^1D$ (12)
C	6	18.42	22.01	1-0	$3s^1P^\circ-3p^1S$ (13)

N II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4564.78	C	1	20.32	23.02	1-2	$3p^1P-3d^3F^\circ$ (14)
4447.033	A	10	20.32	23.10	1-2	$3p^1P-3d^1D^\circ$ (15)
4375.00	C	0	20.32	23.14	1-2	$3p^1P-3d^3D^\circ$ (16)
3919.005	A	6	20.32	23.47	1-1	$3p^1P-3d^1P^\circ$ (17)
3006.86	C	7	20.32	24.43	1-1	$3p^1P-4s^1P^\circ$ (18)
*5005.140	C	10	20.58	23.04	3-4	$3p^3D-3d^3F^\circ$ (19)
5001.469	C	8	20.56	23.03	2-3	
5001.128	C	7	20.56	23.02	1-2	
5025.665	C	6	20.58	23.03	3-3	
5016.387	C	5	20.56	23.02	2-2	
5040.76	C	0	20.58	23.02	3-2	
4803.272	C	6	20.58	23.15	3-3	$3p^3D-3d^3D^\circ$ (20)
4788.126	C	5	20.56	23.14	2-2	
4779.710	C	4	20.56	23.14	1-1	
4810.286	C	2	20.58	23.14	3-2	
4793.656	C	2	20.56	23.14	2-1	
4781.168	C	2	20.56	23.15	2-3	
4774.222	C	2	20.56	23.14	1-2	
4507.559	A	3	20.58	23.31	3-2	$3p^3D-3d^3P^\circ$ (21)
4477.74	C	2	20.56	23.32	2-1	
4459.96	C	1	20.56	23.32	1-0	
4488.15	C	0	20.56	23.31	2-2	
4465.54	C	0	20.56	23.32	1-1	
3328.79	C	4	20.58	24.28	3-2	$3p^3D-4s^3P^\circ$ (22)
3331.32	C	3	20.56	24.27	2-1	
3330.30	C	2	20.56	24.26	1-0	
3318.14	C	2	20.56	24.28	2-2	
3324.58	C	2	20.56	24.27	1-1	
5383.82	C	0	20.85	23.14	1-2	$3p^3S-3d^3D^\circ$ (23)
5007.316	C	7	20.85	23.31	1-2	$3p^3S-3d^3P^\circ$ (24)
*4994.358	C	6	20.85	23.32	1-1	
4987.377	C	4	20.85	23.32	1-0	
4709.45	C	1	20.85	23.47	1-1	$3p^3S-3d^1P^\circ$ (25)
3593.60	C	3	20.85	24.28	1-2	$3p^3S-4s^3P^\circ$ (26)
3609.09	C	2	20.85	24.27	1-1	
3615.88	C	1	20.85	24.26	1-0	
6065.5	C	0	21.06	23.10	1-2	$3p^3P-3d^1D^\circ$ (27)
5941.67	C	8	21.07	23.15	2-3	$3p^3P-3d^3D^\circ$ (28)
5931.79	C	7	21.06	23.14	1-2	
5927.82	C	4	21.06	23.14	0-1	
5952.39	C	3	21.07	23.14	2-2	
5940.25	C	2	21.06	23.14	1-1	
5960.93	C	0	21.07	23.14	2-1	
5495.70	C	5	21.07	23.31	2-2	$3p^3P-3d^3P^\circ$ (29)
5462.62	C	3	21.06	23.32	1-1	
5480.10	C	3	21.07	23.32	2-1	
5454.26	C	2	21.06	23.32	1-0	
5478.13	C	2	21.06	23.31	1-2	
5452.12	C	2	21.06	23.32	0-1	
3838.39	C	5	21.07	24.28	2-2	$3p^3P-4s^3P^\circ$ (30)
3847.38	C	3	21.06	24.27	1-1	
3856.07	C	3	21.07	24.27	2-1	
3855.08	C	2	21.06	24.26	1-0	
3829.80	C	3	21.06	24.28	1-2	
3842.20	C	3	21.06	24.27	0-1	
6610.58	C	6	21.51	23.37	2-3	$3p^1D-3d^1F^\circ$ (31)
6284.30	C	3	21.51	23.47	2-1	$3p^1D-3d^1P^\circ$ (32)
4227.749	A	3n	21.51	24.43	2-1	$3p^1D-4s^1P^\circ$ (33)
5104.45	C	2	22.01	24.43	0-1	$3p^1S-4s^1P^\circ$ (34)
3023.80	C	2	22.01	26.09	0-1	$3p^1S-4d^1P^\circ$ (35)
*6167.82	C	4	23.04	25.04	4-3	$3d^3F^\circ-4p^3D$ (36)
6173.40	C	3	23.03	25.03	3-2	
6170.16	C	1	23.02	25.03	2-1	
6136.9	C	0	23.03	25.04	3-3	
6150.9	C	0	23.02	25.03	2-2	
6114.6	C	0	23.02	25.03	2-3	
4087.35	C	0n	23.03	26.05	3-3	$3d^3F^\circ-4f^1F$ (37)
4095.92	P		23.04	26.06	4-4	$3d^3F^\circ-4f^3F$ (38)
4082.85	C	00	23.03	26.05	3-3	
4076.83	C	0n	23.02	26.05	2-2	
4082.280	A	2n	23.03	26.06	3-4	
4073.055	A	2n	23.02	26.05	2-3	
4041.321	A	5n	23.04	26.10	4-5	$3d^3F^\circ-4f^3G$ (39)
4043.537	A	3n	23.03	26.08	3-4	
4035.087	A	4n	23.02	26.08	2-3	
4057.00	C	1	23.04	26.08	4-4	
4044.75	C	1	23.03	26.08	3-3	
4026.080	A	3n	23.03	26.10	3-4	$3d^3F^\circ-4f^1G$ (40)
6630.5	C	2	23.10	24.96	2-1	$3d^1D^\circ-4p^1P$ (41)
4176.164	A	3n	23.10	26.05	2-3	$3d^1D^\circ-4f^1F$ (42)
4171.608	A	2n	23.10	26.05	2-3	$3d^1D^\circ-4f^3F$ (43)

N II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4110.00	C	0n	23.10	26.10	2-2	$3d^1D^\circ-4f^3$ (44)
6504.9	C	2	23.15	25.04	3-3	$3d^3D^\circ-4p^3$ (45)
6533.0	C	1	23.14	25.03	2-2	
*6545.2	C	0	(23.14 23.15	25.03 25.03	1-1 3-2	
6492.0	C	0	23.14	25.04	2-3	
6522.3	C	0	23.14	25.03	1-2	
6340.67	C	4	23.15	25.09	3-2	$3d^3D^\circ-4p^3$ (46)
*6357.0	C	3	(23.14 23.14	25.08 25.08	2-1 1-0	
6328.6	C	1	23.14	25.09	2-2	
6347.1	C	1	23.14	25.08	1-1	
*4241.787	A	8n	23.14	26.05	2-3	$3d^3D^\circ-4f^1$ (47)
*4241.787	A	8n	23.15	26.06	3-4	$3d^3D^\circ-4f^3$ (48)
4237.049	A	4	23.14	26.05	2-3	
4236.930	A	5	23.14	26.05	1-2	
4181.17	C	0n	23.15	26.10	3-4	$3d^3D^\circ-4f^1$ (49)
4179.667	A	1n	23.15	26.10	3-3	$3d^3D^\circ-4f^3$ (50)
4173.51	C	0n	23.14	26.10	2-2	
*4156.8	C	0nn	23.14	26.11	1-1	
*4160.8	C	0nn	23.14	26.11	2-1	
4173.75	C	0n	23.14	26.10	2-3	
*4160.8	C	0nn	23.14	26.11	2-2	$3d^3D^\circ-4f^1$ (51)
*4156.8	C	0nn	23.14	26.11	1-2	
7139.8	B	3	23.31	25.04	2-3	$3d^3P^\circ-4p^3$ (52)
7217.0	B	2	23.32	25.03	1-2	
7259.3	B	2	23.32	25.03	0-1	
7188.7	B	0	23.31	25.03	2-2	
6942.9	B	3	23.31	25.09	2-2	$3d^3P^\circ-4p^3$ (53)
7003.0	B	0n	23.32	25.08	1-1	
6976.8	B	2	23.31	25.08	2-1	
*7015.3	B	1	23.32	25.08	1-0	
6967.6	B	1	23.32	25.09	1-2	
*7015.3	B	1	23.32	25.08	0-1	
6812.26	C	2	23.31	25.13	2-1	$3d^3P^\circ-4p^3$ (54)
6836.2	C	1	23.32	25.13	1-1	
4432.739	A	6n	23.31	26.10	2-3	$3d^3P^\circ-4f^3$ (55)
4441.99	C	3n	23.32	26.10	1-2	
4433.48	C	2n	23.32	26.11	0-1	
4431.82	C	0	23.31	26.10	2-2	
4427.97	C	2	23.32	26.11	1-1	
4427.21	C	2	23.32	26.11	1-2	$3d^3P^\circ-4f^1$ (56)
6242.52	C	5	23.37	25.35	3-2	$3d^1F^\circ-4p^1$ (57)
4552.536	A	4	23.37	26.08	3-4	$3d^1F^\circ-4f^3$ (58)
4530.403	A	5	23.37	26.10	3-4	$3d^1F^\circ-4f^1$ (59)
*6167.82	C	4	23.47	25.47	1-0	$3d^1P^\circ-4p^1$ (60)
4694.55	C	3n	23.47	26.10	1-2	$3d^1P^\circ-4f^3$ (61)
4677.93	C	3n	23.47	26.11	1-2	$3d^1P^\circ-4f^1$ (62)
*5535.39	C	5	(25.38	27.61)	3-4	$3s^5P-3p^5D$ (63)
5530.27	C	4	(25.37	27.61)	2-3	
5526.26	C	2	(25.37	27.60)	1-2	
5551.95	C	3	(25.38	27.61)	3-3	
5543.49	C	3	(25.37	27.60)	2-2	
*5535.39	C	5	(25.37	27.60)	1-1	
5565.30	C	0	(25.38	27.60)	3-2	
5552.54	B	00	(25.37	27.60)	2-1	
5540.16	C	1	(25.37	27.59)	1-0	
5012.026	C	2	(25.38	27.84)	3-3	$3s^5P-3p^5P$ (64)
*5005.140	C	10	(25.37	27.84)	2-2	
4997.23	C	0	(25.37	27.84)	1-1	
5023.11	C	2	(25.38	27.84)	3-2	
5011.24	B	1	(25.37	27.84)	2-1	
*4994.358	C	6	(25.37	27.84)	2-3	
4991.22	C	2	(25.37	27.84)	1-2	
4145.764	A	3	(25.38	28.36)	3-2	$3s^5P-3p^5S$ (65)
4133.669	A	2	(25.37	28.36)	2-2	
4124.081	A	1	(25.37	28.36)	1-2	
*5179.50	C	5	(27.61	29.99)	4-5	$3p^5D^\circ-3d^5$ (66)
5175.89	C	3	(27.61	29.99)	3-4	
5173.37	C	2	(27.60	29.99)	2-3	
*5172.32	C	1	(27.60 (27.59	29.98) 29.98)	1-2 0-1	
5190.42	C	2	(27.61	29.99)	4-4	
5184.97	C	2	(27.61	29.99)	3-3	
5180.34	B	1	(27.60	29.98)	2-2	
5199.50	B	00	(27.61	29.99)	4-3	
4860.35	C	2	(27.61	30.15)	4-3	$3p^5D^\circ-3d^5$ (67)
4718.43	C	2	(27.61	30.23)	4-4	$3p^5D^\circ-3d^5$ (68)
4709.45	C	1	(27.61	30.23)	3-3	
4702.57	C	0	(27.60	30.22)	2-2	
4721.59	C	0	(27.61	30.23)	4-3	
4712.13	C	0	(27.61	30.22)	3-2	
4704.33	C	0	(27.60	30.22)	2-1	
4698.62	B	0	(27.60	30.22)	1-0	
4706.41	C	0	(27.61	30.23)	3-4	
4700.12	C	0	(27.60	30.23)	2-3	
4695.91	C	1	(27.60	30.22)	1-2	

N II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5351.21	B	4	(27.84	30.15)	3-3	$3p^5P^o-3d^5P$
5327.45	B	0	(27.84	30.16)	2-2	(69)
5313.43	B	0	(27.84	30.16)	1-1	
5340.20	B	1	(27.84	30.16)	3-2	
*5320.96	B	3	(27.84	30.16)	2-1	
5338.66	B	2	(27.84	30.15)	2-3	
*5320.96	B	3	(27.84	30.16)	1-2	
*5179.50	C	5	(27.84	30.23)	3-4	$3p^5P^o-3d^5D$
5171.46	C	1	(27.84	30.23)	2-3	(70)
5168.24	C	1	(27.84	30.22)	1-2	
5183.21	C	2	(27.84	30.23)	3-3	
5174.46	C	1	(27.84	30.22)	2-2	
5170.08	C	1	(27.84	30.22)	1-1	
5186.17	B	0	(27.84	30.22)	3-2	
6888.7	B	2	(28.36	30.15)	2-3	$3p^5S^o-3d^5P$
6870.8	B	1	(28.36	30.16)	2-2	(71)
6857.6	B	1	(28.36	30.16)	2-1	

N III I P 47.24 Anal A List A Apr 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4097.31	A	10	27.32	30.33	½-1½	$3^2S-3^2P^o$
4103.37	A	9	27.32	30.33	½-½	(1)
4640.64	A	(10)	30.33	32.99	1½-2½	$3^2P^o-3^2D$
4634.16	A	(9)	30.33	32.99	½-1½	(2)
4641.90	A	(7)	30.33	32.99	1½-1½	
4514.89	A	7	35.52	38.25	2½-3½	$3s^4P^o-3p^4D$
*4510.92	A	6	(35.50 35.50	38.24 38.23	1½-2½ ½-1½	(3)
4534.57	A	3	35.52	38.24	2½-2½	
4523.60	A	4	35.50	38.23	1½-1½	
4518.18	A	3	35.50	38.23	½-½	
4547.34	A	0	35.52	38.23	2½-1½	
4530.84	A	1	35.50	38.23	1½-½	
3771.08	A	7	35.52	38.79	2½-1½	$3s^4P^o-3p^4S$
3754.62	A	6	35.50	38.79	1½-1½	(4)
3745.83	A	4	35.50	38.79	½-1½	
3367.36	A	7	35.52	39.18	2½-2½	$3s^4P^o-3p^4P$
3361.90	A	2	35.50	39.18	1½-1½	(5)
3358.72	A	1	35.50	39.17	½-½	
3374.06	A	6	35.52	39.18	2½-1½	
3365.79	A	3	35.50	39.17	1½-½	
3354.29	A	4	35.50	39.18	1½-2½	
3353.78	A	4	35.50	39.18	½-1½	
4200.02	A	6	36.70	39.64	1½-2½	$3s^2P^o-3p^2D$
4195.70	A	5	36.68	39.62	½-1½	(6)
4215.69	B	(3)	36.70	39.62	1½-1½	
3355.47	B	(2)	36.70	40.38	1½-½	$3s^2P^o-3p^2S$
3342.77	B	(1)	36.68	40.38	½-½	(7)
3938.52	A	4	38.17	41.30	1½-2½	$3p^2P-3d^2D^o$
3934.41	A	3	38.16	41.30	½-1½	(8)
3942.78	B	(1)	38.17	41.30	1½-1½	
*4867.18	A	5	38.25	40.79	3½-4½	$3p^4D-3d^4F^o$
4861.33	A	4	38.24	40.78	2½-3½	(9)
4858.88	A	3	38.23	40.77	1½-2½	
4858.74	A	2	38.23	40.77	½-1½	
4884.14	A	1	38.25	40.78	3½-3½	
4873.58	A	2	38.24	40.77	2½-2½	
*4867.18	A	5	38.23	40.77	1½-1½	
4896.71	A	0	38.25	40.77	3½-2½	
4881.81	A	0	38.24	40.77	2½-1½	
4348.36	A	5	38.25	41.09	3½-3½	$3p^4D-3d^4D^o$
4335.53	A	4	38.24	41.09	2½-2½	(10)
4328.15	A	3	38.23	41.09	1½-1½	
*4323.93	A	2	38.23	41.08	½-½	
4353.66	A	2	38.25	41.09	3½-2½	
4339.52	A	3	38.24	41.09	2½-1½	
4330.44	A	2	38.23	41.08	1½-½	
4330.14	A	2	38.24	41.09	2½-3½	
*4323.93	A	2	38.23	41.09	1½-2½	
4321.37	A	1	38.23	41.09	½-1½	
3792.87	A	1	38.25	41.51	3½-2½	$3p^4D-3d^4P^o$
3771.45	P		38.24	41.51	2½-1½	(11)
3757.66	P		38.23	41.52	1½-½	
3779.23	P		38.24	41.51	2½-2½	
3762.62	P		38.23	41.51	1½-1½	
3752.65	P		38.23	41.52	½-½	
3770.37	P		38.23	41.51	1½-2½	
3757.60	P		38.23	41.51	½-1½	

N III continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4544.80	B	(0)	38.48	41.20	1½-½	$4^2P^o-5^2S$ (12)
4546.36	A	3	38.79	41.51	1½-2½	$3p^4S-3d^4P^o$
4535.11	A	2	38.79	41.51	1½-1½	(13)
4527.86	A	0	38.79	41.52	1½-½	
6466.86	A	4	39.18	41.09	2½-3½	$3p^4P-3d^4D^o$
6453.95	A	3	39.18	41.09	1½-2½	(14)
6445.05	A	2	39.17	41.09	½-1½	
6478.69	A	2	39.18	41.09	2½-2½	
6463.03	A	2	39.18	41.09	1½-1½	
6450.78	A	2	39.17	41.08	½-½	
6487.55	A	0	39.18	41.09	2½-1½	
6468.77	A	00	39.18	41.08	1½-½	
5314.45	A	2	39.18	41.51	2½-2½	$3p^4P-3d^4P^o$
5282.52	A	00	39.18	41.51	1½-1½	(15)
5260.91	A	1n	39.17	41.52	½-½	
5298.93	A	1	39.18	41.51	2½-1½	
5272.60	A	1	39.18	41.52	1½-½	
5297.86	A	1	39.18	41.51	1½-2½	
5270.59	A	1	39.17	41.51	½-1½	
4003.64	A	(4d)	39.23	42.31	2½-3½	$4^2D-5^2F^o$
3998.69	A	(3d)	39.23	42.31	1½-2½	(16)
4379.09	A	(10d)	39.54	42.36	—	$4^2F^o-5^2G$ (17)

Unclassified Lines of N III

I A	Ref	Int
4294.76	A	0n
4290.80	A	3n
4290.55	A	1n
4288.72	A	1n
4288.21	A	0n
4284.51	A	1n
3172.97	A	2
3171.14	A	1

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See NSRDS-NBS 3, Section 4, 1971

N IV I P 77.09 Anal B List A Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3478.69	A	7	(46.57	50.11)	1-2	$3^3S-3^3P^o$
3482.98	A	5	(46.57	50.11)	1-1	(1)
3484.90	A	3	(46.57	50.11)	1-0	
6383	P		48.00	49.94	0-1	$3^1S-3^1P^o$ (2)
4057.80	B	2	49.98	52.98	1-2	$3^1P^o-3^1D$ (3)
7123.10	A	5	(50.11	51.85)	2-3	$3^3P^o-3^3D$
7109.46	A	3	(50.11	51.85)	1-2	(4)
7103.28	A	1	(50.11	51.85)	0-1	
7127.21	A	1	(50.11	51.85)	2-2	
7111.28	A	1	(50.11	51.85)	1-1	
7129	P		(50.11	51.85)	2-1	
5245	P		(57.46	59.81)	2-3	$3s^3P^o-3p^3D$
5236	P		(57.44	59.80)	1-2	(5)
5281	P		(57.46	59.80)	2-2	
4528	P		(57.46	60.19)	2-1	$3s^3P^o-3p^3S$
4495	P		(57.44	60.19)	1-1	(6)
4479	P		(57.43	60.19)	0-1	
3463.36	B	1	(57.46	61.03)	2-2	$3s^3P^o-3p^3P$
3454	P		(57.44	61.01)	1-1	(7)
3474.56	B	0	(57.46	61.01)	2-1	
3461.34	B	0	(57.44	61.01)	1-0	
3443	P		(57.44	61.03)	1-2	
3445	P		(57.43	61.01)	0-1	
3747.66	B	0	58.44	61.69	1-2	$3s^1P^o-3p^1D$ (8)
5734	P		59.36	61.52	1-2	$3p^1P-3d^1D^o$ (9)
3824	P		59.36	62.59	1-1	$3p^1P-4^1P^o$ (10)
4752	P		(59.81	62.41)	3-3	$3p^3D-3d^3D^o$
4733	P		(59.80	62.41)	2-2	(11)
4762	P		(59.81	62.41)	3-2	
4740	P		(59.80	62.40)	2-1	
4723	P		(59.80	62.41)	2-3	
3714	P		(59.81	63.14)	3-2	$3p^3D-3d^3P^o$
3689	P		(59.80	63.14)	2-1	(12)
3696	P		(59.80	63.14)	2-2	

N IV continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Mul
5561	P		(60.19	62.41)	1-2	3p
5571	P		(60.19	62.40)	1-1	
4183	P		(60.19	63.14)	1-2	3p
4174	P		(60.19	63.14)	1-1	
5846	P		(61.03	63.14)	2-2	3p
5794	P		(61.01	63.14)	1-1	
5828	P		(61.03	63.14)	2-1	
5812	P		(61.01	63.14)	1-2	
6125	P		61.52	63.53	2-2	3d
5073	P		61.69	64.12	2-1	3p

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See NSRDS-NBS 3, Section 4,

N V I P 97.47 Anal A List A Dec 1944

I A	Ref	Int	E P Low	E P High	J	
4603.2	P		56.31	58.99	½-1½	3^2S
4619.4	P		56.31	58.98	½-½	
3161	P		83.74	87.64	-½	5^2P
4335	P		87.64	90.49	½-	6^2S
5273	P		87.95	90.30	-½	6^2P
4751	P		87.95	90.55	—	6^2P
5067	P		88.05	90.49	—	6^2D
4933	P		88.05	90.56	—	6^2D
4952	P		88.06	90.55	—	6^2F
4943	P		88.06	90.56	—	6^2F
4945	P		88.06	90.56	—	6^2G
6719	P		90.30	92.13	½-	7^2S
7330	P		90.49	92.17	—	7^2P

O I I P 13.56 Anal A List B Apr 1944

I A	Ref	Int	E P Low	E P High	J	
7771.96	A	27	9.11	10.69	2-3	3^5S
7774.18	A	26	9.11	10.69	2-2	
7775.40	A	25	9.11	10.69	2-1	
6726.25	A	5	9.11	10.94	2-2	3^5S
6726.50	A	2	9.11	10.94	2-1	
3947.301	E	10	9.11	12.23	2-3	3^5S
3947.489	E	7	9.11	12.23	2-2	
3947.594	E	4	9.11	12.23	2-1	
*8446.35	A	25	9.48	10.94	1-2	3^3S
8446.76	A	23	9.48	10.94	1-1	
*8446.35	A	25	9.48	10.94	1-0	
4368.30	D	(10)	9.48	12.31	1-	3^3S
3692.44	D	(7)	9.48	12.83	1-	3^3S
11302.22	B	15	10.69	11.79	3-2	3^5P-
11297.54	B	10	10.69	11.79	2-2	
11294.97	B	5	10.69	11.79	1-2	
9265.99	A	16	10.69	12.03	3-	3^5P-
9262.73	A	15	10.69	12.03	2-	
9260.88	A	14	10.69	12.03	1-	
6456.01	A	17	10.69	12.61	3-2	3^5P-
6454.48	A	16	10.69	12.61	2-2	
6453.64	A	15	10.69	12.61	1-2	
6158.19	A	18	10.69	12.70	3-	3^5P-
6156.78	A	17	10.69	12.70	2-	(1
6155.99	A	16	10.69	12.70	1-	
5436.83	D	(8)	10.69	12.96	3-2	3^5P-
5435.76	D	(6)	10.69	12.96	2-2	(1
5435.16	D	(5)	10.69	12.96	1-2	

atory		E P		J	Multiplet
Ref	Int	Low	High		(No)
nued					
D	(10)	10.69	13.01	3–	$3^{5}P-5^{5}D^{\circ}$
D	(7)	10.69	13.01	2–	(12)
D	(6)	10.69	13.01	1–	
D	(5)	10.69	13.15	3–2	$3^{5}P-7^{5}S^{\circ}$
D	(4)	10.69	13.15	2–2	(13)
D	(3)	10.69	13.15	1–2	
D	(6)	10.69	13.18	3–	$3^{5}P-6^{5}D^{\circ}$
D	(5)	10.69	13.18	2–	(14)
D	(4)	10.69	13.18	1–	
D	(4)	10.69	13.26	3–2	$3^{5}P-8^{5}S^{\circ}$
D	(3)	10.69	13.26	2–2	(15)
D	(2)	10.69	13.26	1–2	
D	(5)	10.69	13.28	3–	$3^{5}P-7^{5}D^{\circ}$
D	(4)	10.69	13.28	2–	(16)
D	(3)	10.69	13.28	1–	
D	(3)	10.69	13,34	3–2	$3^{5}P-9^{5}S^{\circ}$
D	(3d)	(10.69	13.34	2–2	(17)
		10.69	13.34	1–2	
D	(4)	10.69	13.35	3–	$3^{5}P-8^{5}D^{\circ}$
D	(3)	10.69	13.35	2–	(18)
D	(2)	10.69	13.35	1–	
A	9	10.94	12.49	2–3	$3^{3}P-3s'\ ^{3}D^{\circ}$
A	7	10.94	12.49	1–2	(19)
A	5	10.94	12.49	0–1	
A	4	10.94	12.49	2–2	
A	4	10.94	12.49	1–1	
A	17	10.94	12.64	2–1	$3^{3}P-5^{3}S^{\circ}$
A	15	10.94	12.64	1–1	(20)
A	17	10.94	12.64	0–1	
A	17	10.94	12.70	2–	$3^{3}P-4^{3}D^{\circ}$
A	15	10.94	12.70	1–	(21)
A	17	10.94	12.70	0–	
A	10	10.94	12.98	2–1	$3^{3}P-6^{3}S^{\circ}$
A	8	10.94	12.98	1–1	(22)
A	10	10.94	12.98	0–1	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
O I continued						
*5958.63	A	9	10.94	13.01	2–	$3^{3}P-5^{3}D^{\circ}$
5958.46	A	7	10.94	13.01	1–	(23)
*5958.63	A	9	10.94	13.01	0–	
5554.94	D	(6d)	10.94	13.16	2–1	$3^{3}P-7^{3}S^{\circ}$ (24)
5512.71	D	(5d)	10.94	13.18	2–	$3^{3}P-6^{3}D^{\circ}$ (25)
5299.00	D	(5)	10.94	13.27	2–1	$3^{3}P-8^{3}S^{\circ}$ (26)
5275.08	D	(4)	10.94	13.28	2–	$3^{3}P-7^{3}D^{\circ}$ (27)
*5146.06	D	(5)	10.94	13.34	2–1	$3^{3}P-9^{3}S^{\circ}$ (28)
*5130.53	D	(3)	10.94	13.35	2–	$3^{3}P-8^{3}D^{\circ}$ (29)
3954.687	C	10	10.94	14.06	2–2	$3^{3}P-3s''\ ^{3}P^{\circ}$
3952.982	C	1	10.94	14.06	1–1	(30)
*3953.056	C	2	10.94	14.06	2–1	
3951.987	C	3	10.94	14.06	1–0	
3954.596	C	5	10.94	14.06	1–2	
*3953.056	C	2	10.94	14.06	0–1	
*6324.84	A	3	12.03	13.99	(–3 –2	$3^{3}D^{\circ}-3p'\ ^{3}D$ (31)
6323.39	A	1	12.03	13.99	–1	
7025.52	A	3	12.31	14.06	–2	$4^{3}P-3s''\ ^{3}P^{\circ}$ (32)
4233.32	D	7	12.31	15.22	–2	$4^{3}P-3d'\ ^{3}P^{\circ}$
4222.78	D	5	12.31	15.23	–1	(33)
4217.09	D	4	12.31	15.23	–0	
*8221.84	A	15	12.49	13.99	3–3	$3s'\ ^{3}D^{\circ}-3p'\ ^{3}D$
*8230.01	A	10	12.49	13.99	2–2	(34)
8232.99	A	13	12.49	13.99	1–1	
*8221.84	A	15	12.49	13.99	3–2	
8227.64	A	11	12.49	13.99	2–1	
*8230.01	A	10	12.49	13.99	2–3	
8235.31	A	5	12.49	13.99	1–2	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
O I continued						
7947.56	A	12	12.49	14.04	3–4	$3s'\ ^{3}D^{\circ}-3p'\ ^{3}$
7950.83	A	10	12.49	14.04	2–3	(35)
7952.18	A	9	12.49	14.04	1–2	
7943.15	A	6	12.49	14.04	3–3	
7947.204	C	3	12.49	14.04	2–2	
7939.49	A	1	12.49	14.04	3–2	
3823.469	C	10	12.49	15.71	3–3	$3s'\ ^{3}D^{\circ}-3p''\ ^{3}$
3824.425	C	3	12.49	15.71	2–2	(36)
3825.090	C	3	12.49	15.71	1–1	
3822.63	P		12.49	15.71	3–2	
3825.249	C	4	12.49	15.71	2–3	
3825.530	C	1	12.49	15.71	1–2	
8820.45	A	15	12.67	14.07	2–3	$3s'\ ^{1}D^{\circ}-3p'$ (37)
7156.80	A	12	12.67	14.40	2–2	$3s'\ ^{1}D^{\circ}-3p'$ (38)
*5146.06	D	(5)	12.82	15.22	–2	$5^{3}P-3d'\ ^{3}$
*5130.53	D	(3)	12.82	15.23	–1	(39)
5750.424	C	5	13.07	15.22	–2	$6^{3}P-3d'\ ^{3}$
5731.103	C	3	13.07	15.23	–1	(40)
5720.613	C	1	13.07	15.23	–0	
9156.02	A	4	13.99	15.33	3–4	$3p'\ ^{3}D-3d'\ ^{3}$ (41)
*7706.77	A	5	13.99	15.59	3–2	$3p'\ ^{3}D-sp^{5}$
7663.45	A	3	13.99	15.60	2–1	(42)
7639.99	A	1	13.99	15.60	1–0	
*7706.77	A	5	13.99	15.59	2–2	
7665.48	A	1	13.99	15.60	1–1	
6106.25	A	4	13.99	16.01	3–4	$3p'\ ^{3}D-4d'$ (43)
*5995.28	A	3	13.99	16.04	3–2	$3p'\ ^{3}D-4d'$
5991.93	A	2	13.99	16.05	2–1	(44)
5991.34	A	1	13.99	16.05	1–0	
*5995.28	A	3	13.99	16.04	2–2	
5993.18	A	1	13.99	16.05	1–1	

O I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
9522.01	A	4	14.04	15.33	4-4	3p' ^{3}F-3d' ^{3}F° (45)
9499.39	A	0	14.04	15.34	4-4	3p' ^{3}F-3d' ^{1}G° (46)
9505.67	A	5	14.04	15.34	3-4	
*9498.04	A	8	14.04	15.34	4-5	3p' ^{3}F-3d' ^{3}G°† (47)
9487.49	A	6	14.04	15.34	3-4	
*9498.04	A	8	14.04	15.34	2-3	
6266.89	A	3	14.04	16.01	4-4	3p' ^{3}F-4d' ^{3}F° (48)
6264.55	A	3	14.04	16.01	3-4	3p' ^{3}F-4d' ^{1}G° (49)
*6261.55	A	6	14.04	16.01	4-5	3p' ^{3}F-4d' ^{3}G°† (50)
6256.84	A	4	14.04	16.01	3-4	
*6261.55	A	6	14.04	16.01	2-3	
*5410.76	F	(4)	14.04	16.32	4-4	3p' ^{3}F-5d' ^{3}F° (51)
*5410.76	F	(4)	14.04	16.32	3-4	3p' ^{3}F-5d' ^{1}G° (52)
5408.59	D	(4)	14.04	16.32	4-5	3p' ^{3}F-5d' ^{3}G° (53)
5404.87	F	(3)	14.04	16.32	3-4	
8426.326	C	4	14.06	15.53	2-3	3s'' ^{3}P°-4p' ^{3}D (54)
8428.342	C	2	14.06	15.53	1-2	
8429.128	C	1	14.06	15.53	0-1	
8420.968	C	1	14.06	15.53	2-2	
8424.780	C	1	14.06	15.53	1-1	
7476.45	A	12	14.06	15.71	2-3	3s'' ^{3}P°-3p'' ^{3}D (55)
7479.06	A	8	14.06	15.71	1-2	
7480.66	A	8	14.06	15.71	0-1	
7473.23	A	5	14.06	15.71	2-2	
7477.21	A	7	14.06	15.71	1-1	
7471.36	A	2	14.06	15.71	2-1	
9760.65	A	5	14.07	15.34	3-4	3p' ^{1}F-3d' ^{1}G° (56)
9741.49	A	4	14.07	15.34	3-4	3p' ^{1}F-3d' ^{3}G° (57)
9677.41	A	1	14.07	15.35	3-3	3p' ^{1}F-3d' ^{1}F° (58)
6374.31	A	4	14.07	16.01	3-4	3p' ^{1}F-4d' ^{1}G° (59)
6366.33	A	3	14.07	16.01	3-4	3p' ^{1}F-4d' ^{3}G° (60)
6351.17	A	0	14.07	16.02	3-3	3p' ^{1}F-4d' ^{1}F° (61)
5492.8	F	(3)	14.07	16.32	3-4	3p' ^{1}F-5d' ^{1}G° (62)
5486.6	F	(3)	14.07	16.32	3-4	3p' ^{1}F-5d' ^{3}G° (63)
7886.31	A	4	14.31	15.38	1-2	3s'' ^{1}P°-3p'' ^{1}D (64)
6653.78	A	5	14.31	16.16	1-0	3s'' ^{1}P°-3p'' ^{1}S (65)

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Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4649.139	A	10	22.90	25.55	2½-3½	3s^{4}P-3p^{4}D° (1)
4641.811	A	9	22.88	25.54	1½-2½	
4638.854	A	6	22.87	25.53	½-1½	
4676.234	A	8	22.90	25.54	2½-2½	
4661.635	A	9	22.88	25.53	1½-1½	
4650.841	A	6	22.87	25.52	½- ½	
4696.36	B	2	22.90	25.53	2½-1½	
4673.75	B	4	22.88	25.52	1½- ½	
4349.426	A	8	22.90	25.74	2½-2½	3s^{4}P-3p^{4}P° (2)
4336.865	A	6	22.88	25.73	1½-1½	
4325.77	B	3	22.87	25.72	½- ½	
4366.896	A	7	22.90	25.73	2½-1½	
4345.562	A	7	22.88	25.72	1½- ½	
4319.631	A	8	22.88	25.74	1½-2½	
4317.139	A	6	22.87	25.73	½-1½	
3749.49	B	9	22.90	26.19	2½-1½	3s^{4}P-3p^{4}S° (3)
3727.33	B	8	22.88	26.19	1½-1½	
3712.75	B	7	22.87	26.19	½-1½	
6721.35	B	5	23.34	25.18	1½- ½	3s^{2}P-3p^{2}S° (4)
6640.90	B	4	23.32	25.18	½- ½	
4414.909	A	10	23.34	26.14	1½-2½	3s^{2}P-3p^{2}D° (5)
4416.975	A	8	23.32	26.11	½-1½	
4452.377	A	6	23.34	26.11	1½-1½	
3973.263	A	10	23.34	26.45	1½-1½	3s^{2}P-3p^{2}P° (6)
3954.372	A	7	23.32	26.44	½- ½	
3982.719	A	5	23.34	26.44	1½- ½	
3945.048	A	5	23.32	26.45	½-1½	
3496.27	C	1	25.18	28.71	½-1½	3p^{2}S°-3d^{4}P (7)
3488.18	C	0	25.18	28.71	½- ½	
3474.94	B	1	25.18	28.73	½- ½	3p^{2}S°-3d^{4}D (8)
3390.25	B	8	25.18	28.82	½-1½	3p^{2}S°-3d^{2}P (9)
3377.20	B	7	25.18	28.83	½- ½	
4075.868	A	10	25.55	28.58	3½-4½	3p^{4}D°-3d^{4}F (10)
4072.164	A	8	25.54	28.57	2½-3½	
4069.897	A	6	25.53	28.56	1½-2½	
4069.636	A	4	25.52	28.55	½-1½	
4092.940	A	5	25.55	28.57	3½-3½	
4085.124	A	3	25.54	28.56	2½-2½	
4078.862	A	4	25.53	28.55	1½-1½	
4106.03	B	0	25.55	28.56	3½-2½	
4094.18	B	0	25.54	28.55	2½-1½	

O II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3926.58	P		25.55	28.70	3½-2½	3p^{4}D°-3d^{4}P (11)
3896.30	B	1	25.54	28.71	2½-1½	
3872.45	B	1	25.53	28.71	1½- ½	
3907.45	B	4	25.54	28.70	2½-2½	
3882.45	B	1	25.53	28.71	1½-1½	
3864.13	C	1	25.52	28.71	½- ½	
3893.53	B	2	25.53	28.70	1½-2½	
3874.10	B	2	25.52	28.71	½-1½	
3882.197	A	7	25.55	28.73	3½-3½	3p^{4}D°-3d^{4}D (12)
3864.45	B	5	25.54	28.73	2½-2½	
3851.04	B	3	25.53	28.73	1½-1½	
3847.89	B	3	25.52	28.73	½- ½	
3883.15	B	3	25.55	28.73	3½-2½	
3864.68	B	1	25.54	28.73	2½-1½	
3856.16	B	5	25.53	28.73	1½- ½	
3863.50	B	2	25.54	28.73	2½-3½	
3850.81	B	2	25.53	28.73	1½-2½	
3842.82	B	3	25.52	28.73	½-1½	
3851.47	C	0	25.55	28.76	3½-3½	3p^{4}D°-3d^{2}F (13)
3857.18	B	4	25.54	28.74	2½-2½	
3875.82	B	4	25.55	28.74	3½-2½	
3833.10	B	3	25.54	28.76	2½-3½	
3843.58	B	3	25.53	28.74	1½-2½	
3134.82	B	10 1	25.55	29.49	3½-2½	3p^{4}D°-4s^{4}P (14)
3138.44	B	8 1	25.54	29.47	2½-1½	
3139.77	B	4 1	25.53	29.46	1½- ½	
3122.62	B	6 1	25.54	29.49	2½-2½	
3129.44	B	7 1	25.53	29.47	1½-1½	
3134.32	B	3 1	25.52	29.46	½- ½	
3113.71	B	1 1	25.53	29.49	1½-2½	
3124.02	B	2 1	25.52	29.47	½-1½	
4590.971	A	9	25.55	28.24	2½-3½	3s' ^{2}D-3p' ^{2}F° (15)
4596.174	A	8	25.55	28.24	1½-2½	
4351.269	A	6	25.55	28.39	2½-2½	3s' ^{2}D-3p' ^{2}D° (16)
4347.425	A	5	25.55	28.39	1½-1½	
3911.960	A	10	25.55	28.71	2½-1½	3s' ^{2}D-3p' ^{2}P° (17)
3919.287	A	6	25.55	28.70	1½- ½	
3912.088	B	2	25.55	28.71	1½-1½	
*4357.25	B	0	25.74	28.57	2½-3½	3p^{4}P°-3d^{4}F (18)
4169.230	A	4	25.74	28.70	2½-2½	3p^{4}P°-3d^{4}P (19)
4140.74	B	0	25.73	28.71	1½-1½	
4121.48	B	4	25.72	28.71	½- ½	
4156.54	B	3	25.74	28.71	2½-1½	
4129.34	B	2	25.73	28.71	1½- ½	
4153.302	A	7	25.73	28.70	1½-2½	
4132.806	A	6	25.72	28.71	½-1½	
4119.221	A	8	25.74	28.73	2½-3½	3p^{4}P°-3d^{4}D (20)
4104.743	A	5	25.73	28.73	1½-2½	
*4097.260	A	4n	25.72	28.73	½-1½	
4120.279	A	3	25.74	28.73	2½-2½	
4105.000	A	7	25.73	28.73	1½-1½	
4103.017	A	5	25.72	28.73	½- ½	
4120.554	A	2	25.74	28.73	2½-1½	
4110.795	A	3	25.73	28.73	1½- ½	
4084.66	B	1	25.74	28.76	2½-3½	3p^{4}P°-3d^{2}F (21)
4096.543	A	3	25.73	28.74	1½-2½	
4112.029	A	4	25.74	28.74	2½-2½	
3967.441	A	1	25.72	28.83	½- ½	3p^{4}P°-3d^{2}P (22)
3985.46	C	0	25.72	28.82	½-1½	
3287.59	B	9 1	25.74	29.49	2½-2½	3p^{4}P°-4s^{4}P (23)
3295.13	B	4 1	25.73	29.47	1½-1½	
3301.56	B	3 1	25.72	29.46	½- ½	
3305.15	B	6 1	25.74	29.47	2½-1½	
3306.60	B	6 1	25.73	29.46	1½- ½	
3277.69	B	7 1	25.73	29.49	1½-2½	
3290.13	B	5 1	25.72	29.47	½-1½	
4751.34	B	4	26.14	28.73	2½-3½	3p^{2}D°-3d^{4}D (24)
4710.04	B	5	26.11	28.73	1½-2½	
4752.70	B	2	26.14	28.73	2½-2½	
4705.355	A	8	26.14	28.76	2½-3½	3p^{2}D°-3d^{2}F (25)
*4699.21	B	7	26.11	28.74	1½-2½	
4741.71	B	3	26.14	28.74	2½-2½	
4395.95	B	7	26.14	28.94	2½-2½	3p^{2}D°-3d^{2}D (26)
4369.28	B	4	26.11	28.94	1½-1½	
4406.02	B	1	26.14	28.94	2½-1½	
4359.38	B	1	26.11	28.94	1½-2½	
3470.81	B	8	26.14	29.69	2½-1½	3p^{2}D°-4s^{2}P (27)
3470.42	B	5	26.11	29.67	1½- ½	
3447.98	B	5	26.11	29.69	1½-1½	
4924.60	B	6	26.19	28.70	1½-2½	3p^{4}S°-3d^{4}P (38)
4906.88	B	5	26.19	28.71	1½-1½	
4890.93	B	4	26.19	28.71	1½- ½	
4856.49	B	2	26.19	28.73	1½-2½	3p^{4}S°-3d^{4}D (29)
4856.76	C	2	26.19	28.73	1½-1½	
4864.95	B	3	26.19	28.73	1½- ½	
4845.01	B	1	26.19	28.74	1½-2½	3p^{4}S°-3d^{2}F (30)
3739.92	B	6 1	26.19	29.49	1½-2½	3p^{4}S°-4s^{4}P (31)
3762.63	B	5 1	26.19	29.47	1½-1½	
3777.60	B	4 1	26.19	29.46	1½- ½	
5206.73	B	5	26.45	28.82	1½-1½	3p^{2}P°-3d^{2}P (32)
5160.02	B	4	26.44	28.83	½- ½	
5176.00	B	2	26.45	28.83	1½- ½	
5190.56	B	3	26.44	28.82	½-1½	

O II continued

Laboratory I A	Ref	Int	E P Low	High	J	Mult
4943.06	B	7	26.45	28.94	1½-2½	3p^2
4941.12	B	5	26.44	28.94	½-1½	(
4955.78	B	3	26.45	28.94	1½-1½	
3803.14	B	6 1	26.45	29.69	1½-1½	3p^2
3821.68	B	4 1	26.44	29.67	½- ½	(
3830.45	B	4 1	26.45	29.67	1½- ½	
3794.48	B	3 1	26.44	29.69	½-1½	
4448.21	B	6	28.24	31.01	3½-3½	3p'
4443.05	B	5	28.24	31.01	2½-2½	(
4189.788	A	10	28.24	31.18	3½-4½	3p'
4185.456	A	8	28.24	31.18	2½-3½	(
4113.82	B	1	28.24	31.24	3½-2½	3p'
4110.20	B	1	28.24	31.24	2½-1½	(
3741.69	C	0	28.24	31.54	3½-3½	3p' (
3273.52	B	7 1	28.24	32.01	3½-2½	3p'
3270.98	B	7 1	28.24	32.01	2½-1½	(
*4699.21	B	7	28.39	31.01	2½-3½	3p'
4703.18	B	3	28.39	31.01	1½-2½	(4
4698.48	C	1	28.39	31.01	2½-2½	
4327.48	B	3	28.39	31.24	2½-2½	3p'
4331.89	B	2	28.39	31.24	1½-1½	(4
4327.89	B	0	28.39	31.24	2½-1½	
4331.47	B	0	28.39	31.24	1½-2½	
4192.50	B	2	28.39	31.33	2½-1½	3p'
4196.72	B	1	28.39	31.33	1½- ½	(4
4196.26	C	00	28.39	31.33	1½-1½	
3963.13	B	0	28.39	31.60	2½-1½?	3p' (4
3407.38	B	7 1	28.39	32.01	2½-	3p'
3409.84	B	6 1	28.39	32.01	1½-	(4
6895.29	C	5	28.58	30.37	4½-3½	3d^{4}F
6906.54	C	4	28.57	30.36	3½-2½	(4
6910.75	C	3	28.56	30.35	2½-1½	
6908.11	C	2	28.55	30.34	1½- ½	
6846.97	C	1	28.57	30.37	3½-3½	
6869.74	C	1	28.56	30.36	2½-2½	
6885.07	C	1	28.55	30.35	1½-1½	
4098.27	B	0n	28.55	31.56	1½-2½	3d^{4}F (4
4107.07	B	1n	28.56	31.57	2½-3½	3d^{4}F (4
4089.295	A	4n	28.58	31.60	4½-5½	3d^{4}F
*4097.260	A	4n	28.57	31.58	3½-4½	(4
4095.63	B	0n	28.56	31.57	2½-3½	
4087.16	B	2n	28.55	31.57	1½-2½	
4108.75	B	0n	28.57	31.57	3½-3½	
4096.18	C	0d	28.56	31.57	2½-2½	
4071.20	B	0	28.57	31.60	3½-4½	3d^{4}F
4083.907	A	2n	28.56	31.58	2½-3½	(4
4062.90	B	1n	28.58	31.62	4½-4½	3d^{4}F
4048.22	B	1n	28.57	31.62	3½-3½	(5
4041.31	C	0d	28.56	31.61	2½-2½	
4033.18	C	0d	28.55	31.61	1½-1½	
*4054.10	C	0d	28.57	31.61	3½-2½	
4046.15	C	00d	28.57	31.62	3½-4½	
4044.96	C	0d	28.57	31.62	3½-3½	3d^{4}F
4035.09	C	0d	28.56	31.62	2½-2½	(5
4026.40	B	0n	28.55	31.62	1½-2½	
3371.85	B	2n	28.58	32.24	4½-3½	3d^{4}F
3375.77	B	0	28.57	32.23	3½-2½	(5
3360.15	B	00n	28.57	32.24	3½-3½	
3367.00	B	00n	28.56	32.23	2½-2½	
3370.23	B	00n	28.55	32.22	1½-1½	
4317.65	C	0	28.71	31.56	1½-2½	3d^{4}P
4307.31	B	1n	28.71	31.58	½-1½	(5
4303.82	B	5n	28.70	31.57	2½-3½	3d^{4}P
4294.82	B	3n	28.71	31.58	1½-2½	(5
4281.40	B	0n	28.70	31.58	2½-2½	
4282.82	C	2d	28.71	31.59	1½-1½	
4288.83	B	1n	28.71	31.59	½- ½	
*4276.71	B	1n	28.71	31.59	1½- ½	
4291.25	B	1n	28.70	31.57	2½-3½	3d^{4}P
4305.53	B	0	28.71	31.57	1½-2½	(5
3013.37	B	3	28.70	32.79	2½-3½	3d^{4}P (5
4871.58	B	5	28.71	31.24	1½-2½	3p' ^{2}
4861.03	B	3	28.70	31.24	½-1½	(5
4701.23	B	2	28.71	31.33	1½-1½	3p' ^{2}
4691.47	B	1	28.70	31.33	½- ½	(5
4701.76	B	0	28.71	31.33.	1½- ½	
4690.97	B	0	28.70	31.33	½-1½	
*4469.32	B	3	28.71	31.47	1½-2½	3p' ^{2} (5
4414.37	C	1	28.71	31.50	1½-1½	3p' ^{2} (6
4328.62	B	2	28.71	31.56	1½- ½	3p' ^{2}
4319.93	B	1	28.70	31.56	½- ½	(6
3735.94	B	3	28.71	32.01	1½-2½	3p' ^{2}
3729.34	B	2	28.70	32.01	½-1½	(6

Int	E P Low	E P High	J	Multiplet (No)
0n	28.73	31.58	2½-1½	$3d\,^4D-4f\,^2D^\circ$ (63)
	28.73	31.58	1½-1½	
0	28.73	31.56	1½-2½	
0	28.73	31.57	3½-3½	$3d\,^4D-4f\,^4D^\circ$ (64)
0n	28.73	31.58	2½-2½	
1n	28.73	31.59	½-½	
0d	28.73	31.59	1½-½	
0	28.73	31.57	2½-3½	
0d	28.73	31.59	½-1½	
1n	28.73	31.58	3½-4½	$3d\,^4D-4f\,^4G^\circ$ (65)
0n	28.73	31.57	2½-3½	
0d	28.73	31.58	2½-3½	$3d\,^4D-4f\,^2G^\circ$ (66)
4n	28.73	31.62	3½-4½	$3d\,^4D-4f\,^4F^\circ$ (67)
1n	28.73	31.62	2½-3½	
1n	28.73	31.61	1½-2½	
1n	28.73	31.61	½-1½	
1n	28.73	31.62	3½-3½	
0d	28.73	31.61	2½-2½	
0n	28.73	31.61	1½-1½	
00d	28.73	31.62	3½-3½	$3d\,^4D-4f\,^2F^\circ$ (68)
0d	28.73	31.62	2½-2½	
1n	28.73	31.62	3½-2½	
0n	28.73	31.62	2½-3½	
0d	28.73	31.62	1½-2½	
0n	28.73	32.24	3½-3½	$3d\,^4D-5p\,^4D^\circ$ (69)
00n	28.73	32.23	3½-2½	
0n	28.73	32.26	3½-2½	$3d\,^4D-5p\,^4P^\circ$ (70)
0n	28.73	32.25	2½-1½	
00n	28.73	32.26	2½-2½	
00n	28.73	32.25	½-1½	
0n	28.73	32.31	2½-1½	$3d\,^4D-5p\,^2D^\circ$ (71)
1	28.73	32.79	3½-3½?	$3d\,^4D-5f\,^4D^\circ$ (72)
1	28.73	32.79	2½-3½	
1	28.73	32.81	3½-4½	$3d\,^4D-5f\,^4G^\circ$ (73)
3	28.73	32.84	3½-4½	$3d\,^4D-5f\,^4F^\circ$ (74)
3dd	28.73	32.84	2½-3½	
1	28.73	32.84	3½-3½	
0d	28.74	31.58	2½-2½?	$3d\,^2F-4f\,^4D^\circ$ (75)
0d	28.74	31.59	2½-1½	
2n	28.76	31.58	3½-4½	$3d\,^2F-4f\,^4G^\circ$ (76)
1n	28.74	31.57	2½-3½	
4n	28.76	31.60	3½-4½	$3d\,^2F-4f\,^2G^\circ$ (77)
2n	28.74	31.58	2½-3½	
1n	28.76	31.62	3½-4½	$3d\,^2F-4f\,^4F^\circ$ (78)
3n	28.74	31.62	2½-3½	
00d	28.76	31.62	3½-3½	
0n	28.74	31.61	2½-2½	
0n	28.76	31.62	3½-3½	$3d\,^2F-4f\,^2F^\circ$ (79)
0d	28.76	31.62	3½-2½	
00n	28.74	32.26	2½-2½	$3d\,^2F-5p\,^4P^\circ$ (80)
1n	28.76	32.33	3½-2½	$3d\,^2F-5p\,^2D^\circ$ (81)
0n	28.74	32.31	2½-1½	
0dd	28.76	32.81	3½-4½	$3d\,^2F-5f\,^4G^\circ$ (82)
2	28.76	32.83	3½-4½	$3d\,^2F-5f\,^2G^\circ$ (83)
1	28.74	32.81	2½-3½	
1	28.76	32.84	3½-4½	$3d\,^2F-5f\,^4F^\circ$ (84)
3	28.82	30.68	1½-1½	$3d\,^2P-4p\,^2P^\circ$ (85)
0	28.83	30.68	½-1½	
1	28.82	30.67	1½-½	
3n	28.82	31.56	1½-2½	$3d\,^2P-4f\,^2D^\circ$ (86)
1n	28.83	31.58	½-1½	
2n	28.82	31.58	1½-2½	$3d\,^2P-4f\,^4D^\circ$ (87)
0d	28.83	31.59	½-1½	
2n	28.82	31.57	1½-2½	$3d\,^2P-4f\,^4G^\circ$ (88)
0	28.94	31.56	2½-2½	$3d\,^2D-4f\,^2D^\circ$ (89)
0	28.94	31.58	1½-1½	
0	28.94	31.58	1½-2½	$3d\,^2D-4f\,^4D^\circ$ (90)
0	28.94	31.58	2½-3½	$3d\,^2D-4f\,^2G^\circ$ (91)
1d	28.94	31.62	2½-3½	$3d\,^2D-4f\,^4F^\circ$ (92)
3n	28.94	31.61	1½-2½	
0d	28.94	31.61	2½-2½	
4n	28.94	31.62	2½-3½	$3d\,^2D-4f\,^2F^\circ$ (93)
2n	28.94	31.62	1½-2½	
0d	28.94	31.62	2½-2½	
4	(30.29	33.06)	2½-3½	$sp^3 3s\,^6S^\circ-sp^3 3p\,^6P$ (94)
4	(30.29	33.06)	2½-2½	
3	(30.29	33.06)	2½-1½	
0n	30.68	33.94	1½-2½?	$4p\,^2P^\circ-4d'\,^2D$ (95)
00	30.68	34.34	1½-2½	$4p\,^2P^\circ-5s'\,^2D$ (96)

O II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4060.58	B	3n	31.01	34.05	3½-4½	$3d'\,^2F-4f'\,^2G^\circ$ (97)
4060.98	B	2n	31.01	34.05	2½-3½	
*4054.10	C	0d	31.01	34.06	3½-3½	$3d'\,^2F-4f'\,^2F^\circ$ (98)
4054.55	C	00d	31.01	34.06	2½-2½	
4024.04	B	1n	31.01	34.08	—	$3d'\,^2F-4f'\,^2D^\circ$ (99)
4302.81	C	0d	31.18	34.05	4½-4½	$3d'\,^2G-4f'\,^2G^\circ$ (100)
4303.06	C	0d	31.18	34.05	3½-3½	
4253.74	C	4d	31.18	34.09	4½-5½	$3d'\,^2G-4f'\,^2H^\circ$ (101)
4253.98	C	4d	31.18	34.09	3½-4½	
4378.41	C	0	31.24	34.06	2½-3½	$3d'\,^2D-4f'\,^2F^\circ$ (102)
4378.01	C	0	31.24	34.06	1½-2½	
*4343.36	C	0d	31.24	34.08	2½-2½	$3d'\,^2D-4f'\,^2D^\circ$ (103)
4342.83	C	1d	31.24	34.08	1½-1½?	
4488.09	B	2n	31.33	34.08	1½-2½	$3d'\,^2P-4f'\,^2D^\circ$ (104)
4487.72	B	0n	31.33	34.08	½-1½	
4843.26	B	1n	31.56	34.10	1½-	$3d'\,^2S-4f'\,^2P^\circ$ (105)
4146.09	B	3	(33.06	36.03)	3½-4½	$sp^3 3p\,^6P-sp^3 3d\,^6D^\circ$ (106)
4143.77	B	2	(33.06	36.03)	2½-3½	
4142.24	B	0	(33.06	36.03)	1½-2½	
4145.90	B	0	(33.06	36.03)	3½-3½	
4143.52	B	1	(33.06	36.03)	2½-2½	
4141.96	C	1	(33.06	36.03)	1½-1½	
4142.08	C	1	(33.06	36.04)	1½-½	
3218.10	C	2	(33.06	36.89)	3½-2½	$sp^3 3p\,^6P-sp^3 4s\,^6S^\circ$ (107)
3216.76	C	1	(33.06	36.89)	2½-2½	
3216.08	C	0	(33.06	36.89)	1½-2½	

Strongest Unclassified Lines Attributed to O II

I A	Ref	Int
4506.50	B	2n
3420.61	B	3n
3419.87	B	2n
3081.46	B	2n
3006.82	B	3
3006.04	B	2
3005.62	B	2

O III I P 54.71 Anal B List A Sept 1943

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4239.5	A	00	33.01	35.92	1-1	$3s\,^3P^\circ-3p\,^1P$ (1)
3759.87	A	9	33.04	36.32	2-3	$3s\,^3P^\circ-3p\,^3D$ (2)
3754.67	A	7	33.01	36.29	1-2	
3757.21	A	5	32.99	36.28	0-1	
3791.26	A	6	33.04	36.29	2-2	
3774.00	A	6	33.01	36.28	1-1	
3810.96	A	2	33.04	36.28	2-1	
3340.74	A	6	33.04	36.73	2-1	$3s\,^3P^\circ-3p\,^3S$ (3)
3312.30	A	5	33.01	36.73	1-1	
3299.36	A	3	32.99	36.73	0-1	
3047.13	A	8	33.04	37.09	2-2	$3s\,^3P^\circ-3p\,^3P$ (4)
3035.43	A	4	33.01	37.07	1-1	
3059.30	A	6	33.04	37.07	2-1	
3043.02	A	5	33.01	37.06	1-0	
3023.45	A	5	33.01	37.09	1-2	
3024.57	A	4	32.99	37.07	0-1	
5592.37	A	6	33.71	35.92	1-1	$3s\,^1P^\circ-3p\,^1P$ (5)
2983.78	A	9	33.71	37.85	1-2	$3s\,^1P^\circ-3p\,^1D$ (6)
2983.66	A	1	35.92	40.05	1-2	$3p\,^1P-3d\,^3F^\circ$ (7)
3265.46	A	10	36.32	40.10	3-4	$3p\,^3D-3d\,^3F^\circ$ (8)
3260.98	A	8	36.29	40.08	2-3	
3267.31	A	5	36.28	40.05	1-2	
3284.57	A	4	36.32	40.08	3-3	
3281.94	A	3	36.29	40.05	2-2	
3305.77	A	0	36.32	40.05	3-2	
3252.94	A	2	36.29	40.09	2-2	$3p\,^3D-3d\,^1D^\circ$ (9)
3238.57	A	5	36.28	40.09	1-2	
3017.63	A	5	36.32	40.41	3-3	$3p\,^3D-3d\,^3D^\circ$ (10)
3004.35	A	4	36.29	40.40	2-2	
2996.51	A	3	36.28	40.40	1-1	
3024.36	A	1	36.32	40.40	3-2	
3008.79	A	3	36.29	40.40	2-1	
2997.71	A	2	36.29	40.41	2-3	
2992.11	A	2	36.28	40.40	1-2	
3363.83	A	1	36.73	40.40	1-2	$3p\,^3S-3d\,^3D^\circ$ (11)
3369.40	A	00	36.73	40.40	1-1	
3132.86	A	6	36.73	40.67	1-2	$3p\,^3S-3d\,^3P^\circ$ (12)
3121.71	A	5	36.73	40.69	1-1	
3115.73	A	4	36.73	40.69	1-0	
3440.39	A	4	36.82	40.41	2-3?	$2p^4\,^1D-3d\,^3D^\circ$ (13)
3715.08	A	6	37.09	40.41	2-3	$3p\,^3P-3d\,^3D^\circ$ (14)
3707.24	A	6	37.07	40.40	1-2	
3702.75	A	5	37.06	40.40	0-1	

O III continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3725.30	A	3	37.09	40.40	2-2	$3p\,^3P-3d\,^3D^\circ$ (14) cont
3714.03	A	2	37.07	40.40	1-1	
3732.13	A	1	37.09	40.40	2-1	
3444.10	A	5	37.09	40.67	2-2	$3p\,^3P-3d\,^3P^\circ$ (15)
3415.29	A	3	37.07	40.69	1-1	
3430.60	A	4	37.09	40.69	2-1	
3408.13	A	1	37.07	40.69	1-0	
3428.67	A	3	37.07	40.67	1-2	
3405.74	A	2	37.06	40.69	0-1	
5508.11	A	1	37.85	40.09	2-2	$3p\,^1D-3d\,^1D^\circ$ (16)
3961.59	A	8	37.85	40.96	2-3	$3p\,^1D-3d\,^1F^\circ$ (17)
3816.75	A	1	37.85	41.08	2-1	$3p\,^1D-3d\,^1P^\circ$ (18)
5268.06	A	2	38.74	41.08	0-1	$3p\,^1S-3d\,^1P^\circ$ (19)
3034.32	A	0	41.08	45.15	1-1	$3d\,^1P^\circ-4p\,^1P$ (20)
3703.37	A	5	41.78	45.11	3-4	$3s\,^5P-3p\,^5D^\circ$ (21)
3698.70	A	5	41.76	45.10	2-3	
3695.37	A	4	41.74	45.08	1-2	
3720.86	A	3	41.78	45.10	3-3	
3712.48	A	2	41.76	45.08	2-2	
3704.73	A	3	41.74	45.08	1-1	
3734.80	A	1	41.78	45.08	3-2	
3721.95	A	1	41.76	45.08	2-1	
3709.52	A	2	41.74	45.07	1-0	
3350.99	A	4	41.78	45.46	3-3	$3s\,^5P-3p\,^5P^\circ$ (22)
*3344.26	A	2	41.76	45.45	2-2	
*3336.78	A	3	41.74	45.44	1-1	
3362.38	A	4	41.78	45.45	3-2	
3350.68	A	3	41.76	45.44	2-1	
3333.00	A	4	41.76	45.46	2-3	
*3330.40	A	4	41.74	45.45	1-2	
4081.10	A	1	43.24	46.27	2-3	$3s\,^3P-3p\,^3D^\circ$ (23)
4073.90	A	0	43.22	46.25	1-2	
3556.92	A	1	43.24	46.71	2-2	$3s\,^3P-3p\,^3P^\circ$ (24)
3455.12	A	5	45.11	48.68	4-5	$3p\,^5D^\circ-3d\,^5F$ (25)
3450.94	A	4	45.10	48.67	3-4	
m3448.05	P	0+	45.08	48.66	2-3	
3446.73	A	2	45.08	48.66	1-2	
3447.22	A	1	45.07	48.65	0-1	
3466.15	A	2	45.11	48.67	4-4	
3459.98	A	2	45.10	48.66	3-3	
3454.90	A	2	45.08	48.66	2-2	
3451.33	A	1	45.08	48.65	1-1	
3466.90	A	0	45.10	48.66	3-2	
3459.52	A	0	45.08	48.65	2-1	
3088.04	A	2	45.11	49.11	4-4	$3p\,^5D^\circ-3d\,^5D$ (26)
3083.65	B	1	45.10	49.10	3-3	
3075.19	B	0	45.08	49.10	2-2	
3095.81	B	00	45.11	49.10	4-3	
3084.63	B	0	45.10	49.10	3-2	
3074.68	B	00	45.08	49.10	2-1	
3068.06	B	00	45.08	49.10	1-0	
3075.95	B	0	45.10	49.11	3-4	
3074.15	B	0	45.08	49.10	2-3	
3068.68	B	0	45.08	49.10	1-2	
3065.01	B	00	45.07	49.10	0-1	
3384.95	A	4	45.46	49.11	3-4	$3p\,^5P^\circ-3d\,^5D$ (27)
3382.69	A	3	45.45	49.10	2-3	
3394.26	A	1	45.46	49.10	3-3	
3383.85	A	2	45.45	49.10	2-2	
3376.82	C	(1)	45.44	49.10	1-1	
3355.92	A	3	45.46	49.14	3-3	$3p\,^5P^\circ-3d\,^5P$ (28)
*3336.78	A	3	45.45	49.15	2-2	
3326.16	A	0	45.44	49.15	1-1	
3348.05	A	2	45.46	49.15	3-2	
3332.49	A	1	45.45	49.15	2-1	
*3344.26	A	2	45.45	49.14	2-3	
*3330.40	A	4	45.44	49.15	1-2	
3279.97	C	(1)	46.05	49.82	0-1	$4p\,^1S-5d\,^1P^\circ$ (29)
3728.82	C	(1)	46.27	49.58	3-4	$3p\,^3D^\circ-3d\,^3F$ (30)
3728.49	C	(0)	46.25	49.56	2-3	
3729.70	A	1	46.24	49.55	1-2	
3215.97	B	1	46.27	50.11	3-3	$3p\,^3D^\circ-3d\,^3D$ (31)
3207.12	P		46.25	50.10	2-2	
3200.95	A	1	46.24	50.10	1-1	
4529.7	A	00	46.37	49.10	2-3	$3p\,^5S^\circ-3d\,^5D$ (32)
4461.56	A	1	46.37	49.14	2-3	$3p\,^5S^\circ-3d\,^5P$ (33)
m4447.82	P	0+	46.37	49.15	2-2	
4440.1	A	0	46.37	49.15	2-1	
4555.30	A	0	46.71	49.42	2-2	$3p\,^3P^\circ-3d\,^3P$ (34)
3638.70	A	3	46.71	50.11	2-3	$3p\,^3P^\circ-3d\,^3D$ (35)
3646.84	A	2	46.72	50.10	1-2	
3653.00	A	1	46.72	50.10	0-1	
3645.20	A	1	46.71	50.10	2-2	
3650.70	A	0	46.72	50.10	1-1	
3649.20	A	00	46.71	50.10	2-1	

O III continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4569.50	A	1n	52.63	55.33	2-3?	$3p^1D^o-3d^1F$ (36)
4474.95	A	1n	52.63	55.39	2-2?	$3p^1D^o-3d^1D$ (37)

O IV I P 77.08 Anal B List A Mar 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3063.46	B	6	44.15	48.18	½-1½	$3^2S-3^2P^o$ (1)
3071.66	B	5	44.15	48.17	½- ½	
3411.76	B	4	48.18	51.79	1½-2½	$3^2P^o-3^2D$ (2)
3403.58	B	3	48.17	51.79	½-1½	
3413.71	A	1	48.18	51.79	1½-1½	
3385.55	B	(6)	54.19	57.84	2½-3½	$3s^4P^o-3p^4D$ (3)
3381.28	B	(4)	54.16	57.81	1½-2½	
3381.33	P		54.14	57.79	½-1½	
3409.75	B	(2)	54.19	57.81	2½-2½	
3396.83	B	(2)	54.16	57.79	1½-1½	
3390.37	P		54.14	57.78	½- ½	
3425.57	B	(0)	54.19	57.79	2½-1½	
3405.97	P		54.16	57.78	1½- ½	
3349.11	A	3	55.93	59.62	1½-2½	$3s^2P^o-3p^2D$ (4)
3348.08	A	2	55.90	59.59	½-1½	
3378.09	A	0	55.93	59.59	1½-1½	
3052.54	A	1	55.93	59.97	1½- ½	$3s^2P^o-3p^2S$ (5)
3028.04	A	0	55.90	59.97	½- ½	
•3736.78	B	(4)	57.84	61.14	3½-4½	$3p^4D-3d^4F^o$ (6)
3729.03	B	(3)	57.81	61.12	2½-3½	
•3725.81	B	(2)	(57.79 (57.78	61.11 61.10	1½-2½ ½-1½	
3758.45	B	(0)	57.84	61.12	3½-3½	
3744.73	B	(0)	57.81	61.11	2½-2½	
3736.78	B	(4)	57.79	61.10	1½-1½	
3774.38	P		57.84	61.11	3½-2½	
3755.82	P		57.81	61.10	2½-1½	
3209.64	B	(3)	57.84	61.68	3½-3½	$3p^4D-3d^4D^o$ (7)
3194.75	B	(1)	57.81	61.67	2½-2½	
3185.72	B	(0)	57.79	61.67	1½-1½	
3180.72	B	(0)	57.78	61.66	½- ½	
3216.31	P		57.84	61.67	3½-2½	
3199.53	B	(1)	57.81	61.67	2½-1½	
3188.65	P		57.79	61.66	1½- ½	
3188.17	P		57.81	61.68	2½-3½	
3180.98	P		57.79	61.67	1½-2½	
3177.80	B	(0)	57.78	61.67	½-1½	
3375.50	B	(3)	58.54	62.20	1½-2½	$3p^4S-3d^4P^o$ (8)
3362.63	P		58.54	62.21	1½-1½	
3354.31	A	—	58.54	62.22	1½- ½	
4798.25	B	(5)	59.11	61.68	2½-3½	$3p^4P-3d^4D^o$ (9)
4783.43	B	(4)	59.09	61.67	1½-2½	
4772.57	B	(2)	59.08	61.67	½-1½	
4813.07	B	(1)	59.11	61.67	2½-2½	
4794.22	B	(2)	59.09	61.67	1½-1½	
4779.09	B	(2)	59.08	61.66	½- ½	
4823.93	P		59.11	61.67	2½-1½	
4800.77	P		59.09	61.66	1½- ½	
3995.17	B	(2)	59.11	62.20	2½-2½	$3p^4P-3d^4P^o$ (10)
3956.82	P		59.09	62.21	1½-1½	
3930.63	P		59.08	62.22	½- ½	
3977.10	B	(1)	59.11	62.21	2½-1½	
3945.29	P		59.09	62.22	1½- ½	
3974.66	P		59.09	62.20	1½-2½	
3942.14	B	(0)	59.08	62.21	½-1½	
5362.4	P		59.62	61.92	2½-2½	$3p^2D-3d^2D^o$ (11)
5305.3	P		59.59	61.91	1½-1½	
3563.36	A	2	59.62	63.08	2½-3½	$3p^2D-3d^2F^o$ (12)
3560.42	A	1	59.59	63.05	1½-2½	
3520.9	P		59.97	63.48	½-1½	$3p^2S-3d^2P^o$ (13)
3502.2	P		59.97	63.50	½- ½	
3489.84	C	1	64.03	67.57	1½-2½	$3s'\ ^2P^o-3p'\ ^2D$ (14)
3492.24	C	0	64.03	67.57	½-1½	
4568	P		68.20	70.91	—	$5^2F^o-6^2D$ (15)

O V I P 113.38 Anal B List A Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5114	P		69.29	71.70	0-1	$3^1S-3^1P^o$ (1)
3144.68	A	1	71.70	75.63	1-2	$3^1P^o-3^1D$ (2)
5600	P		(71.92	74.13)	2-3	$3^3P^o-3^3D$ (3)
5582	P		(71.91	74.12)	1-2	
5573	P		(71.91	74.12)	0-1	
5606	P		(71.92	74.12)	2-2	
5584	P		(71.91	74.12)	1-1	
5608	P		(71.92	74.12)	2-1	
4123.90	A	2	(80.63	83.62)	2-3	$3s^3P^o-3p^3D$ (4)
4120	P		(80.58	83.58)	1-2	
4123	P		(80.56	83.56)	0-1	
4179	P		(80.63	83.58)	2-2	
4151	P		(80.58	83.56)	1-1	
4211	P		(80.63	83.56)	2-1	
3275.67	A	0	(80.63	84.39)	2-1	$3s^3P^o-3p^3S$ (5)
3239	P		(80.58	84.39)	1-1	
3222	P		(80.56	84.39)	0-1	
3058.68	A	0	82.03	86.07	1-2	$3s^1P^o-3p^1D$ (6)
4554.28	A	0	83.04	85.75	1-2	$3p^1P-3d^1D^o$ (7)
3747	P		(83.62	86.91)	3-3	$3p^3D-3d^3D^o$ (8)
3717	P		(83.58	86.90)	2-2	
3701	P		(83.56	86.89)	1-1	
3762	P		(83.62	86.90)	3-2	
3726	P		(83.58	86.89)	2-1	
3703	P		(83.58	86.91)	2-3	
3692	P		(83.56	86.90)	1-2	
3298	P		(83.62	87.36)	3-2	$3p^3D-3d^3P^o$ (9)
3249	P		(83.58	87.38)	2-1	
3222	P		(83.56	87.39)	1-0	
3264	P		(83.58	87.36)	2-2	
3230	P		(83.56	87.38)	1-1	
3245	P		(83.56	87.36)	1-2	
4925	P		(84.39	86.90)	1-2	$3p^3S-3d^3D^o$ (10)
4940	P		(84.39	86.89)	1-1	
4158.76	A	0	(84.39	87.36)	1-2	$3p^3S-3d^3P^o$ (11)
4135.9	P		(84.39	87.38)	1-1	
4121.7	P		(84.39	87.39)	1-0	
6830	P		(85.11	86.91)	2-3	$3p^3P-3d^3D^o$ (12)
6790	P		(85.08	86.90)	1-2	
6767	P		(85.07	86.89)	0-1	
6878	P		(85.11	86.90)	2-2	
6819	P		(85.08	86.89)	1-1	
6909	P		(85.11	86.89)	2-1	
5473	P		(85.11	87.36)	2-2	$3p^3P-3d^3P^o$ (13)
5376	P		(85.08	87.38)	1-1	
5432	P		(85.11	87.38)	2-1	
5352	P		(85.08	87.39)	1-0	
5417	P		(85.08	87.36)	1-2	
5343	P		(85.07	87.38)	0-1	
6329	P		86.07	88.02	2-3	$3p^1D-3d^1F^o$ (14)
4522	P		86.07	88.79	2-1	$3p^1D-3d^1P^o$ (15)
3702	P		88.79	92.13	1-2	$3d^1P^o-4^1D$ (16)
7438	P		(89.15	90.81)	—	$4^3S-4^3P^o$ (17)

O VI I P 137.52 Anal A List A Feb 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3811.35	A	2	79.01	82.25	½-1½	$3^2S-3^2P^o$ (1)
3834.24	A	1	79.01	82.23	½- ½	
3068	P		123.46	127.49	½-	$6^2S-7^2P^o$ (2)
3622	P		123.84	127.25	—	$6^2P^o-7^2S$ (3)
3314	P		123.84	127.57	—	$6^2P^o-7^2D$ (4)

O VI continued

Laboratory I A	Ref	Int	E P Low	E P High	J
3509	P		123.97	127.49	—
3426	P		123.97	127.57	—
3438	P		123.98	127.57	—
3433	P		123.98	127.57	—
3434	P		123.98	127.57	—
4751	P		127.25	129.85	½-
5602	P		127.49	129.69	-½
5112	P		127.49	129.90	—
5410	P		127.57	129.85	—
5279	P		127.57	129.90	—
5298	P		127.57	129.90	—
5289	P		127.57	129.90	—
5292	P		127.57	129.90	—
5291	P		127.57	129.90	—

F I I P 17.35 Anal C List D May 1

Laboratory I A	Ref	Int	E P Low	E P High	J
7398.68	A	17	12.64	14.31	2½-2½
7482.72	A	11	12.68	14.33	1½-1½
7514.93	A	9	12.70	14.34	½- ½
7331.95	A	15	12.64	14.33	2½-1½
7425.64	A	14	12.68	14.34	1½- ½
7552.24	A	14	12.68	14.31	1½-2½
7573.41	A	14	12.70	14.33	½-1½
6856.02	A	16	12.64	14.44	2½-3½
6902.46	A	15	12.68	14.46	1½-2½
6909.82	A	13	12.70	14.48	½-1½
6773.97	A	11	12.64	14.46	2½-2½
6834.26	A	12	12.68	14.48	1½-1½
6870.22	A	12	12.70	14.49	½- ½
6708.27	A	7	12.64	14.48	2½-1½
6795.52	A	9	12.68	14.49	1½- ½
6239.64	A	16	12.64	14.62	2½-1½
6348.50	A	15	12.68	14.62	1½-1½
6413.66	A	14	12.70	14.62	½-1½
7754.70	A	19	12.93	14.52	1½-2½
7800.22	A	18	12.97	14.55	½-1½
7607.17	A	15	12.93	14.55	1½-1½
7311.02	A	13	12.93	14.62	1½- ½
7489.14	A	8	12.97	14.62	½- ½
7037.45	A	15	12.93	14.68	1½-1½
7127.88	A	14	12.97	14.70	½- ½
6966.35	A	10	12.93	14.70	1½- ½
7202.37	A	13	12.97	14.68	½-1½

F II I P 34.84 Anal B List D May 1

Laboratory I A	Ref	Int	E P Low	E P High	J
3847.086	A	20	(21.81	25.02)	2-3
3849.987	A	15	(21.81	25.01)	2-2
3851.667	A	10	(21.81	25.01)	2-1
4024.727	A	20	22.57	25.64	1-2
4025.495	A	15	22.57	25.64	1-1
4025.010	A	10	22.57	25.64	1-0
3505.614	A	15	(25.02	28.54)	3-4
3503.095	A	12	(25.01	28.54)	2-3
3502.954	A	8	(25.01	28.54)	2-2
3501.416	A	10	(25.01	28.54)	1-0
4103.525	A	15	25.64	28.65	2-3
4103.085	A	10	25.64	28.65	1-2
4103.724	A	7	25.64	28.65	0-1
4103.871	A	7	25.64	28.65	2-2

REVISED MULTIPLET TABLE

ory	Int	E P Low	High	J	Multiplet (No)
ued					
	8	26.15	29.16	3-3	$3s'\ ^3D^{\circ}-3p'\ ^3D$†
	7	26.16	29.16	2-2	(5)
	7	26.16	29.16	1-1	
	9	26.15	29.64	3-2	$3s'\ ^3D^{\circ}-3p'\ ^3P$†
	7	26.16	29.65	2-1	(6)
	10	26.55	29.42	2-3	$3s'\ ^1D^{\circ}-3p'\ ^1F$ (7)
	10	26.55	30.40	2-2	$3s'\ ^1D^{\circ}-3p'\ ^1D$ (8)
	15n	(28.54	31.44)	—	$3d\,^5D^{\circ}-4f\,^5F$ (9)
	12n	28.65	31.42	3-	$3d\,^3D^{\circ}-4f\,^3F$ †
	10n	28.65	31.42	2-	(10)
	9	29.32	32.71	4-4	$3p'\ ^3F-3d'\ ^3F^{\circ}$†
	8	29.32	32.71	-3	(11)
	7	29.32	32.71	-2	
62.39	Anal A	List D	May 1944		
	12	39.16	43.12	2½-3½	$3s\,^4P-3p\,^4D^{\circ}$
	10	39.12	43.08	1½-2½	(1)
	8	39.10	43.06	½-1½	
A	8	39.16	43.08	2½-2½	
A	8	39.12	43.06	1½-1½	
A	8	39.10	43.05	½- ½	
P		39.16	43.06	2½-1½	
A	4	39.12	43.05	1½- ½	
A	12	40.11	43.99	1½-2½	$3s\,^2P-3p\,^2D^{\circ}$
A	10	40.06	43.95	½-1½	(2)
A	6	40.11	43.95	1½-1½	
A	7	46.94	51.00	2½-3½	$3p'\ ^2D^{\circ}-3d'\ ^2F$
A	6	46.95	51.01	1½-2½	(3)
A	1.5	46.94	51.01	2½-2½	
A	4	47.46	51.38	1½-2½	$3p'\ ^2P^{\circ}-3d'\ ^2D$
A	3	47.45	51.38	½-1½	(4)
B	0	47.46	51.38	1½-1½	
Introduction					
Introduction					

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Ne I	I P 21.47	Anal A	List C	May 1944		
7032.4127	A	(10)	16.55	18.30	2-1	3s 1°-3p 1
6402.2455	B	(20)	16.55	18.48	2-3	(1) -3p 2
6334.4279	A	(10)	16.55	18.50	2-2	-3p 3
6217.2813	A	(15)	16.55	18.53	2-1	-3p 4
6143.0623	A	(12)	16.55	18.56	2-2	-3p 5
5975.5340	A	(12)	16.55	18.61	2-1	-3p 7
5944.8342	A	(10)	16.55	18.62	2-2	-3p 8
5881.8950	A	(20)	16.55	18.65	2-1	-3p 9
3472.5711	C	(10)	16.55	20.10	2-3	3s 1°-4p 2
3369.9081	C	(15)	16.55	20.21	2-1	(2) -4p 9
3369.8086	C	(10)	16.55	20.21	2-2	-4p 8
7245.1668	B	(10)	16.60	18.30	1-1	3s 2°-3p 1
6506.5279	A	(15)	16.60	18.50	1-2	(3) -3p 3
6382.9914	A	(12)	16.60	18.53	1-1	-3p 4
6074.3377	A	(10)	16.60	18.63	1-0	-3p 6
6029.9971	A	(10)	16.60	18.65	1-1	-3p 9
5400.5620	B	(50)	16.60	18.88	1-0	-3p 10
3417.9036	C	(10)	16.60	20.21	1-2	3s 2°-4p 8 (4)
6266.4950	A	(15)	16.64	18.61	0-1	3s 3°-3p 7
6163.5939	A	(12)	16.64	18.65	0-1	(5) -3p 9
8082.4580	B	200	16.78	18.30	1-1	3s 4°-3p 1
7173.9389	B	(10)	16.78	18.50	1-2	(6) -3p 3
7024.0508	B	(9)	16.78	18.53	1-1	-3p 4
6929.4678	B	(10)	16.78	18.56	1-2	-3p 5
6678.2764	A	(9)	16.78	18.62	1-2	-3p 8
6598.9529	A	(15)	16.78	18.65	1-1	-3p 9
5852.4878	A	(50)	16.78	18.88	1-0	-3p 10
3593.5259	C	(10)	16.78	20.21	1-2	3s 4°-4p 8
3520.4717	C	(20)	16.78	20.28	1-0	(7) -4p 10
9665.426	D	1000	18.30	19.58	1-2	3p 1-4s 1°
9486.680	B	500	18.30	19.60	1-1	(8)-4s 2°
8988.58	D	200	18.30	19.68	1-0	-4s 3°
8865.759	B	500	18.30	19.69	1-1	-4s 4°
5343.284	B	(12)	18.30	20.61	1-0	3p 1-4d 1°
5341.096	B	(20)	18.30	20.61	1-1	(9)-4d 2°
5330.779	B	(12)	18.30	20.62	1-2	-4d 5°
4827.338	B	(10)	18.30	20.86	1-1	3p 1-6s 2° (10)
4710.058	E	(10)	18.30	20.92	1-0	3p 1-5d 1°
4708.854	B	(12)	18.30	20.92	1-1	(11)-5d 2°
4704.395	B	(15)	18.30	20.93	1-2	-5d 5°
4537.751	B	(10)	18.30	21.02	1-2	-5d 9°
8377.6068	B	800	18.48	19.95	3-4	3p 2-3d 3°
8376.41	D	200	18.48	19.95	3-3	(12)-3d 4°
8300.3258	B	600	18.48	19.96	3-3	-3d 8°

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Ne I continued						
5764.419	B	(15)	18.48	20.62	3-4	3p 2-4d 3°
5748.299	B	(10)	18.48	20.62	3-3	(13)-4d 8°
5037.7505	B	(10)	18.48	20.93	3-4	3p 2-5d 3° (14)
4788.9258	B	(12)	18.48	21.05	3-2	3p 2-7s 1° (15)
4715.344	B	(15)	18.48	21.09	3-4	3p 2-6d 3°
4712.060	E	(10)	18.48	21.09	3-3	(16)-6d 8°
4540.376	B	(10)	18.48	21.19	3-4	3p 2-7d 3° (17)
8495.3600	B	500	18.50	19.95	2-3	3p 3-3d 4°
8418.4274	B	400	18.50	19.96	2-2	(18)-3d 7°
7943.1802	B	200	18.50	20.05	2-3	-3d 10°
5820.155	B	(10)	18.50	20.62	2-3	3p 3-4d 4°
5804.4488	B	(10)	18.50	20.62	2-2	(19)-4d 7°
5562.769	B	(10)	18.50	20.71	2-3	-4d 10°
•4884.915	B	(10)	18.50	21.02	2-3	3p 3-5d 10° (20)
4752.7313	B	(10)	18.50	21.09	2-3	3p 3-6d 4° (21)
10798.12	F	150	18.53	19.68	1-0	3p 4-4s 3° (22)
8704.15	D	200	18.53	19.95	1-2	3p 4-3d 5°
8681.920	B	500	18.53	19.95	1-1	(23)-3d 6°
8634.6480	B	600	18.53	19.96	1-2	-3d 7°
8136.4060	B	300	18.53	20.05	1-2	-3d 9°
5656.6585	B	(10)	18.53	20.71	1-2	3p 4-4d 9° (24)
4957.0334	B	(10)	18.53	21.02	1-2	3p 4-5d 11° (25)
10844.54	F	200	18.56	19.69	2-1	3p 5-4s 4° (26)
8919.50	D	300	18.56	19.94	2-1	3p 5-3d 2°
8853.867	B	700	18.56	19.95	2-2	(27)-3d 5°
8780.6223	B	1200	18.56	19.96	2-3	-3d 8°
8266.076	B	250	18.56	20.05	2-3	-3d 10°
5974.628	B	(10)	18.56	20.62	2-3	3p 5-4d 8°
5719.2254	B	(10)	18.56	20.71	2-3	(28)-4d 10°
5005.160	B	(10)	18.56	21.02	2-3	3p 5-5d 10° (29)
9226.67	*D*	*200*	*18.61*	*19.95*	*1-2*	*3p 7-3d* 5°
9201.76	D	600	18.61	19.95	1-1	(30)-3d 6°
9148.68	D	600	18.61	19.96	1-2	-3d 7°
8591.2584	B	400	18.61	20.05	1-2	-3d 9°
5872.828	B	(10)	18.61	20.71	1-2	3p 7-4d 9° (31)
4790.218	B	(10)	18.61	21.19	1-2	3p 7-6d 11° (32)

Ne I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
9373.28	D	200	18.62	19.94	2-1	3p 8-3d 2°
9313.98	D	300	18.62	19.95	2-3	(33)-3d 4°
9300.85	D	600	18.62	19.95	2-2	-3d 5°
9221.59	D	200	18.62	19.96	2-2	-3d 7°
9220.05	D	400	18.62	19.96	2-3	-3d 8°
8654.51	D	400	18.62	20.05	2-2	-3d 9°
8654.3835	B	1500	18.62	20.05	2-3	-3d 10°
8647.05	D	300	18.62	20.05	2-2	-3d 11°
5145.011	E	(10)	18.62	21.02	2-2	3p 8-5d 11°
5144.9376	B	(10)	18.62	21.02	2-3	(34)-5d 10°
*4884.915	B	(10)	18.62	20.57	2-1	3p 8-5s 4° (35)
9425.38	D	500	18.63	19.94	0-1	3p 6-3d 2°
9326.52	D	600	18.63	19.95	0-1	(36)-3d 6°
8679.491	B	500	18.63	20.05	0-1	3p 6-3d 12° (37)
9547.40	D	300	18.65	19.94	1-0	3p 9-3d 1°
9534.17	D	500	18.65	19.94	1-1	(38)-3d 2°
9459.21	D	300	18.65	19.95	1-2	-3d 5°
8783.755	B	1000	18.65	20.05	1-2	-3d 11°
8771.70	D	400	18.65	20.05	1-1	-3d 12°
5965.474	B	(10)	18.65	20.71	1-2	3p 9-4d 11° (39)
10562.43	F	200	18.68	20.05	0-1	3p 10-3d 12° (40)

For changes in Paschen's notation see text § 37

Ne II I P 40.91 Anal A List A June 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3694.22	A	10	27.05	30.39	2½-2½	3s^{4}P-3p^{4}P° (1)
3734.94	A	7	27.12	30.42	1½-1½	
3751.26	A	5	27.15	30.44	½- ½	
3664.09	A	9	27.05	30.42	2½-1½	
3709.64	A	7	27.12	30.44	1½- ½	
3766.29	A	8	27.12	30.39	1½-2½	
3777.16	A	8	27.15	30.42	½-1½	
3334.87	A	10	27.05	30.75	2½-3½	3s^{4}P-3p^{4}D° (2)
3355.05	A	7	27.12	30.79	1½-2½	
3360.63	A	5	27.15	30.83	½-1½	
3297.74	A	7	27.05	30.79	2½-2½	
3327.16	A	5	27.12	30.83	1½-1½	
3344.43	A	5	27.15	30.84	½- ½	
3270.79	A	2	27.05	30.83	2½-1½	
3311.30	A	3	27.12	30.84	1½- ½	
3135.82	A	1	27.05	30.99	2½-2½	3s^{4}P-3p^{2}D° (3)
3187.60	A	2	27.12	30.99	1½-2½	
3001.65	A	6	27.12	31.23	1½-1½	3s^{4}P-3p^{4}S° † (4)
3028.84	A	4	27.15	31.23	½-1½	
3713.09	A	10	27.66	30.99	1½-2½	3s^{2}P-3p^{2}D° (5)
3727.08	A	9	27.74	31.05	½-1½	
3643.89	A	5	27.66	31.05	1½-1½	
3481.96	A	6	27.66	31.21	1½- ½	3s^{2}P-3p^{2}S° (6)
3557.84	A	4	27.74	31.21	½- ½	
3323.75	A	7	27.66	31.38	1½-1½	3s^{2}P-3p^{2}P° (7)
3378.28	A	5	27.74	31.39	½- ½	
3309.78	A	3	27.66	31.39	1½- ½	
3392.78	A	5	27.74	31.38	½-1½	
3034.48	A	5	30.39	34.46	2½-3½	3p^{4}P°-3d^{4}D (8)
3047.57	A	6	30.42	34.47	1½-2½	
3054.69	A	5	30.44	34.48	½-1½	
3027.04	A	4	30.39	34.47	2½-2½	
3037.73	A	4	30.42	34.48	1½-1½	
3045.58	A	4	30.44	34.50	½- ½	
3017.34	A	3	30.39	34.48	2½-1½	
3568.53	A	6	30.42	33.88	2½-3½	3s' ^{2}D-3p' ^{2}F° (9)
3574.64	A	5	30.42	33.87	1½-2½	
3574.23	A	0	30.42	33.87	2½-2½	
3345.49	A	3	30.42	34.11	2½-1½	3s' ^{2}D-3p' ^{2}P° (10)
3319.75	A	3	30.42	34.14	1½- ½	
*3345.88	A	1	30.42	34.11	1½-1½	
3230.16	A	5	30.42	34.24	2½-2½	3s' ^{2}D-3p' ^{2}D° (11)
3232.38	A	3	30.42	34.24	1½-1½	
3231.97	A	0	30.42	34.24	2½-1½	
3329.20	A	4	30.75	34.46	3½-3½	3p^{4}D°-3d^{4}D (12)
3357.90	A	3	30.79	34.47	2½-2½	
3374.10	A	3	30.83	34.48	1½-1½	
3379.39	A	1	30.84	34.50	½- ½	
3320.29	A	2	30.75	34.47	3½-2½	
*3345.88	A	1	30.79	34.48	2½-1½	
3362.89	A	2	30.83	34.50	1½- ½	
3367.05	P		30.79	34.46	2½-3½	
3386.24	A	2	30.83	34.47	1½-2½	
3390.56	A	2	30.84	34.48	½-1½	
3218.21	A	8	30.75	34.59	3½-4½	3p^{4}D°-3d^{4}F (13)
3198.62	A	5	30.79	34.65	2½-3½	
3190.86	A	2	30.83	34.69	1½-2½	
3213.70	A	3	30.84	34.68	½-1½	
3164.46	A	3	30.75	34.65	3½-3½	
3165.70	A	4	30.79	34.69	2½-2½	
3198.88	P		30.83	34.68	1½-1½	
3132.22	A	2	30.75	34.69	3½-2½	
3173.58	A	3	30.79	34.68	2½-1½	

Ne II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3208.99	A	2	30.75	34.60	3½-3½	3p^{4}D°-3d^{2}F (14)
3188.74	A	3	30.79	34.66	2½-2½	
3154.82	A	1	30.75	34.66	3½-2½	
3244.15	A	5	30.79	34.60	2½-3½	
3214.38	A	5	30.83	34.66	1½-2½	
3243.34	A	2	30.79	34.60	2½-2½	3p^{4}D°-3d^{2}D (15)
3248.15	A	3dr	30.83	34.62	1½-1½	
3269.86	A	3	30.83	34.60	1½-2½	
3263.43	A	3	30.84	34.62	½-1½	
3118.02	A	4	30.75	34.71	3½-2½	3p^{4}D°-3d^{4}P (16)
3169.30	A	0	30.79	34.69	2½-1½	
3151.16	A	2	30.79	34.71	2½-2½	
3194.61	A	4	30.83	34.69	1½-1½	
3176.16	A	3	30.83	34.71	1½-2½	
3209.38	A	3	30.84	34.69	½-1½	
3039.65	A	3	30.75	34.81	3½-2½	3p^{4}D°-4s^{4}P (17)
3035.98	A	3	30.79	34.86	2½-1½	
3030.85	A	2	30.83	34.90	1½- ½	
3071.08	A	2	30.79	34.81	2½-2½	
3059.16	A	3	30.83	34.86	1½-1½	
3044.16	A	2	30.84	34.90	½- ½	
*3072.68	A	1d	30.84	34.86	½-1½	
3554.39	A	1	30.99	34.46	2½-3½	3p^{2}D°-3d^{4}D (18)
3367.20	A	6	30.99	34.65	2½-3½	3p^{2}D°-3d^{4}F (19)
3388.46	A	6	31.05	34.69	1½-2½	
3330.78	A	2	30.99	34.69	2½-2½	
3417.71	A	5	30.99	34.60	2½-3½	3p^{2}D°-3d^{2}F (20)
3414.82	A	2	31.05	34.66	1½-2½	
3356.35	A	2	30.99	34.66	2½-2½	
3416.87	A	4	30.99	34.60	2½-2½	3p^{2}D°-3d^{2}D (21)
3453.10	A	3	31.05	34.62	1½-1½	
3477.69	A	3	31.05	34.60	1½-2½	
3314.60	A	1	30.99	34.71	2½-2½	3p^{2}D°-3d^{4}P (22)
3371.87	A	4	31.05	34.71	1½-2½	
3255.39	A	2	30.99	34.78	2½-1½	3p^{2}D°-3d^{2}P (23)
3353.63	A	2	31.05	34.73	1½- ½	
3310.55	A	1	31.05	34.78	1½-1½	
3094.08	A	4	30.99	34.98	2½-1½	3p^{2}D°-4s^{2}P (24)
3088.23	A	3	31.05	35.05	1½- ½	
3143.74	A	2	31.05	34.98	1½-1½	
3551.52	A	1	31.21	34.68	½-1½	3p^{2}S°-3d^{4}F (25)
3612.35	A	3	31.21	34.62	½-1½	3p^{2}S°-3d^{2}D (26)
3546.22	A	1	31.21	34.69	½-1½	3p^{2}S°-3d^{4}P (27)
3456.68	A	4dr*	31.21	34.78	½-1½	3p^{2}S°-3d^{2}P (28)
3503.61	A	5	31.21	34.73	½- ½	
3275.20	A	2	31.21	34.98	½-1½	3p^{2}S°-4s^{2}P (29)
3806.30	A	2	31.23	34.47	1½-2½	3p^{4}S°-3d^{4}D (30)
3790.96	A	1	31.23	34.48	1½-1½	
3561.23	A	4	31.23	34.69	1½-2½	3p^{4}S°-3d^{4}F (31)
3571.26	A	4	31.23	34.68	1½-1½	
3590.47	A	2	31.23	34.66	1½-2½	3p^{4}S°-3d^{2}F (32)
3659.93	A	3	31.23	34.60	1½-2½	3p^{4}S°-3d^{2}D (33)
3632.75	A	2	31.23	34.62	1½-1½	
3542.90	A	7	31.23	34.71	1½-2½	3p^{4}S°-3d^{4}P (34)
3565.84	A	4	31.23	34.69	1½-1½	
3594.18	A	4	31.23	34.66	1½- ½	
3475.25	A	1	31.23	34.78	1½-1½	3p^{4}S°-3d^{2}P (35)
3522.72	A	1	31.23	34.73	1½- ½	
3442.12	A	1	31.23	34.81	1½-2½	3p^{4}S°-4s^{4}P (36)
3397.90	A	1	31.23	34.86	1½-1½	
3721.86	A	2	31.38	34.69	1½-2½	3p^{2}P°-3d^{4}F (37)
3753.83	A	5	31.38	34.66	1½-2½	3p^{2}P°-3d^{2}F (38)
3829.77	A	7	31.38	34.60	1½-2½	3p^{2}P°-3d^{2}D (39)
3818.44	A	6	31.39	34.62	½-1½	
3800.02	A	5	31.38	34.62	1½-1½	
3701.81	A	4	31.38	34.71	1½-2½	3p^{2}P°-3d^{4}P (40)
3744.66	A	4	31.39	34.69	½-1½	
3628.06	A	4	31.38	34.78	1½-1½	3p^{2}P°-3d^{2}P (41)
3697.09	A	2	31.39	34.73	½- ½	
3679.80	A	2	31.38	34.73	1½- ½	
3644.86	A	4	31.39	34.78	½-1½	
3428.76	A	5	31.38	34.98	1½-1½	3p^{2}P°-4s^{2}P (42)
3377.23	A	2	31.39	35.05	½- ½	
3443.70	A	2	31.39	34.98	½-1½	
3229.50	A	3	33.88	37.70	3½-4½	3p' ^{2}F°-3d' ^{2}G (43)
3224.82	A	4	33.87	37.70	2½-3½	
3097.15	A	3	33.88	37.86	3½-2½	3p' ^{2}F°-3d' ^{2}D (44)
3092.91	A	2	33.87	37.86	2½-2½	
3411.38	A	1	34.11	37.72	1½-1½	3p' ^{2}P°-3d' ^{2}P (45)
3440.80	A	1	34.14	37.72	½- ½	
3413.13	A	3	34.11	37.72	1½- ½	
3438.97	A	2	34.14	37.72	½-1½	

Ne II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	M
3336.12	A	2	34.11	37.81	1½-1½	3
3141.35	A	3	34.11	38.04	1½-2½	3
3050.57	A	1	34.11	38.15	1½- ½	3
*3072.68	A	1d	34.14	38.15	½- ½	
3480.75	A	2	34.16	37.70	½-1½	8
3479.53	A	1	34.16	37.70	½- ½	8
3542.28	A	2	34.24	37.72	2½-1½	3
3537.99	A	3	34.24	37.72	1½- ½	
3539.94	A	½	34.24	37.72	1½-1½	
3406.88	A	5	34.24	37.86	2½-2½	3
3457.16	P	4dr*	34.24	37.81	1½-1½	
3459.38	A	2	34.24	37.81	2½-1½	
3404.77	A	4	34.24	37.86	1½-2½	
4219.76	A	6	34.46	37.38	3½-3½	3
4231.60	A	4	34.47	37.39	2½-2½	
4239.95	A	2	34.48	37.39	1½-1½	
4242.20	A	1	34.50	37.40	½- ½	
4217.15	A	3	34.46	37.39	3½-2½	
4220.92	A	2	34.47	37.39	2½-1½	
4224.57	A	1	34.48	37.40	1½- ½	
4250.68	A	4	34.48	37.39	1½-2½	
4257.82	A	3	34.50	37.39	½-1½	
4206.43	A	2	34.46	37.39	3½-4½	3
4080.48	A	2d	34.48	37.51	1½-2½	
4150.67	A	3	34.50	37.47	½-1½	
4098.77	A	4	34.46	37.47	3½-3½	
4062.90	A	3	34.47	37.51	2½-2½	
4133.65	A	3	34.48	37.47	1½-1½	
4118.10	A	0	34.48	37.48	1½-2½	3
4100.30	A	1d	34.47	37.48	2½-2½	
4086.69	A	1	34.46	37.48	3½-2½	
4412.54	A	2	34.59	37.38	4½-3½	3d
4514.80	A	2	34.65	37.39	3½-2½	
4535.47	A	2	34.69	37.40	1½- ½	
4517.79	A	2	34.65	37.38	3½-3½	
4553.16	A	4	34.68	37.39	1½-1½	
4565.49	A	1	34.68	37.39	1½-2½	
4397.94	A	6	34.59	37.39	4½-4½	3d
4379.50	A	6	34.65	37.47	3½-3½	
4385.00	A	2	34.69	37.51	2½-2½	
4430.90	A	4	34.68	37.47	1½-1½	
4446.46	A	3	34.69	37.47	2½-1½	
4502.52	A	½	34.65	37.39	3½-4½	
4442.67	A	3	34.69	37.47	2½-3½	
4369.77	A	5	34.68	37.51	1½-2½	
4290.40	A	6	34.59	37.46	4½-5½	3d
4391.94	A	7	34.65	37.46	3½-4½	
4409.30	A	7	34.69	37.49	2½-3½	
*4413.20	A	4	34.68	37.48	1½-2½	
*4428.54	A	6	34.69	37.48	2½-2½	
4365.72	A	2	34.65	37.48	3½-2½	
4534.66	A	2	34.66	37.39	2½-2½	3d
4341.42	A	2	34.66	37.51	2½-2½	3d
4384.08	A	1	34.66	37.48	2½-2½	3d
4468.91	A	5	34.62	37.39	1½-2½	3d
*4428.54	A	6	34.60	37.39	2½-2½	
4456.95	A	5	34.62	37.39	1½-1½	
4416.77	A	2	34.60	37.39	2½-1½	
4439.95	A	2	34.62	37.40	1½- ½	
4244.17	A	0	34.60	37.51	2½-2½	3d
4339.78	A	1	34.62	37.47	1½-1½	
4322.66	A	1	34.62	37.48	1½-2½	3d
*4615.98	A	4	34.71	37.38	2½-3½	3d
4574.49	A	1	34.69	37.39	1½-2½	
4612.89	A	1	34.71	37.39	2½-2½	
4562.05	A	1	34.69	37.39	1½-1½	
4498.94	A	5	34.66	37.40	½- ½	
4600.11	A	1	34.71	37.39	2½-1½	
4544.11	A	1	34.69	37.40	1½- ½	
4471.52	A	3	34.71	37.47	2½-3½	3d
4377.95	A	2	34.69	37.51	1½-2½	
*4413.20	A	4	34.71	37.51	2½-2½	
4439.30	A	3	34.69	37.47	1½-1½	
4475.22	A	1	34.71	37.47	2½-1½	
4421.38	A	3	34.69	37.48	1½-2½	3d
4732.53	A	1	34.78	37.39	1½-2½	3d
4634.73	A	2	34.73	37.39	½-1½	
4719.37	A	1½	34.78	37.39	1½-1½	
*4615.98	A	4	34.73	37.40	½- ½	
4700.1	A	0	34.78	37.40	1½- ½	
4522.66	A	4	34.78	37.51	1½-2½	3d
4508.21	A	3	34.73	37.47	½-1½	
4588.13	A	3	34.78	37.47	1½-1½	
4569.01	A	5	34.78	37.48	1½-2½	3d
4511.37	A	4	34.78	37.51	1½-2½	?3d
4511.29	A	2	34.73	37.46	½-1½	

nued

ory f	Int	E P Low	E P High	J	Multiplet (No)
	2	34.81	37.39	2½-2½	$4s^4P-4f^4D^o$
	0	34.86	37.39	1½-1½	(71)
	0	34.90	37.40	½-½	
	1	34.81	37.39	2½-1½	
	0	34.86	37.40	1½-½	
	3	34.81	37.51	2½-2½	$4s^4P-4f^4F^o$
	½	34.86	37.47	1½-1½	(72)
	½	34.81	37.47	2½-1½	
	2	34.86	37.48	1½-2½	$4s^4P-4f^4G^o$
	3	34.81	37.48	2½-2½	(73)
	1	37.70	40.49	1½-2½	$sp^4(^1S)3p^2P^o$
	1	37.70	40.49	½-1½	$-sp^4(^1S)3d^2D$
	2	37.70	40.49	1½-2½	(74)

.12 Anal A List B June 1944

	Int	E P Low	E P High	J	Multiplet (No)
	(10R)D2	0.00	2.10	½-1½	$3^2S-3^2P^o$
	(9R)D1	0.00	2.09	½-½	(1)
	(8R)	0.00	3.74	½-1½	$3^2S-4^2P^o$
	(8R)	0.00	3.74	½-½	(2)
	10	2.10	3.18	1½-½	$3^2P^o-4^2S$
	6	2.09	3.18	½-½	(3)
	(10R)	2.10	3.60	1½-2½	$3^2P^o-3^2D$
	(8R)	2.09	3.60	½-1½	(4)
	(-)	2.10	3.60	1½-1½	
	(8r)	2.10	4.10	1½-½	$3^2P^o-5^2S$
	(8r)	2.09	4.10	½-½	(5)
	(10)	2.10	4.27	1½-2½	$3^2P^o-4^2D$
	(8)	2.09	4.27	½-1½	(6)
	(-)	2.10	4.27	1½-1½	
	(3s)Forb	2.10	4.27	1½-	$3^2P^o-4^2F^o$
	(3s)Forb	2.09	4.27	½-	(7)
	(6n)	2.10	4.49	1½-½	$3^2P^o-6^2S$
	(5n)	2.09	4.49	½-½	(8)
	(6r)	2.10	4.57	1½-2½	$3^2P^o-5^2D$
	(5r)	2.09	4.57	½-1½	(9)
P	(1s)Forb	2.10	4.57	1½-	$3^2P^o-5^2F^o$
P	(1s)Forb	2.09	4.57	½-	(10)
D	(4n)	2.10	4.69	1½-½	$3^2P^o-7^2S$
D	(3n)	2.09	4.69	½-½	(11)
D	(4r)	2.10	4.74	1½-2½	$3^2P^o-6^2D$
D	(3r)	2.09	4.74	½-1½	(12)
P	(-)Forb	2.10	4.74	1½-	$3^2P^o-6^2F^o$
P	(-)Forb	2.09	4.74	½-	(13)
B	(4n)	2.10	4.81	1½-½	$3^2P^o-8^2S$
B	(3n)	2.09	4.81	½-½	(14)
D	(2n)	2.10	4.84	1½-2½	$3^2P^o-7^2D$
D	(2n)	2.09	4.84	½-1½	(15)
B	(4n)	2.10	4.89	1½-½	$3^2P^o-9^2S$
B	(3)	2.09	4.89	½-½	(16)
B	-	2.10	4.90	1½-	$3^2P^o-8^2D$
B	-	2.09	4.90	½-1½	(17)
E	4	3.18	4.33	½-1½	$4^2S-5^2P^o$
E	2	3.18	4.33	½-½	(18)
F	-	3.18	4.60	½-	$4^2S-6^2P^o$ (19)
F	-	3.18	4.76	½-	$4^2S-7^2P^o$ (20)
F	-	3.60	4.57	—	$3^2D-5^2F^o$ (21)
F	-	3.60	4.74	—	$3^2D-6^2F^o$ (22)
F	-	3.60	4.84	—	$3^2D-7^2F^o$ (23)
P	-	3.60	4.91	—	$3^2D-8^2F^o$ (24)
F	-	3.60	4.95	—	$3^2D-9^2F^o$ (25)
F	-	3.60	4.98	—	$3^2D-10^2F^o$ (26)
F	-	3.60	5.00	—	$3^2D-11^2F^o$ (27)

47.10 Anal A List D June 1944

	Int	E P Low	E P High	J	Multiplet (No)
A	10	32.71	36.20	2-1	3s 1°-3p 1
A	10	32.71	36.70	2-3	(1) -3p 2
A	6	32.71	36.74	2-2	-3p 3
A	4	32.71	36.81	2-1	-3p 4
A	8	32.80	36.20	1-1	3s 2°-3p 1
A	6	32.80	36.74	1-2	(2) -3p 3
A	6	32.80	36.81	1-1	-3p 4
A	7	32.80	36.94	1-2	-3p 5

Na II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3711.074	A	6	32.87	36.20	0-1	3s 3°-3p 1
3135.483	A	5	32.87	36.81	0-1	(3) -3p 4
4087.60	A	0	33.18	36.20	1-1	3s 4°-3p 1
3462.494	A	3	33.18	36.74	1-2	(4) -3p 3
3400.110	A	2	33.18	36.81	1-1	-3p 4
3285.603	A	8	33.18	36.94	1-2	-3p 5
3212.186	A	6	33.18	37.02	1-1	-3p 7
3189.783	A	6	33.18	37.05	1-2	-3p 8
3149.267	A	5	33.18	37.10	1-1	-3p 9
3015.400	A	6	36.74	40.84	2-2	3p 3-$3d^3P^o$ (5)
3064.372	A	4	36.81	40.84	1-2	3p 4-$3d^3P^o$ (6)
3179.055	A	5	36.94	40.82	2-1	3p 5-$3d^3P^o$
3163.731	A	6	36.94	40.84	2-2	(7)
*3078.315	A	6	36.94	40.94	2-2	3p 5-$3d^3F^o$ (8)
3074.334	A	6	36.94	40.95	2-3	3p 5-$3d^1F^o$ (9)
3234.926	A	4	37.02	40.84	1-2	3p 7-$3d^3P^o$ (10)
3045.593	A	5	37.02	41.07	1-0	3p 7-$4s^3P^o$ (11)
3007.071	A	5	37.02	41.08	1-2	3p 7-$3d^1D^o$ (12)
3009.138	A	4	37.02	41.12	1-1	3p 7-$4s^1P^o$ (13)
3274.220	A	5	37.05	40.82	2-1	3p 8-$3d^3P^o$
3257.965	A	6	37.05	40.84	2-2	(14)
3053.664	A	6	37.05	41.09	2-3	3p 8-$3d^3D^o$ (15)
3327.685	A	4	37.10	40.81	1-0	3p 9-$3d^3P^o$
3318.032	A	4	37.10	40.82	1-1	(16)
3225.976	A	4	37.10	40.92	1-2	3p 9-$4s^3P^o$
3104.396	A	4	37.10	41.07	1-0	(17)
3066.536	A	4	37.10	41.12	1-1	3p 9-$4s^1P^o$ (18)
4123.069	A	3	38.13	41.12	0-1	3p 10-$4s^1P^o$ (19)
4114.95	B	3	38.13	41.13	0-1	3p 10-$3d^3D^o$ (20)

For changes in Paschen notation see text § 37

Mg I I P 7.61 Anal A List B July 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4571.0956	A	5	0.00	2.70	0-1	$3^1S-3^3P^o$ (1)
5183.6042	A	125	2.70	5.09	2-1	$3^3P^o-4^3S$
5172.6843	A	80	2.70	5.09	1-1	(2)
5167.3216	A	40	2.70	5.09	0-1	
3838.2918	A	100r*	2.70	5.92	2-3	$3^3P^o-3^3D$
3832.3037	A	80r*	2.70	5.92	1-2	(3)
3829.3549	A	40	2.70	5.92	0-1	
3838.2943	A	100r*	2.70	5.92	2-2	
3832.2996	A	80r*	2.70	5.92	1-1	
3336.69	B	20	2.70	6.40	2-1	$3^3P^o-5^3S$
3332.17	B	15	2.70	6.40	1-1	(4)
3329.93	B	10	2.70	6.40	0-1	
3096.902	B	50	2.70	6.69	2-	$3^3P^o-4^3D$
3092.997	B	40	2.70	6.69	1-	(5)
3091.076	B	20	2.70	6.69	0-	
11828.8	B	(120)	4.33	5.37	1-0	$3^1P^o-4^1S$ (6)
8806.7678	A	(10)	4.33	5.73	1-2	$3^1P^o-3^1D$
8806.7353	A	(2)				(7)
8806.7032	A	(2)				
5711.0912	A	(6)	4.33	6.49	1-0	$3^1P^o-5^1S$
5711.0831	A	(1)				(8)
5711.0735	A	(1)				
5528.4094	A	(10)	4.33	6.56	1-2	$3^1P^o-4^1D$
5528.3986	A	(2)				(9)
5528.3876	A	(2)				
4730.0285	A	(2)	4.33	6.94	1-0	$3^1P^o-6^1S$ (10)
4702.9909	A)	40	4.33	6.95	1-2	$3^1P^o-5^1D$
4702.9831	A)					(11)
4702.9758	A)					
4380.38	B	(5)	4.33	7.14	1-2	$3^1P^o-3p^2$ 3p (12)
4354.540	B	(1)	4.33	7.16	1-0	$3^1P^o-7^1S$ (13)
4351.9056	A)	30	4.33	7.16	1-2	$3^1P^o-6^1D$
4351.8941	A)					(14)
4167.2712	A)	10n	4.33	7.29	1-2	$3^1P^o-7^1D$
4167.2604	A)					(15)
4057.5052	A	5n	4.33	7.37	1-2	$3^1P^o-8^1D$ (16)

Mg I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3986.7533	A	(1)	4.33	7.42	1-2	$3^1P^o-9^1D$ (17)
3938.400	A	(0)	4.33	7.46	1-2	$3^1P^o-10^1D$ (18)
3904.02	E	(2r)	4.33	7.49	1-2	$3^1P^o-11^1D$ (19)
3878.58	B	(1)	4.33	7.51	1-2	$3^1P^o-12^1D$ (20)
3859.24	B	(1)	4.33	7.52	1-2	$3^1P^o-13^1D$ (21)
7657.60	B	(35)	5.09	6.70	1-2	$4^3S-5^3P^o$ (22)
6318.23	B)	(5)	(5.09	7.04	1-2	$4^3S-6^3P^o$
6318.75	B)		5.09	7.04	1-	(23)
5785.08	B	(3)	5.09	7.22	1-2	$4^3S-7^3P^o$ (24)
8923.8	D	20	5.37	6.75	0-1	$4^1S-5^1P^o$ (25)
12083.79	P	(50)	5.73	6.75	2-3	$3^1D-4^1F^o$ (26)
9256.0	D	200nl	5.73	7.06	2-3	$3^1D-5^1F^o$ (27)
8213.02	P	(-)	5.73	7.23	2-3	$3^1D-6^1F^o$ (28)
7691.57	P	(-)	5.73	7.33	2-3	$3^1D-7^1F^o$ (29)
7387.70	P	(-)	5.73	7.40	2-3	$3^1D-8^1F^o$ (30)
7193.20	P	(-)	5.73	7.44	2-3	$3^1D-9^1F^o$ (31)
7060.43	P		5.73	7.48	2-3	$3^1D-10^1F^o$ (32)
6965.42	P		5.73	7.50	2-3	$3^1D-11^1F^o$ (33)
6894.92	P		5.73	7.52	2-3	$3^1D-12^1F^o$ (34)
10966.1	P	(20)	5.91	7.03	2-	$4^3P^o-5^3D$
10961.2	P	(10)	5.91	7.03	1,0-	(35)
9993.7	D	3nl	5.91	7.14	2-1	$4^3P^o-7^3S$
9987.0	D	2n	5.91	7.14	1,0-1	(36)
10812.8	D	(30)	5.92	7.06	—	$3^3D-5^3F^o$ (37)
9415.5	D	10nl	5.92	7.23	—	$3^3D-6^3F^o$ (38)
8736.0	D	1n	5.92	7.33	—	$3^3D-7^3F^o$ (39)
8346.13	P		5.92	7.40	—	$3^3D-8^3F^o$ (40)
8098.72	P		5.92	7.44	—	$3^3D-9^3F^o$ (41)
7930.83	P		5.92	7.48	—	$3^3D-10^3F^o$ (42)
7811.14	P		5.92	7.50	—	$3^3D-11^3F^o$ (43)
7722.60	P		5.92	7.52	—	$3^3D-12^3F^o$ (44)
3627.63	B	(4)	6.56	9.96	2-3	$4^1D-3p3d^1F^o$ (45)
4099.77	B	(2)	6.95	9.96	2-3	$5^1D-3p3d^1F^o$ (46)
3895.662	B	(10)	7.14	10.31	2-3	$3p^2\ ^3P-3p3d^3$
3891.976	B	(5)	7.14	10.31	1-2	(47)
3890.241	B	(3)	7.14	10.31	0-1	
3898.120	B	(4)	7.14	10.31	2-2	
3893.376	B	(3)	7.14	10.31	1-1	
4409.84	B	(1)	7.16	9.96	2-3	$6^1D-3p3d^1F^o$ (48)

Fine Structure

Mg II I P 14.97 Anal A List A June 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
9217.4	P		8.62	9.96	½-1½	$4^2S-4^2P^o$
9243.4	P		8.62	9.95	½-½	(1)
3613.80	A	4	8.62	12.03	½-1½	$4^2S-5^2P^o$
3615.64	A	3	8.62	12.03	½-½	(2)
10914.2	P		8.83	9.96	2½-1½	$3^2D-4^2P^o$
10949.4	P		8.83	9.95	1½-½	(3)
4481.327	A)	100	(8.83	11.58	2½-	$3^2D-4^2F^o$
4481.129	A)		8.83	11.58	1½-2½	(4)
3848.24	A	7	8.83	12.03	2½-1½	$3^2D-5^2P^o$
3850.40	A	6	8.83	12.03	1½-½	(5)
3104.805	A)	30	(8.83	12.80	2½-	$3^2D-5^2F^o$
3104.713	A)		8.83	12.80	1½-2½	(6)
8238.4	P		9.96	11.45	1½-½	$4^2P^o-5^2S$
8217.8	P		9.95	11.45	½-½	(7)
7896.37	A	-	9.96	11.52	1½-	$4^2P^o-4^2D$
7877.13	A	-	9.95	11.52	½-1½	(8)
4433.991	A	8	9.96	12.74	1½-½	$4^2P^o-6^2S$
4427.995	A	7	9.95	12.74	½-½	(9)

Mg II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
4390.585	A	10	9.96	12.77	1½-	$4^2P^o-5^2D$
4384.643	A	8	9.95	12.77	½-1½	(10)
3553.51	A	5	9.96	13.43	1½- ½	$4^2P^o-7^2S$
3549.61	A	4	9.95	13.43	½- ½	(11)
3538.86	A	6	9.96	13.44	1½-	$4^2P^o-6^2D$
3535.04	A	5	9.95	13.44	½-1½	(12)
3175.84	A	2	9.96	13.84	1½- ½	$4^2P^o-8^2S$
3172.79	A	1	9.95	13.84	½- ½	(13)
3168.98	A	3	9.96	13.85	1½-	$4^2P^o-7^2D$
3165.94	A	2	9.95	13.85	½-1½	(14)
9633.0	P		11.52	12.80	—	$4^2D-5^2F^o$ (15)
6346.67	A	5	11.52	13.46	—	$4^2D-6^2F^o$ (16)
5264.14	A	5	11.52	13.86	—	$4^2D-7^2F^o$ (17)
4739.59	A	5	11.52	14.12	—	$4^2D-8^2F^o$ (18)
4436.48	A	5	11.52	14.30	—	$4^2D-9^2F^o$ (19)
4242.47	A	4	11.52	14.43	—	$4^2D-10^2F^o$ (20)
4109.54	A	3	11.52	14.52	—	$4^2D-11^2F^o$ (21)
4013.80	A	2	11.52	14.59	—	$4^2D-12^2F^o$ (22)
6545.80	A	5	11.58	13.47	—	$4^2F^o-6^2G$ (23)
5401.05	A	5	11.58	13.86	—	$4^2F^o-7^2G$ (24)
4851.10	A	5	11.58	14.12	—	$4^2F^o-8^2G$ (25)
4534.26	A	4	11.58	14.30	—	$4^2F^o-9^2G$ (26)
4331.93	A	3	11.58	14.43	—	$4^2F^o-10^2G$ (27)
4193.44	A	2	11.58	14.52	—	$4^2F^o-11^2G$ (28)
4093.90	A	1	11.58	14.59	—	$4^2F^o-12^2G$ (29)

Al I I P 5.96 Anal A List B July 1944

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3961.523//	A	10R	0.01	3.13	1½- ½	$3^2P^o-4^2S$
3944.009	A	10R	0.00	3.13	½- ½	(1)
3443.651	B	10	0.01	3.60	1½-2½	$3^2P^o-3p^2\ ^4P$
3439.352	B	8	0.00	3.59	½-1½	(2)
3452.670	B	5	0.01	3.59	1½-1½	
3444.871	B	7	0.00	3.58	½- ½	
3458.230	B	8	0.01	3.58	1½- ½	
3092.716	C	10R	0.01	4.00	1½-2½	$3^2P^o-3^2D$
3082.159	C	10R	0.00	4.00	½-1½	(3)
3092.843	C	6R	0.01	4.00	1½-1½	
13123.37	P	(400)	3.13	4.07	½-1½	$4^2S-4^2P^o$
13150.68	P	(200)	3.13	4.07	½- ½	(4)
6695.97	D	7	3.13	4.97	½-1½	$4^2S-5^2P^o$
6698.63	D	6	3.13	4.97	½- ½	(5)
5557.08	C	1n	3.13	5.35	½-1½	$4^2S-6^2P^o$
5557.95	C	1n	3.13	5.35	½- ½	(6)
3057.155	B	10	3.60	7.63	2½-2½	$3p^2\ ^4P-4s'\ ^4P^o$†
3059.047	B	4	3.59	7.62	1½-1½	(7)
3066.158	B	5	3.60	7.62	2½-1½	
3064.302	B	5	3.59	7.62	1½- ½	
3050.073	B	9	3.59	7.63	1½-2½	
3054.694	B	6	3.58	7.62	½-1½	
11255.69	P)	(300)	(4.00	5.10	2½-	$3^2D-4^2F^o$
11253.81	P)		(4.00	5.10	1½-	(8)
8773.91	D	20	4.00	5.41	2½-	$3^2D-5^2F^o$
8772.88	D	15	4.00	5.41	1½-2½	(9)
7836.15	D	10	4.00	5.58	2½-	$3^2D-6^2F^o$
7835.33	D	9	4.00	5.58	1½-2½	(10)
7362.31	D	10	4.00	5.68	2½-	$3^2D-7^2F^o$
7361.59	D	6	4.00	5.68	1½-2½	(11)
10891.21	P		4.07	5.20	1½- ½	$4^2P^o-6^2S$
10872.47	P		4.07	5.20	½- ½	(12)
10782.12	P		4.07	5.21	1½-2½	$4^2P^o-5^2D$
10768.39	P		4.07	5.21	½-1½	(13)
10786.78	P		4.07	5.21	1½-1½	
8923.56	D	2	4.07	5.45	1½-2½	$4^2P^o-6^2D$
8912.88	D	1	4.07	5.45	½-1½	(14)
8841.26	D	3	4.07	5.47	1½-2½	$4^2P^o-7^2S$
8828.91	D	1	4.07	5.47	½-1½	(15)
8075.37	D	4	4.07	5.60	1½-2½	$4^2P^o-7^2D$
8065.99	D	3	4.07	5.60	½-1½	(16)
3479.78	B	6	4.81	8.35	2½-2½	$4^2D-3d'\ ^2D^o$
3482.58	B	5 1	4.81	8.35	1½-1½	(17)
3479.27	B	1	4.81	8.35	1½-2½	

Al I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3931.97	B	5	5.21	8.35	2½-2½	$5^2D-3d'\ ^2D^o$
3935.77	B	4	5.21	8.35	1½-1½	(18)
3087.02	B	5	5.45	9.45	2½-1½	$6^2D-4d'\ ^2P^o$† (19)
3203.39	B	4	5.60	9.45	2½-1½	$7^2D-4d'\ ^2P^o$ (20)

Al II I P 18.75 Anal A List A July 1944

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3900.680	B	10	7.39	10.55	1-2	$3^1P^o-3^1D$ (1)
4663.054	B	0	10.55	13.20	2-1	$3^1D-4^1P^o$ (2)
7042.06	A	10	11.27	13.02	1-2	$4^3S-4^3P^o$
7056.60	A	5	11.27	13.02	1-1	(3)
7063.64	A	1	11.27	13.01	1-0	
8640.70	A	8	11.77	13.20	0-1	$4^1S-4^1P^o$ (4)
3275.776	B	4	11.77	15.54	0-1	$4^1S-5^1P^o$ (5)
10076.29	A	6	11.80	13.02	3-2	$3^3D-4^3P^o$
10107.19	A	4	11.80	13.02	2-1	(6)
10122.50	A	0.5	11.80	13.01	1-0	
10077.32	A	1)	11.80	13.02	2-2	
10077.53	A	0.5)				
10108.01	A	0.5)	11.80	13.02	1-1	
10108.37	A	0.2)				
3586.557	A	10	11.80	15.24	3-4	$3^3D-4^3F^o$
3587.068	A	9	11.80	15.24	2-3	(7)
3587.450	A	8	11.80	15.24	1-2	
3586.912	A	4)	11.80	15.24	3-3	
3586.936	A	2)				
3587.309	A	2.5)	11.80	15.24	2-2	
3587.342	A	3)				
3587.165	A	0.5)	11.80	15.24	3-2?	
*3587.195	A	1)				
3586.708	A	1.5Forb	11.80	15.24	2-4	
3586.811	A	0.2Forb	11.80	15.24	1-4	
*3587.195	A	1 Forb	11.80	15.24	1-3	
3313.344	A	3	11.80	15.52	3-2	$3^3D-5^3P^o$
3314.883	A	2	11.80	15.52	2-1	(8)
3315.608	A	1	11.80	15.52	1-0	
3313.470	A	0.5	11.80	15.52	2-2	
3314.981	A	0	11.80	15.52	1-1	
3314.756	A	0.5Forb	11.80	15.52	3-1	
3315.516	A	0.2Forb	11.80	15.52	2-0	
6837.14	A	8	13.02	14.83	2-1	$4^3P^o-5^3S$
6823.48	A	5	13.02	14.83	1-1	(9)
6816.69	A	1	13.01	14.83	0-1	
6243.36	A	10	13.02	15.00	2-3	$4^3P^o-4^3D$
6231.78	A	9	13.02	15.00	1-2	(10)
6226.18	A	8	13.01	15.00	0-1	
3738.003	B	3	13.02	16.32	2-1	$4^3P^o-6^3S$
3733.910	B	2	13.02	16.32	1-1	(11)
3731.950	B	1	13.01	16.32	0-1	
3654.995	A	($^8_6$)	13.02	16.40	2-3	$4^3P^o-5^3D$
3651.096	A	5	13.02	16.40	1-2	(12)
3651.065	A	7 Forb	13.02	16.40	1-3?	
3649.184	A	1.5Forb	13.01	16.40	0-3?	
3649.232	A	1 Forb	13.01	16.40	0-2?	
3026.776	P)	1.5	13.02	17.10	2-1	$4^3P^o-7^3S$
3026.781	P)					(13)
3024.098	P)	1	13.02	17.10	1-1	
3024.114	P)					
3022.804	P	0.5	13.01	17.10	0-1	
2998.158	P)	2	13.02	17.14	2-	$4^3P^o-6^3D$
2998.163	P)					(14)
2995.530	P)	1.5	13.02	17.14	1-	
2995.546	P)					
2994.259	P	1	13.01	17.14	0-1	
6919.96	B	0.5	13.20	14.98	1-0	$4^1P^o-5^1S$ (15)
5593.23	B	10	13.20	15.41	1-2	$4^1P^o-5^1D$ (16)
3866.160	B	2	13.20	16.39	1-0	$4^1P^o-6^1S$ (17)
3703.217	B	4	13.20	16.53	1-2	$4^1P^o-6^1D$ (18)
3135.875	B	3	13.20	17.13	1-0	$4^1P^o-7^1S$ (19)
3088.523	B	3	13.20	17.19	1-2	$4^1P^o-7^1D$ (20)
7471.41	A	9	13.59	15.24	2-3	$4^1D-4^1F^o$ (21)
6335.74	A	10	13.59	15.54	2-1	$4^1D-5^1P^o$ (22)
4237.57	P		13.59	16.50	2-1	$4^1D-5^1F^o$ (23)
4026.5	B	5	13.59	16.66	2-1	$4^1D-6^1P^o$ (24)
3428.916	B	6	13.59	17.19	2-3	$4^1D-6^1F^o$ (25)
3351.456	B	3	13.59	17.27	2-1	$4^1D-7^1P^o$ (26)
3074.665	B	6	13.59	17.60	2-3	$4^1D-7^1F^o$ (27)
3041.278	B	6	13.59	17.65	2-1	$4^1D-8^1P^o$ (28)

Al II continued

Laboratory			E P		J	M
I A	Ref	Int	Low	High		
6696.39	B	0.5	14.83	16.67	1-2	5
6699.46	B	0	14.83	16.67	1-1	
4998.43	P		14.83	17.29	—	5
4332.0	B	0.5	14.83	17.67	—	5
°3983.7	B	0.5	14.83	17.92	—	5
3774.3	B	0	14.83	18.09	—	5
5388.48	B	1	14.98	17.27	0-1	5
4629.7	B	1	14.98	17.65	0-1	5
4240.75	B	3	14.98	17.89	0-1	5
4009.58	B	1	14.98	18.06	0-1	5
3859.33	B	3	14.98	18.18	0-1	5
3753.10	B	1	14.98	18.27	0-1	5
8354.35	A	10	15.00	16.47	3-4	4
8359.57	A	9	15.00	16.47	2-3	
8363.52	A	8	15.00	16.47	1-2	
8359.23	A	1	15.00	16.47	3-3	
8363.30	A	1	15.00	16.47	2-2	
5853.62	B	5	15.00	17.11	3-4	4
5861.53	B	4	15.00	17.10	2-3	
5867.81	B	3	15.00	17.10	1-2	
5371.84	B	6	15.00	17.29	3,2-	4
5085.02	B	4	15.00	17.42	3-4	4
5093.65	B	2	15.00	17.42	2-3	
5100.34	B	1	15.00	17.42	1-2	
4609.7	B	1	15.00	17.67	—	4
4585.820	B	6	15.00	17.69	3-4	4
4588.194	B	5	15.00	17.69	2-3	
4589.750	B	4	15.00	17.69	1-2	
4588.082	B	0.5	15.00	17.69	3-3	
4589.689	B	1	15.00	17.69	2-2	
4226.827	A	8	15.00	17.92	3-4	4
*4227.509	A	4	15.00	17.92	2-3	
4227.999	A	3	15.00	17.92	1-2	
*4227.509	A	4)	15.00	17.92	3-3	
4227.420	A	1)				
4227.945	A	0.5	15.00	17.92	2-2	
4227.875	A	0	15.00	17.92	3-2	
4226.918	A	0Forb	15.00	17.92	2-4	
4227.545	A	0.5Forb	15.00	17.92	1-3	
3995.860	B	5	15.00	18.09	3-4	4
3996.159	B	4	15.00	18.09	2-3	
3996.381	B	3	15.00	18.09	1-2	
3996.075	B	1	15.00	18.09	3-3	
3996.323	B	0.5	15.00	18.09	2-2	
3996.182	B	0.5Forb	15.00	18.09	1-3	
°3983.7	B	0.5	15.00	18.09	—	4
3842.037	B	3	15.00	18.21	3-4	4
3842.213	B	2	15.00	18.21	2-3	
3842.317	B	1	15.00	18.21	1-2	
3734.567	B	1	15.00	18.30	3-4	4
3734.715	B	0.5	15.00	18.30	2-3	
3734.805	B	0	15.00	18.30	1-2	
3656.319	B	0.5	15.00	18.37	3-4	4^3
3597.50	B	2	15.00	18.43	3-4	4^3
3552.00	B	1	15.00	18.47	3-	4^3
3516.05	B	0.5	15.00	18.51	3-	4^3
3463.63	B	0	15.00	18.56	3-	4^3
9331.546	A	3)	15.24	16.56	3-	4^1
9331.979	A	2)				
6201.52	A	10)	15.24	17.23	3-	4^1
6201.70	A	9)				
5158.187	B	1d	15.24	17.63	3-	4^1
4650.544	B	2)	15.24	17.90	4-	4^1
4650.646	B	1.5)				
4356.711	B	2)	15.24	18.07	3-	4^1
4356.807	B	1.5)				
4168.424	B	1)	15.24	18.20	3-4	4^1
4168.511	B	0.5)				
4039.397	B	0)	15.24	18.30	3-4	4^1
4039.302	B	0.5)				
3946.406	B	0.5d	15.24	18.37	3-	4^1
9290.649	A	6)	15.24	16.56	4-	4^3
9290.747	A	5)				
9288.145	A	3)	15.24	16.56	3-	
9288.550	A	2)				
9286.578	A	1)	15.24	16.56	2-	
9286.794	A	2)				
6495.45	B	0.5	15.24	17.14	4-	4^3

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ry	Int	E P Low	High	J	Multiplet (No)
	10n	15.24	17.23	4-	$4^3F^o-6^3G$ (66)
	8 7	15.24	17.23	3-	
	5 6	15.24	17.23	2-	
	2	15.24	17.57	4-	$4^3F^o-7^3D$ (67)
	2	15.24	17.57	3-	
	2	15.24	17.57	2-	
	1.5d	15.24	17.63	4-	$4^3F^o-7^3G$ (68)
	1 0.5	15.24	17.63	3-	
	0.5d	15.24	17.63	2-	
	4 3.5	15.24	17.90	4-	$4^3F^o-8^3G$ (69)
	2 1.5	15.24	17.90	3-	
	1 0.5	15.24	17.90	2-	
	4 3.5	15.24	18.07	4-	$4^3F^o-9^3G$ (70)
	2.0 1.5	15.24	18.07	3-	
	1.0 0.5	15.24	18.07	2-	
	3 2.5	15.24	18.20	4-	$4^3F^o-10^3G$ (71)
	1.5 1	15.24	18.20	3-	
	1 0.5	15.24	18.20	2-	
	0.5d	15.24	18.30	4-	$4^3F^o-11^3G$ (72)
	0 0.5	15.24	18.30	3-	
	0n	15.24	18.30	2-	
	0.5d	15.24	18.37	4-	$4^3F^o-12^3G$ (73)
	0.5d	15.24	18.37	3-	
	0.5	15.24	18.43	4-	$4^3F^o-13^3G$ (74)
	1	15.41	17.19	2-3	$5^1D-6^1F^o$ (75)
	0.5	15.41	17.27	2-1	$5^1D-7^1P^o$ (76)
	3	15.41	17.60	2-3	$5^1D-7^1F^o$ (77)
	3	15.41	17.65	2-1	$5^1D-8^1P^o$ (78)
	3	15.41	17.87	2-3	$5^1D-8^1F^o$ (79)
	3	15.41	17.89	2-1	$5^1D-9^1P^o$ (80)
	0.5	15.41	18.06	2-3	$5^1D-9^1F^o$ (81)
	1	15.41	18.06	2-1	$5^1D-10^1P^o$ (82)
	3	15.41	18.18	2-1	$5^1D-11^1P^o$ (83)
	0.5	15.41	18.19	2-3	$5^1D-10^1F^o$ (84)
	3	15.41	18.27	2-1	$5^1D-12^1P^o$ (85)
	0.5	15.41	18.29	2-3	$5^1D-11^1F^o$ (86)
B	2	15.41	18.34	2-1	$5^1D-13^1P^o$ (87)
B	0.5	15.41	18.45	2-1	$5^1D-15^1P^o$ (88)
B	0	15.41	18.49	2-1	$5^1D-16^1P^o$ (89)
A	2	15.52	17.10	2-1	$5^3P^o-7^3S$ (90)
A	1	15.52	17.10	1-1	
A	0.5	15.52	17.10	0-1	
A	2	15.52	17.14	2-	$5^3P^o-6^3D$ (91)
A	1	15.52	17.14	1-	
A	0.5	15.52	17.14	0-1	
A	10	15.52	17.55	2-1	$5^3P^o-8^3S$ (92)
A	(8)	15.52	17.55	1-1	
A	5 3	15.52	17.55	0-1	
A	2				
A	10	15.52	17.57	2-	$5^3P^o-7^3D$ (93)
A	(8)	15.52	17.57	1-	
A	7 3	15.52	17.57	0-1	
A	2				
B	7	15.52	17.84	2-1	$5^3P^o-9^3S$ (94)
B	5	15.52	17.84	1-1	
B	2	15.52	17.84	0-1	
B	8	15.52	17.86	2-	$5^3P^o-8^3D$ (95)
B	6	15.52	17.86	1-	
B	3	15.52	17.86	0-1	
B	5	15.52	18.04	2-1	$5^3P^o-10^3S$ (96)
B	3	15.52	18.04	1-1	
B	2	15.52	18.04	0-1	
B	1	15.52	18.18	2-	$5^3P^o-10^3D$ (97)
B	0.5	15.52	18.18	1-	
B	0.5	15.52	18.18	0-1	
A	5	15.54	17.19	1-2	$5^1P^o-7^1D$ (98)
A	6	15.54	17.57	1-0	$5^1P^o-8^1S$ (99)
A	7	15.54	17.60	1-2	$5^1P^o-8^1D$ (100)

Al II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
5324.61	B	4	15.54	17.86	1-0	$5^1P^o-9^1S$ (101)
5285.85	B	6	15.54	17.87	1-2	$5^1P^o-9^1D$ (102)
4918.98	B	3	15.54	18.05	1-0	$5^1P^o-10^1S$ (103)
4898.76	B	5	15.54	18.06	1-2	$5^1P^o-10^1D$ (104)
4666.8	B	11	15.54	18.18	1-0	$5^1P^o-11^1S$ (105)
4655.05	B	0.5	15.54	18.19	1-2	$5^1P^o-11^1D$ (106)
4489.87	B	0.5	15.54	18.29	1-2	$5^1P^o-12^1D$ (107)
9124.27	A	0.5	16.32	17.67	1-2	$6^3S-8^3P^o$ (108)
6001.18	B	1	16.39	18.45	0-1	$6^1S-15^1P^o$ (109)
8119.72	A	1.5	16.40	17.92	-4	$5^3D-9^3F^o$ (110)
8122.08	A	0.5	16.40	17.92	-3	
8121.89	A	0.2				
8123.52	A	0	16.40	17.92	-2	
6775.97	B	0.5	16.40	18.22	-	$5^3D-11^3P^o$ (111)
8680.31	A	3	16.47	17.90	4-	$5^3F^o-8^3G$ (112)
8674.92	A	2	16.47	17.90	3-	
8675.28	A	1				
8671.06	A	0.5	16.47	17.90	2-	
8671.28	A	1				
7709.78	A	0	16.47	18.07	4-	$5^3F^o-9^3G$ (113)
7138.81	B	0.5	16.47	18.20	4-	$5^3F^o-10^3G$ (114)
7134.66	B	0.5	16.47	18.20	3-	
7131.99	B	0	16.47	18.20	2-	
8858.39	A	1	16.50	17.90	3-	$5^1F^o-8^1G$ (115)
8858.77	A	0.5				
8086.91	A	0.5	16.53	18.06	2-3	$6^1D-9^1F^o$ (116)
9249.41	A	1	16.56	17.90	—	$5^1G-8^1H^o$ (117)
8160.15	A	3	16.56	18.08	—	$5^1G-9^1H^o$ (118)
7526.2	A	0.2	16.56	18.20	—	$5^1G-10^1H^o$ (119)

Fine Structure

Al III I P 28.33 Anal A List A July 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3601.623	A	(20)	14.31	17.74	2½-1½	$3^2D-4^2P^o$ (1)
3612.352	A	(15)	14.31	17.73	1½- ½	
3601.916	A	1	14.31	17.74	1½-1½	
5696.47	A	8	15.57	17.74	½-1½	$4^2S-4^2P^o$ (2)
5722.65	A	6	15.57	17.73	½- ½	
4529.176	A	(10)	17.74	20.47	1½-2½	$4^2P^o-4^2D$ (3)
4512.535	A	(8)	17.73	20.47	½-1½	
4528.911	A	1	17.74	20.47	1½-1½	
3713.103	A	(15)	17.74	21.07	1½- ½	$4^2P^o-5^2S$ (4)
3702.086	A	(10)	17.73	21.07	½- ½	
4149.897	A	(10)	20.47	23.44	2½-3½	$4^2D-5^2F^o$ (5)
4150.138	A	(8)	20.47	23.44	1½-2½	
4149.917	A	1	20.47	23.44	2½-2½	
4701.65	A	6	20.69	23.32	—	$4^2F^o-5^2D$ (6)
4490.90	A	2nn Forb	20.69	23.44	—	$4^2F^o-5^2F^o$ (7)
4479.968	A	4	20.69	23.45	3½-	$4^2F^o-5^2G$ (8)
4479.891	A	3	20.69	23.45	2½-3½	
4364.59	A	2n	22.03	24.86	1½-	$5^2P^o-6^2D$ (9)
4357.24	P		22.03	24.86	½-1½	
3287.37	A	1	22.03	25.79	1½-	$5^2P^o-7^2D$ (10)
3283.11	A	0.5	22.03	25.79	½-1½	
4903.71	A	4	23.32	25.83	—	$5^2D-7^2F^o$ (11)
3980.56	A	2n	23.32	26.42	—	$5^2D-8^2F^o$ (12)
5260.91	A	0n	23.44	25.79	—	$5^2F^o-7^2D$ (13)
5150.86	A	6n	23.44	25.84	—	$5^2F^o-7^2G$ (14)
4188.88	A	0.5	23.44	26.39	—	$5^2F^o-8^2D$ (15)
4142.15	A	2n	23.44	26.42	—	$5^2F^o-8^2G$ (16)
4141.25	A	0n Forb	23.44	26.42	—	$5^2F^o-8^2H^o$ (17)
5172.6	A	1	23.45	25.83		$5^2G-7^2F^o$ (18)

Al III continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
5163.90	A	7	23.45	25.84		$5^2G-7^2H^o$ (19)
3658.3	A	(1n)	23.45	26.82		$5^2G-9^2H^o$ (20)

REVISED

See NSRDS-NBS 3, Section 2, 1967

Si I I P 8.11 Anal B List A Aug 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
2970.35	A	15	0.78	4.93	2-2	$3p^2\ ^1D-4s^3P^o$ (1)
2987.65	A	25	0.78	4.91	2-1	
4102.926	A	25	1.90	4.91	0-1	$3p^2\ ^1S-4s^3P^o$ (2)
3905.527	A	100	1.90	5.06	0-1	$3p^2\ ^1S-4s^1P^o$ (3)
12031.49	A	25	4.93	5.96	2-3	$4s^3P^o-4p^3D$ (4)
11984.20	A	20	4.91	5.94	1-2	
11991.57	A	10	4.90	5.93	0-1	
12270.50	A	2	4.93	5.94	2-2	
12103.46	A	5	4.91	5.93	1-1	
12395.97	P		4.93	5.93	2-1	
10827.09	A	100	4.93	6.07	2-2	$4s^3P^o-4p^3P$ (5)
10749.40	A	60	4.91	6.06	1-1	
10979.27	A	35	4.93	6.06	2-1	
10786.86	A	50	4.91	6.05	1-0	
10603.38	A	60	4.91	6.07	1-2	
10660.98	A	50	4.90	6.06	0-1	
10585.12	A	100	4.93	6.10	2-1	$4s^3P^o-4p^3S$ (6)
10371.23	A	50	4.91	6.10	1-1	
10288.83	A	25	4.90	6.10	0-1	
9768.27	A	5w	4.93	6.20	2-2	$4s^3P^o-4p^1D$ (7)
9585.72	A	4	4.91	6.20	1-2	
8435.28	P		4.91	6.37	1-0	$4s^3P^o-4p^1S$ (8)
5797.912	A	40	4.93	7.06	2-3	$4s^3P^o-5p^3D$ (9)
5793.128	A	30	4.91	7.04	1-2	
5780.452	A	25	4.90	7.03	0-1	
5859.23	P		4.93	7.04	2-2	
5708.437	A	75	4.93	7.09	2-2	$4s^3P^o-5p^3P$ (10)
5690.470	A	40	4.91	7.08	1-1	
5754.258	A	8w	4.93	7.08	2-1	
5701.138	A	25	4.91	7.07	1-0	
5645.665	A	25	4.91	7.09	1-2	
5665.601	A	25	4.90	7.08	0-1	
5684.523	A	50	4.93	7.10	2-1	$4s^3P^o-5p^3S$ (11)
5622.23	A	3	4.91	7.10	1-1	
11890.44	P		5.06	6.10	1-1	$4s^1P^o-4p^3S$ (12)
10869.54	A	125	5.06	6.20	1-2	$4s^1P^o-4p^1D$ (13)
9413.59	A	200	5.06	6.37	1-0	$4s^1P^o-4p^1S$ (14)
6067.62	P		5.06	7.09	1-2	$4s^1P^o-5p^3P$ (15)
5948.584	A	100	5.06	7.14	1-2	$4s^1P^o-5p^1D$ (16)
5772.258	A	50	5.06	7.20	1-0	$4s^1P^o-5p^1S$ (17)
8417.89	P		5.59	7.06	3-3	$3d^3D^o-5p^3D$ (18)
8527.32	P		5.59	7.04	2-2	
8397.96	P		5.59	7.06	2-3	
8514.64	P		5.59	7.04	1-2	
8230.67	A	15	5.59	7.09	3-2	$3d^3D^o-5p^3P$ (19)
8306.80	A	4w	5.59	7.08	2-1	
8317.45	A	2w	5.59	7.07	1-0	
8211.48	A	2	5.59	7.09	2-2	
8150.57	P		5.59	7.10	1-1	$3d^3D^o-5p^3S$ (20)
7995.00	P		5.59	7.14	2-2	$3d^3D^o-5p^1D$ (21)
7416.00	A	250	5.59	7.26	2-3	$3d^3D^o-4f^1F$ (22)
7423.54	A	500	5.59	7.26	3-4	$3d^3D^o-4f^3F$ (23)
7409.11	A	100	5.59	7.26	2-3	
7405.85	A	300	5.59	7.26	1-2	
7424.63	A	20	5.59	7.26	3-3	
7415.37	A	15	5.59	7.26	2-2	
7289.25	A	250	5.59	7.29	3-4	$3d^3D^o-4f^3G$ (24)
7275.28	A	50	5.59	7.29	2-3	
7290.21	A	10	5.59	7.29	3-3	
7250.69	A	40	5.59	7.30	3-3	$3d^3D^o-4f^3D$ (25)
7193.56	A	8	5.59	7.31	2-2	
7184.89	A	10	5.59	7.31	1-1	
7208.20	A	1	5.59	7.31	3-2	
7193.89	A	5	5.59	7.31	2-1	
7235.86	A	10	5.59	7.30	2-3	
7184.54	A	1	5.59	7.31	1-2	
7235.32	A	15	5.59	7.30	2-2	$3d^3D^o-4f^1D$ (26)
7226.20	A	20	5.59	7.30	1-2	
6244.56	A	10n	5.59	7.57	2-2	$3d^3D^o-5f^1D$ (27)
6237.62	A	5n	5.59	7.57	1-2	
6254.25	A	25n	5.59	7.57	3-4	$3d^3D^o-5f^3F$ (28)
6243.86	A	10n	5.59	7.57	2-3	
6237.34	A	5n	5.59	7.57	1-2	
6254.96	A	2n	5.59	7.57	3-3	
6244.13	P		5.59	7.57	2-2	

Si I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6155.22	A	20n	5.59	7.60	3-4	$3d^3D^\circ-5f^3G$ (29)
6145.08	A	10n	5.59	7.60	2-3	
6155.73	A	2n	5.59	7.60	3-3	
6142.53	A	5n	5.59	7.60	3-3	$3d^3D^\circ-5f^3D$ (30)
6131.54	A	4n	5.59	7.60	2-2	
6124.85	A	2n	5.59	7.60	1-1	
6131.86	A	5n	5.59	7.60	2-3	
6125.03	A	4n	5.59	7.60	1-2	
6142.21	P		5.59	7.60	3-2	
6131.30	P		5.59	7.60	2-1	
10844.02	A	25w	5.84	6.98	1-2	$4p^1P-4d^1D^\circ$ (31)
10627.81	A	20w	5.84	7.00	1-2	$4p^1P-4d^3P^\circ$ (32)
8179.43	P		5.84	7.35	1-2	$4p^1P-6s^3P^\circ$ (33)
8338.43	A	5w	5.84	7.32	1-1	
8093.32	A	25w	5.84	7.36	1-1	$4p^1P-6s^1P^\circ$ (34)
7013.47	A	10w	5.84	7.40	1-2	$4p^1P-5d^3P^\circ$ (35)
7680.35	A	100w	5.84	7.44	1-2	$4p^1P-5d^1D^\circ$ (36)
6848.65	A	4w	5.84	7.64	1-1	$4p^1P-7s^1P^\circ$ (37)
6722.67	A	2w	5.84	7.67	1-2	$4p^1P-6d^1D^\circ$ (38)
11018.00	A	70	5.85	6.97	2-1?	$3d^1D^\circ-5p^1P$ (39)
10153.13	P		5.85	7.06	2-3	$3d^1D^\circ-5p^3D$ (40)
10020.16	A	1	5.85	7.08	2-1	$3d^1D^\circ-5p^3P$ (41)
*9570.08	A	4	5.85	7.14	2-2	$3d^1D^\circ-5p^1D$ (42)
8752.17	A	200	5.85	7.26	2-3	$3d^1D^\circ-4f^1F$ (43)
8742.60	A	100	5.85	7.26	2-3	$3d^1D^\circ-4f^3F$ (44)
8751.18	P		5.85	7.26	2-2	
8556.64	A	100w	5.85	7.29	2-3	$3d^1D^\circ-4f^3G$ (45)
8502.38	A	30w	5.85	7.30	2-3	$3d^1D^\circ-4f^3D$ (46)
8444.00	A	15w	5.85	7.31	2-2	
8444.48	A	3w	5.85	7.31	2-1	
8501.50	A	20w	5.85	7.30	2-2	$3d^1D^\circ-4f^1D$ (47)
7165.62	A	100w	5.85	7.57	2-2	$3d^1D^\circ-5f^1D$ (48)
*7164.75	A)	2w	(5.85	7.57	2-3	$3d^1D^\circ-5f^3F$ (49)
7165.09	P)		5.85	7.57	2-2	
7034.96	A	50w	5.85	7.60	2-3	$3d^1D^\circ-5f^3G$ (50)
7017.98	A	4w	5.85	7.60	2-3	$3d^1D^\circ-5f^3D$ (51)
7017.68	A	10w	5.85	7.60	2-2	
7016.90	P		5.85	7.60	2-1	
6527.20	P		5.85	7.74	2-2	$3d^1D^\circ-6f^3F$ (52)
10727.21	A	75w	5.96	7.11	3-4	$4p^3D-4d^3F^\circ$ (53)
10694.14	A	50w	5.94	7.09	2-3	
10689.52	A	20w	5.93	7.08	1-2	
10882.66	A	5w	5.96	7.09	3-3	
10784.33	A	5w	5.94	7.08	2-2	
8892.97	A	25w	5.96	7.35	3-2	$4p^3D-6s^3P^\circ$ (54)
8949.33	A	15w	5.94	7.32	2-1	
8925.55	A	8w	5.93	7.31	1-0	
8766.68	A	3w	5.94	7.35	2-2	
8883.84	A	4w	5.93	7.32	1-1	
8667.40	P		5.94	7.36	2-1	$4p^3D-6s^1P^\circ$ (55)
8606.43	A	1w	5.93	7.36	1-1	
8579.15	A	2w	5.96	7.40	3-2	$4p^3D-5d^3P^\circ$ (56)
7943.94	A	500w	5.96	7.51	3-4	$4p^3D-5d^3F^\circ$ (57)
7932.20	A	300w	5.94	7.49	2-3	
7918.38	A	200w	5.93	7.49	1-2	
8035.39	A	7w	5.96	7.49	3-3	
7970.26	A	10w	5.94	7.49	2-2	
7373.02	A	10w	5.96	7.63	3-2	$4p^3D-7s^3P^\circ$ (58)
7285.94	P		5.94	7.63	2-2	
7255.28	P		5.94	7.64	2-1	$4p^3D-7s^1P^\circ$ (59)
7005.84	A	50w	5.96	7.72	3-4	$4p^3D-6d^3F^\circ$ (60)
7003.58	A	50w	5.94	7.70	2-3	
6976.53	A	25w	5.93	7.70	1-2	
7084.33	A	2w	5.96	7.70	3-3	
6813.85	P		5.96	7.77	3-3	$4p^3D-7d^3D^\circ$ (61)
6730.38	P		5.93	7.76	1-1	
6842.35	P		5.96	7.76	3-2	
6729.80	P		5.93	7.76	1-2	
6527.49	A	3n	5.96	7.85	3-4	$4p^3D-7d^3F^\circ$ (62)
6555.20	A	2n	5.94	7.82	2-3	
6560.68	A	2n	5.93	7.81	1-2	
10262.49	P		6.06	7.26	1-1	$4p^3P-4d^1P^\circ$ (63)
10067.84	A	4w	6.07	7.30	2-3	$4p^3P-5d^3D^\circ$ (64)
10025.80	P		6.06	7.29	1-2	
9967.46	A	1	6.05	7.29	0-1	
10155.88	A	1	6.07	7.29	2-2	
10001.35	P		6.06	7.29	1-1	

Si I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
9689.41	A	8w	6.07	7.35	2-2	$4p^3P-6s^3P^\circ$ (65)
9789.24	A	2n	6.06	7.32	1-1	
9913.16	A	1w	6.07	7.32	2-1	
9839.58	A	2w	6.06	7.31	1-0	
*9570.08	A	4	6.06	7.35	1-2	
9758.08	A	2n	6.05	7.32	0-1	
9318.24	A	4	6.07	7.40	2-2	$4p^3P-5d^3P^\circ$ (66)
9238.60	A	2n	6.07	7.41	2-1	
*9103.37	A	3w	6.06	7.41	1-0	
9208.55	A	5w	6.06	7.40	1-2	
*9103.37	A	3w	6.05	7.41	0-1	
8070.64	P		6.07	7.60	2-3	$4p^3P-6d^3D^\circ$ (67)
8086.18	P		6.06	7.58	1-2	
7912.55	A	3w	6.07	7.63	2-2	$4p^3P-7s^3P^\circ$ (68)
7898.38	P		6.07	7.63	2-2	$4p^3P-6d^3P^\circ$ (69)
7105.34	P		6.06	7.79	1-1	$4p^3P-8s^1P^\circ$ (70)
7089.03	P		6.05	7.79	0-1	
9891.90	A	5w	6.10	7.35	1-2	$4p^3S-6s^3P^\circ$ (71)
9505.28	A	5	6.10	7.40	1-2	$4p^3S-5d^3P^\circ$ (72)
9421.82	A	4	6.10	7.41	1-1	
9393.40	A	2w	6.10	7.41	1-0	
8046.78	P		6.10	7.63	1-2	$4p^3S-7s^3P^\circ$ (73)
8009.39	P		6.10	7.64	1-1	$4p^3S-7s^1P^\circ$ (74)
7392.18	P		6.10	7.77	1-2	$4p^3S-8s^3P^\circ$ (75)
7455.47	P		6.10	7.75	1-1	
11468.54	A	1w	6.18	7.26	4-4	$3d^3F^\circ-4f^3F$ (76)
11202.02	A	1w	6.15	7.26	2-2	
11308.45	A	2w	6.16	7.26	3-2	
11290.01	A	10w	6.16	7.26	3-4	
11187.74	A	20w	6.15	7.26	2-3	
11130.37	A	7w	6.18	7.29	4-5	$3d^3F^\circ-4f^3G$ (77)
10982.28	A	7w	6.16	7.29	3-4	
10885.16	A	10w	6.15	7.29	2-3	
10984.24	A	3w	6.16	7.29	3-3	
10893.72	P		6.16	7.30	3-2	$3d^3F^\circ-4f^1D$ (78)
10796.52	A	0n	6.15	7.30	2-2	
*8898.97	A	3w	6.18	7.57	4-4	$3d^3F^\circ-5f^3F$ (79)
*8790.88	A	4w	6.16	7.57	3-3	
8729.02	A	5w	6.15	7.57	2-2	
8899.50	A	3w	6.18	7.57	4-3	
8791.28	A	5w	6.16	7.57	3-2	
*8790.88	A	4w	6.16	7.57	3-4	
8728.38	A	10w	6.15	7.57	2-3	
8596.02	P		6.16	7.60	3-4	$3d^3F^\circ-5f^3G$ (80)
8536.38	A	3w	6.15	7.60	2-3	
8597.00	A	2nl	6.16	7.60	3-3	
7850.5	A	2N	6.16	7.74	3-2	$3d^3F^\circ-6f^3F$ (81)
7800.0	A	4N	6.15	7.74	2-2	
11607.42	A	0w	6.20	7.26	2-1	$4p^1D-4d^1P^\circ$ (82)
11485.68	A	2w	6.20	7.27	2-3	$4p^1D-4d^1F^\circ$ (83)
10582.66	A	1	6.20	7.36	2-1	$4p^1D-6s^1P^\circ$ (84)
9886.92	A	2w	6.20	7.44	2-2	$4p^1D-5d^1D^\circ$ (85)
*8898.97	A	3w	6.20	7.58	2-3	$4p^1D-5d^1F^\circ$ (86)
8576.46	P		6.20	7.63	2-2	$4p^1D-6d^3P^\circ$ (87)
8550.34	P		6.20	7.64	2-1	$4p^1D-7s^1P^\circ$ (88)
7431.17	P		6.20	7.86	2-3	$4p^1D-7d^1F^\circ$ (89)
11611.49	A	5w	6.23	7.30	2-3	$3d^3P^\circ-4f^3D$ (90)
*11591.98	A	4w	6.24	7.31	1-2	
11640.58	A	2w	6.25	7.31	0-1	
11502.94	A	3w	6.23	7.31	2-2	
*11591.98	A	4w	6.24	7.31	1-1	
*9009.04	A	5nl	6.23	7.60	2-3	$3d^3P^\circ-5f^3D$ (91)
9064.06	A	0wl	6.24	7.60	1-2	
*9009.04	A	5nl	6.23	7.60	2-2	
10015.33	A	1	6.37	7.60	0-1	$4p^1S-7s^3P^\circ$ (92)

Strongest Unclassified Lines of Si I

I A	Ref	Int
9770.10	A	4w
9738.60	A	6w
9254.59	A	4n
8648.89	A	100nl
8503.17	A	5
7743.2	A	4n
7742.7	A	5n
6721.97	A	4w
6415.24	A	4w

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Si II I P 16.27 Anal B List A Au

Laboratory I A	Ref	Int	E P Low	E P High	J
3856.021	A	8	6.83	10.03	2½-1½
3862.592	A	6	6.83	10.02	1½- ½
3853.657	A	3	6.83	10.03	1½-1½
6347.091	A	10	8.09	10.03	½-1½
6371.359	A	8	8.09	10.02	½- ½
4130.884	A	10	9.80	12.78	2½-
4128.053	A	8	9.79	12.78	1½-2½
5978.970	A	7	10.03	12.09	1½- ½
5957.612	A	5	10.02	12.09	½- ½
5056.020	A	10	10.03	12.47	1½-2½
5041.063	A	8	10.02	12.47	½-1½
5056.353	A	2	10.03	12.47	1½-1½
3339.84	A	3	10.03	13.73	1½- ½
3333.16	A	2	10.02	13.73	½- ½
3210.04	A	3	10.03	13.87	1½-
3203.89	A	2	10.02	13.87	½-1½
5868.404	A	3	?	?	2½-2½
5846.12	A	0	?	?	1½-1½
5827.80	A	0	?	?	½- ½
5915.266	A	1	?	?	2½-1½
5867.497	A	1	?	?	1½- ½
5800.48	A	1	?	?	1½-2½
5806.75	A	2	?	?	½-1½
5639.492	A	2	?	?	2½-1½
5576.61	A	1	?	?	1½-1½
5540.74	A	0	?	?	½-1½

Strongest Unclassified Lines of Si II

I A	Ref	Int
6671.88	A	3
6660.49	A	2
5785.64	A	1
5706.375	A	1
5701.375	A	1
5688.856	A	2
5669.590	A	4
5496.24	A	1
5468.92	A	2
5456.11	A	2
5438.41	A	1
5294.97	A	1
5202.51	A	3
5192.75	A	1
5185.09	A	1
5181.77	A	1
4921.69	A	1
4906.88	A	1n
4859.28	A	1
4656.80	A	1
4198.174	A	2
4190.738	A	3
4076.78	A	1
4075.45	A	2
3998.00	A	1n
3991.77	A	2n
3199.54	A	1
3193.10	A	1
3188.95	A	1

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Si III I P 33.32 Anal B List A Au

Laboratory I A	Ref	Int	E P Low	E P High	J
3086.225	A	7	17.63	21.63	3-2
3093.423	A	6	17.63	21.62	2-1
3096.786	A	4	17.64	21.62	1-0
3086.429	A	3	17.63	21.63	2-2
3093.613	A	3	17.64	21.62	1-1
3086.620	A	1	17.64	21.63	1-2
4552.654	A	9	18.92	21.63	1-2
4567.872	A	7	18.92	21.62	1-1
4574.777	A	4	18.92	21.62	1-0
4338.52	A	1	18.94	21.79	0-1
5739.762	A	8	19.64	21.79	0-1
3806.56	A	5	21.63	24.88	2-
3796.11	A	4	21.62	24.88	1-
3791.41	A	3	21.62	24.88	0-1
3241.67	A	6	21.63	25.44	2-1
3234.00	A	5	21.62	25.44	1-1
3230.55	A	3	21.62	25.44	0-1
3590.46	A	8	21.79	25.22	1-2
3185.16	A	3	21.79	25.66	1-0

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atory Ref	Int	E P Low	High	J	Multiplet (No)
A	4n	25.86	28.42	4–	$4^3F^o-5^3G$
A	3n	25.86	28.42	3–	(9)
A	2n	25.85	28.42	2-3	
A	1	25.86	29.92	4–	$4^3F^o-6^3G$
A	1	25.86	29.92	3–	(10)
A	1	25.85	29.92	2–	
A	0	26.68	30.62	2-2	$3p3d\,^3P^o-3p4p\,^3P$
A	0	26.68	30.60	2-1	(11)
A	1	26.84	30.62	3-2	$3p3d\,^3D^o-3p4p\,^3P$
A	1	26.83	30.60	2-1	(12)
A	0	26.82	30.59	1-0	
A	00	26.83	30.62	2-2	
A	2	27.99	30.62	2-2	$3p4s\,^3P^o-3p4p\,^3P$
A	0	27.95	30.60	1-1	(13)
A	2	27.95	30.59	1-0	
A	1	27.94	30.60	0-1	

d Lines of Si III

A	5
A	4
A	6
A	0n
A	3
A	3
A	2

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› 44.95 Anal A List A Aug 1944

A	10	23.95	26.97	½-1½	$4^2S-4^2P^o$
A	8	23.95	26.95	½-½	(1)
A	8	26.97	30.86	1½-2½	$4^2P^o-4^2D$
A	(7)	26.95	30.86	½-1½	(2)
A	(5)	30.86	34.14	2½-1½	$4^2D-5^2P^o$
A	(4)	30.86	34.13	1½-½	(3)
B	(4)	34.14	37.00	1½-½	$5^2P^o-6^2S$
B	(3)	34.13	37.00	½-½	(4)
A	(4)	35.99	38.92	—	$5^2D-6^2F^o$ (5)
A	(5)	36.26	38.92	—	$5^2F^o-6^2G$ (6)
A	(6)	36.27	38.93	—	$5^2G-6^2H^o$ (7)

0.9 Anal C List B Sept 1944

A	8	6.96	8.12	2½-3½	$4s\,^4P-4p\,^4D^o$
A	5	6.92	8.10	1½-2½	(1)
A	3	6.91	8.08	½-1½	
A	0	6.96	8.10	2½-2½	
A	1	6.92	8.08	1½-1½	
A	1	6.91	8.07	½-½	
A	50	6.96	8.21	2½-2½	$4s\,^4P-4p\,^4P^o$
A	20	6.92	8.19	1½-1½	(2)
A	3	6.91	8.19	½-½	
A	5	6.96	8.19	2½-1½	
A	25	6.92	8.19	1½-½	
A	12	6.92	8.21	1½-2½	
A	25	6.91	8.19	½-1½	
A	30	6.96	8.25	2½-1½	$4s\,^4P-4p\,^4S^o$
A	3	6.92	8.25	1½-1½	(3)
A	0	6.91	8.25	½-1½	
A	25	7.18	8.41	1½-1½	$4s\,^2P-4p\,^2P^o$
A	8	7.14	8.39	½-½	(4)
A	2	7.18	8.39	1½-½	
A	3	7.14	8.41	½-1½	

19.57 Anal B List B Aug 1944

A	4	9.48	12.80	2-3	$3s3p^3\,^3P^o-4p\,^3D$
A	4	9.48	12.76	1-2	(1)
A	3	9.48	12.74	0-1	
A	3	9.48	12.76	2-2	
A	3	9.48	12.74	1-1	
A	2	9.48	12.74	2-1	
A	5	9.48	13.03	2-2	$3s3p^3\,^3P^o-4p\,^3P$
A	5	9.48	13.00	2-1	(2)
A	4nd?	9.48	12.99	1-0	
A	3	9.48	13.03	1-2	
A	6	9.48	13.09	2-1	$3s3p^3\,^3P^o-4p\,^3S$
A	6	9.48	13.09	1-1	(3)
A	4	9.48	13.09	0-1	

P II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3308.86	A	6w	9.59	13.32	2-2	$3s3p^3\,^1D^o-4p\,^1D$ (4)
6043.10	B	(5)	10.76	12.80	2-3	$4s\,^3P^o-4p\,^3D$
6024.15	B	(3)	10.71	12.76	1-2	(5)
6034.01	B	(1)	10.69	12.74	0-1	
6165.56	B	(1)	10.76	12.76	2-2	
6087.76	B	(1)	10.71	12.74	1-1	
5425.93	A	7w	10.76	13.03	2-2	$4s\,^3P^o-4p\,^3P$
5386.87	A	7w	10.71	13.00	1-1	(6)
5499.72	A	7	10.76	13.00	2-1	
5409.66	A	7w	10.71	12.99	1-0	
5316.07	A	7W	10.71	13.03	1-2	
5344.73	A	7W	10.69	13.00	0-1	
5296.09	A	8W	10.76	13.09	2-1	$4s\,^3P^o-4p\,^3S$
5191.41	A	6	10.71	13.09	1-1	(7)
5152.20	A	4	10.69	13.09	0-1	
*?4720.26	A	3	10.71	13.32	1-2	$4s\,^3P^o-4p\,^1D$† (8)
4612.84	A	3	10.71	13.38	1-1	$4s\,^3P^o-4p\,^1P$
4581.77	A	3n	10.69	13.38	0-1	(9)
5253.49	A	8W	10.97	13.32	1-2	$4s\,^1P^o-4p\,^1D$ (10)
4499.18	A	7l	10.97	13.72	1-0	$4s\,^1P^o-4p\,^1S$ (11)
*3551.16	A	3n	12.69	16.17	1-2	$3s3p^3\,^1P^o$-5
3470.83	A	4	12.69	16.25	1–	(12) -8
*3404.34	A	5	12.69	16.32	1-2	-13
3377.52	A	4n	12.69	16.34	1-2	-18
4943.42	A	7l	12.80	15.29	3-2	$4p\,^3D-5s\,^3P^o$
4969.65	A	7l	12.76	15.24	2-1	(13)
4954.33	A	5l	12.74	15.23	1-0	
4864.38	A	4l	12.76	15.29	2-2	
4927.17	A	4l	12.74	15.24	1-1	
4823.84	A	0	12.74	15.29	1-2	
4739.49	A	3l	12.76	15.36	2-1	$4p\,^3D-5s\,^1P^o$
4700.80	A	4l	12.74	15.36	1-1	(14)
4601.97	A	8 Wl?	12.80	15.48	3-4	$4p\,^3D-4d\,^3F^o$
⁑4587.91§	A	8W	(12.76 12.74	15.45 15.43	2-3 1-2	(15)
4658.12	A	6l	12.80	15.45	3-3	
4626.61	A	5l?	12.76	15.43	2-2	
4224.43	A	2	12.80	15.72	3-3	$4p\,^3D-4d\,^3D^o$
4072.13	A	3	12.76	15.79	2-2	(16)
4036.23	A	2n	12.74	15.79	1-1	
4127.49	A	5 l?	12.80	15.79	3-2	
4064.64	A	3 l?	12.76	15.79	2-1	
4166.73	A	2n	12.76	15.72	2-3	
4117.09	A	4	12.80	15.80	3-2	$4p\,^3D-4d\,^3P^o$
4120.78	A	2 n	12.76	15.75	2-1	(17)
4130.77	A	3 nl?	12.74	15.72	1-0	
4062.08	A	2 n	12.76	15.80	2-2	
4091.53	A	3 ld?	12.74	15.75	1-1	
4033.68	A	2	12.74	15.80	1-2	
3604.80	A	0w	12.79	16.16	2-2	$3d\,^3P^o$-4
3570.34	A	3d	12.79	16.25	2-2	(18) -9
3507.37	A	6wd?	12.79	16.31	2–	-12
*3478.74	A	3	12.79	16.34	2-1	-17
3775.03	A	3	12.81	16.08	1-2	$3d\,^3P^o$-2
3676.27	A	6w	12.81	16.17	1-2	(19) -5
3490.46	A	6	12.81	16.34	1-2	-18
3706.06	A	7w	12.83	16.16	1-2?	$3d\,^3D^o$-4
3536.30	A	3	12.83	16.32	1-2	(20) -14
3559.93	A	3	12.85	16.31	2–	$3d\,^3D^o$-12
3556.49	A	6	12.85	16.32	2-2	(21) -13
*3551.16	A	3n	12.85	16.32	2-2	-14
3533.67	A	2	12.85	16.34	2–	-16
3530.25	A	5	12.85	16.34	2-1	-17
3527.11	A	3	12.85	16.34	2-2	-18
*3404.34	A	5	12.85	16.47	2-1	-20
*3728.67§§	A	4d	12.85	16.16	3-2	$3d\,^3D^o$-4
3723.63	A	3	12.85	16.17	3-2	(22) -5
3631.41	A	4	12.85	16.25	3-2?	-9
3566.43	A	5	12.85	16.31	3–	-12
3562.48	A	3	12.85	16.32	3-2	-13
5450.66	A	6l	13.03	15.29	2-2	$4p\,^3P-5s\,^3P^o$
5507.15	A	5l	13.00	15.24	1-1	(23)
5583.33	A	5l	13.03	15.24	2-1	
5541.19	A	4	13.00	15.23	1-0	
5378.12	A	3l	13.00	15.29	1-2	
5483.56	A	5l	12.99	15.24	0-1	
*4589.79	A	8 W	13.03	15.72	2-3	$4p\,^3P-4d\,^3D^o$
4425.95	A	2	13.00	15.79	1-2	(24)
4401.97	A	1 n	12.99	15.79	0-1	
4475.27	A	7l	13.03	15.79	2-2	
4417.31	A	3	13.00	15.79	1-1	
4466.11	A	3	13.03	15.79	2-1	
4462.95	A	5	13.03	15.80	2-2	$4p\,^3P-4d\,^3P^o$
4483.67	A	3	13.00	15.75	1-1	(25)
4533.81	A	2	13.03	15.75	2-1	
*4530.78	A	7l	13.00	15.72	1-0	
4414.29	A	6	13.00	15.80	1-2	
4467.98	A	4	12.99	15.75	0-1	

P II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3827.46	A	7l	13.08	16.31	2-2	$3d\,^1D^o$-11 (26)
5588.25	A	5l	13.09	15.29	1-2	$4p\,^3S-5s\,^3P^o$
5727.69	A	2l	13.09	15.24	1-1	(27)
4554.81	A	6l?	13.09	15.80	1-2	$4p\,^3S-4d\,^3P^o$
4628.71	A	4l?	13.09	15.75	1-1	(28)
4678.95	A	6l	13.09	15.72	1-0	
4558.04	A	6l	13.09	15.79	1-1	$4p\,^3S-4d\,^3D^o$ (29)
4244.55	A	3	13.25	16.16	3-2	$3d\,^1F^o$-4
4109.19	A	5	13.25	16.25	3–	(30) -10
4044.49	A	7w	13.25	16.31	3-2	-11
4019.45	A	4	13.25	16.32	3-3	-15
4452.45	A	6l	13.38	16.15	1–	$3d\,^1P^o$-3
4423.9	A	3d	13.38	16.17	1-1	(31) -6
4160.56	A	3	13.38	16.34	1-2	-18
6460.1	C	3	13.38	15.29	1-2	$4p\,^1P-5s\,^3P^o$ (32)
4288.53	A	4	13.38	16.26	1-1	$4p\,^1P-4d\,^1P^o$ (33)
3372.70	A	4	13.38	17.04	1-1	$4p\,^1P-6s\,^1P^o$ (34)
⁑4587.91 §	A	8W	13.62	16.31	2-2	1°-11
*4530.78	A	7l	13.62	16.34	2–	(35)-16
4792.06	A	5l	13.64	16.21	-2	2°- 7
4622.71	A	4 n	13.64	16.31	-2	(36) -11
*4589.79	A	8 W	13.64	16.32	-3	-15
4565.22	A	6l	13.64	16.34	—	-16
3710.46	A	3n	13.72	17.04	0-1	$4p\,^1S-6s\,^1P^o$ (37)

P III I P 30.03 Anal B List A Aug 1944

4059.27	A	6	14.43	17.47	2½-1½	$3^2D-4^2P^o$
4080.04	A	7	14.43	17.45	1½-½	(1)
4057.39	A	4	14.43	17.47	1½-1½	
4222.15	A	7w	14.55	17.47	½-1½	$4^2S-4^2P^o$
4246.68	A	7w	14.55	17.45	½-½	(3)
3233.62	A	6w	17.47	21.29	1½-	$4^2P^o-4^2D$
3219.32	A	6w	17.45	21.29	½-1½	(4)
3277.82	A	3	14.43	18.19	2½-2½	$3^2D-3p^3\,^2D^o$
3283.22	A	2	14.43	18.19	1½-1½	(2)
5203.86	A	5	21.29	23.66	-1½	$4^2D-5^2P^o$ (5)
3280.23	A	3n	21.29	25.05	—	$4^2D-5^2F^o$ (6)
*4587.91 §	A	8W	22.05	24.74	—	$4^2F^o-5^2D$ (7)
3978.28	A	8W	22.05	25.16	—	$4^2F^o-5^2G$ (8)
3957.64	A	6	?	?	2½-2½	$3p4s\,^4P^o-3p4p\,^4F$
3933.38	A	4	?	?	1½-1½	(9)
3922.72	A	4	?	?	½-½	
3997.17	A	5	?	?	2½-1½	
3951.51	A	5	?	?	1½-½	
3895.03	A	6	?	?	1½-2½	
3904.79	A	6	?	?	½-1½	
3802.08	A	6	?	?	2½-1½	$3p4s\,^4P^o-3p4p\,^4S$
3744.22	A	5	?	?	1½-1½	(10)
*3717.63§§	A	5	?	?	½-1½?	

P IV I P 51.15 Anal B List B Aug 1944

3347.72	A	6	28.01	31.70	1-2	$4^3S-4^3P^o$
3364.44	A	6	28.01	31.68	1-1	(1)
3371.10	A	5	28.01	31.67	1-0	
4249.57	A	6	28.89	31.79	0-1	$4^1S-4^1P^o$ (2)
*3728.67§§	A	4d	36.20	39.51	2-1	$4^3D-5^3P^o$
*3717.63§	A	5	36.20	39.52	2-2	(3)
3717.0[illegible]	[illegible]	5	36.20	39.52	1-2	

P V I P 64.74 Anal A List A Aug 1944

3175.16	A	5	33.70	37.58	½-1½	$4^2S-4^2P^o$
3204.06	A	3	33.70	37.55	½-½	(1)

S I I P 10.31 Anal B List B Sept 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
9212.91	B	(10)	6.50	7.84	2-3	$4^5S^\circ-4^5P$
9228.11	B	(10)	6.50	7.83	2-2	(1)
9237.49	B	(10)	6.50	7.83	2-1	
4694.13	A	10	6.50	9.12	2-3	$4^5S^\circ-5^5P$
4695.45	A	8	6.50	9.12	2-2	(2)
4696.25	A	6	6.50	9.12	2-1	
10455.47	B	(8)	6.83	8.01	1-2	$4^3S^\circ-4^3P$
10459.46	B	(8)	6.83	8.01	1-1	(3)
10456.79	B	(4)	6.83	8.01	1-0	
5278.99	A	3	6.83	9.17	1-2	$4^3S^\circ-5^3P$
5278.70	A	1	6.83	9.17	1-1	(4)
5278.10	A	0	6.83	9.17	1-0	
4411.34	A	3	6.83	9.63	1-	$4^3S^\circ-6^3P$ (5)
8694.70	A	10	7.84	9.25	3-4	$4^5P-4^5D^\circ$
8680.47	A	8	7.83	9.25	2-3	(6)
8671.37	A	1	7.83	9.26	1-2	
8693.98	A	3	7.84	9.25	3-3	
8679.70	A	2	7.83	9.26	2-2	
8670.65	A	2	7.83	9.26	1-1	
8693.24	A	1	7.84	9.26	3-2	
8679.00	A	1	7.83	9.26	2-1	
8670.19	A	1	7.83	9.26	1-0	
7696.73	A	10	7.84	9.44	3-2	$4^5P-6^5S^\circ$
7686.13	A	8	7.83	9.44	2-2	(7)
7679.60	A	5	7.83	9.44	1-2	
6757.16	A	10	7.84	9.66	3-	$4^5P-5^5D^\circ$
6748.79	A	8	7.83	9.66	2-	(8)
6743.58	A	6	7.83	9.66	1-	
6415.50	A	3	7.84	9.76	3-2	$4^5P-7^5S^\circ$
6408.13	A	2	7.83	9.76	2-2	(9)
6403.58	A	1	7.83	9.76	1-2	
6052.66	A	10	7.84	9.87	3-	$4^5P-6^5D^\circ$
6046.04	A	5	7.83	9.87	2-	(10)
6041.93	A	3	7.83	9.87	1-	
5706.11	A	6	7.84	10.00	3-	$4^5P-7^5D^\circ$
5700.24	A	4	7.83	10.00	2-	(11)
5696.63	A	2	7.83	10.00	1-	
5507.01	A	4	7.84	10.08	3-	$4^5P-8^5D^\circ$
5501.54	A	3	7.83	10.08	2-	(12)
5498.18	A	2	7.83	10.08	1-	
9035.92	B	(6)	8.01	9.38	2-3	$4^3P-4^3D^\circ$
9036.32	B	(4)	8.01	9.38	1-2	(13)
9038.72	B	(3)	8.01	9.38	0-1	
9039.27	B	(3)	8.01	9.38	2-2	
9036.73	B	(2)	8.01	9.38	1-1	
8452.14	A	5	8.01	9.47	2-1	$4^3P-6^3S^\circ$
8449.54	A	3	8.01	9.47	1-1	(14)
8451.55	A	1	8.01	9.47	0-1	
*7244.77	A	4	(8.01 8.01	9.71 9.71	2-3 2-2	$4^3P-5^3D^\circ$ † (15)
*9949.84	B	(8)	(8.37 8.37	9.62 9.61	3-2 1-0	$3^3D^\circ-4p'\ ^3P$† (16)
9932.26	B	(8)	8.37	9.62	2-2	
*9033.78	B	(5)	(8.37 8.37	9.66 9.65	3-4 2-3	$3^3D^\circ-4p'\ ^3F$ (17)
9672.34	B	(10)	8.37	9.65	1-2	
9649.94	B	(12)	8.37	9.65	3-3	
9680.80	B	(10)	8.37	9.65	2-2	
9697.33	B	(8)	8.37	9.65	3-2	
9413.46	B	(8)	8.37	9.69	3-3	$3^3D^\circ-4p'\ ^3D$†
9421.93	B	(8)	8.37	9.68	2-2	(18)
*9437.11	B	(8)	(8.37 8.37	9.68 9.68	1-1 3-2	
11453	B	(1)	8.38	9.46	4-	$3^5D^\circ-4^5F$
11472	B)	(1n)	(8.38	9.46	3-	(19)
11454	B		8.38	9.46	0-	
9693.68	B	(10)	8.38	9.70	3-3	$3^5D^\circ-4p'\ ^3F$†
9739.74	B	(8)	8.38	9.69	2-2	(20)
9741.93	B	(5)	8.38	9.69	3-2	
8874.53	B	(9)	8.38	9.77	4-	$3^5D^\circ-5^5F$ †
8884.23	B	(7)	8.38	9.77	3-	(21)
8882.47	B	(5)	8.38	9.77	2-	
8880.70	B	(3)	8.38	9.77	1-	
7923.95	A	15	8.38	9.94	4-	$3^5D^\circ-6^5F$ †
7931.70	A	10	8.38	9.94	3-	(22)
7930.33	A	8	8.38	9.94	2-	
7926.84	A	6	8.38	9.94	1-	

Strongest Unclassified Lines of S I

I A	Ref	Int
9958.90	B	(8)
8585.60	A	10
7639.83	A	10
7578.96	A	10
4993.51	A	8
3867.56	A	8

S II I P 23.3 Anal B List A Sept 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5027.19	D	2	13.04	15.49	1½-½	$3s3p^4\ ^2P-4p^2S^\circ$
5142.33	D	1	13.09	15.49	½-½	(1)
4131.0	A	00	13.04	16.03	1½-1½	$3s3p^4\ ^2P-4p^4P^\circ$ (2)
3906.95	A	1	13.04	16.20	1½-2½	$3s3p^4\ ^2P-4p^2D^\circ$ (3)
3595.991	A	4	13.04	16.47	1½-1½	$3s3p^4\ ^2P-4p^2P^\circ$
3672.14	A	2	13.09	16.45	½-½	(4)
3613.03	A	0	13.04	16.45	1½-½	
3654.51	A	1	13.09	16.47	½-1½	
6386.48	D	2	13.56	15.49	1½-½	$4s\ ^4P-4p^2S^\circ$ (5)
5453.81	C	15	13.61	15.88	2½-3½	$4s\ ^4P-4p^4D^\circ$
5432.77	C	12	13.56	15.83	1½-2½	(6)
5428.64	C	9	13.53	15.80	½-1½	
5564.94	C	8	13.61	15.83	2½-2½	
5509.67	C	15	13.56	15.80	1½-1½	
5473.59	C	15	13.53	15.78	½-½	
5645.62	D	4	13.61	15.80	2½-1½	
5556.01	C	5	13.56	15.78	1½-½	
5032.41	C	2	13.61	16.07	2½-2½	$4s\ ^4P-4p^4P^\circ$
4991.94	C	1	13.56	16.03	1½-1½	(7)
4942.47	C	(1)	13.53	16.02	½-½	
5103.30	C	1	13.61	16.03	2½-1½	
5009.54	C	1	13.56	16.02	1½-½	
4924.08	C	9	13.56	16.07	1½-2½	
4925.32	C	10	13.53	16.03	½-1½	
4779.11	A	2	13.61	16.20	2½-2½	$4s\ ^4P-4p^2D^\circ$
4804.12	A	00	13.61	16.13	1½-1½	(8)
4681.32	A	00	13.56	16.20	1½-2½	
4742.4	A	00	13.53	16.13	½-1½	
4815.515	A	10	13.61	16.18	2½-1½	$4s\ ^4P-4p^4S^\circ$
4716.226	A	8	13.56	16.18	1½-1½	(9)
4656.74	A	4	13.53	16.18	½-1½	
4193.51	A	1	13.56	16.45	½-1½	$4s\ ^4P-4p^2P^\circ$ (10)
5606.11	C	15	13.67	15.88	4½-3½	$3d\ ^4F-4p^4D^\circ$
5640.32	C	10	13.64	15.83	3½-2½	(11)
5659.95	C	12	13.62	15.80	2½-1½	
5664.73	C	10	13.60	15.78	1½-½	
5526.22	C	6	13.64	15.88	3½-3½	
5578.85	C	7	13.62	15.83	2½-2½	
5616.63	C	5	13.60	15.80	1½-1½	
5466.55	E	(0)	13.62	15.88	2½-3½?	
5536.77	D	1	13.60	15.83	1½-2½	
8314.73	B	10	14.01	15.49	1½-½	$4s\ ^2P-4p^2S^\circ$
7967.43	B	10	13.94	15.49	½-½	(12)
5996.16	D	4	14.01	16.07	1½-2½	$4s\ ^2P-4p^4P^\circ$
5909.25	D	2	13.94	16.03	½-1½	(13)
6097.12	D	1	14.01	16.03	1½-1½	
5932.95	D	1	13.94	16.02	½-½	
6123.41	D	1	14.01	16.02	1½-½	
5639.96	C	10	14.01	16.20	1½-2½	$4s\ ^2P-4p^2D^\circ$
5646.98	C	8	13.94	16.13	½-1½	(14)
5819.22	C	10	14.01	16.13	1½-1½	
5014.03	C	1	14.01	16.47	1½-1½	$4s\ ^2P-4p^2P^\circ$
4917.15	C	7	13.94	16.45	½-½	(15)
5047.28	C	(0)	14.01	16.45	1½-½	
4885.63	A	2	13.94	16.47	½-1½	
3669.049	A	5	14.01	17.37	1½-2½	$4s\ ^2P-4p'\ ^2D^\circ$
3594.462	A	3	13.94	17.38	½-1½	(16)
3663.47	A	0	14.01	17.38	1½-1½	
3314.50	A	0	14.01	17.73	1½-1½	$4s\ ^2P-4p'\ ^2P^\circ$
3272.25	D	3	13.94	17.71	½-½	(17)
3329.3	A	00	14.01	17.71	1½-½	
3257.83	D	2	13.94	17.73	½-1½	
6981.40	D	4	14.11	15.88	3½-3½	$3d\ ^4D-4p^4D^\circ$
7139.79	B	1	14.10	15.83	2½-2½	(18)
7256.96	B	1	14.10	15.80	1½-1½	
7317.03	B	0	14.09	15.78	½-½	
7164.63	D	2	14.11	15.83	3½-2½	
7273.20	B	1	14.10	15.80	2½-1½	
7337.61	B	0	14.10	15.78	1½-½	
6957.95	D	1	14.10	15.88	2½-3½	
7124.28	D	1	14.10	15.83	1½-2½	
7236.91	B	0	14.09	15.80	½-1½	
6305.51	D	10	14.11	16.07	3½-2½	$3d\ ^4D-4p^4P^\circ$
6397.30	D	8	14.10	16.03	2½-1½	(19)
6413.71	D	9	14.10	16.02	1½-½	
6286.35	D	8	14.10	16.07	2½-2½	
6384.89	D	8	14.10	16.03	1½-1½	
6398.05	D	8	14.09	16.02	½-½	
6274.34	D	3	14.10	16.07	1½-2½	
6369.34	D	4	14.09	16.03	½-1½	
6092.13	D	2	14.10	16.13	2½-1½	$3d\ ^4D-4p^2D^\circ$
5895.89	D	0	14.10	16.20	2½-2½	(20)
6080.85	D	1	14.10	16.13	1½-1½	
5951.30	D	3	14.10	16.18	2½-1½	$3d\ ^4D-4p^4S^\circ$
5940.69	D	1	14.10	16.18	1½-1½	(21)
5927.15	D	1	14.09	16.18	½-1½	
3845.21	A	00	14.10	17.31	2½-2½	$3d\ ^4D-4p'\ ^2F^\circ$ (22)
3782.6	A	00	14.11	17.37	3½-2½	$3d\ ^4D-4p'\ ^2D^\circ$ (23)

S II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Mu
7509.03	B	0	14.23	15.88	3½-3½	3d
6732.88	D	0	14.23	16.07	3½-2½	3d
6641.06	D	1	14.17	16.03	2½-1½	
6521.39	D	1	14.17	16.07	2½-2½	
6287.06	D	10	14.23	16.20	3½-2½	3d
6312.68	D	10	14.17	16.13	2½-1½	
6102.26	D	4	14.17	16.20	2½-2½	
6161.84	D	1	14.17	16.18	2½-1½	3d
6314.29	D	1	14.23	16.19	3½-	3d
6128.21	D	0	14.17	16.19	2½-	
3993.526	A	4	14.23	17.32	3½-3½	3d
3931.938	A	3	14.17	17.31	2½-2½	
4007.78	A	0	14.23	17.31	3½-2½	
3918.19	A	00	14.17	17.32	2½-3½	
3932.30	A	2	14.23	17.37	3½-2½	3d
3853.09	A	2	14.17	17.38	2½-1½	
3859.26	A	0	14.17	17.37	2½-2½	
7821.47	B	0	14.30	15.88	2½-3½	3d
8086.67	B	0	14.30	15.83	1½-2½	
8273.46	B	0	14.31	15.80	½-1½	
8051.91	B	0	14.30	15.83	2½-2½	
8258.27	B	2	14.30	15.80	1½-1½	
8377.79	B	1	14.31	15.78	½-½	
8221.63	B	0	14.30	15.80	2½-1½	
8361.95	B	1	14.30	15.78	1½-½	
4431.02	A	1	14.59	17.37	1½-2½	3d
3924.05	A	00	14.59	17.73	1½-1½	3d
3945.06	E	(0)	14.59	17.71	1½-½?	
8520.23	B	1	14.73	16.18	2½-1½	3d
4755.12	A	2	14.73	17.32	2½-3½	3d
4763.38	A	1	14.72	17.31	1½-2½	
4668.58	A	3	14.73	17.37	2½-2½	3d
4648.17	A	2	14.72	17.38	1½-1½	
8422.39	B	0	15.00	16.47	2½-1½	4s
8515.48	B	0	15.00	16.45	1½-½	
5320.70	C	3	15.00	17.32	2½-3½	4s
5345.67	C	4	15.00	17.31	1½-2½	
5212.61	C	3	15.00	17.37	2½-2½	4s
5201.00	C	2	15.00	17.38	1½-1½	
5201.32	E	(2)	15.00	17.38	2½-1½	
4524.946	A	6	15.00	17.73	2½-1½	4s
*4552.378	A	7	15.00	17.71	1½-½	
4524.68	A	2	15.00	17.73	1½-1½	
3783.16	A	2	15.49	18.75	½-1½	4
3860.15	A	2	15.49	18.69	½-½	
3317.70	D	0	15.49	19.21	½-½	4
4463.582	A	7	15.88	18.64	3½-2½	4
4483.424	A	6	15.83	18.58	2½-1½	
4486.66	A	3	15.80	18.55	1½-½	
4391.84	A	3	15.83	18.64	2½-2½	
4432.41	A	3	15.80	18.58	1½-1½	
4456.43	A	2	15.78	18.55	½-½	
4342.84	A	00	15.80	18.64	1½-2½	
4402.86	A	0	15.78	18.58	½-1½	
*4162.698	A	10	15.88	18.84	3½-4½	4
4153.098	A	10	15.83	18.80	2½-3½	
4145.100	A	9	15.80	18.78	1½-2½	
4142.291	A	8	15.78	18.76	½-1½	
4217.23	A	3	15.88	18.80	3½-3½	
*4189.71	A	6n	15.83	18.78	2½-2½	
4168.409	A	5	15.80	18.76	1½-1½	
4255.01	B	0	15.88	18.78	3½-2½	
4213.5	A	00	15.83	18.76	2½-1½	
4028.791	A	7	15.88	18.94	3½-3½	4
3990.94	A	3	15.83	18.92	2½-2½	
3963.13	A	2	15.80	18.91	1½-1½	
3946.98	A	1	15.78	18.91	½-½	
4050.11	A	1	15.88	18.92	3½-2½	
4003.89	A	1	15.83	18.91	2½-1½	
*3970.69	A	1	15.80	18.91	1½-½	
3950.42	A	00	15.80	18.92	1½-2½	
3939.49	A	00	15.78	18.91	½-1½	
4792.02	A	3	16.07	18.64	2½-2½	4
4835.85	A	00	16.03	18.58	1½-1½	
4883.73	B	1	16.02	18.55	½-½	
4901.30	C	1	16.07	18.58	2½-1½	
4900.47	C	2	16.03	18.55	1½-½	
4729.45	A	0	16.03	18.64	1½-2½	
*4819.60	A	2n	16.02	18.58	½-1½	
4590.8	A	00	16.07	18.75	2½-1½	4
4533.3	A	00	16.03	18.75	1½-1½	
4518.9	A	00	16.02	18.75	½-1½	
*4552.378	A	7	16.07	18.78	2½-2½	4
4495.9	A	00	16.03	18.78	1½-2½	
4509.0	A	00	16.02	18.76	½-1½	

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tory ef	Int	E P Low	High	J	Multiplet (No)
A	6	16.07	18.94	2½-3½	$4p^4P^{\circ}-4d^4D$
A	5	16.03	18.92	1½-2½	(49)
A	3	16.02	18.91	½-1½	
A	4	16.07	18.92	2½-2½	
A	3	16.03	18.91	1½-1½	
A	3	16.02	18.91	½-½	
A	0	16.07	18.91	2½-1½	
A	1	16.03	18.91	1½-½	
A	5	16.07	19.24	2½-2½	$4p^4P^{\circ}-4d^4P$
B	5	16.02	19.28	½-½	(50)
A	3	16.07	19.26	2½-1½	
A	1	16.03	19.28	1½-½	
A	2	16.03	19.24	1½-2½	
A	1	16.02	19.26	½-1½	
A	00	16.07	19.33	2½-3½	$4p^4P^{\circ}-4d^2F$ (51)
A	3	16.20	18.75	2½-1½	$4p^2D^{\circ}-5s^2P$
A	2n	16.13	18.69	1½-½	(52)
A	00	16.13	18.75	1½-1½	
A	00	16.20	18.94	2½-3½	$4p^2D^{\circ}-4d^4D$
D	00	16.13	18.92	1½-2½	(53)
A	00	16.20	19.24	2½-2½	$4p^2D^{\circ}-4d^4P$
A	1	16.13	19.24	1½-2½	(54)
A	9	16.20	19.33	2½-3½	$4p^2D^{\circ}-4d^2F$
A	7	16.13	19.27	1½-2½	(55)
A	0	16.20	19.27	2½-2½	
A	5	16.20	19.61	2½-2½	$4p^2D^{\circ}-4d^2D$
A	3	16.13	19.59	1½-1½	(56)
C	(2)	16.18	18.64	1½-2½	$4p^4S^{\circ}-5s^4P$
B	2	16.18	18.58	1½-1½	(57)
B	1	16.18	18.55	1½-½	
A	00	16.18	18.92	1½-2½	$4p^4S^{\circ}-4d^4D$ (58)
A	7	16.18	19.24	1½-2½	$4p^4S^{\circ}-4d^4P$
A	3	16.18	19.26	1½-1½	(59)
A	3	16.18	19.28	1½-½	
A	00	16.19	19.33	-3½?	$^2Y^{\circ}-4d^2F$ (60)
E	0	16.47	18.75	1½-1½	$4p^2P^{\circ}-5s^2P$
D	3	16.45	18.69	½-½	(61)
D	2	16.47	18.69	1½-½	
B	1	16.45	18.75	½-1½	
B	0	17.31	18.78	2½-2½	$4p'\ ^2F^{\circ}-4d^4F$
B	0	17.31	18.76	2½-1½	(62)
D	4	17.32	19.33	3½-3½	$4p'\ ^2F^{\circ}-4d^2F$
D	00	17.32	19.27	3½-2½	(63)
A	6n	17.32	20.27	3½-3½	$4p'\ ^2F^{\circ}-4d'\ ^2F$
A	1	17.31	20.27	2½-2½	(64)
A	00	17.32	20.27	3½-2½	
A	4	17.31	20.27	2½-3½	
A	10	17.32	20.29	3½-4½	$4p'\ ^2F^{\circ}-4d'\ ^2G$
A	3	17.31	20.29	2½-3½	(65)
A	2	17.32	20.29	3½-3½	
A	2	17.37	20.27	2½-3½	$4p'\ ^2D^{\circ}-4d'\ ^2F$
A	3	17.38	20.27	1½-2½	(66)
A	0	17.37	20.27	2½-2½	
A	4	17.37	20.29	2½-3½	$4p'\ ^2D^{\circ}-4d'\ ^2G$ (67)
B	1	18.84	20.34	4½-3½	$4d^4F-5p^4D^{\circ}$
B	0	18.80	20.30	3½-2½	(68)
B	1	18.78	20.28	2½-1½	
B	1	18.76	20.26	1½-½	
B	1	18.80	20.34	3½-3½	
B	0	18.78	20.30	2½-2½	
B	0	18.76	20.28	1½-1½	
B	1	18.78	20.34	2½-3½	
B	1	18.76	20.30	1½-2½	
B	2	18.80	20.30	3½-2½	$4d^4F-5p^4P^{\circ}$
B	2	18.78	20.28	2½-1½	(69)
B	0	18.76	20.29	1½-½	
B	0	18.78	20.30	2½-2½	
B	0	18.76	20.28	1½-1½	
B	0	18.76	20.30	1½-2½	
B	00	18.78	20.37	2½-1½	$4d^4F-5p^4S^{\circ}$
B	0	18.76	20.37	1½-1½	(70)

nclassified Lines of S II

D	6	3911.32	A	1
A	1	3831.41	A	3
A	3n	3811.80	A	1n
A	2	3730.64	A	1
A	5	3678.13	A	1
A	6	3385.81	A	2
A	1	3371.90	A	1
A	1	3368.09	A	1
A	6	3356.41	A	1

S III I P 34.9 Anal C List A Oct 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3632.022	A	6	17.67	21.07	2-3	$3d^3P^{\circ}-4p^3D$
3709.371	A	5	17.67	20.99	1-2	(1)
3747.90	A	3	17.67	20.96	0-1	
3710.42	A	0	17.67	20.99	2-2	
3750.74	A	1	17.67	20.96	1-1	
3324.87	A	4	17.67	21.38	2-2	$3d^3P^{\circ}-4p^3P$
3369.49	A	1	17.67	21.33	1-1	(2)
3370.38	A	2	17.67	21.33	2-1	
3387.13	A	2	17.67	21.31	1-0	
3324.01	A	2	17.67	21.38	1-2	
3367.18	A	2	17.67	21.33	0-1	
3234.17	B	(4)	17.67	21.48	2-1	$3d^3P^{\circ}-4p^3S$
3233.24	B	(3)	17.67	21.48	1-1	(3)
3231.10	B	(3)	17.67	21.48	0-1	
4253.593	A	9	18.17	21.07	2-3	$4s^3P^{\circ}-4p^3D$
4284.991	A	5	18.11	20.99	1-2	(4)
4332.71	A	4	18.11	20.96	0-1	
4361.53	A	2	18.17	20.99	2-2	
4340.30	A	2	18.11	20.96	1-1	
4418.84	A	00	18.17	20.96	2-1	
3838.316	A	6	18.17	21.38	2-2	$4s^3P^{\circ}-4p^3P$
3837.80	A	3	18.11	21.33	1-1	(5)
3899.09	P		18.17	21.33	2-1	
*3860.64 §	A	3	18.11	21.31	1-0	
3778.90	A	1	18.11	21.38	1-2	
3831.85	A	2	18.11	21.33	0-1	
3717.775	A	6	18.17	21.48	2-1	$4s^3P^{\circ}-4p^3S$
3662.005	A	4	18.11	21.48	1-1	(6)
3656.61	A	1	18.11	21.48	0-1	
4364.73	A	1	18.24	21.07	3-3	$3d^3D^{\circ}-4p^3D$
4467.83	B	(1)	18.23	20.99	2-2	(7)
4499.29	B	(0)	18.22	20.96	1-1	
4478.48	A	00	18.24	20.99	3-2	
4527.96	B	(0)	18.23	20.96	2-1	
4354.56	A	2	18.23	21.07	2-3	
4439.87	A	1	18.22	20.99	1-2	
3928.615	A	6	18.24	21.38	3-2	$3d^3D^{\circ}-4p^3P$
3983.77	A	3	18.23	21.33	2-1	(8)
3985.97	A	2	18.22	21.31	1-0	
3920.37	B	(0)	18.23	21.38	2-2	
3961.55	A	2	18.22	21.33	1-1	
3794.69	A	2	10.38	21.48	2-1	$3d^3D^{\circ}-4p^3S$
3774.52	A	00	10.37	21.48	1-1	(9)
4613.47	A	00	18.32	20.99	1-2	$4s^1P^{\circ}-4p^3D$
4677.67	A	0	18.32	20.96	1-1	(10)
4099.25	A	00	18.32	21.33	1-1	$4s^1P^{\circ}-4p^3P$
4125.4	A	00	18.32	21.31	1-0	(11)
3899.27	A	00	18.32	21.48	1-1	$4s^1P^{\circ}-4p^3S$ (12)
3136.00	B	(3)	21.38	25.32	2-3	$4p^3P-4d^3F^{\circ}$
3185.16	B	(3)	21.38	25.26	2-2	(13)
2985.98	B	(6)	21.38	25.51	2-2	$4p^3P-4d^3D^{\circ}$ (14)

Strongest Unclassified Lines Attributed to S III

4802.81	A	0
4283.70	A	0
4164.96	A	0
4148.91	A	1
4127.54	A	0
4111.56	A	3
4099.44	A	1
4095.17	A	0
4064.45	A	2
3997.97	A	0
3748.73	A	0
3699.37	A	1
3697.88	A	0
3638.15	A	0
3626.53	A	0
3549.72	A	1
3497.340	A	5

S IV I P 47.1 Anal C List A Aug 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3097.46	A	5	22.40	26.38	½-1½	$4^2S-4^2P^{\circ}$
3117.75	A	3	22.40	26.36	½-½	(1)

Cl I I P 12.9 Anal B List C Oct 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
9121.10	A	75	8.88	10.24	2½-2½	$4s^4P-4p^4P^{\circ}$
9393.81	A	50	8.95	10.26	1½-1½	(1)
9486.89	A	25	8.99	10.29	½-½	
8948.01	A	50	8.88	10.26	2½-1½	
9191.67	A	60	8.95	10.29	1½-½	
9584.77	A	50	8.95	10.24	1½-2½	
9702.35	A	40	8.99	10.26	½-1½	

Cl I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
8375.95	A	150	8.88	10.36	2½-3½	$4s^4P-4p^4D^{\circ}$
8585.96	A	100	8.95	10.39	1½-2½	(2)
8575.25	A	75	8.99	10.43	½-1½	
8212.00	A	100	8.88	10.39	2½-2½	
8333.29	A	100	8.95	10.43	1½-1½	
8428.25	A	100	8.99	10.45	½-½	
7980.58	A	15	8.88	10.43	2½-1½	
8194.35	A	50	8.95	10.45	1½-½	
7878.22	A	75	8.88	10.45	2½-2½	$4s^4P-4p^2D^{\circ}$
7997.80	A	50	8.95	10.49	1½-1½	(3)
7672.44	A	25	8.88	10.49	2½-1½	
8221.73	A	75	8.95	10.45	1½-2½	
8220.40	A	60	8.99	10.49	½-1½	
7414.10	A	90	8.88	10.55	2½-1½	$4s^4P-4p^2P^{\circ}$ †
7717.57	A	100	8.95	10.55	1½-1½	(4)
7924.62	A	100	8.99	10.55	½-1½	
7256.63	A	125	8.88	10.58	2½-1½	$4s^4P-4p^4S^{\circ}$
7547.06	A	100	8.95	10.58	1½-1½	(5)
7744.94	A	125	8.99	10.58	½-1½	
4438.48	A	20	8.88	11.66	2½-2½	$4s^4P-5p^4P^{\circ}$ †
4403.03	A	15	8.88	11.69	2½-1½	(6)
4389.76	A	25	8.88	11.69	2½-3½	$4s^4P-5p^4D^{\circ}$ †
4475.31	A	15	8.95	11.71	1½-2½	(7)
4379.90	A	20	8.95	11.77	1½-1½	
4363.30	A	20	8.95	11.78	1½-2½	$4s^4P-5p^2D^{\circ}$ †
4369.52	A	15	8.99	11.81	½-1½	(8)
4226.44	A	15	8.88	11.80	2½-1½	$4s^4P-5p^4S^{\circ}$ †
4323.35	A	20	8.95	11.80	1½-1½	(9)
10091.64	A	40	9.16	10.39	1½-2½	$4s^2P-4p^4D^{\circ}$ †
10392.45	A	5	9.24	10.43	½-1½	(10)
9744.33	A	30	9.16	10.43	1½-1½	
9592.20	A	75	9.16	10.45	1½-2½	$4s^2P-4p^2D^{\circ}$
9875.95	A	50	9.24	10.49	½-1½	(11)
9288.82	A	60	9.16	10.49	1½-1½	
9073.15	A	50	9.16	10.52	1½-½	$4s^2P-4p^2S^{\circ}$
9632.37	A	20	9.24	10.52	½-½	(12)
8912.88	A	40	9.16	10.55	1½-1½	$4s^2P-4p^2P^{\circ}$
9045.40	A	40	9.24	10.61	½-½	(13)
8550.46	A	20	9.16	10.61	1½-½	
9452.06	A	75	9.24	10.55	½-1½	
8686.28	A	30	9.16	10.58	1½-1½	$4s^2P-4p^4S^{\circ}$
9197.49	A	25	9.24	10.58	½-1½	(14)
4526.20	A	30	9.16	11.89	1½-1½	$4s^2P-5p^2P^{\circ}$
4601.00	A	20	9.24	11.92	½-½	(15)
4469.37	A	18	9.16	11.92	1½-½	
4661.22	A	18	9.24	11.89	½-1½	

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Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4794.54	A	250	13.32	15.89	2-3	$4s^5S^{\circ}-4p^5P$
4810.06	A	225	13.32	15.88	2-2	(1)
4819.46	A	200	13.32	15.88	2-1	
5423.25	A	150	13.62	15.89	4-3	$3d^5D^{\circ}-4p^5P$
5443.42	A	100	13.62	15.88	3-2	(2)
5456.27	A	50	13.62	15.88	2-1	
5423.52	A	100	13.62	15.89	3 3	
5444.25	A	60	13.62	15.88	2-2	
5457.02	A	75	13.62	15.88	1-1	
5424.36	A	25	13.62	15.89	2-3	
5444.99	A	10	13.62	15.88	1-2	
5457.47	A	30	13.62	15.88	0-1	
*5217.93	A	150	13.90	16.27	1-2	$4s^3S^{\circ}-4p^3P$
5221.34	A	75	13.90	16.27	1-1	(3)
*5217.93	A	150	13.90	16.27	1-0	
3353.39	A	125	14.28	17.96	1-1	$3s3p^5\ ^1P^{\circ}-4p'\ ^1$ (4)
8360.63	A	15	14.79	16.27	3-2	$3d^3D^{\circ}-4p^3P$ † (5)
3750.00	A	30	14.79	18.08	3-3	$3d^3D^{\circ}-4p'\ ^3D$
3767.57	A	30	14.79	18.06	2-2	(6)
3774.25	A	25	14.79	18.06	1-1	
3769.13	A	20	14.79	18.06	3-2	
3768.13	A	18	14.79	18.06	2-1	
3748.46	A	15	14.79	18.08	2-3	
3773.68	A	20	14.79	18.06	1-2	
3650.13	A	30	14.79	18.17	3-4	$3d^3D^{\circ}-4p'\ ^3F$ †
3658.38	A	20	14.79	18.16	2-3	(7)
3673.83	A	18	14.79	18.15	1-2	
3659.84	A	18	14.79	18.16	3-3	
3668.03	A	20	14.79	18.15	2-2	
3333.64	A	40	14.79	18.49	3-2	$3d^3D^{\circ}-4p'\ ^3P$ †
*3315.44	A	100	14.79	18.51	2-1	(8)
3312.78	A	15	14.79	18.52	1-0	
3332.42	A	15	14.79	18.49	2-2	
3320.14	A	30	14.79	18.51	1-1	

Cl II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3829.27	A	15	15.00	18.22	2-3	3d' $^1D^o$-4p' ^1F (9)
3147.86	A	20	15.00	18.92	2-2	3d' $^1D^o$-4p' ^1D (10)
3161.44	A	20	15.02	18.92	3-2	3d' $^1F^o$-4p' ^1D (11)
4995.52	A	60	15.61	18.08	4-3	3d' $^3F^o$-4p' ^3D† (12)
4970.12	A	50	15.58	18.06	3-2	
4925.17	A	15	15.56	18.06	2-1	
4936.99	A	25	15.58	18.08	3-3	
4924.28	A	18	15.56	18.06	2-2	
4819.79	A	25	15.61	18.17	4-4	3d' $^3F^o$-4p' ^3F (13)
4781.82	A	50	15.58	18.16	3-3	
4755.64	A	50	15.56	18.15	2-2	
4836.79	A	20	15.61	18.16	4-3	
4798.40	A	15	15.58	18.15	3-2	
4765.30	A	10	15.58	18.17	3-4	
4739.42	A	10	15.56	18.16	2-3	
3092.22	A	50	15.61	19.60	4-3	3d' $^3F^o$-4p" ^3D† (14)
3071.35	A	40	15.58	19.60	3-2	
3058.00	A	40	15.56	19.59	2-1	
3053.74	A	10	15.56	19.60	2-2	
5333.70	A	15	15.64	17.96	1-1	4s' $^3D^o$-4p' ^1P† (15)
5078.25	A	150	15.65	18.08	3-3	4s' $^3D^o$-4p' ^3D (16)
5103.04	A	125	15.65	18.06	2-2	
5099.30	A	100	15.64	18.06	1-1	
5113.36	A	40	15.65	18.06	3-2	
5104.08	A	25	15.65	18.06	2-1	
5068.10	A	10	15.65	18.08	2-3	
5098.34	A	20	15.64	18.06	1-2	
4896.77	A	200	15.65	18.17	3-4	4s' $^3D^o$-4p' ^3F† (17)
4904.76	A	135	15.65	18.16	2-3	
4917.72	A	125	15.64	18.15	1-2	
4914.32	A	12	15.65	18.16	3-3	
4922.14	A	20	15.65	18.15	2-2	
4792.04	A	12	15.65	18.22	2-3	4s' $^3D^o$-4p' ^1F (18)
4343.62	A	100	15.65	18.49	3-2	4s' $^3D^o$-4p' ^3P† (19)
4307.42	A	75	15.65	18.51	2-1	
4291.76	A	50	15.64	18.52	1-0	
4336.26	A	45	15.65	18.49	2-2	
4304.07	A	40	15.64	18.51	1-1	
3123.72	A	15	15.65	19.60	3-3	4s' $^3D^o$-4p" ^3D† (20)
3121.62	A	10	15.65	19.60	2-2	
*3119.82	A	12	(15.65 15.64	19.60 19.60	2-3 1-2	
3045.00	A	10	15.65	19.70	2-2	4s' $^3D^o$-4p" ^1D (21)
2996.63	A	40	15.65	19.77	3-2	4s' $^3D^o$- ^3P † (22)
3006.05	A	20	15.65	19.75	2-1	
3018.82	A	12	15.64	19.73	1-0	
3004.39	A	10	15.64	19.75	1-1	
5634.84	A	18	15.77	17.96	1-1	3d' $^1P^o$-4p' ^1P (23)
4253.51	A	75	15.89	18.79	3-2	4p^5P-5s$^5S^o$ (24)
4241.38	A	60	15.88	18.79	2-2	
4234.09	A	50	15.88	18.79	1-2	
3860.80	A	150	15.89	19.09	3-4	4p^5P-4d$^5D^o$ (25)
3850.97	A	100	15.88	19.09	2-3	
3845.42	A	50	15.88	19.09	1-2	
3860.98	A	100	15.89	19.09	3-3	
3851.38	A	75	15.88	19.09	2-2	
3845.69	A	75	15.88	19.09	1-1	
3861.40	A	50	15.89	19.09	3-2	
3851.69	A	30	15.88	19.09	2-1	
3845.84	A	30	15.88	19.09	1-0	
6094.65	A	100	15.93	17.96	2-1	4s' $^1D^o$-4p' ^1P (26)
5790.50	A	25	15.93	18.06	2-1	4s' $^1D^o$-4p' ^3D† (27)
5392.12	A	100	15.93	18.22	2-3	4s' $^1D^o$-4p' ^1F (28)
4132.48	A	200	15.93	18.92	2-2	4s' $^1D^o$-4p' ^1D (29)
3276.81	A	40	15.93	19.70	2-2	4s' $^1D^o$-4p" ^1D (30)
3096.72	A	25	15.93	19.92	2-1	4s' $^1D^o$-4p" ^1P (31)
5285.48	A	30	16.27	18.60	2-2	4p^3P-3d' $^3P^o$ † (32)
5173.15	A	25	16.27	18.65	2-3	4p^3P-3d' $^3D^o$ † (33)
5189.70	A	25	16.27	18.64	1-2	
5162.34	A	10	16.27	18.66	0-1	
5193.03	A	10	16.27	18.64	2-2	
4585.03	A	15	16.27	18.96	2-1	4p^3P-3d' $^3S^o$† (34)
*4572.13	A	100	16.27	18.97	2-1	4p^3P-5s$^3S^o$ (35)
4569.42	A	50	16.27	18.97	1-1	
*4572.13	A	100	16.27	18.97	0-1	
3949.96	A	10	16.27	19.39	2-2	4p^3P-3p^{5}4s$^3P^o$† (36)
3329.12	A	150	16.27	19.97	2-3	4p^3P-4d$^3D^o$ (37)
*3315.44	A	100	16.27	19.99	1-2	
3307.90	A	50	16.27	20.00	0-1	
3316.86	A	50	16.27	19.99	2-2	
3306.45	A	40	16.27	20.00	1-1	

Cl II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6661.68	A	75	16.32	18.17	5-4	3d' $^3G^o$-4p' ^3F (38)
6686.04	A	45	16.32	18.16	4-3	
6713.43	A	40	16.32	18.15	3-2	
6653.75	A	25	16.32	18.17	4-4	
6681.03	A	15	16.32	18.16	3-3	
4924.83	A	10	17.02	19.53	2-1	4s" $^3P^o$-4p" ^3S† (39)
4907.17	A	15	17.01	19.53	1-1	
4781.32	A	75	17.02	19.60	2-3	4s" $^3P^o$-4p" ^3D (40)
4768.68	A	150	17.01	19.60	1-2	
4771.09	A	40	17.01	19.59	0-1	
4785.44	A	50	17.02	19.60	2-2	
4778.93	A	45	17.01	19.59	1-1	
4490.00	A	50	17.02	19.77	2-2	4s" $^3P^o$- ^3P (41)
4504.27	A	20	17.01	19.75	1-1	
4519.19	A	18	17.02	19.75	2-1	
4536.78	A	20	17.01	19.73	1-0	
*4475.28	A	20	17.01	19.77	1-2	
*4497.30	A	18	17.01	19.75	0-1	
*4259.52	A	35	17.02	19.92	2-1	4s" $^3P^o$-4p" ^1P (42)
4208.03	A	30	17.02	19.95	2-2	4s" $^3P^o$-4p" ^3P (43)
4191.59	A	15	17.01	19.96	1-1	
4204.54	A	18	17.02	19.96	2-1	
4188.82	A	15	17.01	19.96	1-0	
4195.11	A	18	17.01	19.95	1-2	
4185.61	A	20	17.01	19.96	0-1	
6831.62	A	30	17.11	18.92	1-2	4s" $^1P^o$-4p' ^1D (44)
4771.66	A	20	17.11	19.70	1-2	4s" $^1P^o$-4p" ^1D (45)
4399.14	A	15	17.11	19.92	1-1	4s" $^1P^o$-4p" ^1P (46)
4943.24	A	15	17.20	19.70	1-2	3d" $^1P^o$-4p" ^1D (47)
4544.48	A	10	17.20	19.92	1-1	3d" $^1P^o$-4p" ^1P (48)
3843.26	A	100	17.20	20.41	1-0	3d" $^1P^o$-4p" ^1S (49)
*5175.85	A	20	17.31	19.70	2-2	3d" $^1D^o$-4p" ^1D (50)
4740.40	A	150	17.31	19.92	2-1	3d" $^1D^o$-4p" ^1P (51)
4372.91	A	80	17.45	20.27	3-2	3d" $^3D^o$-x' (52)
4309.06	A	50	17.41	20.27	2-2	
*4259.52	A	35	17.37	20.27	1-2	
3037.98	A	35	17.45	21.51	3-2	3d" $^3D^o$-x" (53)
3006.98	A	20	17.41	21.51	2-2	
2982.78	A	18	17.37	21.51	1-2	
6759.42	A	35	17.78	19.60	4-3	3d" $^3F^o$-4p" ^3D† (54)
6850.21	A	40	17.80	19.60	3-2	
6952.13	A	25	17.82	19.59	2-1	
6841.86	A	10	17.80	19.60	3-3	
3883.80	A	12	17.96	21.14	1-2	4p' ^1P-5s' $^1D^o$ (55)
3688.44	A	15	17.96	21.30	1-2	4p' ^1P-4d' $^3F^o$ (56)
3022.93	A	30	17.96	22.04	1-2	4p' ^1P-4d' $^1D^o$ (57)
6399.41	A	10	18.03	19.95	2-2	3d" $^3P^o$-4p" ^3P† (58)
6522.38	A	10	18.08	19.97	3-3	4p' ^3D-4d$^3D^o$ † (59)
4147.09	A	30	18.08	21.06	3-3	4p' ^3D-5s' $^3D^o$† (60)
4130.86	A	25	18.06	21.05	2-2	
4133.66	A	20	18.06	21.05	1-1	
4124.00	A	12	18.06	21.06	2-3	
4079.88	A	15	18.08	21.11	3-3	4p' ^3D-5d$^3D^o$† (61)
4052.22	A	12	18.06	21.11	2-2	
3805.24	A	75	18.08	21.32	3-4	4p' ^3D-4d' $^3F^o$ (62)
3798.80	A	50	18.06	21.31	2-3	
3809.51	A	40	18.06	21.30	1-2	
3818.40	A	30	18.08	21.31	3-3	
3810.10	A	30	18.06	21.30	2-2	
3733.73	A	10	18.08	21.39	3-4	4p' ^3D-4d' $^3G^o$ (63)
3717.94	A	15	18.06	21.38	2-3	
3522.14	A	40	18.08	21.59	3-3	4p' ^3D-4d' $^3D^o$ (64)
3509.39	A	40	18.06	21.58	2-2	
3513.22	A	35	18.06	21.58	1-1	
3526.13	A	30	18.08	21.58	3-2	
3513.69	A	12	18.06	21.58	2-1	
3505.44	A	12	18.06	21.59	2-3	
3508.94	A	12	18.06	21.58	1-2	
3189.04	A	20	18.08	21.95	3-2	4p' ^3D-4d' $^3P^o$† (65)
4276.51	A	30	18.17	21.06	4-3	4p' ^3F-5s' $^3D^o$ † (66)
4270.61	A	25	18.16	21.05	3-2	
4261.22	A	20	18.15	21.05	2-1	
4205.07	A	10	18.17	21.11	4-3	4p' ^3F-5d$^3D^o$ † (67)
3913.92	A	30	18.17	21.32	4-4	4p' ^3F-4d' $^3F^o$† (68)
3916.70	A	20	18.16	21.31	3-3	
3917.57	A	18	18.15	21.30	2-2	

Cl II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Mu
3833.40	A	200	18.17	21.39	4-5	4p'
3827.62	A	150	18.16	21.39	3-4	
3820.25	A	100	18.15	21.38	2-3	
3838.37	A	20	18.17	21.39	4-4	
3830.80	A	15	18.16	21.38	3-3	
3615.09	A	10	18.17	21.59	4-3	4p'
*4235.49	A	25	18.22	21.14	3-2	4p'
3781.23	A	30	18.22	21.49	3-3	4p'
3231.75	A	12	18.22	22.04	3-2	4p'
4811.57	A	12	18.49	21.06	2-3	4p'
4857.04	A	10	18.51	21.05	1-2	
4721.43	A	25	18.49	21.11	2-3	4p'
4748.67	A	20	18.51	21.11	1-2	
4738.41	A	10	18.51	21.12	1-1	
3990.19	A	20	18.49	21.59	2-3	4p'
4020.06	A	15	18.51	21.58	1-2	
4036.53	A	10	18.52	21.58	0-1	
3618.88	A	15	18.49	21.90	2-1	4p'
3639.19	A	18	18.51	21.90	1-1	
3648.07	A	10	18.52	21.90	0-1	
3568.04	A	20	18.49	21.95	2-2	4p'
3576.00	A	15	18.49	21.94	2-1	
3603.72	A	10	18.51	21.94	1-0	
3587.78	A	12	18.51	21.95	1-2	
3604.51	A	15	18.52	21.94	0-1	
7578.07	A	10	18.64	20.27	2-2	3d'
5568.81	A	15	18.92	21.14	2-2	4p'
*5175.85	A	20	18.92	21.30	2-2	4p'
3954.21	A	20	18.92	22.04	2-2	4p'
4224.92	A	15	19.60	22.52	3-2	4p"
*4235.49	A	25	19.60	22.51	2-1	
3866.08	A	40	19.60	22.79	3-4	4p"
3861.95	A	20	19.60	22.80	2-3	
3854.75	A	15	19.59	22.80	1-2	
3864.60	A	15	19.60	22.80	3-3	
4482.02	A	10	19.77	22.52	2-2	^3P
*4497.30	A	18	19.77	22.51	2-1	
*4475.28	A	20	19.75	22.51	1-0	

Strongest Unclassified Lines of Cl II

I A	Ref	Int	I A	Ref
7565.53	A	18	3610.07	A
5356.14	A	10	3479.82	A
4584.28	A	20	3203.05	A
4157.82	A	25	3173.66	A
3981.94	A	15	3170.23	A
3793.75	A	25	3160.52	A

Cl III I P 39.7 Anal B List C Nov 1

I A	Ref	Int	E P Low	E P High	J	Mu
3602.10	B	9	21.56	24.98	$2\frac{1}{2}-3\frac{1}{2}$	4s
3612.85	B	8	21.49	24.91	$1\frac{1}{2}-2\frac{1}{2}$	
3622.69	B	7	21.45	24.85	$\frac{1}{2}-1\frac{1}{2}$	
3682.05	B	7	21.56	24.91	$2\frac{1}{2}-2\frac{1}{2}$	
3670.28	B	7	21.49	24.85	$1\frac{1}{2}-1\frac{1}{2}$	
3656.95	B	7	21.45	24.82	$\frac{1}{2}-\frac{1}{2}$	
3705.45	B	6	21.49	24.82	$1\frac{1}{2}-\frac{1}{2}$	
*3340.42	B	9	21.56	25.25	$2\frac{1}{2}-2\frac{1}{2}$	4s
3329.06	B	8	21.49	25.20	$1\frac{1}{2}-1\frac{1}{2}$	
3387.60	B	6	21.56	25.20	$2\frac{1}{2}-1\frac{1}{2}$	
*3340.42	B	9	21.49	25.19	$1\frac{1}{2}-\frac{1}{2}$	
3283.41	B	6	21.49	25.25	$1\frac{1}{2}-2\frac{1}{2}$	
3289.80	B	7	21.45	25.20	$\frac{1}{2}-1\frac{1}{2}$	
3191.45	B	9	21.56	25.42	$2\frac{1}{2}-1\frac{1}{2}$	4s
3139.34	B	8	21.49	25.42	$1\frac{1}{2}-1\frac{1}{2}$	
3104.46	B	6	21.45	25.42	$\frac{1}{2}-1\frac{1}{2}$	
3925.87	A	5	22.11	25.25	$1\frac{1}{2}-2\frac{1}{2}$	4s
3720.45	A	8	22.11	25.42	$1\frac{1}{2}-2\frac{1}{2}$	4s
3748.81	A	8	22.02	25.31	$\frac{1}{2}-1\frac{1}{2}$	
3320.57	A	7	22.11	27.42	$1\frac{1}{2}-1\frac{1}{2}$	4s
3259.32	A	6	22.02	27.39	$\frac{1}{2}-\frac{1}{2}$	
3336.16	A	5	22.11	27.39	$1\frac{1}{2}-\frac{1}{2}$	
3244.44	A	5	22.02	27.42	$\frac{1}{2}-1\frac{1}{2}$	
3991.50	A	7	22.16	25.25	$2\frac{1}{2}-2\frac{1}{2}$	3d
4059.07	A	6	22.16	25.20	$2\frac{1}{2}-1\frac{1}{2}$	
4104.23	A	5	22.18	25.19	$1\frac{1}{2}-\frac{1}{2}$	
4018.50	A	6	22.18	25.25	$1\frac{1}{2}-2\frac{1}{2}$	
4106.83	A	5	22.19	25.20	$\frac{1}{2}-1\frac{1}{2}$	
3779.35	A	5	22.16	25.42	$2\frac{1}{2}-2\frac{1}{2}$	3d

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atory Ref	Int	E P Low	High	J	Multiplet (No)
A	4	22.60	27.42	2½-1½	$3d^2D-4p^2P^\circ$ †
A	6	22.48	27.39	1½- ½	(9)
A	9	23.26	26.75	2½-3½	$4s'\ ^2D-4p'\ ^2F^\circ$†
A	8	23.26	26.73	1½-2½	(10)
A	8	23.26	26.89	2½-2½	$4s'\ ^2D-4p'\ ^2D^\circ$†
A	8	23.26	26.90	1½-1½	(11)
A	5	23.26	26.90	2½-1½	
A	5	24.07	27.42	2½-1½	$3d'\ ^2D-4p'\ ^2P^\circ$† (12)
A	5	24.22	26.89	3½-2½	$3d'\ ^2F-4p'\ ^2D^\circ$† (13)

ee introduction

15.69 Anal A List D June 1944

Ref	Int	Low	High	J	Multiplet
A	500	11.50	12.85	2-1	4s 1°-4p 1
A	4000	11.50	13.02	2-3	(1) -4p 2
A	800	11.50	13.04	2-2	-4p 3
A	200	11.50	13.10	2-1	-4p 4
A	500	11.50	13.11	2-2	-4p 5
A	(8)	11.50	13.23	2-1	-4p 7
A	(20)	11.50	13.24	2-2	-4p 8
A	(20)	11.50	13.27	2-1	-4p 9
B	(60)	11.50	14.40	2-1	4s 1°-5p 1
B	(100)	11.50	14.44	2-3	(2) -5p 2
B	(50)	11.50	14.44	2-2	-5p 3
B	(80)	11.50	14.46	2-1	-5p 4
B	(100)	11.50	14.47	2-2	-5p 5
B	(40)	11.50	14.62	2-2	-5p 8
B	(100)	11.50	14.62	2-1	-5p 9
A	1500	11.57	12.85	1-1	4s 2°-4p 1
A	2500	11.57	13.04	1-2	(3) -4p 3
A	2000	11.57	13.10	1-1	-4p 4
A	600	11.57	13.11	1-2	-4p 5
B	(100)	11.57	14.44	1-2	4s 2°-5p 3
B	(100)	11.57	14.46	1-1	(4) -5p 4
B	(100)	11.57	14.47	1-2	-5p 5
B	(100)	11.57	14.51	1-0	-5p 6
B	(100)	11.57	14.62	1-2	-5p 8
B	(50)	11.57	15.00	1-0	4s 2°-6p 6 (5)
A	500	11.67	12.85	0-1	4s 3°-4p 1
A	400	11.67	13.10	0-1	(6) -4p 4
A	400	11.67	13.23	0-1	-4p 7
A	200	11.67	13.27	0-1	-4p 9
B	(40)	11.67	14.40	0-1	4s 3°-5p 1
B	(100)	11.67	14:62	0-1	(7) -5p 7
B	(80)	11.67	14.62	0-1	-5p 9
A	1000	11.78	13.04	1-2	4s 4°-4p 3
A	200	11.78	13.10	1-1	(8) -4p 4
A	1000	11.78	13.11	1-2	-4p 5
A	2000	11.78	13.23	1-1	-4p 7
A	3000	11.78	13.24	1-2	-4p 8
A	1500	11.78	13.27	1-1	-4p 9
A	(15)	11.78	13.42	1-0	-4p 10
B	(100)	11.78	14.40	1-1	4s 4°-5p 1
B	(90)	11.78	14.44	1-2	(9) -5p 3
B	(90)	11.78	14.46	1-1	-5p 4
B	(80)	11.78	14.51	1-0	-5p 6
B	(90)	11.78	14.62	1-1	-5p 7
B	(90)	11.78	14.62	1-2	-5p 8
B	(70)	11.78	14.62	1-1	-5p 9
B	(100)	11.78	14.67	1-0	-5p 10
C	500	12.85	14.01	1-2	4p 1-5s 1° (10)
A	(20)	12.85	14.68	1-2	4p 1-4d 3° (11)
A	(30)	12.85	15.04	1-0	4p 1-5d 1° (12)
A	(30)	13.02	15.07	3-4	4p 2-5d 4° (13)
A	(20)	13.02	15.26	3-4	4p 2-6d 4° (14)

ges in Paschen notation see text § 37

A II I P 27.5 Anal B List A Oct 1944

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4401.02	A	7	16.34	19.14	3½-2½	$3d^4D-4p^4P^\circ$
4371.36	A	8	16.35	19.18	2½-1½	(1)
4332.06	A	5	16.37	19.22	1½- ½	
4431.02	A	8	16.35	19.14	2½-2½	
4400.09	A	6	16.37	19.18	1½-1½	
4352.23	A	6	16.39	19.22	½- ½	
4460.56	A	6	16.37	19.14	1½-2½	
4420.90	A	7	16.39	19.18	½-1½	
4013.87	A	10	16.34	19.41	3½-3½	$3d^4D-4p^4D^\circ$
3968.36	A	10	16.35	19.46	2½-2½	(2)
3914.76	A	7	16.37	19.53	1½-1½	
3891.40	A	6	16.39	19.56	½- ½	
3944.27	A	8	16.34	19.46	3½-2½	
3891.97	A	7	16.35	19.53	2½-1½	
3875.26	A	7	16.37	19.56	1½- ½	
4038.82	A	7	16.35	19.41	2½-3½	
3992.06	A	7	16.37	19.46	1½-2½	
3931.24	A	6	16.39	19.53	½-1½	
3786.40	A	6	16.34	19.60	3½-2½	$3d^4D-4p^2D^\circ$
3714.74	A	3	16.35	19.68	2½-1½	(3)
3808.61	A	5	16.35	19.60	2½-2½	
3735.49	A	4	16.37	19.68	1½-1½	
*3830.43	A	5	16.37	19.60	1½-2½	
3750.50	A	4	16.39	19.68	½-1½	
3601.51	A	4	16.35	19.78	2½-1½	$3d^4D-4p^2P^\circ$
3692.33	A	0n	16.37	19.72	1½- ½	(4)
3621.06	A	0	16.37	19.78	1½-1½	
3706.94	A	4	16.39	19.72	½- ½	
3635.13	A	00n	16.39	19.78	½-1½	
3499.49	A	5	16.35	19.88	2½-1½	$3d^4D-4p^4S^\circ$
3517.90	A	3	16.37	19.88	1½-1½	(5)
3531.22	A	2	16.39	19.88	½-1½	
4806.07	A	20	16.57	19.14	2½-2½	$4s^4P-4p^4P^\circ$
4933.34	A	6	16.68	19.18	1½-1½	(6)
4972.16	A	5	16.74	19.22	½- ½	
4735.93	A	15	16.57	19.18	2½-1½	
4847.90	A	8	16.68	19.22	1½- ½	
5009.35	A	8	16.68	19.14	1½-2½	
5062.07	A	8	16.74	19.18	½-1½	
4348.11	A	20n	16.57	19.41	2½-3½	$4s^4P-4p^4D^\circ$
4426.01	A	15	16.68	19.46	1½-2½	(7)
4430.18	A	9	16.74	19.53	½-1½	
4266.53	A	10	16.57	19.46	2½-2½	
4331.25	A	10	16.68	19.53	1½-1½	
4379.74	A	8	16.74	19.56	½- ½	
4178.39	A	5	16.57	19.53	2½-1½	
4282.90	A	7	16.68	19.56	1½- ½	
4082.40	A	6	16.57	19.60	2½-2½	$4s^4P-4p^2D^\circ$
4112.83	A	5	16.68	19.68	1½-1½	(8)
3974.76	A	6	16.57	19.68	2½-1½	
4228.18	A	7	16.68	19.60	1½-2½	
*4201.99	A	5	16.74	19.68	½-1½	
3845.42	A	5	16.57	19.78	2½-1½	$4s^4P-4p^2P^\circ$
3974.48	A	5	16.68	19.78	1½-1½	(9)
4147.43	A	1n	16.74	19.72	½- ½	
4057.72	A	0n	16.74	19.78	½-1½	
3729.29	A	10	16.57	19.88	2½-1½	$4s^4P-4p^4S^\circ$
3850.57	A	15	16.68	19.88	1½-1½	(10)
3928.62	A	9	16.74	19.88	½-1½	
*3922.54	A	1n	16.74	19.89	½- ½	$4s^4P-4p^2S^\circ$ (11)
5950.91	A	0	17.07	19.14	1½-2½	$4s^2P-4p^4P^\circ$
5843.80	A	00n	17.07	19.18	1½-1½	(12)
6077.43	A	00	17.19	19.22	½- ½	
5724.37	A	0n	17.07	19.22	1½- ½	
5145.36	A	8	17.07	19.46	1½-2½	$4s^2P-4p^4D^\circ$
5286.92	A	5	17.19	19.53	½-1½	(13)
5017.63	A	2	17.07	19.53	1½-1½	
4879.90	A	12	17.07	19.60	1½-2½	$4s^2P-4p^2D^\circ$
4965.12	A	7	17.19	19.68	½-1½	(14)
4726.91	A	10	17.07	19.68	1½-1½	
4545.08	A	10	17.07	19.78	1½-1½	$4s^2P-4p^2P^\circ$
4889.06	B	5	17.19	19.72	½- ½	(15)
4657.94	A	9	17.07	19.72	1½- ½	
4764.89	A	10	17.19	19.78	½-1½	
4383.79	A	4	17.07	19.88	1½-1½	$4s^2P-4p^4S^\circ$
4587.90	B	2	17.19	19.88	½-1½	(16)
4375.96	A	5	17.07	19.89	1½- ½	$4s^2P-4p^2S^\circ$
4579.39	A	8	17.19	19.89	½- ½	(17)
3108.82	A	000n	17.07	21.04	1½-2½	$4s^2P-4p'\ ^2F^\circ$ (18)
2979.05	A	6	17.19	21.33	½- ½	$4s^2P-4p'\ ^2P^\circ$†
3033.52	A	6	17.19	21.26	½-1½	(19)

A II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
6643.79	A	10	17.55	19.41	4½-3½	$3d^4F-4p^4D^\circ$
6684.36	A	8	17.62	19.46	3½-2½	(20)
6638.24	A	8	17.67	19.53	2½-1½	
6639.72	A	7	17.70	19.56	1½- ½	
6886.57	B	6	17.62	19.41	3½-3½	
6863.52	B	6	17.67	19.46	2½-2½	
6756.61	A	5	17.70	19.53	1½-1½	
7077.03	A	1	17.67	19.41	2½-3½	
6990.16	A	2	17.70	19.46	1½-2½	
6243.13	A	6	17.62	19.60	3½-2½	$3d^4F-4p^2D^\circ$
*6138.67	A	3	17.67	19.68	2½-1½	(21)
6399.23	A	4	17.67	19.60	2½-2½	
6239.73	A	2	17.70	19.68	1½-1½	
6509.16	A	00	17.70	19.60	1½-2½	
6120.12	A	00	17.70	19.72	1½- ½	$3d^4F-4p^2P^\circ$ (22)
3594.41	A	00n	17.62	21.05	3½-3½	$3d^4F-4p'\ ^2F$ (23)
6808.55	A	3	17.86	19.68	½-1½	$3d^2P-4p^2D^\circ$
7284.27	A	0	17.98	19.68	1½-1½	(24)
6861.30	A	4	17.98	19.78	1½-1½	$3d^2P-4p^2P^\circ$
6666.36	A	5	17.86	19.72	½- ½	(25)
6437.63	A	2	17.86	19.78	½-1½	
6500.25	A	3	17.98	19.88	1½-1½	$3d^2P-4p^4S^\circ$ (26)
6483.10	A	6	17.98	19.89	1½- ½	$3d^2P-4p^2S^\circ$
6103.56	A	4	17.86	19.89	½- ½	(27)
4042.20	A	1	17.98	21.04	1½-2½	$3d^2P-4p'\ ^2F$ (28)
3766.13	A	5	17.98	21.26	1½-1½	$3d^2P-4p'\ ^2P$
3556.91	A	5	17.86	21.33	½- ½	(29)
3682.56	A	4	17.98	21.33	1½- ½	
3634.83	A	4	17.86	21.26	½-1½	
3605.89	A	6	17.98	21.41	1½-2½	$3d^2P-4p'\ ^2D$
3490.89	A	4	17.86	21.40	½-1½	(30)
3611.84	A	4	17.98	21.40	1½-1½	
4609.60	A	15	18.37	21.05	2½-3½	$4s'\ ^2D-4p'\ ^2F$
4589.93	A	9	18.35	21.04	1½-2½	(31)
4637.25	A	6	18.37	21.04	2½-2½	
4277.55	A	8	18.37	21.26	2½-1½	$4s'\ ^2D-4p'\ ^2P$
4131.73	A	8	18.35	21.33	1½- ½	(32)
4237.23	A	7	18.35	21.26	1½-1½	
4072.01	A	9	18.37	21.41	2½-2½	$4s'\ ^2D-4p'\ ^2D$
4042.91	A	8	18.35	21.40	1½-1½	(33)
4079.60	A	5	18.37	21.40	2½-1½	
4035.47	A	6	18.35	21.41	1½-2½	
4936.13	A	00n	18.54	21.04	2½-2½	$3d^2F-4p'\ ^2F$
4904.75	A	6	18.54	21.05	2½-3½	(34)
4530.57	A	4	18.54	21.26	2½-1½	$3d^2F-4p'\ ^2P$ (35)
4182.98	A	0	18.46	21.41	3½-2½	$3d^2F-4p'\ ^2D$
4309.11	A	2	18.54	21.40	2½-1½	(36)
*4300.66	A	6	18.54	21.41	2½-2½	
5141.84	A	6	18.65	21.05	2½-3½	$3d^2D-4p'\ ^2F$
5017.16	A	6	18.58	21.04	1½-2½	(37)
5176.28	A	3	18.65	21.04	2½-2½	
4732.08	B	5	18.65	21.26	2½-1½	$3d^2D-4p'\ ^2P$
4474.77	A	6	18.58	21.33	1½- ½	(38)
4598.77	A	5	18.58	21.26	1½-1½	
4481.83	A	8	18.65	21.41	2½-2½	$3d^2D-4p'\ ^2D$
4370.76	A	6	18.58	21.40	1½-1½	(39)
4490.99	A	5	18.65	21.40	2½-1½	
4362.07	A	5	18.58	21.41	1½-2½	
5245.49	A	0	19.18	21.53	1½-1½	$4p^4P^\circ-3d'\ ^2$ (40)
*4072.40	A	7	19.14	22.17	2½-1½	$4p^4P^\circ-a^2P$
4124.09	A	0	19.18	22.17	1½-1½	(41)
4127.09	B	00n	19.22	22.21	½- ½	
3765.27	A	6	19.14	22.42	2½-2½	$4p^4P^\circ-5s^4P$
3720.43	A	5	19.18	22.50	1½-1½	(42)
3669.62	A	5	19.22	22.59	½- ½	
3678.27	A	5	19.14	22.50	2½-1½	
3622.15	A	6	19.18	22.59	1½- ½	
3809.49	A	7	19.18	22.42	1½-2½	
3770.54	A	6	19.22	22.50	½-1½	
*3564.34 §	B	4	19.14	22.60	2½-1½	$4p^4P^\circ-5s^2P$
*3603.91	B	3	19.18	22.60	1½-1½	(43)
3650.90	A	4	19.22	22.60	½-1½	

A II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3491.54	A	8	19.14	22.67	2½-3½	4p^{4}P^o-4d^{4}D
3514.39	A	9	19.18	22.69	1½-2½	(44)
3535.33	A	6	19.22	22.71	½-1½	
3476.74	A	6	19.14	22.69	2½-2½	
3491.24	A	6	19.18	22.71	1½-1½	
3509.78	A	6	19.22	22.74	½- ½	
3454.10	A	5	19.14	22.71	2½-1½	
*3466.34	A	5	19.18	22.74	1½- ½	
3478.24	A	4	19.18	22.73	1½- ½	4p^{4}P^o-3d' ^{2}S
3521.98	A	4	19.22	22.73	½- ½	(45)
3269.05	A	2	19.14	22.92	2½-3½	4p^{4}P^o-4d^{4}F
3254.03	A	1	19.18	22.97	1½-2½?	(46)
3263.60	A	5	19.22	23.00	½-1½	
3221.64	A	3	19.14	22.97	2½-2½	
3226.00	A	3	19.18	23.00	1½-1½	
3194.25	A	5	19.14	23.00	2½-1½	
3139.02	A	7	19.14	23.07	2½-2½	4p^{4}P^o-4d^{4}P
3212.54	A	5	19.18	23.02	1½-1½	(47)
3281.72	A	6	19.22	22.98	½- ½	
3181.05	A	7	19.14	23.02	2½-1½	
3243.70	A	7	19.18	22.98	1½- ½	
3169.68	A	8	19.18	23.07	1½-2½	
3249.82	A	7	19.22	23.02	½-1½	
3186.19	A	3	19.18	23.05	1½-2½	4p^{4}P^o-4d^{2}D (48)
3146.47	A	2	19.14	23.06	2½-3½	4p^{4}P^o-4d^{2}F (49)
*6818.39	A	4	19.46	21.27	2½-2½	4p^{4}D^o-3d' ^{2}D
			19.53	21.34	1½-1½	(50)
4561.03	A	4	19.46	22.17	2½-1½	4p^{4}D^o-a^{2}P
4593.44	A	2	19.53	22.21	1½- ½	(51)
4666.28	B	2n	19.53	22.17	1½-1½	
4649.06	B	0n	19.56	22.21	½- ½	
*4103.91	A	10	19.41	22.42	3½-2½	4p^{4}D^o-5s^{4}P
*4072.40	A	7	19.46	22.50	2½-1½	(52)
4033.83	A	6	19.53	22.59	1½- ½	
4179.31	A	5	19.46	22.42	2½-2½	
4156.11	A	5	19.53	22.50	1½-1½	
4076.64	A	5	19.56	22.59	½- ½	
4267.47	B	0	19.53	22.42	1½-2½	
4201.58	A	2	19.56	22.50	½-1½	
3933.19	A	0	19.46	22.60	2½-1½	4p^{4}D^o-5s^{2}P
4011.23	A	3	19.53	22.60	1½-1½	(53)
*3922.54	A	1n	19.56	22.70	½- ½	
4053.56	A	0	19.56	22.60	½-1½	
3780.84	A	8	19.41	22.67	3½-3½	4p^{4}D^o-4d^{4}D
3826.83	A	6	19.46	22.69	2½-2½	(54)
3872.15	A	5	19.53	22.71	1½-1½	
3880.34	A	4	19.56	22.74	½- ½	
3763.52	A	5	19.41	22.69	3½-2½	
3799.39	A	6	19.46	22.71	2½-1½	
3841.54	A	3	19.53	22.74	1½- ½	
3844.75	A	4	19.46	22.67	2½-3½	
3900.63	A	5	19.53	22.69	1½-2½	
3911.58	A	5	19.56	22.71	½-1½	
3856.16	A	1	19.53	22.73	1½- ½	4p^{4}D^o-3d' ^{2}S
3895.26	A	2	19.56	22.73	½- ½	(55)
3588.44	A	10	19.41	22.85	3½-4½	4p^{4}D^o-4d^{4}F
3576.62	A	10	19.46	22.92	2½-3½	(56)
3582.35	A	8	19.53	22.97	1½-2½	
3581.62	A	6	19.56	23.00	½-1½	
3521.27	A	5	19.41	22.92	3½-3½	
3520.00	A	6	19.46	22.97	2½-2½	
3548.51	A	7	19.53	23.00	1½-1½	
*3466.34	A	5	19.41	22.97	3½-2½	
3487.33	A	3	19.46	23.00	2½-1½	
3370.97	A	5	19.41	23.07	3½-2½	4p^{4}D^o-4d^{4}P
3471.59	A	2	19.46	23.02	2½-1½	(57)
3569.94	A	1	19.53	22.98	1½- ½	
3421.64	A	5	19.46	23.07	2½-2½	
3532.19	A	00n	19.53	23.02	1½-1½?	
3603.46	A	3	19.56	22.98	½- ½	
3480.52	A	5	19.53	23.07	1½-2½	
3565.02	A	5	19.56	23.02	½-1½	
3438.14	A	000n	19.46	23.05	2½-1½	4p^{4}D^o-4d^{2}D (58)
3379.48	A	2n	19.41	23.06	3½-3½	4p^{4}D^o-4d^{2}F
3341.77	A	2	19.46	23.16	2½-2½	(59)
3430.44	A	4	19.46	23.06	2½-3½	
*3397.89 §	A	4	19.53	23.16	1½-2½	
7348.11	A	2	19.60	21.27	2½-2½	4p^{2}D^o-3d' ^{2}D
7440.54	A	0	19.68	21.34	1½-1½	(60)
7090.55	A	000	19.60	21.34	2½-1½	
6376.00	A	0	19.60	21.53	2½-1½	4p^{2}D^o-3d' ^{2}P (61)
4792.12	A	5	19.60	22.17	2½-1½	4p^{2}D^o-a^{2}P
4867.59	A	3	19.68	22.21	1½- ½	(62)
4949.45	A	2	19.68	22.17	1½-1½	

A II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
4372.50	A	0	19.60	22.42	2½-2½	4p^{2}D^o-5s^{4}P
4379.25	A	1	19.68	22.50	1½-1½	(63)
4255.62	A	3	19.60	22.50	2½-1½	
*4243.71	A	2n	19.68	22.59	1½- ½	
4502.95	A	5	19.68	22.42	1½-2½?	
*4103.91	A	10	19.60	22.60	2½-1½	4p^{2}D^o-5s^{2}P
4076.96	A	4	19.68	22.70	1½- ½	(64)
4218.69	A	5	19.68	22.60	1½-1½	
4007.66	A	1	19.60	22.67	2½-3½	4p^{2}D^o-4d^{4}D
4096.47	A	000	19.68	22.69	1½-2½	(65)
3988.18	A	4	19.60	22.69	2½-2½	
4065.14	B	3	19.68	22.71	1½-1½	
3958.39	A	5	19.60	22.71	2½-1½	
4031.41	B	2	19.68	22.74	1½- ½?	
4047.51	A	3	19.68	22.73	1½- ½	4p^{2}D^o-3d' ^{2}S (66)
3717.17	A	5	19.60	22.92	2½-3½	4p^{2}D^o-4d^{4}F
3746.92	A	4	19.68	22.97	1½-2½	(67)
3656.05	A	5	19.60	22.97	2½-2½	
3709.90	A	4	19.68	23.00	1½-1½	
3620.82	A	0	19.60	23.00	2½-1½	
3550.03	A	4	19.60	23.07	2½-2½	4p^{2}D^o-4d^{4}P
3692.17	A	00n	19.68	23.02	1½-1½	(68)
*3603.91	B	3	19.60	23.02	2½-1½?	
3733.36	A	0n	19.68	22.98	1½- ½	
3635.67	A	2	19.68	23.07	1½-2½	
3570.77	A	00n	19.60	23.05	2½-2½	4p^{2}D^o-4d^{2}D (69)
3559.53	A	6	19.60	23.06	2½-3½	4p^{2}D^o-4d^{2}F
3545.58	A	10	19.68	23.16	1½-2½	(70)
3464.14	A	6	19.60	23.16	2½-2½	
3137.66	A	4	19.60	23.53	2½-1½	4p^{2}D^o-4d^{2}P
3273.36	A	4	19.68	23.45	1½- ½	(71)
3204.34	A	5	19.68	23.53	1½-1½	
3000.45	A	5	19.68	23.79	1½-1½	4p^{2}D^o-3d" ^{2}D†
3014.49	A	5	19.68	23.77	1½-2½	(72)
7617.86	C	1	19.72	21.34	½-1½	4p^{2}P^o-3d' ^{2}D (73)
7055.01	A	2	19.78	21.53	1½-1½	4p^{2}P^o-3d' ^{2}P
6799.32	A	2	19.72	21.53	½-1½	(74)
5165.82	A	5	19.78	22.17	1½-1½	4p^{2}P^o-a^{2}P
4942.96	A	4	19.72	22.21	½- ½	(75)
4681.52	A	1	19.78	22.42	1½-2½	4p^{2}P^o-5s^{4}P
*4440.09	A	3	19.72	22.50	½-1½	(76)
4547.78	A	5	19.78	22.50	1½-1½	
*4300.66	A	6	19.72	22.59	½- ½	
4401.74	A	1n	19.78	22.59	1½- ½	
4374.87	A	3	19.78	22.60	1½-1½	4p^{2}P^o-5s^{2}P
4129.70	A	4	19.72	22.70	½- ½	(77)
4222.67	A	5	19.78	22.70	1½- ½	
4275.19	A	4	19.72	22.60	½-1½	
*4243.71	A	2n	19.78	22.69	1½-2½	4p^{2}P^o-4d^{4}D
4210.00	A	00n	19.78	22.71	1½-1½	(78)
4173.77	D	1	19.78	22.74	1½- ½	
4099.47	A	3	19.72	22.73	½- ½	4p^{2}P^o-3d' ^{2}S (79)
3869.61	A	0	19.78	22.97	1½-2½?	4p^{2}P^o-4d^{4}F
*3753.53	A	4	19.72	23.00	½-1½	(80)
3751.06	A	0	19.78	23.07	1½-2½	4p^{2}P^o-4d^{4}P
3811.22	A	1	19.78	23.02	1½-1½	(81)
3777.55	A	2	19.72	22.98	½- ½	
3855.18	A	0	19.78	22.98	1½- ½	
3655.29	A	6	19.78	23.16	1½-2½?	4p^{2}P^o-4d^{2}F (82)
3293.66	A	7	19.78	23.53	1½-1½	4p^{2}P^o-4d^{2}P
3307.24	A	6	19.72	23.45	½- ½	(83)
3366.59	A	4	19.78	23.45	1½- ½	
3236.82	A	4	19.72	23.53	½-1½	
3093.41	A	8	19.78	23.77	1½-2½	4p^{2}P^o-3d" ^{2}D
3028.93	A	6	19.72	23.79	½-1½	(84)
4865.96	A	5	19.88	22.42	1½-2½	4p^{4}S^o-5s^{4}P
4721.62	B	4	19.88	22.50	1½-1½	(85)
4564.43	A	5	19.88	22.59	1½- ½	
4535.51	A	4	19.88	22.60	1½-1½	4p^{4}S^o-5s^{2}P
4372.09	A	0n	19.88	22.70	1½- ½	(86)
4394.65	A	2n	19.88	22.69	1½-2½	4p^{4}S^o-4d^{4}D
4358.53	A	1	19.88	22.71	1½-1½	(87)
4319.69	A	00n	19.88	22.74	1½- ½	
4338.24	B	1	19.88	22.73	1½- ½	4p^{4}S^o-3d' ^{2}S (88)
*3994.81	A	5	19.88	22.97	1½-2½	4p^{4}S^o-4d^{4}F
3952.74	A	6	19.88	23.00	1½-1½	(89)

A II continued

Laboratory			E P		J	Mu
I A	Ref	Int	Low	High		
3868.53	A	8	19.88	23.07	1½-2½	4p'
3932.55	A	7	19.88	23.02	1½-1½	
3979.36	A	7	19.88	22.98	1½- ½	
3893.14	A	00n	19.88	23.05	1½-2½	4p'
3383.94	A	2	19.88	23.05	1½-1½?	4p'
5305.77	A	3	19.89	22.21	½- ½	4p'
4730.69	A	2	19.89	22.50	½-1½	4p'
4572.92	A	1	19.89	22.59	½- ½	
4543.91	A	1	19.89	22.60	½-1½	4p'
3388.54	A	7	19.89	23.53	½-1½	4p'
3465.80	A	3	19.89	23.45	½- ½	
3161.38	A	4	19.89	23.79	½-1½	4p'
4385.08	B	4	20.65	23.47	½-1½	4s"
4367.87	A	5	20.65	23.48	½- ½	
4309.25	A	3	20.65	23.52	½-1½	4s'
4097.15	A	3	20.65	23.67	½- ½	4s' (
4052.94	A	5	20.65	23.70	½-1½	4s"
*3994.81	A	5	20.65	23.74	½- ½	(
6172.28	A	7	21.05	23.05	3½-2½	4p'
6114.92	A	10	21.04	23.05	2½-1½	(
6123.38	A	3	21.04	23.05	2½-2½	
*6138.67	A	3	21.05	23.06	3½-3½	4p' (
4538.73	A	1n	21.05	23.77	3½-2½	4p'
4480.85	A	0n	21.04	23.79	2½-1½	(
3946.10	A	7	21.05	24.18	3½-2½	4p'
3925.71	A	3	21.04	24.18	2½-1½	(
3561.04	A	6	21.05	24.52	3½-4½	4p'
3545.84	A	9	21.04	24.52	2½-3½	(
3562.19	A	4	21.05	24.52	3½-3½	
3429.64	A	3	21.05	24.65	3½-2½	4p'
3432.64	A	2	21.04	24.63	2½-1½	(
3414.46	A	3	21.04	24.65	2½-2½	
3373.87	A	2n	21.04	24.69	2½-1½	4p' (
3376.46	A	7	21.05	24.71	3½-3½	4p'
3350.94	A	6	21.04	24.72	2½-2½	(
3365.54	A	4	21.05	24.72	3½-2½	
3361.73	A	3	21.04	24.71	2½-3½	
5296.48	A	00n	21.12	23.45	2½-3½	3d' (
4205.19	A	00n	21.12	24.06	2½-3½?	3d' (
4914.32	A	2	21.26	23.77	1½-2½	4p'
4877.08	A	0n	21.26	23.79	1½-1½	(
4227.02	A	4	21.26	24.18	1½-2½	4p'
4337.10	A	6	21.33	24.18	½-1½	(
4226.65	A	2	21.26	24.18	1½-1½	
3713.03	A	2	21.26	24.58	1½-1½	4p' (
3600.22	A	3	21.26	24.69	1½-1½	4p'
3754.06	A	3	21.33	24.62	½- ½	(
3671.01	A	3	21.26	24.62	1½- ½	
3680.06	A	5	21.33	24.69	½-1½	
3639.85	A	7	21.26	24.65	1½-2½	4p'
3660.44	A	6	21.26	24.63	1½-1½	(
3593.76	A	00n	21.26	24.69	1½-1½	4p'
3673.26	A	4	21.33	24.69	½-1½	(
3104.38	A	5	21.26	25.24	1½-1½	4p'
3153.80	A	4	21.33	25.25	½- ½	(
3094.98	A	3	21.26	25.25	1½- ½	
3163.61	A	1	21.33	25.24	½-1½	
3088.24	A	5	21.26	25.26	1½-2½	4p' (
3026.75	A	4	21.26	25.34	1½- ½	4p'
3082.99	A	4	21.33	25.34	½- ½	(
5625.74	A	0n	21.27	23.47	2½-1½	3d' (
5090.55	A	2	21.27	23.70	2½-1½	3d'
5125.84	A	0	21.34	23.74	1½- ½	(
4433.83	A	5	21.27	24.06	2½-3½	3d'
4537.67	B	4	21.34	24.06	1½-2½	(
4438.12	A	1	21.27	24.06	2½-2½	

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ratory Ref	Int	E P Low	E P High	J	Multiplet (No)
A	2	21.27	24.27	2½–2½	$3d'\ ^2D-4f\ ^2D^{\circ}$ (134)
A	5	21.34	24.27	1½–1½	
B	4	21.27	24.27	2½–1½	
A	3	21.34	24.27	1½–2½	
A	0	21.41	23.53	2½–1½	$4p'\ ^2D^{\circ}-4d\ ^2P$ (125)
A	3	21.41	23.77	2½–2½	$4p'\ ^2D^{\circ}-3d''\ ^2D$ (126)
A	1	21.40	23.79	1½–1½	
B	0	21.40	23.77	1½–2½	
A	6	21.41	24.18	2½–2½	$4p'\ ^2D^{\circ}-5s'\ ^2D$ (127)
A	3	21.40	24.18	1½–1½	
A	1	21.41	24.18	2½–1½	
A	3	21.40	24.18	1½–2½	
A	5	21.40	24.62	1½– ½	$4p'\ ^2D^{\circ}-4d'\ ^2P$ (128)
A	4	21.40	24.69	1½–1½	
A	6	21.41	24.65	2½–2½	$4p'\ ^2D^{\circ}-4d'\ ^2D$ (129)
A	4	21.40	24.63	1½–1½	
A	5	21.41	24.63	2½–1½	
A	4	21.40	24.65	1½–2½	
A	4	21.40	24.69	1½–1½?	$4p'\ ^2D^{\circ}-6s\ ^2P$ (130)
A	6	21.41	24.71	2½–3½	$4p'\ ^2D^{\circ}-4d'\ ^2F$ (131)
A	6	21.40	24.72	1½–2½	
A	4	21.41	24.72	2½–2½	
A	3	21.41	25.24	2½–1½	$4p'\ ^2D^{\circ}-5d\ ^2P$ (132)
A	4	21.40	25.25	1½– ½	
A	3	21.40	25.24	1½–1½	
A	4	21.41	25.26	2½–2½	$4p'\ ^2D^{\circ}-5d\ ^2D$ (133)
B	1	21.53	23.70	1½–1½	$3d'\ ^2P-4p''\ ^2P^{\circ}$ (134)
A	2	21.53	23.74	1½– ½	
A	0	21.53	24.06	1½–2½	$3d'\ ^2P-4f\ ^2F^{\circ}$ (135)
A	5	21.53	24.27	1½–2½	$3d'\ ^2P-4f\ ^2D^{\circ}$ (136)
A	000n	23.47	25.24	1½–1½	$5p\ ^2P^{\circ}-5d\ ^2P$ (137)

; Unclassified Lines Attributed to A II

Ref	Int
A	3
A	4
A	4
A	3
B	3
A	3
A	4
A	3
A	3
A	4
A	4
B	4
A	3
A	5
A	3
A	5
A	4
B	4
A	5
A	4
B	3
A	5
A	4
A	3
A	3
A	5
A	5
A	3
A	5
A	3
A	4
A	4
A	4
A	3
A	4
A	5
A	3
A	3
A	4
A	3
A	3
A	4
A	4
A	4
B	5
A	3
A	4
A	3
A	4

A III   I P 40.8   Anal C   List D   Nov 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3285.85	A	25	21.53	25.28	2–3	$4s\ ^5S^{\circ}-4p\ ^5P$ (1)
3301.88	A	20	21.53	25.26	2–2	
3311.25	A	15	21.53	25.25	2–1	
3480.55	A	20	24.28	27.83	3–3	$4s'\ ^3D^{\circ}-4p'\ ^3D$† (2)
3503.58	A	15	24.27	27.79	2–2	
3499.67	A	12	24.27	27.80	1–1	
3336.13	A	25	24.28	27.98	3–4	$4s'\ ^3D^{\circ}-4p'\ ^3F$† (3)
3344.72	A	20	24.27	27.96	2–3	
3358.49	A	15	24.27	27.94	1–2	
3024.05	B	12	25.58	29.66	2–3	$4s''\ ^3P^{\circ}-4p''\ ^3D$† (4)
3054.82	B	12	25.62	29.66	1–2	
3078.15	B	10	25.64	29.65	0–1	
3064.77	B	10	25.62	29.65	1–1	
3795.37	B	20	26.41	29.66	2–3	$3d''\ ^3P^{\circ}-4p''\ ^3D$† (5)
3858.32	B	10	26.46	29.66	1–2	
3391.85	B	15	26.41	30.05	2–2	$3d''\ ^3P^{\circ}-4p''\ ^3P$† (6)

A IV   I P 61   Anal B   List A   Nov 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3077.40	A	8	31.77	35.78	1½–2½	$4s\ ^2P-4p\ ^4P^{\circ}$ (1)
3016.15	A	5	30.95	35.71	½–1½	
3134.90	A	3	31.77	35.71	1½–1½	
3037.98	A	6	31.77	35.83	1½–1½	$4s\ ^2P-4p\ ^2D^{\circ}$ † (2)

K I   I P 4.32   Anal A   List C   Nov 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7664.907//	A	10R	0.00	1.61	½–1½	$4\ ^2S-4\ ^2P^{\circ}$ (1)
7698.979	A	10R	0.00	1.60	½– ½	
4642.27|	H	(2)Forb	0.00	2.66	½–2½	$4\ ^2S-3\ ^2D$ (2)
4641.77	H	(1)Forb	0.00	2.66	½–1½	
4044.145	B	8R	0.00	3.05	½–1½	$4\ ^2S-5\ ^2P^{\circ}$ (3)
4047.214	B	6R	0.00	3.05	½– ½	
3446.38	G	8R	0.00	3.58	½–1½	$4\ ^2S-6\ ^2P^{\circ}$ (4)
3447.41	G	6R	0.00	3.58	½– ½	
12523.0	F	(90)	1.61	2.60	1½– ½	$4\ ^2P^{\circ}-5\ ^2S$ (5)
12434.3	F	(100)	1.60	2.60	½– ½	
11772.66	C	15r	1.61	2.66	1½–2½	$4\ ^2P^{\circ}-3\ ^2D$ (6)
11689.76	C	10	1.60	2.66	½–1½	
11769.41	D	3	1.61	2.66	1½–1½	
6964.69	E	(1)	1.61	3.38	1½–2½	$4\ ^2P^{\circ}-4\ ^2D$ (7)
6936.27	E	(1)	1.60	3.38	½–1½	
6964.18	E	(–)	1.61	3.38	1½–1½	
9950.5	D	20N	2.60	3.84	½–1½	$5\ ^2S-7\ ^2P^{\circ}$ (8)
9955.2	D	10N	2.60	3.84	½– ½	
11022.3	D	10NW	2.66	3.78	—	$3\ ^2D-5\ ^2F^{\circ}$ (9)
9595.60	E	50N1W	2.66	3.94	2½–	$3\ ^2D-6\ ^2F^{\circ}$ (10)
9597.76	E	20N1W	2.66	3.94	1½–	

K II   I P 31.7   Anal A   List D   June 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4829.23	A	30	20.06	22.62	2–1	4s 1°–4p 1
4186.24	A	30	20.06	23.01	2–3	(1) –4p 2
4134.72	A	30	20.06	23.05	2–2	–4p 3
3995.10	A	10	20.06	23.15	2–1	–4p 4
3897.92	A	15	20.06	23.23	2–2	–4p 5
3739.13	A	9	20.06	23.36	2–1	–4p 7
3681.54	A	15	20.06	23.41	2–2	–4p 8
3618.49	A	15	20.06	23.47	2–1	–4p 9
5005.60	A	15	20.15	22.62	1–1	4s 2°–4p 1
4263.40	A	30	20.15	23.05	1–2	(2) –4p 3
4114.99	A	30	20.15	23.15	1–1	–4p 4
4012.10	A	10	20.15	23.23	1–2	–4p 5
3783.19	A	15	20.15	23.41	1–2	–4p 8
3767.36	A	15	20.15	23.43	1–0	–4p 6
3716.60	A	9	20.15	23.47	1–1	–4p 9
5056.27	A	8	20.18	22.62	0–1	3d 1°–4p 1
3873.74	A	10	20.18	23.36	0–1	(3) –4p 7
3744.42	A	9	20.18	23.47	0–1	–4p 9
4505.33	A	30	20.31	23.05	1–2	3d 2°–4p 3
4340.03	A	30	20.31	23.15	1–1	(4) –4p 4
4225.67	A	30	20.31	23.23	1–2	–4p 5
3972.58	A	15	20.31	23.41	1–2	–4p 8

K II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4659.38	A	15	20.36	23.01	2–3	3d 3°–4p 2
4423.73	A	10	20.36	23.15	2–1	(5) –4p 4
4305.00	A	30	20.36	23.23	2–2	–4p 5
3966.72	A	15	20.36	23.47	2–1	–4p 9
5536.01	A	(3)	20.39	22.62	0–1	4s 3°–4p 1
4466.65	A	20	20.39	23.15	0–1	(6) –4p 4
4149.19	A	30	20.39	23.36	0–1	–4p 7
4001.24	A	15	20.39	23.47	0–1	–4p 9
5969.64	A	(2)	20.55	22.62	1–1	4s 4°–4p 1
4943.24	A	5	20.55	23.05	1–2	(7) –4p 3
4608.45	A	30	20.55	23.23	1–2	–4p 5
4388.16	A	30	20.55	23.36	1–1	–4p 7
4309.10	A	30	20.55	23.41	1–2	–4p 8
4222.97	A	30	20.55	23.47	1–1	–4p 9
3530.75	A	20	20.55	24.05	1–0	–4p 1

For changes in Paschen notation see text § 37

K III   I P 46   Anal D   List D   Nov 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3322.40	A	6	25.61	29.32	2½–2½	$4s\ ^4P-4p\ ^4P^{\circ}$ (1)
3420.82	A	6	25.76	29.37	1½–1½	
3278.79	A	6	25.61	29.37	2½–1½	
3468.32	A	6	25.76	29.32	1½–2½	
3513.88	A	5	25.86	29.37	½–1½	
2992.24	A	6	25.61	29.73	2½–3½	$4s\ ^4P-4p\ ^4D^{\circ}$ (2)
3052.07	A	6	25.76	29.81	1½–2½	
3056.84	A	5	25.86	29.90	½–1½	
*3481.11 §	B	6	26.26	29.81	1½–2½	$4s\ ^2P-4p\ ^4D^{\circ}$ (3)
3289.06	B	6	26.26	30.01	1½–2½	$4s\ ^2P-4p\ ^2D^{\circ}$ (4)
3421.83	A	4	26.45	30.05	½–1½	
3201.95	A	6	26.26	30.12	1½–1½	$4s\ ^2P-4p\ ^2P^{\circ}$ (5)
3209.34	A	6	26.45	30.29	½– ½	
3364.22	A	6	26.45	30.12	½–1½	

Ca I   I P 6.09   Anal A   List B   Mar 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6572.781	A	50	0.00	1.88	0–1	$4\ ^1S-4\ ^3P^{\circ}$ (1)
4226.728//	A	500R	0.00	2.92	0–1	$4\ ^1S-4\ ^1P^{\circ}$ (2)
6162.172	A	150	1.89	3.89	2–1	$4\ ^3P^{\circ}-5\ ^3S$ (3)
6122.219	A	100	1.88	3.89	1–1	
6102.722	A	80	1.87	3.89	0–1	
4454.781	A	80	1.89	4.66	2–3	$4\ ^3P^{\circ}-4\ ^3D$ (4)
4434.960	A	60r	1.88	4.66	1–2	
4425.441	A	50	1.87	4.66	0–1	
4455.887	A	40	1.89	4.66	2–2	
4435.688	A	40	1.88	4.66	1–1	
4456.612	B	10	1.89	4.66	2–1	
4302.527	A	60r	1.89	4.76	2–2	$4\ ^3P^{\circ}-4p^2\ ^3P$ (5)
4298.986	A	30	1.88	4.75	1–1	
4318.652	A	45	1.89	4.75	2–1	
4307.741	A	45	1.88	4.74	1–0	
4283.010	A	40	1.88	4.76	1–2	
4289.364	A	40	1.87	4.75	0–1	
3973.707	A	12	1.89	5.00	2–1	$4\ ^3P^{\circ}-6\ ^3S$ (6)
3957.053	A	10	1.88	5.00	1–1	
3948.901	A	6	1.87	5.00	0–1	
3923.50	D	(0)	1.88	5.02	1–0	$4\ ^3P^{\circ}-4p^2\ ^1S$ (7)
3761.72	E	(0)	1.88	5.16	1–0	$4\ ^3P^{\circ}-6\ ^1S$ (8)
3644.410	A	40	1.89	5.28	2–3	$4\ ^3P^{\circ}-5\ ^3D$ (9)
3630.748	A	30	1.88	5.28	1–2	
3624.111	A	20	1.87	5.28	0–1	
3644.765	A	15	1.89	5.28	2–2	
3630.974	A	15	1.88	5.28	1–1	
3644.990	B	2	1.89	5.28	2–1	
3487.598	A	12	1.89	5.43	2–1	$4\ ^3P^{\circ}-7\ ^3S$ (10)
3474.763	A	8	1.88	5.43	1–1	
3468.476	A	4	1.87	5.43	0–1	
3361.918	A	35n*	1.89	5.56	2–3	$4\ ^3P^{\circ}-6\ ^3D$ (11)
3350.209	A	25n*	1.88	5.56	1–2	
3344.513	A	8n	1.87	5.56	0–1	
3362.131	B	35n*	1.89	5.56	2–2	
3350.361	B	25n*	1.88	5.56	1–1	
3362.28	B	(0)	1.89	5.56	2–1	
3286.067	A	4	1.89	5.65	2–1	$4\ ^3P^{\circ}-8\ ^3S$ (12)
3274.661	B	2	1.88	5.65	1–1	
3269.090	B	1n	1.87	5.65	0–1	
3225.896	A	8n*	1.89	5.72	2–3	$4\ ^3P^{\circ}-7\ ^3D$ (13)
3215.145	B	5n*	1.88	5.72	1–2	
3209.930	B	2n	1.87	5.72	0–1	
3226.129	B	8n*	1.89	5.72	2–2	
3215.334	B	5n*	1.88	5.72	1–1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ca I continued						
3180.521	B	1N	1.89	5.77	2-1	$4^3P^o-9^3S$ (14)
3169.854	B	1N	1.88	5.77	1-1	
3164.618	B	1N	1.87	5.77	0-1	
3150.738	A	4N*	1.89	5.81	2-3	$4^3P^o-8^3D$ (15)
3140.782	B	3N*	1.88	5.81	1-2	
3136.003	B	1N	1.87	5.81	0-1	
3151.280	B	4N*	1.89	5.81	2-2	
3141.164	B	3N*	1.88	5.81	1-1	
3117.656	B	1N	1.89	5.85	2-1	$4^3P^o-10^3S$ (16)
3107.388	B	1N	1.88	5.85	1-1	
3102.36	B	(0)	1.87	5.85	0-1	
3006.858	A	6	1.89	6.00	2-2	$4^3P^o-3d^2\ {}^3P$ (17)
2999.641	A	4	1.88	5.99	1-1	
3009.205	A	5	1.89	5.99	2-1	
3000.863	A	5	1.88	5.99	1-0	
2997.309	B	5	1.88	6.00	1-2	
2994.958	A	5	1.87	5.99	0-1	
6439.073	A	150	2.51	4.43	3-4	$3^3D-3d4p\,{}^3F^o$ (18)
6462.566	A	125	2.51	4.42	2-3	
6493.780	A	80	2.51	4.41	1-2	
6471.660	A	40	2.51	4.42	3-3	
6499.649	A	30	2.51	4.41	2-2	
6508.742	B	(1)	2.51	4.41	3-2	
6464.70	D	(1)	2.51	4.42	3-2	$3^3D-3d4p\,{}^1D^o$ (19)
6455.600	A	10	2.51	4.42	2-2	
6449.610	A	50	2.51	4.42	1-2	
6169.559	A	40	2.51	4.52	3-2	$3^3D-5^3P^o$ (20)
6169.055	A	25	2.51	4.51	2-1	
6166.443	A	15	2.51	4.51	1-0	
6161.289	A	10	2.51	4.52	2-2	
6163.758	A	10	2.51	4.51	1-1	
6156.10	F	(1)	2.51	4.52	1-2	
5588.757	A	80	2.51	4.72	3-3	$3^3D-3d4p\,{}^3D^o$ (21)
5594.468	A	60	2.51	4.72	2-2	
5598.487	A	50	2.51	4.71	1-1	
5601.285	A	30	2.51	4.72	3-2	
5602.846	A	25	2.51	4.71	2-1	
5581.971	A	25	2.51	4.72	2-3	
5590.120	A	20	2.51	4.72	1-2	
5270.270	A	60	2.51	4.86	3-2	$3^3D-3d4p\,{}^3P^o$ (22)
5265.557	A	40	2.51	4.86	2-1	
5262.244	A	25	2.51	4.86	1-0	
5264.239	A	20	2.51	4.86	2-2	
5261.706	A	20	2.51	4.86	1-1	
5260.375	A	2	2.51	4.86	1-2	
4585.871	A	50	2.51	5.21	3-4	$3^3D-4^3F^o$ (23)
4581.402	A	40	2.51	5.21	2-3	
4578.558	A	30	2.51	5.21	1-2	
4585.923	B	(2)	2.51	5.21	3-3	
4512.282	A	5	2.51	5.25	3-2	$3^3D-6^3P^o$ (24)
4509.446	B	3	2.51	5.25	2-1	
4507.417	B	(1)	2.51	5.25	1-0	
4507.854	B	1	2.51	5.25	2-2	
4506.624	B	(1)	2.51	5.25	1-1	
4505.00	E	(0)	2.51	5.25	1-2	
4098.533	A	15	2.51	5.53	3-4	$3^3D-5^3F^o$ (25)
4094.930	A	12	2.51	5.53	2-3	
4092.633	A	8	2.51	5.53	1-2	
3875.807	B	(4)	2.51	5.70	3-	$3^3D-6^3F^o$ (26)
3872.552	B	(3)	2.51	5.70	2-	
3870.506	B	(2)	2.51	5.70	1-	
3753.367	B	(1)	2.51	5.80	3-	$3^3D-7^3F^o$ (27)
3750.349	B	(1)	2.51	5.80	2-	
3748.374	B	(1)	2.51	5.80	1-	
3678.240	B	3	2.51	5.87	3-	$3^3D-8^3F^o$ (28)
3675.307	B	2	2.51	5.87	2-	
3673.448	B	1	2.51	5.87	1-	
7202.194	A	200	2.70	4.41	2-2	$3^1D-3d4p\,{}^3F^o$ (29)
7148.147	A	500	2.70	4.42	2-2	$3^1D-3d4p\,{}^1D^o$ (30)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ca I continued						
6798.51	C	6n	2.70	4.51	2-1	$3^1D-5^3P^o$ † (31)
6717.685	A	500n	2.70	4.53	2-1	$3^1D-3d4p\,{}^1P^o$ (32)
5349.472	A	25	2.70	5.00	2-3	$3^1D-3d4p\,{}^1F^o$ (33)
5041.620	A	40	2.70	5.15	2-1	$3^1D-5^1P^o$ (34)
4878.132	A	50	2.70	5.23	2-3	$3^1D-4^1F^o$ (35)
4526.935	A	30	2.70	5.42	2-1	$3^1D-6^1P^o$ (36)
4355.096	A	25	2.70	5.53	2-3	$3^1D-5^1F^o$ (37)
4240.456	A	6	2.70	5.61	2-1	$3^1D-7^1P^o$ (38)
4108.554	B	10N	2.70	5.70	2-3	$3^1D-6^1F^o$ (39)
4058.912	B	1n	2.70	5.74	2-1	$3^1D-8^1P^o$ (40)
3972.570	A	(1)	2.70	5.80	2-3	$3^1D-7^1F^o$ (41)
3889.141	B	(1)	2.70	5.87	2-3	$3^1D-8^1F^o$ (42)
10343.85	C	500	2.92	4.11	1-0	$4^1P^o-5^1S$ (43)
7326.146	A	400	2.92	4.60	1-2	$4^1P^o-4^1D$ (44)
6709.88	D	(1)	2.92	4.76	1-2	$4^1P^o-4p^2\ {}^3P$ (45)
5067.572	A	1	2.92	5.03	1-0	$4^1P^o-4p^2\ {}^1S$ (46)
5857.454	A	100	2.92	5.03	1-2	$4^1P^o-4p^2\ {}^1D$ (47)
5512.979	A	20n	2.92	5.16	1-0	$4^1P^o-6^1S$ (48)
5188.848	A	50	2.92	5.30	1-2	$4^1P^o-5^1D$ (49)
4847.296	A	2	2.92	5.47	1-0	$4^1P^o-7^1S$ (50)
4685.265	A	12	2.92	5.55	1-2	$4^1P^o-6^1D$ (51)
12816.06	P)	(50d)	(3.89	4.86	1-2	$5^3S-3d4p\,{}^3P^o$ (52)
12823.89	P)		3.89	4.86	1-1	
12827.09	P		3.89	4.86	1-0	
6361.79	F	(5n)	4.43	6.37	4-5	$3d4p\,{}^3F^o-3d4d\,{}^3G$ (53)
6343.29	F	(4n)	4.42	6.37	3-4	
6318.11	F	(3n)	4.41	6.36	2-3	
5757.69	F	(4n)	4.43	6.57	4-4	$3d4p\,{}^3F^o-3d4d\,{}^3F$ (54)
5735.74	F	(3n)	4.42	6.57	3-3	
5717.99	F	(4n)	4.41	6.57	2-2	
5761.88	F	(1n)	4.43	6.57	4-3	
5746.81	F	(2N)	4.42	6.57	3-2	
5731.70	F	(1n)	4.42	6.57	3-4	
5707.03	F	(1n)	4.41	6.57	2-3	
9701.81	P	20	4.72	6.00	3-2	$3d4p\,{}^3D^o-3d^2\ {}^3P$ (55)
9688.60	P	15	4.72	5.99	2-1	
9676.25	P	5	4.71	5.99	1-0	
9664.29	P)	5p?	(4.72	6.00	2-2	
9663.58	P)		4.71	5.99	1-1	
9639.40	P		4.71	6.00	1-2	
10838.77	C	10	4.86	6.00	2-2	$3d4p\,{}^3P^o-3d^2\ {}^3P$ (56)
10863.72	C	2	4.86	5.99	1-1	
10869.37	C	3	4.86	5.99	2-1	
10879.78	C	4	4.86	5.99	1-0	
10833.12	C	4	4.86	6.00	1-2	
10861.51	C	3	4.86	5.99	0-1	

Strongest Unclassified Lines of Ca I

I A	Ref	Int
7468.41	F	(3)
6405.89	F	(3n)
6395.16	F	(3n)
5764.32	F	(3n)
5743.28	F	(3n)
5688.47	F	(4N)
5682.88	F	(3n)

Laboratory I A	Ref	Int	E P Low	E P High	J	Mu
Ca II	I P 11.82		Anal A	List B	Apr 1	
3933.664//	A	400R(K)	0.00	3.14	½-1½	4^2
3968.470	A	350R(H)	0.00	3.11	½- ½	
8542.089	B	1500	1.69	3.14	2½-1½	3^2
8662.140	B	1000	1.69	3.11	1½- ½	
8498.018	B	300	1.69	3.14	1½-1½	
3736.901	B	12	3.14	6.44	1½- ½	4^2
3706.026	B	10	3.11	6.44	½- ½	
3179.332	B	15	3.14	7.02	1½-2½	4^2
3158.869	B	10	3.11	7.02	½-1½	
3181.275	B	4	3.14	7.02	1½-1½	
11836.4	P		6.44	7.48	½-1½	5^2
11947.0	P		6.44	7.47	½- ½	
4472.09	D	(0)	6.44	9.20	½-1½	5^2
4479.29	D	(1)	6.44	9.20	½- ½	
4722.50	D	(-)	7.02	9.63	2½-	4^2
4718.16	D	(-)	7.02	9.63	1½-	
3758.36	E	(8)	7.02	10.30	2½-	4^2
3755.61	E	(7)	7.02	10.30	1½-	
3346.99	E	(10)	7.02	10.71	2½-	4^2
3125.15	E	(5)	7.02	10.97	2½-	4^2
3123.29	E	(3)	7.02	10.97	1½-	
2989.42	E	(1)	7.02	11.15	2½-	4^2
2987.72	E	(1)	7.02	11.15	1½-	
9933.3	P		7.48	8.73	1½- ½	5^2
9856.7	P		7.47	8.73	½- ½	
8250.2	P		7.48	8.98	1½-2½	5^2
8203.2	P		7.47	8.98	½-1½	
8256.1	P		7.48	8.98	1½-1½	
5307.30	D	(-)	7.48	9.81	1½- ½	5^2
5285.34	D	(-)	7.47	9.81	½- ½	
5019.979	B	(2)	7.48	9.94	1½-2½	5^2
5001.489	C	(1)	7.47	9.94	½-1½	
5021.141	C	(0)	7.48	9.94	1½-1½	
4220.13	D	(-)	7.48	10.41	1½- ½	5^2
4206.21	D	(-)	7.47	10.41	½- ½	
4109.83	D	(1)	7.48	10.49	1½-2½	5^2
4097.12	D	(1)	7.47	10.49	½-1½	
4110.33	D	(0)	7.48	10.49	1½-1½	
3694.11	D	(1)	7.48	10.82	1½-2½	5^2
3683.71	D	(1)	7.47	10.82	½-1½	
3694.31	D	(0)	7.48	10.82	1½-1½	
6456.907	C	(-)	8.40	10.31	—	4^2
5339.29	D	(-)	8.40	10.71	—	4^2

I A	Ref	Int	E P Low	E P High	J	
Ca III	I P 51.00		Anal D	List A	Apr	
3372.68	A	8	29.94	33.60	2-1	4s (
3537.75	A	7	30.11	33.60	1-1	4s
2988.61	A	7	30.11	34.24	1-2	(
3761.62	A	6	30.32	33.60	0-1	4s
3028.66	A	6	30.32	34.40	0-1	(
4081.74	A	5	30.58	33.60	1-1	4s
3367.81	A	51	30.58	34.24	1-2	(
3233.02	A	4	30.58	34.40	1-1	
3119.66	A	8	30.58	34.53	1-2	
2989.30	A	6	30.58	34.71	1-1	

P 6.7 Anal A List C Nov 1940

oratory Ref	Int	E P Low	E P High	J	Multiplet (No)
A	(2)	0.02	1.96	2½-3½	$a^2D-z^4F^o$ (1)
A	5	0.00	1.95	1½-2½	
A	50	0.02	1.95	2½-2½	
A	40	0.00	1.93	1½-1½	
B	1	0.02	1.93	2½-1½	
A	400	0.02	1.98	2½-2½	$a^2D-z^2D^o$ (2)
A	200	0.00	1.99	1½-1½	
A	15	0.02	1.99	2½-1½	
A	20	0.00	1.98	1½-2½	
C	(2)	0.02	2.00	2½-3½	$a^2D-z^4D^o$ (3)
A	(2)	0.00	1.99	1½-2½	
A	100	0.02	1.99	2½-2½	
A	100	0.00	1.98	1½-1½	
A	20	0.02	1.98	2½-1½	
C	(1)	0.00	1.98	1½- ½	
A	15	0.02	2.33	2½-1½	$a^2D-z^2P^o$ (4)
A	10	0.00	2.31	1½- ½	
A	2	0.00	2.33	1½-1½	
A	20	0.02	2.60	2½-3½	$a^2D-z^2F^o$ (5)
A	15	0.00	2.60	1½-2½	
A	4	0.02	2.60	2½-2½	
A	40	0.02	3.04	2½-1½	$a^2D-y^2P^o$ (6)
A	35	0.00	3.04	(1½-1½ 1½- ½	
A	100	0.02	3.09	2½-2½	$a^2D-y^2D^o$ (7)
A	75	0.00	3.07	1½-1½	
A	25	0.02	3.07	2½-1½	
A	30	0.00	3.09	1½-2½	
A	100	0.02	3.18	2½-3½	$a^2D-y^2F^o$ (8)
A	75	0.00	3.16	1½-2½	
A	20	0.02	3.16	2½-2½	
A	20	0.02	3.79	2½-1½	$a^2D-x^2P^o$ (9)
A	15	0.00	3.77	1½- ½	
A	6	0.00	3.79	1½-1½	
A	10	0.02	4.11	2½-3½	$a^2D-x^2F^o$ (10)
A	8	0.00	4.09	1½-2½	
A	3	0.02	4.09	2½-2½	
A	(6)	0.02	4.16	2½-2½	$a^2D-x^2D^o$ (11)
A	(5)	0.00	4.15	1½-1½	
A	(10)	0.02	4.15	2½-1½	
B	(2)	0.00	4.16	1½-2½	
A	200	1.44	3.62	4½-5½	$a^4F-z^4G^o$ (12)
A	150	1.43	3.60	3½-4½	
B	100	1.43	3.59	2½-3½	
A	100	1.42	3.58	1½-2½	
A	15	1.44	3.60	4½-4½	
B	15	1.43	3.59	3½-3½	
A	15	1.43	3.58	2½-2½	
B	2	1.44	3.59	4½-3½	
B	1	1.43	3.58	3½-2½	
A	125	1.44	3.87	4½-4½	$a^4F-y^4F^o$ (13)
A	80	1.43	3.86	3½-3½	
A	40	1.43	3.85	2½-2½	
A	40	1.42	3.85	1½-1½	
A	20	1.44	3.86	4½-3½	
A	40	1.43	3.85	3½-2½	
A	30	1.43	3.85	2½-1½	
A	10	1.43	3.87	3½-4½	
A	40	1.43	3.86	2½-3½	
A	10	1.42	3.85	1½-2½	
A	40	1.44	4.04	4½-3½	$a^4F-y^4D^o$ (14)
A	30	1.43	4.04	3½-2½	
A	20	1.43	4.03	2½-1½	
A	15	1.42	4.03	1½- ½	
A	5	1.43	4.04	3½-3½	
A	30	1.43	4.04	2½-2½	
		1.42	4.03	1½-1½	
A	(1)	1.43	4.04	2½-3½	
A	(0)	1.42	4.04	1½-2½	
A	100	1.86	4.09	3½-4½	$a^2F-z^2G^o$ (15)
A	80	1.84	4.08	2½-3½	
B	(3)	1.86	4.08	3½-3½	
A	100	1.86	4.11	3½-3½	$a^2F-x^2F^o$ † (16)
A	80	1.84	4.09	2½-2½	
A	60	1.86	4.16	3½-2½	$a^2F-x^2D^o$ † (17)
A	50	1.84	4.15	2½-1½	
A	15	1.98	4.19	4½-4½	$z^4F^o-e^4F$ † (18)
A	4	1.96	4.18	3½-3½	
A	3	1.95	4.17	2½-2½	
B	(4)	1.93	4.17	1½-1½	
A	30	1.98	4.27	4½-3½	$z^4F^o-e^4D$ † (19)
A	20	1.96	4.26	3½-2½	
A	8	1.95	4.25	2½-1½	
A	8	1.93	4.25	1½- ½	
A	12	1.98	4.94	4½-5½	$z^4F^o-e^4G$ † (20)
A	12	1.96	4.93	3½-4½	
A	10	1.95	4.93	2½-3½	
A	8	1.93	4.92	1½-2½	
A	5	1.98	5.57	4½-4½	$z^4F^o-h^4F$ (21)
A	3	1.96	5.56	3½-3½	
A	3	1.95	5.54	2½-2½	
A	3	1.93	5.53	1½-1½	
A	1	1.98	5.56	4½-3½	
A	1	1.96	5.54	3½-2½	
A	1	1.95	5.53	2½-1½	
A	(2)	1.96	5.57	3½-4½	
A	2	1.95	5.56	2½-3½	
A	(1)	1.93	5.54	1½-2½	

Sc I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4709.336	A	5	2.29	4.91	2½-3½	$z^4P^o-f^4D$ † (22)
4706.967	A	(3)	2.29	4.91	1½-2½	
4711.732	A	(1)	2.28	4.90	½-1½	
5258.333	A	15	2.50	4.85	4½-5½	$a^2G-z^2H^o$ † (23)
5285.752	A	10	2.50	4.83	3½-4½	
6557.87	B)	15*	(2.60	4.48	3½-2½	$z^2F^o-f^2D$ (24)
6558.05	B		2.60	4.48	2½-1½	

Strongest Unclassified Lines of Sc.I

I A	Ref	Int	
6835.03	B	(25)	
6817.08	A	(10)	
6737.87	A	(10)	
6036.17	B	(10nl)	
4573.993	A	6	III
4557.237	A	5	III

Sc II I P 12.8 Anal A List A Nov 1940

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3850.36	P		0.02	3.22	3-2	$a^3D-z^1D^o$ (1)
3843.000	A	4	0.01	3.22	2-2	
3833.059	A	3	0.00	3.22	1-2	
3613.836//	A	60	0.02	3.44	3-4	$a^3D-z^3F^o$ (2)
3630.740	A	50	0.01	3.41	2-3	
3642.785	A	40	0.00	3.39	1-2	
3645.311	A	30	0.02	3.41	3-3	
3651.798	A	25	0.01	3.39	2-2	
3666.537	A	3	0.02	3.39	3-2	
3572.523	A	50	0.02	3.48	3-3	$a^3D-z^3D^o$ (3)
3576.340	A	35	0.01	3.46	2-2	
3580.927	A	30	0.00	3.45	1-1	
3590.475	A	20	0.02	3.46	3-2	
3589.635	A	20	0.01	3.45	2-1	
3558.538	A	20	0.01	3.48	2-3	
3567.701	A	20	0.00	3.46	1-2	
3372.151	A	20	0.02	3.68	3-2	$a^3D-z^3P^o$ (4)
3368.946	A	15	0.01	3.67	2-1	
3361.935	A	12	0.00	3.67	1-0	
3359.679	A	10	0.01	3.68	2-2	
3361.270	A	10	0.00	3.67	1-1	
3352.048	A	3	0.00	3.68	1-2	
3251.32	A	3	0.01	3.80	2-1	$a^3D-z^1P^o$ (5)
3244.17	P		0.00	3.80	1-1	
3107.387	A	(1)	0.02	3.99	3-3	$a^3D-z^1F^o$ (6)
3096.77	P		0.01	3.99	2-3	
4246.829	A	100	0.31	3.22	2-2	$a^1D-z^1D^o$ (7)
3989.06	B	2	0.31	3.41	2-3	$a^1D-z^3F^o$ (8)
4014.489	A	5	0.31	3.39	2-2	
3902.09	P		0.31	3.48	2-3	$a^1D-z^3D^o$ (9)
3923.503	A		0.31	3.46	2-2	
3939.51	P		0.31	3.45	2-1	
3664.254	A	1	0.31	3.68	2-2	$a^1D-z^3P^o$ (10)
3675.265	A	1	0.31	3.67	2-1	
3535.729	A	10	0.31	3.80	2-1	$a^1D-z^1P^o$ (11)
3353.734	A	25	0.31	3.99	2-3	$a^1D-z^1F^o$ (12)
4716.13	P		0.60	3.22	3-2	$a^3F-z^1D^o$ (13)
4698.276	A	(2)	0.59	3.22	2-2	
4374.455	A	40	0.62	3.44	4-4	$a^3F-z^3F^o$ (14)
4400.355	A	30	0.60	3.41	3-3	
4415.559	A	20	0.59	3.39	2-2	
4420.665	A	2	0.62	3.41	4-3	
4431.369	A	3	0.60	3.39	3-2	
4354.609	A	5	0.60	3.44	3-4	
4384.813	A	6	0.59	3.41	2-3	
4314.084	A	60	0.62	3.48	4-3	$a^3F-z^3D^o$ (15)
4320.745	A	50	0.60	3.46	3-2	
4325.010	A	40	0.59	3.45	2-1	
4294.767	A	8	0.60	3.48	3-3	
4305.715	A	10	0.59	3.46	2-2	
4279.927	A	1	0.59	3.48	2-3	
4008.41	P		0.60	3.68	3-2	$a^3F-z^3P^o$ (16)
4008.60	P		0.59	3.67	2-1	
3995.49	P		0.59	3.68	2-2	
3843.16	P		0.59	3.80	2-1	$a^3F-z^1P^o$ (17)
3653.62	P		0.62	3.99	4-3	$a^3F-z^1F^o$ (18)
3639.76	P		0.60	3.99	3-3	
3629.10	P		0.59	3.98	2-3	
6604.60	B	10	1.35	3.22	2-2	$b^1D-z^1D^o$ (19)
6001.53	P		1.35	3.41	2-3	$b^1D-z^3F^o$ (20)
6059.25	P		1.35	3.39	2-2	
5806.77	P		1.35	3.48	2-3	$b^1D-z^3D^o$ (21)
5854.31	P		1.35	3.46	2-2	
5890.02	P		1.35	3.45	2-1	
5295.30	P		1.35	3.68	2-2	$b^1D-z^3P^o$ (22)
5318.337	A	3	1.35	3.67	2-1	
5031.019	A	40	1.35	3.80	2-1	$b^1D-z^1P^o$ (23)
4670.404	A	15	1.35	3.99	2-3	$b^1D-z^1F^o$ (24)

Sc II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5552.25	B	3	1.45	3.67	0-1	$a^1S-z^3P^o$ (25)
5239.823	A	15	1.45	3.80	0-1	$a^1S-z^1P^o$ (26)
7178.33	P		1.50	3.22	2-2	$a^3P-z^1D^o$ (27)
7151.18	P		1.49	3.22	1-2	
6245.629	A	20	1.50	3.48	2-3	$a^3P-z^3D^o$ (28)
6279.757	A	15	1.49	3.46	1-2	
6309.902	A	15	1.49	3.45	0-1	
6300.697	A	6	1.50	3.46	2-2	
6320.854	A	7	1.49	3.45	1-1	
6342.082	A	1	1.50	3.45	2-1	
5657.870	A	25	1.50	3.68	2-2	$a^3P-z^3P^o$ (29)
5667.164	A	10	1.49	3.67	1-1	
5684.190	A	15	1.50	3.67	2-1	
5669.030	A	12	1.49	3.67	1-0	
5640.971	A	15	1.49	3.68	1-2	
5658.334	A	8	1.49	3.67	0-1	
5357.195	A	2	1.50	3.80	2-1	$a^3P-z^1P^o$ (30)
5342.05	P		1.49	3.80	1-1	
5334.228	A	2	1.49	3.80	0-1	
5526.809	A	75	1.76	3.99	4-3	$a^1G-z^1F^o$ (31)
3157.44	P		3.22	7.13	2-3	$z^1D^o-e^3D$ (32)
3170.40	B	1	3.22	7.11	2-2	
3176.70	P		3.22	7.10	2-1	
3107.529	A	6	3.22	7.19	2-2	$z^1D^o-e^1D$ (33)
*2988.952§	A	10	3.22	7.35	2-3	$z^1D^o-e^1F$ (34)
3343.27	A	4	3.44	7.13	4-3	$z^3F^o-e^3D$ (35)
3331.07	A	3	3.41	7.11	3-2	
3320.422	A	3	3.39	7.10	2-1	
3316.79	B	1?	3.41	7.13	3-3	
3313.539	A	0?	3.39	7.11	2-2	
3299.41	P		3.39	7.13	2-3	
3108.511	A	3	3.44	7.41	4-3	$z^3F^o-f^3D$ (36)
3092.519	A	2	3.41	7.40	3-2	
3082.56	A	2	3.39	7.39	2-1	
3065.106	A	30	3.44	7.46	4-5	$z^3F^o-e^3G$ (37)
3052.929	A	20	3.41	7.45	3-4	
3045.714	A	15	3.39	7.44	2-3	
3075.38	B	3	3.44	7.45	4-4	
3060.531	A	3	3.41	7.44	3-3	
3083.07	P		3.44	7.44	4-3	
3379.397	A	3	3.48	7.13	3-3	$z^3D^o-e^3D$ (38)
3378.209	A	2	3.46	7.11	2-2	
3373.57	B	1?	3.45	7.10	1-1	
3394.29	B	1	3.48	7.11	3-2	
3363.501	A	1	3.46	7.13	2-3	
3366.46	B	1	3.45	7.11	1-2	
3139.729	A	10	3.48	7.41	3-3	$z^3D^o-f^3D$ (39)
3133.096	A	8	3.46	7.40	2-2	
3128.286	A	5	3.45	7.39	1-1	
3146.91	B	1	3.48	7.40	3-2	
3138.46	B	1	3.46	7.39	2-1	
3126.02	B	1	3.46	7.41	2-3	
3122.954	A	3	3.45	7.40	1-2	
3580.71	P		3.68	7.13	2-3	$z^3P^o-e^3D$ (40)
3586.83	P		3.67	7.11	1-2	
3594.13	P		3.67	7.10	0-1	
3597.39	P		3.68	7.11	2-2	
3594.89	P		3.67	7.10	1-1	
3605.50	P		3.68	7.10	2-1	
3312.736	A	5	3.68	7.41	2-3	$z^3P^o-f^3D$ (41)
3311.708	A	3	3.67	7.40	1-2	
3317.038	A	1	3.67	7.39	0-1	
3320.709	A	1	3.68	7.40	2-2	
3317.693	A	1	3.67	7.39	1-1	
3326.74	P		3.68	7.39	2-1	
3199.37	A	10	3.68	7.54	2-1	$z^3P^o-e^3S$ (42)
3191.005	A	5	3.67	7.54	1-1	
3190.403	A	2	3.67	7.54	0-1	
3379.18	A	2	3.80	7.46	1-1	$z^1P^o-e^1P$ (43)
2979.683	A	5	3.80	7.95	1-2	$z^1P^o-f^1D$ (44)
3678.342	A	2	3.99	7.35	3-3	$z^1F^o-e^1F$ (45)
3122.542	A	1	3.99	7.95	3-2	$z^1F^o-f^1D$ (46)
3039.92	A	10	3.99	8.05	3-4	$z^1F^o-e^1G$ (47)
4748.12	P		4.86	7.46	2-1	$y^3P^o-e^1P$ (48)
4696.71	P		4.83	7.46	1-1	
4671.94	P		4.81	7.46	0-1	
3995.48	P		4.86	7.95	2-2	$y^3P^o-f^1D$ (49)
3959.01	P		4.83	7.95	1-2	

Sc III I P 24.65 Anal C List A Jan 1941

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4068.7	A	(2n)	13.86	16.90	2½-3½	$4^2D-4^2F^o$ (1)
4061.3	A	(2n)	13.86	16.90	1½-2½	

Ti I   I P 6.81   Anal A   List B   Nov 1940

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
•6295.251	E	(2)	0.05	2.01	4-5	a^{3}F-z^{5}G°
6273.389	E	(6)	0.02	1.99	3-4	(1)
6257.72	H	(2)	0.00	1.97	2-3	
6359.896	E	(8)	0.05	1.99	4-4	
6325.22	H	(10)	0.02	1.97	3-3	
6296.646	E	(12)	0.00	1.96	2-2	
6413.13	P		0.05	1.97	4-3	
6364.92	H	(2)	0.02	1.96	3-2	
5940.68	E	-	0.05	2.13	4-5	a^{3}F-z^{5}F°
5913.730	E	-	0.02	2.11	3-4	(2)
6031.68	E	-	0.05	2.09	4-3	
5984.586	E	(1)	0.02	2.08	3-2	
5944.65	P		0.00	2.08	2-1	
5460.502	B	4	0.05	2.31	4-4	a^{3}F-z^{5}D°
5426.256	B	3	0.02	2.30	3-3	(3)
•5396.600	E	1	0.00	2.29	2-2	
5490.840	B	(0)	0.05	2.30	4-3	
•5446.593	B	2	0.02	2.29	3-2	
5408.940	E	(1)	0.02	2.28	2-1	
•5396.600	E	1	0.02	2.31	3-4	
5376.59	P		0.00	2.30	2-3	
5210.386	A	40	0.05	2.42	4-4	a^{3}F-z^{3}F°
5192.971	A	35	0.02	2.40	3-3	(4)
5173.742	A	30	0.00	2.39	2-2	
5252.105	B	8	0.05	2.40	4-3	
5219.697	B	8	0.02	2.39	3-2	
5152.185	B	10	0.02	2.42	3-4	
5147.483	A	10	0.00	2.40	2-3	
5064.654	A	25	0.05	2.48	4-3	a^{3}F-z^{3}D°
5039.959	A	22	0.02	2.47	3-2	(5)
5014.185	A	(25)	0.00	2.46	2-1	
5009.652	A	7	0.02	2.48	3-3	
4997.099	A	8	0.00	2.47	2-2	
4967.30	H	(1)	0.00	2.48	2-3	
4681.908	A	30	0.05	2.68	4-5	a^{3}F-z^{3}G°
4667.585	A	25	0.02	2.67	3-4	(6)
4656.468	A	25	0.00	2.65	2-3	
4715.295	A	4	0.05	2.67	4-4	
4693.670	B	5	0.02	2.65	3-3	
4562.637	B	6	0.02	2.73	3-2	a^{3}F-z^{1}D°
4527.455	E	(4)	0.00	2.73	2-2	(7)
4540.483	E	1	0.05	2.77	4-3	a^{3}F-z^{1}F°
4496.245	E	2	0.02	2.77	3-3	(8)
4462.099	B	(3)	0.00	2.77	2-3	
4112.708	A	20	0.05	3.05	4-4	a^{3}F-z^{1}G°
4076.370	B	4	0.02	3.05	3-4	(9)
4011.534	E	(3)	0.00	3.08	2-1	a^{3}F-z^{3}S° (10)
4009.653	B	15	0.02	3.10	3-2	a^{3}F-z^{5}S°
3982.478	B	30	0.00	3.10	2-2	(11)
3998.635	A	100R	0.05	3.13	4-4	a^{3}F-y^{3}F°
3989.758	A	80r	0.02	3.11	3-3	(12)
3981.761	A	70r	0.00	3.10	2-2	
4024.573	A	35	0.05	3.11	4-3	
4008.926	A	35	0.02	3.10	3-2	
3964.269	A	35	0.02	3.13	3-4	
3962.851	A	35	0.00	3.11	2-3	
3958.206	A	80	0.05	3.17	4-3	a^{3}F-y^{3}D°
3956.336	A	60	0.02	3.14	3-2	(13)
3948.670	A	60	0.00	3.13	2-1	
3924.527	A	50	0.02	3.17	3-3	
3929.875	A	40	0.00	3.14	2-2	
3898.487	B	8	0.00	3.17	2-3	
3947.770	A	40	0.02	3.15	3-2	a^{3}F-z^{3}P°
3914.751	B	5	0.00	3.15	2-1	(14)
3921.423	A	30	0.00	3.15	2-2	
3914.334	A	35	0.05	3.20	4-4	a^{3}F-y^{5}D°
3900.958	B	12	0.02	3.18	3-3	(15)
3889.948	B	6	0.00	3.17	2-2	
3934.228	B	9	0.05	3.18	4-3	
3915.879	B	3	0.02	3.17	3-2	
•3899.668	B	(2)	0.00	3.16	2-1	
3881.399	E	4	0.02	3.20	3-4	
•3875.262	A	20n	0.00	3.18	2-3	
3788.804	E	2	0.05	3.31	4-5	a^{3}F-y^{5}G°
3774.331	E	1n	0.02	3.29	3-4	(16)
3752.860	A	80r	0.05	3.34	4-4	a^{3}F-x^{3}F°
3741.059	A	60r	0.02	3.32	3-3	(17)
3729.806	A	50r	0.00	3.31	2-2	
3771.652	A	25	0.05	3.32	4-3	
3753.623	B	25	0.02	3.31	3-2	
3722.568	A	15?	0.02	3.34	3-4	
3717.393	A	20	0.00	3.32	2-3	
3689.916	A	15	0.05	3.39	4-3	a^{3}F-x^{3}D°
3668.965	A	15	0.02	3.38	3-2	(18)
3654.592	A	15	0.00	3.38	2-1	
3660.631	A	12	0.02	3.39	3-3	
3646.198	A	12	0.00	3.38	2-2	
3637.966	E	10	0.00	3.39	2-3	
3653.497	A	100r	0.05	3.43	4-5	a^{3}F-y^{3}G°
3642.675	A	80r	0.02	3.41	3-4	(19)
3635.462	A	80r	0.00	3.39	2-3	
3671.672	A	20	0.05	3.41	4-4	
3658.097	A	20	0.02	3.39	3-3	
3687.354	E	5	0.05	3.39	4-3	
3635.202	E	8	0.05	3.44	4-3	a^{3}F-z^{5}P°
3626.085	E	4	0.02	3.42	3-2	(20)
3606.786	E	4	0.02	3.44	3-3	
3603.845	E	2	0.00	3.42	2-2	
3604.284	E	8	0.02	3.45	3-2	a^{3}F-y^{1}D° (21)

Ti I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3506.643	E	8	0.05	3.57	4-5	a^{3}F-y^{5}F°
3493.280	E	4	0.02	3.55	3-4	(22)
3483.010	E	(1)	0.00	3.54	2-3	
3519.939	E	1	0.05	3.55	4-4	
3503.760	E	1	0.02	3.54	3-3	
3490.765	E	1	0.00	3.54	2-2	
3530.580	E	1	0.05	3.54	4-3	
3511.626	E	3	0.02	3.54	3-2	
3495.960	E	2	0.00	3.53	2-1	
3385.944	A	40r	0.05	3.69	4-3	a^{3}F-w^{3}D°
3377.577	A	30r	0.02	3.67	3-2	(23)
3370.436	A	40r	0.00	3.66	2-1	
3361.263	E	40r	0.02	3.69	3-3	
3358.271	A	10	0.00	3.67	2-2	
3342.151	E	6	0.00	3.69	2-3	
3371.447	A	80R	0.05	3.71	4-5	a^{3}F-x^{3}G°
3354.634	A	60r	0.02	3.70	3-4	(24)
•3341.875§	A	50r	0.00	3.69	2-3	
3379.216	E	15	0.05	3.70	4-4	
3360.990	E	10	0.02	3.69	3-3	
3385.664	E	12	0.05	3.69	4-3	
3369.054	E	1	0.05	3.71	4-4	a^{3}F-x^{5}D°
3352.937	E	6	0.02	3.70	3-3	(25)
3342.707	E	2	0.00	3.69	2-2	
3377.485	E	20	0.05	3.70	4-3	
3361.835	E	10	0.02	3.69	3-2	
3348.535	E	5	0.00	3.69	2-1	
3344.62	P		0.02	3.71	3-4	
3333.912	E	2	0.00	3.70	2-3	
3243.803	E	4	0.05	3.85	4-3	a^{3}F-v^{3}D°
3222.741	E	3	0.02	3.85	3-2	(26)
3205.848	E	5	0.00	3.85	2-1	
3221.151	E	2	0.02	3.85	3-3	
3205.168	E	2	0.00	3.85	2-2	
3203.58	G	(2)	0.00	3.85	2-3	
3199.915	A	100R	0.05	3.90	4-5	a^{3}F-w^{3}G°
3191.994	A	80R	0.02	3.89	3-4	(27)
3186.451	A	60r	0.00	3.87	2-3	
3214.240	A	12	0.05	3.89	4-4	
3203.828	E	15	0.02	3.87	3-3	
3226.240	E	1	0.05	3.87	4-3	
3160.09	G	tr	0.02	3.93	3-2	a^{3}F-y^{3}P°
3151.11	G	tr	0.00	3.92	2-1	(28)
3143.16	P		0.00	3.93	2-2	
3000.868	E	20	0.05	4.16	4-4	a^{3}F-w^{3}F°
2983.306	E	20	0.02	4.16	3-3	(29)
2970.384	E	10	0.00	4.15	2-2	
•3002.728	E	3	0.05	4.16	4-3	
2985.477	E	3	0.02	4.15	3-2	
2981.448	E	(2)	0.02	4.16	3-4	
2968.231	E	4	0.00	4.16	2-3	
2956.133	A	70R	0.05	4.22	4-4	a^{3}F-v^{3}F° †
2967.225	E	25	0.05	4.21	4-3	(30)
2956.797	E	25	0.02	4.19	3-2	
10396.85	C	25	0.84	2.03	5-6	a^{5}F-z^{5}G°
10496.14	C	30	0.83	2.01	4-5	(31)
10584.66	C	25	0.82	1.99	3-4	
10661.61	C	20	0.81	1.97	2-3	
10726.33	C	18	0.81	1.96	1-2	
10607.78	C	10	0.84	2.01	5-5	
10677.04	C	10	0.83	1.99	4-4	
10732.89	C	8	0.82	1.97	3-3	
•10774.92	C	12	0.81	1.96	2-2	
10792.59	P		0.84	1.99	5-4	
10828.04	C	1	0.83	1.97	4-3	
10847.72	C	1	0.82	1.96	3-2	
9638.28	D	100	0.84	2.13	5-5	a^{5}F-z^{5}F°
9675.55	D	90	0.83	2.11	4-4	(32)
9705.64	D	80	0.82	2.09	3-3	
9728.36	D	60	0.81	2.08	2-2	
9743.60	D	50	0.81	2.08	1-1	
9770.28	D	40	0.84	2.11	5-4	
9783.30	D	40	0.83	2.09	4-3	
9787.67	D	50	0.82	2.08	3-2	
9783.59	D	20	0.81	2.08	2-1	
9546.07	D	50	0.83	2.13	4-5	
9599.53	D	50	0.82	2.11	3-4	
9647.40	D	50	0.81	2.09	2-3	
9688.86	D	30	0.81	2.08	1-2	
8434.98	D	300	0.84	2.31	5-4	a^{5}F-z^{5}D°
8435.68	D	300	0.83	2.30	4-3	(33)
8426.50	D	200	0.82	2.29	3-2	
8412.36	D	150	0.81	2.28	2-1	
8396.93	D	90	0.81	2.28	1-0	
8364.24	E	(2)	0.83	2.31	4-4	
8377.90	D	100	0.82	2.30	3-3	
8382.54	D	100	0.81	2.29	2-2	
8382.82	D	90	0.81	2.28	1-1	
8307.41	E	(1)	0.82	2.31	3-4	
8334.37	E	(2)	0.81	2.30	2-3	
8353.15	E	(2)	0.81	2.29	1-2	
7852.74	P		0.84	2.42	5-4	a^{5}F-z^{3}F°
7885.00	P		0.83	2.40	4-3	(34)
7895.50	P		0.82	2.39	3-2	
5361.724	E	(1)	0.83	3.13	4-4	a^{5}F-y^{3}F°
5384.634	E	(1)	0.82	3.11	3-3	(35)
5401.32	H	(1)	0.81	3.10	2-2	
5338.326	E	1	0.82	3.13	3-4	
5366.651	B	2	0.81	3.11	2-3	
5389.180	B	2	0.81	3.10	1-2	
5289.28	E	(1)	0.83	3.17	4-3	a^{5}F-y^{3}D°
5323.958	E	(1)	0.82	3.14	3-2	(36)
5340.68	H	(1)	0.81	3.13	2-1	
5268.49	P		0.82	3.17	3-3	

Ti I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Mul (No)
•5238.560	B	6	0.84	3.20	5-4	a^5
5246.574	E	3	0.83	3.18	4-3	(
5250.95	E	2	0.82	3.17	3-2	
5251.49	E	(0)	0.81	3.16	2-1	
•5248.402	E	(1)	0.81	3.16	1-0	
5211.22	P	(1)	0.83	3.20	4-4	
5224.14	P	(0)	0.82	3.18	3-3	
5233.817	E	(1)	0.81	3.17	2-2	
5239.942	E	(0)	0.81	3.16	1-1	
4981.732//	A	60	0.84	3.32	5-6	a^5
4991.067	A	50	0.83	3.31	4-5	(
4999.504	A	45	0.82	3.29	3-4	
5007.209	A	40	0.81	3.28	2-3	
5014.277	A	(25)	0.81	3.27	1-2	
5016.162	A	20	0.84	3.31	5-5	
5020.028	A	25	0.83	3.29	4-4	
5022.871	A	25	0.82	3.28	3-3	
5024.842	A	20	0.81	3.27	2-2	
5045.400	B	5	0.84	3.29	5-4	
5043.578	B	7	0.83	3.28	4-3	
5040.642	B	6	0.82	3.27	3-2	
4953.37	P		0.84	3.34	5-4	a^5
4928.895	E	(0)	0.83	3.34	4-4	(
4941.322	E	(1)	0.82	3.32	3-3	
4947.994	E	1	0.81	3.31	2-2	
4909.105	B	2	0.82	3.34	3-4	
4926.148	B	4	0.81	3.32	2-3	
4937.719	B	4	0.81	3.31	1-2	
4801.93	P		0.82	3.39	3-3	a^5
4801.90	P		0.81	3.38	2-2	(
4806.75	P		0.81	3.38	1-1	
4787.64	P		0.81	3.39	2-3	
4792.24	P		0.81	3.38	1-2	
4816.47	P		0.81	3.38	2-1	
4781.718	B	6	0.84	3.43	5-5	a^5
4789.803	E	(1)	0.83	3.41	4-4	(
4812.906	E	(0)	0.84	3.41	5-4	
4758.913	B	4	0.83	3.43	4-5	
4771.103	B	3	0.82	3.41	3-4	
4783.306	E	(2)	0.81	3.39	2-3	
4533.238	A	80	0.84	3.57	5-5	a^5
4534.782	B	60	0.83	3.55	4-4	(
4535.574	B	50	0.82	3.54	3-3	
4535.920	B	40	0.81	3.54	2-2	
4536.051	B	40	0.81	3.53	1-1	
4555.486	A	30	0.84	3.55	5-4	
4552.453	A	35	0.83	3.54	4-3	
4548.764	A	35	0.82	3.54	3-2	
4544.688	A	30	0.81	3.53	2-1	
4512.734	A	40	0.83	3.57	4-5	
4518.022	A	50	0.82	3.55	3-4	
4522.798	A	40	0.81	3.54	2-3	
4527.305	A	35	0.81	3.54	1-2	
4314.801	A	25*	0.83	3.69	4-3	a^5
4326.359	B	9	0.82	3.67	3-2	(
4334.840	B	2	0.81	3.66	2-1	
4299.636	B	15	0.82	3.69	3-3	
4314.74	P	25*	0.81	3.67	2-2	
4326.986	B	2	0.81	3.66	1-1	
•4288.161	B	3	0.81	3.69	2-3	
4306.945	E	1	0.81	3.67	1-2	
4305.910	A	60	0.84	3.71	5-4	a^{5}F
4301.089	B	50	0.83	3.70	4-3	(
4300.566	B	50	0.82	3.69	3-2	
4298.664	A	40	0.81	3.69	2-1	
4295.751	A	22	0.81	3.68	1-0	
4287.405	A	22	0.83	3.71	4-4	
4286.006	A	25	0.82	3.70	3-3	
4289.068	A	25	0.81	3.69	2-2	
4290.933	B	22	0.81	3.69	1-1	
4272.440	B	8	0.82	3.71	3-4	
•4274.584	A	15	0.81	3.70	2-3	
4281.371	A	10	0.81	3.69	1-2	
•4291.214	B	5n	0.83	3.71	4-5	a^{5}F
4288.78	P		0.82	3.70	3-4	(
4287.71	P		0.81	3.69	2-3	
4314.356	B	5	0.83	3.69	4-3	
4299.17	P		0.82	3.69	3-3	
3457.494	E	4	0.84	4.41	5-4	a^{5}F
3458.020	E	3	0.83	4.40	4-3	(
3457.298	E	2	0.82	4.39	3-2	
3455.755	E	1	0.81	4.39	2-1	
3453.654	E	tr	0.81	4.38	1-0	
3445.566	E	1	0.83	4.41	4-4	
3448.255	E	1	0.82	4.40	3-3	
3449.874	E	2	0.81	4.39	2-2	
3450.735	E	1	0.81	4.39	1-1	
3444.899	E	tr	0.81	4.39	1-2	
3240.84	P		0.84	4.65	5-5	a^{5}F
3235.95	P		0.82	4.64	3-3	(
3244.53	P		0.83	4.64	4-3	
6743.124	A	10	0.90	2.73	2-2	a^{1}D (
6599.112	E	12	0.90	2.77	2-3	a^{1}D (
5659.104	E	(3)	0.90	3.08	2-1	a^{1}D (
5436.703	B	1	0.90	3.17	2-3	a^{1}D
5497.92	P		0.90	3.14	2-2	(
4943.074	E	(0)	0.90	3.39	2-3	a^{1}D
4958.26	P	2	0.90	3.38	2-2	(
4840.874	A	25	0.90	3.45	2-2	a^{1}D (
4412.436	B	1	0.90	3.69	2-3	a^{1}D (

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oratory			E P		J	Multiplet
	Ref	Int	Low	High		(No)
§	B	(1)	0.90	3.85	2-3	$a^1D-v^3D^o$ (55)
	A	40n	0.90	4.06	2-3	$a^1D-y^1F^o$ (56)
	A	20	0.90	4.16	2-1	$a^1D-z^1P^o$ (57)
	A	12	0.90	4.31	2-1	$a^1D-y^1P^o$ (58)
	A	15	0.90	4.33	2-2	$a^1D-x^1D^o$ (59)
	G	1	0.90	4.61	2-2	$a^1D-w^3P^o$
	E	1	0.90	4.59	2-1	(60)
	E	10	0.90	4.64	2-3	$a^1D-v^3G^o$ (61)
	A	20	0.90	4.64	2-3	$a^1D-x^1F^o$ (62)
§	E	(12)	0.90	4.66	2-3	$a^1D-u^3F^o$
	P	Ti+	0.90	4.65	2-2	(63)
	E	tr	0.90	4.67	2-1	$a^1D-u^3D^o$ (64)
	E	4	0.90	4.79	2-3	$a^1D-t^3D^o$
	E	3	0.90	4.78	2-2	(65)
	E	15	0.90	4.82	2-1	$a^1D-x^1P^o$ (66)
	E	15	0.90	4.85	2-1	$a^1D-w^1P^o$ (67)
		———	———	———		
	D	150	1.06	2.48	2-3	$a^3P-z^3D^o$
	D	125	1.05	2.47	1-2	(68)
	D	100	1.04	2.46	0-1	
	D	75	1.06	2.47	2-2	
	D	75	1.05	2.46	1-1	
	D	8	1.06	2.46	2-1	
	A	20	1.06	3.08	2-1	$a^3P-z^3S^o$
	A	20	1.05	3.08	1-1	(69)
	A	9	1.04	3.08	0-1	
	P		1.06	3.10	2-2	$a^3P-z^5S^o$
	E	(0)	1.05	3.10	1-2	(70)
	A	10	1.06	3.15	2-2	$a^3P-z^3P^o$
	A	5	1.06	3.15	2-1	(71)
	E	5	1.05	3.15	1-2	
	A	35	1.06	3.17	2-3	$a^3P-y^3D^o$
	A	25	1.05	3.14	1-2	(72)
	A	18	1.04	3.13	0-1	
	A	6	1.06	3.14	2-2	
	A	12	1.05	3.13	1-1	
	H	(1)	1.06	3.13	2-1	
	H	(1)	1.06	3.18	2-3	$a^3P-y^5D^o$
	H	(0)	1.05	3.17	1-2	(73)
	A	4	1.06	3.39	2-3	$a^3P-x^3D^o$
	B	3	1.05	3.38	1-2	(74)
	B	2	1.04	3.38	0-1	
	B	(1)	1.06	3.38	2-2	
	B	1	1.05	3.38	1-1	
	A	20	1.06	3.69	2-3	$a^3P-w^3D^o$
	A	20	1.05	3.67	1-2	(75)
	A	18	1.04	3.66	0-1	
	B	10	1.06	3.67	2-2	
	B	10	1.05	3.66	1-1	
	E	1	1.06	3.66	2-1	
	B	3	1.06	3.69	2-3	$a^3P-x^3G^o$ (76)
	A	10	1.06	3.70	2-3	$a^3P-x^5D^o$
	E	2	1.05	3.69	1-2	(77)
	P	Ti	1.04	3.69	0-1	
	P		1.06	3.69	2-2	
	P		1.05	3.69	1-1	
	A	10	1.06	3.85	2-3	$a^3P-v^3D^o$
	B	5	1.05	3.85	1-2	(78)
	E	(2)	1.04	3.85	0-1	
	B	3	1.06	3.85	2-2	
	B	2	1.05	3.85	1-1	
	P	Ti	1.06	3.85	2-1	
	B	2	1.06	3.93	2-2	$a^3P-y^3P^o$
	E	1n	1.05	3.92	1-1	(79)
	B	1	1.06	3.92	2-1	
	B	1	1.05	3.91	1-0	
	B	3	1.05	3.93	1-2	
	E	1	1.04	3.92	0-1	
	A	30	1.06	4.09	2-2	$a^3P-x^3P^o$
	B	15	1.05	4.09	1-1	(80)
	A	20	1.06	4.09	2-1	
	A	15	1.05	4.08	1-0	
	A	20	1.05	4.09	1-2	
	A	20	1.04	4.09	0-1	
	B	(0)	1.06	4.16	2-1	$a^3P-z^1P^o$
	E	(0)	1.05	4.16	1-1	(81)
	E	(0)	1.04	4.16	0-1	
	F	2	1.06	4.33	2-2	$a^3P-x^1D^o$
	B	3	1.05	4.33	1-2	(82)
	A	20	1.06	4.37	2-1	$a^3P-y^3S^o$
	B	20	1.05	4.37	1-1	(83)
	B	10	1.04	4.37	0-1	
	A	12	1.06	4.61	2-2	$a^3P-w^3P^o$
	E	6	1.05	4.59	1-1	(84)
	E	8	1.06	4.59	2-1	
	E	6	1.05	4.58	1-0	
	E	6	1.05	4.61	1-2	
	E	6	1.04	4.59	0-1	
	E	3	1.06	4.61	2-2	$a^3P-y^5S^o$
	E	1	1.05	4.61	1-2	(85)

Ti I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3382.312	E	15	1.06	4.71	2-3	$a^3P-u^3D^o$
3390.682	E	10	1.05	4.69	1-2	(86)
3398.634	E	8	1.04	4.67	0-1	
3403.369	E	4	1.06	4.69	2-2	
3405.094	E	5	1.05	4.67	1-1	
m3417.88	P	Fe	1.06	4.67	2-1	
3314.422	A	10	1.06	4.79	2-3	$a^3P-t^3D^o$
3309.501	E	15	1.05	4.78	1-2	(87)
3308.391	E	10	1.04	4.77	0-1	
3321.588	E	8	1.06	4.78	2-2	
3314.523	E	8	1.05	4.77	1-1	
3326.639	E	2	1.06	4.77	2-1	
3280.391	E	2	1.06	4.82	2-1	$a^3P-x^1P^o$
3268.61	E	1	1.05	4.82	1-1	(88)
3262.63	G	1	1.04	4.82	0-1	
*3260.259§	E	3	1.06	4.85	2-1	$a^3P-w^1P^o$
*3248.602§	E	15	1.05	4.85	1-1	(89)
*3213.145§	E	8	1.06	4.90	2-3	$a^3P-s^3D^o$
3204.870	E	6	1.05	4.90	1-2	(90)
3201.594	E	5	1.04	4.90	0-1	
3216.203	E	3	1.06	4.90	2-2	
3207.337	E	5	1.05	4.90	1-1	
3218.683	E	tr	1.06	4.90	2-1	
3137.352	E	(1)	1.06	5.00	2-2	$a^3P-v^3P^o$
3134.654	E	1	1.05	4.99	1-1	(91)
3145.515	E	1	1.06	4.99	2-1	
*3136.028	E	2	1.05	4.98	1-0	
*3100.666	E	12	1.06	5.04	3-3	$a^3P-r^3D^o$
3106.806	E	8	1.05	5.02	1-2	(92)
3112.482	E	8	1.04	5.01	0-1	
3117.455	E	6	1.06	5.02	2-2	
3117.899	E	5	1.05	5.01	1-1	
*3128.640§	E	8	1.06	5.01	2-1	
*3100.666	E	12	1.06	5.04	2-1	$a^3P-x^3S^o$
3090.137	E	8	1.05	5.04	1-1	(93)
3084.819	E	4	1.04	5.04	0-1	
2965.707	E	15	1.06	5.22	2-3	$a^3P-q^3D^o$
2965.231	E	(6?)	1.05	5.21	1-2	(94)
2965.68	E	8	1.04	5.20	0-1	
2974.934	E	4	1.06	5.21	2-2	
2970.556	E	4	1.05	5.20	1-1	
2980.296	E	tr	1.06	5.20	2-1	
		———	———	———		
10034.45	D	15	1.45	2.68	4-5	$b^3F-z^3G^o$
10048.78	D	12	1.44	2.67	3-4	(95)
10059.87	D	12	1.42	2.65	2-3	
10189.26	C	3	1.45	2.67	4-4	
10170.60	C	3	1.44	2.65	3-3	
7366.60	E	(1)	1.42	3.10	2-2	$b^3F-z^5S^o$ (96)
7344.72	E	4	1.45	3.13	4-4	$b^3F-y^3F^o$
7357.74	E	3	1.44	3.11	3-3	(97)
7364.11	E	2	1.42	3.10	2-2	
7423.17	E	(2)	1.44	3.10	3-2	
7271.41	E	(0)	1.44	3.13	3-4	
7299.67	I	(2)	1.42	3.11	2-3	
7216.20	E	5	1.44	3.15	3-2	$b^3F-z^3P^o$
7160.33	K	(2)	1.42	3.15	2-2	(98)
7138.05	P		1.42	3.15	2-1	
7209.44	E	20	1.45	3.17	4-3	$b^3F-y^3D^o$
7244.86	E	10	1.44	3.14	3-2	(99)
7251.74	I	8	1.42	3.13	2-1	
7138.91	E	(1)Ti?	1.44	3.17	3-3	
7188.55	E	(0)	1.42	3.14	2-2	
7084.25	P		1.42	3.17	2-3	
7065.15?	J	(1)	1.45	3.20	4-4	$b^3F-y^5D^o$
7130.34	P		1.45	3.18	4-3	(100)
*7007.81	H	(1)	1.42	3.18	2-3	
6666.548	E	(2n)	1.45	3.31	4-5	$b^3F-y^5G^o$ (101)
6556.066	A	25	1.45	3.34	4-4	$b^3F-x^3F^o$
6554.226	A	20	1.44	3.32	3-3	(102)
6546.276	A	20	1.42	3.31	2-2	
m6592.91	P	Fe	1.44	3.31	3-2	
6497.689	E	3	1.44	3.34	3-4	
6508.135	E	3	1.42	3.32	2-3	
6366.354	A	8	1.45	3.39	4-3	$b^3F-x^3D^o$
6336.104	A	8	1.44	3.38	3-2	(103)
6318.027	E	5	1.42	3.38	2-1	
6311.289	E	(1)	1.44	3.39	3-3	
6293.00	P		1.42	3.38	2-2	
6268.50	H	(2)	1.42	3.39	2-3	
6258.706	A	50	1.45	3.43	4-5	$b^3F-y^3G^o$
6258.103	A	40	1.44	3.41	3-4	(104)
6261.101	A	35	1.42	3.39	2-3	
6312.240	A	10	1.45	3.41	4-4	
6303.754	A	10	1.44	3.39	3-3	
5839.78	P		1.45	3.57	4-5	$b^3F-y^5F^o$
5906.50	P		1.45	3.54	4-3	(105)
5512.529	A	25	1.45	3.69	4-3	$b^3F-w^3D^o$
5514.536	B	25	1.44	3.67	3-2	(106)
5514.350	B	20	1.42	3.66	2-1	
5471.198	B	5	1.44	3.69	3-3	
5481.862	B	5	1.42	3.67	2-2	
5449.155	B	1	1.44	3.70	3-3	$b^3F-x^5D^o$
5440.53	P		1.42	3.69	2-2	(107)
5490.151	A	12	1.45	3.70	4-3	
5472.696	B	2	1.44	3.69	3-2	

Ti I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
5474.228	B	6	1.45	3.71	4-5	$b^3F-x^3G^o$
5453.646	B	3	1.44	3.70	3-4	(108)
5438.310	B	1	1.42	3.69	2-3	
5494.726	B	(1)	1.45	3.70	4-4	
5470.50	J	(2)	1.44	3.69	3-3	
*5511.795	B	2	1.45	3.69	4-3	
5145.465	A	12	1.45	3.85	4-3	$b^3F-v^3D^o$
5113.448	A	10	1.44	3.85	3-2	(109)
5087.055	A	8	1.42	3.85	2-1	
5109.427	B	4	1.44	3.85	3-3	
5085.333	B	4	1.42	3.85	2-2	
5081.39	P		1.42	3.85	2-3	
5035.908	A	25	1.45	3.90	4-5	$b^3F-w^3G^o$
5036.468	A	25	1.44	3.89	3-4	(110)
5038.400	A	25	1.42	3.87	2-3	
5071.475	B	7	1.45	3.89	4-4	
5065.985	B	7	1.44	3.87	3-3	
4742.32	P		1.45	4.06	4-3	$b^3F-y^1F^o$
4711.68	P		1.44	4.06	3-3	(111)
4687.82	P		1.42	4.06	2-3	
4559.920	A	6	1.45	4.16	4-4	$b^3F-w^3F^o$
4535.87	P		1.44	4.16	3-3	(112)
4518.700	B	8	1.42	4.15	2-2	
4564.216	E	1	1.45	4.16	4-3	
4540.873	E	1	1.44	4.15	3-2	
m4531.60	P	Fe	1.44	4.16	3-4	
4513.715	E	1	1.42	4.16	2-3	
4457.428	A	40	1.45	4.22	4-4	$b^3F-v^3F^o$
4455.321	A	30	1.44	4.21	3-3	(113)
4453.312	A	30	1.42	4.19	2-2	
4482.688	A	10	1.45	4.21	4-3	
*4474.852	A	8	1.44	4.19	3-2	
4430.366	A	7	1.44	4.22	3-4	
*4434.003	A	15	1.42	4.21	2-3	
4127.09	P		1.45	4.44	4-4	$b^3F-y^1G^o$ (114)
3789.293	B	8	1.45	4.71	4-3	$b^3F-u^3D^o$
3795.903	B	7	1.44	4.69	3-2	(115)
3798.276	A	6	1.42	4.67	2-1	
3717.259	E	1	1.45	4.77	4-4	$b^3F-t^3F^o$ †
3715.795	E	1	1.44	4.76	3-3	(116)
3713.734	E	1	1.42	4.75	2-2	
3728.676	E	1	1.44	4.75	3-3	
3704.295	B	15	1.45	4.79	4-3	$b^3F-t^3D^o$
3694.445	A	10	1.44	4.78	3-2	(117)
3685.964	B	2	1.42	4.77	2-1	
3651.90	P		1.45	4.83	4-5	$b^3F-x^3H^o$
3638.49	P		1.44	4.83	3-4	(118)
3656.73	P		1.45	4.83	4-4	
3487.80	P		1.44	4.98	3-3	$b^3F-w^1F^o$ (119)
3439.305	E	8	1.45	5.04	4-3	$b^3F-r^3D^o$
3443.644	E	5	1.44	5.02	3-2	(120)
3444.403	E	3	1.42	5.01	2-1	
3423.172	E	2	1.44	5.04	3-3	
3430.874	E	2	1.42	5.02	2-2	
3434.69	P		1.45	5.05	4-4	$b^3F-w^1G^o$ (121)
3297.68	P		1.45	5.20	4-4	$b^3F-v^5D^o$
3309.32	P		1.45	5.18	4-3	(122)
3274.047	E	(5)	1.45	5.22	4-3	$b^3F-q^3D^o$
3270.562	E	3	1.44	5.21	3-2	(123)
3265.480	E	2	1.42	5.20	2-1	
3259.42	E	2	1.44	5.22	3-3	
3259.04	G	1	1.42	5.21	2-2	
		———	———	———		
9718.96	D	25	1.50	2.77	4-3	$a^1G-z^1F^o$ (124)
7949.17	E	(3)	1.50	3.05	4-4	$a^1G-z^1G^o$ (125)
4820.410	A	20	1.50	4.06	4-3	$a^1G-y^1F^o$ (126)
*4526.374	E	1	1.50	4.22	4-4	$a^1G-v^3F^o$ (127)
4427.098	A	40	1.50	4.28	4-5	$a^1G-z^1H^o$ (128)
4186.119	A	25	1.50	4.44	4-4	$a^1G-y^1G^o$ (129)
3919.822	B	5	1.50	4.64	4-3	$a^1G-x^1F^o$ (130)
3724.570	A	20	1.50	4.81	4-4	$a^1G-x^1G^o$ (131)
3702.942	B	2	1.50	4.83	4-4	$a^1G-x^3H^o$ (132)
3547.029	A	15	1.50	4.98	4-3	$a^1G-w^1F^o$ (133)
3456.661	E	6	1.50	5.07	4-5	$a^1G-y^1H^o$ (134)
3431.08	P		1.50	5.09	4-4	$a^1G-u^3G^o$ (135)
3392.713	E	10	1.50	5.13	4-3	$a^1G-v^1F^o$ (136)
3119.725	E	15	1.50	5.45	4-5	$a^1G-x^1H^o$ (137)
		———	———	———		
9090.70	D	25	1.74	3.10	3-2	$a^5P-z^5S^o$
9027.32	D	15	1.73	3.10	2-2	(138)
8989.44	D	12	1.73	3.10	1-2	
8821.14	D	12	1.74	3.14	3-2	$a^5P-y^3D^o$
8761.44	D	15	1.73	3.14	2-2	(139)
8725.76	D	6	1.73	3.14	1-2	
8778.66	D	30	1.74	3.15	3-2	$a^5P-z^3P^o$
8719.56	D	30	1.73	3.15	2-2	(140)

Ti I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
8457.10	D	40	1.74	3.20	3-4	a^{5}P-y^{5}D°
8494.42	D	30	1.73	3.18	2-3	(141)
8531.36	D	15	1.73	3.17	1-2	
8550.54	D	25	1.74	3.18	3-3	
8565.45	D	25	1.73	3.17	2-2	
8578.40	D	15	1.73	3.16	1-1	
8612.91	D	7	1.73	3.16	2-1	
*8600.98	D	25	1.73	3.16	1-0	
7474.94	E	(1p?)	1.74	3.39	3-3	a^{5}P-x^{3}D°
7466.44	P		1.73	3.38	2-2	(142)
7431.98	P		1.73	3.39	2-3	
*7253.76	I	(1p?)	1.74	3.44	3-3	a^{5}P-z^{5}P°
7291.03	P		1.73	3.42	2-2	(143)
7305.87	H	(1)	1.73	3.42	1-1	
7332.26	I	(1p?)	1.74	3.42	3-2	
7330.97	I	(1p?)	1.73	3.42	2-1	
7213.35	E	(1)	1.73	3.44	2-3	
7266.29	E	(0)	1.73	3.42	1-2	
6266.021	E	(1)	1.74	3.71	3-4	a^{5}P-x^{5}D°
6264.825	E	(0)	1.73	3.70	2-3	(144)
6277.525	E	(00)	1.73	3.69	1-2	
*6295.251	E	(2)	1.74	3.70	3-3	
6295.949	E	(0)	1.73	3.69	2-2	
6298.075	E	(00)	1.73	3.69	1-1	
4617.269	A	30	1.74	4.41	3-4	a^{5}P-w^{5}D°
4623.098	A	25	1.73	4.40	2-3	(145)
4629.336	A	15	1.73	4.39	1-2	
4639.669	B	15	1.74	4.40	3-3	
4639.369	B	18	1.73	4.39	2-2	
4639.944	B	15	1.73	4.39	1-1	
4656.048	B	6	1.74	4.39	3-2	
4650.016	B	10	1.73	4.39	2-1	
4645.193	A	12	1.73	4.38	1-0	
4481.261	A	30	1.74	4.50	3-3	a^{5}P-y^{5}P°
4480.600	B	5	1.73	4.49	2-2	(146)
4479.724	B	9	1.73	4.48	1-1	
4496.146	A	20	1.74	4.49	3-3	
4489.089	A	20	1.73	4.48	2-1	
4465.807	A	20	1.73	4.50	2-3	
4471.238	A	20	1.73	4.49	1-2	
4305.474	B	2	1.74	4.61	3-2	a^{5}P-w^{3}P°
*4291.214	B	5n	1.73	4.61	2-2	(147)
4299.229	E	15	1.74	4.61	3-2	a^{5}P-y^{5}S°
4284.988	B	8	1.73	4.61	2-2	(148)
4276.441	B	8	1.73	4.61	1-2	
9832.15	D	25	1.88	3.13	5-4	a^{3}G-y^{3}F°
9927.35	D	20	1.87	3.11	4-3	(149)
9997.94	D	15	1.87	3.10	3-2	
9879.41	D	3	1.87	3.11	3-3	
8468.46	D	100	1.88	3.34	5-4	a^{3}G-x^{3}F°
8518.37	D	100	1.87	3.32	4-3	(150)
8548.07	D	100	1.87	3.31	3-2	
8423.10	D	20	1.87	3.34	4-4	
8483.16	D	25	1.87	3.32	3-3	
*7978.88	E	(4)	1.88	3.43	5-5	a^{3}G-y^{3}G°
8024.84	E	(2)	1.87	3.41	4-4	(151)
8068.24	E	(2)	1.87	3.39	3-3	
8066.05	P		1.88	3.41	5-4	
7938.53	P		1.87	3.43	4-5	
6746.433	E	(1)	1.88	3.71	5-5	a^{3}G-x^{3}G°
6746.43	H	(1)	1.87	3.70	4-4	(152)
6751.94	H	(0)	1.87	3.69	3-3	
6092.814	E	4	1.88	3.90	5-5	a^{3}G-w^{3}G°
6121.008	E	3	1.87	3.89	4-4	(153)
6146.225	E	3	1.87	3.87	3-3	
5953.160	A	30	1.88	3.95	5-6	a^{3}G-z^{3}H°
5965.828	A	30	1.87	3.94	4-5	(154)
5978.543	A	25	1.87	3.93	3-4	
5988.560	E	2	1.88	3.94	5-5	
5996.007	E	2	1.87	3.93	4-4	
5409.609	A	6	1.88	4.16	5-4	a^{3}G-w^{3}F°
5397.093	A	4	1.87	4.16	4-3	(155)
5389.996	A	3	1.87	4.15	3-2	
5391.06	P		1.87	4.16	4-4	
5382.96	P		1.87	4.16	3-3	
5265.967	A	10	1.88	4.22	5-4	a^{3}G-v^{3}F°
5283.441	A	8	1.87	4.21	4-3	(156)
5297.236	A	6	1.87	4.19	3-2	
*5248.402	E	(1)	1.87	4.22	4-4	
5269.93	H	(1)	1.87	4.21	3-3	
4885.082	A	20	1.88	4.41	5-6	a^{3}G-y^{3}H°
4899.910	A	20	1.87	4.39	4-5	(157)
4913.616	A	20	1.87	4.38	3-4	
4915.236	B	5	1.88	4.39	5-5	
4925.396	B	5	1.87	4.38	4-4	
4811.074	B	4	1.88	4.44	5-4	a^{3}G-y^{1}G° (158)
4449.985	B	1	1.87	4.64	4-3	a^{3}G-x^{1}F°
4440.345	A	10	1.87	4.64	3-3	(159)
4449.143	A	30	1.88	4.65	5-5	a^{3}G-v^{3}G°
4450.896	A	25	1.87	4.64	4-4	(160)
4453.708	A	20	1.87	4.64	3-3	
4463.539	B	8	1.88	4.64	5-4	
4463.391	B	8	1.87	4.64	4-3	
4436.586	A	4	1.87	4.65	4-5	
4441.272	B	4	1.87	4.64	3-4	
4417.274	A	15	1.88	4.67	5-4	a^{3}G-u^{3}F°
4426.054	A	10	1.87	4.66	4-3	(161)
*4434.003	A	15	1.87	4.65	3-2	
4404.911	B	5	1.87	4.67	4-4	
4416.535	B	4	1.87	4.66	3-3	
4263.134	A	15	1.88	4.77	5-4	a^{3}G-t^{3}F°
*4274.584	A	15	1.87	4.76	4-3	(162)
4282.702	A	12	1.87	4.75	3-2	
4251.618	B	3	1.87	4.77	4-4	
4265.723	B	4	1.87	4.76	3-3	
4169.330	B	7	1.88	4.84	5-6	a^{3}G-x^{3}H°
4166.311	B	6	1.87	4.83	4-5	(163)
4164.134	B	4	1.87	4.83	3-4	
4177.357	E	(2)	1.88	4.83	5-5	
4172.609	E	(2)	1.87	4.83	4-4	
3895.59	P		1.88	5.05	5-4	a^{3}G-w^{1}G°
3885.95	P		1.87	5.05	4-4	(164)
3878.61	P		1.87	5.05	3-4	
3786.253	B	3	1.88	5.14	5-4	a^{3}G-s^{3}F°
3801.093	B	3	1.87	5.12	4-3	(165)
3811.385	B	4	1.87	5.10	3-2	
3733.767	B	4n	1.88	5.18	5-6	a^{3}G-w^{3}H° †
3738.901	E	5n	1.87	5.17	4-5	(166)
3748.101	B	6n	1.87	5.16	3-4	
3504.773	E	2	1.88	5.40	5-4	a^{3}G-r^{3}F°
3516.838	E	3	1.87	5.38	4-3	(167)
3525.161	E	3	1.87	5.37	3-2	
3428.955	E	4	1.88	5.48	5-5	a^{3}G-t^{3}G°
3446.603	E	2	1.87	5.45	4-4	(168)
*3454.165	E	1	1.88	5.45	5-4	
3352.43	P		1.88	5.56	5-4	a^{3}G-q^{3}F°
3358.56	P		1.87	5.55	4-3	(169)
3364.10	P		1.87	5.53	3-2	
3010.42	P		1.87	5.97	4-3	a^{3}G-u^{1}F° (170)
*5054.070	B	3	1.87	4.31	0-1	a^{1}S-y^{1}P° (171)
3601.16	J	1	1.87	5.30	0-1	a^{1}S-v^{1}P° (172)
5025.570	A	18	2.03	4.49	6-5	z^{5}G°-e^{5}F
5013.284	B	18	2.01	4.47	5-4	(173)
5000.991	B	10	1.99	4.46	4-3	
4989.140	B	10	1.97	4.45	3-2	
4978.191	A	10	1.96	4.44	2-1	
4977.731	B	5	2.01	4.49	5-5	
4973.051	B	6	1.99	4.47	4-4	
4968.566	B	6	1.97	4.46	3-3	
4964.713	B	5	1.96	4.45	2-2	
4938.04	H	(0n)	1.99	4.49	4-5	
4941.015	E	(1)	1.97	4.47	3-4	
4944.388	E	(0)	1.96	4.46	2-3	
4355.308	E	1	2.03	4.87	6-5	z^{5}G°-f^{5}F
4340.018	E	1	2.01	4.85	5-4	(174)
3911.185	B	8n	2.03	5.19	6-6	z^{5}G°-e^{5}G
*3899.668	B	(2)	2.01	5.17	5-5	(175)
3888.020	B	4n	1.99	5.16	4-4	
3877.591	B	2n	1.97	5.15	3-3	
3869.275	B	5n	1.96	5.15	2-2	
3926.97	P		2.03	5.17	6-5	
3912.589	B	2	2.01	5.16	5-4	
3897.290	B	1	1.99	5.15	4-3	
3884.090	B	(0)	1.97	5.15	3-2	
3882.147	B	15n	2.01	5.19	5-6	
*3875.262	A	20n	1.99	5.17	4-5	
3868.397	B	10n	1.97	5.16	3-4	
3862.833	B	10n	1.96	5.15	2-3	
3882.892	B	20n	2.03	5.21	6-7	z^{5}G°-e^{5}H
3866.446	A	15n	2.01	5.20	5-6	(176)
3858.133	B	15n	1.99	5.19	4-5	
3853.719	B	10n	1.97	5.17	3-4	
3853.038	B	10n	1.96	5.16	2-3	
3895.243	A	30n	2.03	5.20	6-6	
3882.313	B	10n	2.01	5.19	5-5	
3873.203	B	10n	1.99	5.17	4-4	
3867.739	B	3	1.97	5.16	3-3	
3911.362	E	(2)	2.03	5.19	6-5	
3897.581	B	1	2.01	5.17	5-4	
3887.365	E	(1n)	1.99	5.16	4-3	
3720.384	E	2	2.03	5.35	6-5	z^{5}G°-g^{5}F
3707.549	B	10n	2.01	5.34	5-4	(177)
3696.885	E	2	1.99	5.33	4-3	
3688.27	P		1.97	5.32	3-2	
3681.272	E	1	1.96	5.31	2-1	
3694.10	P		2.01	5.35	5-5	
3685.47	P		1.99	5.34	4-4	
3679.14	P		1.97	5.33	3-3	
3674.92	P		1.96	5.32	2-2	
*3366.176§	E	5	2.03	5.70	6-5	z^{5}G°-h^{5}F
3361.50	G	1	2.01	5.68	5-4	(178)
3356.196	E	2	1.99	5.67	4-3	
*3350.548§	E	2	1.97	5.66	3-2	
3344.931	E	1	1.96	5.65	2-1	
3344.630	E	tr	2.01	5.70	5-5	
3343.379	E	tr	1.99	5.68	4-4	
*3341.554	E	1	1.97	5.67	3-3	
3339.54	E	1n	1.96	5.66	2-2	
3226.128	E	12	2.03	5.86	6-6	z^{5}G°-g^{5}G
3223.519	E	10	2.01	5.84	5-5	(179)
3221.381	E	10	1.99	5.82	4-4	
3219.212	E	8	1.97	5.81	3-3	
3217.942	E	8	1.96	5.80	2-2	
3243.513	E	3	2.03	5.84	6-5	
3238.224	E	4	2.01	5.82	5-4	
3232.791	E	3	1.99	5.81	4-3	
3228.183	E	2	1.97	5.80	3-2	
3206.344	E	5	2.01	5.86	5-6	
3206.825	E	5	1.99	5.84	4-5	
3207.897	E	5	1.97	5.82	3-4	
3209.030	E	4	1.96	5.81	2-3	
3143.350	E	12N	2.03	5.96	6-7	z^{5}G
3139.87	E	10N	2.01	5.94	5-6	(1
3135.069	E	8N	1.99	5.92	4-5	
3130.175	E	8N	1.97	5.91	3-4	
3127.684	E	8N	1.96	5.91	2-3	
3123.769	E	20n	2.03	5.98	6-5	z^{5}G
3118.130	E	15	2.01	5.97	5-4	(1
3114.092	E	20n	1.99	5.95	4-3	
3111.283	E	10n	1.97	5.94	3-2	
3107.468	E	12n	1.96	5.93	2-1	
3105.220	E	2n	2.01	5.98	5-5	
3102.517	E	3n	1.99	5.97	4-4	
3101.526	E	4n	1.97	5.95	3-3	
3101.77	G	1n	1.96	5.94	2-2	
8518.05	D	60	2.13	3.57	5-4	z^{5}F
8467.15	D	75	2.11	3.57	4-3	(1
8424.41	D	50	2.09	3.56	3-2	
8389.48	D	25	2.08	3.55	2-1	
8417.54	D	25	2.11	3.57	4-4	
8386.24	P		2.09	3.57	3-3	
8363.58	P		2.08	3.56	2-2	
5224.301	A	15	2.13	4.49	5-5	z^{5}F
5224.928	A	8	2.11	4.47	4-4	(1
5224.558	B	6	2.09	4.46	3-3	
5223.623	B	6	2.08	4.45	2-2	
5222.685	B	6	2.08	4.44	1-1	
5263.483	B	3	2.13	4.47	5-4	
5255.811	B	5	2.11	4.46	4-3	
5247.293	B	5	2.09	4.45	3-2	
*5238.560	B	6	2.08	4.44	2-1	
5186.329	B	3	2.11	4.49	4-5	
5194.043	E	4	2.09	4.47	3-4	
5201.096	E	4	2.08	4.46	2-3	
5207.852	B	3	2.08	4.45	1-2	
4503.762	A	4n	2.13	4.87	5-5	z^5
4497.709	B	3	2.11	4.85	4-4	(1
4492.540	B	3	2.09	4.84	3-3	
m4488.27	P	Ti$^+$	2.08	4.83	2-2	
4485.013	B	1	2.08	4.83	1-1	
*4526.374	E	1	2.13	4.85	5-4	
4515.610	B	1	2.11	4.84	4-3	
4505.715	E	1	2.09	4.83	3-2	
4496.75	P		2.08	4.83	2-1	
4475.518	E	1	2.11	4.87	4-5	
*4474.852	A	8	2.09	4.85	3-4	
4475.19	P		2.08	4.84	2-3	
4476.61	P		2.08	4.83	1-2	
4030.512	A	25n	2.13	5.19	5-6	z^5
4026.539	A	25n	2.11	5.17	4-5	(
4021.812	B	25n	2.09	5.16	3-4	
4017.771	A	15n	2.08	5.15	2-3	
4015.377	A	12n	2.08	5.15	1-2	
4049.399	E	2n	2.13	5.17	5-5	
4040.310	B	4n	2.11	5.16	4-4	
4031.753	B	3n	2.09	5.15	3-3	
4016.264	B	6	2.13	5.20	5-4	z^5
4012.786	B	3	2.11	5.18	4-3	(
4013.24	P		2.09	5.17	3-2	
3993.796	B	1	2.11	5.20	4-4	
3994.56	P		2.09	5.18	3-3	
3975.69	P		2.09	5.20	3-4	
3980.821	B	(0)	2.08	5.18	2-3	
4013.587	A	12n	2.13	5.20	5-6	z^5
4008.046	B	9n	2.11	5.19	4-5	(
4005.958	B	6n	2.09	5.17	3-4	
4007.195	B	3n	2.08	5.16	2-3	
4003.789	B	10n	2.13	5.21	5-4	z^5
4002.466	B	9n	2.11	5.19	4-3	(
3999.336	B	7n	2.09	5.18	3-2	
3994.683	B	4n	2.08	5.17	2-1	
3990.184	E	(1n)	2.08	5.17	1-0	
3981.466	B	(0)	2.11	5.21	4-4	
3984.313	B	3	2.09	5.19	3-3	
3985.580	B	(1)	2.08	5.18	2-2	
3828.180	B	3	2.13	5.35	5-5	z^5
3822.026	B	(2)	2.11	5.34	4-4	(
3817.639	B	5	2.09	5.33	3-3	
3814.855	B	4	2.08	5.32	2-2	
3813.261	B	(0)	2.08	5.31	1-1	
3306.879	E	10	2.13	5.86	5-6	z^5
3309.730	E	6	2.11	5.84	4-5	(
3312.690	E	5	2.09	5.82	3-4	
3315.237	E	2	2.08	5.81	2-3	
3318.362	E	4	2.08	5.80	1-2	
3325.155	E	3	2.13	5.84	5-5	
3325.229	E	3	2.11	5.82	4-4	
*3324.754	E	4	2.08	5.80	3-3 2-2	
3340.77	H	(1)	2.13	5.82	5-4	
3337.40	G	1n	2.11	5.81	4-3	
3334.35	H	(1n)	2.09	5.80	3-2	
3199.43	G	1n	2.13	5.98	5-5	z^5
3198.726	E	1n	2.11	5.97	4-4	(
3199.34	H	(1n)	2.09	5.95	3-3	
*3213.145§	E	8	2.13	5.97	5-4	
3211.07	E	1n	2.11	5.95	4-3	
3141.670	E	10	2.13	6.05	5-4	z^5
3129.075	E	7	2.11	6.05	4-3	(
*3128.640§	E	8	2.09	6.04	3-2	
3125.656	E	(2)	2.08	6.03	2-1	
3125.553	E	2	2.08	6.02	1-0	

REVISED MULTIPLET TABLE

oratory Ref	Int	E P Low	E P High	J	Multiplet (No)
ntinued					
D	25	2.17	3.39	3-3	$a^3D-x^3D^\circ$
D	25	2.15	3.38	2-2	(193)
D	15	2.14	3.38	1-1	
C	10	2.17	3.38	3-2	
D	8	2.15	3.38	2-1	
D	8	2.15	3.39	2-3	
D	8	2.14	3.38	1-2	
D	10	2.17	3.44	3-3	$a^3D-z^5P^\circ$
D	2	2.15	3.42	2-2	(194)
P		2.17	3.69	3-3	$a^3D-w^3D^\circ$
P		2.15	3.67	2-2	(195)
P		2.14	3.66	1-1	
H	(2)	2.17	4.09	3-2	$a^3D-x^3P^\circ$ †
E	(1)	2.15	4.09	2-1	(196)
H	(1)	2.14	4.08	1-0	
J	3	2.17	4.16	3-4	$a^3D-w^3F^\circ$ †
E	2	2.15	4.16	2-3	(197)
I	1	2.14	4.15	1-2	
F	4n	2.17	4.22	3-4	$a^3D-v^3F^\circ$
E	(0)	2.15	4.21	2-3	(198)
L	(1)	2.14	4.19	1-2	
A	8	2.17	4.61	3-2	$a^3D-w^3P^\circ$
A	7	2.15	4.59	2-1	(199)
B	5	2.14	4.58	1-0	
H	(2)	2.15	4.61	2-2	
E	(1)	2.14	4.59	1-1	
A	12	2.17	4.67	3-4	$a^3D-u^3F^\circ$
A	10	2.15	4.66	2-3	(200)
A	12	2.14	4.65	1-2	
B	3	2.17	4.66	3-3	
B	3	2.15	4.65	2-2	
B	8	2.17	4.71	3-3	$a^3D-u^3D^\circ$
B	4	2.15	4.69	2-2	(201)
B	3	2.14	4.67	1-1	
B	1	2.17	4.69	3-2	
H	(1)	2.15	4.67	2-1	
H	(1p?)	2.15	4.71	2-3	
A	9	2.17	4.77	3-4	$a^3D-t^3F^\circ$
B	6	2.15	4.76	2-3	(202)
B	3	2.14	4.75	1-2	
H	(1p?)	2.17	4.76	3-3	
H	(1p?)	2.15	4.75	2-2	
A	18	2.17	4.79	3-3	$a^3D-t^3D^\circ$
P	(6?)	2.15	4.78	2-2	(203)
B	4	2.14	4.77	1-1	
E	(2)	2.17	4.78	3-2	
E	1	2.15	4.77	2-1	
E	2	2.15	4.79	2-3	
E	4	2.14	4.78	1-2	
A	4	2.17	5.00	3-2	$a^3D-v^3P^\circ$
B	3	2.15	4.99	2-1	(204)
E	1	2.14	4.98	1-0	
B	1	2.15	5.00	2-2	
B	1	2.14	4.99	1-1	
B	3	2.17	5.04	3-3	$a^3D-r^3D^\circ$
P	Ti	2.15	5.02	2-2	(205)
B	2	2.14	5.01	1-1	
A	10	2.17	5.14	3-4	$a^3D-s^3F^\circ$
A	9	2.15	5.12	2-3	(206)
B	8	2.14	5.10	1-2	
B	(00)	2.17	5.12	3-3	
B	(00)	2.15	5.10	2-2	
A	8	2.17	5.18	3-2	$a^3D-u^3P^\circ$
B	4	2.15	5.18	2-1	(207)
B	(0)	2.14	5.18	1-0	
B	6	2.15	5.18	2-2	
E	3	2.14	5.18	1-1	
A	10	2.17	5.22	3-3	$a^3D-q^3D^\circ$
B	6	2.15	5.21	2-2	(208)
B	5	2.14	5.20	1-1	
B	2	2.17	5.21	3-2	
E	2	2.15	5.20	2-1	
B	3	2.15	5.22	2-3	
P	Ti^{+}	2.14	5.21	1-2	
	———	———	———		
D	60	2.24	3.69	2-3	$b^3P-w^3D^\circ$
D	60	2.23	3.67	1-2	(209)
D	50	2.22	3.66	0-1	
D	25	2.24	3.67	2-2	
D	20	2.23	3.66	1-1	
D	20	2.24	3.70	2-3	$b^3P-x^5D^\circ$
D	15	2.23	3.68	1-0?	(210)
E	(2)	2.24	3.85	2-3	$b^3P-v^3D^\circ$ †
E	(1p?)	2.23	3.85	1-2	(211)
H	(1)	2.22	3.85	0-1	
E	(2)	2.24	3.93	2-2	$b^3P-y^3P^\circ$
P		2.24	3.92	2-1	(212)
P		2.23	3.91	1-0	
E	(0)	2.23	3.93	1-2	
P		2.24	4.09	2-2	$b^3P-x^3P^\circ$ (213)
B	2	2.24	4.37	2-1	$b^3P-y^3S^\circ$
I	1	2.23	4.37	1-1	(214)
B	3	2.24	4.61	2-2	$b^3P-w^3P^\circ$
B	(0)	2.23	4.59	1-1	(215)
P		2.23	4.61	1-2	
B	(0)	2.22	4.59	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
4995.062	B	(0)	2.24	4.71	2-3	$b^3P-u^3D^\circ$ (216)
4846.41	P		2.24	4.79	2-3	$b^3P-t^3D^\circ$
4843.989	B	2	2.23	4.78	1-2	(217)
4839.251	E	(1)	2.22	4.77	0-1	
4863.75	P		2.24	4.78	2-2	
4854.727	B	(00)	2.23	4.77	1-1	
*4404.276	B	10	2.24	5.04	2-3	$b^3P-r^3D^\circ$
4421.754	A	6	2.23	5.02	1-2	(218)
4431.284	B	4	2.22	5.01	0-1	
4438.232	B	2	2.24	5.02	2-2	
4444.267	B	(1)	2.23	5.01	1-1	
*4404.276	B	10	2.24	5.04	2-1	$b^3P-x^3S^\circ$
4388.077	B	3	2.23	5.04	1-1	(219)
4375.425	E	1	2.22	5.04	0-1	
4203.465	B	8	2.24	5.18	2-2	$b^3P-u^3P^\circ$
4186.01	P		2.23	5.18	1-1	(220)
4200.752	B	6	2.24	5.18	2-1	
4183.294	B	4	2.23	5.18	1-0	
4188.694	B	5	2.23	5.18	1-2	
4174.478	B	3	2.22	5.18	0-1	
4136.894	B	(1)	2.24	5.22	2-3	$b^3P-q^3D^\circ$
4140.42	P		2.23	5.21	1-2	(221)
4139.46	H	(1)	2.22	5.20	0-1	
4154.865	E	2	2.24	5.21	2-2	
4150.809	B	(0)	2.23	5.20	1-1	
3698.183	E	3	2.24	5.58	2-2	$b^3P-t^3P^\circ$
3710.186	E	(0)	2.24	5.57	2-1	(222)
3705.53	J	(1)	2.23	5.56	1-0	
3686.71	H	(0)	2.23	5.58	1-2	
3689.671	E	(0)	2.22	5.57	0-1	
		———	———	———		
10460.07	C	10	2.25	3.43	6-5	$a^3H-y^3G^\circ$
10553.02	C	8	2.24	3.41	5-4	(223)
10565.97	C	5	2.23	3.39	4-3	
8438.93	D	75	2.25	3.71	6-5	$a^3H-x^3G^\circ$
8450.89	D	75	2.24	3.70	5-4	(224)
8416.97	D	60	2.23	3.69	4-3	
8402.54	D	5	2.24	3.71	5-5	
7440.60	E	(3)	2.25	3.90	6-5	$a^3H-w^3G^\circ$
7489.61	E	(2)	2.24	3.89	5-4	(225)
7496.12	E	(2)	2.23	3.87	4-3	
6745.56	P		2.23	4.06	4-3	$a^3H-y^1F^\circ$ (226)
5999.668	A	8	2.23	4.28	4-5	$a^3H-z^1H^\circ$ (227)
5715.123	A	9	2.25	4.41	6-6	$a^3H-y^3H^\circ$
5739.464	A	9	2.24	4.39	5-5	(228)
5739.975	B	4	2.23	4.38	4-4	
5756.45	P		2.25	4.39	6-5	
5597.92	I	(2n)	2.24	4.44	5-4	$a^3H-y^1G^\circ$
5565.476	A	9	2.23	4.44	4-4	(229)
5127.367	E	(1)	2.25	4.65	6-5	$a^3H-v^3G^\circ$
5132.931	B	(0)	2.24	4.64	5-4	(230)
5122.082	B	(00)	2.23	4.64	4-3	
4856.012	A	20	2.25	4.79	6-7	$a^3H-z^3I^\circ$
4870.129	A	20	2.24	4.77	5-6	(231)
4868.264	A	18	2.23	4.76	4-5	
4882.326	B	2	2.25	4.77	6-6	
4893.065	B	2	2.24	4.76	5-5	
4778.259	A	10	2.23	4.81	4-4	$a^3H-x^1G^\circ$ (232)
4759.272	A	25	2.25	4.84	6-6	$a^3H-x^3H^\circ$
4758.120	A	25	2.24	4.83	5-5	(233)
4742.791	A	20	2.23	4.83	4-4	
4769.775	B	4	2.25	4.83	6-5	
4766.330	B	4	2.24	4.83	5-4	
4747.680	B	3	2.24	4.84	5-6	
4734.682	B	3	2.23	4.83	4-5	
4346.104	A	5	2.23	5.07	4-5	$a^3H-y^1H^\circ$ (234)
4318.631	A	10n	2.25	5.10	6-5	$a^3H-u^3G^\circ$
4325.134	A	9n	2.24	5.09	5-4	(235)
4321.655	A	8n	2.23	5.08	4-3	
4309.071	B	1	2.24	6.10	5-5	
		———	———	———		
8598.18	D	60	2.26	3.69	4-3	$b^1G-x^3G^\circ$ (236)
6861.47	E	6	2.26	4.06	4-3	$b^1G-y^1F^\circ$ (237)
6091.175	A	20	2.26	4.28	4-5	$b^1G-z^1H^\circ$ (238)
5823.679	B	3	2.26	4.38	4-4	$b^1G-y^3H^\circ$ (239)
5644.137	A	18	2.26	4.44	4-4	$b^1G-y^1G^\circ$ (240)
4836.125	B	6	2.26	4.81	4-4	$b^1G-x^1G^\circ$ (241)
4799.797	A	12	2.26	4.83	4-4	$b^1G-x^3H^\circ$ (242)
4424.401	B	2	2.26	5.05	4-4	$b^1G-w^1G^\circ$ (243)
4393.925	A	8	2.26	5.07	4-5	$b^1G-y^1H^\circ$ (244)
4368.941	B	2	2.26	5.08	4-3	$b^1G-u^3G^\circ$ (245)
3938.005	B	2n	2.26	5.39	4-4	$b^1G-v^1G^\circ$ (246)
3574.245	E	8	2.26	5.71	4-4	$b^1G-u^1G^\circ$ (247)
		———	———	———		
9746.86	D	15	2.31	3.57	4-4	$z^5D^\circ-a^5D$ †
9717.00	D	10	2.30	3.57	3-3	(248)
9702.86	D	3	2.29	3.56	2-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ti I continued						
5662.154	A	12	2.31	4.49	4-5	$z^5D^\circ-e^5F$
5675.413	A	9	2.30	4.47	3-4	(249)
5689.465	A	10	2.29	4.46	2-3	
5702.666	B	6	2.28	4.45	1-2	
5713.895	B	3	2.28	4.44	0-1	
5708.199	B	3	2.31	4.47	4-4	
5711.852	B	4	2.30	4.46	3-3	
5716.450	B	4	2.29	4.45	2-2	
5720.445	B	3	2.28	4.44	1-1	
5739.08	P		2.30	4.45	3-2	
4825.445	B	3	2.31	4.87	4-5	$z^5D^\circ-f^5F$
4827.597	F	2	2.30	4.85	3-4	(250)
4832.065	B	(0)	2.29	4.84	2-3	
4837.42	P		2.28	4.83	1-2	
4270.139	B	7n	2.31	5.20	4-4	$z^5D^\circ-g^3F$
4273.312	B	2	2.30	5.18	3-3	(251)
4291.88	J	(1)	2.31	5.18	4-3	
4251.769	B	2n	2.30	5.20	3-4	
4260.738	B	2	2.29	5.18	2-3	
4256.025	A	8n	2.31	5.21	4-4	$z^5D^\circ-e^5D$
4261.609	B	5n	2.30	5.19	3-3	(252)
4266.227	B	3n	2.29	5.18	2-2	
4268.928	E	(1n)	2.28	5.17	1-1	
4280.069	B	2n	2.31	5.19	4-3	
4278.829	B	3n	2.30	5.18	3-2	
4276.657	B	2	2.29	5.17	2-1	
4274.408	B	(0)	2.28	5.17	1-0	
4237.780	B	(0)	2.30	5.21	3-4	
4249.114	A	5n	2.29	5.19	2-3	
4258.523	A	4n	2.28	5.18	1-2	
4265.273	B	3n	2.28	5.17	0-1	
4137.284	A	10n	2.31	5.29	4-3	$z^5D^\circ-e^5P$ †
4143.048	B	7n	2.30	5.27	3-2	(253)
4150.557	B	3	2.29	5.26	2-1	
4120.037	B	2	2.30	5.29	3-3	
4131.244	B	4	2.29	5.27	2-2	
4143.280	B	3	2.28	5.26	1-1	
4058.139	A	7	2.31	5.35	4-5	$z^5D^\circ-g^5F$
4057.612	B	5	2.30	5.34	3-4	(254)
4060.09	P		2.29	5.33	2-3	
m4064.22	P	Ti	2.28	5.32	1-2	
4068.661	E	(1)	2.28	5.31	0-1	
4074.356	B	3	2.31	5.34	4-4	
4071.469	E	2	2.30	5.33	3-3	
4071.211	E	2	2.29	5.32	2-2	
3323.896	E	2	2.31	6.02	4-5	$z^5D^\circ-k^5F$ †
3323.660	E	2n	2.30	6.01	3-4	(255)
3325.365	E	1n	2.29	6.00	2-3	
3328.326	E	1	2.28	5.99	1-2	
		———	———	———		
7038.80	E	6	2.33	4.09	2-2	$c^3P-x^3P^\circ$
7008.35	E	(1)	2.32	4.09	1-1	(256)
7050.65	E	(1)	2.33	4.09	2-1	
7010.94	I	(1)	2.32	4.08	1-0	
6996.63	E	(1)	2.32	4.09	1-2	
7004.60	J	(1)	2.32	4.09	0-1	
6017.52	P		2.32	4.37	1-1	$c^3P-y^3S^\circ$ (257)
5419.189	B	1	2.33	4.61	2-2	$c^3P-y^5S^\circ$ (258)
5429.139	A	6	2.33	4.61	2-2	$c^3P-w^3P^\circ$
5448.882	B	(0)	2.32	4.59	1-1	(259)
5474.449	B	(1)	2.33	4.59	2-1	
5473.517	B	(1)	2.32	4.58	1-0	
5404.023	E	2	2.32	4.61	1-2	
*5446.593	B	2	2.32	4.59	0-1	
4805.416	A	12	2.33	4.90	2-3	$c^3P-s^3D^\circ$
4792.482	A	10	2.32	4.90	1-2	(260)
4796.210	B	6	2.32	4.90	0-1	
4812.240	B	5	2.33	4.90	2-2	
4797.983	B	5	2.32	4.90	1-1	
4637.887	B	8	2.33	5.00	2-2	$c^3P-v^3P^\circ$
4637.209	E	2	2.32	4.99	1-1	(261)
4655.712	B	3	2.33	4.99	2-1	
4640.431	E	2	2.32	4.98	1-0	
4619.525	E	3	2.32	5.00	1-2	
4635.539	E	3	2.32	4.99	0-1	
*4558.092	B	2	2.33	5.04	2-3	$c^3P-r^3D^\circ$
4576.551	E	(0)	2.32	5.02	1-2	(262)
4598.99	P		2.32	5.01	0-1	
4594.51	P		2.33	5.02	2-2	
*4558.092	B	2	2.33	5.04	2-1	$c^3P-x^3S^\circ$ (263)
		———	———	———		
6012.53	H	(1)	2.42	4.47	4-5	$z^3F^\circ-b^3G$
5982.52	H	(0)	2.40	4.46	3-4	(264)
5971.07	H	(0)	2.39	4.45	2-3	
5477.695	A	8	2.42	4.67	4-4	$z^3F^\circ-e^3F$
5481.426	A	6	2.40	4.65	3-3	(265)
5488.210	A	5	2.39	4.63	2-2	
5527.606	B	(1)	2.42	4.65	4-3	
5518.11	P		2.40	4.63	3-2	
5432.318	B	(0)	2.40	4.67	3-4	
5451.965	B	(1)	2.39	4.65	2-3	
4563.437	B	5	2.42	5.12	4-5	$z^3F^\circ-e^3G$
4555.069	B	3	2.40	5.11	3-4	(266)
4570.906	B	3n	2.39	5.09	2-3	
4586.95	P		2.42	5.11	4-4	
4436.64	H	(1)	2.42	5.20	4-4	$z^3F^\circ-g^3F$
4430.033	B	3	2.40	5.18	3-3	(267)
4433.578	B	3	2.39	5.17	2-2	
3708.625	B	4n	2.42	5.74	4-4	$z^3F^\circ-h^3F$ (268)
		———	———	———		

Ti I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5648.570	A	5	2.48	4.67	3-4	$z^3D^o-e^3F$
5662.891	B	4	2.47	4.65	2-3	(269)
5679.908	B	2	2.46	4.63	1-2	
4548.094	B	2	2.48	5.20	3-4	$z^3D^o-g^3F$
4547.850	E	2	2.47	5.18	2-3	(270)
4557.857	B	2	2.46	5.17	1-2	
3481.675	E	3	2.48	6.03	3-3	$z^3D^o-e^3D$
3481.126	E	3	2.47	6.02	2-2	(271)
3472.793	E	2	2.46	6.02	1-1	
7352.16	E	(1)	2.48	4.16	1-1	$a^1P-z^1P^o$ (272)
6716.679	E	(1)	2.48	4.31	1-1	$a^1P-y^1P^o$ (273)
6677.25	J	(0)	2.48	4.33	1-2	$a^1P-x^1D^o$ (274)
*5511.795	B	2	2.48	4.72	1-0	$a^1P-z^1S^o$ (275)
5206.059	B	5	2.48	4.85	1-1	$a^1P-w^1P^o$ (276)
4372.383	A	3	2.48	5.30	1-1	$a^1P-v^1P^o$ (277)
4227.654	B	5	2.48	5.40	1-2	$a^1P-w^1D^o$ (278)
4211.729	B	4	2.48	5.41	1-2	$a^1P-v^1D^o$ (279)
5741.192	B	1	2.49	4.64	2-3	$b^1D-x^1F^o$ (280)
5298.429	A	4	2.49	4.82	2-1	$b^1D-x^1P^o$ (281)
5246.143	B	2	2.49	4.85	2-1	$b^1D-w^1P^o$ (282)
4075.344	A	10	2.49	4.98	2-3	$b^1D-w^1F^o$ (283)
4237.889	A	7	2.49	5.41	2-2	$b^1D-y^1D^o$ (284)
7189.89	E	2	2.57	4.28	5-5	$a^1H-z^1H^o$ (285)
6575.180	E	3	2.57	4.44	5-4	$a^1H-y^1G^o$ (286)
5503.897	A	8	2.57	4.81	5-4	$a^1H-x^1G^o$ (287)
5130.420	A	12	2.57	4.98	5-6	$a^1H-z^1I^o$ (288)
4938.283	A	8	2.57	5.07	5-5	$a^1H-y^1H^o$ (289)
4369.682	A	5n	2.57	5.39	5-4	$a^1H-v^1G^o$ (290)
4278.231	B	7	2.57	5.45	5-5	$a^1H-x^1H^o$ (291)
3926.319	B	10	2.57	5.71	5-4	$a^1H-u^1G^o$ (292)
6215.212	B	20	2.68	4.67	5-4	$z^3G^o-e^3F$
6220.460	B	12	2.67	4.65	4-3	(293)
6221.41	E	8	2.65	4.63	3-2	
5064.068	B	4	2.68	5.12	5-5	$z^3G^o-e^3G$
*5054.070	B	3	2.67	5.11	4-4	(294)
5068.332	B	3	2.65	5.09	3-3	
4908.46	P		2.68	5.20	5-4	$z^3G^o-g^3F$
4900.625	E	(7)	2.67	5.18	4-3	(295)
4900.03	P		2.65	5.17	3-2	
4127.531	A	15	2.68	5.67	5-6	$z^3G^o-f^3H$
4123.559	B	10	2.67	5.66	4-5	(296)
4122.143	A	10	2.65	5.64	3-4	
4149.445	B	(0)	2.68	5.66	5-5	
4142.480	B	2	2.67	5.64	4-4	
4032.628	B	3n	2.68	5.74	5-4	$z^3G^o-h^3F$ (297)
5259.976	B	3	2.73	5.07	2-3	$z^1D^o-e^1F$ (298)
4068.981	B	4n	2.73	5.76	2-3	$z^1D^o-f^1F$ (299)
5351.072	B	4	2.77	5.07	3-3	$z^1F^o-e^1F$ (300)
4224.795	B	5	2.77	5.69	3-4	$z^1F^o-e^1G$ (301)
4123.287	B	5n	2.77	5.76	3-3	$z^1F^o-f^1F$ (302)
3606.062	E	1	2.77	6.19	3-2	$z^1F^o-f^1D$ (303)
6098.655	B	7	3.05	5.07	4-3	$z^1G^o-e^1F$ (304)
4808.531	B	5	3.05	5.62	4-5	$z^1G^o-e^1H$ (305)
4688.392	B	3	3.08	5.71	1-2	$z^3S^o-e^3P$ (306)
7069.11	I	2	3.17	4.91	3-4	$y^3D^o-f^3P$
7039.36	E	(1)	3.14	4.89	2-3	(307)
7035.86	E	(2)	3.13	4.88	1-2	
7996.53	E	(3)	3.32	4.87	6-5	$y^5G^o-f^5F$
*7978.88	E	(4)	3.31	4.85	5-4	(308)
7961.58	E	(2)	3.29	4.84	4-3	
7943.93	E	(1n?)	3.28	4.83	3-2	
7926.37	E	(1)	3.27	4.83	2-1	
7909.34	P		3.30	4.87	5-5	
5804.265	A	5n	3.32	5.45	6-7	$y^5G^o-f^5H$
5785.979	A	5n	3.31	5.44	5-6	(309)
5774.037	A	5n	3.29	5.43	4-5	
5766.330	A	4n	3.28	5.42	3-4	
5762.295	B	4n	3.27	5.41	2-3	

Ti I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5832.47	H	(1)	3.32	5.44	6-6	$y^5G^o-f^5H$
5812.827	B	(1)	3.31	5.43	5-5	cont
5797.445	B	(1)	3.29	5.42	4-4	
5785.67	E	(1)	3.28	5.41	3-3	
10896.10	C	8	3.34	4.47	4-5	$x^3F^o-b^3G$ †
10820.31	C	5	3.32	4.46	3-4	(310)
10793.65	C	3	3.31	4.45	2-3	
5995.685	E	2	3.45	5.50	2-2	$y^1D^o-e^1D$ (311)
9506.04	D	25	3.57	4.87	5-5	$y^5F^o-f^5F$ †
9508.49	D	20	3.55	4.85	4-4	(312)
9510.81	D	12	3.54	4.84	3-3	
9511.80	D	8	3.54	4.83	2-2	
9511.55	D	10	3.53	4.83	1-1	
*8496.03	D	60	3.68	5.13	3-3	$a^1F-y^1F^o$ (313)
7214.97	H	(0)	3.68	5.39	3-4	$a^1F-v^1G^o$ (314)
10147.09	C	4	3.90	5.12	5-5	$w^3G^o-e^3G$
10119.20	C	3	3.89	5.11	4-4	(315)
10179.92	C	3	3.87	5.09	3-3	
5341.492	B	1	4.31	6.62	1-1	$y^1P^o-e^1P$ (316)

Strongest Unclassified Lines of Ti I

I A	Ref	Int	
11609.41	C	3	
11539.50	C	5	
11403.89	C	8	
11381.53	C	7	
11230.91	C	5	
10145.48	C	8	
9981.16	D	5	
8641.47	D	40	
8418.70	D	10	
6565.62	E	4	V
5369.635	A	4	III
4599.226	A	5	IV
4539.096	B	3	IV
4511.176	B	3	IV
4495.006	B	4	III
4129.166	B	4	III
4121.637	B	4	III
4027.426	B	4	IV
3985.246	B	3	III
3861.079	B	3n	IV?
3846.438	B	6n	IV
3836.763	B	5	IV
3833.674	B	4	III
3833.186	B	4	IV
3735.660	B	4n	IV
3715.371	B	3n	IV
3700.055	B	4n	IV
3644.699	E	4	IV
3633.458	E	5	IV
3631.999	E	3	IV
3585.852	E	4	III?
3556.184	E	3	IV
3507.426	E	3	IV
3459.431	E	3	III
3435.432	E	3	III
*3130.804§	A	15?	IV
3007.487	E	4N	IV

Ti II I P 13.6 Anal A List A Oct 1940

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3349.399//	A	125	0.05	3.73	4½-5½	$a^4F-z^4G^o$
3361.213	A	125	0.03	3.70	3½-4½	(1)
3372.800	C	100	0.01	3.67	2½-3½	
3383.761	A	125	0.00	3.65	1½-2½	
3380.278	A	30	0.05	3.70	4½-4½	
3387.834	A	50	0.03	3.67	3½-3½	
3394.574	A	40	0.01	3.65	2½-2½	
3407.205	C	3	0.05	3.67	4½-3½	
3409.809	C	4	0.03	3.65	3½-2½	
3234.517	A	75	0.05	3.86	4½-4½	$a^4F-z^4F^o$
3236.573	A	70	0.03	3.84	3½-3½	(2)
3239.037	A	60	0.01	3.82	2½-2½	
3241.984	A	60	0.00	3.81	1½-1½	
3254.250	C	30	0.05	3.84	4½-3½	
3252.914	C	40	0.03	3.82	3½-2½	
3251.911	C	30	0.01	3.81	2½-1½	
3217.056	A	30	0.03	3.86	3½-4½	
3222.843	A	35	0.01	3.84	2½-3½	
3229.193	C	40	0.00	3.82	1½-2½	
3214.750	C	4	0.05	3.89	4½-3½	$a^4F-z^2F^o$
3226.771	C	2	0.03	3.85	3½-2½	(3)
3197.518	C	2	0.03	3.89	3½-3½	
*3213.145§	C	1	0.01	3.85	2½-2½	
3184.09	C	2	0.01	3.89	2½-3½	
3203.435	C	3	0.00	3.85	1½-2½	
3143.756	C	10	0.03	3.95	3½-2½	$a^4F-z^2D^o$
3157.397	C	2	0.01	3.92	2½-1½	(4)
*3130.804§	A	15	0.01	3.95	2½-2½	
3148.033	A	12	0.00	3.92	1½-1½	
3121.598	C	1	0.00	3.95	1½-2½	

Ti II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	M
3088.027	A	75	0.05	4.05	4½-3½	a
3078.645	A	50	0.03	4.04	3½-2½	
3075.225	A	40	0.01	4.02	2½-1½	
3072.971	C	40	0.00	4.02	1½- ½	
3072.107	C	30	0.03	4.05	3½-3½	
3066.220	C	30	0.01	4.04	2½-2½	
3066.354	C	20	0.00	4.02	1½-1½	
*3059.741	C	4	0.01	4.05	2½-3½	
3057.395	C	10	0.00	4.04	1½-2½	
3444.306	A	30	0.15	3.73	4½-5½	b
3461.496	A	20	0.13	3.70	3½-4½	
3477.181	A	15	0.12	3.67	2½-3½	
3491.053	A	10	0.11	3.65	1½-2½	
3476.982	C	tr	0.15	3.70	4½-4½	
3489.739	C	2	0.13	3.67	3½-3½	
3500.340	C	2	0.12	3.65	2½-2½	
3505.45	P		0.15	3.67	4½-3½	
3513.09	F	tr	0.13	3.65	3½-2½	
3322.936	A	75	0.15	3.86	4½-4½	b
3329.455	A	70	0.13	3.84	3½-3½	
3335.192	A	40	0.12	3.82	2½-2½	
3340.344	A	35	0.11	3.81	1½-1½	
3343.770	C	10	0.15	3.84	4½-3½	
3346.724	D	15	0.13	3.82	3½-2½	
3348.844	C	10?	0.12	3.81	2½-1½	
3308.806	C	8	0.13	3.86	3½-4½	
3318.024	A	10	0.12	3.84	2½-3½	
3326.762	A	20	0.11	3.82	1½-2½	
3302.096	C	0	0.15	3.89	4½-3½	b
3319.063	C	(1)	0.13	3.85	3½-2½	
3288.142	C	0n	0.13	3.89	3½-3½	
3307.717	C	tr	0.12	3.85	2½-2½	
3276.998	C	tr	0.12	3.89	2½-3½	
m3299.44	P	Ti	0.11	3.85	1½-2½	
3231.315	C	4	0.13	3.95	3½-2½	b
3248.70	P		0.12	3.92	2½-1½	
3220.467	C	1	0.12	3.95	2½-2½	
3240.71	C	1	0.11	3.92	1½-1½	
3212.70	P		0.11	3.95	1½-2½	
3168.519	A	40	0.15	4.05	4½-3½	b
3162.570	C	35	0.13	4.04	3½-2½	
3161.755	A	30	0.12	4.02	2½-1½	
3161.205	C	25	0.11	4.02	1½- ½	
3155.670	C	12	0.13	4.05	3½-3½	
3152.251	C	15	0.12	4.04	2½-2½	
3154.195	C	12	0.11	4.02	1½-1½	
*3145.402	C	0	0.12	4.05	2½-3½?	
m3144.74	P	Ti^+	0.11	4.04	1½-2½	
3987.63	P		0.60	3.70	3½-4½	a
3981.998	B	tr	0.57	3.67	2½-3½	
4025.136	C	2	0.60	3.67	3½-3½	
4012.372	B	4	0.57	3.65	2½-2½	
4056.212	C	(1)	0.60	3.65	3½-2½	
3786.33	P		0.60	3.86	3½-4½	a
3774.650	C	(3n)	0.57	3.84	2½-3½	
3813.390	B	2	0.60	3.84	3½-3½	
3796.899	B	2n	0.57	3.82	2½-2½	
3836.085	B	1	0.60	3.82	3½-2½	
3814.580	B	4	0.57	3.81	2½-1½	
3759.291	A	200	0.60	3.89	3½-3½	a
3761.320	A	200	0.57	3.85	2½-2½	
3799.81	F	tr	0.60	3.85	3½-2½	
3721.632	B	15	0.57	3.89	2½-3½	
*3685.192	A	250	(0.60 0.57	3.95 3.92	3½-2½ 2½-1½	a
3649.01	P		0.57	3.95	2½-2½	
3587.130	C	12	0.60	4.05	3½-3½	a
3561.575	C	3	0.57	4.04	2½-2½	
3596.048	A	60	0.60	4.04	3½-2½	
3573.737	C	20	0.57	4.02	2½-1½	
3552.85	P		0.57	4.05	2½-3½	
3349.035	C	75	0.60	4.29	3½-4½	a
*3341.875§	A	100	0.57	4.26	2½-3½	
3372.208	C	10?	0.60	4.26	3½-3½	
4762.77	F	(1)	1.08	3.67	2½-3½	a
4798.535	C	(2)	1.08	3.65	1½-2½	
4806.33	P		1.08	3.65	2½-2½	
4469.160	C	tr	1.08	3.84	2½-3½	a
4493.53	C	(1)	1.08	3.82	1½-2½	
4500.32	P		1.08	3.82	2½-2½	
4518.30	P		1.08	3.81	1½-1½	
4525.21	P		1.08	3.81	2½-1½	
4395.031	A	60	1.08	3.89	2½-3½	a
4443.802	A	50	1.08	3.85	1½-2½	
4450.487	B	10	1.08	3.85	2½-2½	
4294.101	A	40	1.08	3.95	2½-2½	a
4337.916	A	50	1.08	3.92	1½-1½	
4344.291	B	2	1.08	3.92	2½-1½	
4287.893	B	2	1.08	3.95	1½-2½	
4161.524	B	1	1.08	4.05	2½-3½	a
4167.67	P		1.08	4.04	1½-2½	
4173.537	B	1	1.08	4.04	2½-2½	
4184.329	C	0	1.08	4.02	1½-1½	
4190.29	F	(1)	1.08	4.02	2½-1½	
4196.64	P		1.08	4.02	1½- ½	
3480.897	C	0	1.08	4.62	1½- ½	a

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atory Ref	Int	E P Low	E P High	J	Multiplet (No)
P	Ti$^+$	1.08	4.87	2½-2½	$a^2D-y^2D^\circ$
C	3	1.08	4.84	1½-1½	(23)
C	35	1.08	4.84	2½-1½	
C	2	1.08	4.87	1½-2½	
C	30	1.08	4.89	2½-1½	$a^2D-z^2P^\circ$
C	30	1.08	4.90	1½- ½	(24)
C	20	1.08	4.89	1½-1½	
C	3	1.08	4.94	2½-1½	$a^2D-z^4S^\circ$
C	2	1.08	4.94	1½-1½	(25)
C	30	1.08	4.95	2½-3½	$a^2D-y^2F^\circ$
A	40	1.08	4.93	1½-2½	(26)
C	1	1.08	4.93	2½-2½	
C	2	1.08	5.04	2½-3½	$a^2D-y^4D^\circ$
F	tr	1.08	5.01	1½-2½	(27)
P		1.08	5.01	2½-2½	
P		1.08	4.99	1½-1½	
P		1.08	4.99	2½-1½	
P		1.08	4.98	1½- ½	
F	1	1.08	5.21	2½-2½	$a^2D-z^4P^\circ$
P		1.08	5.19	1½-1½	(28)
P		1.08	5.19	2½-1½	
P		1.08	5.18	1½- ½	
P		1.08	5.21	1½-2½	
P		1.13	3.73	4½-5½	$a^2G-z^4G^\circ$
P		1.11	3.70	3½-4½	(29)
P		1.13	3.70	4½-4½	
P		1.11	3.67	3½-3½	
P		1.13	3.67	4½-3½	
C	tr	1.11	3.65	3½-2½	
P		1.13	3.86	4½-4½	$a^2G-z^4F^\circ$
P		1.11	3.84	3½-3½	(30)
C	tr	1.13	3.84	4½-3½	
P		1.11	3.82	3½-2½	
P		1.11	3.86	3½-4½	
A	50	1.13	3.89	4½-3½	$a^2G-z^2F^\circ$
A	40	1.11	3.85	3½-2½	(31)
B	1	1.11	3.89	3½-3½	
B	1	1.11	3.95	3½-2½	$a^2G-z^2D^\circ$ (32)
P		1.13	4.05	4½-3½	$a^2G-z^4D^\circ$
P		1.11	4.04	3½-2½	(33)
P		1.11	4.05	3½-3½	
A	70	1.13	4.29	4½-4½	$a^2G-z^2G^\circ$
A	60	1.11	4.26	3½-3½	(34)
B	2	1.13	4.26	4½-3½	
P		1.11	4.29	3½-4½	
C	4	1.11	4.87	3½-2½	$a^2G-y^2D^\circ$ (35)
A	35	1.13	4.95	4½-3½	$a^2G-y^2F^\circ$
C	30	1.11	4.93	3½-2½	(36)
P		1.11	4.95	3½-3½	
P		1.13	5.04	4½-3½	$a^2G-y^4D^\circ$
P		1.11	5.01	3½-2½	(37)
P		1.11	5.04	3½-3½	
P	Ti	1.18	3.84	2½-3½	$a^4P-z^4F^\circ$
C	(1)	1.16	3.82	1½-2½	(38)
P	Ti	1.16	3.81	½-1½	
P		1.18	3.82	2½-2½	
P		1.16	3.81	1½-1½	
P		1.18	3.81	2½-1½	
P		1.18	3.89	2½-3½	$a^4P-z^2F^\circ$
C	(1)	1.16	3.85	1½-2½	(39)
P		1.18	3.85	2½-2½	
P		1.18	3.95	2½-2½	$a^4P-z^2D^\circ$
B	tr	1.16	3.92	1½-1½	(40)
P		1.18	3.92	2½-1½	
B	40	1.16	3.95	1½-2½	
B	1	1.16	3.93	½-1½	
B	60	1.18	4.05	2½-3½	$a^4P-z^4D^\circ$
B	50	1.16	4.04	1½-2½	(41)
B	15	1.16	4.02	½-1½	
A	35	1.18	4.04	2½-2½	
A	40	1.16	4.02	1½-1½	
B	40	1.16	4.02	½- ½	
B	0	1.18	4.02	2½-1½	
B	1	1.16	4.02	1½- ½	
F	6	1.16	4.62	1½- ½	$a^4P-z^2S^\circ$
C	1	1.16	4.62	½- ½	(42)
C	tr	1.18	4.87	2½-2½	$a^4P-y^2D^\circ$
C	1	1.16	4.84	1½-1½	(43)
P		1.18	4.84	2½-1½	
F		1.16	4.87	1½-2½	
P		1.16	4.84	½-1½	
P	Ti$^+$	1.18	4.89	2½-1½	$a^4P-z^2P^\circ$
F	(2)	1.16	4.90	1½- ½	(44)
P	Ti	1.16	4.89	1½-1½	
F	(1)	1.16	4.90	½- ½	
C	tr	1.16	4.89	½-1½	
C	5	1.18	4.94	2½-1½	$a^4P-z^4S^\circ$
C	4	1.16	4.94	1½-1½	(45)
C	3	1.16	4.94	½-1½	
C	tr	1.18	5.04	2½-3½	$a^4P-y^4D^\circ$
P		1.16	5.01	1½-2½	(46)
P		1.16	4.99	½-1½	

Ti II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
m3218.26	P	Ti$^+$	1.18	5.01	2½-2½	$a^4P-y^4D^\circ$
3221.76	P		1.16	4.99	1½-1½	cont
3228.36	P		1.16	4.98	½- ½	
m3234.50	P	Ti$^+$	1.18	4.99	2½-1½	
3231.71	P		1.16	4.98	1½- ½	
3058.090	C	50	1.18	5.21	2½-2½	$a^4P-z^4P^\circ$
*3059.741	C	6	1.16	5.19	1½-1½	(47)
3063.502	C	4	1.16	5.18	½- ½	
3071.242	C	15	1.18	5.19	2½-1½	
3066.514	C	3	1.16	5.18	1½- ½	
3046.685	C	30	1.16	5.21	1½-2½	
3056.740	C	15	1.16	5.19	½-1½	
4764.535	C	(1)	1.23	3.82	1½-2½	$a^2P-z^4F^\circ$
4763.84	P		1.22	3.81	½-1½	(48)
4792.39	P		1.23	3.81	1½-1½	
4708.663	C	tr	1.23	3.85	1½-2½	$a^2P-z^2F^\circ$ (49)
4533.966	B	30	1.23	3.95	1½-2½	$a^2P-z^2D^\circ$
4563.761	A	30	1.22	3.92	½-1½	(50)
4589.961	B	2	1.23	3.92	1½-1½	
4399.767	A	35	1.23	4.04	1½-2½	$a^2P-z^4D^\circ$
4394.057	B	2	1.22	4.02	½-1½	(51)
4418.340	B	1	1.23	4.02	1½-1½	
4407.678	C	1	1.22	4.02	½- ½	
4432.089	C	tr	1.23	4.02	1½- ½	
3641.330	A	100	1.23	4.62	1½- ½	$a^2P-z^2S^\circ$
3624.826	A	70	1.22	4.62	½- ½	(52)
3388.755	C	8	1.23	4.87	1½-2½	$a^2P-y^2D^\circ$
3402.422	C	8	1.22	4.84	½-1½	(53)
3416.957	C	2	1.23	4.84	1½-1½	
3374.352	C	8	1.23	4.89	1½-1½	$a^2P-z^2P^\circ$
3352.071	C	5	1.22	4.90	½- ½	(54)
*3366.176§	C	8	1.23	4.90	1½- ½	
3360.16	P		1.22	4.89	½-1½	
3337.85	F	2	1.23	4.93	1½-2½	$a^2P-y^2F^\circ$ (55)
3326.68	P		1.23	4.94	1½-1½	$a^2P-z^4S^\circ$
3312.90	P		1.22	4.94	½-1½	(56)
3266.43	F	(1)	1.23	5.01	1½-2½	$a^2P-y^4D^\circ$
3269.77	F	(1)	1.22	4.99	½-1½	(57)
3283.14	P		1.23	4.99	1½-1½	
m3279.97	P	Ti$^+$	1.22	4.98	½- ½	
3293.48	P		1.23	4.98	1½- ½	
m3101.52	P	Ti	1.23	5.21	1½-2½	$a^2P-z^4P^\circ$
3102.975	C	2	1.22	5.19	½-1½	(58)
3115.088	C	1	1.23	5.19	1½-1½	
3109.92	P		1.22	5.18	½- ½	
3122.065	C	2	1.23	5.18	1½- ½	
4657.210	C	tr	1.24	3.89	2½-3½	$b^4P-z^2F^\circ$
4698.67	P		1.23	3.85	1½-2½	(59)
4719.515	C	(1)	1.24	3.85	2½-2½	
4544.009	C	tr	1.24	3.95	2½-2½	$b^4P-z^2D^\circ$
4580.458	C	(1)	1.23	3.92	1½-1½	(60)
4600.28	P		1.24	3.92	2½-1½	
4524.732	C	(1?)	1.23	3.95	1½-2½	
4568.312	C	(1)	1.22	3.92	½-1½	
4395.848	B	2	1.24	4.05	2½-3½	$b^4P-z^4D^\circ$
4390.977	B	tr	1.23	4.04	1½-2½	(61)
4398.314	C	(1)	1.22	4.02	½-1½	
4409.22	C	tr	1.24	4.04	2½-2½	
4409.519	C	tr	1.23	4.02	1½-1½	
4411.936	C	(1)	1.22	4.02	½- ½	
4427.90	P		1.24	4.08	2½-1½	
4423.22	P		1.23	4.02	1½- ½	
3635.36	P		1.23	4.62	1½- ½	$b^4P-z^2S^\circ$
3627.71	C	(1)	1.22	4.62	½- ½	(62)
3394.37	P		1.24	4.87	2½-2½	$b^4P-y^2D^\circ$
m3411.68	P	Ti	1.23	4.84	1½-1½	(63)
3422.661	C	(1)	1.24	4.84	2½-1½	
3383.57	P		1.23	4.87	1½-2½	
3404.97	C	(1)	1.22	4.84	½-1½	
3379.930	C	1n	1.24	4.89	2½-1½	$b^4P-z^2P^\circ$
m3361.07	P	Ti	1.23	4.90	1½- ½	(64)
3369.212	C	3	1.23	4.89	1½-1½	
3354.54	P		1.22	4.90	½- ½	
3362.653	C	1	1.22	4.89	½-1½	
3332.111	A	30	1.24	4.94	2½-1½	$b^4P-z^4S^\circ$
3321.700	C	25	1.23	4.94	1½-1½	(65)
3315.324	C	10	1.22	4.94	½-1½	
*3248.602§	C	50	1.24	5.04	2½-3½	$b^4P-y^4D^\circ$
*3261.596	A	60	1.23	5.01	1½-2½	(66)
3272.080	C	25	1.22	4.99	½-1½	
3271.652	C	25	1.24	5.01	2½-2½	
3278.290	C	30	1.23	4.99	1½-1½	
3282.329	C	25	1.22	4.98	½- ½	
3288.428	C	5	1.24	4.99	2½-1½	
3288.575	C	5	1.23	4.98	1½- ½	
3106.234	C	35	1.24	5.21	2½-2½	$b^4P-z^4P^\circ$
3110.620	C	20	1.23	5.19	1½-1½	(67)
3112.050	C	10	1.22	5.18	½- ½	
3119.800	C	15	1.24	5.19	2½-1½	
3117.669	C	20	1.23	5.18	1½- ½	
3097.186	C	25	1.23	5.21	1½-2½	
3105.084	C	20	1.22	5.19	½-1½	

Ti II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5446.46	P		1.57	3.84	2½-3½	$b^2D-z^4F^\circ$
5454.05	P		1.56	3.82	1½-2½	(68)
5492.82	P		1.57	3.82	2½-2½	
5490.65	P		1.56	3.81	1½-1½	
5529.94	P		1.57	3.81	2½-1½	
5336.809	B	4	1.57	3.89	2½-3½	$b^2D-z^2F^\circ$
5381.020	B	1	1.56	3.85	1½-2½	(69)
5418.802	B	0	1.57	3.85	2½-2½	
5188.700	C	6	1.57	3.95	2½-2½	$b^2D-z^2D^\circ$
5226.534	B	5	1.56	3.92	1½-1½	(70)
5262.104	C	0	1.57	3.92	2½-1½	
5154.061	B	0	1.56	3.95	1½-2½	
4995.89	P		1.57	4.05	2½-3½	$b^2D-z^4D^\circ$
4981.38	P		1.56	4.04	1½-2½	(71)
5013.712	C	tr	1.57	4.04	2½-2½	
5005.18	P		1.56	4.02	1½-1½	
5037.81	P		1.57	4.02	2½-1½	
m5022.82	P	Ti	1.56	4.02	1½- ½	
3741.633	B	50	1.57	4.87	2½-2½	$b^2D-y^2D^\circ$
3757.684	B	30	1.56	4.84	1½-1½	(72)
3776.062	B	6	1.57	4.84	2½-1½	
3723.631	C	tr	1.56	4.87	1½-2½	
3724.106	C	1	1.57	4.89	2½-1½	$b^2D-z^2P^\circ$
3696.39	C	(1)	1.56	4.90	1½- ½	(73)
3706.219	B	20	1.56	4.89	1½-1½	
3666.11	P		1.57	4.94	2½-1½	$b^2D-z^4S^\circ$
3648.80	P		1.56	4.94	1½-1½	(74)
3659.765	C	60	1.57	4.95	2½-3½	$b^2D-y^2F^\circ$
3662.237	C	40	1.56	4.93	1½-2½	(75)
3679.673	C	(3)	1.57	4.93	2½-2½	
3565.326	C	3	1.57	5.04	2½-3½	$b^2D-y^4D^\circ$
3576.38	F	(0n)	1.56	5.01	1½-2½	(76)
3593.093	C	2	1.57	5.01	2½-2½	
3586.55	C	tr	1.56	4.99	1½-1½	
3613.30	P		1.57	4.99	2½-1½	
3608.89	P		1.56	4.98	1½- ½	
3110.095	C	8	1.57	5.54	2½-2½	$b^2D-x^2D^\circ$
3096.424	C	2	1.56	5.54	1½-1½	(77)
3108.927	C	0	1.57	5.54	2½-1½	
3097.626	C	1	1.56	5.54	1½-2½	
3048.766	C	6	1.57	5.62	2½-1½	$b^2D-y^2P^\circ$
3043.851	C	5	1.56	5.61	1½- ½	(78)
3036.784	C	1	1.56	5.62	1½-1½	
5723.87	P		1.58	3.73	5½-5½	$a^2H-z^4G^\circ$
5781.73	P		1.56	3.70	4½-4½	(79)
5814.62	P		1.58	3.70	5½-4½	
5860.92	P		1.56	3.67	4½-3½	
5691.99	P		1.56	3.73	4½-5½	
5396.3	F	(1)	1.58	3.86	5½-4½	$a^2H-z^4F^\circ$
5422.47	F	(1)	1.56	3.84	4½-3½	(80)
5367.95	P		1.56	3.86	4½-4½	
5313.76	P		1.56	3.89	4½-3½	$a^2H-z^2F^\circ$ (81)
4549.622	A	60n	1.58	4.29	5½-4½	$a^2H-z^2G^\circ$
4571.971	A	50n	1.56	4.26	4½-3½	(82)
4529.465	C	1	1.56	4.29	4½-4½	
3648.86	C	(0)	1.56	4.95	4½-3½	$a^2H-y^2F^\circ$ (83)
3224.241	C	35	1.58	5.40	5½-4½	$a^2H-y^2G^\circ$
3218.270	C	25	1.56	5.40	4½-3½	(84)
3214.14	F	1	1.56	5.40	4½-4½	
3017.187	C	50	1.58	5.67	5½-5½	$a^2H-z^2H^\circ$
3029.730	C	35	1.56	5.64	4½-4½	(85)
3038.706	C	6	1.58	5.64	5½-4½	
3008.322	C	2	1.56	5.67	4½-5½	
5129.143	B	1	1.88	4.29	4½-4½	$b^2G-z^2G^\circ$
5185.90	B	2	1.88	4.26	3½-3½	(86)
5183.72	C	tr	1.88	4.26	4½-3½	
5131.28	P		1.88	4.29	3½-4½	
4028.332	B	7	1.88	4.95	4½-3½	$b^2G-y^2F^\circ$
4053.814	B	3	1.88	4.93	3½-2½	(87)
4029.64	P		1.88	4.95	3½-3½	
3504.890	A	80	1.88	5.40	4½-4½	$b^2G-y^2G^\circ$
3510.840	A	60	1.88	5.40	3½-3½	(88)
3509.844	C	3	1.88	5.40	4½-3½	
3505.901	C	tr	1.88	5.40	3½-4½	
*3261.596	A	60	1.88	5.67	4½-5½	$b^2G-z^2H^\circ$
3287.657	A	40	1.88	5.64	3½-4½	(89)
3286.756	C	0	1.88	5.64	4½-4½	
3103.804	C	50	1.88	5.86	4½-3½	$b^2G-x^2F^\circ$
3089.401	C	15	1.88	5.88	3½-2½	(90)
3104.593	C	3	1.88	5.86	3½-3½	
6491.61	P	(2)	2.05	3.95	1½-2½	$b^2P-z^2D^\circ$
6559.580	C	(1)	2.04	3.92	½-1½	(91)
6607.02	P		2.05	3.92	1½-1½	
4805.105	B	2	2.05	4.62	1½- ½	$b^2P-z^2S^\circ$
4779.986	B	1	2.04	4.62	½- ½	(92)
4374.825	B	1	2.05	4.87	1½-2½	$b^2P-y^2D^\circ$
m4400.63	P	Ti	2.04	4.84	½-1½	(93)
4421.949	B	1	2.05	4.84	1½-1½	

Ti II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4350.834	C	1	2.05	4.89	1½-1½	$b^2P-z^2P^\circ$
4316.807	B	1	2.04	4.90	½-½	(94)
4337.33	C	(1)	2.05	4.90	1½-½	
4330.264	B	0	2.04	4.89	½-1½	
4271.94	P		2.05	4.94	1½-1½	$b^2P-z^4S^\circ$
4252.05	P		2.04	4.94	½-1½	(95)
4173.05	P		2.05	5.01	1½-2½	$b^2P-y^4D^\circ$
4181.17	P		2.04	4.99	½-1½	(96)
4200.40	P		2.05	4.99	1½-1½	
4197.95	P		2.04	4.98	½-½	
4217.34	P		2.05	4.98	1½-½	
3907.65	P		2.05	5.21	1½-2½	$b^2P-z^4P^\circ$
3912.32	P		2.04	5.19	½-1½	(97)
3929.15	P		2.05	5.19	1½-1½	
3923.39	P		2.04	5.18	½-½	
3940.32	P		2.05	5.18	1½-½	
3535.408	A	40	2.05	5.54	1½-2½	$b^2P-x^2D^\circ$
3520.253	C	20	2.04	5.54	½-1½	(98)
3533.868	C	2	2.05	5.54	1½-1½	
3456.390	C	20	2.05	5.62	1½-1½	$b^2P-y^2P^\circ$
3452.470	C	4	2.04	5.61	½-½	(99)
3465.562	C	3	2.05	5.61	1½-½	
3443.387	C	1	2.04	5.62	½-1½	
8979.34	P		2.58	3.95	3½-2½	$b^2F-z^2D^\circ$
9252.67	P		2.59	3.92	2½-1½	(100)
9027.90	P		2.59	3.95	2½-2½	
7214.78	P		2.58	4.29	3½-4½	$b^2F-z^2G^\circ$
7355.46	P		2.59	4.26	2½-3½	(101)
7323.20	P		2.58	4.26	3½-3½	
5379.19	P		2.58	4.87	3½-2½	$b^2F-y^2D^\circ$
5468.44	P		2.59	4.84	2½-1½	(102)
5396.59	P		2.59	4.87	2½-2½	
5211.544	C	0	2.58	4.95	3½-3½	$b^2F-y^2F^\circ$
5268.62	C	1	2.59	4.93	2½-2½	(103)
5252.04	P		2.58	4.93	3½-2½	
5227.87	P		2.59	4.95	2½-3½	
4367.657	B	15	2.58	5.40	3½-4½	$b^2F-y^2G^\circ$
4386.858	B	10	2.59	5.40	2½-3½	(104)
4375.35	P		2.58	5.40	3½-3½	
4163.644	A	40	2.58	5.54	3½-2½	$b^2F-x^2D^\circ$
4171.897	A	30	2.59	5.54	2½-1½	(105)
*4174.088§	B	(2)	2.59	5.54	2½-2½	
4064.350	B	(1)	2.59	5.62	2½-1½	$b^2F-y^2P^\circ$ (106)
3761.866	B	15	2.58	5.86	3½-3½	$b^2F-x^2F^\circ$
3748.010	B	10	2.59	5.88	2½-2½	(107)
3739.6	F	tr	2.58	5.88	3½-2½	
3770.412	C	(1)	2.59	5.86	2½-3½	
6212.30	F	(1)	2.63	4.62	½-½	$a^2S-z^2S^\circ$ (108)
5473.517	B	(1)	2.63	4.89	½-1½	$a^2S-z^2P^\circ$
5452.03	F	(1)	2.63	4.90	½-½	(109)
4822.39	P		2.63	5.19	½-1½	$a^2S-z^4P^\circ$
4839.251	C	(1)	2.63	5.18	½-½	(110)
3144.730	C	1	2.63	6.56	½-1½	$a^2S-x^2P^\circ$
*3145.402	C	0	2.63	6.56	½-½	(111)
6717.911	C	(1n)	3.11	4.95	2½-3½	$c^2D-y^2F^\circ$
6680.26	F	(1)	3.08	4.93	1½-2½	(112)
6785.25	P		3.11	4.93	2½-2½	
5072.30	E	2	3.11	5.54	2½-2½	$c^2D-x^2D^\circ$
5010.202	C	tr	3.08	5.54	1½-1½	(113)
5069.12	F	tr	3.11	5.54	2½-1½	
5013.38	P		3.08	5.54	1½-2½	
4911.205	B	0	3.11	5.62	2½-1½	$c^2D-y^2P^\circ$
4874.025	B	tr	3.08	5.61	1½-½	(114)
4855.95	P		3.08	5.62	1½-1½	
4488.319	B	15	3.11	5.86	2½-3½	$c^2D-x^2F^\circ$
4411.080	B	15	3.08	5.88	1½-2½	(115)
4456.650	C	tr	3.11	5.86	2½-2½	
3644.87	P		3.11	6.50	2½-3½	$c^2D-x^4D^\circ$
3633.99	P		3.08	6.48	1½-2½	(116)
3664.86	P		3.11	6.48	2½-2½	
3635.64	P		3.08	6.48	1½-1½	
3666.592	C	(0n)	3.11	6.48	2½-1½	
3652.81	P		3.08	6.46	1½-½	
3578.687	C	(0)	3.11	6.56	2½-1½	$c^2D-x^2P^\circ$
3550.19	P		3.08	6.56	1½-½	(117)
3549.27	P		3.08	6.56	1½-1½	
3524.87	C	tr	3.11	6.61	2½-2½	$c^2D-w^2D^\circ$
3491.19	P		3.08	6.62	1½-1½	(118)
3519.67	P		3.11	6.62	2½-1½	
3496.29	P		3.08	6.61	1½-2½	
3090.051	C	8n	3.73	7.73	5½-4½	$z^4G^\circ-e^4F$
3081.575	C	5n	3.70	7.70	4½-3½	(119)
3072.54	E	(0n)	3.67	7.69	3½-2½	
3063.280	C	2	3.65	7.68	2½-1½	
3194.56	C	8n?	3.86	7.73	4½-4½	$z^4F^\circ-e^4F$
3194.26	C	5n?	3.84	7.70	3½-3½	(120)
3192.68	C	4n	3.82	7.69	2½-2½	
3189.52	C	5n	3.81	7.68	1½-1½	
3213.59	E	tr	3.86	7.70	4½-3½	

Ti II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3208.607	C	1n	3.84	7.69	3½-2½	$z^4F^\circ-e^4F$
3175.66	C	2n	3.84	7.73	3½-4½	cont
3178.630	C	3n	3.82	7.70	2½-3½	
3180.225	C	2n	3.81	7.69	1½-2½	
*3128.640§	C	10n	3.89	7.83	3½-3½	$z^2F^\circ-e^2F$
3127.883	C	10n	3.85	7.80	2½-2½	(121)
3155.91	P		3.89	7.80	3½-2½	
3181.84	C	8n	3.95	7.83	2½-3½	$z^2D^\circ-e^2F$
3182.57	C	6n	3.92	7.80	1½-2½	(122)
2990.16	C	10	3.95	8.08	2½-3½	$z^2D^\circ-f^2F$
2979.199	C	10	3.92	8.06	1½-2½	(123)
3351.67	C	1n	4.05	7.73	3½-4½	$z^4D^\circ-e^4F$
3364.9	F	1n	4.04	7.70	2½-3½	(124)
3369.67	E	0n	4.02	7.69	1½-2½	
3483.80	C	4n	4.29	7.83	4½-3½	$z^2G^\circ-e^2F$
3492.39	F	3n	4.26	7.80	3½-2½	(125)
3459.03	F	(0n)	4.26	7.83	3½-3½	
3022.820	C	15	4.29	8.37	4½-4½	$z^2G^\circ-e^2G$
3023.86	C	12	4.26	8.35	3½-3½	(126)
3414.02	F	(0)	5.04	8.53	3½-4½	$y^4D^\circ-f^4F$ (127)

Strongest Unclassified Lines of Ti II

I A	Ref	Int
3194.76	C	6n?
3174.80	C	5
3164.91	F	8 V^+ ?
3045.085	C	5n

Ti IV I P 43.06 Anal A List A Dec 1940

I A	Ref	Int	Low	High	J	Multiplet
5398.82	A	8	26.22	28.51	½-1½	$5^2S-5^2P^\circ$
5492.43	A	6	26.22	28.47	½-½	
3576.44	A	4	28.51	31.96	1½-2½	$5^2P^\circ-5^2D$
3541.44	A	3	28.47	31.95	½-1½	
4397.37	A	2	29.15	31.96	3½-2½	$4^2F^\circ-5^2D$
4403.54	A	2	29.15	31.95	2½-1½	
*4647.40	A	3	(34.38 34.38	37.04 37.04	4½-5½) 3½-4½	$5^2G-6^2H^\circ$

V I I P 6.71 Anal A List C Nov 1940

I A	Ref	Int	Low	High	J	Multiplet
5632.469	A	1	0.07	2.26	4½-3½	$a^4F-z^6D^\circ$
*5592.962	A	1	0.04	2.25	3½-2½	(1)
5557.453	A	1	0.02	2.24	2½-1½	
5527.72	A	(1)	0.00	2.23	1½-½	
5560.548	C	(3)	0.04	2.26	3½-3½	
5535.382	A	(1)	0.02	2.25	2½-2½	
5515.371	B	(4)	0.00	2.24	1½-1½	
5515.083	A	1	0.07	2.31	4½-5½	$a^4F-z^6F^\circ$ †
5496.020	B	(3)	0.04	2.29	3½-4½	(2)
5482.471	B	(1)	0.02	2.27	2½-3½	
4881.554	A	50w	0.07	2.60	4½-3½	$a^4F-z^4D^\circ$
4875.462	A	40w	0.04	2.57	3½-2½	(3)
4864.741	A	40w	0.02	2.55	2½-1½	
4851.483	A	40w	0.00	2.54	1½-½	
4827.458	A	30	0.04	2.60	3½-3½	
4831.642	A	35	0.02	2.57	2½-2½	
4832.427	A	30	0.00	2.55	1½-1½	
4784.480	A	5	0.02	2.60	2½-3½	
4799.786	A	5	0.00	2.57	1½-2½	
4594.103	A	60w	0.07	2.75	4½-5½	$a^4F-z^4G^\circ$
4586.364	A	50w	0.04	2.73	3½-4½	(4)
4580.394	A	40w	0.02	2.71	2½-3½	
4577.173	A	40w	0.00	2.70	1½-2½	
4635.176	A	15	0.07	2.73	4½-4½	
4619.771	A	25	0.04	2.71	3½-3½	
4606.146	A	15	0.02	2.70	2½-2½	
4669.273	B	(2)	0.07	2.71	4½-3½	
4645.971	A	1	0.04	2.70	3½-2½	
4352.872	C	50w	0.07	2.90	4½-4½	$a^4F-z^4F^\circ$
4341.013	C	40w	0.04	2.88	3½-3½	(5)
4332.823	C	30w	0.02	2.87	2½-2½	
4330.024	C	30w	0.00	2.85	1½-1½	
*4384.722	C	125r	0.07	2.88	4½-3½	
4368.042	C	10	0.04	2.87	3½-2½	
4355.943	C	10	0.02	2.85	2½-1½	
4309.795	C	20	0.04	2.90	3½-4½	
4306.214	C	15	0.02	2.88	2½-3½	
4307.184	C	12	0.00	2.87	1½-2½	
*4234.000	C	12	0.04	2.95	3½-2½	$a^4F-z^2D^\circ$
4259.312	C	8	0.02	2.91	2½-1½	(6)
4300.89	G	1	0.02	2.95	2½-2½	
*4234.524§	C	8	0.00	2.91	1½-1½	
4176.793	B	(3)	0.00	2.95	1½-2½	
3902.250	C	50r	0.07	3.23	4½-4½	$a^4F-y^4F^\circ$
3875.075	C	35	0.04	3.22	3½-3½	(7)
3864.862	C	35	0.02	3.21	2½-2½	
3855.370	C	30	0.00	3.20	1½-1½	
*3909.894	C	20	0.07	3.22	4½-3½	
3892.859	C	25	0.04	3.21	3½-2½	
3875.902	C	20	0.02	3.20	2½-1½	

V I continued

Laboratory I A	Ref	Int	E P Low	High	J	Mu
3867.602	C	15	0.04	3.23	3½-4½	a^4
*3847.323§	E	20	0.02	3.22	2½-3½	
3844.438	C	20	0.00	3.21	1½-2½	
3876.086	C	20	0.07	3.25	4½-4½	a^4
3890.184	C	25	0.04	3.21	3½-3½	
*3925.240	C	10	0.07	3.21	4½-3½	
3841.890	C	5	0.04	3.25	3½-4½	
3862.223	C	12	0.02	3.21	2½-3½	
3855.841	C	60r	0.07	3.27	4½-3½	a^4
3840.752	C	60r	0.04	3.25	3½-2½	
3828.559	C	60r	0.02	3.24	2½-1½	
3818.244	C	60	0.00	3.23	1½-½	
3822.009	C	30	0.04	3.27	3½-3½	
3813.492	C	60	0.02	3.25	2½-2½	
3808.521	C	40	0.00	3.24	1½-1½	
*3794.964	C	50	0.02	3.27	2½-3½	
3793.614	C	8	0.00	3.25	1½-2½	
3817.844	C	8	0.07	3.30	4½-4½	a^4
3803.902	C	6	0.04	3.28	3½-3½	
3791.326	C	2	0.02	3.27	2½-2½	
*3781.393	C	3	0.00	3.26	1½-1½	
3713.957	C	5	0.07	3.39	4½-3½	a^4
3721.358	C	3	0.04	3.36	3½-2½	
3298.139	C	15	0.07	3.81	4½-5½	a^4
3283.311	C	15	0.04	3.80	3½-4½	
3271.637	C	12	0.02	3.79	2½-3½	
3263.238	C	15	0.00	3.78	1½-2½	
3308.246	C	3	0.07	3.80	4½-4½	
3291.676	C	4	0.04	3.79	3½-3½	
3277.939	C	5	0.02	3.78	2½-2½	
3249.566	C	10	0.07	3.87	4½-4½	a^4
3230.646	C	6	0.04	3.86	3½-3½	
3215.375	C	4	0.02	3.86	2½-2½	
3204.196	C	3	0.00	3.85	1½-1½	
*3254.773§	E	10	0.07	3.86	4½-3½	
3185.396	C	200R	0.07	3.94	4½-5½	a^4
3183.96	F	(125R)	0.04	3.92	3½-4½	
3183.406	C	150R	0.02	3.89	2½-3½	
3183.982	C	(150R)	0.00	3.88	1½-2½	
3207.410	C	20	0.07	3.92	4½-4½	
3202.381	C	25	0.04	3.89	3½-3½	
3198.012	C	20	0.02	3.88	2½-2½	
3226.106	C	4	0.07	3.89	4½-3½	
*3217.121§	E	10	0.04	3.88	3½-2½	
3091.437	C	20	0.07	4.06	4½-3½	a^4
3091.552	D	15	0.04	4.03	3½-2½	
3093.24	F	6?	0.02	4.01	2½-1½	
3090.40	F	(1)	0.00	3.99	1½-½	
3069.645	C	30r	0.04	4.06	3½-3½	
*3073.823	C	60r	0.02	4.03	2½-2½	
3080.146	C	6	0.00	4.01	1½-1½	
3052.194	C	20	0.02	4.06	2½-3½	
3060.93	C	2	0.00	4.03	1½-2½	
3063.734	C	12	0.02	4.05	2½-1½	a^4
3054.89	F	1	0.00	4.04	1½-½	
3050.890	C	35r	0.00	4.05	1½-1½	
3066.375	C	125R	0.07	4.09	4½-4½	a^4
3060.460	C	125R	0.04	4.07	3½-3½	
3056.334	C	100R	0.02	4.06	2½-2½	
3053.65	F	80R	0.00	4.04	1½-1½	
3082.109	B	50r	0.07	4.07	4½-3½	
*3073.823	C	60r	0.04	4.06	3½-2½	
3066.51	F	20	0.02	4.04	2½-1½	
3044.936	C	50r	0.04	4.09	3½-4½	
3043.124	C	50r	0.02	4.07	2½-3½	
*3043.555§	C	50r	0.00	4.06	1½-2½	
2977.539	C	25r	0.07	4.21	4½-3½	a^4
2962.772	C	30r	0.04	4.21	3½-2½	
2954.332	C	20	0.02	4.19	2½-1½	
2957.33	C	10?	0.04	4.21	3½-3½	
6243.11	A	30	0.30	2.28	4½-4½	a^6
6251.83	A	30	0.29	2.26	3½-3½	
6256.906	A	8	0.27	2.25	2½-2½	
6258.595	A	8	0.26	2.23	½-½	
6296.518	A	15	0.30	2.26	4½-3½	
6292.858	A	20	0.29	2.25	3½-2½	
6285.185	A	20	0.27	2.24	2½-1½	
6274.670	A	15	0.27	2.23	1½-½	
6199.202	A	30	0.29	2.28	3½-4½	
6216.368	A	30	0.27	2.26	2½-3½	
6230.736	A	30	0.27	2.25	1½-2½	
6242.80	A	15	0.26	2.24	½-1½	
6150.132	A	15	0.30	2.31	4½-5½	a^6
6170.340	A	8	0.29	2.29	3½-4½	
6189.350	A	3	0.27	2.27	2½-3½	
6207.251	A	(5)	0.27	2.25	1½-2½	
6224.26	P		0.26	2.24	½-1½	
6213.874	A	15	0.30	2.29	4½-4½	
6224.507	A	15	0.29	2.27	3½-3½	
6233.187	A	12	0.27	2.25	2½-2½	
6240.137	A	6	0.27	2.24	1½-1½	
6245.214	A	2	0.26	2.24	½-½	
*6268.841	A	8	(0.30 0.29	2.27 2.25	4½-3½ 3½-2½	
6266.32	A	7	0.27	2.24	2½-1½	
6261.236	A	5	0.27	2.24	1½-½	
4460.292	C	50	0.30	3.07	4½-3½	a^6
4459.760	C	30	0.29	3.05	3½-2½	
4457.479	C	15	0.27	3.04	2½-1½	
4437.837	C	20	0.29	3.07	3½-3½	
4441.683	C	25	0.27	3.05	2½-2½	
4444.207	C	20	0.27	3.04	1½-1½	
4419.935	C	12	0.27	3.07	2½-3½	
4428.515	C	15	0.27	3.05	1½-2½	
4436.138	C	15	0.26	3.04	½-1½	

REVISED MULTIPLET TABLE

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aboratory	Ref	Int	E P Low	E P High	J	Multiplet (No)
38//	C	150rw	0.30	3.12	4½-5½	$a^{6}D-y^{6}F^{\circ}$
22	C	125r	0.29	3.10	3½-4½	(22)
74	C	100	0.27	3.09	2½-3½	
28	C	80	0.27	3.07	1½-2½	
75	C	60	0.26	3.07	½-1½	
41	C	80	0.30	3.10	4½-4½	
37	C	70	0.29	3.09	3½-3½	
04	C	70	0.27	3.07	2½-2½	
11	C	90	(0.27	3.07	1½-1½	
			0.26	3.06	½-½	
96	C	15	0.30	3.09	4½-3½	
05	C	20	0.29	3.07	3½-2½	
73	C	20	0.27	3.07	2½-1½	
74	C	20	0.27	3.06	1½-½	
4	G	1	0.29	3.10	3½-2½	$a^{6}D-z^{4}P^{\circ}$ †
11	C	4	0.27	3.08	2½-1½	(23)
25	C	5	0.27	3.10	2½-2½	
74	C	5	0.27	3.08	1½-1½	
57	C	20	0.30	3.23	4½-4½	$a^{6}D-y^{4}F^{\circ}$ †
11	C	4	0.29	3.22	3½-3½	(24)
10	C	4	0.30	3.22	4½-3½	
1	G	2	0.29	3.21	3½-2½	
41	C	12	0.29	3.23	3½-4½	
91	C	10	0.27	3.22	2½-3½	
58	C	10	0.27	3.21	1½-2½	
19	C	15	0.30	3.25	4½-4½	$a^{6}D-z^{2}G^{\circ}$ †
86	C	8	0.29	3.25	3½-4½	(25)
86	C	3	0.29	3.27	3½-3½	$a^{6}D-y^{4}D^{\circ}$ †
6	G	2	0.27	3.25	2½-2½	(26)
59	C	2	0.27	3.24	1½-1½	
28	C	2	0.26	3.23	½-½	
85	C	100R	0.30	3.30	4½-4½	$a^{6}D-y^{6}D^{\circ}$
85	C	60	0.29	3.28	3½-3½	(27)
70	C	50	0.27	3.27	2½-2½	
03	C	4	0.27	3.26	1½-1½	
0	P		0.26	3.26	½-½	
88	C	60	0.30	3.28	4½-3½	
17	C	60	0.29	3.27	3½-2½	
71	C	60	0.27	3.26	2½-1½	
66	C	60	0.27	3.26	1½-½	
94	C	50	0.29	3.30	3½-4½	
96	C	60	0.27	3.28	2½-3½	
67	C	60	0.27	3.27	1½-2½	
86	C	50	0.26	3.26	½-1½	
64	C	50	0.30	3.55	4½-4½	$a^{6}D-x^{6}D^{\circ}$
74	C	25	0.29	3.53	3½-3½	(28)
97	C	15	0.27	3.51	2½-2½	
5	P	V	0.27	3.50	1½-1½	
14	C	10	0.26	3.50	½-½	
63	C	15	0.30	3.53	4½-3½	
88	C	15	0.29	3.51	3½-2½	
13	C	15	0.27	3.50	2½-1½	
87	C	15	0.27	3.50	1½-½	
84	C	25	0.29	3.55	3½-4½	
24	C	20	0.27	3.53	2½-3½	
12	C	25	0.27	3.51	1½-2½	
05	C	20	0.26	3.50	½-1½	
84	C	100	0.30	3.63	4½-3½	$a^{6}D-y^{6}P^{\circ}$
99	C	60	0.29	3.62	3½-2½	(29)
35	C	30	0.27	3.61	2½-1½	
69	C	50	0.29	3.63	3½-3½	
25	C	50	0.27	3.62	2½-2½	
65	C	40	0.27	3.61	1½-1½	
00	C	20	0.27	3.63	2½-3½	
26	C	30	0.27	3.62	1½-2½	
81	C	40	0.26	3.61	½-1½	
0	A	200W	1.08	2.60	3½-3½	$a^{4}D-z^{4}D^{\circ}$
6	A	150w	1.06	2.57	2½-2½	(30)
3	A	100	1.05	2.55	1½-1½	
7	A	80	1.04	2.54	½-½	
1	A	100w	1.08	2.57	3½-2½	
0	A	100	1.06	2.55	2½-1½	
1	A	60	1.05	2.54	1½-½	
6	A	100w	1.06	2.60	2½-3½	
8	A	100w	1.05	2.57	1½-2½	
8	A	50	1.04	2.55	½-1½	
0	A	80w	1.08	2.90	3½-4½	$a^{4}D-z^{4}F^{\circ}$
9	A	60	1.06	2.88	2½-3½	(31)
8	A	40	1.05	2.87	1½-2½	
0	A	20	1.04	2.85	½-1½	
4	A	10	1.08	2.88	3½-3½	
4	A	10	1.06	2.87	2½-2½	
9	A	7	1.05	2.85	1½-1½	
7	A	2	1.05	2.95	1½-2½	$a^{4}D-z^{2}D^{\circ}$ †
6	A	2	1.04	2.91	½-1½	(32)
2	A	(1)	1.08	3.10	3½-4½	$a^{4}D-y^{6}F^{\circ}$ †
4	P		1.06	3.09	2½-3½	(33)
85	A	1	1.05	3.07	1½-2½	
73	A	(3)	1.04	3.07	½-1½	
09	B	(1)	1.06	3.07	2½-1½	
0	A	2	1.05	3.06	1½-½	
84	A	50	1.08	3.10	3½-2½	$a^{4}D-z^{4}P^{\circ}$
05	A	40	1.06	3.08	2½-1½	(34)
6	A	15	1.05	3.06	1½-½	
90	A	25	1.06	3.10	2½-2½	
21	A	25	1.05	3.08	1½-1½	
22	A	25	1.04	3.06	½-½	
01	A	4	1.05	3.10	1½-2½	
13	A	5	1.04	3.08	½-1½	
24	A	60	1.08	3.23	3½-4½	$a^{4}D-y^{4}F^{\circ}$
09	A	60	1.06	3.22	2½-3½	(35)
62	A	40	1.05	3.21	1½-2½	
73	A	30	1.04	3.20	½-1½	

V I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5743.438	A	18	1.08	3.22	3½-3½	$a^{4}D-y^{4}F^{\circ}$
5737.040	A	25	1.06	3.21	2½-2½	cont
5727.662	A	20	1.05	3.20	1½-1½	
*5782.601	A	2	1.08	3.21	3½-2½	
5761.411	A	2	1.06	3.20	2½-1½	
5670.827	A	30w	1.08	3.25	3½-4½	$a^{4}D-z^{2}G^{\circ}$
5731.257	A	30	1.06	3.21	2½-3½	(36)
5776.670	A	4	1.08	3.21	3½-3½	
5627.628	A	30	1.08	3.27	3½-3½	$a^{4}D-y^{4}D^{\circ}$
5624.605	A	20	1.06	3.25	2½-2½	(37)
5624.895	A	10	1.05	3.24	1½-1½	
5626.014	A	8	1.04	3.23	½-½	
5668.369	A	12	1.08	3.25	3½-2½	
5657.449	A	12	1.06	3.24	2½-1½	
5646.112	A	10	1.05	3.23	1½-½	
5584.490	A	10	1.06	3.27	2½-3½	
5592.409	A	12	1.05	3.25	1½-2½	
5604.943	A	8	1.04	3.24	½-1½	
5547.080	A	8	1.08	3.30	3½-4½	$a^{4}D-y^{6}D^{\circ}$ †
5545.933	A	2	1.06	3.28	2½-3½	(38)
5544.865	C	(1)	1.05	3.27	1½-2½	
4670.483	A	25w	1.08	3.72	3½-2½	$a^{4}D-y^{4}P^{\circ}$
4646.396	A	15w	1.06	3.72	2½-1½	(39)
4640.062	A	8	1.05	3.71	1½-½	
4640.735	A	7w	1.06	3.72	2½-2½	
4624.404	A	8	1.05	3.72	1½-1½	
4626.480	A	7	1.04	3.71	½-½	
4618.800	A	(2)	1.05	3.72	1½-2½	
4610.925	A	2	1.04	3.72	½-1½	
4423.212	C	8	1.08	3.87	3½-4½	$a^{4}D-x^{4}F^{\circ}$ †
*4406.147	C	6	1.06	3.86	2½-3½	(40)
4393.835	C	4	1.05	3.86	1½-2½	
4387.213	C	3	1.04	3.85	½-1½	
4090.579	C	25	1.08	4.09	3½-4½	$a^{4}D-w^{4}F^{\circ}$ †
4095.486	C	25	1.06	4.07	2½-3½	(41)
4102.159	C	20	1.05	4.06	1½-2½	
m4109.81	P	V	1.04	4.04	½-1½	
4118.643	C	8	1.08	4.07	3½-3½	
4119.457	C	8	1.06	4.06	2½-2½	
4120.538	C	8	1.05	4.04	1½-1½	
3934.013	C	20	1.08	4.21	3½-3½	$a^{4}D-w^{4}D^{\circ}$
3922.431	C	12	1.06	4.21	2½-2½	(42)
3920.487	C	5	1.05	4.19	1½-1½	
*3912.207	C	10	1.04	4.19	½-½	
3943.664	C	12	1.08	4.21	3½-2½	
3936.282	C	5	1.06	4.19	2½-1½	
3921.905	C	6	1.05	4.19	1½-½	
3912.886	C	4	1.06	4.21	2½-3½	
*3906.748	C	6	1.05	4.21	1½-2½	
3910.790	C	5	1.04	4.19	½-1½	
*3872.748	C	4n	1.08	4.26	3½-4½	$a^{4}D-v^{4}F^{\circ}$
3875.426	C	3	1.06	4.24	2½-3½	(43)
3891.227	B	2	1.05	4.22	1½-2½	
3902.558	C	3	1.04	4.20	½-1½	
*3896.155§	E	6	1.08	4.24	3½-3½	
*3906.748	C	6	1.06	4.22	2½-2½	
*3912.207	C	10	1.05	4.20	1½-1½	
m3840.44	P	Fe	1.08	4.29	3½-3½	$a^{4}D-v^{4}D^{\circ}$
3839.002	C	10	1.06	4.27	2½-2½	(44)
3836.054	C	5	1.05	4.26	1½-1½	
3835.560	C	4	1.04	4.26	½-½	
3859.341	C	6	1.08	4.27	3½-2½	
3851.171	C	5	1.06	4.26	2½-1½	
3844.892	C	4	1.05	4.26	1½-½	
3820.299	B	(4)	1.06	4.29	2½-3½	
3823.990	C	5	1.05	4.27	1½-2½	
3826.774	C	6	1.04	4.26	½-1½	
3583.704	C	8	1.08	4.52	3½-2½	$a^{4}D-x^{4}P^{\circ}$ †
3540.530	C	1	1.06	4.54	2½-1½	(45)
3542.657	C	1	1.05	4.53	1½-½	
*3566.177§	E	4	1.06	4.52	2½-2½	
3400.395	C	12	1.08	4.71	3½-3½	$a^{4}D-t^{4}D^{\circ}$ †
3402.571	C	9	1.06	4.69	2½-2½	(46)
3405.160	C	6	1.05	4.67	1½-1½	
3406.837	C	6	1.04	4.66	½-½	
3002.65	C	8	1.08	5.19	3½-2½	$a^{4}D-v^{4}P^{\circ}$ †
3004.824	C	10	1.06	5.17	2½-1½	(47)
6531.44	A	15	1.21	3.10	2½-2½	$a^{4}P-z^{4}P^{\circ}$
6543.51	A	5	1.19	3.08	1½-1½	(48)
6565.88	A	3	1.18	3.06	½-½	
6624.86	A	7	1.21	3.08	2½-1½	
6605.98	A	10	1.19	3.06	1½-½	
6452.354	A	10	1.19	3.10	1½-2½	
6504.164	A	9	1.18	3.08	½-1½	
6002.273	A	2	1.21	3.27	2½-3½	$a^{4}P-y^{4}D^{\circ}$
5980.748	A	2	1.19	3.25	1½-2½	(49)
5984.602	A	1	1.18	3.24	½-1½	
6048.636	A	tr	1.21	3.25	2½-2½	
6017.90	A	tr	1.19	3.24	1½-1½	
6008.648	A	tr	1.18	3.23	½-½	
6086.55	A	(2)	1.21	3.24	2½-1½	
4925.657	A	10	1.21	3.72	2½-2½	$a^{4}P-y^{4}P^{\circ}$
4886.821	A	2	1.19	3.72	1½-1½	(50)
4882.183	A	2	1.18	3.71	½-½	
4932.029	A	4	1.21	3.72	2½-1½	
4904.285	A	(8)	1.19	3.71	1½-½	
4880.560	A	8	1.19	3.72	1½-2½	
4864.83	P		1.18	3.72	½-1½	
4758.742	A	2	1.21	3.81	2½-2½?	$a^{4}P-z^{6}S^{\circ}$
4716.844	A	(1-)	1.19	3.81	1½-2½?	(51)

V I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multipl (No)
4113.518	C	12	1.21	4.21	2½-3½	$a^{4}P-w^{4}$
4092.407	C	8	1.19	4.21	1½-2½	(52)
4091.945	C	3	1.18	4.19	½-1½	
4124.072	C	5	1.21	4.21	2½-2½	
4107.487	C	4	1.19	4.19	1½-1½	
4093.497	C	5	1.18	4.19	½-½	
3533.676	C	10	1.21	4.71	2½-3½	$a^{4}P-t^{4}D$
3529.735	C	10	1.19	4.69	1½-2½	(53)
3533.757	C	6	1.18	4.67	½-1½	
3553.271	C	6	1.21	4.69	2½-2½	
3545.339	C	8	1.19	4.67	1½-1½	
3543.500	C	8	1.18	4.66	½-½	
3569.083	C	1	1.21	4.67	2½-1½	
3555.142	C	3	1.19	4.66	1½-½	
3377.625	C	15	1.21	4.87	2½-2½	$a^{4}P-w^{4}P$
3376.057	C	8	1.19	4.85	1½-1½	(54)
3366.880	C	4	1.18	4.84	½-½	
3397.580	C	6	1.21	4.85	2½-1½	
3377.394	C	10	1.19	4.84	1½-½	
3356.352	C	10	1.19	4.87	1½-2½	
3365.553	C	10	1.18	4.85	½-1½	
3329.855	C	12	1.21	4.92	2½-1½	$a^{4}P-x^{4}S$
3309.176	C	8	1.19	4.92	1½-1½	(55)
3299.086	C	3	1.18	4.92	½-1½	
3106.11	C	5	1.21	5.19	2½-2½	$a^{4}P-v^{4}P$
3103.60	F	1	1.19	5.17	1½-1½	(56)
3103.994	C	6	1.18	5.15	½-½	
3121.749	C	4	1.21	5.17	2½-1½	
3112.925	C	8	1.19	5.15	1½-½	
3088.114	C	30	1.19	5.19	1½-2½	
3094.692	C	20	1.18	5.17	½-1½	
3083.539	C	30	1.21	5.22	2½-3½	$a^{4}P-r^{4}D$
3075.933	C	8	1.19	5.20	1½-2½	(57)
3080.333	C	12	1.18	5.18	½-1½	
3093.792	C	25	1.21	5.20	2½-2½	
3089.130	C	25	1.19	5.18	1½-1½	
3087.065	C	15	1.18	5.18	½-½	
3107.142	B	5	1.21	5.18	2½-1½	
3095.902	C	5	1.19	5.18	1½-½	
3016.16	C	20	1.21	5.30	2½-1½	$a^{4}P-w^{4}S$
2999.238	C	12	1.19	5.30	1½-1½	(58)
2990.948	C	8	1.18	5.30	½-1½	
6558.02	A	5	1.37	3.25	4½-4½	$a^{2}G-z^{2}G$
6607.82	A	3	1.34	3.21	3½-3½	(59)
6106.967	A	2	1.37	3.39	4½-3½	$a^{2}G-z^{2}F$
6135.07	A	2	1.34	3.36	3½-2½	(60)
4609.646	A	4	1.37	4.05	4½-4½	$a^{2}G-z^{4}H$
4585.94	G	2	1.34	4.04	3½-3½	(61)
4501.972	A	8	1.37	4.11	4½-4½	$a^{2}G-y^{2}G$
4449.573	C	5	1.34	4.12	3½-3½	(62)
4491.164	C	2	1.37	4.12	4½-3½	
m4460.16	P	V	1.34	4.11	3½-4½	
3930.023	C	10	1.37	4.51	4½-4½	$a^{2}G-x^{2}G$
*3909.894	C	20	1.34	4.50	3½-3½	(63)
3942.006	C	6	1.37	4.50	4½-3½	
3898.143	B	(4?)	1.34	4.51	3½-4½	
3886.587	C	6	1.37	4.55	4½-3½	$a^{2}G-w^{4}G^{\circ}$
3864.300	B	(3)	1.34	4.54	3½-2½	(64)
3885.770	C	2	1.37	4.55	4½-4½	$a^{2}G-w^{2}G$
3884.465	C	4	1.34	4.52	3½-3½	(65)
3871.078	C	8	1.37	4.56	4½-3½	$a^{2}G-x^{2}F^{\circ}$
*3863.866§	C	6	1.34	4.54	3½-2½	(66)
3840.140	C	4	1.34	4.56	3½-3½	
3828.836	C	4	1.37	4.59	4½-5½	$a^{2}G-y^{2}H^{\circ}$
3802.883	C	2	1.34	4.59	3½-4½	(67)
3833.226	C	3	1.37	4.59	4½-4½	
3806.796	C	8	1.37	4.61	4½-4½	$a^{2}G-v^{2}G^{\circ}$
3803.784	C	6	1.34	4.59	3½-3½	(68)
3790.469	C	8	1.37	4.63	4½-3½	$a^{2}G-w^{2}F^{\circ}$
3779.648	C	4	1.34	4.61	3½-2½	(69)
3686.262	C	8	1.37	4.72	4½-5½	$a^{2}G-x^{2}H^{\circ}$
3671.205	C	10	1.34	4.71	3½-4½	(70)
3699.476	C	3	1.37	4.71	4½-4½	
3284.360	C	6	1.37	5.13	4½-4½	$a^{2}G-t^{2}G^{\circ}$
3273.027	C	7	1.34	5.12	3½-3½	(71)
3233.190	C	6	1.37	5.19	4½-3½	$a^{2}G-u^{2}F^{\circ}$
3218.869	C	5	1.34	5.18	3½-2½	(72)
3212.434	C	15	1.37	5.21	4½-5½	$a^{2}G-u^{2}H^{\circ}$
3205.582	C	15	1.34	5.19	3½-4½	(73)
3050.400	C	25	1.37	5.42	4½-3½	$a^{2}G-t^{2}F^{\circ}$
3031.007	C	10?	1.34	5.42	3½-2½	(74)
3021.78	C	6	1.37	5.45	4½-5½	$a^{2}G-t^{2}H^{\circ}$
3006.35	C	6	1.34	5.45	3½-4½	(75)
9865.44	A	10	1.70	2.95	1½-2½	$a^{2}P-z^{2}D^{\circ}$
10203.45	A	10	1.70	2.91	½-1½	(76)
10193.66	A	5	1.70	2.91	1½-1½	
5558.752	A	3	1.70	3.92	1½-½	$a^{2}P-z^{2}S^{\circ}$
5561.670	A	2	1.70	3.92	½-½	(77)
4833.027	A	3	1.70	4.26	1½-2½	$a^{2}P-y^{2}D^{\circ}$
*4848.821	A	1	1.70	4.25	½-1½	(78)

REVISED MULTIPLET TABLE

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
V I continued						
4365.745	C	3	1.70	4.53	1½-2½	$a^2P-x^2D^{\circ}$
*4422.477	C	2	1.70	4.50	½-1½	(79)
*3798.661	C	2	1.70	4.95	1½-2½	$a^2P-v^2D^{\circ}$
m3834.22	P	Fe	1.70	4.92	½-1½	(80)
3832.835	C	4	1.70	4.92	1½-1½	
3505.690	C	6	1.70	5.22	1½-1½	$a^2P-v^2P^{\circ}$
3487.008	D	2	1.70	5.24	½-½	(81)
3485.867	B	6	1.70	5.24	1½-½	
3506.843	C	3	1.70	5.22	½-1½	
4537.663	A	6	1.80	4.52	2½-1½	$a^2D-y^2P^{\circ}$
4551.860	A	3	1.79	4.50	1½-½	(82)
3639.024	C	6	1.80	5.19	2½-3½	$a^2D-u^2F^{\circ}$ †
3643.864	C	5	1.79	5.18	1½-2½	(83)
6326.845	A	6	1.86	3.81	6½-5½	$a^4H-y^4G^{\circ}$ †
6339.090	A	5	1.85	3.80	5½-4½	(84)
6349.477	A	5	1.85	3.79	4½-3½	
6357.297	A	4	1.84	3.78	3½-2½	
5584.738	A	(3)	1.86	4.07	6½-6½	$a^4H-z^4H^{\circ}$ †
5586.007	A	2	1.85	4.06	5½-5½	(85)
*5604.205	A	1	1.85	4.05	4½-4½	
5622.075	A	(2)	1.84	4.04	3½-3½	
4501.256	B	1	1.85	4.59	5½-5½	$a^4H-y^2H^{\circ}$
4496.864	A	5	1.85	4.59	4½-4½	(86)
4490.815	A	5	1.85	4.59	4½-5½	
*4488.898	A	20	1.84	4.59	3½-4½	
4452.008	C	20	1.86	4.63	6½-7½	$a^4H-z^4I^{\circ}$ †
4462.363	C	20	1.85	4.62	5½-6½	(87)
4469.710	C	15	1.85	4.61	4½-5½	
4468.010	C	8	1.84	4.60	3½-4½	
4268.643	C	20	1.86	4.75	6½-6½	$a^4H-x^4H^{\circ}$ †
4271.554	C	12	1.85	4.74	5½-5½	(88)
4276.958	C	12	1.85	4.73	4½-4½	
4284.055	C	15	1.84	4.72	3½-3½	
3998.730	C	15	1.86	4.95	6½-5½	$a^4H-u^4G^{\circ}$ †
3992.801	C	12	1.85	4.94	5½-4½	(89)
*3990.566	C	20	(1.85 1.84	4.94 4.93	4½-3½ 3½-2½	
3988.833	C	5	1.85	4.95	5½-5½	
3984.600	C	6	1.85	4.94	4½-4½	
3984.335	C	6	1.84	4.94	3½-3½	
3924.658	C	10	1.86	5.00	6½-6½	$a^4H-w^4H^{\circ}$ †
3927.926	C	(3)	1.85	4.99	5½-5½	(90)
3931.340	C	5	1.85	4.98	4½-4½	
3935.141	C	6	1.84	4.98	3½-3½	
*3722.601	C	(3)	1.86	5.17	6½-5½	$a^4H-t^4G^{\circ}$ †
3721.998	C	4	1.85	5.17	5½-4½	(91)
3729.035	C	4	1.85	5.16	4½-3½	
3737.992	C	5	1.84	5.14	3½-2½	
5772.402	A	6	1.92	4.06	2½-3½	$b^4P-x^4D^{\circ}$ †
*5748.860	A	4	1.89	4.03	1½-2½	(92)
5752.711	A	3	1.86	4.01	½-1½	
5850.286	A	2	1.92	4.03	2½-2½	
5817.063	A	3	1.89	4.01	1½-1½	
5788.549	A	3	1.86	3.99	½-½	
4797.973	A	2	1.92	4.49	2½-1½	$b^4P-y^4S^{\circ}$
4729.544	A	6	1.89	4.49	1½-1½	(93)
4686.926	A	6	1.86	4.49	½-1½	
4751.574	A	6	1.92	4.52	2½-2½	$b^4P-x^4P^{\circ}$
4640.309	B	(0)	1.89	4.54	1½-1½	(94)
4624.657	B	(1)	1.86	4.53	½-½	
4706.178	A	8	1.92	4.54	2½-1½	
4666.149	A	4	1.89	4.53	1½-½	
4684.457	A	(3)	1.89	4.52	1½-2½	
4591.991	B	(0)	1.92	4.61	2½-2½	$b^4P-w^2F^{\circ}$
4529.301	A	4	1.89	4.61	1½-2½	(95)
4071.541	C	8	1.92	4.95	2½-3½	$b^4P-s^4D^{\circ}$ †
4042.635	C	5	1.89	4.94	1½-2½	(96)
4021.925	C	3	1.86	4.93	½-1½	
*3781.303	C	3	1.92	5.19	2½-2½	$b^4P-v^4P^{\circ}$
3761.442	C	3	1.89	5.17	1½-1½	(97)
*3747.982	C	8n	1.86	5.15	½-½	
3804.589	C	3	1.92	5.17	2½-1½	
3775.187	C	3	1.89	5.15	1½-½	
3738.757	C	8	1.89	5.19	1½-2½	
3734.428	C	5	1.86	5.17	½-1½	
*3747.982	C	8n	1.92	5.22	2½-3½	$b^4P-r^4D^{\circ}$ †
3720.93	G	1	1.89	5.20	1½-2½	(98)
3713.56	G	1	1.86	5.18	½-1½	
3763.141	C	6	1.92	5.20	2½-2½	
3740.241	C	6	1.89	5.18	1½-1½	
3723.324	C	3	1.86	5.18	½-½	
4524.218	A	15	1.88	4.61	5½-4½	$a^2H-v^2G^{\circ}$ †
4529.589	A	8	1.86	4.59	4½-3½	(99)
4515.558	A	2	1.88	4.62	5½-6½	$a^2H-z^4I^{\circ}$
4540.014	A	6	1.88	4.60	5½-4½	(100)
4474.714	C	12	1.88	4.64	5½-6½	$a^2H-z^2I^{\circ}$
4457.759	C	8	1.86	4.63	4½-5½	(101)
4468.759	C	4	1.86	4.63	4½-3½	$a^2H-w^2F^{\circ}$
						(102)
V I continued						
4354.979	C	5	1.88	4.72	5½-5½	$a^2H-x^2H^{\circ}$
4342.832	C	6	1.86	4.71	4½-4½	(103)
3708.721	C	6	1.88	5.21	5½-5½	$a^2H-u^2H^{\circ}$
3706.035	C	4	1.86	5.19	4½-4½	(104)
3082.010	B	6	1.88	5.89	5½-5½	$a^2H-s^2H^{\circ}$
3075.269	C	10	1.86	5.88	4½-4½	(105)
9611.60	A	80	1.95	3.23	4½-4½	$b^4F-y^4F^{\circ}$
9614.68	A	50	1.94	3.22	3½-3½	(106)
9691.58	A	40	1.94	3.21	2½-2½	
9738.50	A	15	1.93	3.20	1½-1½	
9582.28	A	6np	1.94	3.22	2½-3½	
9668.9	A	3p?	1.93	3.21	1½-2½	
6430.471	A	5	1.95	3.87	4½-4½	$b^4F-x^4F^{\circ}$ †
6431.620	A	4	1.94	3.86	3½-3½	(107)
6433.17	A	3	1.94	3.86	2½-2½	
6435.148	A	2	1.93	3.85	1½-1½	
4722.877	A	8	1.95	4.56	4½-5½	$b^4F-w^4G^{\circ}$ †
4721.524	A	6	1.94	4.56	3½-4½	(108)
4730.394	A	3	1.94	4.55	2½-3½	
4545.394	A	25	1.95	4.66	4½-5½	$b^4F-v^4G^{\circ}$
4560.710	A	20	1.94	4.65	3½-4½	(109)
4571.783	A	15	1.94	4.64	2½-3½	
4578.728	A	15	1.93	4.63	1½-2½	
4570.425	A	6	1.95	4.65	4½-4½	
4579.198	A	7	1.94	4.64	3½-3½	
4583.783	A	5	1.94	4.63	2½-2½	
4474.045	C	10	1.95	4.71	4½-3½	$b^4F-t^4D^{\circ}$
4496.062	A	8	1.94	4.69	3½-2½	(110)
4514.191	A	6	1.94	4.67	2½-1½	
4525.168	A	5	1.93	4.66	1½-½	
4464.747	C	2	1.94	4.71	3½-3½	
*4488.898	A	20	1.94	4.69	2½-2½	
4509.287	A	3	1.93	4.67	1½-1½	
4232.460	C	15	1.95	4.86	4½-4½	$b^4F-u^4F^{\circ}$ †
4232.952	C	12	1.94	4.86	3½-3½	(111)
*4234.000	C	12	1.94	4.85	2½-2½	
4235.756	C	10	1.93	4.85	1½-1½	
4104.778	C	15	1.95	4.95	4½-3½	$b^4F-s^4D^{\circ}$ †
4118.182	C	8	1.94	4.94	3½-2½	(112)
4123.188	C	6	1.94	4.93	2½-1½	
4128.858	C	5	1.93	4.92	1½-½	
4807.537	A	25	2.12	4.68	6½-5½	$z^6G^{\circ}-e^6F$ †
4796.930	A	20	2.09	4.66	5½-4½	(113)
4786.515	A	20	2.07	4.64	4½-3½	
4776.364	A	10	2.05	4.63	3½-2½	
4766.635	A	10	2.03	4.62	2½-1½	
4757.50	A	8	2.02	4.61	1½-½	
4757.37	A	4	2.09	4.68	5½-5½	
4753.957	A	7	2.07	4.66	4½-4½	
4750.990	A	8	2.05	4.64	3½-3½	
4748.525	A	7	2.03	4.63	2½-2½	
4746.638	A	5	2.02	4.62	1½-1½	
3695.335	C	30	2.12	5.46	6½-7½	$z^6G^{\circ}-e^6H$
3687.473	C	12?	2.09	5.44	5½-6½	(114)
3680.113	C	15	2.07	5.42	4½-5½	
3673.404	C	12	2.05	5.41	3½-4½	
3667.741	C	15	2.03	5.40	2½-3½	
3663.594	C	15	2.02	5.39	1½-2½	
3717.55	G	1	2.12	5.44	6½-6½	
3705.83	G	1	2.09	5.42	5½-5½	
*3694.622	C	3	2.07	5.41	4½-4½	
3684.332	C	3	2.05	5.40	3½-3½	
3675.497	C	3	2.03	5.39	2½-2½	
3676.684	C	10	2.12	5.47	6½-6½	$z^6G^{\circ}-f^6G$ †
3672.403	C	8	2.09	5.45	5½-5½	(115)
3665.142	C	8	2.07	5.43	4½-4½	
3656.706	C	6	2.05	5.42	3½-3½	
*3648.966	C	5	2.03	5.41	2½-2½	
3641.096	C	4	2.02	5.41	1½-1½	
3014.37	C	15N	2.12	6.21	6½-7½	$z^6G^{\circ}-f^6H$
3006.90	F	5N	2.09	6.19	5½-6½	(116)
3006.24	F	5N	2.07	6.17	4½-5½	
3001.90	F	10N	2.05	6.16	3½-4½	
2997.87	F	5N	2.03	6.15	2½-3½	
2997.08	F	3N	2.02	6.14	1½-2½	
7338.92	A	30	2.13	3.81	5½-5½	$a^4G-y^4G^{\circ}$ †
7356.51	A	20	2.12	3.80	4½-4½	(117)
7363.16	A	15	2.11	3.79	3½-3½	
7361.39	A	10	2.11	3.78	2½-2½	
4904.350	B	(9)	2.13	4.64	5½-6½	$a^4G-y^4H^{\circ}$ †
4904.447	B	(7)	2.12	4.64	4½-5½	(118)
4900.624	A	6	2.11	4.63	3½-4½	
4894.218	A	4	2.11	4.63	2½-3½	
4706.574	A	12	2.13	4.75	5½-6½	$a^4G-x^4H^{\circ}$ †
4710.566	A	12	2.12	4.74	4½-5½	(119)
4714.113	A	10	2.11	4.73	3½-4½	
4717.692	A	10	2.11	4.72	2½-3½	
4291.816	C	15	2.13	5.00	5½-6½	$a^4G-w^4H^{\circ}$ †
4296.107	C	15	2.12	4.99	4½-5½	(120)
4297.681	C	12	2.11	4.98	3½-4½	
4298.029	C	12	2.11	4.98	2½-3½	
*4051.352§	C	12	2.13	5.17	5½-5½	$a^4G-t^4G^{\circ}$ †
*4050.963§	C	10	2.12	5.17	4½-4½	(121)
4057.074	C	10	2.11	5.16	3½-3½	
4063.931	C	10	2.11	5.14	2½-2½	
V I continued						
3571.037	C	4	2.13	5.58	5½-4½	a^4G-q
3573.516	C	5	2.12	5.57	4½-3½	(122
3571.653	C	5	2.11	5.57	3½-2½	
3568.940	C	3	2.11	5.56	2½-1½	
5128.530	A	7	2.28	4.68	4½-5½	z^6D°-
5138.431	A	5	2.26	4.66	3½-4½	(123
5148.724	A	4	2.25	4.64	2½-3½	
5159.350	A	3	2.24	4.63	1½-2½	
3741.504	C	6	2.29	5.57	4½-4½	z^6D°-
*3755.701	C	4	(2.28 2.26	5.56 5.55	4½-3½ 3½-2½	(124
5193.004	A	7	2.31	4.68	5½-5½	z^6F°-
*5194.824	A	10	2.29	4.66	4½-4½	(125
5195.394	A	5	2.27	4.64	3½-3½	
*5194.824	A	10	2.25	4.63	2½-2½	
3898.019	C	6	2.31	5.47	5½-6½	z^6F°-
3901.152	C	6	2.29	5.45	4½-5½	(126
3900.175	C	6	2.27	5.43	3½-4½	
3897.075	C	6	2.25	5.42	2½-3½	
5748.412	A	(1)	2.37	4.52	1½-1½	b^2P-y
5656.895	A	1	2.32	4.50	½-½	(127
*5782.601	A	2	2.37	4.50	1½-½	
5624.223	A	(2)	2.32	4.52	½-1½	
4776.519	A	5	2.37	4.95	1½-2½	b^2P-v
4742.631	A	5	2.32	4.92	½-1½	(128
5487.915	A	10	2.36	4.61	5½-4½	b^2H-v
5507.753	A	8	2.35	4.59	4½-3½	(129
5415.277	A	10	2.36	4.64	5½-6½	b^2H-z
*5401.945	A	8	2.35	4.63	4½-5½	(130
5240.878	A	9	2.36	4.72	5½-5½	b^2H-x
5234.088	A	8	2.35	4.71	4½-4½	(131
*5014.620	A	5	2.36	4.82	5½-6½	b^2H-y
5002.320	A	4	2.35	4.82	4½-5½	(132
4591.220	A	12	2.36	5.05	5½-5½	b^2H-w
4553.056	A	7	2.35	5.06	4½-4½	(133
3227.409	C	4	2.36	6.19	5½-6½	b^2H-x
3229.604	B	4	2.35	6.17	4½-5½	(134
5725.633	A	6	2.36	4.51	3½-4½	a^2F-x
5734.004	A	5	2.35	4.50	2½-3½	(135
4705.099	A	4	2.36	4.98	3½-2½	a^2F-u
4715.900	A	5	2.35	4.97	2½-1½	(136
3645.596	C	3	2.36	5.74	3½-2½	a^2F-s
						(137
*3265.899§	C	5	2.36	6.13	3½-2½	a^2F-t
3256.779	B	1	2.35	6.14	2½-1½	(138
5266.118	A	(4)	2.67	5.01	4½-3½	b^2G-v
*5401.945	A	8	2.67	4.96	3½-2½	(139
4373.230	C	4	2.67	5.49	4½-4½	b^2G-s
4375.304	C	4	2.67	5.49	3½-3½	(140
5784.360	A	5	2.75	4.89	5½-4½	z^4G°-
*5786.153	A	7	(2.73 2.71	4.86 4.84	4½-3½ 3½-2½	(141
5783.509	A	2	2.70	4.83	2½-1½	
5846.306	A	8	3.12	5.23	5½-6½	y^6F°-
5830.719	A	7	3.10	5.22	4½-5½	(142
5817.532	A	5	3.09	5.21	3½-4½	
5807.14	A	3	3.07	5.20	2½-3½	
5798.905	A	2	3.07	5.19	1½-2½	
5797.352	A	(1-)	3.06	5.19	½-1½	

Strongest Unclassified Lines of V I

4619.648	A	8	IV
4549.644	A	10	IV
4527.990	A	5	IV
4265.170	C	8n	III
*3963.626§	C	4	II
3898.278	C	5	II
3891.119	C	4	II
3849.324	C	6	I
3845.974	C	3	II
3425.070	C	6	II
3261.081	C	6	III
3156.222	C	10	IV
3153.549	C	5N	IV
3150.568	C	5	IV
3092.72	G	8	III
3041.86	C	8	IV
3002.442	C	6	IV

REVISED MULTIPLET TABLE

I P 14.1 Anal A List A Jan 1941

aboratory	Ref	Int	E P Low	E P High	J	Multiplet (No)
.08//	A	2500R	0.39	4.38	5-6	$a^5F-z^5G^\circ$ (1)
95	A	2000R	0.37	4.34	4-5	
08	A	1500R	0.35	4.31	3-4	
76	A	1000R	0.33	4.29	2-3	
82	A	600R	0.32	4.27	1-2	
38	A	80	0.39	4.34	5-5	
15	A	150R	0.37	4.31	4-4	
62	A	100R	0.35	4.29	3-3	
29	A	150r	0.33	4.27	2-2	
37	A	30	0.39	4.31	5-4	
71	A	20	0.37	4.29	4-3	
37	A	30	0.35	4.27	3-2	
7	A	150	0.35	4.53	3-2	$a^5F-z^5F^\circ$ † (2)
520	A	100	0.33	4.50	2-1	
17	A	6	1.12	4.34	4-5	$a^3F-z^5G^\circ$ (3)
55	A	5	1.09	4.31	3-4	
53	A	4	1.07	4.29	2-3	
10	A	4	1.07	4.27	2-2	
336	A	50	1.12	4.61	4-5	$a^3F-z^5F^\circ$ (4)
48	A	10	1.09	4.59	3-4	
18	P		1.07	4.56	2-3	
71	A	3n	1.12	4.59	4-4	
594	A	90	1.09	4.56	3-3	
177§	A	200	1.07	4.53	2-2	
323	A	600	1.12	4.56	4-3	
18	A	800	1.09	4.53	3-2	
745	A	1000	1.07	4.50	2-1	
800	A	1500	1.12	4.59	4-3	$a^3F-z^3D^\circ$ (5)
190	A	1000	1.09	4.57	3-2	
765	A	500	1.07	4.56	2-1	
713	A	200	1.09	4.59	3-3	
22	A	120	1.07	4.57	2-2	
823	A	20	1.07	4.59	2-3	
00	A	5	1.12	4.63	4-4	$a^3F-z^5D^\circ$ (6)
916	A	250	1.09	4.63	3-3	
837	A	80	1.07	4.61	2-2	
898	A	800	1.12	4.63	4-3	
432	A	400	1.09	4.61	3-2	
163	A	150	1.07	4.60	2-1	
65	A	3	1.09	4.63	3-4	
580	A	5	1.07	4.63	2-3	
12	A	1500R	1.12	4.89	4-5	$a^3F-z^3G^\circ$ (7)
124	A	1200R	1.09	4.86	3-4	
709	A	1000R	1.07	4.84	2-3	
738	A	130	1.12	4.86	4-4	
391	A	100	1.09	4.84	3-3	
295	A	2	1.12	4.84	4-3	
686	A	500R	1.12	4.99	4-4	$a^3F-z^3F^\circ$ (8)
522	A	300R	1.09	4.96	3-3	
717	A	200R	1.07	4.94	2-2	
750	A	120	1.12	4.96	4-3	
345	A	100	1.09	4.94	3-2	
82	A	40	1.09	4.99	3-4	
127	A	40	1.07	4.96	2-3	
126	A	200	1.47	4.56	2-3	$a^3P-z^5F^\circ$ (9)
642	A	300	1.42	4.53	1-2	
11	A	150	1.39	4.50	0-1	
779	A	60	1.47	4.53	2-2	
940	A	80	1.42	4.50	1-1	
03	A	5	1.47	4.50	2-1	
968	A	500	1.47	4.59	2-3	$a^3P-z^3D^\circ$ (10)
418	A	200	1.42	4.57	1-2	
155§	A	60	1.39	4.56	0-1	
732	A	60	1.47	4.57	2-2	
734	A	50	1.42	4.56	1-1	
47	A	3	1.47	4.56	2-1	
27	A	250	1.47	4.63	2-3	$a^3P-z^5D^\circ$ (11)
744	A	60	1.42	4.61	1-2	
409	A	7	1.39	4.60	0-1	
497	A	10	1.47	4.61	2-2	
208	A	5	1.42	4.60	1-1	
48	P		1.47	4.60	2-1	
98	P		1.42	4.59	1-0	
14	A	2	1.47	4.96	2-3	$a^3P-z^3F^\circ$ (12)
12	P		1.57	4.38	6-6	$a^3H-z^5G^\circ$ (13)
11	P		1.56	4.34	5-5	
76	P		1.55	4.31	4-4	
77	P		1.57	4.34	6-5	
03	P		1.56	4.31	5-4	
13	P		1.55	4.29	4-3	
88	P		1.56	4.38	5-6	
17	P		1.55	4.34	4-5	
270	A	7	1.57	4.61	6-5	$a^3H-z^5F^\circ$ (14)
66	A	3	1.56	4.59	5-4	
476	A	1200 1	1.57	4.89	6-5	$a^3H-z^3G^\circ$ (15)
760	A	800 1	1.56	4.86	5-4	
806	A	800	1.55	4.84	4-3	
832	A	7	1.56	4.89	5-5	
16§	A	10	1.55	4.86	4-4	
59	A	1	1.67	4.27	2-2	$b^3F-z^5G^\circ$ (16)
78	A	5?	1.68	4.56	4-3	$b^3F-z^5F^\circ$ (17)
02	A	4	1.67	4.53	3-2	
89	A	3	1.67	4.50	2-1	
82	A	4	1.68	4.59	4-3	$b^3F-z^3D^\circ$ (18)
41	A	15n	1.67	4.57	3-2	
75	A	9n	1.67	4.56	2-1	
062	A	3	1.68	4.63	4-4	$b^3F-z^5D^\circ$

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
m3844.48	P	V	1.68	4.89	4-5	$b^3F-z^3G^\circ$ (20)
3865.72	A	5	1.67	4.86	3-4	
3883.43	A	2	1.67	4.84	2-3	
3875.67	A	5	1.68	4.86	4-4	
3891.25	A	4	1.67	4.84	3-3	
3901.33	P		1.68	4.84	4-3	
3727.351	A	1000 1	1.68	4.99	4-4	$b^3F-z^3F^\circ$ (21)
3750.88	A	600	1.67	4.96	3-3	
3770.974	A	400	1.67	4.94	2-2	
3760.24	A	140	1.68	4.96	4-3	
3778.357	A	100	1.67	4.94	3-2	
3718.159	A	60	1.67	4.99	3-4	
3743.610	A	40	1.67	4.96	2-3	
*2983.009	A	10	1.67	5.81	3-4	$b^3F-z^3H^\circ$ † (22)
4270.64	A	2	1.70	4.59	3-4	$a^5P-z^5F^\circ$ (23)
4286.13	A	3	1.68	4.56	2-3	
4316.258	A	2	1.67	4.53	1-2	
4313.30	A	2	1.70	4.56	3-3	
4331.79	A	3	1.68	4.53	2-2	
*4260.75	A	9n	1.70	4.59	3-3	$a^5P-z^3D^\circ$ (24)
4263.836	A	4n	1.68	4.57	2-2	
4264.50	A	1	1.67	4.56	1-1	
4234.251	A	7	1.68	4.59	2-3	
4248.820	A	4	1.67	4.57	1-2	
4202.350	A	150	1.70	4.63	3-4	$a^5P-z^5D^\circ$ (25)
4178.390	A	60	1.68	4.63	2-3	
4190.40	A	15	1.67	4.61	1-2	
4204.20	A	20	1.70	4.63	3-3	
m4205.05	P	V$^+$	1.68	4.61	2-2	
4209.74	A	10	1.67	4.60	1-1	
4231.165	A	4	1.70	4.61	3-2	
4224.51	A	10	1.68	4.60	2-1	
4220.047	A	10	1.67	4.59	1-0	
3029.56	A	7	1.70	5.77	3-2	$a^5P-z^3P^\circ$ (26)
3020.65	A	6	1.68	5.76	2-1	
3022.57	A	40	1.67	5.75	1-0	
3016.14	A	15	1.68	5.77	2-2	
3013.102	A	80	1.67	5.76	1-1	
3008.610	A	70	1.67	5.77	1-2	
3001.203	A	200	1.70	5.81	3-3	$a^5P-z^5P^\circ$ (27)
3003.461	A	80	1.68	5.79	2-2	
3007.296	A	15	1.67	5.77	1-1	
3016.775	A	120	1.70	5.79	3-2	
3014.822	A	100	1.68	5.77	2-1	
2988.027	A	80	1.68	5.81	2-3	
2995.999	A	60	1.67	5.79	1-2	
2968.373	A	200	1.70	5.85	3-4	$a^5P-y^5D^\circ$ (28)
2976.517	A	100	1.68	5.82	2-3	
2976.197	A	60	1.67	5.81	1-2	
2989.594	A	40	1.70	5.82	3-3	
2983.558	A	80n	1.68	5.81	2-2	
2975.650	A	50	1.67	5.82	1-1	
2996.70	A	3	1.70	5.81	3-2	
*2983.009	A	10	1.68	5.82	2-1	
2982.75	A	40	1.67	5.81	1-0	
4799.94	P		1.81	4.38	5-6	$a^3G-z^5G^\circ$ (29)
4844.31	P		1.80	4.34	4-5	
4880.30	P		1.79	4.31	3-4	
4867.79	P		1.81	4.34	5-5	
4902.89	P		1.80	4.31	4-4	
4928.62	P		1.79	4.29	3-3	
4926.94	P		1.81	4.31	5-4	
4951.66	P		1.80	4.29	4-3	
4966.08	P		1.79	4.27	3-2	
4404.68	A	2	1.81	4.61	5-5	$a^3G-z^5F^\circ$ (30)
4424.62	P		1.80	4.59	4-4	
4451.61	P		1.79	4.56	3-3	
4444.20	P		1.81	4.59	5-4	
4470.39	P		1.80	4.56	4-3	
4500.86	P		1.79	4.53	3-2	
4385.45	P		1.80	4.61	4-5	
4406.22	P		1.79	4.59	3-4	
4370.27	A	3	1.81	4.63	5-4	$a^3G-z^5D^\circ$ (31)
4005.712	A	800	1.81	4.89	5-5	$a^3G-z^3G^\circ$ (32)
4023.388	A	600	1.80	4.86	4-4	
4035.631	A	400	1.79	4.84	3-3	
4039.574	A	20	1.81	4.86	5-4	
*4051.06§	A	20	1.80	4.84	4-3	
3989.803	A	15	1.80	4.89	4-5	
4008.17	A	20	1.79	4.86	3-4	
3878.715	A	300	1.81	4.99	5-4	$a^3G-z^3F^\circ$ (33)
3899.140	A	200	1.80	4.96	4-3	
3914.333	A	250	1.79	4.94	3-2	
*3863.81§	A	60	1.80	4.99	4-4	
3884.847	A	50	1.79	4.96	3-3	
3849.758	A	3	1.79	4.99	3-4	
3033.821	A	300	1.81	5.88	5-6	$a^3G-z^3H^\circ$ (34)
3053.39	A	200	1.80	5.84	4-5	
3067.104	A	200	1.79	5.81	3-4	
3062.702	A	20	1.81	5.84	5-5	
3076.016	A	25	1.80	5.81	4-4	
3085.47	A	1	1.81	5.81	5-4	
4810.17	A	1?	2.03	4.59	4-3	$b^3G-z^3D^\circ$ (35)
4331.55	A	6n	2.04	4.89	5-5	$b^3G-z^3G^\circ$ (36)
4349.97	A	6n	2.03	4.86	4-4	
4366.91	A	5n	2.02	4.84	3-3	
4371.17	P		2.04	4.86	5-4	
4382.33	P		2.03	4.84	4-3	
4310.72	P		2.03	4.89	4-5	
4334.77	P		2.02	4.86	3-4	

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multipl (No)
4183.435	A	250	2.04	4.99	5-4	b^3G-z^3F (37)
4205.080	A	250	2.03	4.96	4-3	
4225.228	A	120	2.02	4.94	3-2	
4164.015	A	15	2.03	4.99	4-4	
4190.89	A	10	2.02	4.96	3-3	
4150.08	P		2.02	4.99	3-4	
*3217.121§	A	400	2.04	5.88	5-6	b^3G-z^3H (38)
3237.876	A	350	2.03	5.84	4-5	
*3254.773§	A	300	2.02	5.81	3-4	
3249.617	A	40	2.04	5.84	5-5	
3263.33	A	20	2.03	5.81	4-4	
m3093.16	P	V$^+$	2.04	6.03	5-5	b^3G-y^3G (39)
3094.196	A	100	2.03	6.02	4-4	
3100.938	A	100	2.02	6.00	3-3	
3104.906	A	25	2.04	6.02	5-4	
3108.704	A	30	2.03	6.00	4-3	
3082.524	A	40	2.03	6.03	4-5	
3086.507	A	30	2.02	6.02	3-4	
3053.894	A	80	2.04	6.08	5-4	b^3G-y^3F (40)
3048.891	A	70	2.03	6.08	4-3	
3042.27	A	80	2.02	6.07	3-2	
*3043.54§	A	40	2.03	6.08	4-4	
3041.42	A	60	2.02	6.08	3-3	
3036.07	A	2	2.02	6.08	3-4	
3023.882	A	20	2.04	6.12	5-5	b^3G-z^1H (41)
3015.98	A	10	2.03	6.12	4-3	b^3G-z^1F (42)
3012.020	A	30	2.04	6.14	5-4	b^3G-z^1G (43)
3001.93	A	2	2.03	6.14	4-4	
2979.102	A	5	2.02	6.16	3-2	b^3G-z^1D (44)
4606.59	P		2.21	4.89	4-5	a^1G-z^3G (45)
4651.42	P		2.21	4.86	4-4	
4688.45	P		2.21	4.84	4-3	
4439.42	A	1	2.21	4.99	4-4	a^1G-z^3F (46)
3401.997	A	2	2.21	5.84	4-5	a^1G-z^3H (47)
3230.919	A	4	2.21	6.03	4-5	a^1G-y^3G (48)
3243.74	P		2.21	6.02	4-4	
3259.684	A	3	2.21	6.00	4-3	
3188.10	A	30	2.21	6.08	4-4	a^1G-y^3F (49)
*3193.97§	A	10?	2.21	6.08	4-3	
3157.900	A	40	2.21	6.12	4-3	a^1G-z^1F (50)
3155.409	A	60	2.21	6.12	4-5	a^1G-z^1H (51)
3142.484	A	150	2.21	6.14	4-4	a^1G-z^1G (52)
5318.61	P		2.27	4.59	3-4	$a^3D-z^5F^\circ$ (53)
5367.53	P		2.26	4.56	2-3	
5432.09	A	2	2.26	4.53	1-2	
5384.89	A	8	2.27	4.56	3-3	
5439.30	A	15	2.26	4.53	2-2	
5487.00	A	8	2.26	4.50	1-1	
5457.10	A	4	2.27	4.53	3-2	
5494.35	P		2.26	4.50	2-1	
5303.26	A	40	2.27	4.59	3-3	$a^3D-z^3D^\circ$ (54)
5332.65	A	9	2.26	4.57	2-2	
5350.37	A	5	2.26	4.56	1-1	
5349.75	A	3	2.27	4.57	3-2	
5357.35	A	2	2.26	4.56	2-1	
5286.42	P		2.26	4.59	2-3	
5325.71	P		2.26	4.57	1-2	
5213.08	P		2.27	4.63	3-4	$a^3D-z^5D^\circ$ (55)
5199.68	A	4	2.26	4.63	2-3	
5234.28	P		2.26	4.61	1-2	
5215.928	A	25	2.27	4.63	3-3	
5240.97	P		2.26	4.61	2-2	
5264.49	P		2.26	4.60	1-1	
5257.51	P		2.27	4.61	3-2	
5271.26	P		2.26	4.60	2-1	
5280.62	P		2.26	4.59	1-0	
4528.51	A	300	2.27	4.99	3-4	$a^3D-z^3F^\circ$ (56)
4564.592	A	200	2.26	4.96	2-3	
4600.19	A	150	2.26	4.94	1-2	
m4577.13	P	V	2.27	4.96	3-3	
4605.352	A	15	2.26	4.94	2-2	
4618.12	P		2.27	4.94	3-2	
3521.836	A	90	2.27	5.77	3-2	$a^3D-z^3P^\circ$ (57)
3520.547	A	15	2.26	5.76	2-1	
3530.45	A	10	2.26	5.75	1-0	
3514.422	A	20	2.26	5.77	2-2	
3517.53	P		2.26	5.76	1-1	
3511.42	A	3	2.26	5.77	1-2	
3477.614	A	40	2.27	5.81	3-2	$a^3D-y^5D^\circ$ (58)
3469.528	A	50	2.26	5.82	2-1	
3476.252	A	20	2.26	5.81	1-0	
3470.263	A	20	2.26	5.81	2-2	
3466.59	A	20	2.26	5.82	1-1	
3467.33	A	2	2.26	5.81	1-2	
3333.608	A	2	2.26	5.96	1-0	$a^3D-z^1S^\circ$ (59)
3291.04	A	5	2.27	6.02	3-4	$a^3D-y^3G^\circ$ (60)
3300.905	A	6	2.26	6.00	2-3	
3307.445	A	2	2.27	6.00	3-3	
3233.772	A	80	2.27	6.08	3-4	$a^3D-y^3F^\circ$ (61)
3233.546	A	40	2.26	6.08	2-3	
3231.952	A	80	2.26	6.07	1-2	
3239.833	A	8	2.27	6.08	3-3	
3234.504	A	10	2.26	6.07	2-2	

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3202.711	A	2	2.27	6.12	3-3	$a^3D-z^1F^\circ$
3196.574	A	20	2.26	6.12	2-3	(62)
3186.86	A	10	2.27	6.14	3-4	$a^3D-z^1G^\circ$ (63)
3186.10	A	1	2.27	6.14	3-2	$a^3D-z^5S^\circ$ (64)
3169.21	A	2	2.27	6.16	3-2?	$a^3D-z^1D^\circ$
*3160.781	A	15	2.26	6.16	1-2	(65)
3050.735	A	15	2.27	6.31	3-2	$a^3D-y^3P^\circ$
3081.254	A	25	2.26	6.26	2-1	(66)
3086.210	A	10	2.26	6.25	1-0	
3078.948	A	5	2.26	6.26	1-1	
3054.24	A	7n	2.27	6.31	3-3	$a^3D-y^3D^\circ$
3048.65	A	4	2.26	6.31	2-3	(67)
3075.474	A	2	2.26	6.27	1-2	
		——	——	——		
4968.50	A	1	2.36	4.84	4-3	$b^1G-z^3G^\circ$ (68)
3547.07	A	5	2.36	5.84	4-5	$b^1G-z^3H^\circ$
3577.644	A	3	2.36	5.81	4-4	(69)
3361.506	A	60	2.36	6.03	4-5	$b^1G-y^3G^\circ$
3392.659	A	50	2.36	6.00	4-3	(70)
3315.170	A	50	2.36	6.08	4-4	$b^1G-y^3F^\circ$
3321.539	A	150	2.36	6.08	4-3	(71)
3282.534	A	150	2.36	6.12	4-3	$b^1G-z^1F^\circ$ (72)
3279.844	A	300	2.36	6.12	4-5	$b^1G-z^1H^\circ$ (73)
*3265.893§	A	100	2.36	6.14	4-4	$b^1G-z^1G^\circ$ (74)
3025.68	A	1	2.36	6.44	4-5	$b^1G-y^3H^\circ$
3032.187	A	3	2.36	6.43	4-4	(75)
		——	——	——		
3621.203	A	150	2.36	5.77	2-2	$b^3P-z^3P^\circ$
3632.126	A	15	2.37	5.76	1-1	(76)
3627.713	A	60	2.36	5.76	2-1	
3645.905	A	30	2.37	5.75	1-0	
3625.608	A	50	2.37	5.77	1-2	
3631.482	A	10	2.37	5.76	0-1	
3607.30	A	1	2.37	5.79	1-2	$b^3P-z^5P^\circ$
3623.03	A	1	2.37	5.77	0-1	(77)
3574.340	A	60	2.36	5.81	2-2	$b^3P-y^5D^\circ$
*3577.857§	A	20	2.37	5.82	1-1	(78)
3573.557	A	50	2.36	5.82	2-1	
3588.13	A	15	2.37	5.81	1-0	
3578.636	A	15	2.37	5.81	1-2	
3577.220	A	10	2.37	5.82	0-1	
3436.393	A	2	2.37	5.96	1-0	$b^3P-z^1S^\circ$ (79)
3394.92	A	1	2.36	6.00	2-3	$b^3P-y^3G^\circ$ (80)
3323.731	A	3	2.36	6.08	2-3	$b^3P-y^3F^\circ$ (81)
3249.464	A	4	2.36	6.16	2-2	$b^3P-z^1D^\circ$ (82)
3128.686	A	20	2.36	6.31	2-3	$b^3P-y^3D^\circ$
3162.714	A	30	2.37	6.27	1-2	(83)
3192.699	A	15	2.37	6.23	0-1	
3159.365	A	20	2.36	6.27	2-2	
3193.200	A	20	2.37	6.23	1-1	
3189.76	A	3	2.36	6.23	2-1	
3125.01	A	20	2.36	6.31	2-2	$b^3P-y^3P^\circ$
3166.39	A	8	2.37	6.26	1-1	(84)
3163.024	A	30	2.36	6.26	2-1	
3174.077	A	30	2.37	6.25	1-0	
3128.288	A	10	2.37	6.31	1-2	
3165.89	A	30	2.37	6.26	0-1	
3024.981	A	50	2.36	6.44	2-1	$b^3P-z^3S^\circ$
3028.042	A	50	2.37	6.44	1-1	(85)
3027.600	A	15	2.37	6.44	0-1	
3005.813	A	30	2.36	6.47	2-3	$b^3P-x^3F^\circ$
3022.146	A	4	2.37	6.45	1-2	(86)
3019.09	A	3	2.36	6.45	2-2	
2972.263	A	80	2.36	6.51	2-3	$b^3P-x^3D^\circ$
2981.200	A	70	2.37	6.51	1-2	(87)
2989.306	A	15	2.37	6.49	0-1	
2978.226	A	20	2.36	6.51	2-2	
2989.74	A	10	2.37	6.49	1-1	
		——	——	——		
3370.40	A	2	2.37	6.03	6-5	$a^1I-y^3G^\circ$ (88)
3288.324	A	20	2.37	6.12	6-5	$a^1I-z^1H^\circ$ (89)
		——	——	——		
6027.23	A	8	2.46	4.50	0-1	$a^1S-z^5F^\circ$ (90)
5862.80	A	15+p?	2.46	4.56	0-1	$a^1S-z^3D^\circ$ (91)
3731.983	A	20	2.46	5.76	0-1	$a^1S-z^3P^\circ$ (92)
3674.691	A	30	2.46	5.82	0-1	$a^1S-y^5D^\circ$ (93)
3270.115	A	10	2.46	6.23	0-1	$a^1S-y^3D^\circ$ (94)
3057.08	A	2	2.46	6.49	0-1	$a^1S-x^3D^\circ$ (95)
3038.520	A	30	2.46	6.52	0-1	$a^1S-z^1P^\circ$ (96)
		——	——	——		
6031.07	A	40	2.51	4.56	2-3	$c^3P-z^5F^\circ$
6028.26	A	40	2.48	4.53	1-2	(97)
6120.98	A	5	2.49	4.50	0-1	
6095.93	A	3	2.48	4.50	1-1	

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5928.86	A	100	2.51	4.59	2-3	$c^3P-z^3D^\circ$
5897.54	A	50	2.48	4.57	1-2	(98)
5951.45	A	4	2.49	4.56	0-1	
5819.93	A	80	2.51	4.63	2-3	$c^3P-z^5D^\circ$ (99)
3787.235	A	150	2.51	5.77	2-2	$c^3P-z^3P^\circ$
*3758.23§	A	40	2.48	5.76	1-1	(100)
3794.366	A	50	2.51	5.76	2-1	
3772.962	A	80	2.48	5.75	1-0	
3751.222	A	150	2.48	5.77	1-2	
3767.720	A	40	2.49	5.76	0-1	
3731.64	A	1	2.48	5.79	1-2	$c^3P-z^5P^\circ$ (101)
3724.984	A	2	2.51	5.82	2-3	$c^3P-y^5D^\circ$
3700.96	A	30	2.48	5.81	1-2	(102)
3709.335	A	40	2.49	5.82	0-1	
3736.017	A	70	2.51	5.81	2-2	
3700.126	A	40	2.48	5.82	1-1	
3735.158	A	30	2.51	5.82	2-1	
3711.118	A	50	2.48	5.81	1-0	
3549.030	A	3	2.48	5.96	1-0	$c^3P-z^1S^\circ$ (103)
3463.079	A	4	2.51	6.08	2-3	$c^3P-y^3F^\circ$
3434.024	A	4	2.48	6.07	1-2	(104)
3464.17	A	6	2.51	6.07	2-2	
3420.709	A	5	2.51	6.12	2-3	$c^3P-z^1F^\circ$ (105)
3401.740	A	1	2.51	6.14	2-2	$c^3P-z^5S^\circ$
3372.666	A	3	2.48	6.14	1-2	(106)
3382.529	A	30	2.51	6.16	2-2	$c^3P-z^1D^\circ$
3353.776	A	30	2.48	6.16	1-2	(107)
3251.869	A	200	2.51	6.31	2-3	$c^3P-y^3D^\circ$
3257.893	A	100	2.48	6.27	1-2	(108)
3297.528	A	20	2.49	6.23	0-1	
3285.022	A	50	2.51	6.27	2-2	
3290.240	A	50	2.48	6.23	1-1	
3317.912	A	20	2.51	6.23	2-1	
3247.908	A	4	2.51	6.31	2-2	$c^3P-y^3P^\circ$
3261.80	A	5	2.48	6.26	1-1	(109)
3288.985	A	7	2.51	6.26	2-1	
3221.380	A	2	2.48	6.31	1-2	
3119.32	A	4	2.51	6.47	2-3	$c^3P-x^3F^\circ$ (110)
3115.16	A	2	2.48	6.44	1-1	$c^3P-z^3S^\circ$ (111)
3083.208	A	40	2.51	6.51	2-3	$c^3P-x^3D^\circ$
3065.61	A	50	2.48	6.51	1-2	(112)
3081.01	A	20	2.49	6.49	0-1	
3089.633	A	4	2.51	6.51	2-2	
3074.66	A	12	2.48	6.49	1-1	
3079.75	A	1	2.51	6.52	2-1	$c^3P-z^1P^\circ$
3062.178	A	3	2.49	6.52	0-1	(113)
2981.924	A	15	2.51	6.65	2-2	$c^3P-w^3D^\circ$ †
2992.378	A	2	2.51	6.64	2-1	(114)
		——	——	——		
5193.43	P		2.51	4.89	6-5	$b^3H-z^3G^\circ$
5227.70	A	20	2.50	4.86	5-4	(115)
5263.99	A	15	2.50	4.84	4-3	
5171.13	P		2.50	4.89	5-5	
5217.36	P		2.50	4.86	4-4	
3669.410	A	300	2.51	5.88	6-6	$b^3H-z^3H^\circ$
3700.337	A	200	2.50	5.84	5-5	(116)
3728.335	A	200	2.50	5.81	4-4	
3711.751	A	10	2.51	5.84	6-5	
3733.607	A	4	2.50	5.81	5-4	
3658.266	A	10	2.50	5.88	5-6	
*3695.158	A	8	2.50	5.84	4-5	
3508.024	A	40	2.51	6.03	6-5	$b^3H-y^3G^\circ$
3513.877	A	15	2.50	6.02	5-4	(117)
3527.867	A	10	2.50	6.00	4-3	
3498.83	P		2.50	6.03	5-5	
3509.20	P		2.50	6.02	4-4	
3448.69	A	1	2.50	6.08	5-4	$b^3H-y^3F^\circ$
3451.046	A	12	2.50	6.08	4-3	(118)
3420.15	A	2	2.51	6.12	6-5	$b^3H-z^1H^\circ$
3410.46	A	1	2.50	6.12	5-5	(119)
3406.06	A	7	2.50	6.12	4-5	
3408.955	A	15	2.50	6.12	4-3	$b^3H-z^1F^\circ$ (120)
3391.01	A	1	2.50	6.14	4-4	$b^3H-z^1G^\circ$ (121)
3134.928	A	200	2.51	6.45	6-6	$b^3H-y^3H^\circ$
3136.503	A	160	2.50	6.44	5-5	(122)
3139.733	A	160	2.50	6.43	4-4	
3144.700	A	20	2.51	6.44	6-5	
3143.477	A	15	2.50	6.43	5-4	
3126.79	A	2	2.50	6.45	5-6	
3132.793	A	3	2.50	6.44	4-5	
3033.445	A	200	2.51	6.58	6-7	$b^3H-z^3I^\circ$
3048.214	A	200	2.50	6.55	5-6	(123)
3063.247	A	200	2.50	6.53	4-5	
3055.942	A	7	2.51	6.55	6-6	
3066.80	A	4	2.50	6.53	5-5	
		——	——	——		
6226.29	A	10n	2.55	4.53	2-2	$b^3D-z^5F^\circ$ (124)
6028.98	A	20	2.55	4.59	3-3	$b^3D-z^3D^\circ$
6086.93	A	15n	2.55	4.57	2-2	(125)
6083.82	A	10n	2.53	4.56	1-1	
6026.81	A	6	2.55	4.59	2-3	

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Mul ((
5916.364	A	15	2.55	4.63	3-3	b^3D
5967.77	A	6	2.55	4.61	2-2	(1
5914.28	A	5	2.55	4.63	2-3	
*5047.308§	A	10	2.55	4.99	3-4	b^3D
5106.233	A	5	2.55	4.96	2-3	(1
5132.19	A	2	2.53	4.94	1-2	
5157.28	A	2?	2.55	4.94	2-2	
3826.968	A	30	2.55	5.77	2-2	b^3D
3813.12	A	3	2.53	5.77	1-2	(1
3774.678	A	15	2.55	5.81	2-2	b^3D
3773.80	A	5	2.55	5.82	2-1	(1
3761.20	A	1	2.53	5.81	1-2	
3604.375	A	4	2.53	5.96	1-0	b^3D (1
3489.947	A	20	2.55	6.08	3-4	b^3D
3496.27	P		2.55	6.08	2-3	(1
m3485.82	P	V+	2.53	6.07	1-2	
m3497.00	P	V+	2.55	6.08	3-3	
3497.39	A	4	2.55	6.07	2-2	
3498.12	P		2.55	6.07	3-2	
3453.78	A	1	2.55	6.12	3-3	b^3D
3453.087	A	90	2.55	6.12	2-3	(1
3435.38	A	7	2.55	6.14	3-4	b^3D (1
3434.46	A	1	2.55	6.14	3-2	b^3D
3433.767	A	3	2.55	6.14	2-2	(1
3414.879	A	3	2.55	6.16	3-2	b^3D
*3414.192§	A	10	2.55	6.16	2-2	(1
3403.159	A	3	2.53	6.16	1-2	
3281.755	A	10	2.55	6.31	3-3	b^3D
3314.862	A	50	2.55	6.27	2-2	(1
m3337.76	P	V+	2.53	6.23	1-1	
3315.53	A	5	2.55	6.27	3-2	
3348.372	A	4	2.55	6.23	2-1	
3281.120	A	40	2.55	6.31	2-3	
3304.474	A	40	2.53	6.27	1-2	
3277.71	A	30	2.55	6.31	3-2	b^3D
3318.907	A	20	2.55	6.26	2-1	(1
3316.873	A	20	2.53	6.25	1-0	
3277.082	A	10	2.55	6.31	2-2	
3308.480	A	20	2.53	6.26	1-1	
3266.91	A	1?	2.53	6.31	1-2	
3120.726	A	50	2.55	6.50	3-4	b^3D
3146.226	A	40 1	2.55	6.47	2-3	(1
3151.319	A	100	2.53	6.45	1-2	
3146.818	A	10	2.55	6.47	3-3	
*3160.781	A	15	2.55	6.45	2-2	
3110.07	A	3?	2.55	6.51	3-3	b^3D
3116.02	A	3	2.55	6.51	2-2	(1
3116.11	A	2	2.53	6.49	1-1	
3106.829	A	3	2.53	6.51	1-2	
3105.973	A	5	2.55	6.52	2-1	b^3D (1
3001.754	A	30	2.55	6.66	3-3	b^3D
3006.502	A	20	2.55	6.65	2-2	(1
3008.508	A	15	2.53	6.64	1-1	
3007.035	A	1	2.55	6.65	3-2	
2997.945	A	6	2.53	6.65	1-2	
		——	——	——		
5202.94	A	2	2.59	4.96	2-3	a^1D (1
3881.04	A	2	2.59	5.77	2-2	a^1D (1
3622.289	A	10	2.59	6.00	2-3	a^1D (1
3541.341	A	50	2.59	6.08	2-3	a^1D
3542.480	A	4	2.59	6.07	2-2	(1
3497.031	A	200	2.59	6.12	2-3	a^1D (1
3457.153	A	300	2.59	6.16	2-2	a^1D (1
3359.50	A	2	2.59	6.26	2-1	a^1D (1
3320.780	A	4	2.59	6.31	2-3	a^1D
3355.366	A	20	2.59	6.27	2-2	(1
3182.674	A	20	2.59	6.47	2-3	a^1D
3197.574	A	7	2.59	6.45	2-2	(1
3161.313	A	30	2.59	6.49	2-1	a^1D (1
3141.486	A	40	2.59	6.52	2-1	a^1D (1
3039.767	A	2	2.59	6.65	2-2	a^1D (1
2963.249	A	9	2.59	6.75	2-1	a^1D (1
		——	——	——		
4038.545	A	2	2.75	5.81	1-0	a^1P (1
*3847.323§	A	100	2.75	5.96	1-0	a^1P (1
3712.533	A	8	2.75	6.07	1-2	a^1P (1
3618.924	A	200	2.75	6.16	1-2	a^1P (1
3507.534	A	20	2.75	6.27	1-2	a^1P (1
3465.25	A	4	2.75	6.31	1-2	a^1P (1
3335.482	A	10	2.75	6.45	1-2	a^1P (1
3285.672	A	3	2.75	6.51	1-2	a^1P
3296.052	A	8	2.75	6.49	1-1	(1

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aboratory	Ref	Int	E P Low	E P High	J	Multiplet (No)
08//	A	2500R	0.39	4.38	5-6	$a^5F-z^5G^\circ$
95	A	2000R	0.37	4.34	4-5	(1)
08	A	1500R	0.35	4.31	3-4	
76	A	1000R	0.33	4.29	2-3	
82	A	600R	0.32	4.27	1-2	
38	A	80	0.39	4.34	5-5	
15	A	150R	0.37	4.31	4-4	
62	A	100R	0.35	4.29	3-3	
29	A	150r	0.33	4.27	2-2	
37	A	30	0.39	4.31	5-4	
71	A	20	0.37	4.29	4-3	
37	A	30	0.35	4.27	3-2	
7	A	150	0.35	4.53	3-2	$a^5F-z^5F^\circ$ †
20	A	100	0.33	4.50	2-1	(2)
		—	—	—		
17	A	6	1.12	4.34	4-5	$a^3F-z^5G^\circ$
55	A	5	1.09	4.31	3-4	(3)
53	A	4	1.07	4.29	2-3	
10	A	4	1.07	4.27	2-2	
39	A	50	1.12	4.61	4-5	$a^3F-z^5F^\circ$
18	A	10	1.09	4.59	3-4	(4)
18	P		1.07	4.56	2-3	
71	A	3n	1.12	4.59	4-4	
594	A	90	1.09	4.56	3-3	
177§	A	200	1.07	4.53	2-2	
323	A	600	1.12	4.56	4-3	
12	A	800	1.09	4.53	3-2	
745	A	1000	1.07	4.50	2-1	
300	A	1500	1.12	4.59	4-3	$a^3F-z^3D^\circ$
190	A	1000	1.09	4.57	3-2	(5)
765	A	500	1.07	4.56	2-1	
713	A	200	1.09	4.59	3-3	
22	A	120	1.07	4.57	2-2	
323	A	20	1.07	4.59	2-3	
00	A	5	1.12	4.63	4-4	$a^3F-z^5D^\circ$
916	A	250	1.09	4.63	3-3	(6)
337	A	80	1.07	4.61	2-2	
398	A	800	1.12	4.63	4-3	
432	A	400	1.09	4.61	3-2	
163	A	150	1.07	4.60	2-1	
55	A	3	1.09	4.63	3-4	
580	A	5	1.07	4.63	2-3	
12	A	1500R	1.12	4.89	4-5	$a^3F-z^3G^\circ$
124	A	1200R	1.09	4.86	3-4	(7)
709	A	1000R	1.07	4.84	2-3	
738	A	130	1.12	4.86	4-4	
391	A	100	1.09	4.84	3-3	
395	A	2	1.12	4.84	4-3	
586	A	500R	1.12	4.99	4-4	$a^3F-z^3F^\circ$
522	A	300R	1.09	4.96	3-3	(8)
717	A	200R	1.07	4.94	2-2	
750	A	120	1.12	4.96	4-3	
345	A	100	1.09	4.94	3-2	
32	A	40	1.09	4.99	3-4	
127	A	40	1.07	4.96	2-3	
		—	—	—		
126	A	200	1.47	4.56	2-3	$a^3P-z^5F^\circ$
542	A	300	1.42	4.53	1-2	(9)
11	A	150	1.39	4.50	0-1	
779	A	60	1.47	4.53	2-2	
340	A	80	1.42	4.50	1-1	
03	A	5	1.47	4.50	2-1	
968	A	500	1.47	4.59	2-3	$a^3P-z^3D^\circ$
418	A	200	1.42	4.57	1-2	(10)
155§	A	60	1.39	4.56	0-1	
732	A	60	1.47	4.57	2-2	
734	A	50	1.42	4.56	1-1	
47	A	3	1.47	4.56	2-1	
37	A	250	1.47	4.63	2-3	$a^3P-z^5D^\circ$
744	A	60	1.42	4.61	1-2	(11)
409	A	7	1.39	4.60	0-1	
497	A	10	1.47	4.61	2-2	
308	A	5	1.42	4.60	1-1	
48	P		1.47	4.60	2-1	
98	P		1.42	4.59	1-0	
14	A	2	1.47	4.96	2-3	$a^3P-z^3F^\circ$
						(12)
		—	—	—		
12	P		1.57	4.38	6-6	$a^3H-z^5G^\circ$
11	P		1.56	4.34	5-5	(13)
76	P		1.55	4.31	4-4	
77	P		1.57	4.34	6-5	
03	P		1.56	4.31	5-4	
13	P		1.55	4.29	4-3	
38	P		1.56	4.38	5-6	
17	P		1.55	4.34	4-5	
370	A	7	1.57	4.61	6-5	$a^3H-z^5F^\circ$
36	A	3	1.56	4.59	5-4	(14)
476	A	1200 l	1.57	4.89	6-5	$a^3H-z^3G^\circ$
760	A	800 l	1.56	4.86	5-4	(15)
306	A	800	1.55	4.84	4-3	
332	A	7	1.56	4.89	5-5	
16§	A	10	1.55	4.86	4-4	
		—	—	—		
59	A	1	1.67	4.27	2-2	$b^3F-z^5G^\circ$
						(16)
78	A	5?	1.68	4.56	4-3	$b^3F-z^5F^\circ$
02	A	4	1.67	4.53	3-2	(17)
39	A	3	1.67	4.50	2-1	
32	A	4	1.68	4.59	4-3	$b^3F-z^3D^\circ$
41	A	15n	1.67	4.57	3-2	(18)
75	A	9n	1.67	4.56	2-1	
062	A	3	1.68	4.63	4-4	$b^3F-z^5D^\circ$

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
m3844.48	P	V	1.68	4.89	4-5	$b^3F-z^3G^\circ$
3865.72	A	5	1.67	4.86	3-4	(20)
3883.43	A	2	1.67	4.84	2-3	
3875.67	A	5	1.68	4.86	4-4	
3891.25	A	4	1.67	4.84	3-3	
3901.33	P		1.68	4.84	4-3	
3727.351	A	1000 l	1.68	4.99	4-4	$b^3F-z^3F^\circ$
3750.88	A	600	1.67	4.96	3-3	(21)
3770.974	A	400	1.67	4.94	2-2	
3760.24	A	140	1.68	4.96	4-3	
3778.357	A	100	1.67	4.94	3-2	
3718.159	A	60	1.67	4.99	3-4	
3743.610	A	40	1.67	4.96	2-3	
*2983.009	A	10	1.67	5.81	3-4	$b^3F-z^3H^\circ$ †
						(22)
		—	—	—		
4270.64	A	2	1.70	4.59	3-4	$a^5P-z^5F^\circ$
4286.13	A	3	1.68	4.56	2-3	(23)
4316.258	A	2	1.67	4.53	1-2	
4313.30	A	2	1.70	4.56	3-3	
4331.79	A	2	1.68	4.53	2-2	
*4260.75	A	9n	1.70	4.59	3-3	$a^5P-z^3D^\circ$
4263.836	A	4n	1.68	4.57	2-2	(24)
4264.50	A	1	1.67	4.56	1-1	
4234.251	A	7	1.68	4.59	2-3	
4248.820	A	4	1.67	4.57	1-2	
4202.350	A	150	1.70	4.63	3-4	$a^5P-z^5D^\circ$
4178.390	A	60	1.68	4.63	2-3	(25)
4190.40	A	15	1.67	4.61	1-2	
4204.20	A	20	1.70	4.63	3-3	
m4205.05	P	V+	1.68	4.61	2-2	
4209.74	A	10	1.67	4.60	1-1	
4231.165	A	4	1.70	4.61	3-2	
4224.51	A	10	1.68	4.60	2-1	
4220.047	A	10	1.67	4.59	1-0	
3029.56	A	7	1.70	5.77	3-2	$a^5P-z^3P^\circ$
3020.65	A	6	1.68	5.76	2-1	(26)
3022.57	A	40	1.67	5.75	1-0	
3016.14	A	15	1.68	5.77	2-2	
3013.102	A	80	1.67	5.76	1-1	
3008.610	A	70	1.67	5.77	1-2	
3001.203	A	200	1.70	5.81	3-3	$a^5P-z^5P^\circ$
3003.461	A	80	1.68	5.79	2-2	(27)
3007.296	A	15	1.67	5.77	1-1	
3016.775	A	120	1.70	5.79	3-2	
3014.822	A	100	1.68	5.77	2-1	
2988.027	A	80	1.68	5.81	2-3	
2995.999	A	60	1.67	5.79	1-2	
2968.373	A	200	1.70	5.85	3-4	$a^5P-y^5D^\circ$
2976.517	A	100	1.68	5.82	2-3	(28)
2976.197	A	60	1.67	5.81	1-2	
2989.594	A	40	1.70	5.82	3-3	
2983.558	A	80n	1.68	5.81	2-2	
2975.650	A	50	1.67	5.82	1-1	
2996.70	A	3	1.70	5.81	3-2	
*2983.009	A	10	1.68	5.82	2-1	
2982.75	A	40	1.67	5.81	1-0	
		—	—	—		
4799.94	P		1.81	4.38	5-6	$a^3G-z^5G^\circ$
4844.31	P		1.80	4.34	4-5	(29)
4880.30	P		1.79	4.31	3-4	
4867.79	P		1.81	4.34	5-5	
4902.89	P		1.80	4.31	4-4	
4928.62	P		1.79	4.29	3-3	
4926.94	P		1.81	4.31	5-4	
4951.66	P		1.80	4.29	4-3	
4966.08	P		1.79	4.27	3-2	
4404.68	A	2	1.81	4.61	5-5	$a^3G-z^5F^\circ$
4424.62	P		1.80	4.59	4-4	(30)
4451.61	P		1.79	4.56	3-3	
4444.20	P		1.81	4.59	5-4	
4470.39	P		1.80	4.56	4-3	
4500.86	P		1.79	4.53	3-2	
4385.45	P		1.80	4.61	4-5	
4406.22	P		1.79	4.59	3-4	
4370.27	A	3	1.81	4.63	5-4	$a^3G-z^5D^\circ$
						(31)
4005.712	A	800	1.81	4.89	5-5	$a^3G-z^3G^\circ$
4023.388	A	600	1.80	4.86	4-4	(32)
4035.631	A	400	1.79	4.84	3-3	
4039.574	A	20	1.81	4.86	5-4	
*4051.06§	A	20	1.80	4.84	4-3	
3989.803	A	15	1.80	4.89	4-5	
4008.17	A	20	1.79	4.86	3-4	
3878.715	A	300	1.81	4.99	5-4	$a^3G-z^3F^\circ$
3899.140	A	200	1.80	4.96	4-3	(33)
3914.333	A	250	1.79	4.94	3-2	
*3863.81§	A	60	1.80	4.99	4-4	
3884.847	A	50	1.79	4.96	3-3	
3849.758	A	3	1.79	4.99	3-4	
3033.821	A	300	1.81	5.88	5-6	$a^3G-z^3H^\circ$
3053.39	A	200	1.80	5.84	4-5	(34)
3067.104	A	200	1.79	5.81	3-4	
3062.702	A	20	1.81	5.84	5-5	
3076.016	A	25	1.80	5.81	4-4	
3085.47	A	1	1.81	5.81	5-4	
		—	—	—		
4810.17	A	1?	2.03	4.59	4-3	$b^3G-z^3D^\circ$
						(35)
4331.55	A	6n	2.04	4.89	5-5	$b^3G-z^3G^\circ$
4349.97	A	6n	2.03	4.86	4-4	(36)
4366.91	A	5n	2.02	4.84	3-3	
4371.17	P		2.04	4.86	5-4	
4382.33	P		2.03	4.84	4-3	
4310.72	P		2.03	4.89	4-5	
4334.77	P		2.02	4.86	3-4	

V II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multipl (No)
4183.435	A	250	2.04	4.99	5-4	b^3G-z^3F
4205.080	A	250	2.03	4.96	4-3	(37)
4225.228	A	120	2.02	4.94	3-2	
4164.015	A	15	2.03	4.99	4-4	
4190.89	A	10	2.02	4.96	3-3	
4150.08	P		2.02	4.99	3-4	
*3217.121§	A	400	2.04	5.88	5-6	b^3G-z^3H
3237.876	A	350	2.03	5.84	4-5	(38)
*3254.773§	A	300	2.02	5.81	3-4	
3249.617	A	40	2.04	5.84	5-5	
3263.33	A	20	2.03	5.81	4-4	
m3093.16	P	V+	2.04	6.03	5-5	b^3G-y^3G
3094.196	A	100	2.03	6.02	4-4	(39)
3100.938	A	100	2.02	6.00	3-3	
3104.906	A	25	2.04	6.02	5-4	
3108.704	A	30	2.03	6.00	4-3	
3082.524	A	40	2.03	6.03	4-5	
3086.507	A	30	2.02	6.02	3-4	
3053.894	A	80	2.04	6.08	5-4	b^3G-y^3F
3040.891	A	70	2.03	6.08	4-3	(40)
3042.27	A	80	2.02	6.07	3-2	
3043.54§	A	40	2.03	6.08	4-4	
3041.42	A	60	2.02	6.08	3-3	
3036.07	A	2	2.02	6.08	3-4	
3023.882	A	20	2.04	6.12	5-5	b^3G-z^1H
						(41)
3015.98	A	10	2.03	6.12	4-3	b^3G-z^1F
						(42)
3012.020	A	30	2.04	6.14	5-4	b^3G-z^1G
3001.93	A	2	2.03	6.14	4-4	(43)
2979.102	A	5	2.02	6.16	3-2	b^3G-z^1D
						(44)
		—	—	—		
4606.59	P		2.21	4.89	4-5	a^1G-z^3G
4651.42	P		2.21	4.86	4-4	(45)
4688.45	P		2.21	4.84	4-3	
4439.42	A	1	2.21	4.99	4-4	a^1G-z^3F
						(46)
3401.997	A	2	2.21	5.84	4-5	a^1G-z^3H
						(47)
3230.919	A	4	2.21	6.03	4-5	a^1G-y^3G
3243.74	P		2.21	6.02	4-4	(48)
3259.684	A	3	2.21	6.00	4-3	
3188.10	A	30	2.21	6.08	4-4	a^1G-y^3F
*3193.97§	A	10?	2.21	6.08	4-3	(49)
3157.900	A	40	2.21	6.12	4-3	a^1G-z^1F
						(50)
3155.409	A	60	2.21	6.12	4-5	a^1G-z^1H
						(51)
3142.484	A	150	2.21	6.14	4-4	a^1G-z^1G
						(52)
		—	—	—		
5318.61	P		2.27	4.59	3-4	a^3D-z^5F
5367.53	P		2.26	4.56	2-3	(53)
5432.09	A	2	2.26	4.53	1-2	
5384.89	A	8	2.27	4.56	3-3	
5439.30	A	15	2.26	4.53	2-2	
5487.00	A	8	2.26	4.50	1-1	
5457.10	A	4	2.27	4.53	3-2	
5494.35	P		2.26	4.50	2-1	
5303.26	A	40	2.27	4.59	3-3	$a^3D-z^3D^\circ$
5332.65	A	9	2.26	4.57	2-2	(54)
5350.37	A	5	2.26	4.56	1-1	
5349.75	A	3	2.27	4.57	3-2	
5357.35	A	2	2.26	4.56	2-1	
5286.42	P		2.26	4.59	2-3	
5325.71	P		2.26	4.57	1-2	
5213.08	P		2.27	4.63	3-4	$a^3D-z^5D^\circ$
5198.68	A	4	2.26	4.63	2-3	(55)
5234.28	P		2.26	4.61	1-2	
5215.928	A	25	2.27	4.63	3-3	
5240.97	P		2.26	4.61	2-2	
5264.49	P		2.26	4.60	1-1	
5257.51	P		2.27	4.61	3-2	
5271.26	P		2.26	4.60	2-1	
5280.62	P		2.26	4.59	1-0	
4528.51	A	300	2.27	4.99	3-4	$a^3D-z^3F^\circ$
4564.592	A	200	2.26	4.96	2-3	(56)
4600.19	A	150	2.26	4.94	1-2	
m4577.13	P	V	2.27	4.96	3-3	
4605.352	A	15	2.26	4.94	2-2	
4618.12	P		2.27	4.94	3-2	
3521.836	A	90	2.27	5.77	3-2	$a^3D-z^3P^\circ$
3520.547	A	15	2.26	5.76	2-1	(57)
3530.45	A	10	2.26	5.75	1-0	
3514.422	A	20	2.26	5.77	2-2	
3517.53	P		2.26	5.76	1-1	
3511.42	A	3	2.26	5.77	1-2	
3477.514	A	40	2.27	5.81	3-2	$a^3D-y^5D^\circ$
3469.528	A	50	2.26	5.82	2-1	(58)
3476.252	A	20	2.26	5.81	1-0	
3470.263	A	20	2.26	5.81	2-2	
3466.59	A	20	2.26	5.82	1-1	
3467.33	A	2	2.26	5.81	1-2	
3333.608	A	2	2.26	5.96	1-0	$a^3D-z^1S^\circ$
						(59)
3291.04	A	5	2.27	6.02	3-4	$a^3D-y^3G^\circ$
3300.905	A	6	2.26	6.00	2-3	(60)
3307.445	A	2	2.27	6.00	3-3	
3233.772	A	80	2.27	6.08	3-4	$a^3D-y^3F^\circ$
3233.546	A	40	2.26	6.08	2-3	(61)
3231.952	A	80	2.26	6.07	1-2	
3239.833	A	8	2.27	6.08	3-3	
3234.504	A	10	2.26	6.07	2-2	

V II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3202.711	A	2	2.27	6.12	3-3	$a^3D-z^1F^o$
3196.574	A	20	2.26	6.12	2-3	(62)
3186.86	A	10	2.27	6.14	3-4	$a^3D-z^1G^o$ (63)
3186.10	A	1	2.27	6.14	3-2	$a^3D-z^5S^o$ (64)
3169.21	A	2	2.27	6.16	3-2?	$a^3D-z^1D^o$
*3160.781	A	15	2.26	6.16	1-2	(65)
3050.735	A	15	2.27	6.31	3-2	$a^3D-y^3P^o$
3081.254	A	25	2.26	6.26	2-1	(66)
3086.210	A	10	2.26	6.25	1-0	
3078.948	A	5	2.26	6.26	1-1	
3054.24	A	7n	2.27	6.31	3-3	$a^3D-y^3D^o$
3048.65	A	4	2.26	6.31	2-3	(67)
3075.474	A	2	2.26	6.27	1-2	
4968.50	A	1	2.36	4.84	4-3	$b^1G-z^3G^o$ (68)
3547.07	A	5	2.36	5.84	4-5	$b^1G-z^3H^o$
3577.644	A	3	2.36	5.81	4-4	(69)
3361.506	A	60	2.36	6.03	4-5	$b^1G-y^3G^o$
3392.659	A	50	2.36	6.00	4-3	(70)
3315.176	A	50	2.36	6.08	4-4	$b^1G-y^3F^o$
3321.539	A	150	2.36	6.08	4-3	(71)
3282.534	A	150	2.36	6.12	4-3	$b^1G-z^1F^o$ (72)
3279.844	A	300	2.36	6.12	4-5	$b^1G-z^1H^o$ (73)
*3265.893§	A	100	2.36	6.14	4-4	$b^1G-z^1G^o$ (74)
3025.68	A	1	2.36	6.44	4-5	$b^1G-y^3H^o$
3032.187	A	3	2.36	6.43	4-4	(75)
3621.203	A	150	2.36	5.77	2-2	$b^3P-z^3P^o$
3632.126	A	15	2.37	5.76	1-1	(76)
3627.713	A	60	2.36	5.76	2-1	
3645.905	A	30	2.37	5.75	1-0	
3625.608	A	50	2.37	5.77	1-2	
3631.482	A	10	2.37	5.76	0-1	
3607.30	A	1	2.37	5.79	1-2	$b^3P-z^5P^o$
3623.03	A	1	2.37	5.77	0-1	(77)
3574.340	A	60	2.36	5.81	2-2	$b^3P-y^5D^o$
*3577.857§	A	20	2.37	5.82	1-1	(78)
3573.557	A	50	2.36	5.82	2-1	
3588.13	A	15	2.37	5.81	1-0	
3578.636	A	15	2.37	5.81	1-2	
3577.220	A	10	2.37	5.82	0-1	
3436.393	A	2	2.37	5.96	1-0	$b^3P-z^1S^o$ (79)
3394.92	A	1	2.36	6.00	2-3	$b^3P-y^3G^o$ (80)
3323.731	A	3	2.36	6.08	2-3	$b^3P-y^3F^o$ (81)
3249.464	A	4	2.36	6.16	2-2	$b^3P-z^1D^o$ (82)
3128.686	A	20	2.36	6.31	2-3	$b^3P-y^3D^o$
3162.714	A	30	2.37	6.27	1-2	(83)
3192.699	A	15	2.37	6.23	0-1	
3159.365	A	20	2.36	6.27	2-2	
3193.200	A	20	2.37	6.23	1-1	
3189.76	A	3	2.36	6.23	2-1	
3125.01	A	20	2.36	6.31	2-2	$b^3P-y^3P^o$
3166.39	A	8	2.37	6.26	1-1	(84)
3163.024	A	30	2.36	6.26	2-1	
3174.077	A	30	2.37	6.25	1-0	
3128.288	A	10	2.37	6.31	1-2	
3165.89	A	30	2.37	6.26	0-1	
3024.981	A	50	2.36	6.44	2-1	$b^3P-z^3S^o$
3028.042	A	50	2.37	6.44	1-1	(85)
3027.600	A	15	2.37	6.44	0-1	
3005.813	A	30	2.36	6.47	2-3	$b^3P-x^3F^o$
3022.146	A	4	2.37	6.45	1-2	(86)
3019.09	A	3	2.36	6.45	2-2	
2972.263	A	80	2.36	6.51	2-3	$b^3P-x^3D^o$
2981.200	A	70	2.37	6.51	1-2	(87)
2989.306	A	15	2.37	6.49	0-1	
2978.226	A	20	2.36	6.51	2-2	
2989.74	A	10	2.37	6.49	1-1	
3370.40	A	2	2.37	6.03	6-5	$a^1I-y^3G^o$ (88)
3288.324	A	20	2.37	6.12	6-5	$a^1I-z^1H^o$ (89)
6027.23	A	8	2.46	4.50	0-1	$a^1S-z^5F^o$ (90)
5862.80	A	15+p?	2.46	4.56	0-1	$a^1S-z^3D^o$ (91)
3731.083	A	20	2.46	5.76	0-1	$a^1S-z^3P^o$ (92)
3674.691	A	30	2.46	5.82	0-1	$a^1S-y^5D^o$ (93)
3270.115	A	10	2.46	6.23	0-1	$a^1S-y^3D^o$ (94)
3057.08	A	2	2.46	6.49	0-1	$a^1S-x^3D^o$ (95)
3038.520	A	30	2.46	6.52	0-1	$a^1S-z^1P^o$ (96)
6031.07	A	40	2.51	4.56	3-3	$c^3P-z^5F^o$
6028.26	A	40	2.48	4.53	1-2	(97)
6120.98	A	5	2.49	4.50	0-1	
6095.93	A	3	2.48	4.50	1-1	

V II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
5928.86	A	100	2.51	4.59	2-3	$c^3P-z^3D^o$
5897.54	A	50	2.48	4.57	1-2	(98)
5951.45	A	4	2.49	4.56	0-1	
5819.93	A	80	2.51	4.63	2-3	$c^3P-z^5D^o$ (99)
3787.235	A	150	2.51	5.77	2-2	$c^3P-z^3P^o$
*3758.22§	A	40	2.48	5.76	1-1	(100)
3794.366	A	50	2.51	5.76	2-1	
3772.962	A	80	2.48	5.75	1-0	
3751.222	A	150	2.48	5.77	1-2	
3767.720	A	40	2.49	5.76	0-1	
3731.64	A	1	2.48	5.79	1-2	$c^3P-z^5P^o$ (101)
3724.984	A	2	2.51	5.82	2-3	$c^3P-y^5D^o$
3700.96	A	30	2.48	5.81	1-2	(102)
3709.335	A	40	2.49	5.82	0-1	
3736.017	A	70	2.51	5.81	2-2	
3700.126	A	40	2.48	5.82	1-1	
3735.158	A	30	2.51	5.82	2-1	
3711.118	A	50	2.48	5.81	1-0	
3549.030	A	3	2.48	5.96	1-0	$c^3P-z^1S^o$ (103)
3463.079	A	4	2.51	6.08	2-3	$c^3P-y^3F^o$
3434.024	A	4	2.48	6.07	1-2	(104)
3464.17	A	6	2.51	6.07	2-2	
3420.709	A	5	2.51	6.12	2-3	$c^3P-z^1F^o$ (105)
3401.740	A	1	2.51	6.14	2-2	$c^3P-z^5S^o$
3372.666	A	3	2.48	6.14	1-2	(106)
3382.529	A	30	2.51	6.16	2-2	$c^3P-z^1D^o$
3353.776	A	30	2.48	6.16	1-2	(107)
3251.869	A	200	2.51	6.31	2-3	$c^3P-y^3D^o$
3257.893	A	100	2.48	6.27	1-2	(108)
3297.528	A	20	2.49	6.23	0-1	
3285.022	A	50	2.51	6.27	2-2	
3290.240	A	50	2.48	6.23	1-1	
3317.912	A	20	2.51	6.23	2-1	
3247.908	A	4	2.51	6.31	2-2	$c^3P-y^3P^o$
3261.80	A	5	2.48	6.26	1-1	(109)
3288.985	A	7	2.51	6.26	2-1	
3221.380	A	2	2.48	6.31	1-2	
3119.32	A	4	2.51	6.47	2-3	$c^3P-x^3F^o$ (110)
3115.16	A	2	2.48	6.44	1-1	$c^3P-z^3S^o$ (111)
3083.208	A	40	2.51	6.51	2-3	$c^3P-x^3D^o$
3065.61	A	50	2.48	6.51	1-2	(112)
3081.01	A	20	2.49	6.49	0-1	
3089.633	A	4	2.51	6.51	2-2	
3074.66	A	12	2.48	6.49	1-1	
3079.75	A	1	2.51	6.52	2-1	$c^3P-z^1P^o$
3062.178	A	3	2.49	6.52	0-1	(113)
2981.924	A	15	2.51	6.65	2-2	$c^3P-w^3D^o$ †
2992.378	A	2	2.51	6.64	2-1	(114)
5193.43	P		2.51	4.89	6-5	$b^3H-z^3G^o$
5227.70	A	20	2.50	4.86	5-4	(115)
5263.99	A	15	2.50	4.84	4-3	
5171.13	P		2.50	4.89	5-5	
5217.36	P		2.50	4.86	4-4	
3669.410	A	300	2.51	5.88	6-6	$b^3H-z^3H^o$
3700.337	A	200	2.50	5.84	5-5	(116)
3728.335	A	200	2.50	5.81	4-4	
3711.751	A	10	2.51	5.84	6-5	
3733.607	A	4	2.50	5.81	5-4	
3658.266	A	10	2.50	5.88	5-6	
*3695.158	A	8	2.50	5.84	4-5	
3509.024	A	40	2.51	6.03	6-5	$b^3H-y^3G^o$
3513.877	A	15	2.50	6.02	5-4	(117)
3527.867	A	10	2.50	6.00	4-3	
3498.83	P		2.50	6.03	5-5	
3509.20	P		2.50	6.02	4-4	
3448.69	A	1	2.50	6.08	5-4	$b^3H-y^3F^o$
3451.046	A	12	2.50	6.08	4-3	(118)
3420.15	A	2	2.51	6.12	6-5	$b^3H-z^1H^o$
3410.46	A	1	2.50	6.12	5-5	(119)
3406.06	A	7	2.50	6.12	4-5	
3408.955	A	15	2.50	6.12	4-3	$b^3H-z^1F^o$ (120)
3391.01	A	1	2.50	6.14	4-4	$b^3H-z^1G^o$ (121)
3134.928	A	200	2.51	6.45	6-6	$b^3H-y^3H^o$
3136.503	A	160	2.50	6.44	5-5	(122)
3139.733	A	160	2.50	6.43	4-4	
3144.700	A	20	2.51	6.44	6-5	
3143.477	A	15	2.50	6.43	5-4	
3126.79	A	2	2.50	6.45	5-6	
3132.793	A	3	2.50	6.44	4-5	
3033.445	A	200	2.51	6.58	6-7	$b^3H-z^3I^o$
3048.214	A	200	2.50	6.55	5-6	(123)
3063.247	A	200	2.50	6.53	4-5	
3055.942	A	7	2.51	6.55	6-6	
3066.80	A	4	2.50	6.53	5-5	
6226.29	A	10n	2.55	4.53	2-2	$b^3D-z^5F^o$ (124)
6028.98	A	20	2.55	4.59	3-3	$b^3D-z^3D^o$
6086.93	A	15n	2.55	4.57	2-2	(125)
6083.82	A	10n	2.53	4.56	1-1	
6026.81	A	6	2.55	4.59	2-3	

V II continued

Laboratory			E P		J	Mul
I A	Ref	Int	Low	High		(
5916.364	A	15	2.55	4.63	3-3	b^3D
5967.77	A	6	2.55	4.61	2-2	(1
5914.28	A	5	2.55	4.63	2-3	
*5047.308§	A	10	2.55	4.99	3-4	b^3D
5106.233	A	5	2.55	4.96	2-3	(1
5132.19	A	2	2.53	4.94	1-2	
5157.28	A	2?	2.55	4.94	2-2	
3826.968	A	30	2.55	5.77	2-2	b^3D
3813.12	A	3	2.53	5.77	1-2	(1
3774.678	A	15	2.55	5.81	2-2	b^3D
3773.80	A	5	2.55	5.82	2-1	(1
3761.20	A	1	2.53	5.81	1-2	
3604.375	A	4	2.53	5.96	1-0	b^3D (1
3489.947	A	20	2.55	6.08	3-4	b^3D
3496.27	P		2.55	6.08	2-3	(1
m3485.82	P	V+	2.53	6.07	1-2	
m3497.00	P	V+	2.55	6.08	3-3	
3497.39	A	4	2.55	6.07	2-2	
3498.12	P		2.55	6.07	3-2	
3453.78	A	1	2.55	6.12	3-3	b^3D
3453.087	A	90	2.55	6.12	2-3	(1
3435.38	A	7	2.55	6.14	3-4	b^3D (1
3434.46	A	1	2.55	6.14	3-2	b^3D
3433.767	A	3	2.55	6.14	2-2	(1
3414.879	A	3	2.55	6.16	3-2	b^3D
*3414.192§	A	10	2.55	6.16	2-2	(1
3403.159	A	3	2.53	6.16	1-2	
3281.755	A	10	2.55	6.31	3-3	b^3D
3314.862	A	50	2.55	6.27	2-2	(1
m3337.76	P	V+	2.53	6.23	1-1	
3315.53	A	5	2.55	6.27	3-2	
3348.372	A	4	2.55	6.23	2-1	
3281.120	A	40	2.55	6.31	2-3	
3304.474	A	40	2.53	6.27	1-2	
3277.71	A	30	2.55	6.31	3-2	b^3D
3318.907	A	20	2.55	6.26	2-1	(1
3316.873	A	20	2.53	6.25	1-0	
3277.082	A	10	2.55	6.31	2-2	
3308.480	A	20	2.53	6.26	1-1	
3266.91	A	1?	2.53	6.31	1-2	
3120.726	A	50	2.55	6.50	3-4	b^3D
3146.226	A	40 1	2.55	6.47	2-3	(1
3151.319	A	100	2.53	6.45	1-2	
3146.818	A	10	2.55	6.47	3-3	
*3160.781	A	15	2.55	6.45	2-2	
3110.07	A	3?	2.55	6.51	3-3	b^3D
3116.02	A	3	2.55	6.51	2-2	(1
3116.11	A	2	2.53	6.49	1-1	
3106.829	A	3	2.53	6.51	1-2	
3105.973	A	5	2.55	6.52	2-1	b^3D (1
3001.754	A	30	2.55	6.66	3-3	b^3D
3006.502	A	20	2.55	6.65	2-2	(1
3008.508	A	15	2.53	6.64	1-1	
3007.035	A	1	2.55	6.65	3-2	
2997.945	A	6	2.53	6.65	1-2	
5202.94	A	2	2.59	4.96	2-3	a^1D (14
3881.04	A	2	2.59	5.77	2-2	a^1D (14
3622.289	A	10	2.59	6.00	2-3	a^1D (14
3541.341	A	50	2.59	6.08	2-3	a^1D
3542.480	A	4	2.59	6.07	2-2	(14
3497.031	A	200	2.59	6.12	2-3	a^1D (14
3457.153	A	300	2.59	6.16	2-2	a^1D (14
3359.50	A	2	2.59	6.26	2-1	a^1D (14
3320.780	A	4	2.59	6.31	2-3	a^1D
3355.366	A	20	2.59	6.27	2-2	(14
3182.674	A	20	2.59	6.47	2-3	a^1D
3197.574	A	7	2.59	6.45	2-2	(15
3161.313	A	30	2.59	6.49	2-1	a^1D (15
3141.486	A	40	2.59	6.52	2-1	a^1D (15
3039.767	A	2	2.59	6.65	2-2	a^1D (15
2963.249	A	9	2.59	6.75	2-1	a^1D (15
4038.545	A	2	2.75	5.81	1-0	a^1P (15
*3847.323§	A	100	2.75	5.96	1-0	a^1P (15
3712.533	A	8	2.75	6.07	1-2	a^1P (15
3618.924	A	200	2.75	6.16	1-2	a^1P (15
3507.534	A	20	2.75	6.27	1-2	a^1P (15
3465.25	A	4	2.75	6.31	1-2	a^1P (16
3335.482	A	10	2.75	6.45	1-2	a^1P (16
3285.672	A	3	2.75	6.51	1-2	a^1P
3296.052	A	8	2.75	6.49	1-1	(16

continued

aboratory			E P		J	Multiplet (No)
	Ref	Int	Low	High		
0	A	10	2.75	6.52	1-1	$a^1P-z^1P^\circ$ (163)
0	A	10	2.75	6.75	1-1	$a^1P-x^3P^\circ$ (164)
2	A	5	2.89	6.03	5-5	$a^1H-y^3G^\circ$ (165)
7	P		2.89	6.02	5-4	
8	A	200	2.89	6.12	5-5	$a^1H-z^1H^\circ$ (166)
8 §	A	10	2.89	6.14	5-4	$a^1H-z^1G^\circ$ (167)
31	A	4	2.89	6.45	5-6	$a^1H-y^3H^\circ$ (168)
2	A	2	2.89	6.43	5-4	
1	A	2	2.89	6.50	5-4	$a^1H-x^3F^\circ$ (169)
66	A	3	2.89	6.55	5-6	$a^1H-z^3I^\circ$ (170)
75	A	200	2.89	6.68	5-4	$a^1H-y^1G^\circ$ (171)
83	A	20	2.89	6.82	5-5	$a^1H-x^3G^\circ$ (172)
87	A	100	2.89	6.84	5-6	$a^1H-z^1I^\circ$ (173)
60	A	100	2.89	6.85	5-5	$a^1H-y^1H^\circ$ (174)
72	A	2	3.11	6.08	2-3	$b^1D-y^3F^\circ$ (175)
55	A	2	3.11	6.07	2-2	
0 §	A	8	3.11	6.12	2-3	$b^1D-z^1F^\circ$ (176)
69	A	50	3.11	6.16	2-2	$b^1D-z^1D^\circ$ (177)
2	A	3	3.11	6.27	2-2	$b^1D-y^3D^\circ$ (178)
58	A	8	3.11	6.45	2-2	$b^1D-x^3F^\circ$ (179)
13	A	1	3.11	6.51	2-2	$b^1D-x^3D^\circ$ (180)
48	A	7	3.11	6.49	2-1	
96	A	20	3.11	6.52	2-1	$b^1D-z^1P^\circ$ (181)
61	A	6	3.11	6.66	2-3	$b^1D-w^3D^\circ$ (182)
790	A	3	3.11	6.75	2-1	$b^1D-x^3P^\circ$ (183)
45	A	200	3.11	6.81	2-3	$b^1D-y^1F^\circ$ (184)
24	A	40	3.11	6.93	2-1	$b^1D-y^1P^\circ$ (185)
75	A	20	3.11	7.08	2-2	$b^1D-y^1D^\circ$ (186)
52	A	4n	3.31	6.12	3-3	$a^1F-z^1F^\circ$ (187)
67	P		3.31	6.14	3-4	$a^1F-z^1G^\circ$ (188)
37	A	1	3.31	6.43	3-4	$a^1F-y^3H^\circ$ (189)
70	A	1	3.31	6.66	3-3	$a^1F-w^3D^\circ$ (190)
83	A	200	3.31	6.68	3-4	$a^1F-y^1G^\circ$ (191)
85	A	20	3.31	6.81	3-3	$a^1F-y^1F^\circ$ (192)
13	A	3	3.31	6.83	3-4	$a^1F-x^3G^\circ$ (193)
57	A	7	3.31	6.83	3-3	
448	A	15	3.31	7.08	3-2	$a^1F-y^1D^\circ$ (194)
65 §	A	10	3.74	6.08	4-4	$c^3F-y^3F^\circ$ (195)
31	A	5	3.74	6.08	3-3	
00	A	3?	3.74	6.07	2-2	
87	A	2	3.74	6.14	4-4	$c^3F-z^1G^\circ$ (196)
952	A	50	3.74	6.31	4-3	$c^3F-y^3D^\circ$ (197)
06.	A	50	3.74	6.27	3-2	
58	A	40	3.74	6.23	2-1	
14	A	6	3.74	6.31	3-3	
805	A	4	3.74	6.27	2-2	
24	A	1	3.74	6.50	4-4	$c^3F-x^3F^\circ$ (198)
08	A	5?	3.74	6.47	4-3	
765	A	4	3.74	6.45	3-2	
35	A	30n	3.74	6.51	4-3	$c^3F-x^3D^\circ$ (199)
32	A	40n	3.74	6.51	3-2	
70	A	20n	3.74	6.49	2-1	
53	A	3n	3.74	6.51	2-2	
55 §	A	40n	3.74	6.66	4-3	$c^3F-w^3D^\circ$ (200)
894	A	30n	3.74	6.65	3-2	
02	A	15n	3.74	6.64	2-1	
30	A	1	3.74	6.81	4-3	$c^3F-y^1F^\circ$ (201)
05	A	7n	3.74	6.81	2-3	
82	A	20n	3.74	6.82	4-5	$c^3F-x^3G^\circ$ (202)
195	A	30n	3.74	6.83	3-4	
783	A	30	3.74	6.83	2-3	
17	A	2	3.74	6.83	4-4	
965	A	2	3.74	6.83	3-3	
15	A	5	3.74	6.85	4-5	$c^3F-y^1H^\circ$ (203)
72	A	1	3.74	7.08	3-2	$c^3F-y^1D^\circ$ (204)
05	A	20	3.74	7.68	4-4	$c^3F-w^3F^\circ$ (205)
07	A	2	3.74	7.67	3-3	

V II continued

Laboratory			E P		J	Multiplet (No)
I A	Ref	Int	Low	High		
6080.11	A	6	3.78	5.81	4-4	$d^3F-z^3H^\circ$ (206)
*5290.74 §	A	6	3.79	6.12	2-3	$d^3F-z^1F^\circ$ (207)
5191.59	A	2	3.78	6,16	3-2	$d^3F-z^1D^\circ$ (208)
4883.415	A	100	3.78	6.31	4-3	$d^3F-y^3D^\circ$ (209)
4965.40	A	40	3.78	6.27	3-2	
5048.91	A	15	3.79	6.23	2-1	
4973.16	A	2	3.79	6.27	2-2	
4535.215	A	3n	3.78	6.50	4-4	$d^3F-x^3F^\circ$ (210)
4596.37	A	5n	3.78	6.47	3-3	
4634.21	A	3n	3.79	6.45	2-2	
4590.505	A	7n	3.78	6.47	4-3	
4627.48	A	1	3.78	6.45	3-2	
4517.35	A	3n	3.79	6.52	2-1	$d^3F-z^1P^\circ$ (211)
4512.72	A	60n	3.78	6.51	4-3	$d^3F-x^3D^\circ$ (212)
4532.188	A	40n	3.78	6.51	3-2	
4558.46	A	20	3.79	6.49	2-1	
4518.38	A	2n	3.78	6.51	3-3	
4538.64	A	2	3.79	6.51	2-2	
4524.81	P		3.79	6.51	2-3	
4304.15	A	2	3.78	6.65	3-2	$d^3F-w^3D^\circ$ (213)
4080.44	A	2	3.78	6.81	3-3	$d^3F-y^1F^\circ$ (214)
4085.67	A	10n	3.79	6.81	2-3	
4065.070	A	100	3.78	6.82	4-5	$d^3F-x^3G^\circ$ (215)
4053.59	A	60 1	3.78	6.83	3-4	
*4051.34 §	A	100	3.79	6.83	2-3	
4049.03	A	3	3.78	6.83	4-4	
4017.29	A	15n	3.78	6.85	4-5	$d^3F-y^1H^\circ$ (216)
3167.420	A	40	3.78	7.68	4-4	$d^3F-w^3F^\circ$ (217)
3174.531	A	60	3.78	7.67	3-3	
3182.59	A	30	3.79	7.66	2-2	
3171.739	A	9	3.78	7.67	4-3	
3179.416	A	8	3.78	7.66	3-2	
3170.208	A	8	3.78	7.68	3-4	
3177.696	A	6	3.79	7.67	2-3	
2973.975	A	40	3.78	7.93	4-5	$d^3F-w^3G^\circ$ † (218)
2985.184	A	60n	3.78	7.92	3-4	
2994.540	A	60	3.79	7.91	2-3	
6801.16	A	5	3.96	5.77	2-2	$d^3P-z^3P^\circ$ (219)
5249.22	A	1?	3.96	6.31	2-3	$d^3P-y^3D^\circ$ (220)
4963.75	A	2	3.96	6.44	2-1	$d^3P-z^3S^\circ$ (221)
4912.38	A	2	3.96	6.47	2-3	$d^3P-x^3F^\circ$ (222)
4823.396	A	6	3.96	6.51	2-3	$d^3P-x^3D^\circ$ (223)
4839.08	A	3	3.96	6.51	2-2	
4408.92	A	40N?	3.96	6.75	2-2	$d^3P-x^3P^\circ$ (224)
4440.41	A	5n	3.99	6.77	1-0	
4483.50	A	2n	4.00	6.75	0-1	
4232.065	A	80n	3.96	6.87	2-1	$d^3P-y^3S^\circ$ (225)
4378.893	A	60n	3.99	6.87	1-1	
4301.130	A	40n	4.00	6.87	0-1	
*4142.90 §	A	6	3.96	6.93	2-1	$d^3P-y^1P^\circ$ (226)
*3991.965	A	2	3.99	7.08	1-2	$d^3P-y^1D^\circ$ (227)
3070.12	A	25 1	3.96	7.98	2-3	$d^3P-v^3D^\circ$ (228)
3075.58	A	5	3.99	8.00	1-2	
3075.043	A	3	4.00	8.02	0-1	
3051.308	A	3	3.96	8.00	2-2	
6672.84	A	3n	4.23	6.08	3-3	$b^1F-y^3F^\circ$ (229)
6517.27	A	15n	4.23	6.12	3-3	$b^1F-z^1F^\circ$ (230)
6380.11	A	40n	4.23	6.16	3-2	$b^1F-z^1D^\circ$ (231)
5019.855	A	100n	4.23	6.68	3-4	$b^1F-y^1G^\circ$ (232)
4325.22	A	9n	4.23	7.08	3-2	$b^1F-y^1D^\circ$ (233)
3343.312	A	2	4.23	7.92	3-4	$b^1F-w^3G^\circ$ (234)
3351.53	A	1	4.23	7.91	3-3	
3293.146	A	50	4.23	7.97	3-2	$b^1F-x^1D^\circ$ (235)
3167.49	A	30	4.23	8.12	3-4	$b^1F-x^1G^\circ$ (236)
3116.78	A	40	4.23	8.19	3-3	$b^1F-x^1F^\circ$ (237)
5642.01	A	60n	4.50	6.68	4-4	$c^1G-y^1G^\circ$ (238)
5341.22	A	2	4.50	6.81	4-3	$c^1G-y^1F^\circ$ (239)
5322.81	A	5	4.50	6.82	4-5	$c^1G-x^3G^\circ$ (240)
5241.19	A	100n	4.50	6.85	4-5	$c^1G-y^1H^\circ$ (241)
3608.32	A	1	4.50	7.92	4-4	$c^1G-w^3G^\circ$ (242)
3404.43	A	80 1	4.50	8.12	4-4	$c^1G-x^1G^\circ$ (243)
3345.899	A	70	4.50	8.19	4-3	$c^1G-x^1F^\circ$ (244)

V II continued

Laboratory			E P		J	Multiple (No)
I A	Ref	Int	Low	High		
3035.14	A	3N	4.89	8.96	5-4	$z^3G^\circ-e^5H$ (245)
3038.00	A	2N?	4.94	9.00	2-3	$z^3F^\circ-e^5F$ (246)
5530.10	A	4	5.44	7.68	3-4	$c^3D-w^3F^\circ$ (247)
5562.02	A	4np?	5.45	7.67	2-3	
m4875.49	P	V	5.44	7.98	3-3	$c^3D-v^3D^\circ$ (248)
4842.50	A	2n	5.45	8.00	2-2	
4813.00	A	1?	5.45	8.02	2-1	
3148.738	A	15	5.44	9.36	3-3	$c^3D-t^3D^\circ$ (249)
3163.76	A	10	5.45	9.35	2-2	
3172.230	A	7	5.46	9.35	1-1	
3154.80	A	1	5.45	9.36	2-3	
3071.77	A	2n	5.44	9.46	3-4	$c^3D-u^3F^\circ$ (250)
5016.60	A	4	5.51	7.97	2-2	$c^1D-x^1D^\circ$ (251)
4618.52	A	3	5.51	8.19	2-3	$c^1D-x^1F^\circ$ (252)

Strongest Unclassified Lines of V II

5791.47	A	15
3611.58	A	10n
3301.66	A	10
3206.16	A	15Nl
3201.58	A	15Nl
3195.50	A	15Nl

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4254.346//	C	1000R	0.00	2.90	3-4	$a^7S-z^7P^\circ$ (1)
4274.803	C	800R	0.00	2.89	3-3	
4289.721	C	700R	0.00	2.88	3-2	
3732.032	C	50	0.00	3.31	3-3	$a^7S-z^5P^\circ$ (2)
3730.807	C	40	0.00	3.31	3-2	
3615.645	C	30	0.00	3.41	3-4	$a^7S-z^7D^\circ$ (3)
3635.281	C	10	0.00	3.39	3-3	
3578.687	C	1000R	0.00	3.45	3-4	$a^7S-y^7P^\circ$ (4)
3593.488	C	900R	0.00	3.43	3-3	
3605.333	C	750R	0.00	3.42	3-2	
3351.966	C	12	0.00	3.68	3-3	$a^7S-y^5P^\circ$ (5)
3379.171	C	15	0.00	3.65	3-2	
6330.101	C	40	0.94	2.89	2-3	$a^5S-z^7P^\circ$ (6)
6362.874	C	30	0.94	2.88	2-2	
5208.436	C	500R	0.94	3.31	2-3	$a^5S-z^5P^\circ$ (7)
5206.039	C	300R	0.94	3.31	2-2	
5204.518	C	200R	0.94	3.31	2-1	
5021.903	C	25	0.94	3.39	2-3	$a^5S-z^7D^\circ$ (8)
5051.900	C	40	0.94	3.38	2-2	
5072.920	C	60	0.94	3.37	2-1	
4942.495	C	200	0.94	3.43	2-3	$a^5S-y^7P^\circ$ (9)
4964.928	C	100	0.94	3.42	2-2	
4496.862	C	100	0.94	3.68	2-3	$a^5S-y^5P^\circ$ (10)
4545.956	C	50	0.94	3.65	2-2	
4580.056	C	40	0.94	3.63	2-1	
3833.49	B	4	0.94	4.16	2-3	$a^5S-z^5D^\circ$ (11)
3852.58	B	15	0.94	4.14	2-2?	
3870.267	C	25n	0.94	4.13	2-1	
3758.72	B	4	0.94	4.22	2-2	$a^5S-z^3P^\circ$ (12)
3192.12	B	5	0.94	4.80	2-3	$a^5S-z^3D^\circ$ (13)
3210.62	B	2	0.94	4.78	2-2	
2988.649	C	25r	0.94	5.07	2-3	$a^5S-x^5P^\circ$ (14)
2994.069	C	18	0.94	5.06	2-2	
2998.787	C	20	0.94	5.05	2-1	
2984.82	B	8	0.94	5.07	2-3	$a^5S-y^5F^\circ$ (15)
2995.10	B	25	0.94	5.06	2-2	
6580.96	B	8	1.03	2.90	4-4	$a^5D-z^7P^\circ$ (16)
6537.921	D	20	1.00	2.89	3-3	
6501.212	D	15	0.98	2.88	2-2	
6630.015	C	25	1.03	2.89	4-3	
6572.900	C	15	1.00	2.88	3-2	
5798.46	B	25	1.03	3.15	4-5	$a^5D-z^7F^\circ$ (17)
5790.59	P		1.00	3.13	3-4	
*5785.86	F	(5d?)	(0.98	3.11	2-3	
			0.96	3.10	1-2	
5409.791	C	500	1.03	3.31	4-3	$a^5D-z^5P^\circ$ (18)
5345.807	C	500	1.00	3.31	3-2	
5296.686	C	100	0.98	3.31	2-1	
5348.319	C	350	1.00	3.31	3-3	
5298.269	C	100	0.98	3.31	2-2	
5264.152	C	200	0.96	3.31	1-1	
5300.749	C	75	0.98	3.31	2-3	
5265.722	C	100	0.96	3.31	1-2	
5247.564	C	150	0.96	3.31	0-1	

Cr I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5122.121	C	30	1.03	3.44	4-5	$a^5D-z^7D^\circ$ †
5112.490	C	25	1.00	3.41	3-4	(19)
5107.70	B	7	0.98	3.39	2-3	
5168.63	B	8	1.03	3.41	4-4	
5151.83	B	12	1.00	3.39	3-3	
5138.71	B	10	0.98	3.38	2-2	
5183.41	B	10	1.00	3.38	3-2	
5093.41	B	7	1.03	3.45	4-4	$a^5D-y^7P^\circ$
5068.290	C	35	1.00	3.43	3-3	(20)
5048.752	C	25	0.98	3.42	2-2	
5123.465	C	35	1.03	3.43	4-3	
5091.890	C	30	1.00	3.42	3-2	
5038.87	P		1.00	3.45	3-4	
5025.54	B	10	0.98	3.43	2-3	
5019.20	B	20	0.96	3.42	1-2	
4646.174	C	100	1.03	3.68	4-3	$a^5D-y^5P^\circ$
4652.158	C	100	1.00	3.65	3-2	(21)
4651.285	C	75	0.98	3.63	2-1	
4600.752	C	75	1.00	3.68	3-3	
4616.137	C	75	0.98	3.65	2-2	
4626.188	C	65	0.96	3.63	1-1	
4565.512	C	50	0.98	3.68	2-3	
4591.394	C	60	0.96	3.65	1-2	
4613.373	C	60	0.96	3.63	0-1	
4351.770	C	100	1.03	3.86	4-5	$a^5D-z^5F^\circ$
4344.507	C	100	1.00	3.84	3-4	(22)
4339.450	C	75	0.98	3.82	2-3	
4337.566	C	75	0.96	3.81	1-2	
4339.718	C	60	0.96	3.80	0-1	
4384.977	C	75	1.03	3.84	4-4	
4371.279	C	75	1.00	3.82	3-3	
4359.631	C	75	0.98	3.81	2-2	
4351.051	C	75	0.96	3.80	1-1	
4412.250	C	40	1.03	3.82	4-3	
4391.753	C	40	1.00	3.81	3-2	
4373.254	C	35	0.98	3.80	2-1	
3919.159	C	100	1.03	4.17	4-4	$a^5D-z^5D^\circ$
3908.755	C	100	1.00	4.16	3-3	(23)
3902.915	C	50	0.98	4.14	2-2	
3903.164	C	25	0.96	4.13	1-1	
3941.490	C	60	1.03	4.16	4-3	
3928.636	C	60	1.00	4.14	3-2	
3921.022	C	50	0.98	4.13	2-1	
3916.243	C	25	0.96	4.12	1-0	
3886.789	C	50	1.00	4.17	3-4	
3883.292	C	60	0.98	4.16	2-3	
3885.218	C	40	0.96	4.14	1-2	
3894.035	C	40	0.96	4.13	0-1	
3831.032	C	12	1.00	4.22	3-2	$a^5D-z^3P^\circ$
3849.534	C	40	0.98	4.18	2-1	(24)
3852.218	C	30	0.96	4.17	1-0	
3806.55	B	5	0.98	4.22	2-2	
3832.32	B	5	0.96	4.18	1-1	
3789.723	C	15	0.96	4.22	1-2	
3823.522	C	12	0.96	4.18	0-1	
3266.634	C	7	1.03	4.80	4-3	$a^5D-z^3D^\circ$
3263.25	P		1.00	4.78	3-2	(25)
3259.60	B	1	0.98	4.76	2-1	
3244.115	C	7	1.00	4.80	3-3	
3245.485	C	10	0.98	4.78	2-2	
3247.274	C	4	0.96	4.76	1-1	
3226.55	B	4	0.98	4.80	2-3	
3233.234	C	7	0.96	4.78	1-2	
3240.951	C	6	0.96	4.76	0-1	
3053.880	C	50r	1.03	5.07	4-3	$a^5D-x^5P^\circ$
3039.780	C	7	1.00	5.06	3-2	(26)
3029.164	C	18	0.98	5.05	2-1	
3034.190	C	25	1.00	5.07	3-3	
3024.350	C	40r	0.98	5.06	2-2	
3018.496	C	10r	0.96	5.05	1-1	
3018.821	C	10r	0.98	5.07	2-3	
3013.713	C	20r	0.96	5.06	1-2	
3013.030	C	15	0.96	5.05	0-1	
3021.558	C	50r	1.03	5.11	4-5	$a^5D-y^5F^\circ$
3017.569	C	35r	1.00	5.09	3-4	(27)
3014.915	C	20r	0.98	5.07	2-3	
3014.760	C	18r	0.96	5.06	1-2	
3015.194	C	18r	0.96	5.05	0-1	
3037.044	C	15	1.03	5.09	4-4	
3030.245	C	25r	1.00	5.07	3-3	
3025.40	P		0.98	5.06	2-2	
3020.673	C	8	0.96	5.05	1-1	
3049.883	C	3	1.03	5.07	4-3	
3040.846	C	10r	1.00	5.06	3-2	
3031.353	C	7	0.98	5.05	2-1	
2986.473	C	30r	1.03	5.16	4-4	$a^5D-y^5D^\circ$
2985.995	C	35r	1.00	5.13	3-3	(28)
2985.849	C	8r	0.98	5.11	2-2	
2986.137	C	3	0.96	5.10	1-1	
3005.057	C	25r	1.03	5.13	4-3	
3000.890	C	25r	1.00	5.11	3-2	
2996.580	C	15r	0.98	5.10	2-1	
2991.886	C	15	0.96	5.09	1-0	
2967.642	C	15	1.00	5.16	3-4	
2971.112	C	20	0.98	5.13	2-3	
2975.483	C	20	0.96	5.11	1-2	
2980.791	C	25	0.96	5.10	0-1	
9290.44	A	50	2.53	3.86	6-5	$a^5G-z^5F^\circ$
*9447.00	A	50	2.53	3.84	5-4	(29)
9574.25	A	50	2.53	3.82	4-3	
9670.48	A	50	2.53	3.81	3-2	
9734.52	A	50	2.53	3.80	2-1	
*9294.17	A	20	2.53	3.86	5-5	$a^5G-z^5F^\circ$
*9447.00	A	50	2.53	3.84	4-4	cont
9571.76	A	25	2.53	3.82	3-3	
9667.20	A	25	2.53	3.81	2-2	
*9294.17	A	20	2.53	3.86	4-5	
9444.36	A	5	2.53	3.84	3-4	
9568.58	A	4	2.53	3.82	2-3	
4872.02	B	18	2.53	5.07	4-3	$a^5G-x^5P^\circ$ †
4885.776	C	75	2.53	5.06	3-2	(30)
4789.354	D	75	2.53	5.11	6-5	$a^5G-y^5F^\circ$
*4829.376	C	100d?	2.53	5.09	5-4	(31)
4861.842	C	75	2.53	5.07	4-3	
4888.530	C	40	2.53	5.06	3-2	
4903.239	C	70	2.53	5.05	2-1	
*4790.337	C	20	2.53	5.11	5-5	
*4829.376	C	100d?	2.53	5.09	4-4	
4861.205	C	35	2.53	5.07	3-3	
4887.73	B	25	2.53	5.06	2-2	
*4790.337	C	20	2.53	5.11	4-5	
4828.66	B	8	2.53	5.09	3-4	
4860.37	B	7	2.53	5.07	2-3	
4571.676	C	40	2.53	5.23	6-7	$a^5G-z^5H^\circ$
4601.021	C	30	2.53	5.22	5-6	(32)
4621.893	C	45*	2.53	5.20	4-5	
4637.182	C	40	2.53	5.19	3-4	
4648.126	C	25	2.53	5.19	2-3	
4600.104	C	40	2.53	5.22	6-6	
*4621.963	C	45*	2.53	5.20	5-5	
*4637.772	C	40	2.53	5.19	4-4	
4648.868	C	35	2.53	5.19	3-3	
4621.00	B	4	2.53	5.20	6-5	
*4637.772	C	40	2.53	5.19	5-4	
4649.461	C	45	2.53	5.19	4-3	
4526.466	C	75	2.53	5.26	6-6	$a^5G-z^5G^\circ$
4530.755	D	100*	2.53	5.26	5-5	(33)
*4535.721	C	60	2.53	5.25	4-4	
4540.502	C	50	2.53	5.25	3-3	
4544.619	C	50	2.53	5.25	2-2	
4529.851	C	25	2.53	5.26	6-5	
*4535.721	C	60	2.53	5.25	5-4	
4541.071	C	30	2.53	5.25	4-3	
4545.335	C	25	2.53	5.25	3-2	
*4527.339	C	40	2.53	5.26	5-6	
4530.688	D	100*	2.53	5.26	4-5	
4535.146	C	35	2.53	5.25	3-4	
4539.788	C	30	2.53	5.25	2-3	
m4466.13	P	Cr	2.53	5.30	5-4	$a^5G-x^5D^\circ$ †
*4518.63	B	6	2.53	5.26	4-3	(34)
4561.20	B	2	2.53	5.24	3-2	
4126.521	C	20	2.53	5.52	6-6	$a^5G-y^5G^\circ$
*4153.816	C	25	2.53	5.50	5-5	(35)
*4163.625	D	20	2.53	5.50	4-4	
4191.271	C	25	2.53	5.48	3-3	
4203.590	C	18	2.53	5.47	2-2	
4153.067	C	9	2.53	5.50	6-5	
*4163.625	D	20	2.53	5.50	5-4	
4191.750	C	10	2.53	5.48	4-3	
4204.19	B	8	2.53	5.47	3-2	
4127.302	C	7	2.53	5.52	5-6	
*4153.816	C	25	2.53	5.50	4-5	
4163.16	P		2.53	5.50	3-4	
4190.66	B	4	2.53	5.48	2-3	
4033.263	C	6	2.53	5.59	6-5	$a^5G-x^5F^\circ$
*4037.294	C	10	2.53	5.59	5-4	(36)
4042.246	C	8	2.53	5.59	4-3	
4046.760	C	6	2.53	5.58	3-2	
4050.02	B	4	2.53	5.58	2-1	
*4033.95	B	3	2.53	5.59	5-5	
*4037.294	C	10	2.53	5.59	4-4	
4041.79	B	6	2.53	5.59	3-3	
4046.19	B	3	2.53	5.58	2-2	
*4033.95	B	3	2.53	5.59	4-5	
4036.80	B	1	2.53	5.59	3-4	
4027.103	C	20	2.53	5.60	5-6	$a^5G-z^3H^\circ$
*4026.166	C	18	2.53	5.60	4-5	(37)
4025.012	C	15	2.53	5.60	3-4	
*4026.166	C	18	2.53	5.60	5-5	
*4025.44	B	5	(2.53 (2.53	5.60 5.60	4-4 5-4	
3963.690	C	100	2.53	5.65	6-7	$a^5G-y^5H^\circ$
3969.748	C	70	2.53	5.64	5-6	(38)
*3976.665	C	100	2.53	5.64	4-5	
3983.907	C	100	2.53	5.63	3-4	
3991.123	C	80	2.53	5.63	2-3	
*3969.061	C	18	2.53	5.64	6-6	
*3976.665	C	100	2.53	5.64	5-5	
*3984.338	C	25	2.53	5.63	4-4	
3991.673	C	25	2.53	5.63	3-3	
3976.01	B	5	2.53	5.64	6-5	
*3984.338	C	25	2.53	5.63	5-4	
3992.11	B	4	2.53	5.63	4-3	
*3860.13	B	5	(2.53 (2.53	5.73 5.73	5-4 4-4	$a^5G-w^5D^\circ$ (39)
3817.844	C	10	2.53	5.77	6-5	$a^5G-w^5F^\circ$
*3816.173	C	20	2.53	5.77	5-4	(40)
3820.874	C	7	2.53	5.76	4-3	
3822.10	B	5	2.53	5.76	3-2	
*3818.481	C	25	2.53	5.77	5-5	
*3816.173	C	20	2.53	5.77	4-4	
3821.582	C	8	2.53	5.76	2-2	
*3818.481	C	25	2.53	5.77	4-5	
3819.97	B	5	2.53	5.76	2-3	
3777.32	B	5	2.53	5.80	6-5	a^5G-z
3789.49	B	2	2.53	5.79	5-4	(41
*3777.93	B	3	(2.53 (2.53	5.80 5.80	5-5 4-5	
3796.99	B	5	2.53	5.78	2-3	
*3767.431	C	12	2.53	5.81	6-5	a^5G-y
*3768.08	B	18	2.53	5.81	5-4	(42
3769.00	B	7	2.53	5.81	4-3	
*3768.08	B	18	(2.53 (2.53	5.81 5.81	5-5 4-4	
3768.62	B	7	2.53	5.81	3-3	
*3768.08	B	18	2.53	5.81	4-5	
3743.884	C	50	2.53	5.83	6-6	a^5G-x
*3743.578	C	45	2.53	5.83	5-5	(43
*3748.998	C	50	2.53	5.83	4-4	
3757.662	C	50	2.53	5.82	3-3	
3768.240	C	35	2.53	5.81	2-2	
3742.968	C	18	2.53	5.83	6-5	
*3748.998	C	50	2.53	5.83	5-4	
3758.044	C	15	2.53	5.82	4-3	
3768.734	C	15	2.53	5.81	3-2	
3744.490	C	18	2.53	5.83	5-6	
*3743.578	C	45	2.53	5.83	4-5	
3748.614	C	12	2.53	5.83	3-4	
3757.174	C	18	2.53	5.82	2-3	
3685.548	C	50w	2.53	5.88	6-5	a^5G-v
*3686.803	C	45w	2.53	5.88	5-4	(44
3687.252	C	50w	2.53	5.88	4-3	
*3686.18	B	5w	2.53	5.88	5-5	
*3686.803	C	45w	2.53	5.88	4-4	
*3686.18	B	5w	2.53	5.88	4-5	
3679.070	C	8	2.53	5.89	6-7	a^5G-z
3688.11	B	7	2.53	5.88	5-6	(45
*3694.12	B	4	2.53	5.87	4-5	
3687.545	C	20	2.53	5.88	6-6	
*3694.12	B	4	2.53	5.87	5-5	
3693.56	B	2	2.53	5.87	6-5	
*3656.261	C	50	2.53	5.91	5-4	a^5G-v
3663.206	C	40	2.53	5.90	4-3	(46
3666.642	C	25	2.53	5.90	3-2	
3668.029	C	15	2.53	5.90	2-1	
*3656.261	C	50	2.53	5.91	4-4	
3662.840	C	15	2.53	5.90	3-3	
3666.19	B	8	2.53	5.90	2-2	
3655.92	P		2.53	5.91	3-4	
3662.39	B	2	2.53	5.90	2-3	
3639.802	C	100	2.53	5.92	6-5	a^5G-u
*3636.590	C	50	2.53	5.93	5-4	(47
3641.830	C	50	2.53	5.92	4-3	
3648.997	C	50	2.53	5.92	3-2	
3653.912	C	45	2.53	5.91	2-1	
*3640.39	B	20	2.53	5.92	5-5	
*3636.590	C	50	2.53	5.93	4-4	
3641.470	C	15	2.53	5.92	3-3	
3648.534	C	15	2.53	5.92	2-2	
*3640.39	B	20	2.53	5.92	4-5	
3636.21	B	2	2.53	5.93	3-4	
3641.01	B	3+g?	2.53	5.92	2-3	
3619.460	C	10	2.53	5.94	6-7	a^5G-x
3646.161	C	12	2.53	5.92	5-6	(48
*3665.980	C	12	2.53	5.90	4-5	
3679.819	C	10	2.53	5.89	3-4	
3688.457	C	10	2.53	5.88	2-3	
3645.59	B	5	2.53	5.92	6-6	
*3665.980	C	12	2.53	5.90	5-5	
*3680.19	B	7	2.53	5.89	4-4	
3665.43	B	4	2.53	5.90	6-5	
*3680.19	B	7	2.53	5.89	5-4	
3689.302	C	8	2.53	5.88	4-3	
*3632.839	C	40	2.53	5.93	5-4	a^5G-u
m3605.41	P	Cr	2.53	5.96	4-3	(49
3609.479	C	18	2.53	5.95	3-2	
3610.058	C	10	2.53	5.95	2-1	
*3632.839	C	40	2.53	5.93	4-4	
3605.05	P		2.53	5.96	3-3	
3608.04	B	4	2.53	5.95	2-2	
3632.46	B	1	2.53	5.93	3-4	
*3604.54	B	3	2.53	5.96	2-3	
3536.89	B	1	2.53	6.02	6-5?	a^5G-z
*3565.55	B	2	2.53	5.99	5-4	(50
*3537.25	B	4d?	2.53	6.02	5-5	
*3565.55	B	2	2.53	5.99	4-4	
*3537.25	B	4d?	2.53	6.02	4-5	
3565.15	B	3	2.53	5.99	3-4	
3445.10	B	7	2.53	6.12	6-5	a^5G-w
*3455.602	C	35	2.53	6.11	5-4	(51
3465.57	B	5	2.53	6.09	4-3	
*3445.618	C	40	2.53	6.12	5-5	
*3455.602	C	35	2.53	6.11	4-4	
3465.245	D	15	2.53	6.09	3-3	
*3445.618	C	40	2.53	6.12	4-5	
3455.281	C	10	2.53	6.11	3-4	
3464.82	B	5	2.53	6.09	2-3	
3433.598	C	50	2.53	6.13	6-6	a^5G-w
*3436.187	C	50	2.53	6.13	5-5	(52)
*3441.439	C	35	2.53	6.12	4-4	
3447.430	C	30	2.53	6.11	3-3	
3453.328	C	35	2.53	6.11	2-2	
3435.679	C	10	2.53	6.13	6-5	
*3441.439	C	35	2.53	6.12	5-4	
3447.760	C	20	2.53	6.11	4-3	
3453.743	C	12	2.53	6.11	3-2	
3434.112	C	20	2.53	6.13	5-6	
*3436.187	C	50	2.53	6.13	4-5	
3441.115	C	9	2.53	6.12	3-4	
3447.015	C	12	2.53	6.11	2-3	

REVISED MULTIPLET TABLE

continued

Laboratory A	Ref	Int	E P Low	E P High	J	Multiplet (No)
.819	C	6d	2.53	6.13	5-4	$a^5G-x^3F^o$
.31	B	8	2.53	6.13	4-3	(53)
.69	C	4	2.53	6.13	3-2	
.819	C	6d	2.53	6.13	4-4	
.995	D	7	2.53	6.13	3-3	
.284	C	10	2.53	6.13	2-2	
.488	C	3	2.53	6.13	3-4	
.59	C	3	2.53	6.13	2-3	
.213	C	20	2.53	6.20	6-5	$a^5G-t^5F^o$
.53	C	15w	2.53	6.20	5-4	(54)
.825§	C	8	2.53	6.19	4-3	
.65	B	10w	2.53	6.18	3-2	
.71	B	10	2.53	6.17	2-1	
.70	B	8	2.53	6.20	5-5	
.53	C	15w	2.53	6.20	4-4	
.564	C	3w	2.53	6.19	3-3	
.24	B	3w	2.53	6.18	2-2	
.70	B	8	2.53	6.20	4-5	
.652	C	5	2.53	6.56	6-5	$a^5G-s^5F^o$
.22	P		2.53	6.56	5-4	(55)
.69	P		2.53	6.55	4-3	
.47	B	3	2.53	6.55	3-2	
.58	B	3	2.53	6.54	2-1	
		———	———	———		
3.28	A	20	2.70	4.17	3-4	$a^5P-z^5D^o$
5.24	A	12	2.70	4.16	2-3	(56)
5.54	A	.5	2.70	4.14	1-2	
.26	A	15	2.70	4.16	3-3	
3.83	A	12	2.70	4.14	2-2	
3.03	A	12	2.70	4.13	1-1	
3.72	A	10	2.70	4.14	3-2	
5.26	A	10	2.70	4.13	2-1	
7.42	A	7	2.70	4.12	1-0	
6.90	A	4	2.70	4.18	2-1	$a^5P-z^3P^o$
7.04	A	6	2.70	4.17	1-0	(57)
3.19	A	6	2.70	4.18	1-1	
5.821	C	50	2.70	5.06	3-2	$a^5P-y^5F^o$
7.75	B	25	2.70	5.06	2-2	(58)
0.228	C	40	2.70	5.06	1-2	
6.15	P	Cr	2.70	5.07	3-3	$a^5P-x^5P^o$
4.541	C	45	2.70	5.06	2-2	(59)
1.458	C	30	2.70	5.05	1-1	
2.676	C	30	2.70	5.06	3-2	
8.971	C	65	2.70	5.05	2-1	
8.07	P	Cr	2.70	5.07	2-3	
7.10	B	20	2.70	5.06	1-2	
3.316	C	100	2.70	5.16	3-4	$a^5P-y^5D^o$
7.714	C	75	2.70	5.13	2-3	(60)
3.130	C	45	2.70	5.11	1-2	
5.910	C	50	2.70	5.13	3-3	
0.751	C	40	2.70	5.11	2-2	
4.672	C	50	2.70	5.10	1-1	
8.93	B	12	2.70	5.11	3-2	
2.263	C	20	2.70	5.10	2-1	
1.765	C	25	2.70	5.09	1-0	
5.308	C	30	2.70	5.30	3-4	$a^5P-x^5D^o$
6.255	C	25	2.70	5.26	2-3	(61)
7.34	B	18	2.70	5.24	1-2	
4.64	B	15	2.70	5.26	3-3	
5.146	C	15	2.70	5.24	2-2	
1.97	B	18	2.70	5.22	1-1	
3.52	P		2.70	5.24	3-2	
9.73	B	20	2.70	5.22	2-1?	
9.87	B	6	2.70	5.21	1-0	
7.062	C	40	2.70	5.32	3-2	$a^5P-z^5S^o$
8.615	C	50	2.70	5.32	2-2	(62)
0.608	C	40	2.70	5.32	1-2	
9.34	B	18w	2.70	5.46	3-3	$a^5P-w^5P^o$
5.20	P		2.70	5.45	2-2	(63)
3.782	C	40	2.70	5.45	3-2	
7.46	B	5w	2.70	5.45	2-1	
0.769	C	18	2.70	5.46	2-3	
7.02	B	35w	2.70	5.45	1-2	
5.757	C	25	2.70	5.57	3-3	$a^5P-v^5P^o$
1.48	B	7	2.70	5.54	2-2	(64)
2.853	C	20	2.70	5.51	1-1	
0.130	C	18	2.70	5.54	3-2	
1.112	C	35	2.70	5.51	2-1	
7.050	C	15	2.70	5.57	2-3	
3.163	C	18	2.70	5.54	1-2	
8.400	C	6	2.70	5.70	3-3	$a^5P-y^3D^o$
0.613	C	12	2.70	5.69	2-2	(65)
7.643	C	8	2.70	5.69	1-1	
9.44	B	3w	2.70	5.69	3-2	
6.099	C	6	2.70	5.69	2-1	
9.584	C	8	2.70	5.70	2-3	
2.162	C	8	2.70	5.69	1-2	
6.938	C	6	2.70	5.73	3-4	$a^5P-w^5D^o$
77.089	C	12	2.70	5.72	2-3	(66)
1.737	C	5	2.70	5.72	1-2	
75.92	B	6	2.70	5.72	3-3	
0.221	C	5	2.70	5.72	2-2	
0.305	C	6	2.70	5.72	1-1	
2.845	C	30	2.70	5.79	3-3	$a^5P-u^5P^o$
79.798	C	10	2.70	5.80	2-2	(67)
72.688	C	7	2.70	5.80	1-1	
78.677	C	18	2.70	5.80	3-2	
71.255	C	20	2.70	5.80	2-1	
3.968	C	15	2.70	5.79	2-3	
1.233	C	15	2.70	5.80	1-2	
60.763	C	5	2.70	5.81	2-1	$a^5P-z^3S^o$
52.19	B	3	2.70	5.81	1-1	(68)

<u>Cr I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3841.277	C	50	2.70	5.91	3-4	$a^5P-v^5D^o$
3850.042	C	50	2.70	5.90	2-3	(69)
3855.571	C	30	2.70	5.90	1-2	
3848.983	C	40	2.70	5.90	3-3	
3854.220	C	50	2.70	5.90	2-2	
3857.631	C	20	2.70	5.90	1-1	
3853.176	C	12	2.70	5.90	3-2	
3856.281	C	15	2.70	5.90	2-1	
3855.286	C	12	2.70	5.90	1-0	
3819.564	C	40	2.70	5.93	3-4	$a^5P-u^5F^o$
3826.425	C	40	2.70	5.92	2-3	(70)
3836.070	C	12	2.70	5.92	1-2	
3825.390	C	20	2.70	5.92	3-3	
3834.735	C	15	2.70	5.92	2-2	
3842.03	B	10	2.70	5.91	1-1	
3833.71	B	3	2.70	5.92	3-2	
3840.70	B	4	2.70	5.91	2-1	
3815.433	C	30	2.70	5.93	3-4	$a^5P-u'^5F^o$ †
3786.22	B	8	2.70	5.96	2-3	(71)
3792.42	B	3	2.70	5.95	1-2	
3755.01	B	7	2.70	5.98	3-2	$a^5P-x^3P^o$ †
3756.83	B	2	2.70	5.98	2-2	(72)
3726.85	B	4w	2.70	6.01	1-1	$a^5P-x^3D^o$ (73)
*3574.039	C	15	2.70	6.15	3-3	$a^5P-t^5P^o$
3602.574	C	12	2.70	6.12	2-2	(74)
3604.95	P		2.70	6.12	1-1	
3601.666	C	40	2.70	6.12	3-2	
*3603.745	C	12	2.70	6.12	2-1	
3574.935	C	10	2.70	6.15	2-3	
*3603.745	C	12	2.70	6.12	1-2	
3572.748	C	12	2.70	6.15	3-2	$a^5P-y^5S^o$
3573.643	C	18	2.70	6.15	2-2	(75)
3574.805	C	12	2.70	6.15	1-2	
3548.731	C	2	2.70	6.17	2-1	$a^5P-t^5F^o$ (76)
3481.303	C	20	2.70	6.24	3-4	$a^5P-u^5D^o$
3473.612	C	15	2.70	6.25	2-3	(77)
3471.49	B	7	2.70	6.25	1-2	
3472.764	C	12	2.70	6.25	3-3	
3470.401	C	10	2.70	6.25	2-2	
3470.529	C	7	2.70	6.25	1-1	
3470.72	B	4	2.70	6.25	1-0	
3307.755	C	8	2.70	6.43	3-4	$a^5P-t^5D^o$ †
3312.06	B	3	2.70	6.42	2-3	(78)
*3315.19	B	11	2.70	6.42	1-2?	
3196.37	P		2.70	6.56	3-4	$a^5P-s^5F^o$
3201.97	P		2.70	6.55	2-3	(79)
m3201.24	P	Cr+	2.70	6.55	3-3	
3204.55	P		2.70	6.55	3-2	
		———	———	———		
9900.87	A	15	2.97	4.22	2-2	$a^3P-z^3P^o$
9626.30	A	4	2.90	4.18	1-1	(80)
10197.05	A	3	2.97	4.18	2-1	
9752.84	A	4	2.90	4.17	1-0	
9362.06	A	10	2.90	4.22	1-2	
9313.55	A	8	2.86	4.18	0-1	
4619.551	C	40	2.97	5.65	2-2	$a^3P-y^3P^o$
4501.788	C	25	2.90	5.64	1-1	(81)
4622.761	C	25	2.97	5.64	2-1	
4501.112	C	35	2.90	5.64	1-0	
4498.730	C	35	2.90	5.65	1-2	
4432.175	C	40	2.86	5.64	0-1	
*4527.339	C	40	2.97	5.70	2-3	$a^3P-y^3D^o$
4424.075	C	10	2.90	5.69	1-2	(82)
*4362.95 §	B	7	2.86	5.69	0-1	
4491.858	C	35	2.97	5.72	2-2	$a^3P-w^5D^o$
4377.549	C	30	2.90	5.72	1-2	(83)
4321.238	C	20	2.86	5.72	0-1	
4387.380	C	10	2.97	5.79	2-3	$a^3P-u^5P^o$
*4262.133	C	12	2.90	5.80	1-2	(84)
4190.16	B	15	2.86	5.80	0-1	
4118.45	P		2.90	5.90	1-2	$a^3P-v^5D^o$ (85)
3886.94	P		2.97	6.15	2-3	$a^3P-t^5P^o$ (86)
3843.64	B	3	2.97	6.19	2-3	$a^3P-t^5F^o$ (87)
m3819.57	P	Cr	2.97	6.21	2-3	$a^3P-w^3D^o$ †
3748.18	B	2	2.90	6.20	1-2	(88)
3710.60	B	4	2.86	6.19	0-1	
*3676.33	B	18	2.97	6.33	2-2	$a^3P-w^3P^o$
*3604.54	B	3	2.90	6.33	1-1	(89)
*3681.691	C	12	2.97	6.33	2-1?	
3613.669	C	8	2.90	6.32	1-0	
3599.395	C	10	2.90	6.33	1-2	
3559.781	C	10	2.86	6.33	0-1	
3450.00	P		2.97	6.55	2-3	$a^3P-s^5F^o$
3453.84	P		2.97	6.55	2-2	(90)
3388.88	B	1	2.90	6.54	1-1	
3198.112	C	7	2.97	6.83	2-3	$a^3P-v^3F^o$ (91)
3188.011	C	20w	2.97	6.85	2-3	$a^3P-v^3D^o$
3159.59	C	20w	2.90	6.81	1-2	(92)
3144.409	C	8w	2.86	6.78	0-1	
3218.70	B	5w	2.97	6.81	2-2	
3179.283	C	7w	2.90	6.78	1-1	
3239.14	B	1	2.97	6.78	2-1	
		———	———	———		

<u>Cr I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multip (No)
7462.37	B	100	2.90	4.55	4-3	z^7P^o-
7400.23	B	150	2.89	4.55	3-3	(93)
7355.94	B	200	2.88	4.55	2-3	
5328.339	C	200w	2.90	5.22	4-5	z^7P^o-
5297.360	C	60w	2.89	5.22	3-4	(94
5275.171	C	75w	2.88	5.22	2-3	
5329.12	D	65w	2.90	5.22	4-4	
5297.976	C	40w	2.89	5.22	3-3	
5275.689	C	50w	2.88	5.22	2-2	
5329.719	C	25w	2.90	5.22	4-3	
5298.44	P		2.89	5.22	3-2	
5276.03	D	75w	2.88	5.22	2-1	
4514.531	C	40	2.90	5.63	4-3	z^7P^o-
4491.678	C	30	2.89	5.63	3-3	(95
4475.345	C	50	2.88	5.63	2-3	
4261.354	C	25	2.90	5.80	4-5	z^7P^o-
4272.910	C	12	2.89	5.78	3-4	(96
4284.725	C	12	2.88	5.76	2-3	
4293.565	C	20	2.90	5.78	4-4	
4299.718	C	20	2.89	5.76	3-3	
4305.453	C	30	2.88	5.74	2-2	
*4320.592	C	30	(2.90 2.89	5.76 5.74	4-3 3-2	
4319.641	C	40	2.88	5.73	2-1	
4129.21	E	(20n)	2.90	5.89	4-5	z^7P^o-
4110.87	E	(8)	2.89	5.89	3-4	(97
4097.65	E	(5)	2.88	5.89	2-3	
4129.96	P		2.90	5.89	4-4	
4111.36	E	(6)	2.89	5.89	3-3	
4097.96	E	(7)	2.89	5.89	2-2	
4130.47	P		2.90	5.89	4-3	
4111.67	E	(3)	2.89	5.89	3-2	
4098.18	E	(7)	2.88	5.89	2-1	
		———	———	———		
8224.09	A	8	2.97	4.47	5-4	a^3H-z
8261.95	A	8	2.95	4.45	4-3	(98
4727.153	C	40	2.99	5.60	6-6	a^3H-z
4693.949	C	45	2.97	5.60	5-5	(99
4666.215	D	25	2.95	5.60	4-4	
4725.95	B	7	2.99	5.60	6-5	
4692.97	B	10	2.97	5.60	5-4	
4695.153	C	30	2.97	5.60	5-6	
4667.181	D	30	2.95	5.60	4-5	
4543.74	C	20	2.97	5.69	5-4	a^3H-y
*4518.63	B	6	2.95	5.69	4-4	(100
4495.04	B	4	2.95	5.70	4-3	a^3H-y (101
4442.268	C	30	2.99	5.77	6-5	a^3H-w
4410.967	C	25	2.97	5.77	5-4	(102
4393.534	C	12	2.95	5.76	4-3	
4387.496	C	30	2.99	5.80	6-5	a^3H-z
4375.333	C	30	2.97	5.79	5-4	(103
4363.134	C	12	2.95	5.78	4-3	
4374.158	C	40	2.99	5.81	6-5	a^3H-y
4346.833	C	30	2.97	5.81	5-4	(104
4325.075	C	40	2.95	5.81	4-3	
4255.502	C	25	2.99	5.89	6-7	a^3H-z
*4240.705	C	30	2.97	5.88	5-6	(105
4226.76	P		2.95	5.87	4-5	
4266.82	B	8	2.99	5.88	6-6	
4248.73	B	10	2.97	5.87	5-5	
4175.945	C	15	2.99	5.94	6-7	a^3H-x
4185.345	C	10	2.97	5.92	5-6	(106
4189.96	B	5	2.95	5.90	4-5	
4210.77	B	5	2.99	5.92	6-6	
4237.27	B	1	2.99	5.90	6-5	
4230.29	B	4	2.97	5.89	5-4	
4220.45	B	5	2.95	5.88	4-3	
4167.80	B	3	2.97	5.93	5-4	a^3H-u
4146.695	C	6	2.95	5.93	4-4	(107
4123.387	C	10	2.99	5.98	6-6	a^3H-y
4121.817	C	10	2.97	5.96	5-5	(108
4104.867	C	10	2.95	5.96	4-4	
4146.47	B	4	2.99	5.90	6-5	
4099.016	C	6	2.97	5.98	5-6	
4101.163	D	8	2.95	5.96	4-5	
3510.538	C	15	2.99	6.50	6-7	a^3H-y
3494.967	C	15	2.97	6.50	5-6	(109
3488.453	C	10	2.95	6.49	4-5	
3512.70	B	2n	2.99	6.50	6-6	
*3503.38 §	B	1	2.97	6.49	5-5	
3481.536	C	18	2.99	6.53	6-6	a^3H-x
3467.715	C	18	2.97	6.53	5-5	(110
3443.790	C	10	2.95	6.54	4-4	
3472.906	C	10	2.95	6.51	4-4	a^3H-1 (111
3346.018	C	12	2.99	6.68	6-5	a^3H-v
3346.71	B	10	2.97	6.66	5-4	(112
3346.78	B	9	2.95	6.64	4-3	
3257.822	C	12	2.99	6.78	6-6	a^3H-w
3251.836	C	15	2.97	6.76	5-5	(113
3245.542	C	12	2.95	6.76	4-4	
3259.975	C	10	2.99	6.77	6-6	a^3H-v
3238.087	C	8	2.97	6.78	5-5	(114
3237.729	C	10	2.95	6.77	4-4	
3253.26	B	4	2.99	6.78	6-5	
3250.58	B	4	2.97	6.77	5-4	
3244.69	B	1	2.97	6.77	5-6	

Cr I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3163.756	C	15	2.99	6.89	6-7	$a^3H-x^3I^\circ$ (115)
3155.149	C	12	2.97	6.88	5-6	
3148.445	C	10	2.95	6.87	4-5	
3169.58	B	3	2.99	6.88	6-6	
3160.61	B	4	2.97	6.87	5-5	
3152.881	D	5	2.99	6.90	6-6	$a^3H-u^3H^\circ$ (116)
3141.891	D	5	2.97	6.90	5-5	
m3039.74	P	Cr	2.99	7.05	6-5	$a^3H-u^3G^\circ$ (117)
3031.486	C	4	2.97	7.04	5-4	
3024.681	C	2	2.95	7.03	4-3	
10486.24	A	20	3.00	4.17	4-4	$b^5D-z^5D^\circ$ (118)
10672.17	A	18	3.00	4.16	3-3	
10816.91	A	8	3.00	4.14	2-2	
10647.66	A	12	3.00	4.16	4-3	
10821.62	A	12	3.00	4.14	3-2	
10957.19	A	12	3.00	4.13	2-1	
11044.64	A	5	3.00	4.12	1-0	
10509.96	A	10	3.00	4.17	3-4	
10667.53	A	15	3.00	4.16	2-3	
10801.37	A	12	3.00	4.14	1-2	
10929.90	A	10	3.00	4.13	0-1	
5712.778	C	100	3.00	5.18	4-4	$b^5D-y^5D^\circ$ (119)
5788.389	C	20	3.00	5.13	3-3	
5843.24	B	25	3.00	5.11	2-2	
•5781.195	C	40	3.00	5.13	4-3	
5844.606	C	40	3.00	5.11	3-2	
5884.452	C	25	3.00	5.10	2-1	
5902.182	C	25	3.00	5.09	1-0	
5719.821	C	40	3.00	5.16	3-4	
5787.036	C	20	3.00	5.13	2-3	
5838.66	B	25	3.00	5.11	1-2	
5876.55	B	25	3.00	5.10	0-1	
•5556.19	B	10	3.00	5.22	4-4	$b^5D-x^7P^\circ$ (120)
5574.41	B	12	3.00	5.21	3-2	
5512.69	B	10	3.00	5.24	3-2	$b^5D-x^5D^\circ$ (121)
•5556.19	B	10	3.00	5.22	2-1	
5004.38	B	35w	3.00	5.46	4-3	$b^5D-w^5P^\circ$ † (122)
5028.00	B	15w	3.00	5.45	3-2	
4981.30	P		3.00	5.48	3-3	$b^5D-y^5G^\circ$ (123)
4998.55	B	4	3.00	5.47	2-2	
4980.30	P		3.00	5.48	2-3	
4755.137	C	8	3.00	5.59	4-5	$b^5D-x^5F^\circ$ (124)
4764.643	C	20	3.00	5.59	3-4	
4770.670	C	12	3.00	5.59	2-3	
4774.557	C	8	3.00	5.58	1-2	
4759.74	B	8	3.00	5.59	4-4	
4771.57	B	10	3.00	5.59	3-3	
4777.57	B	7	3.00	5.58	2-2	
4779.87	B	3	3.00	5.58	1-1	
m4766.66	P	Cr	3.00	5.59	4-3	
•4778.50	B	2	3.00	5.58	3-2	
4566.602	C	7	3.00	5.70	4-3	$b^5D-y^3D^\circ$ (125)
4584.75	B	12	3.00	5.69	3-2	
4590.69	B	8	3.00	5.69	2-1	
4571.105	C	25	3.00	5.70	3-3	
4583.89	B	15	3.00	5.69	2-2	
4587.86	B	8	3.00	5.69	1-1	
•4570.30	B	6	3.00	5.70	2-3	
4515.440	C	25	3.00	5.73	4-4	$b^5D-w^5D^\circ$ † (126)
4519.83	B	7	3.00	5.73	3-4	
4530.12	P		3.00	5.72	2-3	
4458.538	C	45	3.00	5.77	4-5	$b^5D-w^5F^\circ$ (127)
4459.738	C	25	3.00	5.77	3-4	
4465.357	C	35	3.00	5.76	2-3	
4464.907	C	25	3.00	5.76	1-2	
4462.774	C	30	3.00	5.76	0-1	
4455.45	B	7	3.00	5.77	4-4	
4466.165	C	25	3.00	5.76	3-3	
4467.561	C	30	3.00	5.76	2-2	
4464.669	C	25	3.00	5.76	1-1	
4468.38	B	7	3.00	5.76	3-2	
4403.372	C	35	3.00	5.80	4-5	$b^5D-z^3G^\circ$ (128)
4423.318	C	12	3.00	5.79	3-4	
4433.968	C	20	3.00	5.78	2-3	
4419.10	B	10	3.00	5.79	4-4	
4434.75	B	10	3.00	5.78	3-3	
m4430.51	P	Cr	3.00	5.78	4-3	
4424.281	C	40	3.00	5.79	4-3	$b^5D-u^5P^\circ$ (129)
4411.093	C	40	3.00	5.80	3-2	
4399.823	C	30	3.00	5.80	2-1	
4428.501	C	35	3.00	5.79	3-3	
4410.304	C	40	3.00	5.80	2-2	
4397.251	C	30	3.00	5.80	1-1	
4427.71	B	10	3.00	5.79	2-3	
4407.72	B	40d?	3.00	5.80	1-2	
4395.417	C	18	3.00	5.80	0-1	
4356.760	C	20	3.00	5.83	4-5	$b^5D-x^5G^\circ$ (130)
4368.252	C	20	3.00	5.83	3-4	
4379.782	C	20	3.00	5.82	2-3	
4392.26	B	10	3.00	5.81	1-2	
4364.14	B	10	3.00	5.83	4-4	
4380.55	B	10	3.00	5.82	3-3	
4394.83	B	8	3.00	5.81	2-2	
4238.957	C	35	3.00	5.91	4-4	$b^5D-v^5D^\circ$ (131)
4252.243	C	10	3.00	5.90	3-3	
4256.620	C	8	3.00	5.90	2-2	
4248.344	C	12	3.00	5.90	4-3	
4257.368	C	12	3.00	5.90	3-2	
4259.15	B	10	3.00	5.90	2-1	
4242.82	B	10	3.00	5.91	3-4	
4217.626	C	30	3.00	5.92	4-5	$b^5D-u^5F^\circ$ (132)
4216.365	C	15	3.00	5.93	3-4	
4222.732	C	20	3.00	5.92	2-3	
4230.481	C	25	3.00	5.92	1-2	
4235.98	B	15	3.00	5.91	0-1	
4223.47	B	7	3.00	5.92	3-3	
4232.866	C	10	3.00	5.92	2-2	
4237.710	C	12	3.00	5.91	1-1	
4211.349	C	15	3.00	5.93	3-4	$b^5D-u'^5F^\circ$ (133)
4177.17	B	3	3.00	5.95	0-1	
4207.51	B	2	3.00	5.93	4-4	
3945.968	C	10	3.00	6.13	4-5	$b^5D-w^5G^\circ$ (134)
3945.495	C	9	3.00	6.13	4-4	$b^5D-x^3F^\circ$ † (135)
3944.25	B	2	3.00	6.13	3-3	
3943.21	B	3	3.00	6.13	2-2	
3915.843	C	40	3.00	6.15	4-3	$b^5D-t^5P^\circ$ (136)
3952.399	C	15	3.00	6.12	3-2	
3953.163	C	18	3.00	6.12	2-1	
m3919.15	P	Cr	3.00	6.15	3-3	
3951.765	C	8	3.00	6.12	2-2	
3951.097	C	10	3.00	6.12	1-1	
3918.54	P		3.00	6.15	2-3	
•3949.64	B	8	(3.00	6.12	1-2	
			3.00	6.12	0-1	
3917.596	C	15	3.00	6.15	3-2	$b^5D-y^5S^\circ$ (137)
3916.980	C	10	3.00	6.15	2-2	
3914.96	B	4	3.00	6.15	1-2	
3849.365	C	50	3.00	6.20	4-5	$b^5D-t^5F^\circ$ (138)
3858.90	B	15w	3.00	6.20	3-4	
3874.570	D	40w	3.00	6.19	2-3	
3879.222	C	50	3.00	6.18	1-2	
3883.660	C	20	3.00	6.17	0-1	
m3855.65	P	Cr	3.00	6.20	4-4	
3875.14	B	10n	3.00	6.19	3-3	
3881.214	C	40	3.00	6.18	2-2	
3885.084	C	20	3.00	6.17	1-1	
3881.856	C	10	3.00	6.18	3-2	
3804.798	C	50	3.00	6.24	4-4	$b^5D-u^5D^\circ$ (139)
3797.716	C	40	3.00	6.25	3-3	
3793.289	C	30	3.00	6.25	2-2	
3790.228	C	8	3.00	6.25	1-1	
3794.608	C	25	3.00	6.25	4-3	
3793.879	C	30	3.00	6.25	3-2	
3792.137	C	30	3.00	6.25	2-1	
3790.454	C	18	3.00	6.25	1-0	
3807.926	C	15	3.00	6.24	3-4	
3797.126	C	20	3.00	6.25	2-3	
3791.376	C	30	3.00	6.25	1-2	
3788.864	C	20	3.00	6.25	0-1	
m3602.61	P	Cr	3.00	6.42	4-3	$b^5D-t^5D^\circ$ (140)
3607.92	P		3.00	6.42	3-2	
3608.58	P		3.00	6.42	2-1	
3607.25	P		3.00	6.42	1-0	
3460.430	C	25	3.00	6.56	4-5	$b^5D-s^5F^\circ$ † (141)
3469.590	C	15	3.00	6.56	3-4	
3474.87	B	8	3.00	6.55	2-3	
3477.161	C	7	3.00	6.55	1-2	
3479.14	B	5	3.00	6.54	0-1	
•3467.022	C	12	3.00	6.56	4-4	
3475.36	P		3.00	6.55	3-3	
3478.77	B	7	3.00	6.55	2-2	
3480.28	B	4	3.00	6.54	1-1	
8947.20	A	35	3.09	4.47	5-4	$a^3G-z^3F^\circ$ (142)
8976.88	A	25	3.07	4.45	4-3	
9035.86	A	20	3.07	4.43	3-2	
8835.67	A	10	3.07	4.47	4-4	
8925.75	A	10	3.07	4.45	3-3	
8786.28	P		3.07	4.47	3-4	
4922.267	C	300	3.09	5.60	5-6	$a^3G-z^3H^\circ$ (143)
4887.013	C	150	3.07	5.60	4-5	
4870.796	C	100	3.07	5.60	3-4	
4920.945	C	50	3.09	5.60	5-5	
4885.957	C	50	3.07	5.60	4-4	
4836.857	C	40	3.09	5.64	5-6	$a^3G-y^5H^\circ$ (144)
4814.265	C	35	3.07	5.64	4-5	
4810.733	C	35	3.07	5.63	3-4	
4847.177	C	18	3.09	5.64	5-5	
4825.51	B	10	3.07	5.63	4-4	
4822.06	B	5	3.07	5.63	3-3	
4756.113	C	100	3.09	5.69	5-4	$a^3G-y^3F^\circ$ (145)
4737.350	C	75	3.07	5.68	4-3	
4730.711	C	50	3.07	5.67	3-2	
4724.416	C	35	3.07	5.69	4-4	
4723.03	B	15	3.07	5.68	3-3	
4710.24	B	6	3.07	5.69	3-4	
•4698.615	C	50	3.07	5.70	4-3	$a^3G-y^3D^\circ$ (146)
4698.947	C	20	3.07	5.69	3-2	
4684.605	C	12	3.07	5.70	3-3	
4656.189	C	30	3.07	5.72	4-3	$a^3G-w^5D^\circ$ † (147)
4646.495	C	15	3.07	5.72	3-2	
4614.15	B	12	3.09	5.77	5-5	$a^3G-w^5F^\circ$ (148)
4581.063	C	10	3.07	5.77	4-4	
4574.45	B	6	3.07	5.76	3-3	
4576.76	B	6	3.07	5.76	3-2	
4555.09	B	(10?)	3.09	5.80	5-5	$a^3G-z^3G^\circ$ (149)
•4542.621	C	35	3.07	5.79	4-4	
4541.513	C	25	3.07	5.78	3-3	
4540.719	C	50	3.09	5.81	5-5	a^3G- (15
4511.903	C	60	3.07	5.81	4-4	
4500.295	C	40	3.07	5.81	3-3	
4513.21	B	8+g	3.07	5.81	4-3	
4505.22	B	1	3.09	5.83	5-5	a^3G- (15
4484.68	B	8	3.07	5.82	3-3	
4425.129	C	12	3.09	5.88	5-6	a^3G- (15
4406.26	B	18	3.07	5.87	4-5	
4364.87	B	10	3.09	5.92	5-6	a^3G- (15
4366.33	B	4	3.07	5.90	4-5	
4271.061	C	15	3.09	5.98	5-6	a^3G- (15
4269.951	C	12	3.07	5.96	4-5	
4262.38	B	8	3.07	5.96	3-4	
4209.756	C	15	3.09	6.02	5-5	a^3G- (15
4224.514	C	18	3.07	5.99	4-4	
•4221.572	C	25	3.07	5.99	3-3	
4249.81	P		3.09	5.99	5-4	
4184.895	C	12	3.07	6.02	4-5	
4213.179	C	10	3.07	5.99	3-4	
4080.56	B	2	3.09	6.12	5-5	a^3G- (15
4057.19	B	3	3.07	6.12	4-5	
4060.62	B	8d?	3.07	6.11	3-4	
3586.23	B	4	3.09	6.53	5-6	a^3G- (15
3571.97	P		3.07	6.53	4-5	
3553.968	C	5	3.07	6.54	3-4	
3442.58	B	1	3.09	6.68	5-5	a^3G- (15
3425.96	B	4	3.07	6.68	4-5	
•3349.322§	C	8	3.09	6.78	5-6	a^3G- (15
3343.342	C	5	3.07	6.76	4-5	
3343.227	C	5	3.07	6.76	3-4	
3351.596	C	8	3.09	6.77	5-6	a^3G- (16
3328.80	B	4	3.07	6.78	4-5	
3334.925	C	6	3.07	6.77	3-4	
3344.50	B	4	3.09	6.78	5-5	
3313.721	C	3	3.09	6.82	5-4	a^3G- (161
3309.82	B	4	3.07	6.80	4-3	
3298.318	C	7	3.07	6.82	4-4	
3302.86	B	6	3.07	6.80	3-3	
3238.50	B	4	3.09	6.90	5-6	a^3G-u (162
3227.23	B	2	3.07	6.90	4-5	
3119.246	C	5	3.09	7.05	5-5	a^3G-u (163
3110.860	C	5	3.07	7.04	4-4	
3109.336	C	8	3.07	7.03	3-3	
3115.51	B	1	3.07	7.03	4-3	
3105.57	B	2	3.07	7.05	4-5	
3104.70	B	2	3.07	7.04	3-4	
•3060.63	B	2	3.09	7.12	5-5	a^3G-t (164
3058.17	B	3	3.07	7.11	4-4	
3047.455	C	4	3.07	7.12	4-5	
3052.229	C	6	3.07	7.11	3-4	
9059.74	A	5	3.11	4.47	4-4	a^3F-z (165
9148.45	A	6	3.10	4.45	3-3	
9208.29	A	25	3.11	4.45	4-3	
9263.97	A	20	3.10	4.43	3-2	
4954.811	C	80	3.11	5.60	4-5	a^3F-z (166
4936.334	C	150	3.10	5.60	3-4	
4953.714	D	25	3.11	5.60	4-4	
4880.06	B	25	3.11	5.64	4-5	a^3F-y (167
4874.651	C	20	3.10	5.63	3-4	
4787.74	B	5	3.11	5.69	4-4	a^3F-y (168
4784.70	P		3.10	5.68	3-3	
4754.743	C	20	3.08	5.67	2-2	
4801.030	C	75	3.11	5.68	4-3	
4792.513	C	75	3.10	5.67	3-2	
4747.00	B	4	3.08	5.68	2-3	
4761.242	C	10	3.11	5.70	4-3	a^3F-y (169
4759.907	C	10	3.10	5.69	3-2	
4729.723	C	35	3.08	5.69	2-1?	
4717.688	C	10	3.11	5.72	4-3	a^3F-w (170
4706.102	C	25	3.10	5.72	3-2	
4680.870	C	35	3.08	5.72	2-1	
4701.92	B	5	3.10	5.72	3-3	
4669.67	B	10	3.08	5.72	2-2	
4640.55	B	4	3.11	5.77	4-4	a^3F-w (171
4632.180	C	35	3.10	5.76	3-3	
4599.25	B	1	3.08	5.76	2-2	
4634.59	B	5	3.10	5.76	3-2	
4599.00	B	8	3.08	5.76	2-1	
4635.30	B	3	3.10	5.77	3-4	
4596.90	B	3	3.08	5.76	2-3	
4584.095	C	20	3.11	5.80	4-5	a^3F-z (172)
4586.138	C	20	3.10	5.79	3-4	
4565.657	C	25	3.08	5.78	2-3	
4601.15	B	20	3.11	5.79	4-4	
4598.441	C	20	3.10	5.78	3-3	
4569.530	C	20	3.11	5.81	4-5	a^3F-y (173)
4554.830	C	25	3.10	5.81	3-4	
4522.00	B	12	3.08	5.81	2-3	
4569.644	C	30	3.11	5.81	4-4	
4556.169	C	40	3.10	5.81	3-3	
4570.98	B	20	3.11	5.81	4-3	

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tory ef	Int	E P Low	High	J	Multiplet (No)
C	30	3.08	5.80	2-1?	$a^3F-u^5P^{\circ}$ (174)
B	3	3.08	5.81	2-1	$a^3F-z^3S^{\circ}$ (175)
C	15	3.11	5.96	4-3	$a^3F-u'\,^5F^{\circ}$ (176)
B	8	3.10	5.95	3-2	
B	8	3.08	5.95	2-1	
B	10	3.10	5.93	3-4	
C	8	3.11	5.96	4-5	$a^3F-y^3H^{\circ}$ (177)
C	5	3.10	5.96	3-4	
C	12	3.11	6.02	4-5	$a^3F-x^3G^{\circ}$ (178)
C	12	3.10	5.99	3-4	
C	30	3.08	5.99	2-3	
B	5	3.11	6.09	4-3	$a^3F-x^3D^{\circ}$ (179)
C	30	3.10	6.05	3-2	
B	4	3.11	6.12	4-5	$a^3F-w^3G^{\circ}$ † (180)
B	4	3.10	6.11	3-4	
C	6	3.08	6.09	2-3	
B	4	3.11	6.76	4-5	$a^3F-w^3H^{\circ}$ (181)
B	2	3.10	6.76	3-4	
B	3	3.11	6.76	4-4	
C	8	3.11	6.82	4-4	$a^3F-w^3F^{\circ}$ (182)
C	7	3.10	6.80	3-3	
C	10	3.08	6.79	2-2	
B	2	3.10	6.82	3-4	
P	Cr^+	3.08	6.80	2-3	
C	8	3.11	7.05	4-5	$a^3F-u^3G^{\circ}$ (183)
C	8	3.10	7.04	3-4	
C	5	3.08	7.03	2-3	
C	4	3.11	7.04	4-4	
B	3	3.10	7.03	3-3	
C	10	3.11	7.12	4-5	$a^3F-t^3G^{\circ}$ (184)
C	10	3.10	7.11	3-4	
C	10	3.08	7.11	2-3	
B	4	3.11	7.11	4-4	
B	5	3.10	7.11	3-3	
B	50	3.18	5.22	6-5	$z^7F^{\circ}-e^7D$ (185)
B	40	3.15	5.22	5-4	
B	30	3.13	5.22	4-3	
B	25	3.11	5.22	3-2	
B	25	3.15	5.22	5-5	
B	25	3.13	5.22	4-4	
P		3.09	5.22	1-1	
P		3.09	5.22	1-2	
C	75	3.18	5.80	6-5	$z^7F^{\circ}-f^7D$ (186)
C	60	3.15	5.78	5-4	
C	60	3.13	5.76	4-3	
C	65	3.11	5.74	3-2	
B	50	3.10	5.73	2-1	
C	50	3.15	5.80	5-5	
C	55	3.13	5.78	4-4	
C	60	3.11	5.76	3-3	
C	55	3.10	5.74	2-2	
C	40	3.09	5.73	1-1	
C	10	3.13	5.80	4-5	
C	30	3.11	5.78	3-4	
D	35	3.10	5.76	2-3	
C	20	3.09	5.74	1-2	
C	35	3.08	5.73	0-1	
A	100	3.31	4.68	3-2	$z^5P^{\circ}-e^5S$ (187)
A	75	3.31	4.68	2-2	
A	50	3.31	4.68	1-2	
C	100	3.31	5.44	3-4	$z^5P^{\circ}-e^5D$ (188)
C	75	3.31	5.44	2-3	
C	50	3.31	5.44	1-2	
C	50	3.31	5.44	3-3	
C	50	3.31	5.44	2-2	
C	50	3.31	5.44	1-1	
B	10	3.31	5.44	3-2	
C	40	3.31	5.44	2-1	
C	40	3.31	5.44	1-0	
B	18w	3.31	5.67	3-2	$z^5P^{\circ}-f^5S$ (189)
B	15w	3.31	5.67	2-2	
B	12w	3.31	5.67	1-2	
B	4	3.31	6.03	3-4	$z^5P^{\circ}-f^5D$ (190)
B	7w	3.31	6.01	2-3	
B	5w	3.31	5.99	1-2	
B	6	3.31	6.01	3-3	
B	8v	3.31	5.99	2-2	
B	5w	3.31	5.99	2-1	
C	50	3.36	5.65	2-2	$b^3P-y^3P^{\circ}$ (191)
C	35	3.35	5.64	1-1	
C	35	3.36	5.64	2-1	
C	40	3.35	5.64	1-0	
C	75	3.35	5.65	1-2	
C	35	3.35	5.64	0-1	
P	Cr	3.36	5.70	2-3	$b^3P-y^3D^{\circ}$ (192)
C	30	3.35	5.69	1-2	
B	15	3.35	5.69	0-1	
C	15	3.36	5.69	2-2	
B	10	3.35	5.69	1-1	
C	50	3.36	5.72	2-3	$b^3P-w^5D^{\circ}$ (193)
C	30	3.35	5.72	1-2	
C	45	3.35	5.72	0-1	
C	50	3.36	5.72	2-2	
C	50	3.35	5.72	1-1	
B	20	3.36	5.72	2-1	

Cr I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4761.73	B	5	3.36	5.95	2-2	$b^3P-u'\,^5F^{\circ}$† (194)
4752.87	B	10	3.35	5.95	1-1	
4707.754	C	15	3.36	5.98	2-2	$b^3P-x^3P^{\circ}$ (195)
4725.67	B	5	3.35	5.97	1-1	
4736.13	B	5	3.36	5.97	2-1	
4749.25	B	1w	3.35	5.95	1-0	
4697.395	C	15	3.35	5.98	1-2	
4722.741	D	10	3.35	5.97	0-1	
4526.108	C	40	3.36	6.09	2-3	$b^3P-x^3D^{\circ}$ (196)
4575.121	C	25	3.35	6.05	1-2	
4584.934	C	15	3.36	6.05	2-2	
4492.312	C	40	3.36	6.11	2-1	$b^3P-y^3S^{\circ}$ (197)
4482.878	C	40	3.35	6.11	1-1	
4480.263	C	30	3.35	6.11	0-1	
4338.799	C	15	3.36	6.21	2-3	$b^3P-w^3D^{\circ}$ (198)
4345.085	C	15	3.35	6.20	1-2	
4357.525	C	15	3.35	6.19	0-1	
4353.983	D	15	3.36	6.20	2-2	
4359.992	C	20	3.35	6.19	1-1	
4368.89	B	8	3.36	6.19	2-1	
4266.44	B	2w	3.36	6.25	2-2	$b^3P-u^5D^{\circ}$ (199)
3153.54	B	5	3.36	7.27	2-2	$b^3P-t^3P^{\circ}$ (200)
3164.06	B	1	3.35	7.26	1-1	
5224.941	C)	150*	(3.44	5.80	5-5	$z^7D^{\circ}-f^7D$ (201)
5225.032	C)		(3.41	5.78	4-4	
5224.082	C	40	3.39	5.76	3-3	
5220.912	C	40	3.37	5.73	1-1	
5273.439	C	25	3.44	5.78	5-4	
5265.160	C	60	3.41	5.76	4-3	
5254.918	C	100	3.39	5.74	3-2	
5243.395	C	75	3.38	5.73	2-1	
5177.430	C	75	3.41	5.80	4-5	
5184.590	C	100	3.39	5.78	3-4	
5192.000	C	100	3.38	5.76	2-3	
5200.188	C	50	3.37	5.74	1-2	
5027.66	P		3.44	5.89	5-5	$z^7D^{\circ}-g^7D$ (202)
4948.64	P		3.39	5.89	3-3	
4900.83	P		3.37	5.89	1-1	
4983.63	P		3.41	5.89	4-5	
4947.91	P		3.39	5.89	3-4	
4900.50	P		3.37	5.89	1-2	
5702.307	C	60	3.43	5.60	5-6	$b^3G-z^3H^{\circ}$ (203)
5664.040	C	40	3.42	5.60	4-5	
5628.645	C	50	3.41	5.60	3-4	
*5700.514	C	40	3.43	5.60	5-5	
5480.502	C	45	3.43	5.69	5-4	$b^3G-y^3F^{\circ}$ (204)
5463.974	C	40	3.42	5.68	4-3	
5442.413	C	35	3.41	5.67	3-2	
5446.76	B	25	3.42	5.69	4-4	
5432.347	C	25	3.41	5.68	3-3	
5292.865	C	10	3.43	5.77	5-5	$b^3G-w^5F^{\circ}$ (205)
5257.07	B	10	3.42	5.77	4-4	
5236.63	B	10	3.41	5.76	3-3	
5215.29	B	20	3.43	5.80	5-5	$b^3G-z^3G^{\circ}$ (206)
5206.52	P		3.42	5.79	4-4	
5193.488	C	35	3.41	5.78	3-3	
*5237.35§	B	2	3.43	5.79	5-4	
5222.39	B	10	3.42	5.78	4-3	
*5177.83	B	10	3.41	5.79	3-4	
5196.443	C	100*	3.43	5.81	5-5	$b^3G-y^3G^{\circ}$ (207)
5166.227	C	150	3.42	5.81	4-4	
5139.654	C	100	3.41	5.81	3-3	
5196.57	B	100*	3.43	5.81	5-4	
5167.96	B	30	3.42	5.81	4-3	
5137.94	B	12	3.41	5.81	3-4	
4846.29	B	40	3.43	5.98	5-6	$b^3G-y^3H^{\circ}$ (208)
4851.465	C	25	3.42	5.96	4-5	
4831.627	C	15	3.41	5.96	3-4	
4626.81	B	8	3.42	6.09	4-3	$b^3G-x^3D^{\circ}$ (209)
4602.51	B	7	3.43	6.12	5-5	$b^3G-w^3G^{\circ}$ † (210)
4596.38	B	6	3.42	6.11	4-4	
4585.72	B	3	3.43	6.13	5-5	$b^3G-w^5G^{\circ}$ (211)
4560.26	B	1	3.41	6.11	3-3	
*4595.05	B	5w	3.43	6.12	5-4	
4585.088	C	18	3.43	6.13	5-4	$b^3G-x^3F^{\circ}$ (212)
4555.30	B	15	3.42	6.13	4-3?	
4532.75	B	10	3.41	6.13	3-2	
3983.237	C	7	3.43	6.53	5-6	$b^3G-x^3H^{\circ}$ † (213)
3970.07	B	7	3.42	6.53	4-5	
*3941.15	B	3	3.41	6.54	3-4	
3806.829	C	10	3.43	6.68	5-5	$b^3G-v^3G^{\circ}$ † (214)
3812.250	C	12	3.42	6.66	4-4	
3814.622	C	12	3.41	6.64	3-3	
3736.45	B	4	3.43	6.74	5-4	$b^3G-q^5F^{\circ}$ † (215)
3693.09	B	5	3.43	6.78	5-6	$b^3G-w^3H^{\circ}$ † (216)
3689.63	B	6	3.42	6.76	4-5	
3683.67	B	4n	3.41	6.76	3-4	
3695.86	B	5	3.43	6.77	5-6	$b^3G-v^3H^{\circ}$ (217)
3671.94	B	1	3.42	6.78	4-5	
3673.59	B	2	3.41	6.77	3-4	
3345.14	B	5	3.43	7.12	5-5	$b^3G-t^3G^{\circ}$ † (218)
3345.36	B	4	3.42	7.11	4-4	

Cr I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3293.81	B	5	3.43	7.18	5-4	$b^3G-u^3F^{\circ}$ (219)
3277.86	B	4	3.42	7.19	4-3	
3270.70	B	3	3.41	7.18	3-2	
3229.204	C	10	3.43	7.26	5-6	$b^3G-t^3H^{\circ}$ † (220)
3219.616	D	8	3.42	7.25	4-5	
3211.309	C	8	3.41	7.25	3-4	
11157.03	A	25	3.45	4.55	4-3	$y^7P^{\circ}-e^7S$ (221)
11015.63	A	30	3.43	4.55	3-3	
11905.83	A	25	3.42	4.55	2-3	
6978.46	B	300	3.45	5.22	4-5	$y^7P^{\circ}-e^7D$ (222)
6924.13	C	200	3.43	5.22	3-4	
6881.64	B	100	3.42	5.22	2-3	
6979.82	C	150	3.45	5.22	4-4	
6925.24	D	150	3.43	5.22	3-3	
6882.48	D	75	3.42	5.22	2-2	
6980.91	B	50	3.45	5.22	4-3	
6926.04	B	100	3.43	5.22	3-2	
6883.04	D	150	3.42	5.22	2-1	
5609.19	B	35	3.43	5.63	3-3	$y^7P^{\circ}-f^7S$ (223)
5580.51	B	25	3.42	5.63	2-3	
5508.88	P		3.43	5.67	3-2	$y^7P^{\circ}-f^5S$ (224)
5255.132	C	125	3.45	5.80	4-5	$y^7P^{\circ}-f^7D$ (225)
5272.010	C	50	3.43	5.78	3-4	
5287.188	C	40	3.42	5.76	2-3	
5304.211	C	40	3.45	5.78	4-4	
5312.878	C	50	3.43	5.76	3-3	
5318.775	C	40	3.42	5.74	2-2	
m5345.81	P	Cr	3.45	5.76	4-3	
5344.761	C	20	3.43	5.74	3-2	
5340.437	C	35	3.42	5.73	2-1	
9730.32	A	25	3.54	4.80	3-3	$a^3D-z^3D^{\circ}$ † (226)
9949.06	A	20	3.54	4.78	2-2	
10080.32	A	15	3.54	4.76	1-1	
5738.554	C	30	3.54	5.69	3-4	$a^3D-y^3F^{\circ}$ (227)
5772.676	C	25	3.54	5.68	2-3	
m5783.15	P	Cr	3.54	5.67	1-2	
*5700.514	C	40	3.54	5.70	3-3	$a^3D-y^3D^{\circ}$ (228)
5736.632	C	15	3.54	5.69	2-2	
m5746.32	P	Cr	3.54	5.69	1-1	
4835.68	B	10	3.54	6.09	3-3	$a^3D-x^3D^{\circ}$ (229)
4775.141	C	10	3.54	6.12	3-4?	$a^3D-w^5G^{\circ}$ † (230)
4797.69	B	15	3.54	6.11	2-3	
4809.32	B	10	3.54	6.11	1-2	
4764.294	C	50	3.54	6.13	3-4	$a^3D-x^3F^{\circ}$ (231)
4767.860	C	30	3.54	6.13	2-3	
4766.63	B	35	3.54	6.13	1-2	
4757.591	C	18	3.54	6.13	3-3	
4767.280	D	25	3.54	6.13	2-2	
4721.14	B	8w	3.54	6.15	3-3	$a^3D-t^5P^{\circ}$ (232)
4622.491	C	35	3.54	6.21	3-3	$a^3D-w^3D^{\circ}$ (233)
m4649.54	P	Cr	3.54	6.20	2-2	
4665.902	C	35	3.54	6.19	1-1	
4413.866	C	40	3.54	6.33	3-2	$a^3D-w^3P^{\circ}$ (234)
4430.486	C	30	3.54	6.33	2-1	
4443.707	C	30	3.54	6.32	1-0	
4422.697	C	10	3.54	6.33	2-2	
4429.938	C	20	3.54	6.33	1-1	
3520.55	B	0	3.54	7.04	3-4	$a^3D-u^3G^{\circ}$ (235)
3385.31	B	9	3.54	7.19	3-4	$a^3D-u^3F^{\circ}$ (236)
3386.50	B	5	3.54	7.19	2-3	
3390.77	B	5	3.54	7.18	1-2	
3391.11	B	1	3.54	7.18	2-2	
5261.754	C	50	3.68	6.03	3-4	$y^5P^{\circ}-f^5D$ † (237)
5240.468	C	60	3.65	6.01	2-3	
5307.281	C	30	3.68	6.01	3-3	
3902.108	C	10	3.65	6.82	2-3	$y^5P^{\circ}-e^3D$ (238)
5698.330	C	100	3.86	6.03	5-4	$z^5F^{\circ}-f^5D$ (239)
5694.730	C	75	3.84	6.01	4-3	
5682.483	C	75	3.82	5.99	3-2	
5642.362	C	50	3.84	6.03	4-4	
5649.371	C	50	3.82	6.01	3-3	
5648.18	F	(1)	3.81	5.99	2-2	
5597.87	B	18	3.82	6.03	3-4	
5615.54	P		3.81	6.01	2-3	
4275.973	C	15	3.86	6.75	5-5	$z^5F^{\circ}-e^5F$ † (240)
4260.19	B	5w	3.84	6.74	4-4	
4291.964	C	15	3.86	6.74	5-4	
*4269.02	B	5w	3.82	6.71	3-2	
4244.33	B	3w	3.84	6.75	4-5	
4148.52	B	2	3.84	6.82	4-3	$z^5F^{\circ}-e^3D$ † (241)
4163.94	B	2	3.82	6.79	3-2	
4174.795	C	10	3.81	6.77	2-1?	
6029.28	B	18	3.83	5.88	6-6	$a^3I-z^3I^{\circ}$ (242)
6047.665	D	18	3.83	5.87	5-5	
5746.432	C	25	3.83	5.98	7-6	$a^3I-y^3H^{\circ}$ (243)
5791.781	C	20	3.83	5.96	6-5	
5801.14	B	30	3.83	5.96	5-4	

REVISED MULTIPLET TABLE

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tory Ref	Int	E P Low	High	J	Multiplet (No)
C	45*	3.83	6.50	7-7	$a^3I-y^3I^\circ$
C	20	3.83	6.50	6-6	(244)
C	10	3.83	6.49	5-5	
B	1	3.83	6.50	7-6	
B	1	3.83	6.49	6-5	
C	12	3.83	6.51	5-4	a^3I-1° (245)
B	12	3.83	6.53	7-6	$a^3I-x^3H^\circ$
C	12	3.83	6.53	6-5	(246)
C	15	3.83	6.54	5-4	
B	7w	3.83	6.53	6-6	
B	2	3.83	6.53	5-5	
B	1gn?	3.83	6.53	5-6	
C	35	3.83	6.73	7-8	$a^3I-z^3K^\circ$ †
C	25	3.83	6.72	6-7	(247)
C	30	3.83	6.71	5-6	
C	40	3.83	6.78	7-6	$a^3I-w^3H^\circ$
C	20	3.83	6.76	6-5	(248)
C	25	3.83	6.76	5-4	
B	3	3.83	6.78	6-6	
C	20	3.83	6.78	5-6	
C	20	3.83	6.77	7-6	$a^3I-v^3H^\circ$
C	15	3.83	6.78	6-5	(249)
C	15	3.83	6.77	5-4	
B	2	3.83	6.77	6-6	
C	35	3.83	6.77	5-6	
B	7	3.83	6.79	7-7	$a^3I-z^1K^\circ$
C	30	3.83	6.79	6-7	(250)
C	20	3.83	6.89	7-7	$a^3I-x^3I^\circ$
C	20	3.83	6.88	6-6	(251)
C	20	3.83	6.87	5-5	
P		3.83	6.88	7-6	
B	8	3.83	6.87	6-5	
B	5	3.83	6.89	6-7	
C	5	3.83	6.88	5-6	
P	Cr	3.83	7.26	7-6	$a^3I-t^3H^\circ$
C	10	3.83	7.25	6-5	(252)
C	4	3.83	7.25	5-4	
C	10	3.83	7.40	7-7	$a^3I-w^3I^\circ$
C	12	3.83	7.39	6-6	(253)
B	10	3.83	7.41	5-5	
C	10	3.83	7.49	7-7	$a^3I-v^3I^\circ$
C	10	3.83	7.47	6-6	(254)
B	8	3.83	7.46	5-5	
C	5	3.83	7.55	7-6	$a^3I-s^3H^\circ$
B	4	3.83	7.53	6-5	(255)
C	6	3.83	7.51	5-4	
C	15	3.83	5.69	3-4	$b^3D-y^3F^\circ$
B	10	3.83	5.68	2-3	(256)
B	10	3.83	5.67	1-2	
C	20	3.83	5.98	3-2	$b^3D-x^3P^\circ$
B	25	3.83	5.97	2-1	(257)
B	50	3.83	6.13	3-4	$b^3D-x^3F^\circ$
C	35	3.83	6.13	2-3	(258)
C	30	3.83	6.13	1-2	
B	25	3.83	6.13	3-3	
B	10	3.83	6.13	2-2	
C	30	3.83	6.33	3-2	$b^3D-w^3P^\circ$
B	22	3.83	6.33	2-1	(259)
B	25	3.83	6.32	1-0	
B	15	3.83	6.33	2-2	
B	12	3.83	6.33	1-1	
B	6	3.83	6.80	3-4	$b^3D-v^3F^\circ$
B	1	3.83	6.83	2-3	(260)
B	4	3.83	6.85	1-2	
B	0	3.83	6.83	3-3	
B	2	3.83	6.85	2-2	
C	10	3.83	6.82	3-4	$b^3D-w^3F^\circ$
C	10	3.83	6.80	2-3	(261)
C	8	3.83	6.79	1-2	
B	5	3.83	6.80	3-3	
C	12	3.83	6.79	2-2	
B	2	3.83	6.79	3-2	
C	7	3.83	6.99	3-2	$b^3D-v^3P^\circ$
B	4	3.83	7.00	2-1	(262)
B	5	3.83	7.34	3-4	$b^3D-t^3F^\circ$
B	3	3.83	7.34	2-3	(263)
B	4	3.83	7.33	1-2	
B	20	3.88	5.59	5-5	$a^5F-x^5F^\circ$ †
B	18	3.87	5.59	4-4	(264)
B	18	3.87	5.59	3-3	
B	10	3.87	5.58	2-2	
B	9	3.87	5.58	1-1	
D	18	3.88	5.77	5-5	$a^5F-w^5F^\circ$
D	12	3.87	5.77	4-4	(265)
P	Cr+	3.88	6.43	5-4	$a^5F-t^5D^\circ$
F	(1)	3.87	6.42	4-3	(266)
P		3.87	6.42	3-2	
B	12	3.87	6.42	1-0?	
P		3.87	6.43	4-4	
B	20	3.88	6.64	5-4	$a^5F-s^5D^\circ$ †
B	8w	3.87	6.62	4-3	(267)
B	4N	3.87	6.61	3-2	

Cr I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3989.986	C	15	3.88	6.97	5-6	$a^5F-v^5G^\circ$ †
4001.444	C	25	3.87	6.96	4-5	(268)
*4012.49 §	B	20	3.87	6.95	3-4	
4022.263	C	18	3.87	6.94	2-3	
4031.130	D	7	3.87	6.93	1-2	
4003.921	D	7	3.88	6.96	5-5	
4014.668	C	10	3.87	6.95	4-4	
4023.739	C	8	3.87	6.94	3-3	
3716.531	C	10w	3.88	7.20	5-4	$a^5F-r^5D^\circ$ †
3714.39	B	4w	3.87	7.20	4-4	(269)
3712.50	B	1w	3.87	7.20	3-4	
4481.44	B	18	3.96	6.72	6-7	$a^1I-z^3K^\circ$ † (270)
4268.788	C	10	3.96	6.85	6-6	$a^1I-z^1I^\circ$ (271)
4204.471	C	12	3.96	6.90	6-5	$a^1I-u^3H^\circ$ (272)
4192.103	C	15	3.96	6.91	6-5	$a^1I-z^1H^\circ$ (273)
3527.08	B	3N	3.96	7.46	6-6	$a^1I-y^1I^\circ$ (274)
*4542.621	C	35	4.09	6.80	4-4	$b^3F-v^3F^\circ$
4495.275	C	12	4.09	6.83	4-3	(275)
4531.82	B	2	4.08	6.80	3-4	
4524.841	C	15	4.09	6.82	4-4	$b^3F-w^3F^\circ$ †
*4535.721	C	60	4.08	6.80	3-3	(276)
4553.949	C	18	4.08	6.79	2-2	
*4521.141	C	25	4.08	6.81	2-2	$b^3F-v^3D^\circ$
4561.54	B	10w	4.08	6.78	2-1	(277)
4169.838	C	1	4.09	7.05	4-5	$b^3F-u^3G^\circ$ †
4170.202	C	15	4.08	7.04	3-4	(278)
4174.941	C	8	4.08	7.03	2-3	
4065.716	C	12	4.09	7.12	4-5	$b^3F-t^3G^\circ$
4076.061	C	10	4.08	7.11	3-4	(279)
4077.677	C	10	4.08	7.11	2-3	
3990.16	B	6	4.09	7.18	4-4	$b^3F-u^3F^\circ$ †
3976.30	B	5	4.08	7.19	3-3	(280)
3979,324	C	7	4.08	7.18	2-2	
3564.30	B	7	4.09	7.55	4-5	$b^3F-s^3G^\circ$
3562.48	B	4	4.08	7.55	3-4	(281)
*3565.55	B	2	4.08	7.54	2-3	
3569.14	B	5	4.09	7.55	4-4	
6661.076	C	50	4.17	6.03	4-4	$z^5D^\circ-f^5D$
6669.257	C	40	4.16	6.01	3-3	(282)
6657.54	B	20w	4.14	5.99	2-2	
6734.16	B	30	4.17	6.01	4-3	
6715.38	B	35	4.16	5.99	3-2	
6680.19	B	25w	4.14	5.99	2-1	
6597.556	C	40	4.16	6.03	3-4	
6612.17	B	40	4.14	6.01	2-3	
4796.169	C	40w	4.17	6.75	4-5	$z^5D^\circ-e^5F$ †
4783.06	B	15w	4.16	6.74	3-4	(283)
4775.53	B	10w	4.14	6.73	2-3	
*4769.80	B	4w	(4.13 4.12	6.71 6.70	1-2 0-1	
4816.41	B	10w	4.17	6.74	4-4	
4805.24	B	15w	4.16	6.73	3-3	
4796.84	B	12w	4.14	6.71	2-2	
3566.10	B	25n	4.17	7.64	4-3	$z^5D^\circ-f^5P$
3568.36	B	3w	4.16	7.62	3-2	(284)
5285.38	B	7	4.17	6.50	6-7	$b^1I-y^3I^\circ$
5309.47	B	8	4.17	6.49	6-5	(285)
4595.590	C	45	4.17	6.85	6-6	$b^1I-z^1I^\circ$ (286)
4514.373	C	20	4.17	6.90	6-6	$b^1I-u^3H^\circ$
*4521.141	C	25	4.17	6.90	6-5	(287)
4506.853	C	30	4.17	6.91	6-5	$b^1I-z^1H^\circ$ (288)
3747.264	C	7	4.17	7.46	6-6	$b^1I-y^1I^\circ$ (289)
4757.326	C	15	4.22	6.82	2-3	$z^3P^\circ-e^3D$ †
4743.112	C	12w	4.18	6.79	1-2	(290)
*4751.04	B	5w	4.17	6.77	0-1	
8167.94	A	4	4.19	5.70	3-3	$c^3D-y^3D^\circ$ (291)
4699.589	C	25	4.19	6.82	3-4	$c^3D-w^3F^\circ$ †
4723.18	B	8	4.19	6.80	2-3	(292)
4741.089	D	12	4.19	6.79	1-2	
4488.051	C	30	4.19	6.94	3-3	$c^3D-v^5G^\circ$ (293)
4232.222	C	15	4.19	7.11	2-3	$c^3D-t^3G^\circ$ (294)
4000.59	B	4	4.19	7.27	3-2	$c^3D-t^3P^\circ$ (295)
8707.95	A	12	4.37	5.79	4-3	$c^5D-u^5P^\circ$ †
8718.70	A	8	4.38	5.80	3-2	(296)
8732.17	A	3	4.39	5.80	2-1	
8786.96	A	4	4.38	5.79	3-3	
8773.56	A	5	4.39	5.80	2-2	
8297.58	A	3	4.39	5.88	2-3	$c^5D-x^5H^\circ$
						(297)

Cr I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
8183.22	A	35	4.37	5.88	4-5	$c^5D-v^5F^\circ$
8235.89	A	30	4.38	5.88	3-4	(298)
8287.38	A	25	4.39	5.88	2-3	
8322.06	A	20	4.40	5.88	1-2	
8338.83	A	5	4.40	5.88	0-1	
*8166.66	A	7	4.37	5.88	4-4	
8238.29	A	12	4.38	5.88	3-3	
8290.62	A	10	4.39	5.88	2-2	
8323.44	A	5	4.40	5.88	1-1	
8018.04	A	3	4.37	5.91	4-4	$c^5D-v^5D^\circ$ †
8119.13	A	3	4.38	5.90	3-3	(299)
8185.69	A	5	4.39	5.90	2-2	
8225.67	A	3	4.40	5.90	1-1	
8084.98	A	10	4.38	5.91	3-4	
*8166.66	A	7	4.39	5.90	2-3	
8216.28	A	5	4.40	5.90	1-2	
7942.02	A	25	4.37	5.92	4-5	$c^5D-u^5F^\circ$ †
7989.36	A	12	4.38	5.93	3-4	(300)
8061.27	A	10	4.39	5.92	2-3	
8128.28	A	8	4.40	5.92	1-2	
8169.80	A	5	4.40	5.91	0-1	
6729.72	B	40	4.37	6.20	4-5	$c^5D-t^5F^\circ$ (301)
*5373.715	C	30	4.44	6.73	6-5	$b^3H-r^5F^\circ$
*5391.350	C	35	4.43	6.72	5-4	(302)
4592.54	B	15	4.44	7.12	6-5	$b^3H-t^3G^\circ$ †
4606.375	C	15	4.43	7.11	5-4	(303)
4609.894	C	8	4.43	7.11	4-3	
4376.798	C	25	4.44	7.26	6-6	$b^3H-t^3H^\circ$ †
m4371.28	P	Cr	4.43	7.25	5-5	(304)
4373.656	C	15	4.43	7.25	4-4	
4161.415	C	15	4.44	7.40	6-7	$b^3H-w^3I^\circ$
4165.519	C	15	4.43	7.39	5-6	(305)
4142.193	C	7	4.43	7.41	4-5	
4174.15	B	3	4.44	7.39	6-6	
4043.696	C	7	4.44	7.49	6-7	$b^3H-v^3I^\circ$ †
4056.793	C	5	4.43	7.47	5-6	(306)
4071.000	C	5	4.43	7.46	4-5	
3958.08	B	5	4.44	7.55	6-6	$b^3H-s^3H^\circ$
3979.22	B	6	4.43	7.53	5-5?	(307)
3998.85	B	4	4.43	7.51	4-4	
3562.29	B	5	4.44	7.90	6-6	$b^3H-q^3H^\circ$
3564.953	C	5	4.43	7.89	5-5	(308)
*3574.039	C	15	4.43	7.88	4-4	
5263.750	D	40	4.47	6.82	4-3	$z^3F^\circ-e^3D$
5278.262	C	40	4.45	6.79	3-2	(309)
5287.68	B	10w	4.43	6.77	2-1	
4503.05	B	12	4.68	7.42	2-1	$e^5S-x^3S^\circ$ (310)
4656.837	D	10	4.76	7.41	5-5	$a^1H-w^3I^\circ$ (311)
4564.166	C	40	4.76	7.46	5-6	$a^1H-y^1I^\circ$ (312)
3926.649	C	10	4.76	7.90	5-6	$a^1H-q^3H^\circ$ (313)
6135.759	C	25	4.80	6.82	3-3	$z^3D^\circ-e^3D$ (314)
*6762.41	C	40	5.26	7.08	6-6	$z^5G^\circ-e^5G$ †
6757.78	B	25	5.26	7.08	5-5	(315)
6751.28	B	40	5.25	7.08	4-4	
6744.66	B	15	5.25	7.08	3-3	
6738.81	B	18	5.25	7.08	2-2	
7908.30	A	20	5.60	7.16	6-5	$z^3H^\circ-e^3G$
7910.50	A	18	5.60	7.16	5-4	(316)
7917.85	A	18	5.60	7.16	4-3	

Strongest Unclassified Lines of Cr I

7771.74	A	15	
6789.17	C	18	
5854.27	B	75	
5796.757	C	40	
5753.692	C	25	V
5712.635	C	10	V
5681.198	C	60	V
5385.28	B	20v	
5370.356	C	40	
5078.711	C	40	
4884.949	C	25	IIIA
4752.084	C	50	IV
4614.73	B	10	
4611.968	C	15	
4594.403	C	8	
4586.99	B	8	
4489.471	C	5w	IV
4403.498	C	40	IV
4323.523	C	30	IV
4301.178	C	25	IV
4261.615	C	12	IV
4206.899	C	10	V
4200.103	C	12	III
4126.925	C	6	III
3999.679	C	7	

ued

ory r Int	E P Low	 High	J	Multiplet (No)
(10n)*	(III			
	III			
50w	V			
30w	V			
3N	III			
2N	IV?			
7w	III			
4w	IV			
10w	V			
3n	III			
5	V			
4N	IV			
5n	III			
5	III			
12	III			
8n	IV			
7n	IV			
4n	IV			
5n	IV			
3n	V			
20w	III			
5w	III			
20w	III			
15w	III			
2N	V			
2N	V			
?	III			
5w	III			
7w	III			
3w	III			
3w	V			

16.6 Anal B List A April 1941

Int	Low	High	J	Multiplet
10	2.47	5.86	3½-4½	$a^4D-z^6F^\circ$
10	2.44	5.83	2½-3½	(1)
8	2.42	5.81	1½-2½	
12	2.41	5.79	½-1½	
	2.47	5.83	3½-3½	
	2.44	5.81	2½-2½	
	2.42	5.79	1½-1½	
	2.41	5.78	½- ½	
	2.47	5.81	3½-2½	
	2.44	5.79	2½-1½	
	2.42	5.78	1½- ½	
4	2.47	6.00	3½-3½	$a^4D-z^6P^\circ$
20	2.44	5.99	2½-2½	(2)
20	2.42	5.97	1½-1½	
35	2.47	5.99	3½-2½	
25	2.44	5.97	2½-1½	
	2.44	6.00	2½-3½	
4	2.42	5.99	1½-2½	
6	2.41	5.97	½-1½	
150	2.47	6.09	3½-2½	$a^4D-z^4P^\circ$
125	2.44	6.05	2½-1½	(3)
75	2.42	6.02	1½- ½	
60	2.44	6.09	2½-2½	
100	2.42	6.05	1½-1½	
75	2.41	6.02	½- ½	
12	2.42	6.09	1½-2½	
35	2.41	6.05	½-1½	
20	2.47	6.15	3½-4½	$a^4D-z^6D^\circ$
6	2.44	6.13	2½-3½	(4)
25	2.42	6.14	1½-2½	
20	2.41	6.12	½-1½	
3	2.47	6.13	3½-3½?	
50	2.44	6.14	2½-2½	
50	2.42	6.12	1½-1½	
40	2.41	6.11	½- ½	
150	2.47	6.14	3½-2½	
75	2.44	6.12	2½-1½	
40	2.42	6.11	1½- ½	
125	2.47	6.41	3½-4½	$a^4D-z^4F^\circ$
100	2.44	6.39	2½-3½	(5)
75	2.42	6.38	1½-2½	
60	2.41	6.37	½-1½	
50	2.47	6.39	3½-3½	
40	2.44	6.38	2½-2½	
40	2.42	6.37	1½-1½	
5	2.47	6.38	3½-2½	
10	2.44	6.37	2½-1½	
	2.53	5.89	5½-5½	$a^4G-z^6F^\circ$
	2.53	5.86	4½-4½	(6)
	2.53	5.83	3½-3½	
	2.53	5.81	2½-2½	
	2.53	5.86	5½-4½	
	2.53	5.83	4½-3½	
	2.53	5.81	3½-2½	
	2.53	5.79	2½-1½	
	2.53	5.89	4½-5½	
	2.53	5.86	3½-4½	
	2.53	5.83	2½-3½	
(1)	2.53	6.00	4½-3½	$a^4G-z^6P^\circ$ (7)
	2.53	6.15	5½-4½	$a^4G-z^6D^\circ$
2	2.53	6.13	4½-3½	(8)
	2.53	6.14	3½-2½	
	2.53	6.12	2½-1½	
	2.53	6.15	4½-4½	
	2.53	6.13	3½-3½	
	2.53	6.14	2½-2½	
	2.53	6.15	3½-4½	
	2.53	6.13	2½-3½	

Cr II continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
*3180.73 §	A	75	2.53	6.41	5½-4½	$a^4G-z^4F^\circ$
3197.12	A	75	2.53	6.39	4½-3½	(9)
3209.21	A	50	2.53	6.38	3½-2½	
3217.44	A	50	2.53	6.37	2½-1½	
3181.428	B	20	2.53	6.41	4½-4½	
3196.96	A	20	2.53	6.39	3½-3½	
3208.62	A	20	2.53	6.38	2½-2½	
*3196.40	A	3	2.53	6.39	2½-3½	
3935.18	P		2.69	5.83	2½-3½	$a^4P-z^6F^\circ$
3964.64	P		2.69	5.81	1½-2½	(10)
3985.96	P		2.69	5.79	½-1½	
3964.35	P		2.69	5.81	2½-2½	
3986.03	P		2.69	5.79	1½-1½	
3999.00	P		2.69	5.78	½- ½	
3985.74	P		2.69	5.79	2½-1½	
3999.07	P		2.69	5.78	1½- ½	
3748.68	A	7	2.69	5.99	2½-2½	$a^4P-z^6P^\circ$
*3761.90	A	8	2.69	5.97	1½-1½	(11)
3761.69	A	7	2.69	5.97	2½-1½	
*3761.90	A	8	2.69	5.97	½-1½	
3631.49	A	50	2.69	6.09	2½-2½	$a^4P-z^4P^\circ$
3677.93	A	30	2.69	6.05	1½-1½	(12)
3712.97	A	35	2.69	6.02	½- ½	
3677.69	A	40	2.69	6.05	2½-1½	
3713.04	A	15	2.69	6.02	1½- ½	
3631.72	A	40	2.69	6.09	1½-2½	
3677.86	A	50	2.69	6.05	½-1½	
3593.02	P		2.69	6.13	2½-3½	$a^4P-z^6D^\circ$
3585.54	A	40	2.69	6.14	1½-2½	(13)
3603.80	A	40	2.69	6.12	½-1½	
3585.31	A	60	2.69	6.14	2½-2½	
3603.86	A	20	2.69	6.12	1½-1½	
3613.21	A	20	2.69	6.11	½- ½	
3603.61	A	20	2.69	6.12	2½-1½	
3613.26	A	15	2.69	6.11	1½- ½	
3336.16	A	2	2.69	6.39	2½-3½	$a^4P-z^4F^\circ$
3349.68	P		2.69	6.38	1½-2½	(14)
3032.927	B	30	2.69	6.76	2½-3½	$a^4P-z^4D^\circ$
3047.76	A	25	2.69	6.74	1½-2½	(15)
*3059.521	B	25	2.69	6.73	½-1½	
3047.63	A	20	2.69	6.74	2½-2½	
*3059.521	B	25	2.69	6.73	1½-1½	
3067.18	A	20	2.69	6.72	½- ½	
3059.41	A	10	2.69	6.73	2½-1½	
m3067.23	P	Cr^+	2.69	6.72	1½- ½	
4456.84	P		3.09	5.86	3½-4½	$b^4D-z^6F^\circ$
4507.19	P		3.09	5.83	2½-3½	(16)
4544.70	P		3.09	5.81	1½-2½	
4571.24	P		3.09	5.79	½-1½	
4504.52	P		3.09	5.83	3½-3½	
4545.49	P		3.09	5.81	2½-2½	
4572.83	P		3.09	5.79	1½-1½	
4588.40	P		3.09	5.78	½- ½	
4542.77	P		3.09	5.81	3½-2½	
4573.63	P		3.09	5.79	2½-1½	
4590.00	P		3.09	5.78	1½- ½	
4236.33	P		3.09	6.00	3½-3½	$b^4D-z^6P^\circ$
4264.19	P		3.09	5.99	2½-2½	(17)
4280.33	P		3.09	5.97	1½-1½	
4261.80	P		3.09	5.99	3½-2½	
4281.03	P		3.09	5.97	2½-1½	
4238.69	P		3.09	6.00	2½-3½	
4263.49	P		3.09	5.99	1½-2½	
4278.94	P		3.09	5.97	½-1½	
*4111.01	A	18	3.09	6.09	3½-2½	$b^4D-z^4P^\circ$
4172.60	A	2	3.09	6.05	2½-1½	(18)
4217.07	A	1	3.09	6.02	1½- ½	
4113.24	A	5	3.09	6.09	2½-2½	
4171.92	A	3	3.09	6.05	1½-1½	
4215.77	A	2	3.09	6.02	½- ½	
4112.59	A	1	3.09	6.09	1½-2½	
4170.58	P		3.09	6.05	½-1½	
4030.28	P		3.09	6.15	3½-4½	$b^4D-z^6D^\circ$
4063.94	P		3.09	6.13	2½-3½	(19)
4053.45	A	1	3.09	6.14	1½-2½	
4075.63	P		3.09	6.12	½-1½	
4061.77	P		3.09	6.13	3½-3½	
4054.11	A	8	3.09	6.14	2½-2½	
4076.87	A	3	3.09	6.12	1½-1½	
4087.63	A	2	3.09	6.11	½- ½	
4051.97	A	12	3.09	6.14	3½-2½	
4077.50	A	4	3.09	6.12	2½-1½	
4088.90	A	1	3.09	6.11	1½- ½	
3715.19	A	20	3.09	6.41	3½-4½	$b^4D-z^4F^\circ$
3738.38	A	25	3.09	6.39	2½-3½	(20)
3754.59	A	20	3.09	6.38	1½-2½	
3765.62	A	8	3.09	5.37	½-1½	
3736.56	A	1	3.09	8.39	3½-3½	
3755.13	A	2	3.09	6.38	2½-2½	
3766.65	A	4	3.09	6.37	1½-1½	
3753.26	P		3.09	6.38	3½-2½	
3767.18	P		3.09	6.37	2½-1½	
3360.295	B	100	3.09	6.76	3½-3½	$b^4D-z^4D^\circ$
*3379.825§	B	60	3.09	6.74	2½-2½	(21)
3393.86	A	30	3.09	6.73	1½-1½	
3402.43	A	25	3.09	6.72	½- ½	
3378.337	B	25	3.09	6.74	3½-2½	
3394.32	A	35	3.09	6.73	2½-1½	
m3403.29	P	Cr^+	3.09	6.72	1½- ½	
3361.770	B	30	3.09	6.76	2½-3½	
3379.371	B	30	3.09	6.74	1½-2½	
3393.00	A	35	3.09	6.73	½-1½	

Cr II continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
5626.60	P		3.81	6.00	2½-3½	$b^4P-z^6P^\circ$
5497.86	P		3.74	5.99	1½-2½	(22)
*5419.36	A	1	3.70	5.97	½-1½	
5671.62	P		3.81	5.99	2½-2½	
5525.90	P		3.74	5.97	1½-1½	
5701.46	P		3.81	5.97	2½-1½	
5407.62	A	10	3.81	6.09	2½-2½	$b^4P-z^4P^\circ$
5346.54	A	5	3.74	6.05	1½-1½	(23)
5318.41	A	4	3.70	6.02	½- ½	
5510.68	A	7	3.81	6.05	2½-1½	
5420.90	A	10	3.74	6.02	1½- ½	
5249.40	A	10	3.74	6.09	1½-2½	
5246.75	A	15	3.70	6.05	½-1½	
5322.78	P		3.81	6.13	2½-3½	$b^4P-z^6D^\circ$
5153.49	A	15	3.74	6.14	1½-2½	(24)
5097.29	A	7	3.70	6.12	½-1½	
5305.85	A	25	3.81	6.14	2½-2½	
5191.46	A	2	3.74	6.12	1½-1½	
5116.06	A	2	3.70	6.11	½- ½	
5346.12	P		3.81	6.12	2½-1½	
5210.87	A	7	3.74	6.11	1½- ½	
4777.78	P		3.81	6.39	2½-3½	$b^4P-z^4F^\circ$
4679.87	P		3.74	6.38	1½-2½	(25)
4621.41	P		3.70	6.37	½-1½	
4805.18	P		3.81	6.38	2½-2½	
4698.64	P		3.74	6.37	1½-1½	
4824.97	P		3.81	6.37	2½-1½	
4179.43	A	12	3.81	6.76	2½-3½	$b^4P-z^4D^\circ$
*4111.01	A	18	3.74	6.74	1½-2½	(26)
4072.56	A	4	3.70	6.73	½-1½	
4207.35	A	4	3.81	6.74	2½-2½	
4132.41	A	7	3.74	6.73	1½-1½	
4086.14	A	8	3.70	6.72	½- ½	
4229.81	A	1	3.81	6.73	2½-1½	
2976.718	B	35	3.81	7.96	2½-2½	$b^4P-y^4D^\circ$ †
*2961.732	B	50	3.74	7.91	1½-1½	(27)
2953.358	B	35	3.70	7.88	½- ½	
3011.42	A	7	3.81	7.91	2½-1½	
2984.69	A	10	3.74	7.88	1½- ½	
2971.906	B	75	3.75	7.90	6½-6½	$a^4H-z^4H^\circ$
2979.741	B	80	3.74	7.88	5½-5½	(28)
2985.325	B	75	3.73	7.86	4½-4½	
2989.194	B	70	3.72	7.85	3½-3½	
2988.056	C	12	3.75	7.88	6½-5½	
2992.40	A	10	3.74	7.86	5½-4½?	
2994.737	B	20	3.73	7.85	4½-3½	
2972.64	A	10	3.73	7.88	4½-5½	
5369.25	P		3.85	6.15	4½-4½	$a^4F-z^6D^\circ$
5410.39	P		3.85	6.13	3½-3½	(29)
5378.07	P		3.84	6.14	2½-2½	
5409.28	P		3.84	6.12	1½-1½	
5425.29	P		3.85	6.13	4½-3½	
5392.95	P		3.85	6.14	3½-2½	
*5419.36	A	1	3.84	6.12	2½-1½	
5430.41	P		3.84	6.11	1½- ½	
5354.66	P		3.85	6.15	3½-4½	
5395.41	P		3.84	6.13	2½-3½	
5368.10	P		3.84	6.14	1½-2½	
4824.13	A	75	3.85	6.41	4½-4½	$a^4F-z^4F^\circ$
4848.24	A	60	3.85	6.39	3½-3½	(30)
4864.32	A	50	3.84	6.38	2½-2½	
4876.41	A	50	3.84	6.37	1½-1½	
4860.20	A	20	3.85	6.39	4½-3½	
4876.48	P		3.85	6.38	3½-2½	
4884.57	A	10	3.84	6.37	2½-1½	
4812.35	A	25	3.85	6.41	3½-4½	
4836.22	A	25	3.84	6.39	2½-3½	
4856.19	A	20	3.84	6.38	1½-2½	
4242.38	A	30	3.85	6.76	4½-3½	$a^4F-z^4D^\circ$
4261.92	A	20	3.85	6.74	3½-2½	(31)
4275.57	A	30	3.84	6.73	2½-1½	
4284.21	A	20	3.84	6.72	1½- ½	
4233.25	A	10	3.85	6.76	3½-3½	
4252.62	A	10	3.84	6.74	2½-2½	
4269.28	A	10	3.84	6.73	1½-1½	
4224.09	P		3.84	6.76	2½-3½	
4246.41	A	2	3.84	6.74	1½-2½	
3063.84	A	7	3.85	7.88	4½-5½	$a^4F-z^4H^\circ$
*3072.47	A	8	3.85	7.86	3½-4½	(32)
2966.051	B	40	3.85	8.01	4½-3½	$a^4F-y^4D^\circ$
3003.924	B	35	3.85	7.96	3½-2½	(33)
3034.54	A	15	3.84	7.91	2½-1½	
3055.44	A	12	3.84	7.88	1½- ½	
2999.30	A	8	3.84	7.96	2½-2½	
5553.81	P		3.87	6.09	2½-2½	$a^2D-z^4P^\circ$
5731.02	P		3.89	6.05	1½-1½	(34)
5662.58	P		3.87	6.05	2½-1½	
5806.31	P		3.89	6.02	1½- ½	
5610.01	P		3.89	6.09	1½-2½	
5464.36	P		3.87	6.13	2½-3½	$a^2D-z^6D^\circ$
5500.61	P		3.89	6.14	1½-2½	(35)
5446.57	P		3.87	6.14	2½-2½	
5543.86	P		3.89	6.12	1½-1½	
5488.97	P		3.87	6.12	2½-1½	
5566.06	P		3.89	6.11	1½- ½	
4891.55	P		3.87	6.39	2½-3½	$a^2D-z^4F^\circ$
4964.34	P		3.89	6.38	1½-2½	(36)
4920.28	P		3.87	6.38	2½-2½	
4985.46	P		3.89	6.37	1½-1½	
4941.03	P		3.87	6.37	2½-1½	

REVISED MULTIPLET TABLE

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ory f Int	E P Low	 High	J	Multiplet (No)
	3.87	6.76	2½-3½	$a^2D-z^4D^\circ$ (37)
	3.89	6.74	1½-2½	
	3.87	6.74	2½-2½	
	3.89	6.73	1½-1½	
	3.87	6.73	2½-1½	
	3.89	6.72	1½- ½	
	3.99	6.41	3½-4½	$a^2F-z^4F^\circ$ (38)
Cr+	4.02	6.39	2½-3½	
	3.99	6.39	3½-3½	
	4.03	6.38	2½-2½	
	3.99	6.38	3½-2½	
4	4.02	6.37	2½-1½	
2	4.02	6.74	2½-2½	$a^2F-z^4D^\circ$ (39)
10	4.02	6.73	2½-1½	
1	4.02	7.91	2½-1½	$a^2F-y^4D^\circ$ (40)
20	3.99	8.07	3½-4½	$a^2F-z^4G^\circ$ (41)
8	4.02	8.06	2½-3½	
3	3.99	8.06	3½-3½	
2	4.03	8.04	2½-2½	
25	3.99	8.11	3½-4½	$a^2F-z^2G^\circ$ (42)
10	4.02	8.09	2½-3½	
2	3.99	8.09	3½-3½	
75	4.06	6.41	4½-4½	$b^4F-z^4F^\circ$ (43)
20	4.05	6.39	3½-3½	
25	4.06	6.38	2½-2½	
40	4.05	6.37	1½-1½	
15	4.06	6.39	4½-3½	
20	4.05	6.38	3½-2½	
12	4.06	6.37	2½-1½	
15	4.05	6.41	3½-4½	
10	4.06	6.39	2½-3½	
12	4.05	6.38	1½-2½	
100	4.06	6.76	4½-3½	$b^4F-z^4D^\circ$ (44)
75	4.05	6.74	3½-2½	
35	4.06	6.73	2½-1½	
25	4.05	6.72	1½- ½	
20	4.05	6.76	3½-3½	
20	4.06	6.74	2½-2½	
18	4.05	6.73	1½-1½	
	4.06	6.76	2½-3½	
3	4.05	6.74	1½-2½	
8	4.06	7.88	4½-5½	$b^4F-z^4H^\circ$ (45)
15	4.06	8.01	4½-3½	$b^4F-y^4D^\circ$ (46)
10	4.05	7.96	3½-2½	
15	4.06	7.91	2½-1½	
8	4.05	7.88	1½- ½?	
20	4.05	8.01	3½-3½	
4	4.06	7.96	2½-2½	
35	4.06	8.11	4½-5½	$b^4F-z^4G^\circ$ (47)
7	4.05	8.07	3½-4½	
10	4.06	8.06	2½-3½	
15	4.05	8.04	1½-2½	
15	4.06	8.07	4½-4½	
10	4.05	8.06	3½-3½	
10	4.06	8.04	2½-2½	
4	4.06	8.11	4½-4½	$b^4F-z^2G^\circ$ (48)
8w	4.05	8.09	3½-3½	
18	4.05	8.11	3½-4½	
12	4.06	8.09	2½-3½	
1	4.06	8.23	2½-1½	$b^4F-z^2D^\circ$ (49)
15	4.16	6.41	5½-4½	$b^4G-z^4F^\circ$ (50)
12	4.15	6.39	4½-3½	
8	4.14	6.38	3½-2½	
8	4.13	6.37	2½-1½	
1	4.15	6.41	4½-4½	
3	4.14	6.39	3½-3½	
	4.13	6.38	2½-2½	
50	4.16	7.90	5½-6½	$b^4G-z^4H^\circ$ (51)
50	4.15	7.88	4½-5½	
40	4.14	7.86	3½-4½	
40	4.13	7.85	2½-3½	
12	4.16	7.88	5½-5½	
12	4.15	7.86	4½-4½	
8	4.14	7.85	3½-3½	
2	4.15	8.01	4½-3½	$b^4G-y^4D^\circ$ (52)
5	4.16	8.10	5½-6½	$b^4G-z^4I^\circ$ (53)
7	4.15	8.08	4½-5½	
5d	4.14	8.05	3½-4½	
30	4.16	8.11	5½-5½	$b^4G-z^4G^\circ$ (54)
Cr+	4.15	8.07	4½-4½	
20	4.14	8.06	3½-3½	
20	4.13	8.04	2½-2½	
	4.16	8.07	5½-4½	
5	4.15	8.06	4½-3½	
3	4.14	8.04	3½-2½	
12	4.15	8.11	4½-5½	
8	4.14	8.07	3½-4½	
8	4.13	8.06	2½-3½	
7	4.16	8.11	5½-4½	$b^4G-z^2G^\circ$ (55)
5	4.15	8.09	4½-3½	
10	4.15	8.11	4½-4½	
7	4.14	8.09	3½-3½	
10	4.14	8.11	3½-4½	
15	4.13	8.09	2½-3½	

<u>Cr II</u> continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
2985.02	A	7	4.14	8.27	3½-2½	$b^4G-z^2D^\circ$ (56)
2970.66	A	2	4.13	8.28	2½-1½	$b^4G-z^2P^\circ$ (57)
2968.67	A	15	4.16	8.32	5½-5½	$b^4G-y^4G^\circ$ (58)
2963.46	A	20	4.15	8.31	4½-4½	
2956.60	A	10	4.14	8.31	3½-3½	
*2965.19	A	2	4.15	8.31	4½-3½	
2955.71	A	2	4.14	8.31	3½-2½	
*2961.732	B	50	4.16	8.33	5½-4½	$b^4G-y^4F^\circ$ † (59)
2959.97	A	18	4.15	8.32	4½-3½	
2951.95	A	10	4.14	8.32	3½-2½	
2955.12	A	10	4.15	8.33	4½-4½?	
2951.40	A	10	4.14	8.32	3½-3½	
°3421.62	A	4	(4.30	7.90	5½-6½	$a^2H-z^4H^\circ$ (60)
			4.28	7.88	4½-5½	
3460.03	A	1	4.30	7.86	5½-4½	
3450.84	A	3	4.28	7.85	4½-3½	
3270.14	A	40	4.30	8.07	5½-4½	$a^2H-z^4G^\circ$ (61)
3264.26	A	35	4.28	8.06	4½-3½	
3250.79	A	10	4.28	8.07	4½-4½	
3245.31	A	5	4.30	8.10	5½-6½	$a^2H-z^4I^\circ$ (62)
3247.01	A	4	4.28	8.08	4½-5½	
3268.48	A	10	4.28	8.05	4½-4½	
3288.04	A	15	4.30	8.05	5½-4½	
3238.77	A	50	4.30	8.11	5½-4½	$a^2H-z^2G^\circ$ (63)
3234.06	A	50	4.28	8.09	4½-3½	
3219.79	A	10	4.28	8.11	4½-4½	
3053.65	A	10	4.28	8.32	4½-5½	$a^2H-y^4G^\circ$ (64)
3050.137	B	100	4.30	8.34	5½-6½	$a^2H-z^2I^\circ$ (65)
3040.92	A	70	4.28	8.33	4½-5½	
3057.86	A	12	4.30	8.33	5½-5½	
2953.706	B	45	4.28	8.45	4½-4½	$a^2H-z^2H^\circ$ † (66)
2969.67	A	15	4.30	8.45	5½-4½	
3400.08	A	2	4.28	7.91	½-1½	$a^2P-y^4D^\circ$ (67)
3482.58	A	12	4.36	7.91	1½-1½	
3430.42	A	3	4.28	7.88	½- ½	
3369.05	A	18	4.36	8.03	1½- ½	$a^2P-z^2S^\circ$ (68)
3291.75	A	40	4.28	8.03	½- ½	
3186.75	A	18	4.36	8.24	1½-2½	$a^2P-y^4P^\circ$ (69)
3154.10	A	2	4.28	8.19	½-1½	
3163.93	A	10	4.28	8.18	½- ½	
3158.03	A	20	4.36	8.27	1½-2½	$a^2P-z^2D^\circ$ (70)
3125.02	A	15	4.28	8.23	½-1½?	
3194.63	A	10	4.36	8.23	1½-1½	
3152.21	A	40	4.36	8.28	1½-1½	$a^2P-z^2P^\circ$ (71)
3103.48	A	30	4.28	8.26	½- ½	
3172.08	A	40	4.36	8.26	1½- ½	
3084.46	A	15	4.28	8.28	½-1½	
3121.05	A	8	4.36	8.32	1½-2½	$a^2P-y^4F^\circ$ (72)
3121.84	A	10	4.36	8.32	1½-1½	
3074.91	A	3	4.36	8.38	1½-2½	$a^2P-x^4D^\circ$ (73)
3074.67	A	3	4.36	8.38	1½-1½	
3034.05	A	5	4.36	8.43	1½-1½	$a^2P-z^4S^\circ$ (74)
3008.67	A	3	4.36	8.47	1½-2½	$a^2P-z^2F^\circ$ (75)
3557.85	P		4.40	7.86	3½-4½	$b^2F-z^4H^\circ$ (76)
3566.37	A	1	4.39	7.85	2½-3½	
*3466.25	A	2	4.40	7.96	3½-2½	$b^2F-y^4D^\circ$ (77)
3508.67	P		4.39	7.91	2½-1½	
3376.27	A	10	4.40	8.05	3½-4½	$b^2F-z^4I^\circ$ (78)
3357.40	A	40	4.40	8.07	3½-4½	$b^2F-z^4G^\circ$ (79)
3367.42	A	12	4.39	8.06	2½-3½	
3324.346	B	50	4.40	8.11	3½-4½	$b^2F-z^2G^\circ$ (80)
3335.28	A	40	4.39	8.09	2½-3½	
3312.53	A	20	4.40	8.24	3½-2½	$b^2F-y^4P^\circ$ (81)
3347.33	A	8	4.39	8.19	2½-1½	
3183.325	B	40	4.40	8.27	3½-2½	$b^2F-z^2D^\circ$ (82)
3216.55	A	20	4.39	8.23	2½-1½	
3179.45	A	8	4.39	8.27	2½-2½	
3173.58	A	15	4.39	8.28	2½-1½?	$b^2F-z^2P^\circ$ (83)
3149.12	A	4	4.40	8.31	3½-4½	$b^2F-y^4G^\circ$ (84)
3145.77	A	15	4.40	8.32	3½-2½	$b^2F-y^4F^\circ$ (85)
3142.74	A	10	4.39	8.32	2½-1½	
3098.16	A	18	4.40	8.38	3½-3½	$b^2F-x^4D^\circ$ (86)
3095.22	A	3	4.39	8.38	2½-2½	
3098.88	A	3	4.40	8.38	3½-2½	
*3094.94	A	10	4.39	8.38	2½-1½	
3015.510	B	50	4.40	8.49	3½-3½	$b^2F-z^2F^\circ$ (87)
3028.125	B	40	4.39	8.47	2½-2½	
3031.63	A	1	4.40	8.47	3½-2½	
3012.01	A	1	4.39	8.49	2½-3½	
3004.47	A	3	4.39	8.50	2½-3½	$b^2F-y^4H^\circ$ (88)

<u>Cr II</u> continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
3529.73	A	2	4.41	7.90	5½-6½	$b^2H-z^4H^\circ$ (89)
3540.28	P		4.40	7.88	4½-5½	
3552.50	P		4.41	7.88	5½-5½	
3558.22	P		4.40	7.86	4½-4½	
3570.57	P		4.41	7.86	5½-4½	
3571.64	P		4.40	7.85	4½-3½	
3387.73	A	5	4.41	8.05	5½-4½	$b^2H-z^4I^\circ$ (90)
3357.72	A	0	4.40	8.07	4½-4½	$b^2H-z^4G^\circ$ (91)
3368.73	A	10	4.41	8.07	5½-4½	
3372.13	A	15	4.40	8.06	4½-3½	
3335.46	A	30	4.41	8.11	5½-4½	$b^2H-z^2G^\circ$ (92)
3339.90	A	20	4.40	8.09	4½-3½	
3324.67	P		4.40	8.11	4½-4½	
3157.52	A	1	4.41	8.32	5½-5½	$b^2H-y^4G^\circ$ (93)
3147.84	A	1	4.40	8.32	4½-5½	
3135.74	A	30	4.41	8.34	5½-6½	$b^2H-z^2I^\circ$ (94)
3134.33	A	25	4.40	8.33	4½-5½	
3143.91	A	7	4.41	8.33	5½-5½	
3026.647	B	80	4.41	8.49	5½-5½	$b^2H-z^2H^\circ$ (95)
3041.74	A	50	4.40	8.45	4½-4½	
3050.75	D	4	4.41	8.45	5½-4½	
3017.80	A	5	4.40	8.49	4½-5½	
*2968.21 §	A	3	4.41	8.57	5½-6½	$b^2H-y^4H^\circ$ (96)
2958.54	A	2	4.41	8.58	5½-4½	$b^2H-x^4F^\circ$ (97)
3625.30	P		4.48	7.88	4½-5½	$a^2G-z^4H^\circ$ (98)
3621.51	D	(1)	4.46	7.86	3½-4½	
3644.12	P		4.48	7.86	4½-4½	
3635.43	P		4.46	7.85	3½-3½	
*3658.19	A	20	4.48	7.85	4½-3½?	
3428.94	A	7	4.46	8.06	3½-3½	$a^2G-z^4G^\circ$ (99)
3399.54	A	18	4.48	8.11	4½-4½	$a^2G-z^2G^\circ$ (100)
3395.62	A	20	4.46	8.09	3½-3½	
3415.47	D	1	4.48	8.09	4½-3½	
3199.87	A	10	4.46	8.31	3½-2½	$a^2G-y^4G^\circ$ (101)
3079.34	A	15	4.48	8.49	4½-5½	$a^2G-z^2H^\circ$ (102)
3087.90	A	20	4.46	8.45	3½-4½	
3104.29	A	3	4.48	8.45	4½-4½	
3077.24	A	18	4.48	8.49	4½-3½	$a^2G-z^2F^\circ$ (103)
3077.79	A	25	4.46	8.47	3½-2½	
3061.14	P		4.46	8.49	3½-3½	
2954.67	D	10	4.48	8.65	4½-4½	$a^2G-y^2G^\circ$ (104)
*2957.56	A	5	4.46	8.63	3½-3½	
6053.48	A	10	4.72	6.76	3½-3½	$c^4D-z^4D^\circ$ (105)
6129.23	A	7	4.73	6.74	2½-2½	
6195.18	A	3	4.74	6.73	1½-1½	
6239.77	A	1	4.74	6.72	½- ½	
6112.26	A	2	4.72	6.74	3½-2½	
6176.95	A	2	4.73	6.73	2½-1½	
6226.86	A	1	4.74	6.72	1½- ½	
6070.08	A	2	4.73	6.76	2½-3½	
6147.15	A	3	4.74	6.74	1½-2½	
6208.18	A	3	4.74	6.73	½-1½	
3895.16	A	2	4.74	7.91	½-1½	$c^4D-y^4D^\circ$ (106)
3513.03	A	10	4.72	8.24	3½-2½	$c^4D-y^4P^\circ$ (107)
3565.31	A	5	4.73	8.19	2½-1½	
3584.01	P		4.74	8.18	1½- ½	
3518.62	A	3	4.73	8.24	2½-2½	
3571.37	A	3	4.74	8.19	1½-1½	
3588.30	A	2	4.74	8.18	½- ½	
3524.54	P		4.74	8.24	1½-2½	
3575.69	P		4.74	8.19	½-1½	
*3506.61	A	1	4.74	8.26	1½- ½	$c^4D-z^2P^\circ$ (108)
3478.17	A	3	4.72	8.27	3½-2½	$c^4D-z^2D^\circ$ (109)
3528.23	A	1	4.73	8.23	2½-1½	
*3489.45	A	2	4.74	8.27	1½-2½	
3438.46	A	0	4.72	8.31	3½-2½	$c^4D-y^4G^\circ$ (110)
3445.04	A	5	4.73	8.31	2½-3½	
3426.13	D	8	4.72	8.33	3½-4½	$c^4D-y^4F^\circ$ (111)
3437.93	A	2	4.73	8.32	2½-3½	
3444.34	A	4	4.74	8.32	1½-2½	
3449.28	A	2	4.74	8.32	½-1½	
*3376.72	A	5	4.72	8.38	3½-3½	$c^4D-x^4D^\circ$ (112)
3382.79	P		4.73	8.38	2½-2½	
3387.96	A	3	4.74	8.38	1½-1½	
3278.79	A	2	4.72	8.49	3½-3½	$c^4D-z^2F^\circ$ (113)
3201.26	A	25	4.72	8.58	3½-4½	$c^4D-x^4F^\circ$ (114)
3205.11	A	25	4.73	8.58	2½-3½	
3212.91	A	18	4.74	8.58	1½-2½	
3229.89	A	10	4.74	8.56	½-1½	
3200.45	A	10	4.72	8.58	3½-3½	
3208.02	A	8	4.73	8.58	2½-2½	
3226.36	A	4	4.74	8.56	1½-1½	
3164.48	A	1	4.74	8.64	1½-2½	$c^4D-y^2D^\circ$ (115)
*3196.40	A	3	4.74	8.60	1½-1½	
*3072.47	A	8	4.73	8.75	2½-3½	$c^4D-y^2F^\circ$ (116)
3102.58	A	2	4.74	8.71	1½-2½	

ory f	Int	E P Low	High	J	Multiplet (No)
.nued					
A	40	4.76	8.07	4½-4½	$b^{2}G-z^{4}G^{\circ}$ (117)
A	10	4.75	8.06	3½-3½	
A	3 Zr?	4.75	8.04	3½-2½	
A	20	4.76	8.11	4½-4½	$b^{2}G-z^{2}G^{\circ}$ (118)
A	35	4.75	8.09	3½-3½	
P		4.76	8.09	4½-3½	
P		4.75	8.11	3½-4½	
A	30	4.76	8.49	4½-5½	$b^{2}G-z^{2}H^{\circ}$ (119)
A	4	4.75	8.45	3½-4½	
A	5	4.76	8.45	4½-4½	
A	35	4.76	8.49	4½-3½	$b^{2}G-z^{2}F^{\circ}$ (120)
A	20	4.75	8.47	3½-2½	
A	5	4.75	8.49	3½-3½	
A	8	4.76	8.54	4½-5½	$b^{2}G-y^{4}H^{\circ}$ (121)
A	5	4.75	8.52	3½-4½	
A	8	4.76	8.58	4½-4½	$b^{2}G-x^{4}F^{\circ}$ (122)
A	35	4.76	8.65	4½-4½	$b^{2}G-y^{2}G^{\circ}$ (123)
A	15	4.75	8.63	3½-3½	
A	12	4.76	8.63	4½-3½	
P	Cr	4.75	8.65	3½-4½	
A	35	4.76	8.69	4½-5½	$b^{2}G-y^{2}H^{\circ}$ (124)
A	30	4.75	8.69	3½-4½	
A	1	4.76	8.69	4½-4½	
A	40	4.76	8.75	4½-5½	$b^{2}G-x^{4}G^{\circ}$ (125)
A	50	4.75	8.73	3½-4½	
P		4.76	8.73	4½-4½	
P	Cr+	4.75	8.69	3½-3½	
A	8	4.75	8.68	3½-2½	
A	35	4.76	8.75	4½-3½	$b^{2}G-y^{2}F^{\circ}$ (126)
A	20	4.75	8.71	3½-2½	
A	2w	4.75	8.75	3½-3½	
P		4.92	7.88	4½-5½	$c^{2}G-z^{4}H^{\circ}$ (127)
P		4.90	7.86	3½-4½	
P		4.92	7.86	4½-4½	
P		4.90	7.85	3½-3½	
P		4.92	7.85	4½-3½	
P		4.92	8.08	4½-5½	$c^{2}G-z^{4}I^{\circ}$ (128)
P		4.90	8.05	3½-4½	
A	1	4.92	8.05	4½-4½	
P		4.92	8.11	4½-5½	$c^{2}G-z^{4}G^{\circ}$ (129)
P		4.90	8.07	3½-4½	
A	3	4.92	8.07	4½-4½	
P		4.90	8.06	3½-3½	
P		4.92	8.06	4½-3½	
P		4.90	8.04	3½-2½	
A	7	4.92	8.11	4½-4½	$c^{2}G-z^{2}G^{\circ}$ (130)
A	5	4.90	8.09	3½-3½	
A	3	4.90	8.34	3½-2½	$c^{2}G-y^{4}P^{\circ}$ (131)
A	2	4.90	8.31	3½-2½	$c^{2}G-y^{4}G^{\circ}$ (132)
A	3	4.90	8.32	3½-3½	$c^{2}G-y^{4}F^{\circ}$ (133)
A	5	4.92	8.38	4½-3½	$c^{2}G-x^{4}D^{\circ}$ (134)
A	3	4.90	8.38	3½-2½	
P		4.90	8.38	3½-3½	
A	30	4.92	8.49	4½-5½	$c^{2}G-z^{2}H^{\circ}$ (135)
A	25	4.90	8.45	3½-4½	
A	2	4.93	8.46	4½-4½	
A	35	4.93	8.49	4½-3½	$c^{2}G-z^{2}F^{\circ}$ (136)
A	25	4.90	8.47	3½-2½	
A	18	4.92	8.65	4½-4½	$c^{2}G-y^{2}G^{\circ}$ (137)
A	18	4.90	8.63	3½-3½	
A	20	4.90	8.65	3½-4½	
A	15	4.92	8.69	4½-5½	$c^{2}G-y^{2}H^{\circ}$ (138)
A	15	4.90	8.69	3½-4½	
A	4	4.90	8.71	3½-2½	$c^{2}G-y^{2}F^{\circ}$ (139)
A	18	4.92	8.75	4½-5½	$c^{2}G-x^{4}G^{\circ}$ (140)
A	12	4.90	8.73	3½-4½	
A	7	4.92	8.73	4½-4½	
A	5	4.90	9.07	3½-3½	$c^{2}G-w^{4}D^{\circ}$ (141)
D	(1)	4.92	8.05	3½-4½	$c^{2}F-z^{4}I^{\circ}$ (142)
P		4.92	8.11	3½-4½	$c^{2}F-z^{2}G^{\circ}$ (143)
P		4.91	8.09	2½-3½	
A	1	4.92	8.09	3½-3½	
A	15	4.92	8.24	3½-2½	$c^{2}F-y^{4}P^{\circ}$ (144)
A	3	4.91	8.19	2½-1½	
A	25	4.92	8.27	3½-2½	$c^{2}F-z^{2}D^{\circ}$ (145)
A	20	4.91	8.23	2½-1½	
P		4.91	8.27	2½-2½	
A	20	4.91	8.28	2½-1½?	$c^{2}F-z^{2}P^{\circ}$ (146)
P		4.92	8.33	3½-4½	$c^{2}F-y^{4}F^{\circ}$ (147)
P		4.91	8.32	2½-3½	
P		4.92	8.32	3½-3½	
P		4.91	8.32	2½-2½	
A	10	4.92	8.32	3½-2½	
A	7	4.91	8.33	2½-1½	

<u>Cr II</u> continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3461.28	A	3	4.92	8.49	3½-3½	$c^{2}F-z^{2}F^{\circ}$ (148)
*3466.25	A	2	4.91	8.47	2½-2½	
m3482.56	P	Cr+	4.92	8.47	3½-2½	
3445.20	P		4.91	8.49	2½-3½	
3374.99	A	8	4.92	8.58	3½-4½	$c^{2}F-x^{4}F^{\circ}$ (149)
3377.36	A	5	4.92	8.58	3½-2½	
*3376.72	A	5	4.91	8.56	2½-1½	
3306.95	A	50	4.92	8.65	3½-4½	$c^{2}F-y^{2}G^{\circ}$ (150)
3314.57	A	35	4.91	8.63	2½-3½	
3329.45	A	4	4.92	8.63	3½-3½	
3275.92	A	10	4.92	8.69	3½-4½	$c^{2}F-y^{2}H^{\circ}$ (151)
3258.01	A	3	4.91	8.69	2½-3½	$c^{2}F-x^{4}G^{\circ}$ (152)
m3269.75	P	Cr+	4.91	8.68	2½-2½	
3227.48	A	3	4.92	8.75	3½-3½	$c^{2}F-y^{2}F^{\circ}$ (153)
3241.38	A	4	4.91	8.71	2½-2½	
3255.62	A	3	4.92	8.71	3½-2½	
3213.46	A	3	4.91	8.75	2½-3½	
3044.24	A	10	4.92	8.98	3½-4½	$c^{2}F-x^{2}G^{\circ}$ (154)
3038.04	A	6	4.91	8.97	2½-3½	
4227.73	A	1	4.96	7.88	6½-5½	$b^{2}I-z^{4}H^{\circ}$ (155)
3650.37	A	40	4.96	8.34	6½-6½	$b^{2}I-z^{2}I^{\circ}$ (156)
3664.95	A	30	4.97	8.33	5½-5½	
3661.44	A	3	4.96	8.33	6½-5½	
3653.85	P		4.97	8.34	5½-6½	
*3503.36 §	A	3	4.96	8.49	6½-5½	$b^{2}I-z^{2}H^{\circ}$ (157)
3539.00	A	4	4.97	8.45	5½-4½	
*3506.61	A	1	4.97	8.49	5½-5½	
*3310.65	A	35	4.96	8.69	6½-5½	$b^{2}I-y^{2}H^{\circ}$ (158)
3314.06	A	18	4.97	8.69	5½-4½	
3258.77	A	30	4.96	8.75	6½-5½	$b^{2}I-x^{4}G^{\circ}$ (159)
3283.04	A	20	4.97	8.73	5½-4½	
3261.56	A	4	4.97	8.75	5½-5½	
*2965.19	A	2	4.96	9.13	6½-6½	$b^{2}I-1^{\circ}$ (160)
4195.41	A	10	5.30	8.24	2½-2½	$b^{2}D-y^{4}P^{\circ}$ (161)
4278.10	A	1	5.31	8.19	1½-1½	
4145.77	A	25	5.30	8.27	2½-2½	$b^{2}D-z^{2}D^{\circ}$ (162)
4224.85	A	30	5.31	8.23	1½-1½	
4209.02	A	3	5.30	8.23	2½-1½	
4161.05	A	2	5.31	8.27	1½-2½	
4135.77	P		5.30	8.28	2½-1½	$b^{2}D-z^{2}P^{\circ}$ (163)
4185.50	P		5.31	8.26	1½- ½	
4151.00	A	5	5.31	8.28	1½-1½	
4089.49	A	2	5.30	8.31	2½-2½	$b^{2}D-y^{4}G^{\circ}$ (164)
4081.21	A	1	5.30	8.32	2½-3½	$b^{2}D-y^{4}F^{\circ}$ (165)
4082.30	A	10	5.30	8.32	2½-2½	
4098.44	A	8	5.31	8.32	1½-1½	
4002.48	A	5	5.30	8.38	2½-3½	$b^{2}D-x^{4}D^{\circ}$ (166)
4017.96	A	3	5.31	8.38	1½-2½	
3865.59	A	75	5.30	8.49	2½-3½	$b^{2}D-z^{2}F^{\circ}$ (167)
3905.64	A	25	5.31	8.47	1½-2½	
3892.14	A	4	5.30	8.47	2½-2½	
3701.90	A	4	5.30	8.63	2½-3½	$b^{2}D-y^{2}G^{\circ}$ (168)
3694.98	A	4	5.30	8.64	2½-2½	$b^{2}D-y^{2}D^{\circ}$ (169)
3707.13	A	3	5.31	8.64	1½-2½	
m3631.48	P	Cr+	5.30	8.69	2½-3½	$b^{2}D-x^{4}G^{\circ}$ (170)
3657.94	A	1	5.31	8.68	1½-2½	
3576.23	P		5.30	8.76	2½-3½	$b^{2}D-y^{2}F^{\circ}$ (171)
3622.45	A	1	5.31	8.71	1½-2½	
3610.85	P		5.30	8.71	2½-2½	
3276.28	A	1	5.30	9.06	2½-1½	$b^{2}D-w^{4}D^{\circ}$ (172)
*3286.34 §	A	0	5.31	9.06	1½- ½	
3202.52	A	15	5.30	9.15	2½-3½	$b^{2}D-x^{2}F^{\circ}$ (173)
3178.79	A	7	5.31	9.19	1½-2½	
3169.85	A	2w	5.30	9.19	2½-2½	
3190.69	A	6	5.31	9.17	1½-3½	$b^{2}D-w^{4}F^{\circ}$ (174)
3141.80	A	4	5.30	9.22	2½-1½	$b^{2}D-x^{4}P^{\circ}$ (175)
4761.42	A	1	5.65	8.24	2½-2½	$c^{2}D-y^{4}P^{\circ}$ (176)
4832.97	P		5.64	8.19	1½-1½	
4697.62	A	2	5.65	8.27	2½-2½	$c^{2}D-z^{2}D^{\circ}$ (177)
4684.77	A	1	5.65	8.28	2½-1½	$c^{2}D-z^{2}P^{\circ}$ (178)
4715.12	D	1	5.64	8.26	1½- ½	
4671.36	P		5.64	8.28	1½-1½	
4341.09	A	7	5.65	8.49	2½-3½	$c^{2}D-z^{2}F^{\circ}$ (179)
*4362.93 §	A	3	5.64	8.47	1½-2½	
4374.61	P		5.65	8.47	2½-2½	
4204.83	P		5.65	8.58	2½-3½	$c^{2}D-x^{4}F^{\circ}$ (180)
4199.02	P		5.64	8.58	1½-2½	
4209.84	P		5.65	8.58	2½-2½	
4222.00	A	1	5.64	8.56	1½-1½	
4232.96	P		5.65	8.56	2½-1½	

<u>Cr II</u> continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4127.08	A	3	5.65	8.64	2½-2½	$c^{2}D-y^{2}D^{\circ}$ (181)
4170.86	A	1	5.64	8.60	1½-1½	
4181.50	A	1	5.65	8.60	2½-1½	
4116.66	A	2	5.64	8.64	1½-2½	
4048.02	P		5.65	8.69	2½-3½	$c^{2}D-x^{4}G^{\circ}$ (182)
4056.07	A	4	5.64	8.68	1½-2½	
4066.16	P		5.65	8.68	2½-2½	
3979.51	A	20	5.65	8.75	2½-3½	$c^{2}D-y^{2}F^{\circ}$ (183)
*4012.50 §	A	30	5.64	8.71	1½-2½	
4022.36	A	3	5.65	8.71	2½-2½	
3522.13	A	7	5.65	9.15	2½-3½	$c^{2}D-x^{2}F^{\circ}$ (184)
m3484.16	P	Cr+	5.65	9.19	2½-3½	$c^{2}D-w^{4}F^{\circ}$ (185)
*3489.45	A	2	5.64	9.17	1½-2½	
3125.79	A	5	5.65	9.59	2½-1½	$c^{2}D-y^{2}P^{\circ}$ (186)
3113.59	A	5	5.64	9.60	1½- ½	
6089.69	A	15	6.46	8.49	4½-5½	$d^{2}G-z^{2}H^{\circ}$ (187)
6179.17	A	10	6.46	8.45	3½-4½	
6188.00	P		6.46	8.45	4½-4½	
6081.51	A	3	6.46	8.49	4½-3½	$d^{2}G-z^{2}F^{\circ}$ (188)
6138.77	A	2	6.46	8.47	3½-2½	
5620.63	A	12	6.46	8.65	4½-4½	$d^{2}G-y^{2}G^{\circ}$ (189)
5678.42	A	10	6.46	8.63	3½-3½	
4901.65	A	15	6.46	8.98	4½-4½	$d^{2}G-x^{2}G^{\circ}$ (190)
4912.49	A	12	6.46	8.97	3½-3½	
4465.78	A	4	6.46	9.22	4½-5½	$d^{2}G-x^{2}H^{\circ}$ (191)
4511.82	P		6.46	9.19	3½-4½	
4516.56	P		6.46	9.19	4½-4½	
4256.16	A	5	6.46	9.36	4½-4½	$d^{2}G-w^{2}G^{\circ}$ (192)
4268.93	A	1	6.46	9.35	3½-3½	
4070.90	A	10	6.46	9.49	4½-3½	$d^{2}G-w^{2}F^{\circ}$ (193)
4049.14	A	18	6.46	9.50	3½-2½	
4067.05	P		6.46	9.49	3½-3½	
4038.03	A	25	6.46	9.52	4½-5½	$d^{2}G-w^{2}H^{\circ}$ (194)
4003.33	A	25	6.46	9.54	3½-4½	
4007.04	P		6.46	9.54	4½-4½	
3089.75	A	1	6.46	10.45	4½-3½	$d^{2}G-u^{2}F^{\circ}$ (195)
6418.87	A	7	6.66	8.58	4½-4½	$c^{4}F-x^{4}F^{\circ}$ (196)
6271.83	A	5	6.61	8.58	3½-3½	
6168.46	A	2	6.58	8.58	2½-2½	
6415.59	A	1	6.66	8.58	4½-3½	
6282.92	A	2	6.61	8.58	3½-2½	
6274.94	A	1	6.61	8.58	3½-4½	
6066.00	A	7	6.66	8.69	4½-5½	$c^{4}F-y^{2}H^{\circ}$ (197)
6069.69	A	1	6.66	8.69	4½-4½	
5895.90	A	4	6.66	8.75	4½-5½	$c^{4}F-x^{4}G^{\circ}$ (198)
5841.86	A	5	6.61	8.73	3½-4½	
5827.24	A	5	6.58	8.69	2½-3½	
5110.43	A	2	6.66	9.07	4½-3½	$c^{4}F-w^{4}D^{\circ}$ (199)
4857.60	A	2	6.66	9.20	4½-4½	$c^{4}F-w^{4}F^{\circ}$ (200)
5137.09	A	7	6.79	9.20	2½-2½	$c^{4}P-x^{4}P^{\circ}$ (201)
5091.14	A	2	6.80	9.22	1½-1½	
5076.15	A	4	6.79	9.22	2½-1½	

Strongest Unclassified Lines of <u>Cr II</u>

I A	Ref	Int
6305.60	A	4
5913.87	A	3
4952.78	A	10
3814.00	A	12
3801.21	A	10 Cr I?
3778.69	A	6
3750.56	A	12
3711.29	A	7
3495.56	A	20
3198.00	A	15

Mn I   I P 7.40   Anal B   List B   May 1941

I A	Ref	Int	E P Low	High	J	Multiplet (No)
5394.674	B	10	0.00	2.29	2½-3½	$a^{6}S-z^{8}P^{\circ}$ (1)
5432.548	B	4	0.00	2.27	2½-2½	
4030.755 //	B	200R	0.00	3.06	2½-3½	$a^{6}S-z^{6}P^{\circ}$ (2)
4033.073	B	150R	0.00	3.06	2½-2½	
4034.490	B	100R	0.00	3.06	2½-1½	
3224.761	B	10	0.00	3.83	2½-2½	$a^{6}S-z^{4}P^{\circ}$ (3)
3216.946	B	8	0.00	3.84	2½-1½	
5341.065	B	20	2.11	4.42	4½-3½	$a^{6}D-y^{6}P^{\circ}$ (4)
5420.362	B	10	2.13	4.41	3½-2½	
*5481.396	B	4	2.15	4.41	2½-1½	
5407.424	B	5	2.13	4.42	3½-3½	
5470.638	B	8	2.15	4.41	2½-2½	
5516.771	B	7	2.17	4.41	1½-1½	
5457.471	B	1	2.15	4.42	2½-3½	
5505.869	B	2	2.17	4.41	1½-2½	
5537.756	B	5	2.18	4.41	½-1½	

d

ry Int	E P Low	E P High	J	Multiplet (No)
50r	2.11	5.16	4½-4½	$a^{6}D-z^{6}D^{\circ}$
20	2.13	5.18	3½-3½	(5)
8	2.15	5.19	2½-2½	
(2)	2.17	5.20	1½-1½	
5	2.18	5.21	½- ½	
20	2.11	5.18	4½-3½	
15	2.13	5.19	3½-2½	
15	2.15	5.20	2½-1½	
10	2.17	5.21	1½- ½	
12	2.13	5.16	3½-4½	
12	2.15	5.18	2½-3½	
12	2.17	5.19	1½-2½	
10	2.18	5.20	½-1½	
20r	2.11	5.35	4½-5½	$a^{6}D-z^{6}F^{\circ}$
20r	2.13	5.36	3½-4½	(6)
12	2.15	5.37	2½-3½	
10	2.17	5.38	1½-2½	
7	2.18	5.39	½-1½	
10	2.11	5.36	4½-4½	
10	2.13	5.37	3½-3½	
10	2.15	5.38	2½-2½	
8	2.17	5.39	1½-1½	
8	2.18	5.39	½- ½	
(1)	2.11	5.37	4½-3½	
4	2.13	5.38	3½-2½	
5	2.15	5.39	2½-1½	
5	2.17	5.39	1½- ½	
5	2.11	5.47	4½-4½	$a^{6}D-z^{4}F^{\circ}$
4	2.13	5.50	3½-3½	(7)
(1)	2.15	5.52	2½-2½	
	2.11	5.50	4½-3½	
4	2.13	5.47	3½-4½	
(1)	2.15	5.50	2½-3½	
(1)	2.17	5.52	1½-2½	
	2.18	5.53	½-1½	
40	2.11	5.55	4½-3½	$a^{6}D-x^{6}P^{\circ}$
30	2.13	5.57	3½-2½	(8)
20	2.15	5.59	2½-1½	
20	2.13	5.55	3½-3½	
20	2.15	5.57	2½-2½	
20	2.17	5.59	1½-1½	
12	2.15	5.55	2½-3½	
15	2.17	5.57	1½-2½	
15	2.18	5.59	½-1½	
8	2.15	5.86	2½-1½	$a^{6}D-1^{\circ}$
4	2.17	5.86	1½-1½	(9)
(1)	2.18	5.86	½-1½	
5	2.13	5.89	3½-2½	$a^{6}D-2^{\circ}$
6	2.17	5.89	1½-2½	(10)
4	2.15	5.90	2½-1½	$a^{6}D-4^{\circ}$
(3)	2.17	5.90	1½-1½	(11)
4	2.18	5.90	½-1½	
5	2.11	5.90	4½-3½	$a^{6}D-3^{\circ}$
5	2.13	5.90	3½-3½	(12)
6	2.15	5.90	2½-3½	
7	2.11	5.91	4½-	$a^{6}D-5^{\circ}$
10	2.13	5.91	3½-	(13)
30	2.11	5.93	4½-5½	$a^{6}D-y^{6}F^{\circ}$
20	2.13	5.95	3½-4½	(14)
15	2.15	5.95	2½-3½	
12	2.17	5.96	1½-2½	
10	2.18	5.96	½-1½	
15	2.11	5.95	4½-4½	
12	2.13	5.95	3½-3½	
12	2.15	5.96	2½-2½	
12	2.17	5.96	1½-1½	
10	2.18	5.96	½- ½	
5	2.11	5.95	4½-3½	
6	2.13	5.96	3½-2½	
5	2.15	5.96	2½-1½	
5	2.17	5.96	1½- ½	
50	2.11	6.16	4½-3½	$a^{6}D-w^{6}P^{\circ}$
40	2.13	6.17	3½-2½	(15)
20	2.15	6.18	2½-1½	
20	2.13	6.16	3½-3½	
20	2.15	6.17	2½-2½	
20	2.17	6.18	1½-1½	
(2)	2.15	6.16	2½-3½	
10	2.17	6.17	1½-2½	
15	2.18	6.18	½-1½	
50	2.31	4.87	4½-3½	$z^{8}P^{\circ}-e^{8}S$
50	2.29	4.87	3½-3½	(16)
50	2.27	4.87	2½-3½	
(1)	2.29	5.11	3½-2½	$z^{8}P^{\circ}-e^{6}S$ † (17)
60	2.31	5.77	4½-5½	$z^{8}P^{\circ}-e^{8}D$
50	2.29	5.77	3½-4½	(18)
30	2.27	5.77	2½-3½	
40	2.31	5.77	4½-4½	
40	2.29	5.77	3½-3½	
50	2.27	5.77	2½-2½	
20	2.31	5.77	4½-3½	
30	2.29	5.77	3½-2½	
50	2.27	5.77	2½-1½	
15	2.31	6.19	4½-3½	$z^{8}P^{\circ}-f^{8}S$
15	2.29	6.19	3½-3½	(19)
15	2.27	6.19	2½-3½	
3	2.88	5.36	3½-4½	$a^{4}D-z^{6}F^{\circ}$
2	2.91	5.37	2½-3½	(20)
(1)	2.93	5.38	1½-2½	
(1)	2.94	5.39	½-1½	
(2)	2.88	5.37	3½-3½	

<u>Mn I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4762.376	B	30	2.88	5.47	3½-4½	$a^{4}D-z^{4}F^{\circ}$
4766.430	B	20	2.91	5.50	2½-3½	(21)
4765.859	B	10	2.93	5.52	1½-2½	
4761.526	B	10	2.94	5.53	½-1½	
4709.715	B	10	2.88	5.50	3½-3½	
4727.476	B	10	2.91	5.52	2½-2½	
4739.108	B	8	2.93	5.53	1½-1½	
4671.688	B	3	2.88	5.52	3½-2½	
4701.159	B	3	2.91	5.53	2½-1½	
4451.586	B	15	2.88	5.65	3½-3½	$a^{4}D-z^{4}D^{\circ}$
4464.677	B	8	2.91	5.67	2½-2½	(22)
4470.138	B	6	2.93	5.69	1½-1½	
4472.792	B	5	2.94	5.70	½- ½	
4414.879	B	10	2.88	5.67	3½-2½	
4436.352	B	8	2.91	5.69	2½-1½	
4453.005	B	6	2.93	5.70	1½- ½	
4502.220	B	7	2.91	5.65	2½-3½	
4498.897	B	7	2.93	5.67	1½-2½	
4490.081	B	5	2.94	5.69	½-1½	
4235.290	B	8	2.88	5.79	3½-2½	$a^{4}D-y^{4}P^{\circ}$
4235.140	B	6	2.91	5.82	2½-1½	(23)
4239.725	B	5	2.93	5.84	1½- ½	
4281.099	B	6	2.91	5.79	2½-2½	
4265.924	B	6	2.93	5.82	1½-1½	
4257.659	B	5	2.94	5.84	½- ½	
4312.550	B	3	2.93	5.79	1½-2½	
4284.084	B	(4)	2.94	5.82	½-1½	
3696.568	B	8	2.88	6.21	3½-4½	$a^{4}D-y^{4}F^{\circ}$
3728.889	B	(1)	2.91	6.22	2½-3½	(24)
3750.763	B	(2)	2.93	6.22	1½-2½	
3763.377	B	(2)	2.94	6.22	½-1½	
3694.115	B	(1)	2.88	6.22	3½-3½	
3726.931	B	(1)	2.91	6.22	2½-2½	
3601.782	C	(1)	2.91	6.33	2½-2½	$a^{4}D-x^{4}P^{\circ}$
3605.691	B	(1)	2.93	6.35	1½-1½	(25)
3583.676	B	(2)	2.91	6.35	2½-1½	
3589.973	C	(1)	2.93	6.37	1½- ½	
3407.960	C	(1)	2.91	6.53	2½-2½	$a^{4}D-v^{6}P^{\circ}$
						(26)
6021.802	C	50	3.06	5.11	3½-2½	$z^{6}P^{\circ}-e^{6}S$
6016.637	C	40	3.06	5.11	2½-2½	(27)
6013.498	B	30	3.06	5.11	1½-2½	
4462.022	B	20	3.06	5.83	3½-4½	$z^{6}P^{\circ}-e^{6}D$
4458.262	B	12	3.06	5.83	2½-3½	(28)
4455.821	B	6	3.06	5.83	1½-2½	
4461.085	B	8	3.06	5.83	3½-3½	
4457.549	B	8	3.06	5.83	2½-2½	
4455.318	B	6	3.06	5.83	1½-1½	
4460.377	B	3	3.06	5.83	3½-2½	
4457.045	B	5	3.06	5.83	2½-1½	
4455.012	B	5	3.06	5.83	1½- ½	
4061.742	B	5	3.06	6.10	3½-2½	$z^{6}P^{\circ}-f^{6}S$
4059.392	B	5	3.06	6.10	2½-2½	(29)
4057.950	B	4	3.06	6.10	1½-2½	
3317.305	B	10n	3.06	6.78	3½-4½	$z^{6}P^{\circ}-g^{6}D$
3314.876	C	6n	3.06	6.78	2½-3½	(30)
*3313.524	B	(4 4)	3.06	6.78	1½-2½	
3316.440	C	5n	3.06	6.78	3½-3½	
3314.393	C	6n	3.06	6.78	2½-2½	
5504.21	B	(2)	3.12	5.36	5½-4½	$a^{4}G-z^{6}F^{\circ}$
*5481.396	B	4	3.12	5.37	4½-3½	(31)
5460.644	C	(1)	3.12	5.38	3½-2½	
5444.096	C	(1n)	3.12	5.39	2½-1½	
5510.174	C	(1)	3.12	5.36	4½-4½	
5255.325	B	4	3.12	5.47	5½-4½	$a^{4}G-z^{4}F^{\circ}$
5196.591	B	3	3.12	5.50	4½-3½	(32)
5150.890	B	3	3.12	5.52	3½-2½	
*5117.937	B	3	3.12	5.53	2½-1½	
5260.771	B	(3)	3.12	5.47	4½-4½	
5197.216	B	1	3.12	5.50	3½-3½	
5149.13	B	(1)	3.12	5.52	2½-2½	
3986.826	B	3	3.12	6.21	5½-4½	$a^{4}G-y^{4}F^{\circ}$
3987.098	B	(1)	3.12	6.22	4½-3½	(33)
3985.241	B	3	3.12	6.22	3½-2½	
3982.583	B	(2)	3.12	6.22	2½-1½	
3989.958	C	(1)	3.12	6.21	4½-4½	
3987.464	B	(2)	3.12	6.22	3½-3½	
3984.177	B	(1)	3.12	6.22	2½-2½	
3986.395	C	(2)	3.12	6.22	2½-3½	
3047.035	B	15	3.12	7.17	5½-5½	$a^{4}G-z^{4}G^{\circ}$
3045.593	B	12	3.12	7.17	4½-4½	(34)
3043.356	B	9	3.12	7.18	3½-3½	
3040.603	B	12	3.12	7.18	2½-2½	
3043.770	B	(3)	3.12	7.17	5½-4½	
3043.143	B	(3)	3.12	7.18	4½-3½	
3041.224	B	4	3.12	7.18	3½-2½	
3048.864	B	5	3.12	7.17	4½-5½	
3045.808	B	5	3.12	7.17	3½-4½	
3042.733	B	4	3.12	7.18	2½-3½	
3022.749	B	10	3.12	7.20	5½-6½	$a^{4}G-z^{4}H^{\circ}$
3016.454	B	8	3.12	7.21	4½-5½	(35)
3011.376	B	7	3.12	7.22	3½-4½	
3007.655	B	6	3.12	7.22	2½-3½	
3014.668	B	5	3.12	7.21	5½-5½	
3011.162	B	5	3.12	7.22	4½-4½	
3008.265	B	4	3.12	7.22	3½-3½	
5388.521	B	(3)	3.36	5.65	2½-3½	$a^{4}P-z^{4}D^{\circ}$
5348.069	B	(1)	3.36	5.67	1½-2½	(36)
5317.095	B	(2)	3.37	5.69	½-1½	
5334.804	C	(1)	3.36	5.67	2½-2½	
5307.53	P		3.36	5.69	1½-1½	
5292.861	C	(1)	3.37	5.70	½- ½	

<u>Mn I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4147.532	B	(3)	3.36	6.33	2½-2½	$a^{4}P-x^{4}P^{\circ}$
4131.430	B	(1)	3.36	6.35	1½-1½	(37)
4123.543	B	(1)	3.36	6.35	2½-1½	
*4110.903	B	(2)	3.36	6.37	1½- ½	
4155.525	B	(2)	3.36	6.33	1½-2½	
4137.257	B	(3)	3.37	6.35	½-1½	
3115.465	B	6	3.36	7.32	2½-3½	$a^{4}P-x^{4}F^{\circ}$
3108.635	B	(1)	3.36	7.33	2½-2½	(38)
3107.774	B	(1)	3.36	7.33	1½-1½	
6491.712	B	15	3.75	5.65	3½-3½	$b^{4}D-z^{4}D^{\circ}$
6440.974	B	8	3.76	5.67	2½-2½	(39)
6384.669	B	4	3.76	5.69	1½-1½	
6356.057	C	(2)	3.76	5.70	½- ½	
6413.92	C	(3)	3.75	5.67	3½-2½	
6382.169	B	(3)	3.76	5.69	2½-1½	
6349.748	C	(1)	3.76	5.70	1½- ½	
6519.371	B	(3)	3.76	5.65	2½-3½	
6443.492	B	(2)	3.76	5.67	1½-2½	
6391.214	C	(1)	3.76	5.69	½-1½	
4431.922	B	(1)	3.76	6.54	1½-1½	$b^{4}D-v^{6}P^{\circ}$
4436.025	B	(2n)	3.76	6.54	½-1½	(40)
3462.748	C	(1)	3.76	7.32	2½-3½	$b^{4}D-x^{4}F^{\circ}$
3455.04	C	(2)	3.76	7.33	1½-2½	(41)
5377.628	B	6	3.83	6.12	2½-1½	$z^{4}P^{\circ}-e^{4}S$
5399.489	B	4	3.84	6.12	1½-1½	(42)
5413.687	B	2	3.84	6.12	½-1½	
4844.315	B	(2)	3.83	6.37	2½-2½	$z^{4}P^{\circ}-e^{4}P$
4843.19	B	(1n)	3.84	6.38	1½-1½	(43)
4838.244	B	(1)	3.84	6.39	½- ½	
4825.593	B	(1)	3.83	6.38	2½-1½	
4826.896	B	(2)	3.84	6.39	1½- ½	
4862.054	B	(3)	3.84	6.37	1½-2½	
4854.604	B	(2)	3.84	6.38	½-1½	
3926.467	B	10	3.83	6.97	2½-2½	$z^{4}P^{\circ}-1$ (44)
3800.552	B	4	3.83	7.07	2½-3½	$z^{4}P^{\circ}-e^{4}D$
3785.421	B	(1)	3.84	7.10	1½-2½	(45)
3774.645	B	(1)	3.83	7.10	2½-2½	
9243.29	A	150	4.31	5.65	4½-3½	$a^{4}F-z^{4}D^{\circ}$ †
9172.09	A	100	4.33	5.67	3½-2½	(46)
9114.02	A	50	4.33	5.69	2½-1½	
9084.29	A	30	4.34	5.70	1½- ½	
*4110.903	B	(2)	4.31	7.32	4½-4½	$a^{4}F-x^{4}F^{\circ}$
4122.757	C	(1)	4.33	7.32	3½-3½	(47)
4123.279	B	(1)	4.33	7.33	2½-2½	
4105.365	B	(3)	4.31	7.32	4½-3½	
4113.876	B	(2)	4.33	7.33	2½-1½	
4045.133	B	4*	4.31	7.36	4½-5½	$a^{4}F-y^{4}G^{\circ}$
4048.999	C	(2)	4.33	7.37	3½-4½	(48)
4052.472	B	(2)	4.33	7.38	2½-3½	
4055.214	B	(1)	4.34	7.38	1½-2½	
8740.93	A	1000w	4.42	5.83	3½-4½	$y^{6}P^{\circ}-e^{6}D$
8703.76	A	500w	4.41	5.83	2½-3½	(49)
8673.97	A	200w	4.41	5.83	1½-2½	
8737.32	A	300w	4.42	5.83	3½-3½	
8701.05	A	300w	4.41	5.83	2½-2½	
8672.06	A	300w	4.41	5.83	1½-1½	
8734.60	A	30w	4.42	5.83	3½-2½	
8699.13	A	100w	4.41	5.83	2½-1½	
8670.92	A	200w	4.41	5.83	1½- ½	
7326.51	A	400 l	4.42	6.10	3½-2½	$y^{6}P^{\circ}-f^{6}S$
7302.89	A	300 l	4.41	6.10	2½-2½	(50)
7283.80	A	250 l	4.41	6.10	1½-2½	
6605.546	D	6n	4.42	6.28	3½-2½	$y^{6}P^{\circ}-g^{6}S$
6586.343	B	(1)	4.41	6.28	2½-2½	(51)
6570.834	B	(1)	4.41	6.28	1½-2½	
4565.73	B	(1n)	4.41	7.11	2½-1½	$y^{6}P^{\circ}-e^{4}D$
						(52)
8431.20	A	20Ns	5.11	6.58	2½-3½	$e^{6}S-u^{6}P^{\circ}$
8409.88	A	15Ns	5.11	6.58	2½-2½	(53)
8395.87	A	10Ns	5.11	6.58	2½-1½	
7764.72	A	250nl	5.35	6.94	5½-4½	$z^{6}F^{\circ}-f^{6}D$ †
7733.24	A	150nl	5.36	6.96	4½-3½	(54)
7709.98	A	40Nl	5.37	6.97	3½-2½	
7706.52	A	10Nl	5.38	6.98	2½-1½	
7677.46	A	2Nl	5.39	7.00	1½- ½?	
7680.22	A	200	5.47	7.07	4½-3½	$z^{4}F^{\circ}-e^{4}D$ †
7712.42	A	100n	5.50	7.10	3½-2½	(55)
7734.43	A	50n	5.52	7.11	2½-1½	
7755.15	A	20Nl	5.53	7.12	1½- ½	
8929.72	A	60n	5.55	6.94	3½-4½	$x^{6}P^{\circ}-f^{6}D$ †
8926.06	A	15n	5.57	6.96	2½-3½	(56)
8901.0	A	2p?	5.59	6.97	1½-2½	
9429.58	A	30n	5.65	6.96	3½-3½	$z^{4}D^{\circ}-f^{6}D$ †
9476.57	A	4n	5.67	6.97	2½-2½	(57)
9535.72	A	5n	5.69	6.98	1½-1½	
9336.47	A	40n	5.65	6.97	3½-2½	$z^{4}D^{\circ}-1$
9502.12	A	8n	5.67	6.97	2½-2½	(58)
9633.02	A	4p?	5.69	6.97	1½-2½	
8654.63	A	40n	5.65	7.07	3½-3½	$z^{4}D^{\circ}-e^{4}D$ †
8659.38	A	10n	5.67	7.10	2½-2½	(59)

ratory Ref	Int	E P Low	High	J	Multiplet (No)
tinued					
A	100n	5.79	7.07	$2\frac{1}{2}-3\frac{1}{2}$	$y^4P^o-e^4D$ †
A	40	5.82	7.10	$1\frac{1}{2}-2\frac{1}{2}$	(60)
A	15	5.84	7.11	$\frac{1}{2}-1\frac{1}{2}$	

Unclassified Lines of Mn I

ratory Ref	Int	E P Low	High	J	Multiplet (No)
A	15				
A	40				
A	40nl				
A	25				
A	15				
B	(5)				
B	(6)				
B	(6)				
B	(3)				
B	4	III			
B	4	V			
B	3	IV			
B	4*	V			
B	4	V			
B	3	IV			
B	4	V			
B	5	V			
B	5	V			
B	6	V			
B	4	V			
B	5	V			
B	4	V			
B	4	IV			
B	4	IV			
B	3	V			
B	5	IV			
B	3	V			
B	3	V			
B	4	V			
B	30n	IV			
B	(10n	IV			
	15n	IV			
B	15n	IV			
B	4	V			
B	5	III?			
B	8	IV			

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Ref	Int	Low	High	J	Multiplet (No)
A	20	1.17	4.76	2-3	$a^5S-z^7P^o$
A	8	1.17	4.74	2-2	(1)
P		1.77	4.79	4-4	$a^5D-z^7P^o$
P		1.80	4.76	3-3	(2)
P		1.82	4.74	2-2	
B	(2?)	1.77	4.76	4-3	
P		1.80	4.74	3-2	
P		1.80	4.79	3-4	
P		1.82	4.76	2-3	
P		1.84	4.74	1-2	
A	100	1.77	5.35	4-3	$a^5D-z^5P^o$
A	75	1.80	5.37	3-2	(3)
A	40	1.82	5.38	2-1	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Mn II continued						
3474.037	A	50	1.80	5.35	3-3	$a^5D-z^5P^o$
3482.905	A	40	1.82	5.37	2-2	cont
3488.676	A	40	1.84	5.38	1-1	
3496.814	A	20	1.82	5.35	2-3	
3497.536	A	25	1.84	5.37	1-2	
3495.831	A	40	1.85	5.38	0-1	
7415.78	P		3.69	5.35	3-3	$a^5P-z^5P^o$
7369.73	P		3.69	5.37	2-2	(4)
7347.72	P		3.70	5.38	1-1	
7353.52	P		3.69	5.37	3-2	
7330.54	P		3.69	5.38	2-1	
7432.27	P		3.69	5.35	2-3	
7387.10	P		3.70	5.37	1-2	
4755.728	A	On	5.37	7.97	5-6	$a^5F-z^5G^o$
4764.7	P		5.37	7.96	4-5	(5)
4738.29	B	—	5.36	7.96	3-4	
4730.361	B	—	5.35	7.96	2-3	
4727.9	P		5.35	7.96	1-2	
4343.987	A	2N	5.37	8.21	5-5	$a^5F-z^5F^o$
4326.756	B	(3)	5.37	8.23	4-4	(6)
4292.246	A	ON	5.36	8.23	3-3	
4283.772	A	0	5.35	8.23	2-2	
4284.425	A	0	5.35	8.23	1-1	
4325.1	P		5.37	8.23	5-4	
4345.6	P		5.37	8.21	4-5	
4300.197	B	(1)	5.36	8.23	3-4	
4206.375	A	ON	5.37	8.31	5-4	$a^5F-z^5D^o$
4259.203	A	On	5.37	8.27	4-3	(7)
4253.02	C	(2)	5.36	8.26	3-2	
4244.26	C	(1)	5.35	8.26	2-1	
3685.049	A	-1N	5.37	8.72	5-5	$a^5F-y^5F^o$
3708.06	C	(1)	5.37	8.70	4-4	(8)
3709.88	C	(1)	5.36	8.68	3-3	
3717.53	C	(1)	5.35	8.67	2-2	
3724.81	C	(1)	5.35	8.66	1-1	
3706.91	C	(1)	5.37	8.70	5-4	
3729.49	C	(1)	5.37	8.68	4-3	
3725.29	C	(1)	5.36	8.67	3-2	
3686.20	C	(1)	5.37	8.72	4-5	
*3509.971	A	0	5.37	8.89	5-4	$a^5F-y^5D^o$
3482.06	C	(1)	5.37	8.92	4-3	(9)
3457.809	A	On	5.36	8.93	3-2	
3449.5	P		5.35	8.93	2-1	
3446.0	P		5.35	8.93	1-0	
3029.041	A	50	5.35	9.43	3-2	$z^5P^o-e^5S$
3039.551	A	40	5.37	9.43	2-2	(10)
3046.266	A	30	5.38	9.43	1-2	
5302.320	A	30	9.82	12.15	5-	$e^7D-z^7F^o$
5299.278	A	25	9.82	12.15	4-	(11)
5296.968	A	20	9.82	12.15	3-	
5295.292	A	15	9.82	12.15	2-	
5294.216	A	10	9.82	12.15	1-	
3466.336	A	9	9.82	13.38	5-	$e^7D-y^7F^o$
3465.037	A	8	9.82	13.38	4-	(12)
3464.043	A	7	9.82	13.38	3-	
3463.330	A	6	9.82	13.38	2-	
3462.878	A	5	9.82	13.38	1-	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Mn II continued						
6122.438	A	40	10.14	12.16	4-5	$e^5D-x^5F^o$
6125.855	A	25	10.14	12.16	3-4	(13)
6128.725	A	20	10.14	12.16	2-3	
6130.794	A	15	10.14	12.16	1-2	
6131.917	A	15	10.14	12.16	0-1	
6122.799	A	8	10.14	12.16	4-4	
6126.210	A	10	10.14	12.16	3-3	
6129.022	A	10	10.14	12.16	2-2	
6131.005	A	5	10.14	12.16	1-1	
6123.164	A	-1	10.14	12.16	4-3	
6126.516	A	0	10.14	12.16	3-2	
6129.255	A	0	10.14	12.16	2-1	
3800.240	A	2	10.14	13.39	4-5	$e^5D-v^5F^o$
3801.633	A	3	10.14	13.39	3-4	(14)
3802.958	A	0	10.14	13.39	2-3	
3803.881	A	0	10.14	13.39	1-2	
3804.476	A	0	10.14	13.39	0-1	
3134.819	A	1	10.14	14.08	4-5	$e^5D-r^5F^o$
3135.507	A	0	10.14	14.08	3-4	(15)
3136.315	A	0	10.14	14.08	2-3	
6105.381	A	5	10.31	12.33	4-5	$y^7P^o-f^7D$
6050.446	A	3	10.29	12.33	3-4	(16)
6008.295	A	0	10.28	12.33	2-3	
6107.293	A	1	10.31	12.33	4-4	
6051.860	A	1	10.29	12.33	3-3	
6009.298	A	1	10.28	12.33	2-2	
6108.8	P		10.31	12.33	4-3	
6052.892	A	0	10.29	12.33	3-2	
6009.962	A	1	10.28	12.33	2-1	
4530.034	A	5	10.62	13.35	4-3	$x^7P^o-g^7S$
4510.210	A	3	10.61	13.35	3-3	(17)
4496.989	A	2	10.60	13.35	2-3	
4639.150	A	3	10.73	13.39	3-2	$w^5P^o-g^5S$
4647.585	A	2	10.73	13.39	2-2	(18)
4652.816	A	1	10.74	13.39	1-2	
6446.281	A	50N	12.15	14.06	6-	$z^7F^o-f^7G$
						(19)
6463.637	A	12	12.16	14.06	5-6	$x^5F^o-f^5G$
6463.195	A	10	12.16	14.06	4-5	(20)
6462.799	A	7	12.16	14.06	3-4	
6462.454	A	5	12.16	14.06	2-3	
6462.210	A	3	12.16	14.06	1-2	
3050.661	A	25	?	?	2-2	$^3P-{}^3P^o$
3043.132	A	6	?	?	1-1	(21)
3034.810	A	6	?	?	2-1	
3033.591	A	4	?	?	1-0	
3059.064	A	10	?	?	1-2	
3049.027	A	8	?	?	0-1	

Measures inadequate for preparation of list of strongest unclassified lines of Mn II.

REVISED MULTIPLET TABLE

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ory Int	E P Low	E P High	J	Multiplet (No)
4	0.00	2.39	4-5	$a^5D-z^7D^\circ$
	0.05	2.41	3-4	(1)
1	0.09	2.44	2-3	
1	0.11	2.46	1-2	
1	0.12	2.47	0-1	
10	0.00	2.41	4-4	
4	0.05	2.44	3-3	
2	0.09	2.46	2-2	
1	0.11	2.47	1-1	
(1)	0.00	2.44	4-3	
⊙	0.05	2.46	3-2	
	0.09	2.46	2-1	
9	0.00	2.82	4-5	$a^5D-z^7F^\circ$
10	0.05	2.84	3-4	(2)
8	0.09	2.85	2-3	
4	0.11	2.86	1-2	
3	0.12	2.87	0-1	
(1)	0.00	2.84	4-4	
⊙	0.05	2.85	3-3	
(1)	0.09	2.86	2-2	
(1)	0.11	2.87	1-1	
Fe	0.00	2.85	4-3	
2	0.05	2.86	3-2	
2	0.09	2.87	2-1	
Fe	0.11	2.87	1-0	
8	0.00	2.93	4-4	$a^5D-z^7P^\circ$
3	0.05	2.99	3-3	(3)
1	0.09	3.03	2-2	R
(1)	0.00	2.99	4-3	
(1)	0.05	3.03	3-2	
4	0.05	2.93	3-4	
2	0.09	2.99	2-3	
300R	0.00	3.20	4-4	$a^5D-z^5D^\circ$
40R	0.05	3.23	3-3	(4)
30R	0.09	3.25	2-2	
8	0.11	3.27	1-1	
50r	0.00	3.23	4-3	
50r	0.05	3.25	3-2	
100r	0.09	3.27	2-1	
25r	0.11	3.28	1-0	
25R	0.05	3.20	3-4	
25R	0.09	3.23	2-3	
30R	0.11	3.25	1-2	
20r	0.12	3.27	0-1	
250R	0.00	3.32	4-5	$a^5D-z^5F^\circ$
150R	0.05	3.35	3-4	(5)
100R	0.09	3.38	2-3	
60R	0.11	3.40	1-2	
40r	0.12	3.42	0-1	
40r	0.00	3.35	4-4	
100r	0.05	3.38	3-3	
50r	0.09	3.40	2-2	
40r	0.11	3.42	1-1	
5	0.00	3.38	4-3	
10	0.05	3.40	3-2	
20	0.09	3.42	2-1	
150R	0.00	3.59	4-3	$a^5D-z^5P^\circ$
75R	0.05	3.64	3-2	(6)
50r	0.09	3.67	2-1	
100r	0.05	3.59	3-3	
70r	0.09	3.64	2-2	
60r	0.11	3.67	1-1	
20	0.09	3.59	2-3	
40	0.11	3.64	1-2	
40	0.12	3.67	0-1	
10	0.00	3.86	4-4	$a^5D-z^3F^\circ$
7	0.05	3.93	3-3	(7)
5	0.09	3.97	2-2	R
2	0.00	3.93	4-3	
(1)	0.05	3.97	3-2	
8	0.05	3.86	3-4	
8	0.09	3.93	2-3	
7	0.00	3.87	4-3	$a^5D-z^3D^\circ$
(2)	0.05	3.91	3-2	(8)
2	0.09	3.94	2-1	
7	0.05	3.87	3-3	
2	0.09	3.91	2-2	
Fe	0.11	3.94	1-1	
8	0.09	3.87	2-3	
8	0.11	3.91	1-2	
4	0.12	3.94	0-1	
200R	0.00	4.09	4-4	$a^5D-y^5D^\circ$
150R	0.05	4.14	3-3	(9)
100R	0.09	4.17	2-2	
15r	0.11	4.20	1-1	
125R	0.00	4.14	4-3	
100R*	0.05	4.17	3-2	
100R	0.09	4.20	2-1	
60R	0.11	4.21	1-0	
100R	0.05	4.09	3-4	
100R	0.09	4.14	2-3	
80R	0.11	4.17	1-2	
50R	0.12	4.20	0-1	
125R	0.00	4.16	4-5	$a^5D-y^5F^\circ$ †
60R	0.05	4.20	3-4	(10)
60R	0.09	4.24	2-3	
40R	0.11	4.26	1-2	
20	0.12	4.28	0-1	
50R	0.09	4.26	2-2	
30R	0.11	4.28	1-1	
20r	0.05	4.19	3-2	$a^5D-z^3P^\circ$
40R	0.09	4.24	2-1	(11)
5	0.11	4.27	1-0	
12r	0.09	4.19	2-2	
3	0.11	4.24	1-1	
15r	0.11	4.19	1-2	
100R*	0.12	4.24	0-1	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
8047.60	O	15	0.86	2.39	5-5	$a^5F-z^7D^\circ$
8204.10	P	⊙	0.91	2.41	4-4	(12)
8310.98	P		0.95	2.44	3-3	
8382.23	P	⊙	0.99	2.46	2-2	
8425.89	P	⊙	1.01	2.47	1-1	
7912.866	E	6	0.86	2.41	5-4	
8075.13	O	4	0.91	2.44	4-3	
8204.93	P	⊙	~~0.95~~	2.46	3-2	
8307.61	P	⊙	0.99	2.47	2-1	
8349.05	P	⊙	0.91	2.39	4-5	
8447.63	P	⊙	0.95	2.41	3-4	
6358.692	I	3	0.86	2.80	5-6	$a^5F-z^7F^\circ$
m6462.72	P	Fe	0.91	2.82	4-5	(13)
6547.58	P		0.95	2.84	3-4	
6609.68	P	⊙	0.99	2.85	2-3	
6648.08	P	⊙	1.01	2.86	1-2	
6280.625	I	2	0.86	2.82	5-5	
6400.335	V	(2)	0.91	2.84	4-4	
6498.950	V	5	0.95	2.85	3-3	
6574.238	V	3	0.99	2.86	2-2	
6625.04	V	1	1.01	2.87	1-1	
6221.661	U	(-)	0.86	2.84	5-4	
6353.84	P	⊙	0.91	2.85	4-3	
6464.67	P		0.95	2.86	3-2	
6551.68	P	⊙	0.99	2.87	2-1	
6613.83	P	1	1.01	2.87	1-0	
5956.702	J	(3)	0.86	2.93	5-4	$a^5F-z^7P^\circ$
*5949.35	V	(2)	0.91	2.99	4-3	(14)
*5958.23	P	(2)	0.95	3.03	3-2	
6180.85	P	⊙	0.91	2.93	4-4	
5269.541	I	60	0.86	3.20	5-4	$a^5F-z^5D^\circ$
5328.042	I	50	0.91	3.23	4-3	(15)
5371.493	B	50	0.95	3.25	3-2	
5405.778	B	40	0.99	3.27	2-1	
5434.527	B	30	1.01	3.28	1-0	
5397.131	B	40	0.91	3.20	4-4	
5429.699	B	40	0.95	3.23	3-3	
5446.920	B	40	0.99	3.25	2-2	
5455.613	B	40	1.01	3.27	1-1	
5501.469	B	12	0.95	3.20	3-4	
5506.782	B	18	0.99	3.23	2-3	
5497.519	B	15	1.01	3.25	1-2	
5012.071	B	12	0.86	3.32	5-5	$a^5F-z^5F^\circ$
5051.636	B	10	0.91	3.35	4-4	(16)
5083.342	B	7	0.95	3.38	3-3	
5107.452	J	6	0.99	3.40	2-2	
5123.723	B	6	1.01	3.42	1-1	
4939.690	B	4	0.86	3.35	5-4	
4994.133	B	8	0.91	3.38	4-3	
5041.074	J	7	0.95	3.40	3-2	
5079.742	J	4	0.99	3.42	2-1	
5127.363	B	5	0.91	3.32	4-5	
5142.932	J	6	0.95	3.35	3-4	
5150.843	B	6	0.99	3.38	2-3	
5151.915	J	4	1.01	3.40	1-2	
m4611.35	P	Fe	0.91	3.59	4-3	$a^5F-z^5P^\circ$
4598.33	P	⊙	0.95	3.64	3-2	(17)
4597.06	P	⊙	0.99	3.67	2-1	
4687.30	P	⊙	0.95	3.59	3-3	
4653.49	P	⊙	0.99	3.64	2-2	
4633.05	P		1.01	3.67	1-1	
4744.64	P	⊙	0.99	3.59	2-3	
4690.38	P	⊙	1.01	3.64	1-2	
4100.745	J	3	0.86	3.86	5-4	$a^5F-z^3F^\circ$
4092.512	V	(1)	0.91	3.93	4-3	(18)
4096.21	P	⊙	0.95	3.97	3-2	
4177.597	J	4	0.91	3.86	4-4	
4152.172	J	4	0.95	3.93	3-3	
4139.933	J	2	0.99	3.97	2-2	
*4239.847	J	2	0.95	3.86	3-4	
4197.10	P	⊙	0.99	3.93	2-3	
4169.09	P	⊙	1.01	3.97	1-2	
4174.917	J	5	0.91	3.87	4-3	$a^5F-z^3D^\circ$
4172.749	J	4	0.95	3.91	3-2	(19)
4173.926	J	2	0.99	3.94	2-1	
4237.085	M	(2)	0.95	3.87	3-3	
4218.12	P		0.99	3.91	2-2	
4203.570	V	(1)	1.01	3.94	1-1	
4283.87	P	⊙?	0.99	3.87	2-3	
4248.40	P	⊙	1.01	3.91	1-2	
3820.428	I	250R	0.86	4.09	5-4	$a^5F-y^5D^\circ$
3825.884	B	200R	0.91	4.14	4-3	(20)
3834.225	B	100r	0.95	4.17	3-2	
3840.439	B	80r	0.99	4.20	2-1	
3849.969	B	40	1.01	4.21	1-0	
3887.051	B	15	0.91	4.09	4-4	
3878.021	B	60	0.95	4.14	3-3	
3872.504	B	60	0.99	4.17	2-2	
3865.526	B	30	1.01	4.20	1-1	
3940.882	B	5	0.95	4.09	3-4	
3917.185	B	8	0.99	4.14	2-3	
3898.012	K	10	1.01	4.17	1-2	
3734.867	B	300r	0.86	4.16	5-5	$a^5F-y^5F^\circ$
3749.487	B	200R	0.91	4.20	4-4	(21)
3758.235	B	150R	0.95	4.24	3-3	
3763.790	B	100r	0.99	4.26	2-2	
3767.194	B	80r	1.01	4.28	1-1	
3687.458	B	40r	0.86	4.20	5-4	
3709.246	G	75r	0.91	4.24	4-3	
3727.621	B	50r	0.95	4.26	3-2	
3743.364	G	20	0.99	4.28	2-1	
3798.513	B	40	0.91	4.16	4-5	
3799.549	B	50	0.95	4.20	3-4	
3795.004	B	60	0.99	4.24	2-3	
3787.883	B	50	1.01	4.26	1-2	
3812.964	G	40	0.95	4.19	3-2	$a^5F-z^3P^\circ$
3790.095	B	12	0.99	4.24	2-1	(22)
3786.678	J	8	1.01	4.27	1-0	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3850.820	B	12	0.99	4.19	2-2	$a^5F-z^3P^\circ$
3814.526	J	5	1.01	4.24	1-1	cont
3876.043	J	4	1.01	4.19	1-2	
3581.195//	B	250R	0.86	4.30	5-6	$a^5F-z^5G^\circ$
3647.844	B	100R	0.91	4.29	4-5	(23)
3631.464	B	125R	0.95	4.35	3-4	
3618.769	B	125R	0.99	4.40	2-3	
3608.861	B	100r	1.01	4.43	1-2	
3589.107	B	8	0.86	4.29	5-5	
3585.708	J	20	0.91	4.35	4-4	
3585.320	B	30	0.95	4.40	3-3	
3586.985	G	30	0.99	4.43	2-2	
3528.94	P		0.86	4.35	5-4	
3540.709	J	3	0.91	4.40	4-3	
3554.122	J	4	0.95	4.43	3-2	
3513.820	B	30	0.86	4.37	5-5	$a^5F-z^3G^\circ$
3521.264	B	25	0.91	4.42	4-4	(24)
3526.167	J	15	0.95	4.45	3-3	
3466.501	V	3	0.86	4.42	5-4	
3483.006	G	3	0.91	4.45	4-3	
3570.100	G	100R	0.91	4.37	4-5	
3565.381	B	60r	0.95	4.42	3-4	
3558.518	B	30	0.99	4.45	2-3	
3359.496	V	2	0.86	4.53	5-4	$a^5F-y^3F^\circ$
3356.332	V	1	0.91	4.59	4-3	(25)
3355.517	V	(1)	0.95	4.63	3-2	
3410.905	V	(1)	0.91	4.53	4-4	
3396.386	V	(1)	0.95	4.59	3-3	
3384.80	P	⊙?	0.99	4.63	2-2	
3452.273	G	10	0.95	4.53	3-4	
*3426.383	J	5	0.99	4.59	2-3	
*3404.301	V	3	1.01	4.63	1-2	
3401.521	A	6	0.91	4.54	4-3	$a^5F-y^5P^\circ$
3396.978	A	4	0.95	4.59	3-2	(26)
3397.642	V	2	0.99	4.62	2-1	
3442.672	J	3	0.95	4.54	3-3	
3427.002	J	2	0.99	4.59	2-2	
3417.273	J	(1gn)	1.01	4.62	1-1	
3473.497	V	(1)	0.99	4.54	2-3	
3446.947	U	(1)	1.01	4.59	1-2	
3245.964	V	(2)	0.91	4.71	4-3	$a^5F-y^3D^\circ$
3230.09	P	⊙	0.95	4.77	3-2	(27)
3223.853	V	(1)	0.99	4.81	2-1	
3283.430	V	(1)	0.95	4.71	3-3	
*3257.244	V	2	0.99	4.77	2-2	
3241.50	P	(1)	1.01	4.81	1-1	
3311.451	V	(1)	0.99	4.71	2-3	
3275.24	P		1.01	4.77	1-2	
3057.446	A	40R	0.86	4.89	5-4	$a^5F-x^5D^\circ$
3067.244	A	30r	0.91	4.93	4-3	(28)
3075.721	A	25r	0.95	4.97	3-2	
3083.742	A	20	0.99	4.99	2-1	
3091.578	A	20	1.01	5.00	1-0	
3099.968	V	15	0.91	4.89	4-4	
3100.666	G	20	0.95	4.93	3-3	
3100.304	G	20	0.99	4.97	2-2	
3099.898	V	20	1.01	4.99	1-1	
3134.111	A	10	0.95	4.89	3-4	
*3125.653	C	15	0.99	4.93	2-3	
*3116.633§	A	12	1.01	4.97	1-2	
*2984.785§	V	10	0.86	4.99	5-4	$a^5F-y^7P^\circ$
3045.077	G	5	0.91	4.96	4-3	(29)
3092.785	V	2	0.95	4.94	3-2	
3025.283	V	3	0.91	4.99	4-4	
3078.014	G	4	0.95	4.96	3-3	
3117.63	W	1	0.99	4.94	2-2	
3057.80	P	⊙	0.95	4.99	3-4	
3102.64	P	⊙	0.99	4.96	2-3	
m3134.15	P	Fe	1.01	4.94	1-2	
2999.512	A	30R	0.86	4.97	5-5	$a^5F-x^5F^\circ$
3009.570	C	25r	0.91	5.01	4-4	(30)
3018.983	G	15r	0.95	5.04	3-3	
3026.462	G	15	0.99	5.06	2-2	
3031.638	G	15	1.01	5.08	1-1	
2969.474	G	10	0.86	5.01	5-4	
2987.292	A	10	0.91	5.04	4-3	
3003.031	C	10	0.95	5.06	3-2	
3016.186	G	12	0.99	5.08	2-1	
3040.428	C	15	0.91	4.97	4-5	
3041.745	V	15	0.95	5.01	3-4	
3042.666	G	15	0.99	5.04	2-3	
3043.020	G	15	1.01	5.06	1-2	
3014.176	V	3	0.95	5.05	3-2	$a^5F-z^5G^\circ$
3037.782	V	2	0.99	5.05	2-2	(31)
*3053.443	U	(2)	1.01	5.05	1-2	
8916.26	F	1	1.60	2.99	2-3	$a^3F-z^7P^\circ$ (32)
7180.020	V	1	1.48	3.20	4-4	$a^3F-z^5D^\circ$
7494.72	P	⊙	1.55	3.20	3-4	(33)
6710.31	V	2	1.48	3.32	4-5	$a^3F-z^5F^\circ$
6844.67	P	1	1.55	3.35	3-4	(34)
6929.96	P		1.60	3.38	2-3	
6581.22	V	2	1.48	3.35	4-4	
6739.54	V	1	1.55	3.38	3-3	
6851.64	P	1	1.60	3.40	2-2	
6483.95	P	⊙	1.48	3.38	4-3	
6665.43	P	⊙	1.55	3.40	3-2	
6801.87	P	⊙	1.60	3.42	2-1	
5853.18	V	(1)	1.48	3.59	4-3	$a^3F-z^5P^\circ$ (35)
5171.599	B	20	1.48	3.86	4-4	$a^3F-z^3F^\circ$
5194.943	I	10	1.55	3.93	3-3	(36)
5216.278	B	10	1.60	3.97	2-2	
5041.759	B	10	1.48	3.93	4-3	
5107.645	J	8	1.55	3.97	3-2	
5332.903	J	4	1.55	3.86	3-4	
5307.365	B	2	1.60	3.93	2-3	

Int	E P Low	E P High	J	Multiplet (No)
40	1.48	3.87	4-3	a^{3}F-z^{3}D°
40	1.55	3.91	3-2	(37)
30	1.60	3.94	2-1	
15	1.55	3.87	3-3	
20	1.60	3.91	2-2	
Fe	1.60	3.87	2-3	
4	1.48	4.09	4-4	a^{3}F-y^{5}D°
3	1.55	4.14	3-3	(38)
(1)	1.60	4.17	2-2	
⊙	1.48	4.14	4-3	
⊙	1.55	4.09	3-4	
⊙	1.60	4.14	2-3	
9	1.48	4.16	4-5	a^{3}F-y^{5}F°
5	1.55	4.20	3-4	(39)
(2)	1.60	4.24	2-3	
8	1.48	4.20	4-4	
5	1.55	4.24	3-3	
2	1.60	4.26	2-2	
⊙	1.48	4.24	4-3	
(2)	1.55	4.26	3-2	
(2)	1.60	4.28	2-1	
⊙	1.55	4.19	3-2	a^{3}F-z^{3}P°
⊙	1.60	4.24	2-1	(40)
(1)	1.60	4.19	2-2	
45r	1.48	4.29	4-5	a^{3}F-z^{5}G°.
30	1.55	4.35	3-4	(41)
20	1.60	4.40	2-3	
15	1.48	4.35	4-4	
10	1.55	4.40	3-3	
2	1.60	4.43	2-2	
(1)	1.48	4.40	4-3	
4	1.55	4.43	3-2	
35	1.48	4.37	4-5	a^{3}F-z^{3}G°
35	1.55	4.42	3-4	(42)
35	1.60	4.45	2-3	
30	1.48	4.42	4-4	
25	1.55	4.45	3-3	
10	1.48	4.45	4-3	
60r	1.48	4.53	4-4	a^{3}F-y^{3}F°
45	1.55	4.59	3-3	(43)
40	1.60	4.63	2-2	
30	1.48	4.59	4-3	
25	1.55	4.63	3-2	
30	1.55	4.53	3-4	
25	1.60	4.59	2-3	
4	1.48	4.54	4-3	a^{3}F-y^{5}P°
(2)	1.55	4.59	3-2	(44)
⊙	1.60	4.62	2-1	
(1)	1.55	4.54	3-3	
Fe	1.60	4.59	2-2	
⊙	1.60	4.54	2-3	
100r	1.48	4.71	4-3	a^{3}F-y^{3}D°
75r	1.55	4.77	3-2	(45)
80r	1.60	4.81	2-1	
20	1.55	4.71	3-3	
20	1.60	4.77	2-2	
10	1.60	4.71	2-3	
(1)	1.48	4.89	4-4	a^{3}F-x^{5}D°
3	1.55	4.93	3-3	(46)
(1)	1.60	4.97	2-2	
2	1.48	4.93	4-3	
1	1.55	4.97	3-2	
(1)	1.60	4.99	2-1	
⊙	1.55	4.89	3-4	
1	1.60	4.93	2-3	
⊙	1.48	4.99	4-4	a^{3}F-y^{7}P°
⊙	1.48	4.96	4-3	(47)
⊙	1.55	4.94	3-2	
⊙	1.55	4.99	3-4	
⊙	1.60	4.96	2-3	
(1)	1.48	4.97	4-5	a^{3}F-x^{5}F°
(1)	1.48	5.01	4-4	(48)
(1)	1.55	5.04	3-3	
(1)	1.60	5.06	2-2	
2	1.48	5.04	4-3	
(1)	1.55	5.06	3-2	
4	1.60	5.08	2-1	
(2)	1.48	5.25	4-3	a^{3}F-x^{5}P°
(1)	1.55	5.29	3-2	(49)
(1)	1.55	5.25	3-3	
(1)	1.48	5.30	4-5	a^{3}F-y^{5}G°
	1.55	5.31	3-4	(50)
(1)	1.60	5.33	2-3	
(1)	1.48	5.31	4-5	a^{3}F-z^{5}H°
⊙	1.55	5.32	3-4	(51)
(1)	1.60	5.35	2-3	
5	1.48	5.37	4-4	a^{3}F-w^{5}D°
	1.55	5.42	3-3	(52)
⊙	1.60	5.45	2-2	
5	1.48	5.42	4-3	
4	1.55	5.45	3-2	
(1)	1.60	5.48	2-1	
(-)	1.48	5.50	4-3	a^{3}F-v^{5}D°
⊙	1.55	5.48	3-4	(53)
⊙	1.48	5.48	4-4	
⊙	1.55	5.50	3-3	
⊙	1.60	5.51	2-2	
1	1.55	5.49	3-2	a^{3}F-y^{5}S°
				(54)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3007.146	V	8	1.48	5.58	4-3	a^{3}F-x^{3}D°
3055.263	C	12	1.55	5.59	3-2	(55)
3068.175	G	8	1.60	5.62	2-1	
3060.984	G	4	1.55	5.58	3-3	
3093.806	V	3	1.60	5.59	2-2	
3000.452	G	8	1.48	5.59	4-5	a^{3}F-y^{3}G°
3041.639	V	10	1.55	5.61	3-4	(56)
3067.123	V	8	1.60	5.62	2-3	
2988.468	G	2	1.48	5.61	4-4	
3029.237	V	3	1.55	5.62	3-3	
2976.50	P	(1)	1.48	5.62	4-3	
2962.11	W	(2)	1.48	5.64	4-5	a^{3}F-x^{5}G°
3004.62	W	(1)	1.55	5.66	3-4	(57)
3034.51	W	(2n)	1.60	5.67	2-3?	
11973.01	D	8	2.17	3.20	3-4	a^{5}P-z^{5}D°
11882.80	D	7	2.19	3.23	2-3	(58)
11884.12	D	3	2.21	3.25	1-2	
11638.25	D	7	2.17	3.23	3-3	
11607.57	D	12	2.19	3.25	2-2	
11689.98	D	8	2.21	3.27	1-1	
11374.02	D	3	2.17	3.25	3-2	
11422.30	D	6	2.19	3.27	2-1	
11593.55	D	5	2.21	3.28	1-0	
10395.75	F	8	2.17	3.35	3-4	a^{5}P-z^{5}F°
10340.77	F	4	2.19	3.38	2-3	(59)
10379.01	P	⊙	2.21	3.40	1-2	
10155.18	P	⊙	2.17	3.38	3-3	
10167.4	F	1	2.19	3.40	2-2	
10265.23	P	⊙	2.21	3.42	1-1	
9987.88	P		2.17	3.40	3-2	
10058.28	P	⊙	2.19	3.42	2-1	
8688.633	E	1500	2.17	3.59	3-3	a^{5}P-z^{5}P°
8514.075	E	150	2.19	3.64	2-2	(60)
8468.413	E	300	2.21	3.67	1-1	
8387.781	E	1200	2.17	3.64	3-2.	
8327.063	E	1200	2.19	3.67	2-1	
8824.227	E	250	2.19	3.59	2-3	
8661.908	E	600	2.21	3.64	1-2	
7267.00	P	⊙	2.17	3.86	3-4	a^{5}P-z^{3}F°
7101.28	P	⊙	2.19	3.93	2-3	(61)
7037.04	P	⊙?	2.21	3.97	1-2	
6430.851	B	300	2.17	4.09	3-4	a^{5}P-y^{5}D°
6335.335	B	10	2.19	4.14	2-3	(62)
6297.800	I	5	2.21	4.17	1-2	
6265.140	B	6	2.17	4.14	3-3	
6219.290	I	6	2.19	4.17	2-2	
6213.438	I	5	2.21	4.20	1-1	
6151.624	L	(2)	2.17	4.17	3-2	
6136.999	J	(2)	2.19	4.20	2-1	
6173.343	J	3	2.21	4.21	1-0	
6062.89	V	(1)	2.17	4.20	3-4	a^{5}P-y^{5}F°
*6021.82	W	(2n)	2.19	4.24	2-3	(63)
6015.25	P	⊙	2.21	4.26	1-2	
5958.34	P	⊙	2.17	4.24	3-3	
5943.58	P	⊙	2.19	4.26	2-2	
6063.25	V	(1)	2.21	4.28	1-1	
5881.76	P	⊙	2.17	4.26	3-2	
5892.80	P		2.19	4.28	2-1	
6097.08	P	⊙	2.17	4.19	3-2	a^{5}P-z^{3}P°
6009.45	P		2.19	4.24	2-1	(64)
m6012.21	P	N1	2.21	4.27	1-0	
6163.560	V	(1)	2.19	4.19	2-2	
6082.718	V	(1)	2.21	4.24	1-1	
6240.656	I	(2)	2.21	4.19	1-2	
m5224.30	P	T1	2.17	4.53	3-4	a^{5}P-y^{3}F°
5143.73	P	⊙	2.19	4.59	2-3	(65)
5102.24	P		2.21	4.63	1-2	
5202.339	B	8	2.17	4.54	3-3	a^{5}P-y^{5}P°
5145.105	T	(-)	2.19	4.59	2-2	(66)
5131.475	J	(2)	2.21	4.62	1-1	
5098.703	J	8	2.17	4.59	3-2	
5079.226	J	6	2.19	4.62	2-1	
5250.650	B	6	2.19	4.54	2-3	
5198.714	B	4	2.21	4.59	1-2	
4847.09	P		2.17	4.71	3-3	a^{5}P-y^{3}D°
4771.702	J	(1)	2.19	4.77	2-2	(67)
4745.129	U	(1)	2.21	4.81	1-1	
4731.77	P		2.17	4.77	3-2	
4700.42	P	⊙	2.19	4.81	2-1	
*4889.009	U	(1)	2.19	4.71	2-3	
4817.773	U	(1)	2.21	4.77	1-2	
4528.619	B	18	2.17	4.89	3-4	a^{5}P-x^{5}D°
4494.568	B	12	2.19	4.93	2-3	(68)
4482.257	J	6	2.21	4.97	1-2	
4459.121	B	10	2.17	4.93	3-3	
4442.343	B	12	2.19	4.97	2-2	
4447.722	B	9	2.21	4.99	1-1	
4407.714	J	5	2.17	4.97	3-2	
4408.419	B	6	2.19	4.99	2-1	
4430.618	B	6	2.21	5.00	1-0	
4371.00	P		2.17	4.99	3-4	a^{5}P-y^{7}P°
4447.134	J	(2)Mn?	2.19	4.96	2-3	(69)
4518.58	P	⊙	2.21	4.94	1-2	
4412.43	P	⊙	2.17	4.96	3-3	
4478.040	U	(1)	2.19	4.94	2-2	
4442.835	J	(2)	2.17	4.94	3-2	
4338.260	J	(2)	2.17	5.01	3-4	a^{5}P-x^{5}F°
4324.961	V	(1)	2.19	5.04	2-3	(70)
4329.54	P	⊙	2.21	5.06	1-2	
4292.13	P	⊙	2.17	5.04	3-3	
4292.293	V	(1)	2.19	5.06	2-2	
4308.54	P		2.21	5.08	1-1	
m4259.95	P	Fe	2.17	5.06	3-2	
4271.65	P	⊙	2.19	5.08	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4282.406	B	12	2.17	5.05	3-2	a^{5}P-z^{5}S°
4315.087	B	10	2.19	5.05	2-2	(71)
4352.737	B	9	2.21	5.05	1-2	
4001.666	J	5	2.17	5.25	3-3	a^{5}P-x^{5}P°
3977.743	I	12	2.19	5.29	2-2	(72)
3974.766	V	(1)	2.21	5.32	1-1	
3949.954	I	10	2.17	5.29	3-2	
3943.339	J	2	2.19	5.32	2-1	
4030.194	V	(3)	2.19	5.25	2-3	
4009.714	I	10	2.21	5,29	1-2	
3852.574	I	6	2.17	5.37	3-4	a^{5}P-w^{5}D°
3816.340	J	4	2.19	5.42	2-3	(73)
3807.534	G	7	2.21	5.45	1-2	
*3790.756	J	1	2.17	5.42	3-3	
3778.697	J	(1)	2.19	5.45	2-2	
3774.823	G	5	2.21	5.48	1-1	
3753.610	G	8	2.17	5.45	3-2	
3746.486	J	1	2.19	5.48	2-1	
3768.030	J	3	2.21	5.49	1-0	
3776.454	G	6	2.17	5.43	3-4	a^{5}P-w^{5}F°
3781.188	J	(1)	2.19	5.45	2-3	(74)
3792.834	V	1	2.21	5.47	1-2	
3756.069	J	1	2.17	5.45	3-3	
3764.21	P	⊙	2.19	5.47	2-2	
3779.486	J	2	2.21	5.48	1-1	
3739.317	V	1	2.17	5.47	3-2	
3751.09	P	⊙	2.19	5.48	2-1	
*3721.278	V	2	2.17	5.48	3-4	a^{5}P-v^{5}D°
m3726.89	P	Fe	2.19	5.50	2-3	(75)
3739.120	J	1	2.21	5.51	1-2	
*3702.500	J	1	2.17	5.50	3-3	
3711.30	P		2.19	5.51	2-2	
3725.65	P		2.21	5.53	1-1	
3687.100	J	2	2.17	5.51	3-2	
3698.03	P	⊙	2.19	5.53	2-1	
3707.918	G	8	2.17	5.49	3-2	a^{5}P-y^{5}S°
3732.399	B	10	2.19	5.49	2-2	(76)
3760.534	G	6	2.21	5.49	1-2	
*3612.940	J	1	2.17	5.58	3-3	a^{5}P-x^{3}D°
3628.094	V	1	2.19	5.59	2-2	(77)
3618.96	P		2.21	5.62	1-1	
3604.96	P		2.17	5.59	3-2	
3592.881	U	(1)	2.19	5.62	2-1	
*3636.186	V	2	2.19	5.58	2-3	
3654.66	W	(1)	2.21	5.59	1-2	
3497.110	J	10	2.17	5.70	3-3	a^{5}P-w^{5}P°
3497.15	P	(1)	2.19	5.72	2-2	(78)
3509.870	U	(1)	2.21	5.73	1-1	
3475.651	J	6	2.17	5.72	3-2	
3485.342	A	7	2.19	5.73	2-1	
3518.86	W	(2)	2.19	5.70	2-3	
3521.833	J	2	2.21	5.72	1-2	
3462.353	J	2	2.19	5.75	2-1	a^{5}P-z^{3}S°
3486.556	U	(1)	2.21	5.75	1-1	(79)
3427.121	A	20	2.17	5.77	3-4	a^{5}P-u^{5}D°
3445.151	A	20	2.19	5.77	2-3	(81)
3451.915	G	10	2.21	5.79	1-2	
3424.284	G	10	2.17	5.77	3-3	
3428.192	G	8	2.19	5.79	2-2	
3417.842	G	12	2.21	5.82	1-1	
3407.53	P	⊙	2.17	5.79	3-2	
3394.583	G	5	2.19	5.82	2-1	
*3426.383	J	5d	2.17	5.77	3-2	a^{5}P-y^{3}P°
3426.637	J	5	2.19	5.79	2-1	(82)
3477.850	V	(2)	2.21	5.76	1-0	
3447.278	G	8	2.19	5.77	2-2	
3450.328	G	10	2.21	5.79	1-1	
3471.27	V	5	2.21	5.77	1-2	
3407.461	A	20d	2.17	5.79	3-4	a^{5}P-x^{3}F°
3404.357	G	6	2.19	5.81	2-3	(83)
3415.530	G	4	2.21	5.83	1-2	
3383.981	C	8	2.17	5.81	3-3	
3392.304	G	8	2.19	5.83	2-2	
3372.070	G	3	2.17	5.83	3-2	
3382.403	G	3	2.17	5.82	3-4	a^{5}P-z^{3}H°
						(84)
3392.652	G	15	2.17	5.80	3-3	a^{5}P-w^{3}D°
3399.336	A	15	2.19	5.82	2-2	(85)
3406.803	J	6	2.21	5.84	1-1	
3379.017	G	6	2.17	5.82	3-2	
*3383.692	G	5	2.19	5.84	2-1	
3413.135	A	15	2.19	5.80	2-3	
3422.656	G	7	2.21	5.82	1-2	
3327.961	V	(1)	2.17	5.87	3-4	a^{5}P-w^{5}G°
						(86)
3346.942	V	1	2.17	5.85	3-2	a^{5}P-1°
3366.870	V	5	2.19	5.85	2-2	(87)
3389.748	V	2	2.21	5.85	1-2	
3343.243	V	(1)	2.17	5.86	3-4	a^{5}P-z^{1}G°
						(88)
3351.529	V	2	2.19	5.87	2-1	a^{5}P-y^{3}S°
3374.221	V	(1)	2.21	5.87	1-1	(89)
3286.755	A	20	2.17	5.92	3-3	a^{5}P-v^{5}P°
3284.588	A	5	2.19	5.95	2-2	(91)
3292.590	G	8	2.21	5.96	1-1	
3265.616	G	15	2.17	5.95	3-2	
3271.002	A	15	2.19	5.96	2-1	
3305.971	C	20	2.19	5.92	2-3	
3306.356	C	20	2.21	5.95	1-2	

REVISED MULTIPLET TABLE

oratory Ref	Int	E P Low	E P High	J	Multiplet (No)
ntinued					
V	(2)	2.17	5.92	3-4	a^{5}P-y^{5}F° (90)
V	2	2.19	5.94	2-3	
A	6	2.21	5.96	1-2	
V	(1)	2.17	5.94	3-3	
V	4	2.19	5.96	2-2	
V	2	2.21	5.97	1-1	
A	8	2.17	5.96	3-2	
V	5	2.19	5.97	2-1	
G	8	2.19	5.98	2-3	a^{5}P-w^{3}G° (93)
V	4	2.17	5.96	3-2	a^{5}P-x^{3}P° (95)
V	6	2.19	5.99	2-1	
P	⊙	2.21	5.98	1-0	
P	⊙	2.19	5.96	2-2	
G	5	2.21	5.99	1-1	
G	5	2.21	5.96	1-2	
V	(1)	2.17	6.01	3-4	a^{5}P-y^{1}G° (97)
V	4	2.21	6.06	1-2	a^{5}P-2° (98)
P	⊙	2.17	6.06	3-4	a^{5}P-w^{3}F° (99)
V	2	2.19	6.08	2-3	
S	(-)	2.19	6.10	2-2	
P	⊙	2.17	6.07	3-3	a^{5}P-v^{3}D° (100)
P	Fe	2.19	6.08	2-2	
P		2.21	6.09	1-1	
P	(1)	2.17	6.08	3-2	
P	⊙	2.19	6.09	2-1	
G	3	2.19	6.07	2-3	
U	(1)	2.21	6.08	1-2	
V	(3r)	2.19	6.08	2-3	a^{5}P-3° (101)
S	(1)	2.17	6.20	3-2	a^{5}P-w^{3}P° (102)
P		2.19	6.18	2-1	
W	(1)	2.21	6.17	1-0	
P	⊙	2.19	6.20	2-2	
S	(-)	2.17	6.25	3-4	a^{5}P-x^{1}G° (103)
G	6	2.17	6.31	3-4	a^{5}P-t^{5}D° † (104)
G	3	2.19	6.34	2-3	
U	(2)	2.21	6.37	1-2	
P	⊙	2.21	6.32	1-2	a^{5}P-v^{3}F°† (105)
E	4	2.27	3.59	2-3	a^{3}P-z^{5}P° (105)
P	⊙	2.41	3.64	1-2	
P	⊙	2.47	3.67	0-1	
F	1	2.27	3.64	2-2	
P		2.41	3.67	1-1	
E	10	2.27	3.67	2-1	
P	Fe	2.27	3.93	2-3	a^{3}P-z^{3}F° (107)
P	Fe	2.41	3.97	1-2	
O	4	2.27	3.87	2-3	a^{3}P-z^{3}D° (108)
E	8	2.41	3.91	1-2	
O	2	2.47	3.94	0-1	
P	⊙	2.27	3.91	2-2	
P	⊙	2.41	3.94	1-1	
P	⊙	2.27	3.94	2-1	
V	2	2.27	4.14	2-3	a^{3}P-y^{5}D° (109)
V	20	2.41	4.17	1-2	
V	1	2.47	4.20	0-1	
I	20	2.27	4.17	2-2	
V	1	2.41	4.20	1-1	
V	(1)	2.27	4.20	2-1	
V	2	2.41	4.21	1-0	
P		2.27	4.24	2-3	a^{3}P-y^{5}F° (110)
P	⊙?	2.41	4.26	1-2	
P	1	2.47	4.28	0-1	
B	200	2.27	4.19	2-2	a^{3}P-z^{3}P° (111)
I	100	2.41	4.24	1-1	
I	6	2.27	4.24	2-1	
B	80	2.41	4.27	1-0	
I	150	2.41	4.19	1-2	
I	100	2.47	4.24	0-1	
V	(2)	2.27	4.59	2-3	a^{3}P-y^{3}F° (112)
P	⊙	2.41	4.63	1-2	
P	⊙	2.27	4.63	2-2	
V	(2)	2.27	4.54	2-3	a^{3}P-y^{5}P° (113)
P	⊙	2.41	4.59	1-2	
P	⊙	2.47	4.62	0-1	
P	(1)	2.27	4.59	2-2	
P		2.41	4.62	1-1	
P	⊙	2.27	4.62	2-1	
B	15	2.27	4.71	2-3	a^{3}P-y^{3}D° (114)
P	Fe	2.41	4.77	1-2	
J	4	2.47	4.81	0-1	
B	3	2.27	4.77	2-2	
V	(2)	2.41	4.81	1-1	
V	(1)	2.27	4.81	2-1	
J	(2)	2.27	4.93	2-3	a^{3}P-x^{5}D° (115)
V	(1)	2.41	4.97	1-2	
P	⊙	2.47	4.99	0-1	
J	(2)	2.27	4.97	2-2	
P	⊙	2.41	4.99	1-1	
V	(1)	2.27	4.99	2-1	
J	(2)	2.27	5.05	2-2	a^{3}P-z^{5}S° (116)
U	(1)	2.27	5.25	2-3	a^{3}P-x^{5}P° (117)
P		3.41	5.29	1-2	
P	⊙	2.47	5.32	0-1	
V	(1)	2.27	5.29	2-2	
P	⊙	2.41	5.32	1-1	
V	(1)	2.27	5.32	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
4037.725	V	(1)	2.27	5.33	2-3	a^{3}P-y^{5}G° (118)
4225.79	P	⊙	2.41	5.33	1-2	
4007.233	V	(1gn)	2.27	5.35	2-3	a^{3}P-z^{5}H° (119)
3913.635	J	4	2.27	5.42	2-3	a^{3}P-w^{5}D° (120)
4058.766	V	3	2.41	5.45	1-2	
4101.684	V	(1)	2.47	5.48	0-1	
3874.053	V	(1)	2.27	5.45	2-2	
*4021.622	V	(1)	2.41	5.48	1-1	
3840.20	P	⊙	2.27	5.48	2-1	
4013.89	P		2.41	5.49	1-0	
3876.671	U	(1)	2.27	5.45	2-3	a^{3}P-w^{5}F° (121)
3819.62	P		2.27	5.50	2-3	a^{3}P-v^{5}D° (122)
3981.106	V	(1)	2.41	5.51	1-2	
4043.69	P	⊙	2.47	5.53	0-1	
3803.24	P	⊙	2.27	5.51	2-2	
3965.83	P	⊙	2.41	5.53	1-1	
3825.404	J	(1gn)	2.27	5.49	2-2	a^{3}P-y^{5}S° (123)
4005.38	P	⊙	2.41	5.49	1-2	
3724.380	B	8	2.27	5.58	2-3	a^{3}P-x^{3}D° (124)
3885.512	I	5	2.41	5.59	1-2	
3918.319	J	3	2.47	5.62	0-1	
3715.911	G	4	2.27	5.59	2-2	
3845.170	K	(5)	2.41	5.62	1-1	
3678.98	W	(1)	2.27	5.62	2-1	
3677.477	V	(2)	2.27	5.62	2-3	a^{3}P-y^{3}G° (125)
3630.67	P	⊙?	2.27	5.67	2-3	a^{3}P-x^{5}G° (126)
3601.42	P	⊙	2.27	5.70	2-3	a^{3}P-w^{5}P° (127)
3735.71	P	⊙	2.41	5.72	1-2	
*3790.756	J	1	2.47	5.73	0-1	
m3578.67	P	Cr	2.27	5.72	2-2	
3722.24	P	⊙	2.41	5.73	1-1	
3566.31	P	⊙	2.27	5.73	2-1	
3542.243	V	1	2.27	5.75	2-1	a^{3}P-z^{3}S° (128)
3696.03	W	(1)	2.41	5.75	1-1	
3763.57	P	⊙	2.47	5.75	0-1	
3524.236	G	4	2.27	5.77	2-3	a^{3}P-u^{5}D° (130)
3657.143	V	1	2.41	5.79	1-2	
*3683.616	V	(1)	2.47	5.82	0-1	
3506.498	G	6	2.27	5.79	2-2	
3618.91	P	⊙	2.41	5.82	1-1	
3471.350	U	6	2.27	5.82	2-1	
3619.66	P	⊙	2.41	5.82	1-0	
3526.465	J	4	2.27	5.77	2-2	a^{3}P-y^{3}P° (131)
3655.35	P	⊙	2.41	5.79	1-1	
3504.866	V	2	2.27	5.79	2-1	
3686.260	J	2	2.41	5.76	1-0	
3678.863	J	3	2.41	5.77	1-2	
3721.396	V	1	2.47	5.79	0-1	
3481.558	V	(1)	2.27	5.81	2-3	a^{3}P-x^{3}F° (132)
3616.326	U	(1)	2.41	5.83	1-2	
m3490.74	P	Co	2.27	5.80	2-3	a^{3}P-w^{3}D° (133)
3624.30	W	(1)	2.41	5.82	1-2	
3670.810	V	1	2.47	5.84	0-1	
*3476.336	V	(2w)	2.27	5.82	2-2	
3606.53	P	⊙	2.41	5.84	1-1	
m3459.95	P	Fe	2.27	5.84	2-1	
3442.364	V	5	2.27	5.85	2-2	a^{3}P-1° (134)
3587.424	J	2	2.41	5.85	1-2	
3426.337	U	(2)	2.27	5.87	2-1	a^{3}P-y^{3}S° (135)
3569.99	W	(1)	2.41	5.87	1-1	
3632.979	J	3	2.47	5.87	0-1	
3393.915	V	(1)	2.27	5.91	2-3	a^{3}P-x^{3}G° (136)
m3378.73	P	Fe	2.27	5.92	2-3	a^{3}P-v^{5}P° (137)
3494.15	W	(1)	2.41	5.95	1-2	
3538.55	W	(1)	2.47	5.96	0-1	
3356.407	H	3	2.27	5.95	2-2	
3478.788	V	(1)	2.41	5.96	1-1	
3342.225	V	5	2.27	5.96	2-1	
3347.927	A	6	2.27	5.96	2-2	a^{3}P-v^{5}F° (138)
3484.97	W	(1)	2.41	5.96	1-2	
3340.566	A	6	2.27	5.96	2-2	a^{3}P-x^{3}P° (139)
3451.628	J	2	2.41	5.99	1-1	
3317.121	G	3	2.27	5.99	2-1	
3458.304	J	4	2.41	5.98	1-0	
3477.007	V	(1)	2.41	5.96	1-2	
3510.443	V	(2)	2.47	5.99	0-1	
3388.81	P	(1)	2.41	6.06	1-2	a^{3}P-2° (140)
*3239.029	V	(1)	2.27	6.08	2-3	a^{3}P-w^{3}F° (141)
3345.679	V	(1)	2.41	6.10	1-2	
*3250.400	V	(2)	2.27	6.07	2-3	a^{3}P-v^{3}D° (142)
3367.161	V	(1)	2.41	6.08	1-2	
3416.688	V	(1)	2.47	6.09	0-1	
*3239.029	V	(1)	2.27	6.08	2-2	
3360.935	V	(1)	2.41	6.09	1-1	
3233.304	V	(1)	2.27	6.09	2-1?	
3214.624	V	(1)	2.27	6.11	2-2	a^{3}P-z^{1}D° (143)
3142.888	V	5	2.27	6.20	2-2	a^{3}P-w^{3}P° (144)
*3278.741	V	4	2.41	6.18	1-1	
3157.15	P	⊙	2.27	6.18	2-1	
3288.660	V	(2)	2.41	6.17	1-0	
3263.378	V	(2)	2.41	6.20	1-2	
3331.778	V	(2)	2.47	6.18	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3030.61	P	⊙	2.27	6.34	2-3	a^{3}P-v^{3}F° (145)
2976.126	G	5	2.27	6.42	2-3	a^{3}P-u^{3}D° † (146)
3053.065	G	5	2.41	6.46	1-2	
3078.436	V	3	2.47	6.48	0-1	
3033.104	V	(1)	2.41	6.48	1-1	
3063.939	V	(2)	2.41	6.44	1-1	a^{3}P-t^{3}D° † (147)
2996.386	G	5	2.41	6.53	1-2	a^{3}P-v^{3}P° † (148)
2960.303	V	1	2.47	6.64	0-1	
10191.51	P	⊙?	2.41	3.63	4-3	z^{7}D°-b^{3}D (149)
5871.04	V	(1)	2.46	4.56	2-2	z^{7}D°-d^{3}F (150)
5908.24	V	(2)	2.47	4.56	1-2	
4260.479	H	35	2.39	5.29	5-5	z^{7}D°-e^{7}D (152)
4235.942	I	25	2.41	5.33	4-4	
4222.219	J	12	2.44	5.36	3-3	
4210.352	J	15	2.47	5.40	1-1	
4198.310	J	20	2.39	5.33	5-4	
4187.802	J	20	2.41	5.36	4-3	
4187.044	J	20	2.44	5.39	3-2	
4191.436	J	15	2.46	5.40	2-1	
4299.242	I	18	2.41	5.29	4-5	
4271.159	J	20	2.44	5.33	3-4	
4250.125	J	25	2.46	5.36	2-3	
4233.608	I	18	2.47	5.39	1-2	
3947.393	V	(1)	2.39	5.52	5-4	z^{7}D°-e^{5}D (153)
3920.645	U	(1)	2.41	5.56	4-3	
3908.68	P	⊙	2.44	5.60	3-2	
3905.66	P	⊙	2.46	5.62	2-1	
3908.90	P		2.47	5.63	1-0	
3980.65	W	(1)	2.41	5.52	4-4	
3950.78	P	⊙	2.44	5.56	3-3	
m3932.59	P	Fe	2.46	5.60	2-2	
3922.08	P	⊙	2.47	5.62	1-1	
4011.71	W	(1)	2.44	5.52	3-4	
3975.21	W	(1)	2.46	5.56	2-3	
3949.23	P	⊙	2.47	5.60	1-2	
3615.01	P	⊙	2.39	5.80	5-5	z^{7}D°-e^{5}F (154)
3594.10	P	⊙	2.41	5.85	4-4	
3570.60	P	⊙	2.44	5.90	3-3	
3554.65	P	⊙	2.46	5.93	2-2	
3544.88	P	⊙	2.47	5.95	1-1	
3225.789	A	25	2.39	6.21	5-6	z^{7}D°-e^{7}F (155)
3196.930	A	20	2.41	6.26	4-5	
3180.223	G	20	2.44	6.32	3-4	
*3200.475	A	15	2.46	6.31	2-3	
3192.799	G	8	2.47	6.34	1-2	
3175.447	A	12	2.39	6.28	5-5	
3160.658	A	10	2.41	6.32	4-4	
*3184.631	V	3	2.44	6.31	3-3	
*3181.922	U	(2)	2.46	6.34	2-2	
3205.400	A	15	2.47	6.32	1-1	
3139.661	U	(1)	2.39	6.32	5-4	
3165.005	V	3	2.41	6.31	4-3	
3166.24	P	⊙	2.44	6.34	3-2	
3194.422	V	3	2.46	6.32	2-1	
3222.069	A	20	2.39	6.22	5-5	z^{7}D°-f^{7}D (156)
3199.530	G	15	2.41	6.27	4-4	
*3214.044	V	20	2.44	6.28	3-3	
3215.940	A	12	2.46	6.30	2-2	
3221.936	V	2	2.47	6.30	1-1	
3178.015	A	10	2.39	6.27	5-4	
3194.03	P		2.41	6.28	4-3	
3199.93	P		2.44	6.30	3-2	
3210.830	G	10	2.46	6.30	2-1	
3244.190	A	15	2.41	6.22	4-5	
3219.581	G	12	2.44	6.27	3-4	
3230.16	P		2.46	6.28	2-3	
3227.067	V	3	2.47	6.30	1-2	
3217.380	A	10	2.39	6.22	5-4	z^{7}D°-f^{5}D (157)
3227.798	G	15	2.41	6.24	4-3	
3230.963	G	10	2.44	6.26	3-2	
3228.262	V	5	2.46	6.28	2-1	
3228.900	G	3	2.47	6.29	1-0	
3239.436	A	15	2.41	6.22	4-4	
3248.206	G	10	2.44	6.24	3-3	
3247.297	V	3	2.46	6.26	2-2	
m3239.46	P	Fe	2.47	6.28	1-1	
3259.991	G	6	2.44	6.22	3-4	
3264.716	V	(2)	2.46	6.24	2-3	
3258.62	P	⊙	2.47	6.26	1-2	
3211.989	G	10	2.39	6.23	5-4	z^{7}D°-e^{7}P (158)
3219.806	G	10	2.41	6.25	4-3	
m3214.07	P	Fe	2.44	6.28	3-3	
3233.967	G	12	2.41	6.23	4-4	
3240.11	P	⊙	2.44	6.25	3-3	
3230.210	V	6	2.46	6.28	2-2	
3254.46	P	⊙	2.44	6.23	3-4	
3256.52	P	⊙	2.46	6.25	2-3	
3241.43	P		2.47	6.28	1-2	
3207.092	V	2	2.39	6.24	5-6	z^{7}D°-e^{5}G (159)
3210.230	G	8	2.41	6.26	4-5	
3201.891	S	(-)	2.44	6.29	3-4	
3193.314	V	8	2.46	6.32	2-3	
3188.819	G	7	2.47	6.34	1-2	
3188.567	G	4	2.39	6.26	5-5	
*3182.076	V	3	2.41	6.29	4-4	
m3177.52	P	Fe+	2.44	6.32	3-3	
m3177.96	P	Fe	2.46	6.34	2-2	
3160.77	P		2.39	6.29	5-4	
3157.992	U	(2)	2.41	6.32	4-3	
*3162.335	U	2n	2.44	6.34	3-2	

y Int	E P Low	E P High	J	Multiplet (No)
d				
8	2.39	6.29	5-6	$z^7D^o-e^7G$
8	2.41	6.32	4-5	(160)
4	2.44	6.34	3-4	
2	2.46	6.35	2-3	
2	2.47	6.36	1-2	
⊙	2.39	6.32	5-5	
(1)	2.41	6.34	4-4	
(1)	2.44	6.35	3-3	
⊙	2.46	6.36	2-2	
	2.47	6.37	1-1	
15	2.39	6.34	5-4	
Fe	2.41	6.35	4-3	
	2.44	6.36	3-2	
	2.46	6.37	2-1	
	2.39	6.31	5-5	$z^7D^o-f^5F$
⊙	2.41	6.35	4-4	(161)
⊙	2.44	6.37	3-3	
6n	2.46	6.38	2-2	
	2.47	6.39	1-1	
	2.39	6.35	5-4	
	2.41	6.37	4-3	
(1)	2.44	6.38	3-2	
	2.46	6.39	2-1	
	2.41	6.31	4-5	
5	2.44	6.35	3-4	
2	2.46	6.37	2-3	
(1)	2.47	6.38	1-2	
3	2.44	6.31	3-2	$z^7D^o-e^5S$
15	2.46	6.31	2-2	(162)
4	2.47	6.31	1-2	
(1)	2.44	6.34	3-4	$z^7D^o-g^5D$
				(163)
(1)	2.41	6.37	4-3	$z^7D^o-e^7S$
6	2.44	6.37	3-3	(164)
6	2.46	6.37	2-3	
⊙	2.41	6.40	4-3	$z^7D^o-e^5P$
⊙	2.44	6.43	3-2	(165)
⊙	2.46	6.42	2-1	
(1)	2.44	6.40	3-3?	
(1)	2.46	6.43	2-2	
(1)	2.47	6.42	1-1	
⊙?	2.44	3.87	4-3	$a^3H-z^3D^o$
				(166)
5	2.39	4.16	6-5	$a^3H-y^5F^o$
6	2.42	4.20	5-4	(167)
1	2.44	4.24	4-3	
⊙	2.42	4.16	5-5	
(1)	2.44	4.20	4-4	
Fe	2.39	4.30	6-6	$a^3H-z^5G^o$
60	2.42	4.29	5-5	(168)
30	2.44	4.35	4-4	
1000	2.39	4.29	6-5	
400	2.42	4.35	5-4	
10	2.44	4.40	4-3	
	2.42	4.30	5-6	
1	2.44	4.29	4-5	
20	2.39	4.37	6-5	$a^3H-z^3G^o$
20	2.42	4.42	5-4	(169)
20	2.44	4.45	4-3	
2	2.42	4.37	5-5	
4	2.44	4.42	4-4	
⊙?	2.44	4.37	4-5	
⊙	2.42	4.53	5-4	$a^3H-y^3F^o$
⊙	2.44	4.59	4-3	(170)
(3)	2.44	4.53	4-4	
⊙	2.42	5.28	5-6	$a^3H-y^5G^o$
⊙	2.44	5.30	4-5	(171)
⊙	2.42	5.31	5-4	
⊙	2.44	5.33	4-3	
	2.39	5.35	6-6	$a^3H-z^5H^o$
(1)	2.42	5.31	5-5	(172)
⊙	2.39	5.31	6-5	
⊙	2.42	5.32	5-4	
⊙	2.44	5.35	4-3	
⊙	2.42	5.35	5-6	
(1)	2.39	5.46	6-5	$a^3H-w^5F^o$
⊙	2.42	5.43	5-4	(173)
⊙	2.44	5.45	4-3	
⊙	2.44	5.43	4-4	
10	2.39	5.59	6-5	$a^3H-y^3G^o$
8	2.42	5.61	5-4	(175)
(8)	2.44	5.62	4-3	
(2)	2.42	5.59	5-5	
2	2.44	5.61	4-4	
Fe	2.39	5.63	6-6	$a^3H-x^5G^o$
(1)	2.39	5.64	6-5	(176)
⊙	2.42	5.66	5-4	
⊙	2.44	5.67	4-3	
(1)	2.42	5.63	5-6	
8	2.39	5.68	6-7	$a^3H-z^3I^o$
6	2.42	5.68	5-6	(177)
8	2.44	5.70	4-5	
(1gn)	2.39	5.68	6-6	
(1)	2.42	5.70	5-5	
⊙	2.42	5.77	5-4	$a^3H-u^5D^o$
(1)	2.44	5.77	4-3	(178)
⊙	2.44	5.77	4-4	
1	2.42	5.79	5-4	$a^3H-x^3F^o$
(1)	2.44	5.81	4-3	(179)
(1)	2.44	5.79	4-4	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3623.187	G	8	2.39	5.80	6-6	$a^3H-z^3H^o$
3650.280	J	5	2.42	5.80	5-5	(180)
3659.516	G	8	2.44	5.82	4-4	
3619.76	W	(1)	2.39	5.80	6-5	
3637.251	V	1	2.42	5.82	5-4	
3653.763	V	1	2.42	5.80	5-6	
3672.69	W	1	2.44	5.80	4-5	
3573.842	V	3	2.39	5.85	6-6	$a^3H-w^5G^o$
3596.20	W	1	2.42	5.85	5-5	(181)
3595.87	W	(1)	2.44	5.87	4-4	
3566.59	W	(1)	2.39	5.85	6-5	
3574.37	P		2.42	5.87	5-4	
3582.56	W	(1)	2.44	5.89	4-3	
3603.572	U	(1)	2.42	5.85	5-6	
3617.97	P	⊙	2.44	5.85	4-5	
3543.09	P	⊙	2.39	5.88	6-5	$a^3H-v^5F^o$
3531.43	W	(1)	2.42	5.92	5-4	(182)
3528.24	P	⊙	2.44	5.94	4-3	
3572.32	P	⊙	2.42	5.88	5-5	
3552.42	U	(1)	2.44	5.92	4-4	
3593.80	P	⊙	2.44	5.88	4-5	
3514.62	W	(1)	2.39	5.91	6-5	$a^3H-x^3G^o$
3546.21	U	(1)	2.42	5.90	5-4	(183)
3564.56	P	⊙	2.44	5.91	4-3	
3543.39	W	(1)	2.42	5.91	5-5	
3567.36	W	(1)	2.44	5.90	4-4	
3564.51	P	⊙	2.44	5.91	4-5	
3466.279	V	(1)	2.39	5.95	6-5	$a^3H-w^3G^o$
3478.382	V	(1gn)	2.42	5.97	5-4	(185)
3484.84	W	(1)	2.44	5.98	4-3	
3494.25	P	⊙	2.42	5.95	5-5	
3448.19	P	⊙	2.39	5.97	6-5	$a^3H-z^1H^o$
*3475.867	V	(1)	2.42	5.97	5-5	(186)
3496.19	U	(1)	2.44	5.97	4-5	
3437.631	V	(1)	2.42	6.01	5-4	$a^3H-y^1G^o$
3457.512	V	(1)	2.44	6.01	4-4	(187)
3390.25	P	⊙?	2.42	6.06	5-4	$a^3H-w^3F^o$
3394.085	V	(1)	2.44	6.08	4-3	(188)
3395.90	P	⊙?	2.44	6.08	4-3	a^3H-3^o
						(189)
3327.498	V	(2)	2.39	6.10	6-6	$a^3H-y^3H^o$
3334.223	V	(3)	2.42	6.12	5-5	(190)
*3339.202	V	2	2.44	6.14	4-4	
3308.75	P	⊙	2.39	6.12	6-5	
3320.650	V	(2)	2.42	6.14	5-4	
3353.268	V	(1)	2.42	6.10	5-6	
3352.929	V	(1)	2.44	6.12	4-5	
3324.541	V	4	2.39	6.11	6-5	$a^3H-v^3G^o$
3331.616	V	3	2.42	6.13	5-4	(191)
3325.468	V	4	2.44	6.15	4-3	
*3350.284	V	(3)	2.42 2.44	6.11 6.13	5-5 4-4	
3369.14	P	⊙	2.44	6.11	4-5	
*3225.607	U	(1)	2.42	6.25	5-4	$a^3H-x^1G^o$
3243.118	V	(1)	2.44	6.25	4-4	(192)
3160.342	V	(2)	2.39	6.30	6-6	$a^3H-x^3H^o$
3178.970	V	3	2.42	6.30	5-5	(192a)
3155.80	P	⊙	2.39	6.30	6-5	
3183.58	P	⊙	2.42	6.30	5-6	
3155.293	V	2	2.42	6.33	5-4	$a^3H-v^3F^o$
*3172.067	V	2	2.44	6.33	4-4	(193)
m3125.68	P	Fe	2.39	6.34	6-5	$a^3H-u^3G^o$
3119.495	G	6	2.42	6.38	5-4	(194)
3120.435	G	6	2.44	6.40	4-3	
3148.420	U	(2)	2.42	6.34	5-5	
3135.863	U	(1)	2.44	6.38	4-4	
3165.08	P	⊙	2.44	6.34	4-5	
3144.92	P	⊙	2.42	6.35	5-4	a^3H-4^o
3161.55	P	⊙	2.44	6.35	4-4	(195)
3100.838	V	(2)	2.39	6.37	6-5	a^3H-6^o
						(196a)
*3106.542§	U	(1)	2.44	6.42	4-3	$a^3H-u^3D^o$
						(196)
3083.152	U	(1)	2.44	6.45	4-3	$a^3H-t^3D^o$
						(197)
3025.638	V	15	2.39	6.47	6-6	$a^3H-w^3H^o$
3030.149	C	15	2.42	6.50	5-5	(198)
3031.213	G	12	2.44	6.51	4-4	
3009.098	V	3	2.39	6.50	6-5	
3015.913	C	4	2.42	6.51	5-4	
3046.929	V	(1)	2.42	6.47	5-6	
3045.594	V	(1)	2.44	6.50	4-5	
3005.302	G	3	2.39	6.50	6-7	$a^3H-y^3I^o$
3039.322	V	(2)	2.42	6.48	5-6	(199)
3019.291	V	(1)	2.44	6.53	4-5	
3018.134	U	(1)	2.39	6.48	6-6	
3004.119	V	(2)	2.42	6.53	5-5	
*2986.655§	V	(1)	2.42	6.55	5-6	$a^3H-z^1I^o$
						(200)
2980.80	P	⊙	2.44	6.58	4-4	a^3H-9^o †
						(201)
9372.900	E	6	2.55	3.86	4-4	$b^3F-z^3F^o$
9146.11	F	3	2.58	3.93	3-3	(202)
9010.55	F	2	2.60	3.97	2-2	
9359.420	E	3	2.55	3.87	4-3	$b^3F-z^3D^o$
9246.54	F	2	2.58	3.91	3-2	(203)
9173.20	P	⊙	2.60	3.94	2-1	
7461.534	V	(1)	2.55	4.20	4-4	$b^3F-y^5F^o$
7430.58	M	1	2.58	4.24	3-3	(204)
7400.87	P	⊙	2.60	4.26	2-2	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7069.54	P	1	2.55	4.29	4-5	$b^3F-z^5G^o$
6950.82	P		2.58	4.35	3-4	(205)
6860.29	V	1	2.60	4.40	2-3	
6839.828	V	4	2.55	4.35	4-4	
6783.71	V	2	2.58	4.40	3-3	
6746.96	P	⊙	2.60	4.43	2-2	
m6677.96	P	Fe	2.55	4.40	4-3	
6672.88	P		2.58	4.43	3-2	
6783.27	P	⊙	2.55	4.37	4-5	$b^3F-z^3G^o$
6712.68	P		2.58	4.42	3-4	(206)
6646.98	V	(1)	2.60	4.45	2-3	
6609.116	I	30	2.55	4.42	4-4	
6575.022	I	30	2.58	4.45	3-3	
6475.632	I	12	2.55	4.45	4-3	
6230.728	B	25	2.55	4.53	4-4	$b^3F-y^3F^o$
6137.696	B	18	2.58	4.59	3-3	(207)
6065.487	B	15	2.60	4.63	2-2	
6051.00	P	⊙	2.55	4.59	4-3	
*6005.53	V	(1)	2.58	4.63	3-2	
6322.693	I	5	2.58	4.53	3-4	
6200.323	J	4	2.60	4.59	2-3	
6199.475	U	(1)	2.55	4.54	4-3	$b^3F-y^5P^o$
6139.65	P	⊙	2.58	4.59	3-2	(208)
6106.84	P	⊙	2.60	4.62	2-1	
6290.55	P	⊙	2.58	4.54	3-3	
6302.31	P		2.60	4.59	2-2	
6356.293	U	(1)	2.60	4.54	2-3	
5701.553	J	7	2.55	4.71	4-3	$b^3F-y^3D^o$
5615.308	V	(2)	2.58	4.77	3-2	(209)
5567.401	V	(2)	2.60	4.81	2-1	
5778.47	V	(1)	2.58	4.71	3-3	
5667.67	P		2.60	4.77	2-2	
5833.93	P	⊙	2.60	4.71	2-3	
5265.94	P		2.55	4.89	4-4	$b^3F-x^5D^o$
*5235.392	V	(2)	2.58	4.93	3-3	(210)
5172.21	P	⊙	2.55	4.93	4-3	
5164.70	P	⊙	2.58	4.97	3-2	
m5162.38	P	Fe	2.60	4.99	2-1	
5331.48	P		2.58	4.89	3-4	
5280.91	P		2.60	4.93	2-3	
5069.60	P	⊙	2.58	5.01	3-4	$b^3F-x^5F^o$
5010.30	P	⊙	2.55	5.01	4-4	(211)
5006.72	P	⊙	2.58	5.04	3-3	
5003.85	P	⊙	2.60	5.06	2-2	
4566.68	P	⊙	2.55	5.25	4-3	$b^3F-x^5P^o$
						(212)
*4488.917	J	(2)	2.55	5.30	4-5	$b^3F-y^5G^o$
4513.72	P	⊙	2.58	5.31	3-4	(213)
4509.13	P	⊙	2.60	5.33	2-2	
*4373.563	J	(2)	2.55	5.37	4-4	$b^3F-w^5D^o$
4337.52	P		2.58	5.42	3-3	(214)
4319.45	P	⊙	2.60	5.45	2-2	
4294.04	P		2.55	5.42	4-3	
4288.962	V	(1)	2.58	5.45	3-2	
4277.41	P		2.60	5.48	2-1	
4235.65	P	⊙	2.55	5.46	4-5	$b^3F-w^5F^o$
4318.81	P	⊙	2.58	5.43	3-4	(215)
4322.70	P	⊙	2.60	5.45	2-3	
4275.72	U	(1)	2.55	5.43	4-4	
4270.31	P	⊙	2.58	5.47	3-2	
4283.40	P	⊙	2.60	5.48	2-1	
4246.79	P		2.58	5.48	3-4	$b^3F-v^5D^o$
4251.88	P	⊙	2.60	5.50	2-3	(216)
4067.275	B	4	2.55	5.58	4-3	$b^3F-x^3D^o$
4095.975	I	4	2.58	5.59	3-2	(217)
4078.365	J	4	2.60	5.62	2-1	
4106.266	V	(1)	2.58	5.58	3-3	
*4123.748	J	(1)	2.60	5.59	2-2	
4134.19	P	⊙	2.60	5.58	2-3	
4055.046	V	3	2.55	5.59	4-5	$b^3F-y^3G^o$
4071.52	U	(1)	2.58	5.61	3-4	(218)
4076.498	V	(1)	2.60	5.62	2-3	
4033.19	P	(1)	2.55	5.61	4-4	
4049.336	V	(1)	2.58	5.62	3-3	
4011.416	V	(1)	2.55	5.62	4-3	
3985.32	P	⊙	2.55	5.64	4-5	$b^3F-x^5G^o$
4005.49	P	⊙	2.58	5.66	3-4	(219)
4019.05	U	(1)	2.60	5.67	2-3	
3968.38	P		2.55	5.66	4-4	
3992.64	P	⊙	2.58	5.67	3-3	
*4010.77	W	(1)	2.60	5.67	2-2	
3955.77	P	⊙	2.55	5.67	4-3	
3984.46	P	⊙	2.58	5.57	3-2	
3921.27	U	(1)	2.55	5.70	4-5	$b^3F-z^3I^o$
						(220)
3833.311	J	5	2.55	5.77	4-4	$b^3F-u^5D^o$
3864.31	P	⊙	2.58	5.77	3-3	(221)
3867.45	P	⊙	2.60	5.79	2-2	
3829.771	U	(2)	2.55	5.77	4-3	
3842.975	U	(1)	2.58	5.79	3-2	
3824.73	P		2.60	5.82	2-1	
3867.925	V	1	2.58	5.77	3-4	
3808.731	J	4	2.55	5.79	4-4	$b^3F-x^3F^o$
3813.059	J	5?	2.58	5.81	3-3	(222)
3821.834	J	3	2.60	5.83	2-2	
3779.434	V	3*	2.55	5.81	4-3	
3797.948	J	(1)	2.58	5.83	3-2	
3842.90	P	⊙	2.58	5.79	3-4	
3837.132	J	1	2.60	5.81	2-3	
3791.504	J	(1)	2.55	5.80	4-5	$b^3F-z^3H^o$
*3811.05	U	(1)	2.58	5.82	3-4	(223)
3777.448	J	2	2.55	5.82	4-4	

atory Ref	Int	E P Low	High	J	Multiplet (No)
inued					
P	Fe	2.55	5.80	4-3	$b^3F-w^3D^{\circ}$ (224)
P	Fe	2.58	5.82	3-2	
P	⊙	2.60	5.84	2-1	
J	1	2.58	5.80	3-3	
J	1	2.60	5.82	2-2	
P	⊙	2.60	5.80	2-3	
P	⊙	2.55	5.85	4-5	$b^3F-w^5G^{\circ}$ (225)
W	(1)	2.58	5.87	3-4	
V	(1)	2.60	5.89	2-3	
U	(1)	2.55	5.87	4-4	
P	⊙	2.58	5.89	3-3	
J	2	2.60	5.90	2-2	
V	(1)	2.55	5.89	4-3	
V	(1)	2.58	5.90	3-2	
V	(1)	2.58	5.85	3-2	b^3F-1° (226)
J	(1)	2.60	5.85	2-2	
J	1	2.55	5.86	4-4	$b^3F-z^1G^{\circ}$ (227)
J	1	2.58	5.86	3-4	
B	6	2.55	5.91	4-5	$b^3F-x^3G^{\circ}$ (228)
J	3	2.58	5.90	3-4	
J	2	2.60	5.91	2-3	
W	(1)	2.55	5.90	4-4	
P	⊙	2.58	5.91	3-3	
V	1	2.55	5.92	4-4	$b^3F-v^5F^{\circ}$ (229)
U	(1)	2.58	5.94	3-3	
P	⊙	2.60	5.96	2-2	
W	(1)	2.55	5.94	4-3	
P	⊙	2.58	5.96	3-2	
P	⊙	2.60	5.97	2-1	
B	8	2.58	5.92	3-4	
P	⊙	2.60	5.94	2-3	
U	(1)	2.55	5.92	4-3	$b^3F-v^5P^{\circ}$ (231)
V	1	2.58	5.95	3-2	
P	(1)	2.60	5.96	2-1?	
S	(-)	2.58	5.92	3-3	
P	⊙	2.60	5.95	2-2	
G	1	2.55	5.95	4-5	$b^3F-w^3G^{\circ}$ (233)
J	2	2.58	5.97	3-4	
V	1	2.60	5.98	2-3	
P	⊙	2.55	5.97	4-4	
P	Fe	2.58	5.98	3-3	
P	⊙	2.58	5.96	3-2	$b^3F-x^3P^{\circ}$ (235)
P	⊙	2.55	6.01	4-4	$b^3F-y^1G^{\circ}$ (237)
U	(1)	2.58	6.01	3-4	
U	(1)	2.55	6.06	4-4	$b^3F-w^3F^{\circ}$ (238)
P	Fe	2.58	6.08	3-3	
W	(1)	2.60	6.10	2-2	
G	8	2.55	6.08	4-3	
G	2	2.58	6.10	3-2	
W	(1)	2.55	6.07	4-3	$b^3F-v^3D^{\circ}$ (239)
J	3	2.58	6.08	3-2	
J	3	2.60	6.09	2-1	
J	1	2.58	6.07	3-3	
U	(2)	2.60	6.08	2-2	
P	⊙	2.60	6.07	2-3	
V	1	2.58	6.08	3-3	b^3F-3° (240)
P	Fe	2.55	6.12	4-5	$b^3F-y^3H^{\circ}$ (241)
V	(1)	2.58	6.14	3-4	
V	4	2.55	6.11	4-5	$b^3F-v^3G^{\circ}$ (242)
J	(2)	2.58	6.13	3-4	
V	2	2.60	6.15	2-3	
V	(1)	2.55	6.13	4-4	
P	⊙	2.58	6.15	3-3	
P	⊙	2.60	6.11	2-2	$b^3F-z^1D^{\circ}$ (243)
P	⊙	2.58	6.20	3-2	$b^3F-w^3P^{\circ}$ (244)
V	(1)	2.60	6.18	2-1	
P	⊙	2.60	6.20	2-2	
V	(1)	2.58	6.24	3-3	$b^3F-z^1F^{\circ}$ (245)
V	(1)	2.60	6.24	2-3?	
V	(1)	2.55	6.25	4-4	$b^3F-x^1G^{\circ}$ (246)
P	⊙	2.55	6.34	4-4	$b^3F-u^5F^{\circ}$ (247)
P	⊙	2.55	6.37	4-3	
W	(1)	2.58	6.40	3-2	
P	⊙	2.55	6.30	4-5	$b^3F-x^3H^{\circ}$ (248)
V	(1)	2.55	6.34	4-3	$b^3F-t^5D^{\circ}$ (249)
V	4	2.55	6.33	4-4	$b^3F-v^3F^{\circ}$ (250)
V	4	2.58	6.34	3-3	
V	(2)	2.60	6.32	2-2	
V	(1)	2.55	6.34	4-3	
U	(1)	2.58	6.32	3-2	
V	4	2.55	6.34	4-5	$b^3F-u^3G^{\circ}$ (252)
V	3	2.58	6.38	3-4	
V	3	2.55	6.35	4-4	b^3F-4° (253)
P	Fe	2.55	6.38	4-3	$b^3F-u^5P^{\circ}$ (254)
P	⊙	2.58	6.41	3-2	
V	(1)	2.58	6.38	3-2	$b^3F-y^1D^{\circ}$ (255)
V	(1)	2.58	6.39	3-2	b^3F-7° (256)

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe I continued						
3253.954	V	(2)	2.60	6.39	2-2	$b^3F-x^1D^{\circ}$ (257)
3191.11	W	(1)	2.55	6.42	4-3	$b^3F-u^3D^{\circ}$ (258)
3181.522	G	4	2.58	6.46	3-2	
3176.366	V	2	2.60	6.48	2-1	
3198.266	U	(1)	2.60	6.46	2-2	
3232.16	P	⊙	2.60	6.42	2-3	
3166.435	G	6	2.55	6.45	4-3	$b^3F-t^3D^{\circ}$ (259)
3190.02	W	(1)	2.58	6.45	3-3	
3159.25	P	⊙	2.60	6.50	2-2	
3126.84	P	⊙	2.55	6.50	4-5	$b^3F-w^3H^{\circ}$ (260)
3111.686	U	(2)	2.55	6.51	4-4	
3093.888	V	(2 1d)	2.55	6.54	4-3	$b^3F-s^3D^{\circ}$ (261)
3116.39	P	⊙	2.58	6.54	3-3	
3052.78	P	⊙	2.55	6.59	4-3	$b^3F-t^5P^{\circ}$ (262)
3007.75	P	⊙	2.58	6.68	3-2	
3018.25	P	⊙	2.55	6.64	4-3	$b^3F-x^1F^{\circ}$ (263)
3054.949	S	(-)	2.60	6.64	2-3	
10422.99	D	0	2.68	3.86	5-4	$a^3G-z^3F^{\circ}$ (264)
10195.11	F	2	2.72	3.93	4-3	
10113.86	F	2	2.75	3.97	3-2	
8345.20	P	⊙	2.68	4.16	5-5	$a^3G-y^5F^{\circ}$ (265)
8303.11	P	⊙	2.72	4.20	4-4	
8112.17	P	⊙	2.68	4.20	5-4	
8108.33	P	⊙	2.72	4.24	4-3	
8129.32	P	⊙	2.75	4.26	3-2	
7650.95	P		2.68	4.29	5-5	$a^3G-z^5G^{\circ}$ (266)
7540.44	P	⊙	2.72	4.35	4-4	
7481.74	P	⊙	2.75	4.40	3-3	
7382.63	P	⊙	2.68	4.35	5-4	
7344.18	P	⊙	2.72	4.40	4-3	
7347.16	P	⊙	2.75	4.43	3-2	
7316.77	P	⊙	2.68	4.37	5-5	$a^3G-z^3G^{\circ}$ (267)
7261.00	P	⊙	2.72	4.42	4-4	
7228.70	O	1	2.75	4.45	3-3	
7114.55	P	⊙	2.68	4.42	5-4	
7100.20	P	⊙?	2.72	4.45	4-3	
7471.75	P	⊙	2.72	4.37	4-5	
6677.993	B	600	2.68	4.53	5-4	$a^3G-y^3F^{\circ}$ (268)
6592.919	B	300	2.72	4.59	4-3	
6546.245	B	200	2.75	4.63	3-2	
6806.851	L	10	2.72	4.53	4-4	
6703.573	L	10	2.75	4.59	3-3	
6180.216	V	(2)	2.72	4.71	4-3	$a^3G-y^3D^{\circ}$ (269)
6085.267	V	(1)	2.75	4.77	3-2	
5391.78	P	⊙	2.68	4.97	5-5	$a^3G-x^5F^{\circ}$ (270)
4432.90	P	⊙	2.72	5.50	4-3	$a^3G-v^5D^{\circ}$ (271)
4460.12	P	⊙	2.75	5.51	3-2	
4305.13	P	⊙	2.72	5.58	4-3	$a^3G-x^3D^{\circ}$ (272)
*4340.49	P	(1)	2.75	5.59	3-2	
*4239.847	J	2	2.68	5.59	5-5	$a^3G-y^3G^{\circ}$ (273)
4266.968	J	3	2.72	5.61	4-4	
4288.148	J	(2)	2.75	5.62	3-3	
4215.975	V	(1)	2.68	5.61	5-4	
4242.588	V	(1)	2.72	5.62	4-3	
m4291.44	P	Fe	2.72	5.59	4-5	
4313.04	P	⊙	2.75	5.61	3-4	
4184.22	U	(1)	2.68	5.63	5-6	$a^3G-x^5G^{\circ}$ (274)
4213.42	P	⊙	2.72	5.64	4-5	
4239.01	P	⊙	2.75	5.66	3-4	
*4163.676	V	(1)	2.68	5.64	5-5	
4194.50	P	⊙	2.72	5.66	4-4	
4224.63	P	⊙	2.75	5.67	3-3	
4145.209	V	(1)	2.68	5.66	5-4	
4180.41	P	⊙	2.72	5.67	4-3	
*4215.430	J	2	2.75	5.67	3-2	
4112.17	P	⊙	2.68	5.68	5-6	$a^3G-z^3I^{\circ}$ (275)
3998.054	I	10	2.68	5.77	5-4	$a^3G-u^5D^{\circ}$ (276)
4039.94	W	(1)	2.72	5.77	4-3	
*4043.901	V	5n	2.72	5.77	4-4	
4085.26	P	⊙	2.75	5.77	3-4	
3971.325	I	9	2.68	5.79	5-4	$a^3G-x^3F^{\circ}$ (277)
3983.960	I	10	2.72	5.81	4-3	
4007.277	J	6	2.75	5.83	3-2	
4016.54	W	(1)	2.72	5.79	4-4	
4024.109	J	(1)	2.75	5.81	3-3	
4057.356	V	2	2.75	5.79	3-4	
3956.681	B	12	2.68	5.80	5-6	$a^3G-z^3H^{\circ}$ (278)
3997.394	I	15	2.72	5.80	4-5	
4021.869	I	12	2.75	5.82	3-4	
3952.606	I	8	2.68	5.80	5-5	
3981.775	J	7	2.72	5.82	4-4	
3937.329	J	3	2.68	5.82	5-4	
3995.996	J	4	2.72	5.80	4-3	$a^3G-w^3D^{\circ}$ (279)
4017.096	V	(1)	2.75	5.82	3-2	
4036.37	P	⊙	2.75	5.80	3-3	
3897.896	J	8	2.68	5.85	5-6	$a^3G-w^5G^{\circ}$ (280)
*3932.629	J	4	2.72	5.85	4-5	
3945.119	J	4	2.75	5.87	3-4	
3929.114	J	(1)	2.75	5.89	3-3	
3863.745	V	2	2.68	5.87	5-4	
3890.844	J	2	2.72	5.89	4-3	
3907.937	B	4	2.75	5.90	3-2	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe I continued						
3971.82	W	(1)	2.75	5.85	3-2	a^3G-1° (281)
3884.359	J	3	2.68	5.86	5-4	$a^3G-z^1G^{\circ}$ (282)
3927.61	P	⊙	2.72	5.86	4-4	
*3966.630	J	10n	2.75	5.86	3-4	
*3861.341	J	2	2.68	5.88	5-5	$a^3G-v^5F^{\circ}$ (283)
3855.329	V	(1w)	2.72	5.92	4-4	
3813.638	J	2	2.68	5.92	5-4	
3826.836	J	1	2.72	5.94	4-3	
3892.898	V	(1)	2.75	5.92	3-4	
3827.572	J	1	2.68	5.91	5-5	$a^3G-x^3G^{\circ}$ (284)
3872.923	V	1	2.72	5.90	4-4	
3907.464	J	(1)	2.75	5.91	3-3	
3830.850	J	1	2.68	5.90	5-4	
3869.590	V	3*	2.72	5.91	4-3	
3869.562	K	3*	2.72	5.91	4-5	
3910.845	J	(3)	2.75	5.90	3-4	
3770.305	V	3*	2.68	5.95	5-5	$a^3G-w^3G^{\circ}$ (287)
3792.156	J	2	2.72	5.97	4-4	
3811.892	J	2	2.75	5.98	3-3	
3751.820	J	(1)	2.68	5.97	5-4	
3775.860	J	(1)	2.72	5.98	4-3	
*3811.05	U	(1)	2.72	5.95	4-5	
3828.510	V	(1n)	2.75	5.97	3-4	
3748.91	P	⊙	2.68	5.97	5-5	$a^3G-z^1H^{\circ}$ (289)
3789.178	J	3	2.72	5.97	4-5	
3704.463	B	10	2.68	6.01	5-4	$a^3G-y^1G^{\circ}$ (290)
3743.78	P	(0)	2.72	6.01	4-4	
3779.213	U	(1)	2.75	6.01	3-4	
3649.508	B	12	2.68	6.06	5-4	$a^3G-w^3F^{\circ}$ (291)
3669.523	B	10	2.72	6.08	4-3	
3677.630	B	12	2.75	6.10	3-2	
3687.656	J	4	2.72	6.06	4-4	
*3703.556	J	5	2.75	6.08	3-3	
3722.028	J	(1)	2.75	6.06	3-4	
3684.108	G	15	2.72	6.07	4-3	$a^3G-v^3D^{\circ}$ (292)
*3703.556	J	5	2.75	6.08	3-2	
3718.407	J	3	2.75	6.07	3-3	
3705.71	P	⊙	2.75	6.08	3-3	a^3G-3° (293)
3606.679	G	20	2.68	6.10	5-6	$a^3G-y^3H^{\circ}$ (294)
3621.463	B	15	2.72	6.12	4-5	
3638.296	G	12	2.75	6.14	3-4	
3584.663	B	8	2.68	6.12	5-5	
3605.450	G	15	2.72	6.14	4-4	
3568.977	J	4	2.68	6.14	5-4	
3603.205	G	10	2.68	6.11	5-5	$a^3G-v^3G^{\circ}$ (295)
*3618.392	J	2	2.72	6.13	4-4	
3622.001	G	12	2.75	6.15	3-3	
3581.645	J	1	2.68	6.13	5-4	
3589.456	G	3	2.72	6.15	4-3	
3640.388	G	15	2.72	6.11	4-5	
3651.469	B	20	2.75	6.13	3-4	
3527.90	P	⊙	2.75	6.24	3-3	$a^3G-z^1F^{\circ}$ (296)
3459.429	V	(2)	2.68	6.25	5-4	$a^3G-x^1G^{\circ}$ (297)
3493.69	W	(2)	2.72	6.25	4-4	
3411.88	P	⊙	2.68	6.30	5-5	$a^3G-u^5F^{\circ}$ (298)
3411.134	V	(1)	2.68	6.30	5-6	$a^3G-x^3H^{\circ}$ (299)
3439.050	V	(1)	2.72	6.30	4-5	
3405.83	W	(2)	2.68	6.30	5-5	
3404.923	U	(1)	2.68	6.31	5-4	$a^3G-t^5D^{\circ}$ (300)
3404.755	V	(1)	2.72	6.34	4-3	
3438.10	P	⊙	2.72	6.31	4-4	
3434.029	V	(1w)	2.75	6.34	3-3	
3378.676	G	6	2.68	6.33	5-4	$a^3G-v^3F^{\circ}$ (301)
*3404.301	V	3	2.72	6.34	4-3	
3453.022	J	(2)	2.75	6.32	3-2	
3411.353	G	3	2.72	6.33	4-4	
3440.74	P	⊙	2.75	6.33	3-4	
3366.790	V	5	2.68	6.35	5-4	a^3G-4° (302)
3399.230	V	(1)	2.72	6.35	4-4	
3428.41	P	⊙?	2.75	6.35	3-4	
3341.906	G	5	2.68	6.37	5-5	a^3G-6° (303)
3373.874	V	(1)	2.72	6.37	4-5	
3370.786	A	10	2.68	6.34	5-5	$a^3G-u^3G^{\circ}$ (304)
3369.549	G	8	2.72	6.38	4-4	
3380.111	C	8	2.75	6.40	3-3	
3337.666	C	6	2.68	6.38	5-4	
3351.750	V	3	2.72	6.40	4-3	
3403.299	U	(2)	2.72	6.34	4-5	
3398.226	V	(1)	2.75	6.38	3-4	
*3393.609	V	(1w)	2.75	6.38	3-2	$a^3G-y^1D^{\circ}$ (305)
3387.410	V	2	2.75	6.39	3-2	$a^3G-x^1D^{\circ}$ (306)
3335.72	P	⊙?	2.72	6.42	4-3	$a^3G-u^3D^{\circ}$ (307)
3363.815	V	(1)	2.75	6.42	3-3	
3254.734	V	(2)	2.68	6.47	5-6	$a^3G-w^3H^{\circ}$ (308)
3265.55	P	⊙	2.72	6.50	4-5	
3275.685	V	(1)	2.75	6.51	3-4	
3235.592	U	(1)	2.68	6.50	5-5	
3249.037	V	(1)	2.72	6.51	4-4	
3219.37	P	⊙	2.68	6.51	5-4	

ry Int	E P Low	E P High	J	Multiplet (No)
ed				
Fe	2.68	6.48	5-6	a^{3}G-y^{3}I°
⊙	2.72	6.53	4-5	(309)
2n	2.68	6.58	5-4	a^{3}G-9° (310)
10	2.72	6.63	4-5	a^{3}G-y^{1}H° (311)
⊙	2.75	6.64	3-3	a^{3}G-x^{1}F° (312)
6	2.68	6.66	5-5	a^{3}G-t^{3}G°
(2)	2.72	6.70	4-4	(313)
(1)	2.75	6.74	3-3	
(1)	2.68	6.70	5-4	
3	2.72	6.74	4-3	
(2)	2.68	6.67	5-5	a^{3}G-12°
(-)	2.72	6.67	4-5	(314)
(1)	2.68	6.70	5-4	a^{3}G-13°
(1)	2.73	6.70	4-4	(315a)
⊙	2.75	6.70	3-4	
(-)	2.73	6.77	4-4	a^{3}G-w^{1}G° (315)
10	2.68	6.85	5-6	a^{3}G-v^{3}H°
6	2.72	6.84	4-5	(316)
7	2.75	6.84	3-4	
Fe	2.68	6.84	5-5	
(-)	2.72	6.84	4-4	
5	2.75	6.89	3-3	a^{3}G-w^{1}F° (317)
———	———	———		
60	2.80	5.29	6-5	z^{7}F°-e^{7}D
60	2.82	5.33	5-4	(318)
50	2.84	5.36	4-3	
25	2.85	5.39	3-2	
15	2.86	5.40	2-1	
20	2.82	5.29	5-5	
20	2.84	5.33	4-4	
30	2.85	5.36	3-3	
25	2.86	5.39	2-2	
20	2.87	5.40	1-1	
(2)	2.84	5.29	4-5	
7	2.85	5.33	3-4	
10	2.86	5.36	2-3	
12	2.87	5.39	1-2	
12	2.87	5.40	0-1	
(1)	2.82	5.52	5-4	z^{7}F°-e^{5}D
⊙	2.84	5.52	4-4	(319)
(1)	2.85	5.56	3-3	
(1)	2.86	5.60	2-2	
⊙	2.87	5.62	1-1	
⊙	2.85	5.52	3-4	
⊙	2.86	5.56	2-3	
(1)	2.87	5.60	1-2	
(1)	2.87	5.62	0-1	
	2.80	5.80	6-5	z^{7}F°-e^{5}F
(1)	2.85	5.93	3-2	(320)
⊙	2.86	5.95	2-1	
⊙	2.82	5.80	5-5	
⊙	2.84	5.85	4-4	
(1)	2.85	5.90	3-3	
(1)	2.87	5.95	1-1	
⊙	2.85	5.85	3-4	
(1)	2.87	5.93	1-2	
(1m)	2.87	5.95	0-1	
20	2.80	6.21	6-6	z^{7}F°-e^{7}F
6	2.82	6.28	5-5	(321)
5	2.84	6.32	4-4	
3	2.85	6.31	3-3	
3	2.86	6.34	2-2	
(1)	2.87	6.32	1-1	
(2)	2.80	6.28	6-5	
	2.82	6.32	5-4	
⊙	2.84	6.31	4-3	
⊙	2.85	6.34	3-2	
(1)	2.86	6.32	2-1	
⊙	2.82	6.21	5-6	
(1)	2.84	6.28	4-5	
⊙	2.85	6.32	3-4	
2	2.86	6.31	2-3	
⊙	2.87	6.34	1-2	
(1)	2.87	6.32	0-1	
Fe	2.80	6.22	6-5	z^{7}F°-f^{7}D
2	2.82	6.27	5-4	(322)
	2.84	6.28	4-3	
1	2.85	6.30	3-2	
2	2.86	6.30	2-1	
7	2.82	6.22	5-5	
8	2.84	6.27	4-4	
2	2.85	6.28	3-3	
2	2.86	6.30	2-2	
(1)	2.87	6.30	1-1	
(1)	2.84	6.22	4-5	
⊙	2.85	6.27	3-4	
⊙?	2.86	6.28	2-3	
1	2.87	6.30	1-2	
(1)	2.87	6.30	0-1	
6	2.82	6.22	5-4	z^{7}F°-f^{5}D
4	2.84	6.24	4-3	(323)
2	2.85	6.26	3-2	
2	2.86	6.28	2-1	
(1)	2.87	6.29	1-0	
2	2.84	6.22	4-4	
1	2.85	6.24	3-3	
⊙	2.86	6.26	2-2	
	2.87	6.28	1-1	
(1)	2.85	6.22	3-4	
⊙	2.86	6.24	2-3	
⊙	2.87	6.26	1-2	
⊙	2.87	6.28	0-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
3618.30	P	⊙	2.82	6.23	5-4	z^{7}F°-e^{7}P
3620.23	W	(1)	2.84	6.25	4-3	(324)
*3602.534	G	3	2.85	6.28	3-2	
3638.16	P	⊙	2.84	6.23	4-4	
3635.28	P		2.85	6.25	3-3	
3613.15	W	(1)	2.86	6.28	2-2	
3653.35	P	⊙	2.85	6.23	3-4	
3646.10	P	⊙	2.86	6.25	2-3	
3620.00	P		2.87	6.28	1-2	
3586.75	P	(2)	2.80	6.24	6-6	z^{7}F°-e^{5}G
3588.615	G	3	2.82	6.26	5-5	(325)
3572.60	U	(1)	2.84	6.29	4-4	
3556.68	W	(1)	2.85	6.32	3-3	
3563.61	P	⊙	2.80	6.26	6-5	
3612.068	G	8	2.82	6.24	5-6	
*3608.146	J	3	2.84	6.26	4-5	
3587.253	V	2	2.85	6.29	3-4	
3567.045	V	2	2.86	6.32	2-3	
3554.50	W	2	2.87	6.34	1-2	
3570.243	V	20	2.80	6.25	6-7	z^{7}F°-e^{7}G
3554.922	G	40	2.82	6.29	5-6	(326)
3541.083	G	15	2.84	6.32	4-5	
3542.076	G	15	2.85	6.34	3-4	
3536.556	G	15	2.86	6.35	2-3	
3533.201	G	10	2.87	6.36	1-2	
3533.008	J	5	2.87	6.37	0-1	
3530.385	G	2	2.80	6.29	6-6	
3522.268	G	(3)	2.82	6.32	5-5	
3527.792	G	4	2.84	6.34	4-4	
3526.377	J	4	2.85	6.35	3-3	
3526.673	J	5	2.86	6.36	2-2	
3529.818	G	6	2.87	6.37	1-1	
3498.18	P	⊙	2.80	6.32	6-5	
3509.12	W	(1)	2.82	6.34	5-4	
3512.239	U	(1)	2.84	6.35	4-3	
3516.55	W	(1)	2.85	6.36	3-2	
3523.30	W	(1)	2.86	6.37	2-1	
3513.59	P	⊙	2.80	6.31	6-5	z^{7}F°-f^{5}F
3493.57	P	⊙	2.82	6.35	5-4	(327)
3537.896	J	4	2.82	6.31	5-5	
3512.08	W	(1)	2.84	6.35	4-4	
3506.23	W	(1)	2.86	6.38	2-2	
3506.58	P	⊙	2.87	6.39	1-1	
3556.877	G	7	2.84	6.31	4-5	
3526.23	W	(3)	2.85	6.35	3-4	
3518.68	W	(1)	2.86	6.37	2-3	
m3512.68	P	Co	2.87	6.38	1-2	
3509.73	P	⊙	2.87	6.39	0-1	
*3565.583	J	3	2.85	6.31	3-2	z^{7}F°-e^{5}S
*3575.976	G	2	2.86	6.31	2-2	(328)
3582.69	W	(2)	2.87	6.31	1-2	
3525.856	U	(1)	2.84	6.34	4-4	z^{7}F°-g^{5}D
3540.121	G	3	2.85	6.34	3-4	(329)
3512.80	P	⊙	2.85	6.37	3-3	z^{7}F°-e^{7}S
3522.896	U	(1)	2.86	6.37	2-3	(330)
3490.04	P	⊙?	2.86	6.40	2-3	z^{7}F°-e^{5}P (331)
3215.637	V	(3)	2.82	6.63	5-5	z^{7}F°-e^{3}G (332)
*3209.297	G	6	2.80	6.64	6-5	z^{7}F°-g^{7}D
3196.147	V	2	2.82	6.68	5-4	(333)
*3182.076	V	3	2.84	6.72	4-3	
3173.608	U	(1)	2.85	6.74	3-2	
3181.85	W	(3)	2.86	6.74	2-2	
3173.40	W	(1)	2.87	6.76	1-1	
3187.16	P	⊙	2.87	6.74	1-2	
3175.97	W	(1)	2.87	6.76	0-1	
2976.922	U	(1)	2.82	6.97	5-5	z^{7}F°-1 †
2990.33	P	⊙	2.84	6.97	4-5	(334)
2974.78	W	(1)	2.82	6.97	5-	z^{7}F°-2 (335)
		———	———	———		
11149.34	D	2	2.82	3.93	2-3	b^{3}P-z^{3}F°
10881.65	D	1	2.83	3.97	1-2	(336)
11783.28	D	6	2.82	3.87	2-3	b^{3}P-z^{3}D°
11439.06	D	15	2.83	3.91	1-2	(337)
11251.09	D	3	2.85	3.94	0-1	
11298.83	D	3	2.82	3.91	2-2	
11119.80	D	10	2.83	3.94	1-1	
10987.22	P	⊙	2.82	3.94	2-1	
9370.57	P		2.82	4.14	2-3	b^{3}P-y^{5}D°
9210.030	E	6	2.83	4.17	1-2	(338)
9117.10	F	2	2.85	4.20	0-1	
9118.888	E	25	2.82	4.17	2-2	
9030.67	F	1	2.83	4.20	1-1	
8943.00	F	2	2.82	4.20	2-1	
8946.25	F	1	2.83	4.21	1-0	
8999.561	E	200	2.82	4.19	2-2	b^{3}P-z^{3}P°
8757.192	E	25	2.83	4.24	1-1	(339)
8674.751	E	60	2.82	4.24	2-1	
8611.807	E	40	2.83	4.27	1-0	
9088.326	E	50	2.83	4.19	1-2	
8838.433	E	30	2.85	4.24	0-1	
6979.17	P	⊙	2.82	4.59	2-3	b^{3}P-y^{3}F°
6859.49	P	⊙	2.83	4.63	1-2	(340)
6808.80	P	⊙	2.82	4.63	2-2	
6912.43	P	⊙	2.83	4.62	1-1	b^{3}P-y^{5}P°
6860.96	P	1	2.82	4.62	2-1	(341)
6518.376	I	20	2.82	4.71	2-3	b^{3}P-y^{3}D°
6355.038	I	4	2.83	4.77	1-2	(342)
6270.238	J	(2)	2.85	4.81	0-1	
6311.506	V	(1)	2.82	4.77	2-2	
6229.234	V	(1)	2.83	4.81	1-1	
6187.41	P	⊙	2.82	4.81	2-1	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5835.58	P	⊙	2.82	4.93	2-3	b^{3}P-x^{5}D°
5747.85	P	⊙	2.82	4.97	2-2	(343)
5552.85	P	⊙	2.82	5.04	2-3	b^{3}P-x^{5}F°
5532.13	P		2.83	5.06	1-2	(344)
5529.80	P	⊙	2.85	5.08	0-1	
5536.59	P	⊙	2.82	5.05	2-2	b^{3}P-z^{5}S°
5570.06	P	⊙	2.83	5.05	1-2	(345)
4741.533	B	3	2.82	5.42	2-3	b^{3}P-w^{5}D°
4707.487	J	(2)	2.83	5.45	1-2	(346)
4680.475	V	(1)	2.85	5.48	0-1	
4683.565	J	(2)	2.82	5.45	2-2	
4657.598	V	(1)	2.83	5.48	1-1	
4687.387	J	(1)	2.82	5.45	2-3	b^{3}P-w^{5}F°
4685.03	P	⊙	2.83	5.47	1-2	(347)
4687.67	P	⊙	2.85	5.48	0-1	
4661.33	P	⊙	2.82	5.47	2-2	
4664.71	P		2.83	5.48	1-1	
4641.22	P	⊙	2.82	5.48	2-1	
4604.23	P	⊙	2.82	5.50	2-3	b^{3}P-v^{5}D°
4603.34	P	⊙	2.83	5.51	1-2	(348)
4605.10	P	⊙	2.85	5.53	0-1	
4580.46	P		2.82	5.51	2-2	
4582.941	U	(1)	2.83	5.53	1-1	
4612.64	P	⊙	2.82	5.49	2-2	b^{3}P-y^{5}S°
4635.846	J	(1)	2.83	5.49	1-2	(349)
4466.554	B	12	2.82	5.58	2-3	b^{3}P-x^{3}D°
4476.021	I	10	2.83	5.59	1-2	(350)
4443.197	B	7	2.85	5.62	0-1	
4454.383	B	5	2.82	5.59	2-2	
4422.570	B	6	2.83	5.62	1-1	
4401.447	V	(2)	2.82	5.62	2-1	
4290.870	J	(1)	2.82	5.70	2-3	b^{3}P-w^{5}P°
4278.38	P		2.83	5.72	1-2	(351)
4279.864	J	(1)	2.85	5.73	0-1	
4258.619	J	(1)	2.82	5.72	2-2	
4260.73	P	⊙	2.83	5.73	1-1	
4241.112	V	(1)	2.82	5.73	2-1	
4207.130	J	4	2.82	5.75	2-1	b^{3}P-z^{3}S°
4226.426	J	3	2.83	5.75	1-1	(352)
4245.258	I	6	2.85	5.75	0-1	
4181.758	J	15	2.82	5.77	2-3	b^{3}P-u^{5}D°
4175.640	B	10	2.83	5.79	1-2	(354)
m4143.83	P	Fe	2.85	5.82	0-1	
4156.803	B	12	2.82	5.79	2-2	
4125.884	J	(2)	2.83	5.82	1-1	
4107.492	B	12	2.82	5.82	2-1	
4126.88	U	(1)	2.83	5.82	1-0	
4184.895	B	10	2.82	5.77	2-2	b^{3}P-y^{3}P°
4173.322	J	2	2.83	5.79	1-1	(355)
4154.502	J	12	2.82	5.79	2-1	
4213.650	B	5	2.83	5.76	1-0	
4203.987	B	10	2.83	5.77	1-2	
4191.685	J	(2)	2.85	5.79	0-1	
4121.806	B	5	2.82	5.81	2-3	b^{3}P-x^{3}F°
4122.522	J	4	2.83	5.83	1-2	(356)
*4104.132	K	3	2.82	5.83	2-2	
4134.681	B	12	2.82	5.80	2-3	b^{3}P-w^{3}D°
4132.903	J	8	2.83	5.82	1-2	(357)
4127.612	B	7	2.85	5.84	0-1	
4114.449	B	5	2.82	5.82	2-2	
4109.808	J	9	2.83	5.84	1-1	
4091.561	J	(1)	2.82	5.84	2-1	
4066.979	B	6	2.82	5.85	2-2	b^{3}P-1°
4085.011	J	4	2.83	5.85	1-2	(358)
4044.614	J	6	2.82	5.87	2-1	b^{3}P-y^{3}S°
4062.446	J	10	2.83	5.87	1-1	(359)
4079.848	J	4	2.85	5.87	0-1	
4000.02	W	(1)	2.82	5.90	2-2	b^{3}P-w^{5}G° (360)
3978.466	V	(1)	2.82	5.92	2-3	b^{3}P-v^{5}P°
3964.522	J	3	2.83	5.95	1-2	(361)
3961.147	J	(2)	2.85	5.96	0-1	
*3947.533	J	5	2.82	5.95	2-2	
3944.748	J	(2)	2.83	5.96	1-1	
m3927.93	P	Fe	2.82	5.96	2-1	
3953.863	V	(1)	2.82	5.94	2-3	b^{3}P-v^{5}F°
3952.704	V	(1)	2.83	5.96	1-2	(362)
3935.815	B	8	2.82	5.96	2-2	
3935.31	W	(2)	2.83	5.97	1-1	
3918.58	P	⊙	2.82	5.97	2-1	
3925.646	J	4	2.82	5.96	2-2	b^{3}P-x^{3}P°
3909.830	J	3	2.83	5.99	1-1	(364)
3893.316	V	(1)	2.82	5.99	2-1	
3918.418	J	4	2.83	5.98	1-0	
3942.443	B	6	2.83	5.96	1-2	
3925.946	J	6	2.85	5.99	0-1	
*3829.458	V	1	2.83	6.06	1-2	b^{3}P-2° (366)
3801.681	J	3	2.82	6.07	2-3	b^{3}P-y^{3}D°
3801.804	J	1	2.83	6.08	1-2	(367)
3809.043	V	(1)	2.85	6.09	0-1	
3786.176	J	4	2.82	6.08	2-2	
3793.872	J	1	2.83	6.09	1-1	
3778.320	U	(1)	2.82	6.09	2-1	
3768.23	W	(1)	2.83	6.11	1-2	b^{3}P-z^{1}D° (368)

R E V I S E D   M U L T I P L E T   T A B L E

ratory		E P		J	Multiplet
Ref	Int	Low	High		(No)
tinued					
J	4	2.82	6.20	2-2	$b^3P-w^3P^\circ$
G	12	2.83	6.18	1-1	(369)
J	2	2.82	6.18	2-1	
J	3	2.83	6.17	1-0	
V	3	2.83	6.20	1-2	
J	3	2.85	6.18	0-1	
P	⊙?	2.82	6.24	2-3	$b^3P-z^1F^\circ$ (370)
U	(1)	2.82	6.34	2-3	$b^3P-v^3F^\circ$ (371)
V	(1)	2.82	6.40	2-3	$b^3P-u^3G^\circ$ (372)
V	(1)	2.82	6.38	2-2	$b^3P-y^1D^\circ$
V	(1)	2.83	6.38	1-2	(373)
V	(3w)	2.82	6.39	2-2	b^3P-7° (374)
V	(1)	2.83	6.39	1-2	$b^3P-x^1D^\circ$ (375)
J	3	2.82	6.42	2-3	$b^3P-u^3D^\circ$
P	⊙	2.83	6.46	1-2	(376)
V	(1)	2.85	6.48	0-1	
V	(1w)	2.82	6.46	2-2	
V	(2)	2.83	6.48	1-1	
V	(1)	2.82	6.48	2-1	
P		2.82	6.45	2-3	$b^3P-t^3D^\circ$
V	(1)	2.83	6.50	1-2	(377)
V	(1)	2.85	6.44	0-1?	
V	(1)	2.82	6.50	2-2	
V	(1)	2.83	6.44	1-1?	
P	⊙?	2.82	6.44	2-1?	
V	4	2.83	6.53	1-1	b^3P-8°
V	3	2.85	6.53	0-1	(378)
C	7	2.82	6.53	2-2	$b^3P-v^3P^\circ$
P		2.83	6.64	1-1	(379)
V	(2)	2.82	6.64	2-1	
V	4	2.83	6.53	1-2	
V	(2)	2.85	6.64	0-1	
V	(2)	2.82	6.57	2-1	$b^3P-z^1P^\circ$
V	(2)	2.83	6.57	1-1	(380)
V	3	2.82	6.62	2-3	$b^3P-y^1F^\circ$ (381)
V	(1w)	2.82	6.67	2-3	b^3P-11° (382)
S	(-)	2.83	6.88	1-2	$b^3P-w^1D^\circ$ (382a)
I	40	2.93	5.29	4-5	$z^7P^\circ-e^7D$
I	30	2.99	5.33	3-4	(383)
I	10	3.03	5.36	2-3	
J	20	2.93	5.33	4-4	
I	30	2.99	5.36	3-3	
J	15	3.03	5.39	2-2	
J	10	2.93	5.36	4-3	
J	10	2.99	5.39	3-2	
J	20	3.03	5.40	2-1	
V	3n	2.93	5.52	4-4	$z^7P^\circ-e^5D$
V	(1)	2.99	5.56	3-3	(384)
V	(1)	3.03	5.60	2-2	
W	(1)	2.93	5.56	4-3	
V	(1)	2.99	5.60	3-2	
P	⊙	3.03	5.62	2-1	
P	⊙	2.99	5.52	3-4	
P	⊙	3.03	5.56	2-3	
G	15n	2.93	6.28	4-5	$z^7P^\circ-e^7F$
G	20	2.99	6.32	3-4	(385)
J	1w	3.03	6.31	2-3	
J	3n	2.93	6.32	4-4	
I	8	2.99	6.31	3-3	
J	6	3.03	6.34	2-2	
J	2	2.93	6.31	4-3	
P	⊙	2.99	6.34	3-2	
J	4	3.03	6.32	2-1	
J	5	2.93	6.22	4-5	$z^7P^\circ-f^7D$
J	1	2.99	6.27	3-4	(386)
P		3.03	6.28	2-3	
G	12	2.93	6.27	4-4	
J	6	2.99	6.28	3-3	
J	1	3.03	6.30	2-2	
P	⊙	2.93	6.28	4-3	
J	3	2.99	6.30	3-2	
V	1	3.03	6.30	2-1	
J	4	2.93	6.22	4-4	$z^7P^\circ-f^5D$
J	(1)	2.99	6.24	3-3	(387)
P	⊙	3.03	6.26	2-2	
J	4	2.93	6.24	4-3	
V	4	2.99	6.26	3-2	
J	(1)	3.03	6.28	2-1	
J	6	2.93	6.23	4-4	$z^7P^\circ-e^7P$
J	1	2.99	6.25	3-3	(388)
V	1	3.03	6.28	2-2	
G	12	2.93	6.25	4-3	
P	⊙	2.99	6.28	3-2	
J	3	2.93	6.26	4-5	$z^7P^\circ-e^5G$
P	Co	2.99	6.29	3-4	(389)
P	⊙	3.03	6.32	2-3	
W	1	2.93	6.29	4-4	
G	6n	2.99	6.32	3-3	
V	2	3.03	6.34	2-2	
G	6n	2.93	6.32	4-3	
V	(1)	2.99	6.34	3-2	
P	(1)	2.93	6.32	4-5	$z^7P^\circ-e^7G$
W	(1)	2.99	6.34	3-4	(390)
P	⊙	3.03	6.35	2-3	
W	(1)	2.99	6.35	3-3	
P	⊙	2.93	6.35	4-3	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe I continued						
3649.70	P	⊙	2.93	6.31	4-5	$z^7P^\circ-f^5F$
3664.537	G	2	2.99	6.35	3-4	(391)
3689.37	P	⊙	3.03	6.37	2-3	
*3602.534	G	3	2.93	6.35	4-4	
*3645.494	V	1	2.99	6.37	3-3	
*3707.048	I	8	2.99	6.31	3-2	$z^7P^\circ-e^5S$
*3752.420	J	(1w)	3.03	6.31	2-2	(392)
3623.51	P	⊙	2.99	6.39	3-3	$z^7P^\circ-g^5D$
*3679.53	W	(1)	2.99	6.34	3-4	(393)
3666.85	P	⊙	3.03	6.39	2-3	
3588.52	P	⊙	2.93	6.37	4-3	$z^7P^\circ-e^7S$
3650.031	J	4	2.99	6.37	3-3	(394)
3694.005	G	20	3.03	6.37	2-3	
3554.44	P	⊙	2.93	6.40	4-3	$z^7P^\circ-e^5P$
*3584.960	J	4	2.99	6.43	3-2	(395)
3633.64	P	⊙	3.03	6.42	2-1	
3614.77	P		2.99	6.40	3-3	
3627.35	P	⊙	3.03	6.43	2-2	
3657.89	W	1	3.03	6.40	2-3	
3322.474	G	5n	2.93	6.64	4-5	$z^7P^\circ-g^7D$
3338.643	V	(3w)	2.99	6.68	3-4	(396)
3342.76	P	⊙	3.03	6.72	2-3	
3287.117	V	(1w)	2.93	6.68	4-4	
3306.703	S	(-)	2.99	6.72	3-3	
3320.800	V	(2n,gn)	3.03	6.74	2-2	
3285.20	U	(1)	2.99	6.74	3-2	
3256.52	P	⊙	2.99	6.77	3-2	$z^7P^\circ-e^3P$
3238.535	S	(-)	3.03	6.84	2-1	(397)
*3053.443	U	(2)	2.93	6.97	4-	$z^7P^\circ-2$ (398)
10086.27	P	⊙?	2.94	4.16	5-5	$b^3G-y^5F^\circ$ (399)
9038.84	P	⊙	2.94	4.30	5-6	$b^3G-z^5G^\circ$
9375.14	P		2.98	4.29	4-5	(400)
9156.23	P	⊙	3.00	4.35	3-4	
9089.413	E	30	2.94	4.29	5-5	
8975.408	E	10	2.98	4.35	4-4	
8868.42	F	3	3.00	4.40	3-3	
*8713.19	F	(10)	2.94	4.35	5-4	
8698.71	P	⊙	2.98	4.40	4-3	
8621.612	E	10	2.94	4.37	5-5	$b^3G-z^3G^\circ$
8582.267	E	15	2.98	4.42	4-4	(401)
8515.08	O	20	3.00	4.45	3-3	
8342.21	P	⊙?	2.94	4.42	5-4	
8358.53	P	⊙	2.98	4.45	4-3	
8878.26	P	⊙	2.98	4.37	4-5	
8747.32	F	2	3.00	4.42	3-4	
7748.281	E	125	2.94	4.53	5-4	$b^3G-y^3F^\circ$
7664.302	E	80	2.98	4.59	4-3	(402)
7583.796	E	50	3.00	4.63	3-2	
7954.94	P	⊙	2.98	4.53	4-4	
7904.12	P	⊙	2.98	4.54	4-3	$b^3G-y^5P^\circ$
7798.90	P	⊙	3.00	4.59	3-2	(403)
7112.176	I	3	2.98	4.71	4-3	$b^3G-y^3D^\circ$
6971.95	V	1	3.00	4.77	3-2	(404)
6310.543	U	(1)	2.94	4.89	5-4	$b^3G-x^5D^\circ$
6539.72	W	(2)	3.00	4.89	3-4?	(405)
5261.49	P	⊙	2.94	5.28	5-6	$b^3G-y^5G^\circ$
5226.42	P	⊙	2.94	5.30	5-5	(406)
5288.38	P	⊙	2.98	5.31	4-4	
5318.04	P	⊙	3.00	5.33	3-3	
5196.24	P	⊙	2.94	5.31	5-4	
*5326.154	V	(1)	3.00	5.32	3-4	$b^3G-z^5H^\circ$
5265.25	P	⊙?	3.00	5.35	3-3	(407)
5204.95	P	⊙?	2.98	5.35	4-3	
4773.52	P	⊙?	3.00	5.59	3-2	$b^3G-x^3D^\circ$
4787.50	P	⊙?	3.00	5.58	3-3	(408)
4647.437	B	6	2.94	5.59	5-5	$b^3G-y^3G^\circ$
4691.414	B	6	2.98	5.61	4-4	(409)
4710.286	B	5	3.00	5.62	3-3	
4618.765	J	(2)	2.94	5.61	5-4	
4661.975	J	(2)	2.98	5.62	4-3	
*4720.997	J	(1)	2.98	5.59	4-5	
4740.343	J	(1)	3.00	5.61	3-4	
4626.758	S	(-)	2.98	5.64	4-5	$b^3G-x^5G^\circ$
*4556.129	J	4n	2.94	5.64	5-5	(410)
4603.956	V	(1)	2.98	5.66	4-4	
4633.764	U	(1)	3.00	5.67	3-3	
4494.47	P	⊙	2.94	5.68	5-6	$b^3G-z^3I^\circ$
4472.57	P	⊙	2.94	5.70	5-5	(411)
4358.505	B	3	2.94	5.77	5-4	$b^3G-u^5D^\circ$
4418.432	V	(1)	2.98	5.77	4-3	(412)
4433.39	P	⊙	3.00	5.79	3-2	
4423.145	V	(1)	2.98	5.77	4-4	
4461.80	P	⊙	3.00	5.77	3-3	
4326.762	V	(2)	2.94	5.79	5-4	$b^3G-x^3F^\circ$
4351.549	J	3	2.98	5.81	4-3	(413)
*4373.563	J	(2)	3.00	5.83	3-2	
4390.460	V	(1)	2.98	5.79	4-4	
4309.382	V	4	2.94	5.80	5-6	$b^3G-z^3H^\circ$
4367.581	J	5	2.98	5.80	4-5	(414)
4390.954	B	4	3.00	5.82	3-4	
4304.552	J	(1)	2.94	5.80	5-5	
4348.939	J	(1)	2.98	5.82	4-4	
4286.440	V	(1)	2.94	5.82	5-4	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		
Fe I continued						
4365.902	V	(1)	2.98	5.80	4-3	$b^3G-w^3D^\circ$
4385.260	V	(1)	3.00	5.82	3-2	(415)
4239.735	U	3	2.94	5.85	5-6	$b^3G-w^5G^\circ$
4290.382	J	(2)	2.98	5.85	4-5	(416)
4299.65	W	(1)	3.00	5.87	3-4	
*4229.516	J	(1gn)	2.94	5.85	5-5	
4259.34	P	⊙?	2.98	5.87	4-4	
4280.63	P	⊙	3.00	5.89	3-3	
4199.37	P	⊙	2.94	5.87	5-4	
4255.499	V	(1)	3.00	5.90	3-2	
4223.73	P	⊙	2.94	5.86	5-4	$b^3G-z^1G^\circ$
4284.415	U	(1)	2.98	5.86	4-4	(417)
4196.533	V	(1)	2.94	5.88	5-5	$b^3G-v^5F^\circ$
4203.30	U	(1)	3.00	5.94	3-3	(418)
4140.24	P	⊙?	2.94	5.92	5-4	
4164.80	U	(1)	2.98	5.94	4-3	
4237.67	P	⊙	3.00	5.92	3-4	
4156.670	V	(1)	2.94	5.91	5-5	$b^3G-x^3G^\circ$
4219.41	P	⊙	2.98	5.90	4-4	(419)
*4254.938	V	(1)	3.00	5.91	3-3	
4160.561	V	(1)	2.94	5.90	5-4	
*4215.430	J	2	2.98	5.91	4-5	
4258.956	J	(1)	3.00	5.90	3-4	
4089.225	J	(1)	2.94	5.95	5-5	$b^3G-w^3G^\circ$
*4123.748	J	(1)	2.98	5.97	4-4	(422)
4141.862	V	(1)	3.00	5.98	3-3	
4067.49	P	⊙	2.94	5.97	5-4	
4104.46	P	⊙	2.98	5.98	4-3	
4146.071	V	(2)	2.98	5.95	4-5	
4161.488	V	(1)	3.00	5.97	3-4	
4064.07	P	⊙	2.94	5.97	5-5	$b^3G-z^1H^\circ$
4120.211	J	5	2.98	5.97	4-5	(423)
4011.89	P	⊙	2.94	6.01	5-4	$b^3G-y^1G^\circ$
4066.597	V	(1)	2.98	6.01	4-4	(424)
4045.139	V	(1)	3.00	6.06	3-2	b^3G-2° (425)
*3947.533	J	5	2.94	6.06	5-4	$b^3G-w^3F^\circ$
3979.12	P	⊙	2.98	6.08	4-3	(426)
3983.83	P	⊙	3.00	6.10	3-2	
4000.466	J	2	2.98	6.06	4-4	
*4014.28	W	(1)	3.00	6.08	3-3	
4035.98	P	⊙	3.00	6.06	3-4	
3996.28	P	⊙	2.98	6.07	4-3	$b^3G-v^3D^\circ$
*4014.28	W	(1)	3.00	6.08	3-2	(427)
4031.73	P	⊙	3.00	6.07	3-3	
3981.62	P	⊙?	2.98	6.08	4-3	b^3G-3°
4016.81	P		3.00	6.08	3-3	(428)
3897.449	J	(2)	2.94	6.10	5-6	$b^3G-y^3H^\circ$
3922.68	P	⊙	2.98	6.12	4-5	(429)
3871.750	J	4	2.94	6.12	5-5	
3903.902	J	5	2.98	6.14	4-4	
3853.462	V	(1)	2.94	6.14	5-4	
3893.391	I	7	2.94	6.11	5-5	$b^3G-v^3G^\circ$
3919.069	J	3	2.98	6.13	4-4	(430)
3918.644	J	6	3.00	6.15	3-3	
3868.243	V	(1)	2.94	6.13	5-4	
3885.154	V	(1)	2.98	6.15	4-3	
3944.890	J	3	2.98	6.11	4-5	
3953.156	J	4	3.00	6.13	3-4	
*3976.865	J	(1)	3.00	6.11	3-2	$b^3G-z^1D^\circ$ (431)
3777.061	J	(1)	2.98	6.24	4-3	$b^3G-z^1F^\circ$ (432)
3726.06	P	⊙	2.94	6.25	5-4	$b^3G-x^1G^\circ$ (433)
3716.71	P	⊙	2.98	6.30	4-5	$b^3G-u^5F^\circ$
3696.81	P	⊙	3.00	6.34	3-4	(434)
3670.071	J	3	2.94	6.30	5-6	$b^3G-x^3H^\circ$
3709.535	J	(1)	2.98	6.30	4-5	(435)
3663.95	W	(1)	2.94	6.30	5-5	
3662.90	P		2.94	6.31	5-4	$b^3G-t^5D^\circ$
3669.68	P	⊙	2.98	6.34	4-3	(436)
3708.45	P	⊙	2.98	6.31	4-4	
3699.55	P	⊙	3.00	6.34	3-3	
3632.558	J	3	2.94	6.33	5-4	$b^3G-v^3F^\circ$
3669.151	J	3	2.98	6.34	4-3	(437)
3721.606	V	(1)	3.00	6.32	3-2	
*3623.440	G	1	2.94	6.34	5-5	$b^3G-u^3G^\circ$
3628.82	P	⊙	2.98	6.38	4-4	(438)
3637.05	P	⊙	3.00	6.40	3-3	
3585.193	V	(2)	2.94	6.38	5-4	
*3608.146	J	3	2.98	6.40	4-3	
*3667.999	V	1	2.98	6.34	4-5	
3658.02	P	⊙	3.00	6.38	3-4	
3663.25	W	(1)	2.98	6.35	4-4	b^3G-4°
3693.008	J	1	3.00	6.35	3-4	(439)
3590.08	W	(1)	2.94	6.37	5-5	b^3G-6°
3633.837	V	1	2.98	6.37	4-5	(440)
*3645.494	V	1	3.00	6.39	3-2	$b^3G-x^1D^\circ$ (441)
3489.670	J	4	2.94	6.47	5-6	$b^3G-w^3H^\circ$
3508.494	J	5	2.98	6.50	4-5	(442)
3516.403	G	5	3.00	6.51	3-4	
3449.06	P	⊙	2.94	6.51	5-4	
*3479.683	V	(1)	2.94	6.48	5-6	$b^3G-y^3I^\circ$ (443)

Int	E P Low	E P High	J	Multiplet (No)
5	2.94	6.58	5-4	b^3G-9° (444)
3	2.98	6.58	4-4	
(1)	3.00	6.58	3-4	
⊙	3.00	6.62	3-3	$b^3G-y^1F^\circ$ (445)
2	2.94	6.63	5-5	$b^3G-y^1H^\circ$ (446)
(1)	2.98	6.64	4-3	$b^3G-x^1F^\circ$ (447)
(1)	3.00	6.64	3-3	
⊙	2.98	6.65	4-3	b^3G-10° (448)
4	2.94	6.66	5-5	$b^3G-t^3G^\circ$ (449)
2	2.98	6.70	4-4	
(2)	3.00	6.74	3-3	
(1)	2.94	6.70	5-4	
(2 1)	2.98	6.74	4-3	
(1)	2.98	6.66	4-5	
(1)	3.00	6.70	3-4	
(1)	2.94	6.67	5-5	b^3G-12° (450)
⊙	2.98	6.67	4-5	
(1)	2.94	6.70	5-4	b^3G-13° (450a)
(1)	2.98	6.70	4-4	
⊙	3.00	6.70	3-4	
Fe	2.94	6.77	5-4	$b^3G-w^1G^\circ$ (451)
2	2.98	6.77	4-4	
(1)	3.00	6.77	3-4	
(-)	2.94	6.85	5-6	$b^3G-v^3H^\circ$ (452)
Fe	2.98	6.84	4-5	
(1)	3.00	6.84	3-4	
(2)	2.94	6.84	5-5?	
(-)	2.98	6.84	4-4	
⊙	2.94	6.85	5-5	$b^3G-x^1H^\circ$ (453)
(1)	2.98	6.89	4-3	$b^3G-w^1F^\circ$ (454)
2	3.00	6.89	3-3	
3	2.94	6.90	5-5	$b^3G-s^3G^\circ$ (455)
(2)	2.98	6.90	4-4	
(1)	3.00	6.93	3-3	
⊙?	3.00	6.90	3-4	
⊙?	2.94	6.96	5-5	$b^3G-u^3H^\circ$ (456)
(1)	2.94	6.97	5-4	
(1)	2.94	6.99	5-4	$b^3G-u^3F^\circ$ (457)
(1)	2.98	7.01	4-3	
(2)	3.00	7.02	3-2	
(-)	2.94	7.03	5-4	$b^3G-v^1G^\circ$ (458)
(-)	2.98	7.05	4-5	$b^3G-x^3I^\circ$ (459)
(1)	2.98	7.12	4-3	$b^3G-t^3F^\circ$ † (460)
(1)	3.00	7.12	3-2	
⊙	2.98	7.10	4-4	
	3.00	4.19	2-2	$c^3P-z^3P^\circ$ (461)
3	3.06	4.24	1-1	
⊙	3.00	4.24	2-1	
3	3.06	4.27	1-0	
3	3.06	4.19	1-2	
3	3.10	4.24	0-1	
⊙	3.00	4.45	2-3?	$c^3P-z^3G^\circ$ (462)
12	3.00	4.71	2-3	$c^3P-y^3D^\circ$ (463)
3	3.06	4.77	1-2	
⊙	3.10	4.81	0-1	
⊙	3.00	4.77	2-2	
⊙	3.06	4.81	1-1	
⊙	3.00	4.81	2-1	
(0)	3.00	5.25	2-3	$c^3P-x^5P^\circ$ (464)
	3.06	5.29	1-2	
⊙	3.10	5.32	0-1	
⊙	3.00	5.29	2-2	
(1)	3.06	5.32	1-1	
⊙	3.00	5.32	2-1	
(-)	3.00	5.42	2-3	$c^3P-w^5D^\circ$ (465)
2	3.00	5.45	2-2	
⊙	3.00	5.48	2-1	
⊙	3.00	5.50	2-3	$c^3P-v^5D^\circ$ (466)
	3.06	5.51	1-2	
⊙	3.10	5.53	0-1	
5	3.00	5.58	2-3	$c^3P-x^3D^\circ$ (467)
⊙	3.06	5.59	1-2	
⊙	3.10	5.62	0-1	
3	3.00	5.59	2-2	
(1)	3.06	5.62	1-1	
(1)	3.00	5.62	2-1	
⊙	3.00	5.70	2-3	$c^3P-v^5P^\circ$ (468)
⊙	3.06	5.73	1-1	
⊙	3.00	5.73	2-1	
(2)	3.00	5.75	2-1	$c^3P-z^3S^\circ$ (469)
(1)	3.06	5.75	1-1	
(2)	3.00	5.77	2-3	$c^3P-u^5D^\circ$ (471)
(1)	3.06	5.79	1-2	
(3)	3.10	5.82	0-1	
	3.00	5.79	2-2	
(4)	3.06	5.82	1-1	
(1)	3.00	5.82	2-1	
⊙	3.06	5.82	1-0	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4464.773	V	(2)	3.00	5.77	2-2	$c^3P-y^3P^\circ$ (472)
4517.530	B	(2)	3.06	5.79	1-1	
4430.197	V	(2)	3.00	5.79	2-1	
4564.832	V	(1)	3.06	5.76	1-0	
4553.48	P		3.06	5.77	1-2	
4583.72	P	⊙	3.10	5.79	0-1	
4393.03	P	⊙	3.00	5.81	2-3	$c^3P-x^3F^\circ$ (473)
4372.994	V	(1)	3.00	5.83	2-2	
4384.682	V	(1)	3.00	5.82	2-2	$c^3P-w^3D^\circ$ (474)
4330.81	P	⊙	3.00	5.85	2-2	c^3P-1° (475)
4414.23	P	⊙	3.06	5.85	1-2	
4305.455	B	3	3.00	5.87	2-1	$c^3P-y^3S^\circ$ (476)
4387.897	J	3	3.06	5.87	1-1	
4450.320	J	(3)	3.10	5.87	0-1	
*4202.755	V	(1)	3.00	5.94	2-3	$c^3P-v^5F^\circ$ (476a)
4260.135	V	(1)	3.06	5.96	1-2	
4298.21	P	⊙	3.10	5.97	0-1	
4182.384	J	4	3.00	5.96	2-2	
4239.95	P	⊙	3.06	5.97	1-1	
4162.93	P	⊙	3.00	5.97	2-1	
*4254.938	V	(1)	3.00	5.90	2-2	$c^3P-w^5G^\circ$ (477)
4335.46	P	⊙	3.06	5.90	1-2	
4230.584	U	(1)	3.00	5.92	2-3	$c^3P-v^5P^\circ$ (478)
4273.87	W	(1)	3.06	5.95	1-2	
4309.46	P	⊙	3.10	5.96	0-1	
4195.615	J	(3)	3.00	5.95	2-2	
4250.90	P	⊙	3.06	5.96	1-1	
4141.352	U	(1)	3.00	5.98	2-3	$c^3P-w^3G^\circ$ (480)
4170.906	B	5	3.00	5.96	2-2	$c^3P-x^3P^\circ$ (482)
4210.39	P	⊙	3.06	5.99	1-1	
*4134.433	V	(1)	3.00	5.99	2-1	
4220.347	J	4	3.06	5.98	1-0	
4248.228	J	4	3.06	5.96	1-2	
4267.830	B	5	3.10	5.99	0-1	
m4044.64	P	Fe	3.00	6.06	2-2	c^3P-2° (484)
4117.32	U	(1)	3.06	6.06	1-2	
4013.798	V	(1)	3.00	6.08	2-3	$c^3P-w^3F^\circ$ (485)
4053.82	W	(1)	3.06	6.10	1-2	
3983.35	U	(1)	3.00	6.10	2-2	
4031.243	V	(2)	3.00	6.07	2-3	$c^3P-v^3D^\circ$ (486)
4085.38	P		3.06	6.08	1-2	
*4130.035	U	(1)	3.10	6.09	0-1	
4013.822	J	2	3.00	6.08	2-2	
4076.232	J	(1)	3.06	6.09	1-1	
*4004.976	J	(1)	3.00	6.09	2-1	
3976.392	V	(1)	3.00	6.11	2-2	$c^3P-z^1D^\circ$ (487)
4046.629	V	(1)	3.06	6.11	1-2	
3867.219	B	7	3.00	6.20	2-2	$c^3P-w^3P^\circ$ (488)
3955.956	J	2	3.06	6.18	1-1	
3888.825	V	3	3.00	6.18	2-1	
3970.391	J	4	3.06	6.17	1-0	
*3933.606	J	(2)	3.06	6.20	1-2	
4006.631	J	2	3.10	6.18	0-1	
3808.286	J	(1)	3.00	6.24	2-3	$c^3P-z^1F^\circ$ (489)
3699.147	J	1	3.00	6.34	2-3	$c^3P-t^5D^\circ$ (490)
3722.23	P	⊙	3.06	6.37	1-2	
3662.73	P	⊙	3.00	6.37	2-2	
3693.79	P	⊙	3.06	6.40	1-1	
3635.19	W	2	3.00	6.40	2-1	
*3679.53	W	(1)	3.06	6.41	1-0	
3698.611	J	2	3.00	6.34	2-3	$c^3P-v^3F^\circ$ (491)
3782.608	J	(1)	3.06	6.32	1-2	
3721.189	V	(1)	3.00	6.32	2-2	
3836.660	V	1	3.00	6.40	2-3	$c^3P-u^3G^\circ$ (493)
3652.26	P	⊙	3.00	6.38	2-2	$c^3P-y^1D^\circ$ (494)
3711.411	J	2	3.06	6.38	1-2	
*3645.090	V	2	3.00	6.39	2-2	$c^3P-x^1D^\circ$ (495)
3704.010	V	(1)	3.06	6.39	1-2	
3617.788	B	12	3.00	6.42	2-3	$c^3P-u^3D^\circ$ (496)
3632.042	J	10	3.06	6.46	1-2	
3645.822	J	6	3.10	6.48	0-1	
3575.374	J	4	3.00	6.46	2-2	
3603.828	J	1	3.06	6.48	1-1	
3548.037	U	(2)	3.00	6.48	2-1	
m3586.10	P	Fe	3.00	6.45	2-3	$c^3P-t^3D^\circ$ (497)
3581.916	U	(1)	3.06	6.50	1-2	
*3690.450	V	(1)	3.10	6.44	0-1?	
m3526.69	P	Fe	3.00	6.50	2-2	
m3647.43	P	Fe	3.06	6.44	1-1?	
3590.29	P	⊙?	3.00	6.44	2-1?	
3505.065	V	2	3.00	6.53	2-1	c^3P-8° (498)
3559.506	J	2	3.06	6.53	1-1	
3600.48	P	⊙?	3.10	6.53	0-1	
m3497.89	P	Fe	3.00	6.53	2-2	$c^3P-v^3P^\circ$ (499)
*3442.979	V	(1)	3.06	6.64	1-1	
3392.018	V	2	3.00	6.64	2-1	
3552.112	V	1	3.06	6.53	1-2	
*3507.39 §	W	(1)	3.06	6.58	1-2	$c^3P-s^3D^\circ$ (500)
3459.911	G	4	3.00	6.57	2-1	$c^3P-z^1P^\circ$ (501)
3512.95	W	(1)	3.06	6.57	1-1	

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3426.09	P	⊙	3.10	6.70	0-1	$c^3P-t^5P^\circ$ (502)
3388.966	V	(1w)	3.06	6.70	1-1	
3339.588	V	(1w)	3.00	6.70	2-1	
3397.221	V	(1)	3.00	6.64	2-3	$c^3P-x^1F^\circ$ (503)
*3181.922	U	(2)	3.00	6.88	2-2	$c^3P-w^1D^\circ$ (505)
3001.66	P	(1)	3.00	7.12	2-3	$c^3P-t^3F^\circ$ (506)
3035.25	P	⊙	3.06	7.12	1-2	
8931.78	P	⊙	3.03	4.42	4-4	$a^1G-z^3G^\circ$ (507)
8689.71	P	⊙	3.03	4.45	4-3	
8254.34	P	⊙	3.03	4.53	4-4	$a^1G-y^3F^\circ$ (508)
7941.84	P	⊙	3.03	4.59	4-3	
7350.55	P	⊙	3.03	4.71	4-3	$a^1G-y^3D^\circ$ (509)
5038.81	P	⊙?	3.03	5.48	4-4	$a^1G-v^5D^\circ$ (510)
4842.19	P	⊙?	3.03	5.58	4-3	$a^1G-x^3D^\circ$ (511)
4793.96	P	(1)	3.03	5.61	4-4	$a^1G-y^3G^\circ$ (512)
4636.66	P	⊙	3.03	5.70	4-5	$a^1G-z^3I^\circ$ (513)
4514.189	J	(2)	3.03	5.77	4-4	$a^1G-u^5D^\circ$ (514)
*4509.306	U	(1)	3.03	5.77	4-3	
4480.142	J	(3)	3.03	5.79	4-4	$a^1G-x^3F^\circ$ (515)
4439.643	V	(1)	3.03	5.81	4-3	
4456.331	J	(1)	3.03	5.80	4-5	$a^1G-z^3H^\circ$ (516)
4436.931	V	(2)	3.03	5.82	4-4	
4343.699	J	(2)	3.03	5.87	4-4	$a^1G-w^5G^\circ$ (517)
4369.774	B	7	3.03	5.86	4-4	$a^1G-z^1G^\circ$ (518)
4298.040	B	(2)	3.03	5.91	4-5	$a^1G-x^3G^\circ$ (520)
4302.191	J	(2)	3.03	5.90	4-4	
4225.956	J	3	3.03	5.95	4-5	$a^1G-w^3G^\circ$ (521)
*4202.755	V	(1)	3.03	5.97	4-4	
4199.098	J	20	3.03	5.97	4-5	$a^1G-z^1H^\circ$ (522)
4143.418	J	15	3.03	6.01	4-4	$a^1G-y^1G^\circ$ (523)
4074.794	J	5	3.03	6.06	4-4	$a^1G-w^3F^\circ$ (524)
4052.664	V	(1)	3.03	6.08	4-3	
4070.45	P	⊙?	3.03	6.07	4-3	$a^1G-v^3D^\circ$ (525)
3994.117	J	2	3.03	6.12	4-5	$a^1G-y^3H^\circ$ (526)
3974.65	P	⊙	3.03	6.14	4-4	
4017.156	J	6	3.03	6.11	4-5	$a^1G-v^3G^\circ$ (527)
3990.379	J	2	3.03	6.13	4-4	
3955.22	P	⊙	3.03	6.15	4-3	
3843.259	B	8	3.03	6.24	4-3	$a^1G-z^1F^\circ$ (528)
3839.259	B	7	3.03	6.25	4-4	$a^1G-x^1G^\circ$ (529)
3729.34	P	⊙	3.03	6.34	4-4	$a^1G-u^5F^\circ$ (530)
3773.364	V	(1)	3.03	6.30	4-5	$a^1G-x^3H^\circ$ (531)
3732.13	P	⊙?	3.03	6.34	4-3	$a^1G-t^5D^\circ$ (532)
*3740.061	V	(1)	3.03	6.33	4-4	$a^1G-v^3F^\circ$ (532a)
3730.386	G	3	3.03	6.34	4-5	$a^1G-u^3G^\circ$ (533)
3689.897	V	(1w)	3.03	6.38	4-4	
3725.498	J	(1)	3.03	6.35	4-4	a^1G-4° (534)
*3695.054	B	8	3.03	6.37	4-5	a^1G-6° (534a)
3617.09	W	(1)	3.03	6.45	4-3	$a^1G-t^3D^\circ$ (535)
3545.832	U	(1)	3.03	6.51	4-4	$a^1G-w^3H^\circ$ (536)
3529.531	U	(1)	3.03	6.53	4-5	$a^1G-y^3I^\circ$ (537)
3522.73	P	⊙	3.03	6.54	4-3	$a^1G-s^3D^\circ$ (538)
3437.046	G	3	3.03	6.62	4-3	$a^1G-y^1F^\circ$ (539)
3429.82	P	⊙	3.03	6.63	4-5	$a^1G-y^1H^\circ$ (540)
3425.009	G	4	3.03	6.64	4-3	$a^1G-x^1F^\circ$ (541)
3410.031	U	(1)	3.03	6.65	4-3	a^1G-10° (542)
3329.532	V	(2)	3.03	6.74	4-3	$a^1G-t^3G^\circ$ (542a)
3395.87	P	⊙	3.03	6.67	4-5	a^1G-12° (543)
m3306.35	P	Fe	3.03	6.77	4-4	$a^1G-w^1G^\circ$ (544)
3240.013	U	(1)	3.03	6.84	4-5	$a^1G-v^3H^\circ$ (545)
3238.32	P	⊙	3.03	6.84	4-4	
3229.994	U	(3)	3.03	6.85	4-5	$a^1G-x^1H^\circ$ (546)
3202.562	V	2	3.03	6.89	4-3	$a^1G-w^1F^\circ$ (547)
3190.651	U	(2)	3.03	6.90	4-5	$a^1G-s^3G^\circ$ (548)
3190.825	V	(2)	3.03	6.90	4-4	
*3171.353	V	5	3.03	6.93	4-3	
3073.244	S	(-)	3.03	7.05	4-5	$a^1G-x^3I^\circ$ (549)

ratory		E P		J	Multiplet
Ref	Int	Low	High		(No)
tinued					
P	⊙?	3.20	5.00	4-3	$z^5D^\circ-a^1F$
					(550)
P	⊙	3.20	5.05	4-3	$z^5D^\circ-X$
P	⊙	3.23	5.08	3-2	(551)
P	⊙	3.23	5.05	3-3	
P	⊙	3.25	5.08	2-2	
P	⊙	3.25	5.05	2-3	
P	⊙?	3.27	5.08	1-2	
W	(3)	3.20	5.29	4-5	$z^5D^\circ-e^7D$
P		3.23	5.33	3-4	(552)
W	(2n)	3.25	5.36	2-3	
P	⊙	3.27	5.39	1-2	
P	⊙	3.28	5.40	0-1	
V	(2)	3.20	5.33	4-4	
V	(2)	3.23	5.36	3-3	
V	(1)	3.25	5.39	2-2	
P	⊙	3.23	5.39	3-2	
I	30	3.20	5.52	4-4	$z^5D^\circ-e^5D$
I	18	3.23	5.56	3-3	(553)
J	8	3.25	5.60	2-2	
V	(2)	3.27	5.62	1-1	
J	5	3.20	5.56	4-3	
J	7	3.23	5.60	3-2	
J	6	3.25	5.62	2-1	
J	5n	3.27	5.63	1-0	
I	10	3.23	5.52	3-4	
I	12	3.25	5.56	2-3	
I	10	3.27	5.60	1-2	
K	(5)	3.28	5.62	0-1	
I	12	3.20	5.80	4-5	$z^5D^\circ-e^5F$
B	8	3.23	5.85	3-4	(554)
J	6	3.25	5.90	2-3	
J	3	3.27	5.93	1-2	
J	2n	3.28	5.95	0-1	
J	5	3.20	5.85	4-4	
I	3	3.23	5.90	3-3	
J	3n	3.25	5.93	2-2	
J	(2n)	3.27	5.95	1-1	
V	(1)	3.20	5.90	4-3	
V	(2)	3.23	5.93	3-2	
V	(1)	3.25	5.95	2-1	
J	(2)	3.20	5.92	4-4	$z^5D^\circ-e^3F$
P		3.23	5.99	3-3	(555)
P	⊙	3.25	6.04	2-2	
J	(2)	3.23	5.92	3-4	
J	(2)	3.25	5.99	2-3	
P	⊙	3.20	6.28	4-5	$z^5D^\circ-e^7F$
P	⊙	3.23	6.32	3-4	(556)
V	3n	3.25	6.31	2-3	
U	(1)	3.27	6.34	1-2	
P	⊙	3.23	6.31	3-3	
J	(1)	3.25	6.34	2-2	
P	⊙	3.27	6.32	1-1	
P	⊙	3.20	6.31	4-3	
P	⊙	3.25	6.32	2-1	
P	⊙	3.20	6.22	4-5	$z^5D^\circ-f^7D$
P	⊙	3.23	6.27	3-4	(557)
J	(1w)	3.25	6.28	2-3	
V	(1w)	3.28	6.30	0-1	
J	(2)	3.20	6.27	4-4	
V	5n	3.23	6.28	3-3	
W	(1)	3.25	6.30	2-2	
U	(1)	3.27	6.30	1-1	
J	(1)	3.20	6.28	4-3	
V	(1)	3.23	6.30	3-2	
P	⊙	3.25	6.30	2-1	
J	8n	3.20	6.22	4-4	$z^5D^\circ-f^5D$
J	4n	3.23	6.24	3-3	(558)
K	3	3.25	6.26	2-2	
J	(1)	3.27	6.28	1-1	
K	4n	3.20	6.24	4-3	
J	5n	3.23	6.26	3-2	
K	4n	3.25	6.28	2-1	
J	2n	3.27	6.29	1-0	
U	(1)	3.23	6.22	3-4	
P	⊙	3.25	6.24	2-3	
J	3n	3.27	6.26	1-2	
J	(1)	3.28	6.28	0-1	
J	8n	3.20	6.23	4-4	$z^5D^\circ-e^7P$
J	4	3.23	6.25	3-3	(559)
P	(1)	3.25	6.28	2-2	
P	⊙	3.20	6.25	4-3	
P	⊙	3.23	6.28	3-2	
P	⊙	3.23	6.23	3-4	
V	(1)	3.25	6.25	2-3	
J	(6)	3.20	6.26	4-5	$z^5D^\circ-e^5G$
J	6n	3.23	6.29	3-4	(560)
J	(4)	3.25	6.32	2-3	
V	(2)	3.27	6.34	1-2	
P	Fe	3.20	6.29	4-4	
P	⊙	3.23	6.32	3-3	
P		3.25	6.34	2-3	
P	⊙	3.20	6.32	4-3	
P	⊙	3.23	6.34	3-2	
J	4n	3.20	6.32	4-5	$z^5D^\circ-e^7G$
J	4n	3.23	6.34	3-4	(561)
W	(1)	3.25	6.35	2-3	
P	⊙	3.27	6.36	1-2	
P	⊙	3.28	6.37	0-1	
P	⊙	3.23	6.35	3-3	
P	⊙	3.27	6.37	1-1	
J	10n	3.20	6.31	4-5	$z^5D^\circ-f^5F$
J	6n	3.23	6.35	3-4	(562)
J	4n	3.25	6.37	2-3	
J	6n	3.27	6.38	1-2	
V	(1n)	3.28	6.39	0-1	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe I continued						
3911.00	P	(1)	3.20	6.35	4-4	$z^5D^\circ-f^5F$
3926.001	V	(1)	3.23	6.37	3-3	(562)
3941.283	J	(3)	3.25	6.38	2-2	cont
3955.352	J	(3)	3.27	6.39	1-1	
3889.33	P		3.20	6.37	4-3	
3910.52	P	⊙	3.23	6.38	3-2	
*3933.606	J	(2)	3.25	6.39	2-1	
3997.48	P	⊙	3.23	6.31	3-2	$z^5D^\circ-e^5S$
*4029.640	V	3n	3.25	6.31	2-2	(563)
4052.466	V	(1)	3.27	6.31	1-2	
3936.79	P	⊙	3.20	6.33	4-3	$z^5D^\circ-e^3D$
3905.18	P	⊙	3.23	6.39	3-2	(564)
3889.92	P	(1)	3.25	6.42	2-1	
3974.397	J	(1)	3.23	6.33	3-3	
m3935.86	P	Fe	3.25	6.39	2-2	
3911.18	P		3.27	6.42	1-1	
4006.16	P	⊙	3.25	6.33	2-3	
3957.62	W	(1)	3.27	6.39	1-2	
3922.09	P	⊙	3.28	6.42	0-1	
3928.085	J	(1)	3.20	6.34	4-4	$z^5D^\circ-g^5D$
3900.519	J	2	3.23	6.39	3-3	(565)
3888.42	P	(1)	3.25	6.43	2-2	
3884.66	W	(1)	3.27	6.45	1-1	
3864.30	P	⊙	3.20	6.39	4-3	
3858.48	P	⊙	3.23	6.43	3-2	
3863.70	P	⊙	3.25	6.45	2-1	
3879.19	P	⊙	3.27	6.45	1-0	
3965.511	J	(1)	3.23	6.34	3-4	
3931.122	J	(3)	3.25	6.39	2-3	
3909.664	J	(1)	3.27	6.43	1-2	
3895.44	P	(1)	3.28	6.45	0-1	
3894.49	U	(1)	3.20	6.37	4-3	$z^5D^\circ-e^7S$
3962.353	V	(2)	3.25	6.37	2-3	(566)
3854.375	U	(1)	3.20	6.40	4-3	$z^5D^\circ-e^5P$
3855.846	J	(1w)	3.23	6.43	3-2	(567)
3892.98	U	(1)	3.25	6.42	2-1	
3890.39	U	(1)	3.23	6.40	3-3	
3885.76	P	⊙	3.25	6.43	2-2	
3914.273	V	(1)	3.27	6.42	1-1	
3920.839	J	(1)	3.25	6.40	2-3	
3906.97	P	⊙	3.27	6.43	1-2	
3925.201	V	(1)	3.28	6.42	0-1	
3680.675	U	2n	3.20	6.55	4-5	$z^5D^\circ-g^5F$
3668.214	U	(1)	3.23	6.59	3-4	(568)
3636.49	P	⊙	3.25	6.65	2-3	
3598.93 ?	W	(1)	3.27	6.70	1-2	
3591.485	U	(1)	3.28	6.71	0-1	
*3636.186	V	2	3.20	6.59	4-4	
3582.34	P	⊙	3.27	6.71	1-1	
*3667.999	V	1	3.20	6.56	4-4	$z^5D^\circ-h^5D$
m3647.84	P	Fe	3.23	6.61	3-3	(569)
3618.62	P	⊙	3.25	6.66	2-2	
3615.19	W	(1)	3.27	6.68	1-1	
3616.15	P	(1)	3.20	6.61	4-3	
3592.68	W	(1)	3.23	6.66	3-2	
3597.05	W	3n	3.25	6.68	2-1	
3700.61	P	⊙	3.23	6.56	3-4	
3667.252	G	3n	3.20	6.56	4-3	$z^5D^\circ-f^5P$
3644.798	U	(1)	3.23	6.61	3-2	(570)
3624.06	P	⊙	3.25	6.66	2-1	
3671.51	W	(1)	3.25	6.61	2-2	
*3690.450	V	(1)	3.27	6.61	1-2	
3651.03	P	⊙	3.20	6.58	4-5	$z^5D^\circ-f^5G$
*3618.392	J	2	3.23	6.64	3-4	(571)
3593.33	W	(1)	3.25	6.69	2-3	
3565.83	P	⊙	3.25	6.71	2-2	
3558.08	P	⊙	3.23	6.70	3-4	$z^5D^\circ-e^5H$
3496.60	P	⊙	3.20	6.73	4-3	(572)
3590.99	W	(1)	3.20	6.63	4-5	$z^5D^\circ-e^3G$
3579.83	P	⊙	3.23	6.67	3-4	(573)
3621.19	P	⊙	3.23	6.64	3-3	$z^5D^\circ-f^3D$
3647.56	P	⊙	3.25	6.64	2-3	(574)
3583.337	J	2	3.28	6.72	0-1?	
3518.23	P	⊙	3.23	6.73	3-4	$z^5D^\circ-e^3H$
						(575)
3473.23	P	⊙	3.20	6.75	4-4	$z^5D^\circ-f^3F$
3419.157	V	(1)	3.23	6.84	3-2	(576)
3502.46	P	⊙	3.23	6.75	3-4	
3473.01	P	⊙	3.25	6.81	2-3	
3459.29	P	⊙	3.27	6.84	1-2	
3418.176	U	(2w)	3.27	6.88	1-0	$z^5D^\circ-e^3P$
3502.85	P	⊙	3.25	6.77	2-2	(577)
3459.81	P	⊙	3.27	6.84	1-1	
3143.990	G	8	3.20	7.12	4-4	$z^5D^\circ-i^5D$
3156.275	G	5n	3.23	7.14	3-3	(578)
3160.200	V	(2n)	3.25	7.16	2-2	
3132.514	V	4n	3.20	7.14	4-3	
3140.385	V	5n	3.23	7.16	3-2	
3167.907	V	(1)	3.23	7.12	3-4	
3174.22	P	⊙	3.27	7.16	1-2	
3150.301	V	(3n)	3.27	7.19	1-2	$z^5D^\circ-4$
						(578a)
10780.71	P	⊙	3.22	4.37	6-5	$b^3H-z^3G^\circ$
10616.75	P	⊙	3.25	4.42	5-4	(579)
10577.14	P	⊙	3.29	4.45	4-3	
9873.16	F	1n	3.25	4.53	5-4	$b^3H-y^3F^\circ$
						(580)
5807.22	P	⊙	3.22	5.35	6-6	$b^3H-z^5H^\circ$
6007.75	P	⊙	3.25	5.31	5-5	(581)
6065.81	P	⊙	3.29	5.32	4-4	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe I continued						
5920.520	V	(2)	3.22	5.31	6-5	$b^3H-z^5H^\circ$
5891.12	U	(1)	3.25	5.35	5-6	(581)
6109.318	V	(1)	3.29	5.31	4-5	cont
5587.36	P	⊙?	3.25	5.46	5-5	$b^3H-w^5F^\circ$
5675.08	P	⊙?	3.29	5.46	4-5	(583)
5209.90	P	⊙	3.22	5.59	6-5	$b^3H-y^3G^\circ$
5240.36	P	⊙	3.25	5.61	5-4	(584)
5279.65	P	⊙	3.29	5.62	4-3	
5277.32	P	⊙	3.25	5.59	5-5	
5317.394	V	(1)	3.29	5.61	4-4	
*5030.784§	R	5	3.22	5.68	6-7	$b^3H-z^3I^\circ$
5080.95	P	⊙	3.25	5.68	5-6	(585)
5124.60	P	⊙	3.29	5.70	4-5	
m5018.43	P	Fe+	3.22	5.68	6-6	
5052.97	P	⊙	3.25	5.70	5-5	
4975.415	U	(1)	3.29	5.77	4-4	$b^3H-u^5D^\circ$
						(586)
4867.64	P	⊙	3.25	5.79	5-4	$b^3H-x^3F^\circ$
						(587)
4788.757	J	(4)	3.22	5.80	6-6	$b^3H-z^3H^\circ$
4839.549	J	(3)	3.25	5.80	5-5	(588)
*4881.726	J	(2)	3.29	5.82	4-4	
4782.79	P	⊙	3.22	5.80	6-5	
4816.67	P	⊙	3.25	5.82	5-4	
*4845.656	V	(2)	3.25	5.80	5-6	
4903.10	P	⊙?	3.29	5.80	4-3	$b^3H-w^3D^\circ$
						(589)
4737.633	J	(1)	3.25	5.86	5-4	$b^3H-z^1G^\circ$
4800.55	P	⊙	3.29	5.86	4-4	(590)
4600.937	J	(1)	3.22	5.91	6-5	$b^3H-x^3G^\circ$
4658.29	U	(1)	3.25	5.90	5-4	(591)
4714.182	V	(1n)	3.29	5.91	4-3	
4649.828	U	(1)	3.22	5.88	6-5	$b^3H-v^5F^\circ$
						(592)
4518.45	U	(1)	3.22	5.95	6-5	$b^3H-w^3G^\circ$
4541.953	U	(1)	3.25	5.97	5-4	(593)
*4575.80	U	(1)	3.29	5.98	4-3	
4569.06	P	⊙	3.25	5.95	5-5	
4487.74	P	⊙	3.22	5.97	6-5	$b^3H-z^1H^\circ$
4537.677	J	(1n)	3.25	5.97	5-5	(594)
4595.363	J	(3)	3.29	5.97	4-5	
*4472.721	J	(2)	3.25	6.01	5-4	$b^3H-y^1G^\circ$
4528.76	P	⊙	3.29	6.01	4-4	(595)
4446.90	P	⊙	3.29	6.06	4-4	$b^3H-w^3F^\circ$
						(596)
4285.445	B	3	3.22	6.10	6-6	$b^3H-y^3H^\circ$
m4299.25	P	Fe	3.25	6.12	5-5	(597)
4327.92	W	(2)	3.29	6.14	4-4	
4330.962	V	(1)	3.25	6.10	5-6	
4280.53	U	(1)	3.22	6.11	6-5	$b^3H-v^3G^\circ$
4294.939	V	(1w)	3.25	6.13	5-4?	(598)
4304.87	P	⊙	3.29	6.15	4-3	
4325.95	P	⊙	3.35	6.11	5-5	
4346.558	J	(2)	3.29	6.13	4-4	
4167.862	V	(2)	3.29	6.25	4-4	$b^3H-x^1G^\circ$
						(599)
*4038.622	Q	(-)	3.29	6.34	4-4	$b^3H-u^5F^\circ$
*4099.08	U	(1)	3.29	6.30	4-5?	(600)
4012.16	W	(1)	3.22	6.30	6-6	$b^3H-x^3H^\circ$
4004.832	J	(1)	3.22	6.30	6-5	(601)
4041.911	S	(-)	3.29	6.34	4-3	$b^3H-t^5D^\circ$
						(602)
4006.314	J	3	3.35	6.33	5-4	$b^3H-v^3F^\circ$
*4041.288	V	(1)	3.29	6.34	4-3	(603)
3956.459	J	9	3.22	6.34	6-5	$b^3H-u^3G^\circ$
3948.779	B	10	3.25	6.38	5-4	(604)
3967.423	B	8	3.29	6.40	4-3	
3995.199	J	(1w)	3.25	6.34	5-5	
3992.395	U	(1)	3.29	6.38	4-4	
3989.60	P	⊙	3.25	6.35	5-4	b^3H-4°
						(605)
3916.733	I	6	3.22	6.37	6-5	b^3H-6°
3954.715	U	(1)	3.25	6.37	5-5	(606)
3998.46	P	⊙	3.29	6.37	4-5	
3797.517	B	12	3.22	6.47	6-6	$b^3H-w^3H^\circ$
3808.697	G	10	3.25	6.50	5-5	(607)
3824.306	V	2	3.29	6.51	4-4	
3771.50	P	⊙	3.22	6.50	6-5	
3784.27	P	⊙	3.25	6.51	5-4	
3765.542	B	20	3.22	6.50	6-7	$b^3H-y^3I^\circ$
3681.181	I	10	3.25	6.48	5-6	(608)
3805.345	B	12	3.29	6.53	4-5	
3785.706	J	(1)	3.22	6.48	6-6	
3765.70	W	(1)	3.35	6.53	5-5	
3704.336	V	(1)	3.22	6.55	6-6	$b^3H-z^1I^\circ$
3738.308	B	10	3.25	6.55	5-6	(609)
3705.70	P	⊙	3.25	6.58	5-4	b^3H-9°
						(610)
3586.114	B	10	3.22	6.66	6-5	$b^3H-t^3G^\circ$
*3584.960	J	4	3.25	6.70	5-4	(611)
3573.896	G	4	3.29	6.74	4-3	
3620.87	P	⊙	3.29	6.70	4-4	
3582.201	J	5	3.22	6.67	6-5	b^3H-12°
3613.95	P	⊙	3.25	6.67	5-5	(612)
3578.760	B	2	3.25	6.70	5-4	b^3H-13°
3612.51	P	⊙	3.29	6.70	4-4	(613a)

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ory ef Int	E P Low	 High	J	Multiplet (No)
⊙	3.25	6.77	5-4	$b^3H-w^1G^o$ (613)
(2)	3.29	6.77	4-4	
5	3.22	6.85	6-6	$b^3H-v^3H^o$ (614)
(2)	3.25	6.84	5-5	
(2)	3.29	6.84	4-4	
(2)	3.22	6.84	6-5	
(1)	3.25	6.84	5-4	
⊙	3.25	6.85	5-6	
⊙	3.22	6.85	6-5	$b^3H-x^1H^o$ (615)
⊙	3.25	6.85	5-5	
⊙	3.29	6.89	4-3	$b^3H-w^1F^o$ (616)
5	3.22	6.95	6-6	$b^3H-u^3H^o$ (617)
5	3.25	6.96	5-5	
6	3.29	6.97	4-4	
(1)	3.22	6.96	6-5	
(2)	3.25	6.97	5-4	
(1)	3.25	6.95	5-6	
(2)	3.29	6.96	4-5	
⊙	3.25	6.99	5-4	$b^3H-u^3F^o$ (618)
⊙	3.29	7.01	4-3	
(3)	3.29	6.99	4-4	
(1)	3.29	7.03	4-4	$b^3H-v^1G^o$ (619)
8	3.22	7.04	6-7	$b^3H-x^3I^o$ (620)
10	3.25	7.05	5-6	
8	3.29	7.05	4-5	

Int	Low	High	J	Multiplet (No)
⊙?	3.24	4.45	3-3	$a^3D-z^3G^o$ (621)
1	3.24	4.53	3-4	$a^3D-y^3F^o$ (622)
	3.29	4.59	2-3	
⊙	3.26	4.63	1-2	
⊙	3.24	4.59	3-3	
(1)	3.29	4.63	2-2	
25	3.24	4.71	3-3	$a^3D-v^3D^o$ (623)
20	3.29	4.77	2-2	
10	3.26	4.81	1-1	
⊙	3.24	4.77	3-2	
10nd?	3.29	4.81	2-1	
⊙	3.29	4.71	2-3	
⊙	3.26	4.77	1-2	
(1)	3.24	5.25	3-3	$a^3D-x^5P^o$ (624)
⊙	3.29	5.29	2-2	
⊙	3.26	5.32	1-1	
⊙	3.24	5.29	3-2	
⊙	3.29	5.25	2-3	
⊙	3.24	5.37	3-4	$a^3D-w^5D^o$ (625)
⊙	3.26	5.45	1-2	
⊙	3.24	5.42	3-3	
⊙	3.24	5.45	3-2	
(1)	3.24	5.43	3-4	$a^3D-w^5F^o$ (626)
(2)	3.26	5.48	1-1	
(2)	3.24	5.47	3-2	
⊙	3.24	5.50	3-3	$a^3D-v^5D^o$ (627)
⊙	3.29	5.51	2-2	
⊙	3.24	5.58	3-3	$a^3D-x^3D^o$ (628)
⊙	3.29	5.59	2-2	
(1)	3.26	5.62	1-1	
⊙	3.24	5.59	3-2	
⊙	3.24	5.70	3-3	$a^3D-w^5P^o$ (629)
(1)	3.26	5.72	1-2	
⊙	3.24	5.77	3-3	$a^3D-u^5D^o$ (630)
(1)	3.26	5.82	1-1	
⊙	3.24	5.79	3-2	
⊙	3.24	5.77	3-2	$a^3D-y^3P^o$ (631)
⊙	3.29	5.79	2-1	
⊙	3.29	5.77	2-2	
⊙	3.26	5.77	1-2	
⊙	3.24	5.81	3-3	$a^3D-x^3F^o$ (632)
⊙	3.29	5.83	2-2	
(1)	3.24	5.80	3-3	$a^3D-w^3D^o$ (633)
⊙	3.29	5.83	2-2	
(1)	3.26	5.84	1-1	
⊙	3.24	5.83	3-2	
⊙	3.29	5.84	2-1	
⊙	3.26	5.82	1-2	
⊙	3.24	5.85	3-2	a^3D-1^o (634)
(-)	3.29	5.85	2-2	
(2)	3.26	5.85	1-2	
(1)	3.29	5.87	2-1	$a^3D-y^3S^o$ (635)
⊙	3.26	5.87	1-1	
⊙	3.24	5.91	3-3	$a^3D-x^3G^o$ (636)
⊙	3.24	5.90	3-2	$a^3D-w^5G^o$ (637)
(1)	3.24	5.95	3-2	$a^3D-v^5P^o$ (638)
(1)	3.29	5.96	2-1	
(2,g?)	3.26	5.95	1-2	
⊙	3.24	5.97	3-4	$a^3D-w^3G^o$ (639)
⊙	3.24	5.98	3-3	
⊙	3.26	5.96	1-2	$a^3D-v^5F^o$ (640)
⊙	3.26	5.97	1-1	
(1)	3.24	5.96	3-3	$a^3D-x^3P^o$ (641)
(2)	3.29	5.99	2-1	
(1n,g?)	3.26	5.98	1-0	

Fe I continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
4611.05	P	⊙	3.29	5.96	2-2	$a^3D-x^3P^o$ (641) cont
4521.85	P	⊙	3.26	5.99	1-1	
4565.324	V	(2n)	3.26	5.96	1-2	
4414.47	P	(1)	3.26	6.06	1-2	a^3D-2^o (643)
4368.66	P	⊙	3.24	6.06	3-4	$a^3D-w^3F^o$ (644)
4419.78	P	⊙	3.29	6.08	2-3	
4341.57	P	⊙	3.26	6.10	1-2	
4343.22	P	⊙	3.24	6.08	3-3	
4343.257	J	(2)	3.24	6.08	3-2	$a^3D-v^3D^o$ (645)
4409.123	J	(21)	3.29	6.09	2-1	
4440.972	V	(2)	3.29	6.07	2-3	
4377.796	V	(1)	3.26	6.08	1-2	
4422.882	V	(1n)	3.29	6.08	2-3	a^3D-3^o (646)
4304.15	P	⊙	3.29	6.15	2-3	$a^3D-v^3G^o$ (647)
4231.525	V	(1gn)	3.24	6.15	3-3	
4299.49	P	⊙	3.24	6.11	3-2	$a^3D-z^1D^o$ (648)
4374.495	V	(1)	3.29	6.11	2-2	
4172.126	J	5	3.24	6.20	3-2	$a^3D-w^3P^o$ (649)
4268.744	J	2	3.29	6.18	2-1	
4246.02	P	⊙	3.26	6.17	1-0	
4242.730	J	(2)	3.29	6.20	2-2	
*4229.516	J	(1gn)	3.26	6.18	1-1	
4103.62	P	⊙	3.24	6.24	3-3	$a^3D-z^1F^o$ (650)
4171.904	V	(2)	3.29	6.24	2-3	
*4099.08	U	(1)	3.24	6.25	3-4	$a^3D-x^1G^o$ (651)
*3932.629	J	4	3.26	6.40	1-2	$a^3D-u^5F^o$ (652)
*3966.532	V	(1n)	3.29	6.40	2-2	
3914.42	P	⊙	3.26	6.41	1-1	
3948.00	P	⊙	3.29	6.41	2-1	
*4022.744	U	(1)	3.24	6.31	3-4	$a^3D-t^5D^o$ (654)
*4041.288	V	(1)	3.29	6.34	2-3	
3963.43	P	⊙	3.26	6.37	1-2	
3986.176	J	5	3.24	6.33	3-4	$a^3D-v^3F^o$ (655)
4040.650	J	4	3.29	6.34	2-3	
4031.968	V	4	3.26	6.32	1-2	
3976.564	V	(1)	3.24	6.34	3-3	
4067.60	P	⊙	3.29	6.32	2-2	
*4002.665	V	(1)	3.24	6.32	3-2	
3969.628	J	(1)	3.24	6.35	3-4	a^3D-4^o (657)
3965.446	V	(1)	3.24	6.35	3-	a^3D-5^o (658)
3929.208	J	(1)	3.24	6.38	3-4	$a^3D-u^3G^o$ (659)
3966.824	J	(1)	3.29	6.40	2-3	
3925.55	P	⊙	3.24	6.38	3-3	$a^3D-u^5P^o$ (660)
3889.38	P	⊙	3.26	6.43	1-1	
3914.50	P	⊙	3.26	6.41	1-2	
3923.03	P	⊙	3.24	6.38	3-2	$a^3D-y^1D^o$ (661)
3985.393	J	3	3.29	6.38	2-2	
3951.164	I	9	3.26	6.38	1-2	
3914.73	W	(1)	3.24	6.39	3-2	$a^3D-x^1D^o$ (662)
*3976.865	J	(1)	3.29	6.39	2-2	
3883.282	J	(4)	3.24	6.42	3-3	$a^3D-u^3D^o$ (663)
3894.005	J	(2)	3.29	6.46	2-2	
*3829.458	V	1	3.26	6.48	1-1	
3834.46	P	⊙	3.24	6.46	3-2	
3861.60	U	(1)	3.29	6.48	2-1	
*3861.341	J	2	3.26	6.46	1-2	
3846.803	B	8	3.24	6.45	3-3	$a^3D-t^3D^o$ (664)
3836.332	I	4	3.29	6.50	2-2	
3878.726	V	(2)	3.26	6.44	1-1?	
3778.509	J	4	3.24	6.50	3-2	
3911.699	U	(1)	3.29	6.44	2-1?	
3906.748	J	2	3.29	6.45	2-3	
3810.759	J	2	3.29	6.53	2-1	a^3D-8^o (665)
3779.444	V	3*	3.26	6.53	1-1	
3802.283	J	(1)	3.29	6.53	2-2	$a^3D-v^3P^o$ (666)
3740.247	J	3	3.24	6.54	3-3	$a^3D-s^3D^o$ (667)
3751.059	J	(1)	3.29	6.58	2-2	
3796.90	U	(1)	3.29	6.54	2-3	
3757.459	J	1	3.29	6.57	2-1	$a^3D-z^1P^o$ (668)
3727.03	P	⊙	3.26	6.57	1-1	
3688.476	V	(1w)	3.24	6.58	3-4	a^3D-9^o (669)
3643.80	P	(1)	3.24	6.62	3-3	$a^3D-y^1F^o$ (670)
3697.510	V	(1w)	3.29	6.62	2-3	
*3683.616	V	(1)	3.29	6.64	2-3	$a^3D-x^1F^o$ (671)
3613.45	P	⊙	3.24	6.65	3-3	a^3D-10^o (672)
3600.89	P	⊙	3.29	6.65	2-2	
3568.828	V	(2)	3.24	6.70	3-4	$a^3D-t^3G^o$ (673)
3573.403	V	2	3.29	6.74	2-3	
3523.12	P	⊙	3.24	6.74	3-3	
3598.71	W	1	3.24	6.67	3-3	a^3D-11^o (674)
*3651.10	W	(1)	3.29	6.67	2-3	
3560.705	V	5	3.24	6.70	3-4	a^3D-13^o (675)
*3431.815	J	3	3.29	6.88	2-2	$a^3D-w^1D^o$ (676)
3406.443	J	3	3.26	6.88	1-2	
*3381.340	V	(2)	3.24	6.89	3-3	$a^3D-w^1P^o$ (677)

Fe I continued

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
3368.25	P	⊙	3.24	6.90	3-4	$a^3D-s^3G^o$ (678)
3391.84	P	⊙	3.29	6.93	2-3	
3310.496	V	(3)	3.24	6.97	3-4	$a^3D-u^3H^o$ (679)
3292.022	G	8	3.24	6.99	3-4	$a^3D-u^3F^o$ (680)
3314.742	C	7	3.29	7.01	2-3	
3282.891	G	(2)	3.26	7.02	1-2	
3271.498	V	(2)	3.24	7.01	3-3	
3306.495	V	(1)	3.29	7.02	2-2	
3263.45	P	⊙	3.24	7.02	3-2	
3253.610	V	4	3.24	7.03	3-4	$a^3D-v^1G^o$ (681)
3191.41	P	⊙	3.24	7.10	3-4	$a^3D-t^3F^o$ (682)
3223.08	P	⊙	3.29	7.12	2-3	
3193.74	P	⊙	3.26	7.12	1-2	
3216.06	P	⊙	3.29	7.12	2-2	

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
7478.87	P	⊙	3.35	5.00	4-3	$z^5F^o-a^1F$ (683)
7340.78	P	⊙	3.40	5.08	2-2	z^5F^o-X (684)
7398.78	P	⊙	3.42	5.08	1-2	
6271.289	U	(1)	3.32	5.29	5-5	$z^5F^o-e^7D$ (685)
6249.65	P	⊙	3.35	5.33	4-4	
6232.735	Q	(-)	3.38	5.36	3-3	
6219.54	P	⊙	3.40	5.39	2-2	
6137.51	P	⊙	3.32	5.33	5-4	
6145.42	P	⊙	3.35	5.36	4-3	
6388.41	P	⊙	3.35	5.29	4-5	
6339.96	P	⊙	3.38	5.33	3-4	
5615.652	B	50	3.32	5.52	5-4	$z^5F^o-e^5D$ (686)
5586.763	B	40	3.35	5.56	4-3	
5572.849	B	30	3.38	5.60	3-2	
5569.625	B	20	3.40	5.62	2-1	
5576.097	J	10	3.42	5.63	1-0	
5709.378	K	10	3.35	5.52	4-4	
5658.826	B	10	3.38	5.56	3-3	
5624.549	B	10	3.40	5.60	2-2	
5602.955	J	10	3.42	5.62	1-1	
5784.69	V	(1)	3.38	5.52	3-4	
5712.150	V	(2)	3.40	5.56	2-3	
5658.542	V	(1)	3.42	5.60	1-2	
4966.096	B	8	3.32	5.80	5-5	$z^5F^o-e^5F$ (687)
4946.394	J	4	3.35	5.85	4-4	
4910.027	J	(2)	3.38	5.90	3-3	
4882.151	J	(2)	3.40	5.93	2-2	
4863.653	J	(2)	3.42	5.95	1-1	
4875.89	W	(1)	3.32	5.85	5-4	
4855.683	J	(3)	3.35	5.90	4-3	
4843.155	J	(3)	3.38	5.93	3-2	
4838.519	J	(2n)	3.40	5.95	2-1	
5039.266	V	(2)	3.35	5.80	4-5	
5002.800	J	(6)	3.38	5.85	3-4	
4950.112	J	(2)	3.40	5.90	2-3	
4907.743	K	(1)	3.42	5.93	1-2	
4741.081	J	(1)	3.32	5.92	5-4	$z^5F^o-e^3F$ (688)
4679.229	V	(1)	3.35	5.99	4-3	
4642.58	P	⊙	3.38	6.04	3-2	
4807.725	K	(2)	3.35	5.92	4-4	
4739.699	V	(1)	3.38	5.99	3-3	
4678.41	P	⊙	3.40	6.04	2-2	
4860.98	P	(1)	3.38	5.92	3-4	
4766.87	P	⊙	3.40	5.99	2-3	
4701.90	P	⊙	3.42	6.04	1-2	
4259.988	V	(2)	3.32	6.21	5-6	$z^5F^o-e^7F$ (689)
4224.176	J	6n	3.35	6.28	4-5	
4200.930	J	3n	3.38	6.32	3-4	
*4238.027	J	4	3.40	6.31	2-3	
4224.509	V	3n	3.42	6.34	1-2	
4172.641	V	(1)	3.32	6.28	5-5	
4161.080	V	(1)	3.35	6.32	4-4	
*4208.610	J	3n	3.38	6.31	3-3	
4205.546	J	(2)	3.40	6.34	2-2	
4246.59	P	(1)	3.42	6.32	1-1	
4111.06	P	(1)	3.32	6.32	5-4	
4168.625	V	(1w)	3.35	6.31	4-3	
m4176.57	P	Fe	3.38	6.34	3-2	
m4237.42	P	Fe	3.40	6.32	2-1	
4253.52	P	⊙	3.32	6.22	5-5	$z^5F^o-f^7D$ (690)
4228.71	P	⊙	3.35	6.27	4-4	
4177.07	P	(1)	3.32	6.27	5-4	
4256.212	V	(3)	3.40	6.30	2-1	
4307.08	P	⊙	3.35	6.22	4-5	
4269.87	P	⊙	3.38	6.27	3-4	
4345.358	M	tr?	3.32	6.22	5-4	$z^5F^o-f^5D$ (691)
4278.234	J	(1)	3.35	6.24	4-3	
4320.36	P	(1)	3.38	6.24	3-3	
4320.52	U	(1)	3.40	6.26	2-2	
4306.58	P	(1)	3.42	6.28	1-1	
4341.23	P	⊙	3.38	6.22	3-4	
4351.37	P	⊙	3.40	6.24	2-3	
*4340.51	P	(1)	3.42	6.26	1-2	
m4235.96	P	Fe	3.32	6.23	5-4	$z^5F^o-e^7P$ (692)
4264.209	J	(2)	3.35	6.25	4-5	
4336.86	P	⊙	3.40	6.25	2-3	
4227.434	J	30	3.32	6.24	5-6	$z^5F^o-e^5G$ (693)
4247.432	I	12	3.35	6.26	4-5	
4238.816	I	10n	3.38	6.29	3-4	
4225.460	J	6n	3.40	6.32	2-3	
4217.551	J	7n	3.42	6.34	1-2	
4195.337	J	5	3.32	6.26	5-5	
4198.268	V	(1)	3.35	6.29	4-4	
4196.212	J	4	3.38	6.32	3-3	
4198.645	J	4n	3.40	6.34	2-2	
4147.34	P	⊙	3.32	6.29	5-4	
4156.480	V	(1)	3.35	6.32	4-3	
4169.777	V	(1)	3.38	6.34	3-2	

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Int	E P Low	E P High	J	Multiplet (No)
5n	3.32	6.29	5-6	$z^5F^\circ-e^7G$
9n	3.35	6.32	4-5	(694)
⊙	3.38	6.34	3-4	
(2b,gn)	3.40	6.35	2-3	
(1)	3.42	6.36	1-2	
(1)	3.32	6.32	5-5	
(1)	3.35	6.34	4-4	
(1)	3.38	6.35	3-3	
(1w)	3.40	6.36	2-2	
(1)	3.32	6.34	5-4	
(1)	3.38	6.36	3-2	
⊙	3.40	6.37	2-1	
3n	3.32	6.31	5-5	$z^5F^\circ-f^5F$
(1w)	3.35	6.35	4-4	(695)
⊙	3.38	6.37	3-3	
(1)	3.40	6.38	2-2	
(4)	3.42	6.39	1-1	
⊙	3.32	6.35	5-4	
(1w)	3.35	6.37	4-3	
(1)	3.38	6.38	3-2	
⊙	3.40	6.39	2-1	
7n	3.35	6.31	4-5	
10n	3.38	6.35	3-4	
8n	3.40	6.37	2-3	
5n	3.42	6.38	1-2	
3n	3.38	6.31	3-2	$z^5F^\circ-e^5S$
4	3.40	6.31	2-2	(696)
⊙	3.35	6.33	4-3	$z^5F^\circ-e^3D$
(1)	3.38	6.39	3-2	(697)
(1)	3.40	6.42	2-1	
(1)	3.38	6.33	3-3	
(1)	3.40	6.39	2-2	
⊙	3.40	6.33	2-3	
6	3.32	6.22	5-4	$z^5F^\circ-g^5D$
(3)	3.35	6.24	4-3	(698)
(1)	3.38	6.26	3-2	
3	3.40	6.28	2-1	
(2)	3.42	6.29	1-0	
(2)	3.35	6.22	4-4	
(1)	3.38	6.24	3-3	
(1)	3.40	6.26	2-2	
(2)	3.42	6.28	1-1	
⊙	3.38	6.22	3-4	
(1)	3.40	6.24	2-3	
⊙	3.42	6.26	1-2	
(1)	3.40	6.37	2-3	$z^5F^\circ-e^7S$ (699)
(1)	3.35	6.40	4-3	$z^5F^\circ-e^5P$
(2)	3.38	6.43	3-2	(700)
(1)	3.38	6.40	3-3	
⊙	3.40	6.43	2-2	
⊙	3.42	6.42	1-1	
(1)	3.40	6.40	2-3	
⊙	3.42	6.43	1-2	
3n	3.32	6.55	5-5	$z^5F^\circ-g^5F$
⊙	3.35	6.59	4-4	(701)
⊙	3.35	6.55	4-5	
⊙	3.38	6.59	3-4	
(2)	3.32	6.56	5-4	$z^5F^\circ-h^5D$
⊙	3.35	6.61	4-3	(702)
(1w)	3.35	6.50	4-3	$z^5F^\circ-f^5P$
⊙	3.38	6.61	3-2	(703)
(1)	3.40	6.66	2-1	
⊙	3.40	6.61	2-2	
⊙	3.40	6.56	2-3	
(2w)	3.32	6.56	5-6	$z^5F^\circ-f^5G$
⊙	3.40	6.69	2-3	(704)
(0)	3.42	6.71	1-2	
⊙	3.32	6.58	5-5	
⊙	3.32	6.64	5-4	
⊙	3.35	6.69	4-3	
⊙	3.38	6.71	3-2	
2	3.32	6.63	5-5	$z^5F^\circ-e^3G$
12	3.35	6.67	4-4	(705)
(1)	3.35	6.63	4-5	
⊙	3.40	6.71	2-3	
⊙	3.35	6.64	4-3	$z^5F^\circ-f^3D$
⊙	3.40	6.72	2-1	(706)
(1)	3.40	6.74	2-2	$z^5F^\circ-g^7D$
⊙	3.42	6.76	1-1	(707)
(1)	3.38	6.68	3-4	
⊙	3.40	6.72	2-3	
⊙	3.35	6.97	4-5	$z^5F^\circ-1$ (708)
(1)	3.32	6.97	5-	$z^5F^\circ-2$ (709)
3	3.32	7.12	5-4	$z^5F^\circ-1^5D$
(2)	3.35	7.14	4-3	(710)
(1w)	3.38	7.16	3-2	
(2w)	3.35	7.12	4-4	
(2w)	3.38	7.14	3-3	
(1w)	3.38	7.12	3-4	
⊙	3.40	7.14	2-3	
8	3.32	7.16	5-6	$z^5F^\circ-g^5G$
20	3.35	7.19	4-5	(711)
4	3.38	7.22	3-4	
6	3.40	7.25	2-3	
4	3.42	7.26	1-2	
(1)	3.32	7.35	3-3	
(1)	3.40	7.36	2-2	
(2)	3.40	7.19	2-2	$z^5F^\circ-4$
(1)	3.42	7.19	1-2	(712)

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
8978.17	P	⊙	3.40	4.77	1-2	$a^1P-y^3D^\circ$
8729.12	P	2	3.40	4.81	1-1	(713)
5551.29	P	⊙	3.40	5.62	1-1	$a^1P-x^3D^\circ$ (714)
5245.72	P	⊙	3.40	5.75	1-1	$a^1P-z^3S^\circ$ (715)
5226.06	P	(1)	3.40	5.76	1-0	$a^1P-y^3P^\circ$ (716)
5167.70	P	⊙	3.40	5.79	1-2	$a^1P-u^5D^\circ$
5091.73	P	⊙	3.40	5.82	1-1	(717)
5029.623	V	(1)	3.40	5.85	1-2	a^1P-1° (718)
4818.66	P	⊙	3.40	5.96	1-1	$a^1P-v^5P^\circ$ (719)
4815.22	P	⊙	3.40	5.96	1-2	$a^1P-x^3P^\circ$
4779.444	J	(1)	3.40	5.98	1-0	(720)
4804.59	P	(1)	3.40	5.97	1-1	$a^1P-v^5F^\circ$ (721)
4647.72	P	⊙	3.40	6.06	1-2	a^1P-2° (722)
4566.990	V	(1)	3.40	6.10	1-2	$a^1P-w^3F^\circ$ (723)
4607.08	P	⊙	3.40	6.08	1-2	$a^1P-v^3D^\circ$ (724)
4461.37	W	(1)	3.40	6.17	1-0	$a^1P-w^3P^\circ$ (725)
4137.002	J	7	3.40	6.38	1-2	$a^1P-y^1D^\circ$ (726)
*4127.207	J	3n	3.40	6.39	1-2	$a^1P-x^1D^\circ$ (727)
*4038.622	Q	(-)	3.40	6.46	1-2	$a^1P-u^3D^\circ$
4003.764	J	2	3.40	6.48	1-1	(728)
3976.615	J	4	3.40	6.50	1-2	$a^1P-t^3D^\circ$
4057.66	P	⊙	3.40	6.44	1-1?	(729)
3949.14	W	(1)	3.40	6.53	1-1	a^1P-8° (730)
3940.044	V	(1)	3.40	6.53	1-2	$a^1P-v^3P^\circ$
3806.203	J	2	3.40	6.64	1-1	(731)
3885.07	P	⊙?	3.40	6.58	1-2	$a^1P-s^3D^\circ$ (732)
3891.928	J	3	3.40	6.57	1-1	$a^1P-z^1P^\circ$ (733)
3543.669	J	(4)	3.40	6.88	1-2	$a^1P-w^1D^\circ$ (734)
3410.171	G	3	3.40	7.02	1-2	$a^1P-u^3F^\circ$ (735)
*3314.070§	V	(1)	3.40	7.12	1-2	$a^1P-t^3F^\circ$ (736)
9924.35	P	⊙	3.53	4.77	2-2	$a^1D-y^3D^\circ$
9620.93	P	⊙	3.53	4.81	2-1	(737)
6016.66	W	(2)	3.53	5.58	2-3	$a^1D-x^3D^\circ$ (738)
5614.58	P	⊙?	3.53	5.73	2-1	$a^1D-w^5P^\circ$ (739)
5555.17	P	⊙	3.53	5.75	2-1	$a^1D-z^3S^\circ$ (740)
5467.76	P	⊙	3.53	5.79	2-2	$a^1D-u^5D^\circ$
5382.750	T	(-)	3.53	5.82	2-1	(741)
5275.30	P	⊙	3.53	5.87	2-1	$a^1D-y^3S^\circ$ (742)
5198.843	V	(1)	3.53	5.91	2-3	$a^1D-x^3G^\circ$ (743)
5078.53	P	⊙?	3.53	5.96	2-1	$a^1D-v^5P^\circ$ (744)
5121.96	P	⊙?	3.53	5.94	2-3	$a^1D-v^5F^\circ$
5091.72	P	⊙	3.53	5.96	2-2	(745)
*5031.030	R	2	3.53	5.98	2-3	$a^1D-w^3G^\circ$ (746)
5020.819	U	(1)	3.53	5.99	2-1	$a^1D-x^3P^\circ$ (748)
*4889.009	U	(1)	3.53	6.06	2-2	a^1D-2° (749)
4844.016	V	(2)	3.53	6.08	2-3	$a^1D-w^3F^\circ$ (750)
4869.45	P	⊙	3.53	6.07	2-3	$a^1D-v^3D^\circ$ (751)
4705.464	J	(1)	3.53	6.15	2-3	$a^1D-v^3G^\circ$ (752)
4789.654	B	7	3.53	6.11	2-2	$a^1D-z^1D^\circ$ (753)
4632.14	P	⊙	3.53	6.20	2-2	$a^1D-w^3P^\circ$
4663.183	J	(1)	3.53	6.18	2-1	(754)
4547.851	B	4	3.53	6.24	2-3	$a^1D-z^1F^\circ$ (755)
4343.86	P	⊙	3.53	6.37	2-3	$a^1D-u^5F^\circ$
4304.87	P	⊙	3.53	6.40	2-2	(756)
4392.31	P	⊙	3.53	6.34	2-3	$a^1D-v^3F^\circ$
4424.194	V	(1)	3.53	6.32	2-2	(757)
4378.73	P	⊙	3.53	6.35	2-	a^1D-5° (759)
4305.20	U	(1)	3.53	6.40	2-3	$a^1D-u^3G^\circ$ (760)
4327.100	J	3	3.53	6.38	2-2	$a^1D-y^1D^\circ$ (761)
4317.04	P	(1)	3.53	6.39	2-2	$a^1D-x^1D^\circ$ (762)
4219.59	P	⊙	3.53	6.46	2-2	$a^1D-u^3D^\circ$
4181.55	P	⊙	3.53	6.48	2-1	(763)
4151.957	V	(1)	3.53	6.50	2-2	$a^1D-t^3D^\circ$
4240.372	J	(2)	3.53	6.44	2-1?	(764)
4122.00	P	⊙	3.53	6.53	2-1	a^1D-8° (765)

Fe I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4112.09	P	⊙	3.53	6.53	2-2	$a^1D-v^3P^\circ$
*3966.532	V	(1n)	3.53	6.64	2-1	(766)
4059.726	V	3	3.53	6.57	2-1	$a^1D-z^1P^\circ$ (767)
3989.859	J	(2d)	3.53	6.62	2-3	$a^1D-y^1F^\circ$ (768)
3973.655	J	3	3.53	6.64	2-3	$a^1D-x^1F^\circ$ (769)
3953.50	P	⊙	3.53	6.65	2-3	a^1D-10° (770)
3845.692	J	(1)	3.53	6.74	2-3	$a^1D-t^3G^\circ$ (771)
3682.226	J	20	3.53	6.88	2-2	$a^1D-w^1D^\circ$ (772)
3677.309	J	2	3.53	6.89	2-3	$a^1D-w^1F^\circ$ (773)
3636.23	W	(1)	3.53	6.93	2-3	$a^1D-s^3G^\circ$ (774)
3538.31	W	(1)	3.53	7.02	2-2	$a^1D-u^3F^\circ$ (775)
*3442.979	V	(1)	3.53	7.12	2-3	$a^1D-t^3F^\circ$
3434.95	P	⊙	3.53	7.12	2-2	(776)
7094.30	P	⊙	3.56	5.30	5-5	$a^1H-y^5G^\circ$ (778)
6019.36	P	⊙	3.56	5.61	5-4	$a^1H-y^3G^\circ$ (780)
5913.35	P	⊙	3.56	5.64	5-5	$a^1H-x^5G^\circ$ (781)
5584.768	V	(1)	3.56	5.77	5-4	$a^1H-u^5D^\circ$ (782)
5532.752	V	(1)	3.56	5.79	5-4	$a^1H-x^3F^\circ$ (783)
*5466.993	V	(1)	3.56	5.82	5-4	$a^1H-z^3H^\circ$ (784)
5374.78	P	⊙	3.56	5.85	5-5	$a^1H-w^5G^\circ$
*5326.154	V	(1)	3.56	5.87	5-4	(785)
5365.403	J	3	3.56	5.86	5-4	$a^1H-z^1G^\circ$ (786)
5231.41	U	(1)	3.56	5.92	5-4	$a^1H-v^5F^\circ$ (787)
5257.65	P	⊙	3.56	5.91	5-5	$a^1H-x^3G^\circ$
5263.874	V	(1)	3.56	5.90	5-4	(788)
5150.19	P	⊙	3.56	5.95	5-5	$a^1H-w^3G^\circ$
5115.788	T	(1)	3.56	5.97	5-4	(789)
m5110.36	P	Fe	3.56	5.97	5-5	$a^1H-z^1H^\circ$ (790)
5028.129	J	4	3.56	6.01	5-4	$a^1H-y^1G^\circ$ (791)
4927.42	W	(1)	3.56	6.06	5-4	$a^1H-w^3F^\circ$ (792)
4849.67	P	⊙	3.56	6.10	5-6	$a^1H-y^3H^\circ$
4809.94	V	(1)	3.56	6.12	5-5	(793)
4843.39	P	⊙	3.56	6.11	5-5	$a^1H-v^3G^\circ$
4804.529	V	(1)	3.56	6.13	5-4	(794)
4587.132	J	(2)	3.56	6.25	5-4	$a^1H-x^1G^\circ$ (795)
4502.592	V	(1)	3.56	6.30	5-6	$a^1H-x^3H^\circ$
4493.37	P	(1)	3.56	6.30	5-5	(796)
4432.572	J	(3)	3.56	6.34	5-5	$a^1H-u^3G^\circ$
4375.46	P	⊙	3.56	6.36	5-4	(797)
4425.662	V	(1)	3.56	6.35	5-4	a^1H-4° (798)
4382.777	V	(2)	3.56	6.37	5-5	a^1H-6° (799a)
4201.73	W	(1)	3.56	6.50	5-5	$a^1H-w^3H^\circ$
4174.419	U	(1)	3.56	6.51	5-4	(799)
4219.364	B	12	3.56	6.48	5-6	$a^1H-y^3I^\circ$ (800)
4118.549	B	15	3.56	6.55	5-6	$a^1H-z^1I^\circ$ (801)
4014.534	B	10	3.56	6.63	5-5	$a^1H-y^1H^\circ$ (802)
3972.920	V	(1)	3.56	6.66	5-5	$a^1H-t^3G^\circ$ (803)
3846.412	J	2	3.56	6.77	5-4	$a^1H-w^1G^\circ$ (804)
*3748.492§	V	7	3.56	6.85	5-6	$a^1H-v^3H^\circ$
3756.939	J	4	3.56	6.84	5-5	(805)
3743.468	J	6	3.56	6.85	5-5	$a^1H-x^1H^\circ$ (806)
3690.730	J	4	3.56	6.90	5-5	$a^1H-s^3G^\circ$ (807)
3627.05	W	(1)	3.56	6.96	5-5	$a^1H-u^3H^\circ$
3621.718	V	(2)	3.56	6.97	5-4	(808)
3599.624	G	3	3.56	6.99	5-4	$a^1H-u^3F^\circ$ (809)
3553.741	G	6	3.56	7.03	5-4	$a^1H-v^1G^\circ$ (810)
3538.77	W	(1)	3.56	7.05	5-6	$a^1H-x^3I^\circ$
3534.52	W	(1)	3.56	7.05	5-5	(811)
*3479.683	V	(1)	3.56	7.10	5-4	$a^1H-t^3F^\circ$ (812)
3169.09	P	⊙	3.56	7.45	5-6	$a^1H-t^3H^\circ$ (813)
8461.41	P	⊙	3.59	5.05	3-3	$z^5P^\circ-X$
8767.65	P	⊙	3.64	5.05	2-3	(814)
*7086.76	V	2	3.59	5.33	3-4	$z^5P^\circ-e^7D$
7158.502	V	1	3.64	5.36	2-3	(815)
6953.01	P	⊙	3.59	5.36	3-3	
7057.96	P	⊙	3.64	5.39	2-2	
7125.00	P	⊙?	3.67	5.40	1-1	

atory Ref	Int	E P Low	E P High	J	Multiplet (No)
inued					
I	800	3.59	5.52	3-4	$z^5P^\circ-e^5D$
I	400	3.64	5.56	2-3	(816)
I	60	3.67	5.60	1-2	
K	15	3.59	5.56	3-3	
K	15	3.64	5.60	2-2	
K	12	3.67	5.62	1-1	
K	4	3.50	5.60	3-2	
K	5	3.64	5.62	2-1	
K	6	3.67	5.63	1-0	
W	(1)	3.59	5.85	3-4	$z^5P^\circ-e^5F$
V	(1)	3.64	5.90	2-3	(817)
P	⊙	3.67	5.93	1-2	
P	⊙	3.59	5.90	3-3	
P	⊙	3.64	5.93	2-2	
P	⊙	3.64	5.95	2-1	
P	⊙	3.59	5.92	3-4	$z^5P^\circ-e^3F$
P	⊙	3.59	5.99	3-3	(818)
P	⊙	3.59	6.32	3-4	$z^5P^\circ-e^7F$
P	Fe	3.64	6.31	2-3	(819)
P	⊙	3.67	6.34	1-2	
P	Fe	3.59	6.31	3-3	
P	(1)	3.64	6.34	2-2	
J	(2n)	3.59	6.34	3-2	
P	⊙	3.64	6.32	2-1	
K	(2n)	3.59	6.27	3-4	$z^5P^\circ-f^7D$
J	(4)	3.64	6.28	2-3	(820)
J	(1)	3.67	6.30	1-2	
V	(1)	3.59	6.28	3-3	
J	(2)	3.64	6.30	2-2	
J	(3)	3.67	6.30	1-1	
J	4n	3.59	6.30	3-2	
P	⊙	3.64	6.30	2-1	
B	7	3.59	6.22	3-4	$z^5P^\circ-f^5D$
B	3n	3.64	6.24	2-3	(821)
V	(1)	3.67	6.26	1-2	
J	5	3.59	6.24	3-3	
J	(3)	3.64	6.26	2-2	
J	3n	3.67	6.28	1-1	
J	3n	3.59	6.26	3-2	
J	(4)	3.64	6.28	2-1	
J	(5)	3.67	6.29	1-0	
B	6	3.59	6.23	3-4	$z^5P^\circ-e^7P$
J	3n	3.64	6.25	2-3	(822)
J	3	3.59	6.25	3-3	
P	⊙	3.64	6.28	2-2	
K	(2)	3.59	6.28	3-2	
J	(2)	3.59	6.29	3-4	$z^5P^\circ-e^5G$
U	(1)	3.64	6.32	2-3	(823)
P	⊙	3.59	6.32	3-3	
V	(1)	3.64	6.34	2-2	
P	⊙	3.59	6.34	3-2	
P	⊙	3.59	6.34	3-4	$z^5P^\circ-e^7G$
P	⊙	3.59	6.35	3-3	(824)
J	(4)	3.59	6.35	3-4	$z^5P^\circ-f^5F$
P	⊙	3.64	6.37	2-3	(825)
J	(3n)	3.59	6.37	3-3	
J	(1)	3.64	6.38	2-2	
P	⊙	3.59	6.38	3-2	
P	⊙	3.64	6.39	2-1	
I	5n	3.59	6.31	3-2	$z^5P^\circ-e^5S$
I	5n	3.64	6.31	2-2	(826)
P	⊙	3.67	6.31	1-2	
J	(1)	3.59	6.33	3-3	$z^5P^\circ-e^3D$
J	(2)	3.64	6.39	2-2	(827)
J	(2)	3.67	6.42	1-1	
K	(2)	3.64	6.33	2-3	
	(1)	3.67	6.39	1-2	
	4	3.59	6.34	3-4	$z^5P^\circ-g^5D$
	(2)	3.64	6.39	2-3	(828)
	(3)	3.67	6.43	1-2	
	(5)	3.59	6.39	3-3	
	Fe	3.64	6.43	2-2	
	(2)	3.67	6.45	1-1	
	(1)	3.59	6.43	3-2	
	(2)	3.64	6.45	2-1	
	(2)	3.67	6.45	1-0	
	(1)	3.59	6.37	3-3	$z^5P^\circ-e^7S$
	(2)	3.64	6.37	2-3	(829)
	4n	3.59	6.40	3-3	$z^5P^\circ-e^5P$
	(31)	3.64	6.43	2-2	(830)
	(2)	3.67	6.42	1-1	
	3n	3.64	6.42	2-1	
	5n	3.34	6.40	2-3	
	(4)	3.67	6.43	1-2	
	⊙	3.59	6.59	3-4	$z^5P^\circ-g^5F$
	⊙	3.64	6.65	2-3	(831)
	⊙	3.59	6.65	3-3	
	⊙	3.59	6.56	3-3	$z^5P^\circ-f^5P$
	⊙	3.64	6.61	2-2	(832)
	⊙	3.64	6.66	2-1	
	⊙	3.64	6.56	2-3	
	(1)	3.64	6.64	2-3	$z^5P^\circ-f^3D$
	⊙	3.67	6.67	1-2	(833)
	⊙?	3.59	6.75	3-4	$z^5P^\circ-f^3F$
	⊙	3.24	6.81	2-3	(834)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
<u>Fe I</u> continued						
3490.47	P	⊙	3.59	7.12	3-4	$z^5P^\circ-i^5D$
3526.96	P	⊙	3.64	7.14	2-3	(835)
*3476.336	V	(2w)	3.59	7.14	3-3	
3507.14	P	⊙	3.64	7.16	2-2	
*3457.090	V	(3w)	3.59	7.16	3-2	
3428.746	V	(2)	3.59	7.19	3-2	$z^5P^\circ-4$
3477.98	P	⊙	3.64	7.19	2-2	(836)
3510.18	P	⊙	3.67	7.19	1-2	
5981.38	P	⊙	3.62	5.68	6-6	$a^1I-z^3I^\circ$ (837)
5649.66	V	(1)	3.62	5.80	6-5	$a^1I-z^3H^\circ$ (838)
*5538.54	V	(1)	3.62	5.85	6-6	$a^1I-w^5G^\circ$
5521.14	P	(1)	3.62	5.85	6-5	(839)
5465.04	P	(1)	3.62	5.88	6-5	$a^1I-v^5F^\circ$ (840)
5397.60	W	(1)	3.62	5.91	6-5	$a^1I-x^3G^\circ$ (841)
5284.416	T	(-)	3.62	5.95	6-5	$a^1I-w^3G^\circ$ (842)
5242.495	B	4	3.62	5.97	6-5	$a^1I-z^1H^\circ$ (843)
4926.82	P	⊙	3.62	6.12	6-5	$a^1I-y^3H^\circ$ (844)
4961.908	U	(1)	3.62	6.11	6-5	$a^1I-v^3G^\circ$ (845)
4604.85	P	⊙	3.62	6.30	6-6	$a^1I-x^3H^\circ$
4595.21	P	⊙	3.62	6.30	6-5	(846)
*4531.633	J	(2)	3.62	6.34	6-5	$a^1I-u^3G^\circ$ (847)
*4479.612	J	(3)	3.62	6.37	6-5	a^1I-6° (848)
4309.036	J	(2)	3.62	6.48	6-6	$a^1I-y^3I^\circ$
4238.61	P	⊙	3.62	6.53	6-5	(849)
4203.953	V	(1)	3.62	6.55	6-6	$a^1I-z^1I^\circ$ (850)
4095.63	P	⊙	3.62	6.63	6-5	$a^1I-y^1H^\circ$ (851)
*4052.312	J	(1)	3.62	6.66	6-5	$a^1I-t^3G^\circ$ (852)
*4047.315	V	(1)	3.62	6.67	6-5	a^1I-12° (853)
3813.891	V	2	3.62	6.85	6-5	$a^1I-x^1H^\circ$ (854)
3759.155	V	(1)	3.62	6.90	6-5	$a^1I-s^3G^\circ$ (855)
3597.24	P	⊙	3.62	7.05	6-5	$a^1I-x^3I^\circ$ (856)
11355.97	D	1	3.63	4.71	3-3	$b^3D-y^3D^\circ$
10725.19	P	⊙	3.62	4.77	2-2	(858)
10332.33	P	⊙	3.62	4.81	1-1	
7323.38	P	⊙?	3.63	5.31	3-4	$b^3D-y^5G^\circ$
7262.46	P	⊙?	3.63	5.33	3-3	(859)
6749.52	P	⊙	3.63	5.45	3-2	$b^3D-w^5D^\circ$
6603.67	P	⊙	3.62	5.49	1-0	(860)
6474.61	V	(1)	3.62	5.53	1-1	$b^3D-y^5D^\circ$ (861)
6603.20	P	⊙	3.63	5.49	3-2	$b^3D-y^5S^\circ$ (862)
6307.85	P	⊙	3.63	5.58	3-3	$b^3D-x^3D^\circ$
6301.86	P	⊙	3.62	5.58	2-3	(863)
6043.738	U	(1)	3.63	5.67	3-3	$b^3D-x^5G^\circ$ (864)
5762.434	V	(1)	3.63	5.77	3-4	$b^3D-u^5D^\circ$
5754.41	V	(1)	3.63	5.77	3-3	(866)
5702.434	U	(1)	3.62	5.79	2-2?	
5707.25	P	⊙	3.83	5.79	3-2	
5609.97	P	⊙	3.62	5.82	2-1	
*5600.242	V	(1)	3.62	5.82	1-0	
5760.351	V	(1)	3.63	5.77	3-2	$b^3D-y^3P^\circ$
5698.05	W	(1)	3.62	5.79	2-1	(867)
5761.27	W	(1)	3.62	5.76	1-0	
5707.068	V	(1)	3.63	5.79	3-4	$b^3D-x^3F^\circ$
5636.708	V	(1)	3.62	5.81	2-3	(868)
5568.81	U	(1)	3.62	5.84	1-1	$b^3D-w^3D^\circ$
5660.79	W	(1)	3.62	5.80	2-3	(869)
5611.35	P	⊙	3.62	5.82	1-2	
5487.49	P	⊙	3.63	5.87	3-4	$b^3D-w^5G^\circ$
5452.119	U	(1)	3.62	5.39	2-3	(870)
5411.39	P	⊙	3.62	5.90	2-2	
5539.28	W	(1)	3.63	5.85	3-2	b^3D-1°
*5534.68	W	(1)	3.62	5.85	2-2	(871)
5529.15	W	(2)	3.63	5.86	3-4	$b^3D-z^1G^\circ$ (872)
5493.33	P	⊙	3.62	5.87	2-1	$b^3D-y^3S^\circ$
5482.26	P	⊙	3.62	5.87	1-1	(873)
5421.40	P	⊙	3.63	5.90	3-4	$b^3D-x^3G^\circ$
5414.91	P	⊙	3.63	5.91	3-3	(874)
5386.958	T	(1)	3.63	5.92	3-4	$b^3D-y^5F^\circ$
5327.25	P	⊙	3.62	5.94	2-3	(875)
5284.27	P	⊙	3.62	5.96	1-2	
5294.555	T	(-)	3.62	5.96	2-2	
5253.25	P	⊙	3.62	5.97	1-1	
5398.769	V	(1)	3.63	5.96	3-2	
5315.78	P	⊙	3.62	5.95	2-2	$b^3D-v^5P^\circ$
5370.06	P	⊙	3.62	5.96	1-1	(877)
5320.048	V	(1)	3.63	5.95	3-2	
5305.41	P	⊙	3.62	5.95	1-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
<u>Fe I</u> continued						
5280.364	V	(1)	3.63	5.96	3-2	$b^3D-x^3P^\circ$
5317.927	T	(2)	3.62	5.99	2-1	(880)
5223.191	V	(1)	3.62	5.98	1-0	
5207.95	P	(1)	3.62	5.99	1-1	
5066.28	P	⊙	3.62	6.06	1-2	b^3D-2° (882)
5065.201	V	(2)	3.63	6.06	3-4	$b^3D-w^3F^\circ$
5027.212	V	(1)	3.62	6.08	2-3	(883)
4970.496	V	(2)	3.62	6.10	1-2	
*5031.030	R	2	3.63	6.08	3-3	
4979.58	W	(1)	3.62	6.10	2-2	
5058.50	W	(1)	3.63	6.07	3-3	$b^3D-v^3D^\circ$
5054.647	T	1	3.62	6.07	2-3	(884)
5018.02	P	⊙	3.62	6.08	1-2	
5035.025	R	3	3.63	6.08	3-3	b^3D-3° (885)
4935.42	P	⊙	3.63	6.13	3-4	$b^3D-v^3G^\circ$ (886)
4968.709	V	(1)	3.62	6.11	2-2	$b^3D-z^1D^\circ$ (887)
*4802.883	J	(3)	3.63	6.20	3-2	$b^3D-w^3P^\circ$
*4832.734	J	(2)	3.62	6.18	2-1	(888)
*4845.656	V	(2)	3.62	6.17	1-0	
4799.412	V	(1)	3.62	6.20	2-2	
4824.162	V	(1)	3.62	6.18	1-1	
4708.972	V	(1)	3.62	6.24	2-3	$b^3D-z^1F^\circ$ (889)
4706.31	P	⊙	3.63	6.25	3-4	$b^3D-x^1G^\circ$ (890)
4490.63	P	⊙	3.62	6.37	2-3	$b^3D-u^5F^\circ$
4448.97	P	⊙	3.62	6.40	2-2	(891)
4605.99	P	⊙	3.63	6.31	3-4	$b^3D-t^5D^\circ$
4543.22	P	⊙	3.62	6.34	2-3	(893)
4481.04	P	⊙	3.62	6.37	1-2	
4419.30	P	⊙	3.62	6.41	1-0	
*4558.108	J	(1)	3.63	6.33	3-4	$b^3D-v^3F^\circ$
4542.422	V	(2)	3.62	6.34	2-3	(894)
4568.842	V	(1)	3.62	6.32	1-2	
4545.54	P	⊙	3.63	6.34	3-3	
4579.68	P	⊙	3.63	6.32	3-2	
4536.509	U	(1)	3.63	6.35	3-4	b^3D-4° (896)
4527.90	P	(1)	3.62	6.35	2-	b^3D-5° (697)
4483.78	P	⊙	3.63	6.38	3-4	$b^3D-u^3G^\circ$
4452.32	P	⊙	3.63	6.40	3-3	(898)
4479.01	P	⊙	3.63	6.38	3-3	$b^3D-u^5P^\circ$
4425.79	P	⊙	3.62	6.41	2-2	(899)
4386.6	W	(1w)	3.62	6.43	1-1	
4428.74	P	⊙	3.63	6.41	3-2	
4393.70	P	⊙	3.62	6.43	2-1	
m4475.99	P	Fe	3.62	6.38	2-3	
4418.60	P	⊙	3.62	6.41	1-2	
*4472.721	J	(2)	3.62	6.38	2-2	$b^3D-y^1D^\circ$ (900)
4466.183	V	(1)	3.63	6.39	3-2	b^3D-7°
4463.16	P	⊙	3.62	6.39	2-2	(901)
*4461.989	J	(4)	3.62	6.39	2-2	$b^3D-x^1D^\circ$
4454.655	J	(1)	3.62	6.39	1-2	(902)
4360.813	V	(1)	3.63	6.46	3-2	$b^3D-u^3D^\circ$ (903)
*4376.782	V	(1)	3.63	6.45	3-3	$b^3D-t^3D^\circ$
4285.832	V	(1)	3.62	6.50	2-2	(904)
4373.90	P	⊙	3.62	6.45	2-3	
4253.93	P	⊙	3.62	6.53	2-1	b^3D-8°
4247.29	P	⊙	3.62	6.53	1-1	(905)
4246.090	J	3	3.63	6.53	3-2	$b^3D-v^3P^\circ$
4088.567	V	(1)	3.62	6.64	2-1	(906)
4243.368	V	(2)	3.62	6.53	2-2	
4082.44	W	(2)	3.62	6.64	1-1	
4236.76	U	(1)	3.62	6.53	1-2	
4239.36	P	⊙	3.63	6.54	3-3	$b^3D-s^3D^\circ$
4236.66	P	⊙	3.62	6.54	2-3	(907)
4181.20	P	⊙	3.62	6.57	1-1	$b^3D-z^1P^\circ$ (908)
4172.97	P	⊙	3.63	6.58	3-4	b^3D-9° (909)
4115.89	P	⊙	3.63	6.62	3-3	$b^3D-y^1F^\circ$ (910)
4096.118	V	(1)	3.62	6.64	2-3	$b^3D-x^1F^\circ$ (911)
4074.70	P	⊙	3.62	6.65	2-3	b^3D-10° (912)
4020.490	V	(1)	3.63	6.70	3-4	$b^3D-t^3G^\circ$
3960.284	J	(1)	3.62	6.74	2-3	(913)
3962.65	P	⊙	3.63	6.74	3-3	
4058.46	P	⊙	3.63	6.67	3-3	b^3D-11°
4055.98	W	(1)	3.62	6.67	2-3	(914)
4010.18	W	(1)	3.63	6.70	3-4	b^3D-13° (915)
3787.164	J	(1)	3.62	6.88	2-2	$b^3D-w^1D^\circ$ (916)
3781.936	J	(1)	3.62	6.89	2-3	$b^3D-v^1F^\circ$ (917)
3767.73	P	⊙	3.63	6.90	3-4	$b^3D-s^3G^\circ$
3738.51	P	⊙	3.62	6.93	2-3	(918)

REVISED MULTIPLET TABLE

ued

ory f	Int	E P Low	High	J	Multiplet (No)
	⊙?	3.62	7.08	2-2	$b^3D-u^3F^\circ$ (919)
	⊙	3.63	7.43	3-4	$b^3D-r^3G^\circ$ (920)
	⊙	3.62	7.45	2-3	
	(1)	3.63	7.45	3-3	
	(2)	3.68	5.59	4-5	$b^1G-y^3G^\circ$ (921)
	⊙	3.68	5.61	4-4	
	⊙	3.68	5.79	4-4	$b^1G-x^3F^\circ$ (922)
	(1)	3.68	5.81	4-3	
	⊙?	3.68	5.87	4-4	$b^1G-w^5G^\circ$ (923)
	(1)	3.68	5.86	4-4	$b^1G-z^1G^\circ$ (924)
	⊙	3.68	5.92	4-4	$b^1G-v^5F^\circ$ (925)
	⊙	3.68	5.91	4-5	$b^1G-x^3G^\circ$ (926)
	(2)	3.68	5.90	4-4	
	(2)	3.68	5.91	4-3	
	⊙	3.68	5.95	4-5	$b^1G-w^3G^\circ$ (927)
	⊙	3.68	5.97	4-4	
	(2)	3.68	5.97	4-5	$b^1G-z^1H^\circ$ (928)
	(2)	3.68	6.01	4-4	$b^1G-y^1G^\circ$ (929)
	(-)	3.68	6.06	4-4	$b^1G-w^3F^\circ$ (930)
	⊙	3.68	6.08	4-3	
	⊙	3.68	6.08	4-3	b^1G-3° (931)
	⊙	3.68	6.11	4-5	$b^1G-v^3G^\circ$ (932)
	(1)	3.68	6.24	4-3	$b^1G-z^1F^\circ$ (933)
J	(3)	3.68	6.25	4-4	$b^1G-x^1G^\circ$ (934)
J	(2n)	3.68	6.30	4-5	$b^1G-x^3H^\circ$ (935)
	(1)	3.68	6.37	4-5	b^1G-6° (936)
J	(1)	3.68	6.42	4-3	$b^1G-u^3D^\circ$ (937)
P	⊙	3.68	6.50	4-5	$b^1G-w^3H^\circ$ (938)
P	⊙?	3.68	6.58	4-4	b^1G-9° (939)
U	(2)	3.68	6.62	4-3	$b^1G-y^1F^\circ$ (940)
J	(2)	3.68	6.64	4-3	$b^1G-x^1F^\circ$ (941)
P	⊙	3.68	6.65	4-3	b^1G-10° (942)
P	⊙	3.68	6.70	4-4	$b^1G-t^3G^\circ$ (943)
P	⊙	3.68	6.74	4-3	
P	⊙	3.68	6.70	4-4	b^1G-13° (944)
J	2	3.68	6.77	4-4	$b^1G-w^1G^\circ$ (945)
P	⊙	3.68	6.85	4-5	$b^1G-x^1H^\circ$ (946)
P	⊙	3.68	6.89	4-3	$b^1G-w^1F^\circ$ (947)
J	(1)	3.68	6.90	4-5	$b^1G-s^3G^\circ$ (948)
P	⊙	3.68	6.97	4-4	$b^1G-u^3H^\circ$ (949)
P	⊙	3.68	6.99	4-4	$b^1G-u^3F^\circ$ (950)
P	⊙	3.68	7.01	4-3	
W	(1)	3.68	7.03	4-4	$b^1G-v^1G^\circ$ (951)
P	⊙	3.68	7.05	4-5	$b^1G-x^3I^\circ$ (952)
W	(1)	3.68	7.12	4-3	$b^1G-t^3F^\circ$ (953)
P	⊙	3.68	7.43	4-4	$b^1G-r^3G^\circ$ (954)
P	⊙	3.68	7.45	4-3	
D	5	3.86	5.05	4-3	$z^3F^\circ-X$ (955)
P	⊙	3.86	5.29	4-5	$z^3F^\circ-e^7D$ (956)
P		3.93	5.33	3-4	
P	⊙	3.86	5.52	4-4	$z^3F^\circ-e^5D$ (957)
U	(1)	3.93	5.56	3-3	
P	⊙	3.97	5.60	2-2	
P	⊙	3.86	5.56	4-3	
P	⊙	3.97	5.62	2-1	
P	⊙	3.93	5.52	3-4	
V	(1)	3.86	5.85	4-4	$z^3F^\circ-e^5F$ (958)
P	⊙	3.93	5.85	3-4	
K	8	3.86	5.93	4-4	$z^3F^\circ-e^3F$ (959)
K	5	3.93	5.99	3-3	
V	3	3.97	6.04	2-2	
V	(1)	3.86	5.99	4-3	
U	(1)	3.93	6.04	3-2	
V	(2 1d)	3.93	5.92	3-4	
V	(1)	3.97	5.99	2-3	
P	⊙	3.86	6.28	4-5	$z^3F^\circ-e^7F$ (960)
P	⊙	3.86	6.32	4-4	
P	⊙	3.93	6.31	3-3	
U	(1)	3.86	6.27	4-4	$z^3F^\circ-f^7D$ (961)
P	(1)	3.97	6.30	2-1	
P	⊙	3.93	6.29	3-4	$z^3F^\circ-e^5G$ (962)
P	⊙	3.97	6.32	3-3	
P	⊙	3.86	6.29	4-4	

Fe I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
5050.13	P	⊙	3.86	6.31	4-5	$z^3F^\circ-f^5F$ (963)
5085.93	P	⊙	3.93	6.35	3-4	
5168.18	P	⊙	3.93	6.31	3-2	$z^3F^\circ-e^5S$ (964)
5001.871	B	12	3.86	6.33	4-3	$z^3F^\circ-e^3D$ (965)
5014.950	J	10	3.93	6.39	3-2	
5022.244	J	6	3.97	6.42	2-1	
5129.658	T	(1)	3.93	6.33	3-3	
5099.091	T	(1)	3.97	6.39	2-2	
5217.69	P	⊙	3.97	6.33	2-3	
4987.83	P	⊙	3.86	6.34	4-4	$z^3F^\circ-g^5D$ (966)
*5007.289	J	(3n)	3.93	6.39	3-3	
5019.74	P	⊙	3.97	6.43	2-2	
4885.435	J	2	3.86	6.39	4-3	
4938.183	K	(2)	3.93	6.43	3-2	
4978.606	J	2	3.97	6.45	2-1	
5058.00	W	(1)	3.93	6.37	3-3	$z^3F^\circ-e^7S$ (967)
4933.878	Q	(1)	3.93	6.43	3-2	$z^3F^\circ-e^5P$ (968)
5027.34	P	⊙	3.97	6.42	2-1	
5015.30	P	⊙	3.97	6.43	2-2	
4630.785	U	(1)	3.93	6.59	3-4	$z^3F^\circ-g^5F$ (969)
*4607.655	J	3n	3.97	6.65	2-3	
4526.40	P	⊙	3.86	6.59	4-4	
4538.84	W	(2)	3.93	6.65	3-3	
4438.53	P	⊙	3.86	6.65	4-3	
4452.62	P	⊙	3.93	6.70	3-2	
4492.693	V	(1n)	3.97	6.71	2-1	
*4575.80	U	(1)	3.86	6.56	4-4	$z^3F^\circ-h^5D$ (970)
4598.37	P	⊙	3.93	6.61	3-3	
*4495.386	V	(1)	3.86	6.61	4-3	
4511.04	P	⊙	3.93	6.66	3-2	
4544.50	P	⊙	3.97	6.68	2-1	
4593.544	U	(1)	3.93	6.61	3-2	$z^3F^\circ-f^5P$ (971)
4587.72	P	⊙	3.97	6.66	2-1	
4551.667	U	(1)	3.93	6.64	3-4	$z^3F^\circ-f^5G$ (972)
4538.58	P	⊙	3.97	6.69	2-3	
4450.77	P	⊙	3.86	6.64	4-4	
4471.81	P	(1)	3.93	6.69	3-3	
4429.32	U	(1)	3.93	6.71	3-2	
4456.63	P		3.86	6.63	4-5	$z^3F^\circ-e^3G$ (973)
*4490.773	J	(2n)	3.93	6.67	3-4	
4494.05	P	⊙	3.97	6.71	2-3	
4392.58	U	(1)	3.86	6.67	4-4	
4428.57	P	⊙	3.93	6.71	3-3	
4455.032	J	(2)	3.86	6.64	4-3	$z^3F^\circ-f^3D$ (974)
*4490.773	J	(2n)	3.93	6.67	3-2	
4479.97	P	⊙	3.97	6.72	2-1	
*4556.129	J	4n	3.93	6.64	3-3	
*4558.108	J	(1)	3.97	6.67	2-2	
4625.44	P	⊙	3.97	6.64	2-3	
4354.28	P	⊙	3.86	6.70	4-5	$z^3F^\circ-e^3H$ (975)
4394.31	P	⊙	3.93	6.73	3-4	
4300.21	P	⊙	3.86	6.73	4-4	
4276.684	J	(1)	3.86	6.75	4-4	$z^3F^\circ-f^3F$ (976)
4286.976	V	(1)	3.93	6.81	3-3	
4300.828	V	(1)	3.97	6.84	2-2	
4197.38	P	⊙	3.86	6.81	4-3	
4369.73	P	⊙	3.93	6.75	3-4	
3975.85	W	(1)	3.86	6.97	4-	$z^3F^\circ-2$ (977)
3742.14	P	⊙	3.93	7.22	3-4	$z^3F^\circ-g^5G$ (978)
3673.68	P	⊙	3.86	7.22	4-4	
3648.22	P	⊙	3.86	7.25	4-3	
10469.59	D	20	3.87	5.05	3-3	$z^3D^\circ-X$ (979)
10532.21	D	10	3.91	5.08	2-2	
10143.59	P	⊙	3.87	5.08	3-2	
10884.30	D	3	3.91	5.05	2-3	
10818.36	D	3	3.94	5.08	1-2	
7486.13	P	⊙	3.87	5.52	3-4	$z^3D^\circ-e^5D$ (980)
7474.60	P	⊙	3.91	5.56	2-3	
7325.33	P	⊙	3.91	5.60	2-2	
6226.77	V	(1)	3.87	5.85	3-4	$z^3D^\circ-e^5F$ (981)
6221.40	V	(1)	3.91	5.90	2-3	
6209.73	P	⊙	3.94	5.93	1-2	
6083.67	P	⊙	3.87	5.90	3-3	
6114.41	P	⊙	3.91	5.93	2-2	
6008.577	K	9	3.87	5.92	3-4	$z^3D^\circ-e^3F$ (982)
5934.658	K	5	3.91	5.99	2-3	
5883.838	K	4	3.94	6.04	1-2	
5809.249	V	(2)	3.87	5.99	3-3	
5798.194	V	(2)	3.91	6.04	2-2	
5678.38	P	⊙	3.87	6.04	3-2	
5304.11	P	(1)	3.91	6.24	2-3	$z^3D^\circ-f^5D$ (983)
5277.59	P	(1)	3.94	6.28	1-1	
5005.720	J	10	3.87	6.33	3-3	$z^3D^\circ-e^3D$ (984)
4985.261	J	7	3.91	6.39	2-2	
4973.108	J	3	3.94	6.42	1-1	
4896.437	U	(1)	3.87	6.39	3-2	
4911.786	U	(1)	3.91	6.42	2-1	
5098.594	K	(3)	3.91	6.33	2-3	
5048.454	V	(2)	3.94	6.39	1-2	
4977.653	U	(1)	3.91	6.39	2-3	$z^3D^\circ-g^5D$ (985)
4970.66	P	⊙	3.94	6.43	1-2	
4889.113	U	(2)	3.87	6.39	3-3	
4909.387	J	(1)	3.91	6.43	2-2	
4930.331	K	(2)	3.94	6.45	1-1	
4870.05	P	⊙	3.91	6.45	2-1	

Fe I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4905.15	W	(1)	3.91	6.43	2-2	$z^3D^\circ-e^5P$ (986)
4978.11	P	⊙	3.94	6.42	1-1	
4916.67	P	⊙	3.91	6.42	2-1	
4966.30	P	⊙	3.94	6.43	1-2	
4529.562	V	(1)	3.87	6.59	3-4	$z^3D^\circ-g^5F$ (987)
4479.00	P	⊙	3.94	6.70	1-2	
4441.56	P	⊙	3.87	6.65	3-3	
4429.20	P	⊙	3.91	6.70	2-2	
4358.95	P	⊙	3.87	6.70	3-2	
4404.10	P	⊙	3.91	6.71	2-1	
4579.05	P	⊙	3.87	6.56	3-4	$z^3D^\circ-h^5D$ (988)
4498.54	P	⊙	3.87	6.61	3-3	
4487.01	P	⊙	3.91	6.66	2-2	
4504.23	P	⊙	3.94	6.68	1-1	
4568.62	P	⊙	3.91	6.61	2-2	$z^3D^\circ-f^5P$ (989)
4546.68	P	⊙	3.94	6.66	1-1	
4621.63	P	⊙	3.94	6.61	1-2	
4377.330	U	(1)	3.87	6.69	3-3	$z^3D^\circ-f^5G$ (990)
4336.60	P	⊙	3.87	6.71	3-2	
*4395.514	V	(1w)	3.87	6.67	3-4	$z^3D^\circ-e^3G$ (991)
4405.40	P	⊙	3.91	6.71	2-3	
4335.89	U	(1)	3.87	6.71	3-3	
4458.101	V	(3)	3.87	6.64	3-3	$z^3D^\circ-f^3D$ (992)
4466.939	V	(2)	3.91	6.67	2-2	
4440.840	V	(1)	3.94	6.72	1-1	
*4395.514	V	(1w)	3.87	6.67	3-2	
4391.87	P	⊙	3.91	6.73	2-1	
*4531.633	J	(2)	3.91	6.64	2-3	
4517.60	P	⊙	3.94	6.67	1-2	
4279.480	V	(1)	3.87	6.75	3-4	$z^3D^\circ-f^3F$ (993)
*4265.260	J	(2)	3.91	6.81	2-3	
4264.743	U	(1)	3.94	6.84	1-2	
4200.09	P	⊙	3.87	6.81	3-3	
4243.786	V	(1w)	3.87	6.77	3-2	$z^3D^\circ-e^3P$ (994)
4220.05	P	⊙	3.91	6.84	2-1	
4310.37	P	⊙	3.91	6.77	2-2	
*4265.260	J	(2)	3.94	6.84	1-1	
4357.53	P	⊙	3.94	6.77	1-2	
3839.614	V	(2w)	3.94	7.16	1-2	$z^3D^\circ-i^5D$ (995)
3675.76	P	⊙	3.87	7.22	3-4	$z^3D^\circ-g^5G$ (996)
3699.41	P	⊙	3.91	7.25	2-3	
3683.77	P	⊙	3.91	7.26	2-2	
3717.73	P	⊙	3.87	7.19	3-2	$z^3D^\circ-4$ (997)
9959.18	P	⊙	4.06	5.30	4-5	$c^3F-y^5G^\circ$ (998)
8096.874	E	10	4.06	5.58	4-3	$c^3F-x^3D^\circ$ (999)
8422.95	O	2	4.12	5.59	3-2	
8481.96	P	⊙	4.17	5.62	2-1	
8466.54	P	⊙	4.12	5.58	3-3	
8680.77	P	⊙	4.17	5.59	2-2	
8737.10	P	⊙	4.17	5.58	2-3	
7537.44	P	⊙?	4.06	5.70	4-3	$c^3F-w^5F^\circ$ (1000)
7967.03	P	⊙?	4.17	5.72	2-2	
7219.686	I	5	4.06	5.77	4-4	$c^3F-u^5D^\circ$ (1001)
7498.56	V	1	4.12	5.77	3-3	
7617.97	P	⊙	4.17	5.79	2-2	
7207.123	V	6	4.06	5.77	4-3	
7418.674	E	5	4.12	5.79	3-2	
7454.02	V	(1)	4.17	5.82	2-1	
7512.17	P	⊙	4.12	5.77	3-4	
7132.989	I	8	4.06	5.79	4-4	$c^3F-x^3F^\circ$ (1002)
*7307.938§	L	8	4.12	5.81	3-3	
7443.031	L	2	4.17	5.83	2-2	
7418.32	P	⊙	4.12	5.79	3-4	
7501.25	P	⊙	4.17	5.81	2-3	
7072.82	P	⊙	4.06	5.80	4-5	$c^3F-z^3H^\circ$ (1003)
7300.59	P	⊙	4.12	5.82	3-4	
7024.084	V	5	4.06	5.82	4-4	
7068.415	I	40	4.06	5.80	4-3	$c^3F-w^3D^\circ$ (1004)
7284.843	L	4	4.12	5.82	3-2	
7401.689	E	4	4.17	5.84	2-1	
7348.51	P	⊙	4.12	5.80	3-3	
7476.92	P	⊙	4.17	5.82	2-2	
6793.26	V	2	4.06	5.87	4-4	$c^3F-x^5G^\circ$ (1005)
7000.633	V	3	4.12	5.89	3-3	
7107.461	I	4	4.17	5.90	2-2	
6745.96	P	⊙	4.06	5.89	4-3	
*6933.628	L	6	4.12	5.90	3-2	
6857.25	V	4	4.06	5.86	4-4	$c^3F-z^1G^\circ$ (1006)
7120.56	P	⊙	4.12	5.86	3-4	
6785.88	P	⊙	4.06	5.88	4-5	$c^3F-v^5F^\circ$ (1007)
6963.02	P	⊙	4.17	5.94	2-3	
6639.90	P	(2)	4.06	5.92	4-4	
6796.11	V	2	4.12	5.94	3-3	
6555.87	P	⊙	4.06	5.94	4-3	
6682.23	P	⊙	4.06	5.91	4-5	$c^3F-x^3G^\circ$ (1008)
6942.82	P	⊙	4.12	5.90	3-4	
7105.90	P	⊙	4.17	5.91	2-3	
6623.78	P	⊙	4.06	5.92	4-3	$c^3F-v^5F^\circ$ (1010)
*6777.44	V	1	4.12	5.95	3-2	
6509.56	V	(1)	4.06	5.95	4-5	$c^3F-s^3G^\circ$ (1012)

nued

tory		E P		J	Multiplet
ef	Int	Low	High		(No)
V	6d	4.12	5.96	3-2	$c^3F-x^3P^\circ$ (1013)
V	1	4.17	5.99	2-1	
V	1	4.17	5.96	2-2	
V	(2)	4.06	6.01	4-4	$c^3F-y^1G^\circ$ (1014)
J	4	4.06	6.06	4-4	$c^3F-w^3F^\circ$ (1015)
J	(3)	4.12	6.08	3-3	
I	3	4.17	6.10	2-2	
P	⊙	4.06	6.08	4-3	
U	(1)	4.12	6.10	3-2	
V	(-)	4.06	6.07	4-3	$c^3F-v^3D^\circ$ (1016)
P	⊙	4.12	6.08	3-2	
V	(1)	4.17	6.09	2-1	
J	4	4.06	6.12	4-5	$c^3F-y^3H^\circ$ (1017)
J	(2)	4.12	6.14	3-4	
P	⊙	4.06	6.14	4-4	
B	4	4.06	6.11	4-5	$c^3F-v^3G^\circ$ (1018)
J	(2)	4.12	6.13	3-4	
J	(2)	4.17	6.15	2-3	
P	⊙	4.12	6.15	3-3	
V	(2)	4.17	6.11	2-2	$c^3F-z^1D^\circ$ (1019)
U	(1)	4.12	6.20	3-2	$c^3F-w^3P^\circ$ (1020)
P	⊙	4.06	6.24	4-3	$c^3F-z^1F^\circ$ (1021)
P	⊙	4.17	6.24	2-3	
V	(1)	4.12	6.25	3-4	$c^3F-x^1G^\circ$ (1022)
P	⊙	4.06	6.30	4-5	$c^3F-u^5F^\circ$ (1023)
P	⊙	4.12	6.34	3-4	
P	⊙	4.06	6.37	4-3	
V	(1)	4.06	6.30	4-5	$c^3F-x^3H^\circ$ (1024)
K	(8)	4.12	6.37	3-2	$c^3F-t^5D^\circ$ (1025)
P	Fe	4.06	6.33	4-4	$c^3F-v^3F^\circ$ (1026)
P	⊙	4.12	6.34	3-3	
P	⊙	4.06	6.34	4-3	
W	(1)	4.12	6.32	3-2	
V	(1)	4.12	6.33	3-4	
W	(1)	4.17	6.34	2-3	
J	(2)	4.06	6.37	4-5	c^3F-6° (1028)
V	(1)	4.06	6.34	4-5	$c^3F-u^3G^\circ$ (1029)
J	(2)	4.12	6.38	3-4	
J	(2)	4.17	6.40	2-3	
P	⊙	4.06	6.38	4-4	
P	⊙	4.12	6.40	3-3	
W	(1n)	4.06	6.40	4-3	
V	(1)	4.12	6.38	3-2	$c^3F-y^1D^\circ$ (1030)
V	(2)	4.06	6.42	4-3	$c^3F-u^3D^\circ$ (1031)
V	(1)	4.12	6.46	3-2	
V	(1)	4.17	6.48	2-1	
R	3	4.12	6.42	3-3	
T	(-)	4.17	6.46	2-2	
W	(2)	4.17	6.42	2-3	
P	⊙	4.06	6.45	4-3	$c^3F-t^3D^\circ$ (1032)
V	(2)	4.12	6.50	3-2	
P	⊙	4.17	6.44	2-1?	
P	⊙	4.12	6.45	3-3	
P	⊙	4.17	6.50	2-2	
S	(-)	4.12	6.51	3-4	$c^3F-w^3H^\circ$ (1033)
V	(1)	4.17	6.53	2-1	c^3F-8° (1034)
P	⊙	4.06	6.54	4-3	$c^3F-s^3D^\circ$ (1035)
P	(1)	4.17	6.58	2-2	
W	(1)	4.17	6.57	2-1	$c^3F-z^1P^\circ$ (1036)
P	⊙	4.06	6.58	4-4	c^3F-9° (1037)
P	⊙?	4.12	6.68	3-2	$c^3F-t^5P^\circ$ (1038)
P	⊙	4.17	6.70	2-1	
P	(1)	4.06	6.62	4-3	$c^3F-y^1F^\circ$ (1039)
P	⊙?	4.12	6.64	3-3	$c^3F-x^1F^\circ$ (1040)
T	(1)	4.17	6.64	2-3	
J	(2)	4.12	6.65	3-3	c^3F-10° (1041)
J	(2)	4.06	6.66	4-5	$c^3F-t^3G^\circ$ (1042)
J	(2)	4.12	6.70	3-4	
V	(1)	4.17	6.74	2-3	
V	(1n)	4.12	6.67	3-3	c^3F-11° (1043)
P	⊙	4.17	6.67	2-3	
J	(1)	4.06	6.67	4-5	c^3F-12° (1043a)
V	(1)	4.12	6.70	3-4	c^3F-13° (1044)
P	⊙	4.06	6.70	4-4	
P	⊙	4.12	6.77	3-4	$c^3F-w^1G^\circ$ (1045)
P	⊙	4.06	6.85	4-5	$c^3F-x^1H^\circ$ (1046)
P	⊙	4.17	6.88	2-2	$c^3F-w^1D^\circ$ (1047)
J	(1)	4.12	6.89	3-3	$c^3F-w^1F^\circ$ (1048)
P	⊙	4.17	6.89	2-3	
P	⊙	4.06	7.03	4-4	$c^3F-v^1G^\circ$ (1049)

Fe I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
8632.42	P	⊙	4.09	5.52	4-4	$y^5D^\circ-e^5D$ (1050)
8652.50	P	⊙	4.14	5.56	3-3	
8355.16	P	⊙	4.09	5.56	4-3	
8950.20	P	⊙	4.14	5.52	3-4	
8878.76	P	⊙	4.17	5.56	2-3	
8834.04	P	⊙	4.20	5.60	1-2	
8779.12	P	⊙	4.21	5.62	0-1	
7187.341	E	800	4.09	5.80	4-5	$y^5D^\circ-e^5F$ (1051)
7207.406	E	500	4.14	5.85	3-4	
7164.469	E	250	4.17	5.90	2-3	
7130.942	I	150	4.20	5.93	1-2	
7090.404	I	40	4.21	5.95	0-1	
6999.902	I	30	4.09	5.85	4-4	
7016.436	V	60	4.14	5.90	3-3	
7022.976	L	50	4.17	5.93	2-2	
7038.251	I	40	4.20	5.95	1-1	
6819.60	P	(1)	4.09	5.90	4-3	
6880.65	V	2	4.14	5.93	3-2	
6933.04	U	1	4.17	5.95	2-1	
6725.39	V	2	4.09	5.92	4-4	$y^5D^\circ-e^3F$ (1052)
6653.88	V	(1)	4.14	5.99	3-3	
6916.703	I	60	4.14	5.92	3-4	
6786.88	V	5	4.17	5.99	2-3	
6704.48	P	(1)	4.20	6.04	1-2	
*5666.837	U	(1)	4.14	6.31	3-3	$y^5D^\circ-e^7F$ (1053)
5703.09	P	⊙	4.17	6.34	2-2	
5815.42	P	⊙	4.20	6.32	1-1	
5737.71 ?	W	(1)	4.09	6.31	4-3	
5859.96	P	⊙	4.17	6.28	2-3	$y^5D^\circ-f^7D$ (1054)
5760.53	P	⊙	4.14	6.28	3-3	
5813.33	P	⊙	4.17	6.30	2-2	
5715.47	P	⊙	4.14	6.30	3-2	
5796.67	P	⊙	4.17	6.30	2-1	
5871.289	U	(1)	4.14	6.24	3-3	$y^5D^\circ-f^5D$ (1055)
5928.50	P	⊙	4.20	6.28	1-1	
5732.86	P	⊙	4.09	6.24	4-3	
5815.16	V	(1)	4.14	6.26	3-2?	
5893.24	P	⊙	4.20	6.29	1-0	
5974.62	P	⊙	4.17	6.24	2-3	
5844.879	U	(1)	4.14	6.25	3-3	$y^5D^\circ-e^7P$ (1056)
5707.70	P	⊙	4.09	6.25	4-3	
5760.71	P	⊙	4.14	6.28	3-2	
5947.30	P	⊙	4.17	6.25	2-3	
5677.68	P	⊙	4.09	6.26	4-5	$y^5D^\circ-e^5G$ (1057)
5721.70	P	⊙	4.14	6.29	3-4	
5739.78	P	⊙	4.17	6.32	2-3	
5761.08	P	⊙	4.20	6.34	1-2	
5644.35	P	⊙	4.14	6.32	3-3	
5516.29	P	⊙	4.09	6.32	4-3	
5607.66	P	⊙	4.14	6.34	3-4	$y^5D^\circ-e^7G$ (1058)
5705.32	P	⊙	4.20	6.36	1-2	
5481.252	V	(2)	4.09	6.34	4-4	
5568.44	P	⊙	4.14	6.35	3-3	
5636.00	P	⊙	4.17	6.36	2-2	
5551.77	P	⊙	4.09	6.31	4-5	$y^5D^\circ-f^5F$ (1059)
5568.07	P	⊙	4.14	6.35	3-4	
5652.01	P	⊙	4.20	6.38	1-2	
5443.41	P	⊙	4.09	6.35	4-4	
5524.25	P	(1)	4.14	6.37	3-3	
5583.97	P	⊙	4.17	6.38	2-2	
*5666.837	U	(1)	4.14	6.31	3-2	$y^5D^\circ-e^5S$ (1060)
5493.508	V	(1)	4.09	6.33	4-3	$y^5D^\circ-e^3D$ (1061)
5483.111	V	(1)	4.14	6.39	3-2	
5481.451	T	(3)	4.17	6.42	2-1	
5620.527	V	(1)	4.14	6.33	3-3	
5573.10	V	(1)	4.17	6.39	2-2	
5547.00	W	(2)	4.20	6.42	1-1	
*5715.107	V	(1)	4.17	6.33	2-3	
5579.34	P	⊙	4.21	6.42	0-1	
5476.571	J	10	4.09	6.34	4-4	$y^5D^\circ-g^5D$ (1062)
5473.908	J	(3)	4.14	6.39	3-3	
5478.48	V	(1)	4.17	6.43	2-2	
*5493.850	T	(0)	4.20	6.45	1-1	
5353.386	V	(2)	4.09	6.39	4-3	
5391.493	V	(1)	4.14	6.43	3-2	
5429.52	P	⊙	4.17	6.45	2-1	
5480.872	V	(2)	4.20	6.45	1-0	
5602.788	V	(2)	4.14	6.34	3-4	
5563.604	I	3	4.17	6.39	2-3	
5543.930	J	(2)	4.20	6.43	1-2	
5525.552	V	(3)	4.21	6.45	0-1	
*5534.68	W	(1)	4.14	6.37	3-3	$y^5D^\circ-e^7S$ (1063)
5334.32	P	⊙	4.09	6.40	4-3	$y^5D^\circ-e^5P$ (1064)
5386.341	V	(1)	4.14	6.43	3-2	
5487.52	P	⊙	4.17	6.42	2-1	
5453.98	P	⊙	4.14	6.40	3-3	
5473.18	P	⊙	4.17	6.43	2-2	
5553.22	P	⊙	4.20	6.42	1-1	
5543.03	P	⊙	4.17	6.40	2-3	
*5538.54	V	(1)	4.20	6.43	1-2	
*5007.289	J	(3n)	4.09	6.55	4-5	$y^5D^\circ-g^5F$ (1065)
5027.136	J	5n	4.14	6.59	3-4	
4991.277	J	(3)	4.17	6.65	2-3	
*4939.244	J	(2)	4.20	6.70	1-2	
4933.348	K	(2n)	4.21	6.71	0-1	
4925.28	W	(1)	4.09	6.59	4-4	
4887.189	K	(-)	4.17	6.70	2-2	
4983.855	J	6n	4.09	6.56	4-4	$y^5D^\circ-h^5D$ (1066)
4988.963	J	(6)	4.14	6.61	3-3	
4957.68	P	⊙	4.17	6.66	2-2	
4969.927	J	(3)	4.20	6.68	1-1	
4888.651	V	(1)	4.09	6.61	4-3	
4886.335	J	(1)	4.14	6.66	3-2	
4917.25	W	(1)	4.17	6.68	2-1	

Fe I continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
5088.16	P	(1)	4.14	6.56	3-4	$y^5D^\circ-h^5D$ (1066) cont
5063.296	T	(-)	4.17	6.61	2-3?	
5011.24	P	⊙	4.20	6.66	1-2	
4982.507	J	8n	4.09	6.56	4-3	$y^5D^\circ-f^5P$ (1067)
4983.258	J	5n	4.14	6.61	3-2	
4967.899	J	(3)	4.17	6.66	2-1	
5086.77	P	⊙	4.14	6.56	3-3	
*5057.49	W	(1)	4.17	6.61	2-2	
5021.68	P	⊙	4.20	6.66	1-1	
*4952.646	V	(1n)	4.09	6.58	4-5	$y^5D^\circ-f^5G$ (1068)
4934.023	K	(2n)	4.14	6.64	3-4	
4910.328	J	(1w)	4.17	6.69	2-3	
4910.570	J	(1w)	4.20	6.71	1-2	
4835.862	K	(3)	4.09	6.64	4-4	
4840.329	V	(1n)	4.14	6.69	3-3	
4859.12	W	(1)	4.17	6.71	2-2	
*4745.806	B	3n	4.09	6.69	4-3	
4790.56	P	⊙	4.14	6.71	3-2	
4842.78	V	(1)	4.09	6.63	4-5	$y^5D^\circ-e^3G$ (1069)
4862.60	P	⊙	4.14	6.67	3-4	
4858.24	P	⊙	4.17	6.71	2-3	
m4840.89	P	Ti	4.09	6.64	4-3	$y^5D^\circ-f^3D$ (1070)
4862.54	P	⊙	4.14	6.67	3-2	
4841.80	W	(1)	4.17	6.72	2-1	
*4939.244	J	(2)	4.14	6.64	3-3	
4933.19	P	⊙	4.17	6.67	2-2	
4892.86	W	(1)	4.20	6.72	1-1	
5012.16	P	⊙	4.17	6.64	2-3	
4986.24	W	(1)	4.20	6.67	1-2	
4918.03	W	(1)	4.21	6.72	0-1	
4631.03	P	⊙	4.09	6.75	4-4	$y^5D^\circ-f^3F$ (1071)
4538.20	P	⊙	4.09	6.81	4-3	
*4720.997	J	(1)	4.14	6.75	3-4	
4688.38	P	⊙	4.17	6.81	2-3	
4679.96	P	⊙	4.20	6.84	1-2	
4677.59	P	⊙	4.14	6.77	3-2	$y^5D^\circ-e^3P$ (1072)
4742.93	P	⊙	4.17	6.77	2-2	
4135.77	U	(1)	4.17	7.16	2-2	$y^5D^\circ-i^5D$ (1073)
4044.49	P	⊙	4.09	7.14	4-3	
4085.98	W	(1)	4.14	7.16	3-2	
4163.35	P	⊙	4.17	7.14	2-3	
4172.97	P	⊙	4.20	7.16	1-2	
3970.99	P	⊙	4.09	7.19	4-5	$y^5D^\circ-g^5G$ (1074)
3996.79	P	⊙	4.14	7.22	3-4	
4046.46	P	⊙	4.14	7.19	3-2	$y^5D^\circ-4$ (1075)
4095.27	P	⊙	4.17	7.19	2-2	
4131.75	P	⊙	4.20	7.19	1-2	
9103.64	F	1	4.16	5.52	5-4	$y^5F^\circ-e^5D$ (1076)
*9070.42	F	2	4.20	5.56	4-3	
9084.20	P	1	4.24	5.60	3-2	
7511.045	E	800	4.16	5.80	5-5	$y^5F^\circ-e^5F$ (1077)
7495.088	E	400	4.20	5.85	4-4	
7445.776	E	200	4.24	5.90	3-3	
7411.178	E	100	4.26	5.93	2-2	
7389.425	E	80	4.28	5.95	1-1	
7306.61	V	3	4.16	5.85	5-4	
7288.760	I	10	4.20	5.90	4-3	
7293.068	I	15	4.24	5.93	3-2	
7311.101	I	12	4.26	5.95	2-1	
7710.390	E	25	4.20	5.80	4-5	
7661.223	E	30	4.24	5.85	3-4	
7568.925	E	30	4.26	5.90	2-3	
7491.678	L	12	4.28	5.93	1-2	
7008.014	V	5	4.16	5.92	5-4	$y^5F^\circ-e^3F$ (1078)
6898.31	V	3	4.20	5.99	4-3	
6847.60	P	(1)	4.24	6.04	3-2	
7181.222	L	10	4.20	5.92	4-4	
7038.818	V	2	4.24	5.99	3-3	
6951.62	P	(1)	4.26	6.04	2-2	
7333.62	V	1n	4.24	5.92	3-4	
*7148.69	R	(-)	4.26	5.99	2-3	
7022.39	P	⊙	4.28	6.04	1-2	
*6005.53	V	(1)	4.16	6.21	5-6	$y^5F^\circ-e^7F$ (1079)
*6021.82	W	(2n)	4.26	6.31	2-3	
6008.35	P	⊙	4.28	6.34	1-2	
5992.65	P	⊙?	4.16	6.22	5-5	$y^5F^\circ-f^7D$ (1080)
5961.91	P	⊙	4.20	6.27	4-4	
6060.81	P	⊙	4.20	6.24	4-3	$y^5F^\circ-f^5D$ (1081)
6107.09	P	(1)	4.24	6.26	3-2	
6032.67	V	(1)	4.20	6.25	4-3	$y^5F^\circ-e^7P$ (1082)
*6127.913	J	(2)	4.26	6.28	2-2	
5940.972	V	(2)	4.16	6.24	5-6	$y^5F^\circ-e^5G$ (1083)
5996.49	P	⊙	4.26	6.32	2-3	
5877.770	U	(1)	4.16	6.26	5-5	
5901.53	P	⊙	4.20	6.29	4-4	
5918.93	P	(1)	4.24	6.32	3-3	
5742.95	P	(1)	4.16	6.31	5-5	$y^5F^\circ-f^5F$ (1084)
5738.22	P	⊙	4.20	6.35	4-4	
5786.99	P	⊙	4.24	6.37	3-3	
5826.64	P	⊙	4.26	6.38	2-2	
5859.20	V	(1)	4.28	6.39	1-1	
5627.08	P	⊙	4.16	6.35	5-4	
5691.69	P	⊙	4.20	6.37	4-3	
5753.38	P	⊙	4.24	6.38	3-2	
5809.88	P	⊙	4.26	6.39	2-1	
5858.77	P	⊙	4.20	6.31	4-5	
5835.10	P	⊙	4.24	6.35	3-4	
5861.11	P	⊙	4.26	6.37	2-3	
5876.27	P	⊙	4.28	6.38	1-2	

REVISED MULTIPLET TABLE

ory ef	Int	E P Low	High	J	Multiplet (No)
nued					
P	⊙	4.24	6.31	3-2	$y^5F^\circ-e^5S$ (1085)
V	(2n)	4.26	6.31	2-2	
V	(2)	4.20	6.33	4-3	$y^5F^\circ-e^3D$ (1086)
V	(2)	4.24	6.39	3-2	
V	(1)	4.26	6.42	2-1	
V	(2)	4.24	6.33	3-3	
V	(1)	4.26	6.39	2-2	
P	⊙	4.28	6.42	1-1	
J	(2)	4.26	6.33	2-3	
P	(1)	4.28	6.39	1-2	
B	6	4.16	6.34	5-4	$y^5F^\circ-g^5D$ (1087)
I	3	4.20	6.39	4-3	
V	(2)	4.24	6.43	3-2	
P	⊙	4.26	6.45	2-1	
V	(1)	4.28	6.45	1-0	
J	(5)	4.20	6.34	4-4	
T	(3)	4.24	6.39	3-3	
V	(2)	4.26	6.43	2-2	
V	(1)	4.28	6.45	1-1	
V	(2)	4.24	6.34	3-4	
J	(1)	4.26	6.39	2-3	
P	(2)	4.28	6.43	1-2	
P	⊙	4.20	6.40	4-3	$y^5F^\circ-e^5P$ (1088)
V	(1)	4.24	6.43	3-2	
P	⊙	4.26	6.42	2-1	
P	⊙	4.24	6.40	3-3	
P	⊙	4.26	6.43	2-2	
J	10n	4.16	6.55	5-5	$y^5F^\circ-g^5F$ (1089)
J	(4)	4.20	6.59	4-4	
T	(1)	4.24	6.65	3-3	
K	(1)	4.26	6.70	2-2	
T	(2)	4.28	6.71	1-1	
P	⊙	4.16	6.59	5-4	
P	⊙	4.20	6.65	4-3	
P	⊙	4.24	6.70	3-2	
P	⊙	4.20	6.55	4-5	
V	(1)	4.24	6.59	3-4	
U	(3n)	4.26	6.65	2-3	
V	(2)	4.28	6.70	1-2	
J	6n	4.16	6.56	5-4	$y^5F^\circ-h^5D$ (1090)
J	6n	4.20	6.61	4-3	
K	(6n)	4.24	6.66	3-2	
P	(1)	4.26	6.68	2-1	
J	5n	4.20	6.56	4-4	
W	(1)	4.24	6.61	3-3	
V	(3)	4.26	6.66	2-2	
J	(3w)	4.28	6.68	1-1	
V	(1n)	4.20	6.56	4-3	$y^5F^\circ-f^5P$ (1091)
V	(2w)	4.24	6.61	3-2	
V	(2w)	4.26	6.66	2-1	
P	⊙	4.24	6.56	3-3	
P	⊙	4.26	6.61	2-2	
P	⊙	4.28	6.66	1-1	
J	20n	4.16	6.56	5-6	$y^5F^\circ-f^5G$ (1092)
K	(8)	4.20	6.58	4-5	
J	(3w)	4.24	6.64	3-4	
J	(6)	4.26	6.69	2-3	
V	(1n)	4.28	6.71	1-2	
U	(1)	4.16	6.58	5-5	
V	(1)	4.20	6.64	4-4	
V	(2)	4.24	6.69	3-3	
P	⊙	4.24	6.71	3-2	
P	⊙	4.16	6.59	5-6	$y^5F^\circ-e^5H$ (1093)
P	⊙	4.20	6.65	4-5	
P	⊙	4.24	6.70	3-4	
P	⊙	4.26	6.73	2-3	
P	⊙	4.16	6.65	5-5	
P	⊙?	4.16	6.70	5-4	
P	⊙	4.16	6.63	5-5	$y^5F^\circ-e^3G$ (1094)
P	⊙	4.20	6.67	4-4	
P	⊙	4.24	6.71	3-3,	
J	10n	4.20	6.63	4-5	
J	6n	4.24	6.67	3-4	
V	(2)	4.26	6.71	2-3	
T	(1)	4.20	6.64	4-3	$y^5F^\circ-f^3D$ (1095)
P	⊙	4.24	6.67	3-2	
T	(-)	4.26	6.72	2-1	
U	(3)	4.24	6.64	3-3	
V	(2n)	4.26	6.67	2-2	
T	(1)	4.28	6.72	1-1	
P	⊙	4.26	6.64	2-3	
P	⊙	4.28	6.67	1-2	
P	(1)	4.16	6.64	5-5	$y^5F^\circ-g^7D$ (1096)
P	⊙	4.16	6.68	5-4	
P	⊙	4.20	6.72	4-3	
U	(1)	4.16	6.65	5-6	$y^5F^\circ-e^3H$ (1097)
P	⊙	4.24	6.73	3-4	
P	⊙	4.20	6.73	4-4	
P	⊙	4.24	6.84	3-2	$y^5F^\circ-f^3F$ (1098)
P	⊙	4.20	6.75	4-4	
S	(-)	4.24	6.81	3-3	
P	⊙	4.26	6.84	2-2	
P	⊙	4.24	6.75	3-4	
P	⊙	4.26	6.81	2-3	
J	(2)	4.28	6.84	1-2	
P	(1)	4.20	6.97	4-5	$y^5F^\circ-1$ (1099)
P	⊙?	4.20	6.97	4-	$y^5F^\circ-2$ (1100)
P	⊙?	4.20	7.02	4-4	$y^5F^\circ-3$ (1101)
P	⊙	4.20	7.12	4-4	$y^5F^\circ-1^5D$ (1102)
U	(1)	4.24	7.14	3-3	
P	⊙	4.24	7.12	3-4	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
<u>Fe I</u> continued						
4112.972	J	3n	4.16	7.16	5-6	$y^5F^\circ-g^5G$ (1103)
4125.622	J	(1)	4.20	7.19	4-5	
4132.54	P	⊙	4.24	7.22	3-4	
4137.42	P	⊙	4.26	7.25	2-3	
4142.628	V	(1N)	4.28	7.26	1-2	
4067.85	P	⊙	4.16	7.19	5-5	
4083.71	P		4.20	7.22	4-4	
4100.35	P	⊙	4.24	7.25	3-3	
*4117.872	V	(1)	4.26	7.26	2-2	
4185.66	P	⊙	4.24	7.19	3-2	$y^5F^\circ-4$ (1104)
4224.30	P	⊙	4.26	7.19	2-2	
7239.885	I	6	4.19	5.90	2-3	$z^3P^\circ-e^5F$ (1105)
7311.26	P	⊙	4.24	5.93	1-2	
7095.425	I	3	4.19	5.93	2-2	
7213.84	P	⊙	4.24	5.95	1-1	
5955.682	U	(1)	4.24	6.31	1-2	$z^3P^\circ-e^5S$ (1106)
5762.992	K	10	4.19	6.33	2-3	$z^3P^\circ-e^3D$ (1107)
5753.136	J	5	4.24	6.39	1-2	
5717.845	L	(3)	4.27	6.42	0-1	
5618.646	V	(1)	4.19	6.39	2-2	
*5655.506	V	4	4.24	6.42	1-1	
m5525.48	P	Fe	4.19	6.42	2-1	
5608.98	P	⊙	4.19	6.39	2-3	$z^3P^\circ-g^5D$ (1108)
5652.32	V	(1)	4.24	6.43	1-2	
5661.36	W	(1)	4.27	6.45	0-1	
5522.46	V	(2)	4.19	6.43	2-2	
*5600.242	V	(1)	4.24	6.45	1-1	
5472.720	V	(1)	4.19	6.45	2-1	
5588.07	P		4.19	6.40	2-3	$z^3P^\circ-e^5P$ (1109)
5646.70	P	⊙	4.24	6.43	1-2	
5724.445	U	(1)	4.27	6.42	0-1	
5517.08	W	(1n)	4.19	6.43	2-2	
5661.97	P	⊙	4.24	6.42	1-1	
5027.785	T	(-)	4.19	6.65	2-3	$z^3P^\circ-g^5F$ (1110)
5025.08	P	⊙	4.24	6.70	1-2	
5041.33	P	⊙	4.27	6.71	0-1	
4922.18	P	⊙	4.19	6.70	2-2	
4992.80	P	⊙	4.24	6.71	1-1	
4993.687	U	(1)	4.19	6.66	2-2	$z^3P^\circ-h^5D$ (1111)
5056.856	U	(1)	4.24	6.68	1-1	
*4952.646	V	(1n)	4.19	6.68	2-1	
5205.31	P	⊙	4.24	6.61	1-2	$z^3P^\circ-f^5P$ (1112)
5004.034	T	(1)	4.19	6.66	2-1	
4945.65	W	(1)	4.19	6.69	2-3	$z^3P^\circ-f^5G$ (1113)
4995.41	P	⊙	4.24	6.71	1-2	
4893.70	P	⊙	4.19	6.71	2-2	
4720.56	P	⊙?	4.19	6.81	2-3	$z^3P^\circ-f^3F$ (1114)
4775.87	P		4.19	6.77	2-2	$z^3P^\circ-e^3P$ (1115)
*4757.582	J	(2)	4.24	6.84	1-1	
4665.24	P	⊙	4.19	6.84	2-1	
4872.69	P	⊙	4.24	6.77	1-2	
4801.63	P	⊙	4.27	6.84	0-1	
4160.78	P	⊙	4.19	7.16	2-2	$z^3P^\circ-1^5D$ (1116)
8356.07	P	⊙	4.28	5.75	2-1	$b^1D-z^3S^\circ$ (1117)
7820.80	P	⊙	4.28	5.85	2-2	b^1D-1° (1118)
6756.56	P	⊙	4.28	6.10	2-2	$b^1D-w^3F^\circ$ (1120)
6571.22	U	(1)	4.28	6.15	2-3	$b^1D-v^3G^\circ$ (1121)
6736.56	P	⊙	4.28	6.11	2-2	$b^1D-z^1D^\circ$ (1122)
6267.845	U	(1)	4.28	6.24	2-3	$b^1D-z^1F^\circ$ (1123)
5883.06	P	⊙?	4.28	6.37	2-2	$b^1D-t^5D^\circ$ (1124)
6035.34	P	⊙?	4.28	6.32	2-2	$b^1D-v^3F^\circ$ (1125)
5976.18	P	⊙	4.28	6.34	2-3	
5816.07	P	⊙?	4.28	6.40	2-3	$b^1D-u^3G^\circ$ (1127)
5856.084	V	(2)	4.28	6.38	2-2	$b^1D-y^1D^\circ$ (1128)
5837.709	V	(1)	4.28	6.39	2-2	$b^1D-x^1D^\circ$ (1129)
5539.831	U	(1)	4.28	6.50	2-2	$b^1D-t^3D^\circ$ (1130)
5698.37	W	(2)	4.28	6.44	2-1	
5469.09	P	⊙	4.28	6.53	2-2	$b^1D-v^3P^\circ$ (1131)
5376.849	U	(2)	4.28	6.57	2-1	$b^1D-z^1P^\circ$ (1132)
4734.100	J	(1)	4.28	6.88	2-2	$b^1D-w^1D^\circ$ (1133)
4725.94	V	(1n)	4.28	6.89	2-3	$b^1D-w^1F^\circ$ (1134)
4333.06	P	⊙	4.28	7.12	2-2	$b^1D-t^3F^\circ$ (1135)
8220.406	E	1500	4.30	5.80	6-5	$z^5G^\circ-e^5F$ (1136)
7937.166	E	700	4.29	5.85	5-4	
7998.972	E	700	4.35	5.90	4-3	
8046.073	E	600	4.40	5.93	3-2	
8085.200	E	500	4.43	5.95	2-1	
8179.03	O	(1)	4.29	5.80	5-5	
8248.151	E	30	4.35	5.85	4-4	
8232.347	E	50	4.40	5.90	3-3	
8207.767	E	40	4.43	5.93	2-2	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
<u>Fe I</u> continued						
8509.63	P	⊙	4.35	5.80	4-5	$z^5G^\circ-e^5F$ (1136) cont
8496.51	P	⊙	4.40	5.85	3-4	
8401.68	P	⊙	4.43	5.90	2-3	
7586.044	E	150	4.29	5.92	5-4	$z^5G^\circ-e^3F$ (1137)
7531.171	E	60	4.35	5.99	4-3	
7507.300	L	8	4.40	6.04	3-2	
7869.65	O	4	4.35	5.92	4-4	
7737.67	P	⊙	4.40	5.99	3-3	
7647.83	P	⊙	4.43	6.04	2-2	
6428.80	V	(1)	4.35	6.27	4-4	$z^5G^\circ-f^7D$ (1138)
6543.98	U	(1)	4.35	6.24	4-3	$z^5G^\circ-f^5D$ (1139)
6376.22	P	⊙	4.30	6.24	6-6	$z^5G^\circ-e^5G$ (1140)
6303.46	V	(1n)	4.30	6.26	6-5	
6351.29	P	⊙	4.29	6.24	5-6	
6472.15	P	⊙?	4.35	6.26	4-5	
6148.65	P	⊙	4.30	6.31	6-5	$z^5G^\circ-f^5F$ (1141)
6034.04	P	(2)	4.29	6.34	5-4	$z^5G^\circ-g^5D$ (1142)
6054.100	U	(2)	4.35	6.39	4-3	
6081.72	P	⊙	4.40	6.43	3-2	
6212.04	V	(1)	4.35	6.34	4-4	
5361.637	U	(1)	4.40	6.70	3-2	$z^5G^\circ-g^5F$ (1143)
5395.25	W	(1n)	4.43	6.71	2-1	
5469.29	P	⊙	4.29	6.55	5-5	
5512.277	V	(1)	4.35	6.59	4-4	
5487.16	V	(1)	4.40	6.65	3-3	
5432.950	U	(2n)	4.43	6.70	2-2	
5615.18	P	⊙	4.35	6.55	4-5	
5441.321	U	(1)	4.29	6.56	5-4	$z^5G^\circ-h^5D$ (1144)
5466.404	J	(3)	4.35	6.61	4-3	
5446.58	P		4.40	6.66	3-2	
5470.17	W	(1)	4.43	6.68	2-1	
5520.19	P	⊙?	4.43	6.66	2-2	
5455.433	K	(5)	4.30	6.56	6-6	$z^5G^\circ-f^5G$ (1145)
m5404.12	P	Fe	4.29	6.58	5-5	
5400.509	J	(5)	4.35	6.64	4-4	
5389.461	K	(5)	4.40	6.69	3-3	
5398.285	V	(1)	4.43	6.71	2-2	
5422.15	P	⊙	4.30	6.58	6-5	
5265.42	P	⊙	4.29	6.64	5-4	
5327.86	P	⊙?	4.40	6.71	3-2	
5437.19	P	⊙	4.29	6.56	5-6	
5546.512	V	(1)	4.35	6.58	4-5	
5505.893	T	(-)	4.40	6.64	3-4	
5461.54	W	(1n)	4.43	6.69	2-3	
5424.072	I	45n	4.30	6.58	6-7	$z^5G^\circ-e^5H$ (1146)
5383.374	I	35n	4.29	6.59	5-6	
5369.965	I	25n	4.35	6.65	4-5	
5367.470	I	20n	4.40	6.70	3-4	
5364.874	I	15n	4.43	6.73	2-3	
5401.27	P	⊙	4.30	6.59	6-6	
5236.38	P	⊙	4.29	6.65	5-5	
5267.28	P	⊙	4.35	6.70	4-4	
5295.316	U	(1)	4.40	6.73	3-3	
5290.79	P		4.30	6.63	6-5	$z^5G^\circ-e^3G$ (1147)
5184.17	P	⊙	4.29	6.67	5-4	
5273.62	P	⊙	4.29	6.63	5-5	
5315.07	W	(1)	4.35	6.67	4-4	
5326.793	T	(-)	4.40	6.71	3-3	
5409.125	V	(1)	4.35	6.63	4-5	
5406.77	P	⊙	4.35	6.64	4-3	$z^5G^\circ-f^3D$ (1148)
5417.03	W	(1)	4.40	6.67	3-2	
5512.40	P	⊙	4.40	6.64	3-3	
5489.85	P	⊙	4.43	6.67	2-2	
5262.61	P	⊙	4.30	6.65	6-6	$z^5G^\circ-e^3H$ (1149)
5130.91	P	⊙	4.29	6.70	5-5	
5056.00	W	(1)	4.29	6.73	5-4	
5245.62	P	⊙	4.29	6.65	5-6	
5259.09	P	⊙	4.35	6.70	4-5	
5277.31	P	⊙	4.40	6.73	3-4	
5023.476	T	(-)	4.29	6.75	5-4	$z^5G^\circ-f^3F$ (1150)
5031.901	R	8	4.35	6.81	4-3	
*5057.49	W	(1)	4.40	6.84	3-2	
5146.30	P	⊙	4.35	6.75	4-4	
5123.28	P	⊙	4.40	6.81	3-3	
5120.89	P	⊙	4.43	6.84	2-2	
5241.90	P	(1)	4.40	6.75	3-4	
4618.568	V	(2w)	4.29	6.97	5-5	$z^5G^\circ-1$ (1151)
4631.49	W	(1)	4.35	7.03	4-4	$z^5G^\circ-3$ (1152)
8598.79	O	4	4.37	5.80	5-5	$z^3G^\circ-e^5F$ (1153)
8610.62	P	⊙	4.42	5.85	4-4	
8562.13	P	⊙	4.45	5.90	3-3	
8331.941	E	200	4.37	5.85	5-4	
8339.431	E	80	4.42	5.90	4-3	
8360.822	E	8	4.45	5.93	3-2	
8896.00	P	⊙	4.42	5.80	4-5	
8848.25	P		4.45	5.85	3-4	
7945.878	E	600	4.37	5.92	5-4	$z^3G^\circ-e^3F$ (1154)
7832.224	E	400	4.42	5.99	4-3	
7780.586	E	300	4.45	6.04	3-2	
8198.951	E	80	4.42	5.92	4-4	
8028.341	E	50	4.45	5.99	3-3	
8414.08	P	⊙	4.45	5.92	3-4	
6681.34	P	⊙	4.37	6.21	5-6	$z^3G^\circ-e^7F$ (1155)
6635.68	P	⊙	4.42	6.28	4-5	
6615.03	P	⊙	4.45	6.32	3-4	
6665.42	P	⊙	4.37	6.22	5-5	$z^3G^\circ-f^7D$ (1156)
m6646.90	P	Fe	4.42	6.27	4-4	
6700.89	P	⊙	4.45	6.30	3-2	
6787.61	P	⊙	4.45	6.27	3-4	

ued

ory ef	Int	E P Low	E P High	J	Multiplet (No)
	⊙	4.37	6.23	5-4	$z^3G^\circ-e^7P$
	⊙	4.42	6.25	4-3	(1157)
	⊙	4.45	6.25	3-3	
	(1)	4.42	6.33	4-3	$z^3G^\circ-e^3D$ (1158)
	(1w)	4.37	6.55	5-5	$z^3G^\circ-g^5F$
	(2)	4.45	6.65	3-3	(1159)
	⊙	4.37	6.59	5-4	
	⊙	4.45	6.70	3-2	
	(1)	4.42	6.55	4-5	
	(1)	4.37	6.56	5-4	$z^3G^\circ-h^5D$
	⊙?	4.45	6.66	3-2	(1160)
	⊙	4.42	6.56	4-4	
	(1)	4.45	6.61	3-3	
	(1)	4.37	6.56	5-6	$z^3G^\circ-f^5G$
	(1)	4.42	6.58	4-5	(1161)
	⊙	4.45	6.64	3-4	
	(1)	4.42	6.64	4-4	
	⊙	4.45	6.69	3-3	
	(1)	4.37	6.64	5-4	
	⊙	4.42	6.69	4-3	
	⊙	4.37	6.59	5-6	$z^3G^\circ-e^5H$
	⊙	4.42	6.65	4-5	(1162)
	⊙	4.45	6.70	3-4	
	⊙	4.37	6.65	5-5	
	⊙	4.42	6.70	4-4	
	⊙	4.45	6.73	3-3	
	⊙	4.37	6.70	5-4	
	⊙	4.42	6.73	4-3	
	15n	4.37	6.63	5-5	$z^3G^\circ-e^3G$
	10n	4.42	6.67	4-4	(1163)
	(2)	4.45	6.71	3-3	
	(3)	4.37	6.67	5-4	
	Fe	4.42	6.71	4-3	
	(2)	4.42	6.63	4-5	
	(1)	4.45	6.67	3-4	
	(1)	4.42	6.64	4-3	$z^3G^\circ-f^3D$
	⊙	4.45	6.67	3-2	(1164)
	35n	4.37	6.65	5-6	$z^3G^\circ-e^3H$
	30n	4.42	6.70	4-5	(1165)
	15n	4.45	6.73	3-4	
	⊙	4.37	6.70	5-5	
	(1)	4.42	6.73	4-4	
	⊙	4.37	6.73	5-4	
	(1n)	4.37	6.75	5-4	$z^3G^\circ-f^3F$
	(1)	4.42	6.81	4-3	(1166)
	(-)	4.45	6.84	3-2	
	⊙	4.42	6.75	4-4	
	(1n)	4.45	6.81	3-3	
	(1)	4.45	6.75	3-4	
	⊙?	4.42	6.97	4-5	$z^3G^\circ-1$ (1167)
	⊙?	4.37	6.97	5-	$z^3G^\circ-2$ (1168)
	⊙	4.42	7.14	4-3	$z^3G^\circ-1^5D$
	⊙	4.45	7.16	3-2	(1169)
	⊙	4.37	7.19	5-5	$z^3G^\circ-g^5G$
	⊙?	4.37	7.22	5-4	(1170)
	⊙	4.42	7.25	4-3	
	2	4.59	5.85	3-4	$y^3F^\circ-e^5F$
	10	4.53	5.85	4-4	(1171)
	2	4.59	5.90	3-3	
	150	4.53	5.92	4-4	$y^3F^\circ-e^3F$
	120	4.59	5.99	3-3	(1172)
	100	4.63	6.04	2-2	
	20	4.53	5.99	4-3	
	8	4.59	6.04	3-2	
	20	4.59	5.92	3-4	
	8	4.63	5.99	2-3	
	60	4.53	6.33	4-3	$y^3F^\circ-e^3D$
	40	4.59	6.39	3-2	(1173)
	20	4.63	6.42	2-1	
	⊙	4.59	6.33	3-3	
	⊙	4.63	6.39	2-2	
	⊙	4.63	6.43	2-2	$y^3F^\circ-g^5D$
	5	4.53	6.39	4-3	(1174)
	5	4.59	6.43	3-2	
	5	4.63	6.45	2-1	
	⊙	4.53	6.55	4-5	$y^3F^\circ-g^5F$
	(1n)	4.59	6.59	3-4	(1175)
	6	4.53	6.59	4-4	
	(1)	4.59	6.65	3-3	
	⊙	4.63	6.70	2-2	
	(2n)	4.59	6.70	3-2	
	(2w,d)	4.63	6.71	2-1	
	(1)	4.63	6.66	2-2	$y^3F^\circ-h^5D$
	(1)	4.53	6.61	4-3	(1176)
	(2)	4.59	6.66	3-2	
	⊙	4.63	6.68	2-1	
	⊙	4.59	6.56	3-4	
	(1)	4.59	6.61	3-2	$y^3F^\circ-f^5P$
	(1)	4.63	6.66	2-1	(1177)
	15	4.53	6.58	4-5	$y^3F^\circ-f^5G$
	10n	4.59	6.64	3-4	(1178)
	(3n)	4.63	6.69	2-3	
	(2n)	4.53	6.64	4-4	
	⊙	4.59	6.69	3-3	
	⊙	4.53	6.69	4-3	
	⊙	4.59	6.71	3-2	

<u>Fe I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5816.36	V	(3d)	4.53	6.65	4-5	$y^3F^\circ-e^5H$
5855.126	V	(1)	4.59	6.70	3-4	(1179)
5891.16	P	⊙	4.63	6.73	2-3	
5696.10	P	⊙	4.53	6.70	4-4	
5769.31	P	(1)	4.59	6.73	3-3	
5863.357	K	8	4.53	6.63	4-5	$y^3F^\circ-e^3G$
*5914.16	V	8	4.59	6.67	3-4	(1180)
5930.173	K	8	4.63	6.71	2-3	
5752.043	J	(2)	4.53	6.67	4-4	
5806.727	V	(2)	4.59	6.71	3-3	
5650.31	P	⊙	4.53	6.71	4-3	
5859.608	K	5	4.53	6.64	4-3	$y^3F^\circ-f^3D$
*5914.16	V	8	4.59	6.67	3-2	(1181)
5905.673	K	3n	4.63	6.72	2-1	
5686.532	V	(3)	4.53	6.70	4-5	$y^3F^\circ-e^3H$
5747.95	V	(1)	4.59	6.73	3-4	(1182)
5594.661	V	(2)	4.53	6.73	4-4	
5554.895	I	4	4.53	6.75	4-4	$y^3F^\circ-f^3F$
5565.708	I	4	4.59	6.81	3-3	(1183)
5598.303	J	4	4.63	6.84	2-2	
5421.85	P	⊙	4.53	6.81	4-3	
5488.14	P	⊙	4.59	6.84	3-2	
5705.988	V	(2)	4.59	6.75	3-4	
5679.023	V	(2)	4.63	6.81	2-3	
5642.75	P	⊙	4.59	6.77	3-2	$y^3F^\circ-e^3P$
5759.270	U	(1)	4.63	6.77	2-2	(1184)
5057.83	P	⊙	4.53	6.97	4-	$y^3F^\circ-2$ (1185)
6930.35	P	⊙	4.54	6.32	3-4	$y^5P^\circ-e^7F$
*7145.317	V	5	4.59	6.31	2-3	(1186)
*6951.261	I	25	4.54	6.31	3-3	
7053.48	P		4.59	6.34	2-2	
6864.31	P	⊙	4.54	6.34	3-2	
7115.25	P	⊙?	4.59	6.32	2-1	
7120.01	P	⊙	4.54	6.27	3-4	$y^5P^\circ-f^7D$
7295.00	V	1	4.59	6.28	2-3	(1187)
7356.81	P	⊙	4.62	6.30	1-2	
*7222.88	V	(1)	4.59	6.30	2-2	
7330.16	P	⊙	4.62	6.30	1-1	
7024.649	V	10n	4.54	6.30	3-2	
§7320.694§	L	5n	4.54	6.22	3-4	$y^5P^\circ-f^5D$
7473.56	O	(1)	4.59	6.24	2-3	(1188)
7261.54	V	3n	4.54	6.24	3-3	
7382.99	V	1n	4.59	6.26	2-2	
7421.60	O	1	4.62	6.28	1-1	
7175.937	V	3	4.54	6.26	3-2	
7285.286	V	1	4.59	6.28	2-1	
7366.37	O	1	4.62	6.29	1-0	
7292.856	V	3n	4.54	6.23	3-4	$y^5P^\circ-e^7P$
7430.90	M	1	4.59	6.25	2-3	(1189)
7431.94	P	⊙	4.62	6.28	1-2	
7221.22	V	2n	4.54	6.25	3-3	
7295.27	P	⊙	4.59	6.28	2-2	
7093.10	P	⊙	4.54	6.28	3-2	
7034.06	P	⊙	4.54	6.29	3-4	$y^5P^\circ-e^5G$
7109.67	P	⊙	4.59	6.32	2-3	(1190)
7161.04	P	⊙	4.62	6.34	1-2	
6917.52	P		4.54	6.32	3-3	
7034.08	P	⊙	4.59	6.34	2-2	
6845.93	P	⊙	4.54	6.34	3-2	
6862.481	V	4n	4.54	6.34	3-4	$y^5P^\circ-e^7G$
6989.64	P	⊙	4.59	6.35	2-3	(1191)
6803.84	P	⊙	4.54	6.35	3-3	
6803.30	P	⊙	4.54	6.35	3-4	$y^5P^\circ-f^5F$
6920.16	P	⊙	4.59	6.37	2-3	(1192)
6838.08	V	4nl	4.54	6.37	3-3	
6692.47	P	1	4.54	6.38	3-2	
6848.86	P	⊙	4.59	6.39	2-1	
*6951.261	I	25	4.54	6.31	3-2	$y^5P^\circ-e^5S$
*7145.317	V	5	4.59	6.31	2-2	(1193)
6881.74	M	1	4.54	6.33	3-3	$y^5P^\circ-e^3D$
6855.74	V	2	4.59	6.39	2-2	(1194)
6833.24	V	1	4.62	6.42	1-1	
6676.86	P	⊙	4.54	6.39	3-2	
6717.556	V	3	4.59	6.42	2-1	
7071.88	V	1	4.59	6.33	2-3	
6976.306	V	1	4.62	6.39	1-2	
6855.176	I	150	4.54	6.34	3-4	$y^5P^\circ-g^5D$
6841.349	I	80	4.59	6.39	2-3	(1195)
6828.610	I	50	4.62	6.43	1-2	
6663.26	V	(1)	4.54	6.39	3-3	
*6713.14	V	6d	4.59	6.43	2-2	
6752.724	L	10	4.62	6.45	1-1	
6541.49	P		4.54	6.43	3-2	
6639.71	P	4	4.59	6.45	2-1	
6733.164	L	6	4.62	6.45	1-0	
6753.45	P	⊙	4.54	6.37	3-3	$y^5P^\circ-e^7S$
6936.48	P	⊙	4.59	6.37	2-3	(1196)
6633.764	K	50	4.54	6.40	3-3	$y^5P^\circ-e^5P$
6705.117	I	15n	4.59	6.43	2-2	(1197)
6842.668	V	6n	4.62	6.42	1-1	
6533.97	V	8n	4.54	6.43	3-2	
6726.668	V	20n	4.59	6.42	2-1	
6810.28	V	20n	4.59	6.40	2-3	
6820.43	O	8n	4.62	6.43	1-2	
6012.75	P	⊙	4.54	6.59	3-4	$y^5P^\circ-g^5F$
5995.93	P	⊙	4.59	6.65	2-3	(1198)
5933.80	P	⊙	4.62	6.70	1-2	
5715.80	P	⊙	4.54	6.70	3-2	

<u>Fe I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6100.29	P	(1)	4.54	6.56	3-4	$y^5P^\circ-h^5D$
6100.23	P		4.59	6.61	2-3	(1199)
*5958.22	P	(2)	4.54	6.61	3-3	
5947.50	P	(1)	4.59	6.66	2-2	
5978.17	P	⊙	4.62	6.68	1-1	
6098.28	P	⊙	4.54	6.56	3-3	$y^5P^\circ-f^5P$
6091.74	P	⊙	4.59	6.61	2-2	(1200)
5950.13	P	⊙	4.54	6.61	3-2	
5880.00	V	(2wd)	4.54	6.64	3-4	$y^5P^\circ-f^5G$
5879.49	P	⊙	4.59	6.69	2-3	(1201)
5892.46	P	⊙	4.62	6.71	1-2	
5640.46	W	(1n)	4.54	6.73	3-3	$y^5P^\circ-e^5H$ (1202)
5887.46	P	⊙	4.54	6.64	3-3	$y^5P^\circ-f^3D$
5867.01	P	⊙	4.62	6.72	1-1	(1203)
5778.81	P	⊙	4.54	6.67	3-2	
*5759.57	P	(2)	4.54	6.68	3-4	$y^5P^\circ-g^7D$
5727.75	U	(1)	4.59	6.74	2-2	(1204)
*5620.04	W	(1)	4.54	6.73	3-4	$y^5P^\circ-e^3H$ (1205)
4776.34	V	(1n)	4.54	7.12	3-4	$y^5P^\circ-1^5D$
4839.77	P	⊙	4.59	7.14	2-3	(1206)
4749.93	V	(1)	4.54	7.14	3-3	
4802.53	P	⊙	4.59	7.16	2-2	
4714.074	V	(1n)	4.54	7.16	3-3	
4661.538	J	(2n)	4.54	7.19	3-2	$y^5P^\circ-4$ (1207)
10333.24	P	⊙	4.57	5.77	4-4	$d^3F-u^5D^\circ$
10307.48	P	⊙	4.57	5.77	4-3	(1208)
10156.50	P	⊙	4.57	5.79	4-4	$d^3F-x^3F^\circ$
9881.51	P	1	4.56	5.81	3-3	(1209)
9747.24	F	2	4.56	5.83	2-2	
9950.70	P	⊙	4.57	5.81	4-3	
10084.42	P	⊙	4.56	5.79	3-4	
9937.10	P	⊙	4.57	5.82	4-4	$d^3F-z^3H^\circ$ (1210)
10026.10	P		4.57	5.80	4-3	$d^3F-w^3D^\circ$
9839.38	F	1	4.56	5.82	3-2	(1211)
9771.06	P	⊙	4.56	5.84	2-1	
9955.85	P	⊙	4.56	5.80	3-3	
9636.69	Y	(1)	4.57	5.85	4-5	$d^3F-w^5G^\circ$ (1212)
9225.55	O	(1)	4.56	5.90	3-4	$d^3F-x^3G^\circ$ (1213)
8848.46	P	⊙	4.56	5.96	2-2	$d^3F-v^5F^\circ$ (1214)
8576.50	P	⊙	4.57	6.01	4-4	$d^3F-y^1G^\circ$
8525.04	P	⊙	4.56	6.01	3-4	(1215)
8253.78	P	⊙	4.56	6.06	2-2	d^3F-2° (1216)
*8149.59	O	3	4.56	6.08	3-3	$d^3F-w^3F^\circ$
8002.55	P	⊙	4.56	6.10	2-2	(1217)
8196.52	P	⊙	4.57	6.08	4-3	
8269.66	P	⊙	4.57	6.07	4-3	$d^3F-v^3D^\circ$
*8149.59	O	3	4.56	6.08	3-2	(1218)
7129.30	P	⊙	4.57	6.30	4-5	$d^3F-x^3H^\circ$ (1219)
7125.28	P	⊙	4.57	6.31	4-4	$d^3F-t^5D^\circ$
6949.37	P		4.56	6.34	3-3	(1220)
6805.72	P	⊙	4.56	6.37	2-2	
6983.53	P	⊙	4.57	6.34	4-3	
6822.00	P	1	4.56	6.37	3-2	
6711.24	P	⊙	4.56	6.40	2-1	
7089.73	P	⊙	4.56	6.31	3-4	
6932.49	P	⊙	4.56	6.34	2-3	
7011.364	V	3	4.57	6.33	4-4	$d^3F-v^3F^\circ$
*6947.501	V	3	4.56	6.34	3-3	(1221)
7010.362	V	2	4.56	6.32	2-2	
7027.60	V	(1)	4.56	6.32	3-2	
6976.934	V	3	4.56	6.33	3-4	
6930.64	V	1	4.56	6.34	2-3	
6960.334	V	2	4.57	6.35	4-4	d^3F-4°
6926.40	P	⊙	4.56	6.35	3-4	(1222)
*6947.501	V	3	4.57	6.35	4-	d^3F-5° (1224)
6854.82	V	2	4.57	6.37	4-5	d^3F-6° (1224a)
6977.445	V	4	4.57	6.34	4-5	$d^3F-u^3G^\circ$
6804.27	V	3	4.56	6.38	3-4	(1225)
6716.24	V	3	4.56	6.40	2-3	
6837.00	O	3	4.57	6.38	4-4	
6732.06	V	1	4.56	6.40	3-3	
6764.13	P	⊙	4.57	6.40	4-3	
6785.76	P	⊙	4.56	6.38	3-2	$d^3F-y^1D^\circ$
6769.66	P	⊙	4.56	6.38	2-2	(1226)
6761.07	P	⊙	4.56	6.39	3-2	$d^3F-x^1D^\circ$
6745.11	V	1	4.56	6.39	2-2	(1227)
6699.14	V	2	4.57	6.42	4-3	$d^3F-u^3D^\circ$
6667.73	V	(1)	4.56	6.42	3-3	(1228)
6591.32	V	2	4.57	6.45	4-3	$d^3F-t^3D^\circ$
6364.717	V	(1)	4.56	6.50	3-2	(1229)
6306.19	P	⊙	4.57	6.53	4-5	$d^3F-y^3I^\circ$ (1230)
6271.52	P	⊙	4.56	6.53	3-2	$d^3F-v^3P^\circ$
5926.83	P	⊙	4.56	6.64	2-1	(1231)
6016.95	P	⊙	4.57	6.62	4-3	$d^3F-y^1F^\circ$
5991.58	P	⊙	4.56	6.62	3-3	(1232)

REVISED MULTIPLET TABLE

ory f Int	E P Low	E P High	J	Multiplet (No)
ued				
⊙	4.56	6.64	3-3	$d^3F-x^1F^\circ$ (1233)
⊙	4.56	6.64	2-3	
(1)	4.57	6.66	4-5	$d^3F-t^3G^\circ$ (1234)
⊙	4.56	6.70	3-4	
⊙	4.56	6.74	2-3	
(1)	4.57	6.70	4-4	
(1)	4.56	6.74	3-3	
(1)	4.57	6.67	4-3	d^3F-11° (1235)
⊙	4.56	6.67	3-3	
(1)	4.57	6.67	4-5	d^3F-12° (1236)
⊙	4.57	6.70	4-4	d^3F-13° (1236a)
⊙	4.56	6.70	3-4	
⊙	4.57	6.84	4-5	$d^3F-v^3H^\circ$ (1237)
⊙	4.56	6.84	3-4	
(-)	4.56	6.88	2-2	$d^3F-w^1D^\circ$ (1238)
⊙	4.56	6.89	3-3	$d^3F-w^1F^\circ$ (1239)
⊙	4.57	6.90	4-5	$d^3F-s^3G^\circ$ (1240)
⊙	4.56	6.90	3-4	
⊙	4.56	6.93	2-3	
⊙	4.57	6.96	4-5	$d^3F-u^3H^\circ$ (1241)
⊙	4.57	6.99	4-4	$d^3F-u^3F^\circ$ (1242)
⊙	4.56	7.01	3-3	
⊙	4.56	7.02	2-2	
⊙	4.56	6.99	3-4	
⊙	4.57	7.10	4-4	$d^3F-t^3F^\circ$ (1243)
⊙	4.56	7.12	3-3	
⊙	4.56	7.12	2-2	
⊙	4.57	7.12	4-3	
⊙	4.57	7.40	4-5	$d^3F-r^3G^\circ$ (1244)
⊙	4.57	7.47	4-5	$d^3F-t^3H^\circ$ (1245)
⊙	4.56	7.50	3-4	
———	———	———		
5	4.71	5.85	3-4	$y^3D^\circ-e^5F$ (1246)
1	4.77	5.90	2-3	
⊙	4.71	5.90	3-3	
100	4.71	5.92	3-4	$y^3D^\circ-e^3F$ (1247)
80	4.77	5.99	2-3	
60	4.81	6.04	1-2	
20	4.71	5.99	3-3	
10	4.77	6.04	2-2	
⊙	4.71	6.04	3-2	
⊙	4.77	6.31	2-2	$y^3D^\circ-e^5S$ (1249)
25	4.71	6.33	3-3	$y^3D^\circ-e^3D$ (1250)
6	4.77	6.39	2-2	
⊙	4.81	6.42	1-1	
1	4.71	6.39	3-2	
(1)	4.77	6.42	2-1	
⊙	4.77	6.33	2-3	
2	4.81	6.39	1-2	
1	4.71	6.39	3-3	$y^3D^\circ-g^5D$ (1251)
(1)	4.77	6.43	2-2	
1n	4.81	6.45	1-1	
⊙	4.71	6.43	3-2	
⊙	4.77	6.45	2-1	
⊙	4.71	6.43	3-2	$y^3D^\circ-e^5P$ (1252)
50n	4.71	6.59	3-4	$y^3D^\circ-g^5F$ (1253)
15n	4.77	6.65	2-3	
⊙	4.71	6.65	3-3	
Fe+	4.77	6.70	2-2	
3	4.81	6.71	1-1	
(1)	4.77	6.71	2-1	
⊙	4.71	6.56	3-4	$y^3D^\circ-h^5D$ (1254)
(1)	4.81	6.68	1-1	
(1n)	4.71	6.66	3-2	
⊙	4.77	6.68	2-1	
	4.71	6.56	3-3	$y^3D^\circ-f^5P$ (1255)
3n	4.77	6.61	2-2	
⊙	4.81	6.66	1-1	
⊙	4.71	6.61	3-2	
(1)	4.77	6.66	2-1	
⊙	4.81	6.61	1-2	
1n	4.71	6.64	3-4	$y^3D^\circ-f^5G$ (1256)
⊙	4.77	6.69	2-3	
⊙	4.71	6.69	3-3	
⊙	4.71	6.71	3-2	
⊙?	4.71	6.70	3-4	$y^3D^\circ-e^5H$ (1257)
30n	4.71	6.64	3-3	$y^3D^\circ-f^3D$ (1258)
20n	4.77	6.67	2-2	
15n	4.81	6.72	1-1	
3n	4.71	6.67	3-2	
(1n)	4.77	6.72	2-1	
4n	4.77	6.64	2-3	
4n	4.81	6.67	1-2	
4	4.71	6.75	3-4	$y^3D^\circ-f^3F$ (1259)
4n	4.77	6.81	2-3	
5	4.81	6.84	1-2	
(1)	4.71	6.81	3-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
5984.805	K	8	4.71	6.77	3-2	$y^3D^\circ-e^3P$ (1260)
5987.057	K	6	4.77	6.84	2-1	
•5975.355	J	4	4.81	6.88	1-0	
6170.492	K	4n	4.77	6.77	2-2	
~~6103.190~~	K	3	4.81	6.84	1-1	
6293.92	P	⊙	4.81	6.77	1-2	
		———	———	———		
m8920.02	P	Fe	4.89	6.28	4-5	$x^5D^\circ-e^7F$ (1261)
•9157.08	P	(2)	4.97	6.31	2-3	
9328.64	P	⊙	5.00	6.32	0-1	
8643.29	P	⊙	4.89	6.32	4-4	
9006.72	F	1	4.97	6.34	2-2	
9253.72	P	⊙	4.99	6.32	1-1	
9298.05	P	⊙	4.89	6.22	4-5	$x^5D^\circ-f^7D$ (1262)
9178.57	F	1n	4.93	6.28	3-3	
9392.77	P	⊙	4.99	6.30	1-1	
9242.32	F	2	4.97	6.30	2-1	
9259.05	F	15	4.89	6.22	4-4	$x^5D^\circ-f^5D$ (1263)
9462.97	F	2	4.93	6.24	3-3	
9550.90	F	2	4.97	6.26	2-2	
9164.51	U	(1)	4.89	6.24	4-3	
9318.13	F	3	4.93	6.26	3-2	
9388.28	F	3n	4.97	6.28	2-1	
•9452.45	F	2	4.99	6.29	1-0	
9214.45	F	6	4.89	6.23	4-4	$x^5D^\circ-e^7P$ (1264)
9394.71	F	3n	4.93	6.25	3-3	
9404.80	P	⊙?	4.97	6.28	2-2	
9100.50	F	5n	4.89	6.25	4-3	
9024.47	F	15	4.89	6.26	4-5	$x^5D^\circ-e^5G$ (1265)
•9080.48	F	3n	4.93	6.29	3-4	
9116.89	P	⊙	4.99	6.34	1-2	
8805.21	P	⊙	4.89	6.29	4-4	
8887.10	P	⊙	4.93	6.32	3-3	
8616.27	P	⊙	4.89	6.32	4-5	$x^5D^\circ-e^7G$ (1266)
8796.42	F	2	4.93	6.34	3-4	
8902.94	P	⊙	4.97	6.35	2-3	
8978.04	P	⊙	4.99	6.36	1-2	
8538.02	P	⊙	4.89	6.34	4-4	
8700.34	P	⊙	4.93	6.35	3-3	
8956.26	P	⊙	4.99	6.37	1-1	
8447.41	P	⊙	4.89	6.35	4-3	
8819.42	P	⊙	4.97	6.37	2-1	
8710.29	F	20n	4.89	6.31	4-5	$x^5D^\circ-f^5F$ (1267)
8699.43	O	(4n)	4.93	6.35	3-4	
8790.62	F	10n	4.97	6.37	2-3	
8846.82	F	5	4.99	6.38	1-2	
8876.13	F	2	5.00	6.39	0-1	
8446.56	P		4.89	6.35	4-4	
8592.97	O	(2n)	4.93	6.37	3-3	
•8713.19	F	10	4.97	6.38	2-2	
8808.17	P	4n	4.99	6.39	1-1	
8519.05	P	⊙	4.93	6.38	3-2	
•9157.07	P	(2)	4.97	6.31	2-2	$x^5D^\circ-e^5S$ (1268)
8567.78	P	⊙	4.89	6.33	4-3	$x^5D^\circ-e^3D$ (1269)
8493.79	P	⊙	4.93	6.39	3-2	
8466.10	P	⊙	4.97	6.42	2-1	
8828.08	P	⊙	4.93	6.33	3-3	
8686.77	P	⊙	4.97	6.39	2-2	
8592.10	P	⊙	4.99	6.42	1-1	
9036.74	P	(1)	4.97	6.33	2-3	
8819.48	P	⊙	4.99	6.39	1-2	
8656.67	P	⊙	5.00	6.42	0-1	
8526.685	E	8	4.89	6.34	4-4	$x^5D^\circ-g^5D$ (1270)
8471.75	O	2	4.93	6.39	3-3	
8459.01	P	⊙	4.97	6.43	2-2	
8465.23	P	⊙	4.99	6.45	1-1	
8275.91	O	4n	4.93	6.43	3-2	
8342.95	R	(-)	4.97	6.45	2-1	
8434.51	P	⊙	4.99	6.45	1-0	
8784.44	F	5	4.93	6.34	3-4	
8663.73	P	⊙	4.97	6.39	2-3	
8584.82	P	⊙	4.99	6.43	1-2	
8527.88	P	⊙	5.00	6.45	0-1	
8369.87	P	⊙	4.89	6.37	4-3	$x^5D^\circ-e^7S$ (1271)
8816.86	P	⊙	4.97	6.37	2-3	
8186.80	O	10nd?	4.89	6.40	4-3	$x^5D^\circ-e^5P$ (1272)
8263.86	P	⊙	4.93	6.43	3-2	
8480.63	P	⊙	4.97	6.42	2-1	
8424.14	O	2n	4.93	6.40	3-3	
8446.42	P		4.97	6.43	2-2	
8607.08	P	⊙	4.99	6.42	1-1	
8613.93	P	⊙	4.97	6.40	2-3	
8571.84	P	⊙	4.99	6.43	1-2	
8671.86	P	⊙	5.00	6.42	0-1	
7440.98	V	2n	4.89	6.55	4-5	$x^5D^\circ-g^5F$ (1273)
7447.43	V	1	4.93	6.59	3-4	
7351.160	V	2n	4.97	6.65	2-3	
7216.68	P	⊙	4.99	6.70	1-2	
7194.92	O	1	5.00	6.71	0-1	
7261.29	P	⊙	4.89	6.59	4-4	
7212.47	V	1n	4.93	6.65	3-3	
7127.58	P	⊙	4.97	6.70	2-2	
6997.13	P	⊙	4.93	6.70	3-2	
7062.80	P	⊙	4.97	6.71	2-1	
7389.34	P		4.89	6.56	4-4	$x^5D^\circ-h^5D$ (1274)
7363.96	O	1n	4.93	6.61	3-3	
7278.48	P	⊙	4.97	6.66	2-2	
7282.39	V	1n	4.99	6.68	1-1	
7181.93	V	1n	4.89	6.61	4-3	
7142.522	V	4n	4.93	6.66	3-2	
7191.66	O	(1)	4.97	6.68	2-1	
7582.15	P	⊙	4.93	6.56	3-4	
7508.53	P	⊙	4.97	6.61	2-3	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Fe I continued						
7386.394	L	8n	4.89	6.56	4-3	$x^5D^\circ-f^5P$ (1275)
7351.56	V	4	4.93	6.61	3-2	
7300.47	O	1n	4.97	6.66	2-1	
7495.67	P	⊙	4.97	6.61	2-2	
‡7320.694§	L	5n	4.89	6.58	4-5	$x^5D^\circ-f^5G$ (1276)
7344.86	V	2n	4.93	6.64	3-4	
7176.886	V	2n	4.97	6.69	2-3	
7155.64	V	3n	4.99	6.71	1-2	
7068.60	P	⊙	4.89	6.64	4-4	
7044.60	O	(1)	4.93	6.69	3-3	
7068.02	P	⊙	4.97	6.71	2-2	
7083.396	V	1n	4.89	6.63	4-5	$x^5D^\circ-e^3G$ (1277)
7091.91	P	(1)	4.93	6.67	3-4	
7066.15	P	⊙	4.97	6.71	2-3	
7079.32	P	⊙	4.89	6.64	4-3	$x^5D^\circ-f^3D$ (1278)
7091.83	O	(1)	4.93	6.67	3-2	
7031.42	P	⊙	4.97	6.72	2-1	
7256.13	P	(1)	4.93	6.64	3-3	
7225.82	P	⊙	4.97	6.67	2-2	
7118.12	P	⊙	4.99	6.72	1-1	
7396.50	P	⊙	4.97	6.64	2-3	
7317.40	P	⊙	4.99	6.67	1-2	
7162.37	P	⊙	5.00	6.72	0-1	
6639.35	P	⊙	4.89	6.75	4-4	$x^5D^\circ-f^3F$ (1279)
6794.60	P	⊙	4.93	6.75	3-4	
6712.44	P	⊙	4.97	6.81	2-3	
m6705.13	P	Fe	4.93	6.77	3-2	$x^5D^\circ-e^3P$ (1280)
6601.13	P	⊙	4.97	6.84	2-1	
6524.76	P	⊙	4.99	6.88	1-0	
6824.82	P	⊙	4.97	6.77	2-2	
6677.49	P	⊙	4.99	6.84	1-1	
5531.949	U	(1)	4.89	7.12	4-4	$x^5D^\circ-i^5D$ (1281)
5602.54	P	⊙	4.93	7.14	3-3	
5634.53	P	⊙	4.97	7.16	2-2	
5496.57	P	⊙	4.89	7.14	4-3	
5552.70	P	⊙	4.93	7.16	3-2	
5685.86	P	⊙	4.97	7.14	2-3	
5690.07	P	⊙	4.99	7.16	1-2	
5479.95	P	⊙	4.93	7.19	3-2	$x^5D^\circ-4$ (1282)
5559.64	P	⊙	4.97	7.19	2-2	
5613.70	P	⊙	4.99	7.19	1-2	
		———	———	———		
9602.07	F	2	4.99	6.28	4-5	$y^7P^\circ-e^7F$ (1283)
8863.64	F	1p?	4.94	6.34	2-2	
9382.93	P	3n	4.96	6.28	3-3	$y^7P^\circ-f^7D$ (1284)
9944.13	F	3n	4.99	6.23	4-4	$y^7P^\circ-e^7P$ (1285)
9608.89	P	⊙?	4.96	6.25	3-3	
9248.80	P	⊙	4.94	6.28	2-2	
9811.36	F	2	4.99	6.25	4-3	
9383.40	P	⊙	4.96	6.28	3-2	
8967.53	P	⊙	4.99	6.37	4-3	$y^7P^\circ-e^7S$ (1286)
8798.05	P	⊙	4.96	6.37	3-3	
8679.61	P	⊙	4.94	6.37	2-3	
7909.60	P	⊙?	4.99	6.55	4-5	$y^7P^\circ-g^5F$ (1287)
6813.55	P	⊙?	4.96	6.77	3-2	$y^7P^\circ-e^3P$ (1288)
6245.84	V	(1)	4.99	6.97	4-5	$y^7P^\circ-1$ (1289)
5678.04	P	⊙?	4.96	7.14	3-3	$y^7P^\circ-i^5D$ (1290)
5748.15	P	⊙?	4.99	7.14	4-3	
5720.79	P	(1n)	4.99	7.15	4-5	$y^7P^\circ-h^7D$ (1291)
		———	———	———		
9913.19	P	⊙	4.97	6.21	5-6	$x^5F^\circ-e^7F$ (1292)
9763.913	E	15	5.01	6.28	4-5	
9658.94	F	3	5.04	6.32	3-4	
•9868.09	F	3	5.06	6.31	2-3	
9800.79	P	⊙	5.08	6.34	1-2	
•9452.45	F	2	4.97	6.28	5-5	
9433.29	P	⊙	5.01	6.32	4-4	
•9699.70	F	6n	5.04	6.31	3-3	
9693.69	F	1	5.06	6.34	2-2	
9920.46	P	⊙	5.08	6.32	1-1	
9531.22	P	⊙	5.04	6.34	3-2	
9878.18	P	⊙	4.97	6.22	5-5	$x^5F^\circ-f^7D$ (1293)
9977.52	F	1	5.04	6.28	3-3	
10016.67	P	⊙	5.06	6.30	2-2	
10080.44	P	⊙	5.08	6.30	1-1	
9967.32	P	⊙	5.06	6.30	2-1	
9834.04	F	3n	4.97	6.22	5-4	$x^5F^\circ-f^5D$ (1294)
10057.64	F	3	5.01	6.24	4-3	
10142.82	F	2	5.04	6.26	3-2	
10137.06	P	⊙	5.06	6.28	2-1	
10149.09	P	⊙	5.08	6.29	1-0	
9783.96	F	3	4.97	6.23	5-4	$x^5F^\circ-e^7P$ (1295)
9980.55	F	2n	5.01	6.25	4-3	
10117.81	P	⊙	5.01	6.23	4-4	
9738.624	E	200	4.97	6.24	5-6	$x^5F^\circ-e^5G$ (1296)
9889.082	E	40	5.01	6.26	4-5	
9861.793	E	30	5.04	6.29	3-4	
9800.335	E	20	5.06	6.32	2-3	
9763.450	E	15	5.08	6.34	1-2	
9569.960	E	40n	4.97	6.26	5-5	
9626.562	E	30n	5.01	6.29	4-4	
9634.22	F	5	5.04	6.32	3-3	
9657.30	F	4	5.06	6.34	2-2	
9409.55	P	⊙	5.01	6.32	4-3	

tory Ref	Int	E P Low	High	J	Multiplet (No)
nued					
F	2	4.97	6.29	5-6	$x^5F^\circ-e^7G$
F	10n	5.01	6.32	4-5	(1297)
P	1	5.04	6.34	3-4	
P	⊙	5.06	6.35	2-3	
P	⊙	4.97	6.32	5-5	
F	2	5.01	6.34	4-4	
P		5.04	6.35	3-3	
P	⊙	4.97	6.34	5-4	
F	5n	4.97	6.31	5-5	$x^5F^\circ-f^5F$
F	2n	5.01	6.35	4-4	(1298)
P	⊙	5.04	6.37	3-3	
P	1n	5.08	6.39	1-1	
P	⊙	4.97	6.35	5-4	
F	3n	5.01	6.37	4-3	
P	⊙	5.04	6.38	3-2	
E	10n	5.01	6.31	4-5	
F	20n	5.04	6.35	3-4	
F	10n	5.06	6.37	2-3	
F	4n	5.08	6.38	1-2	
F	6n	5.04	6.31	3-2	$x^5F^\circ-e^5S$
F	3	5.06	6.31	2-2	(1299)
F	3	5.01	6.33	4-3	$x^5F^\circ-e^3D$
P	4nd	5.04	6.39	3-2	(1300)
F	2	5.06	6.42	2-1	
O	(1)	5.06	6.39	2-2	
P	⊙	5.08	6.39	1-2	
E	30	4.97	6.34	5-4	$x^5F^\circ-g^5D$
E	20	5.01	6.39	4-3	(1301)
F	10	5.04	6.43	3-2	
F	5	5.06	6.45	2-1	
F	3	5.08	6.45	1-0	
F	2	5.01	6.34	4-4	
E	5n	6.04	6.39	3-3	
F	2	5.06	6.43	2-2	
F	2	5.08	6.45	1-1	
P	1	5.08	6.43	1-2	
P	⊙	5.01	6.40	4-3	$x^5F^\circ-e^5P$
P	⊙	5.04	6.43	3-2	(1302)
P	⊙	4.97	6.55	5-5	$x^5F^\circ-g^5F$
P	⊙	5.01	6.59	4-4	(1303)
P	⊙	5.06	6.70	2-2	
P	⊙	5.01	6.65	4-3	
P	⊙	5.04	6.70	3-2	
P	⊙	5.04	6.59	3-4	
P	⊙	5.06	6.65	2-3	
O	5n	4.97	6.56	5-4	$x^5F^\circ-h^5D$
P	⊙	5.01	6.61	4-3	(1304)
P	⊙	5.04	6.66	3-2	
O	(1)	5.01	6.56	4-4	
P	⊙	5.06	6.66	2-2	
P	⊙	5.08	6.68	1-1	
P	⊙?	5.06	6.61	2-3	
O	(1)	5.01	6.56	4-3	$x^5F^\circ-f^5P$
P	4n	5.04	6.61	3-2	(1305)
P	⊙	5.06	6.66	2-1	
P	⊙	5.06	6.61	2-2	
P	⊙	5.08	6.66	1-1	
O	4n	4.97	6.56	5-6	$x^5F^\circ-f^5G$
P	1	5.01	6.58	4-5	(1306)
P	⊙	5.04	6.64	3-4	
P	⊙	5.08	6.71	1-2	
P	⊙	5.01	6.64	4-4	
P	⊙	5.04	6.69	3-3	
P	⊙	5.06	6.71	2-2	
P	⊙	4.97	6.64	5-4	
P	⊙	5.01	6.65	4-5	$x^5F^\circ-e^5H$
P	⊙	5.04	6.70	3-4	(1307)
P	⊙	5.06	6.73	2-3	
P	⊙	4.97	6.65	5-5	
P	⊙	5.01	6.73	4-3	
P	⊙	4.97	6.63	5-5	$x^5F^\circ-e^3G$
P	⊙	5.04	6.71	3-3	(1308)
O	2n	5.01	6.63	4-5	
O	1n	5.04	6.67	3-4	
P	⊙	5.06	6.71	2-3	
P	⊙	5.06	6.72	2-1	$x^5F^\circ-f^3D$
P	⊙	5.04	6.64	3-3	(1309)
P	⊙	5.06	6.67	2-2	
P	⊙	4.97	6.65	5-6	$x^5F^\circ-e^3H$
P	⊙	5.01	6.70	4-5	(1310)
P	⊙	5.01	6.73	4-4	
V	(1)	5.04	6.75	3-4	$x^5F^\circ-f^3F$
V	2	5.06	6.81	2-3	(1311)
P	⊙	4.97	7.02	5-4	$x^5F^\circ-3$
P	⊙?	5.01	7.02	4-4	(1312)

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe I continued						
5732.29	P	⊙	4.97	7.12	5-4	$x^5F^\circ-i^5D$
5805.76	P	(1)	5.01	7.14	4-3	(1313)
5835.41	P	⊙	5.04	7.16	3-2	
5845.27	P	⊙	5.01	7.12	4-4	
5890.48	P	⊙	5.04	7.14	3-3	
5952.19	P	⊙	5.06	7.14	2-3	
5633.970	V	(2)	4.97	7.16	5-6	$x^5F^\circ-g^5G$
*5655.506	V	4	5.01	7.19	4-5	(1314)
5655.179	V	(2)	5.04	7.22	3-4	
5650.71	V	(1)	5.06	7.25	2-3	
5650.01	V	(1)	5.08	7.26	1-2	
5549.66	P	⊙	4.97	7.19	5-5	
5577.03	P	⊙	5.01	7.22	4-4	
5595.06	P	⊙	5.04	7.25	3-3	
5614.29	P	⊙	5.06	7.26	2-2	
5474.09	P	⊙	4.97	7.22	5-4	
5518.57	P	⊙	5.01	7.25	4-3	
11479.87	P	⊙?	5.00	6.08	3-2	$a^1F-v^3D^\circ$ (1315)
10875.00	P	⊙	5.00	6.14	3-4	$a^1F-y^3H^\circ$ (1316)
9917.93	F	2	5.00	6.25	3-4	$a^1F-x^1G^\circ$ (1317)
8852.30	P	⊙?	5.00	6.40	3-2	$a^1F-u^5F^\circ$ (1318)
9482.82	P	⊙?	5.00	6.31	3-4	$a^1F-t^5D^\circ$ (1319)
8959.88	P	⊙?	5.00	6.38	3-3	$a^1F-u^5P^\circ$ (1320)
8559.98	W	(1)	5.00	6.45	3-3	$a^1F-t^3D^\circ$ (1321)
8171.30	P	⊙	5.00	6.51	3-4	$a^1F-w^3H^\circ$ (1322)
7846.47	P	⊙?	5.00	6.58	3-2	$a^1F-s^3D^\circ$ (1323)
7107.30	P	⊙	5.00	6.74	3-3	$a^1F-t^3G^\circ$ (1324)
6552.77	W	(2)	5.00	6.89	3-3	$a^1F-w^1F^\circ$ (1325)
6124.08	P	⊙	5.00	7.02	3-2	$a^1F-u^3F^\circ$ (1326)
6089.566	L	(1)	5.00	7.03	3-4	$a^1F-v^1G^\circ$ (1327)
5041.32	P	⊙	5.00	7.45	3-3	$a^1F-r^3G^\circ$ (1328)
9008.37	F	2	5.05	6.42	3-3	$X-u^3D^\circ$ (1329)
8814.50	P	2	5.05	6.45	3-3	$X-t^3D^\circ$
8689.83	P	⊙	5.08	6.50	2-2	(1330)
8464.02	P	⊙	5.05	6.50	3-2	
8300.01	P	⊙	5.05	6.53	3-2	$X-v^3P^\circ$ (1331)
8274.28	O	6	5.05	6.54	3-3	$X-s^3D^\circ$
8264.27	M	3	5.08	6.58	2-2	(1332)
6700.90	P	⊙	5.05	6.89	3-3	$X-w^1F^\circ$
6841.65	P	⊙	5.08	6.89	2-3	(1333)
6406.42	W	(1)	5.08	7.01	2-3	$X-u^3F^\circ$ (1334)
6217.288	V	(1)	5.05	7.03	3-4	$X-v^1G^\circ$ (1335)
10012.15	P	⊙	5.05	6.28	2-1	$z^5S^\circ-f^5D$ (1336)
9683.57	F	1	5.05	6.32	2-3	$z^5S^\circ-e^5G$ (1337)
9335.27	P	⊙	5.05	6.37	2-3	$z^5S^\circ-f^5F$
9248.13	P	⊙	5.05	6.38	2-2	(1338)
*7148.69	R	(-)	5.05	6.77	2-2	$z^5S^\circ-e^3P$ (1339)
5853.48	P	⊙?	5.05	7.16	2-2	$z^5S^\circ-i^5D$ (1340)
10890.13	P	⊙?	5.29	6.42	2-1	$x^5P^\circ-e^3D$
11542.96	P	⊙?	5.32	6.39	1-2	(1341)
9233.15	P	(1)	5.30	6.63	5-5	$y^5G^\circ-e^3G$
9052.56	P	(1)	5.31	6.67	4-4	(1342)
6671.36	W	(2)	5.30	7.15	5-5	$y^5G^\circ-h^7D$ (1343)
6450.99	V	(1)	5.31	7.22	4-4	$y^5G^\circ-g^5G$
6402.43	P	(1)	5.33	7.26	2-2?	(1344)
10555.63	P	⊙	5.48	6.59	3-4	$w^5D^\circ-g^5F$
10362.73	P	⊙	5.45	6.65	2-3	(1345)
10070.58	P	⊙	5.49	6.71	0-1	
10022.34	P	⊙	5.48	6.71	1-1	
9676.42	F	1	5.37	6.65	4-3	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Fe I continued						
10353.85	P	(2n)	5.37	6.56	4-4	$w^5D^\circ-h^5D$
10388.73	P	⊙	5.42	6.61	3-3	(1346)
10283.87	P	⊙	5.48	6.68	1-1	
9951.15	P	⊙	5.37	6.61	4-3	
9953.45	P	⊙	5.42	6.66	3-2	
10348.16	F	4n	5.37	6.56	4-3	$w^5D^\circ-f^5P$
10364.13	P	⊙	5.42	6.61	3-2	(1347)
10153.30	P		5.42	6.64	3-4	$w^5D^\circ-f^5G$
10019.77	P	⊙	5.45	6.69	2-3	(1348)
10032.84	P	⊙	5.48	6.71	1-2	
9764.40	P	⊙	5.42	6.69	3-3	
6943.67	P	⊙?	5.37	7.15	4-5	$w^5D^\circ-h^7D$ (1349)
10925.80	D	1	5.46	6.59	5-4	$w^5F^\circ-g^5F$ (1350)
7430.73	O	(1)	5.46	7.12	5-4	$w^5F^\circ-i^5D$ (1351)
7526.72	P	⊙	5.48	7.12	4-4	$v^5D^\circ-i^5D$
7537.97	P	⊙	5.50	7.14	3-3	(1352)
7461.28	P	⊙	5.48	7.14	4-3	
7448.00	P	⊙	5.50	7.16	3-2	

Additions to Multiplets of Fe I

4232.724	V	1	0.11	2.99	1-2	$a^5D-z^7P^\circ$ (3)
m3199.50	P	Fe	0.11	3.97	1-2	$a^5D-z^3F^\circ$ (7)
3418.507	G	10	2.21	5.82	1-0	$a^5P-u^5D^\circ$ (81)

Strongest Unclassified Lines of Fe I

9666.59	F	2	V
9637.55	F	2	V
9529.31	F	2n	V
9430.08	E	3	IV*
8145.47	O	4	V
8024.50	O	3n	V
7994.473	E	20	IV*
7808.04	O	6n	V
7573.53	O	2n	V
7546.177	L	4	IV*
*7376.434§	R	3n	V
7254.649	V	2	IV*
6975.46	V	3n	V
6902.80	V	3n	V
6881.46	M	1	V
6838.86	V	3n	V
6793.62	M	1	V
6755.609	V	3	IV*
6726.78	D	(3)	
6609.56	V	1	V
6528.53	V	2	V
6501.681	V	4	IV*
6042.092	J	2	V
5036.294	R	6	
4552.544	J	(3)	
4237.162	J	2	V
4100.17	W	(3)	
3851.58	W	(4)	
3739.527	J	3	IV
3681.774	V	1	IV
3680.801	V	1	IV
3656.227	V	3n	IV
3634.698	G	4n	IV
3617.317	J	2	IV
3616.572	J	3n	IV
3614.550	G	2n	IV
3587.752	J	3	IV
3506.40	W	(3)	
3438.306	V	(3w)	
3262.284	V	4	IV
3179.538	V	3	IV
3139.908	V	4n	V
3130.17	W	(3)	
3126.175	G	8n	IV
3102.71	W	(4)	
2991.632	G	5n	IV

REVISED MULTIPLET TABLE

y	E P		J	Multiplet
Int	Low	High		(No)
.16	Anal A	List A		July 1941
9	0.98	4.75	3½-4½	$a^4D-z^6D^\circ$
4	1.04	4.77	2½-3½	(1)
(1)	1.07	4.80	1½-2½	
1	1.09	4.82	½-1½	
8	0.98	4.77	3½-3½	
7	1.04	4.80	2½-2½	
6	1.07	4.82	1½-1½	
4	1.09	4.83	½-½	
0	0.98	4.80	3½-2½	
	1.04	4.82	2½-1½	
(3)	1.07	4.83	1½-½	
11	1.04	5.21	2½-3½	$a^4D-z^6F^\circ$ †
10	1.07	5.23	1½-2½	(2)
8	1.09	5.23	½-1½	
5	1.09	5.24	½-½	
5	1.07	5.24	1½-½	
	1.66	4.77	2½-3½	$a^4P-z^6D^\circ$
	1.69	4.80	1½-2½	(3)
	1.72	4.82	½-1½	
2	1.66	4.80	2½-2½	
	1.69	4.82	1½-1½	
	1.72	4.83	½-½	
2	1.66	4.82	2½-1½	
	1.69	4.83	1½-½	
	1.66	5.21	2½-3½	$a^4P-z^6F^\circ$
3	1.69	5.23	1½-2½	(4)
1	1.72	5.23	½-1½	
1	1.66	5.23	2½-2½	
2	1.69	5.23	1½-1½	
2	1.72	5.24	½-½	
	1.66	5.23	2½-1½	
	1.69	5.24	1½-½	
3	1.66	5.27	2½-3½	$a^4P-z^6P^\circ$
	1.69	5.34	1½-2½	(5)
	1.72	5.39	½-1½	
	1.66	5.34	2½-2½	
	1.69	5.39	1½-1½	
	1.66	5.39	2½-1½	
13	1.66	5.49	2½-3½	$a^4P-z^4D^\circ$
13	1.69	5.53	1½-2½	(6)
10	1.72	5.56	½-1½	
9	1.66	5.53	2½-2½	
11	1.69	5.56	1½-1½	
11	1.72	5.58	½-½	
4	1.66	5.56	2½-1½	
6	1.69	5.58	1½-½	
10	1.66	5.52	2½-3½	$a^4P-z^4F^\circ$
8	1.69	5.57	1½-2½	(7)
5	1.72	5.59	½-1½	
5	1.66	5.57	2½-2½	
(5)	1.69	5.59	1½-1½	
0	1.66	5.59	2½-1½	
15	1.66	5.80	2½-2½	$a^4P-z^4P^\circ$ †
10	1.69	5.85	1½-1½	(8)
9	1.72	5.88	½-½	
13	1.69	5.80	1½-2½	
13	1.72	5.85	½-1½	
	1.96	4.75	4½-4½	$a^2G-z^6D^\circ$
	2.02	4.77	3½-3½	(9)
	1.96	4.77	4½-3½	
	2.02	4.80	3½-2½	
	2.02	4.75	3½-4½	
	1.96	5.46	4½-4½	$a^2G-z^4F^\circ$
	2.02	5.52	3½-3½	(10)
	1.96	5.52	4½-3½	
	2.02	5.57	3½-2½	
	2.02	5.46	3½-4½	
	2.27	4.83	1½-½	$a^2P-z^6D^\circ$ (11)
	2.27	5.23	1½-2½	$a^2P-z^6F^\circ$
	2.33	5.23	½-1½	(12)
	2.27	5.23	1½-1½	
	2.33	5.24	½-½	
	2.27	5.24	1½-½	
	2.27	5.34	1½-2½	$a^2P-z^6P^\circ$
	2.33	5.39	½-1½	(13)
	2.27	5.39	1½-1½	
4	2.27	5.53	1½-2½	$a^2P-z^4D^\circ$
	2.33	5.56	½-1½	(14)
	2.27	5.56	1½-1½	
	2.33	5.58	½-½	
	2.27	5.58	1½-½	
	2.27	5.57	1½-2½	$a^2P-z^4F^\circ$
	2.33	5.59	½-1½	(15)
	2.27	5.59	1½-1½	
5	2.27	5.80	1½-2½	$a^2P-z^4P^\circ$
3	2.33	5.85	½-1½	(16)
	2.27	5.85	1½-1½	
	2.33	5.88	½-½	
5	2.27	5.88	1½-½	
	2.51	5.18	5½-5½	$a^2H-z^6F^\circ$
	2.57	5.20	4½-4½	(17)
	2.51	5.20	5½-4½	
	2.57	5.21	4½-3½	
	2.57	5.18	4½-5½	
	2.63	4.80	1½-2½	$a^2D-z^6D^\circ$ (18)

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe II continued						
4602.75	P		2.53	5.21	2½-3½	$a^2D-z^6F^\circ$
4582.12	P		2.53	5.23	2½-2½	(19)
4515.19	P		2.53	5.27	2½-3½	$a^2D-z^6P^\circ$
4558.58	P		2.63	5.34	1½-2½	(20)
4399.86	P		2.53	5.34	2½-2½	
4480.46	P		2.63	5.39	1½-1½	
4327.04	P		2.53	5.39	2½-1½	
4177.70	P		2.53	5.49	2½-3½	$a^2D-z^4D^\circ$
4258.35	P		2.63	5.53	1½-2½	(21)
4119.53	P		2.53	5.53	2½-2½	
4211.80	P		2.63	5.56	1½-1½	
4075.95	P		2.53	5.56	2½-1½	
4183.20	P		2.63	5.58	1½-½	
4124.793	A	1	2.53	5.52	2½-3½	$a^2D-z^4F^\circ$
4205.48	P		2.63	5.57	1½-2½	(22)
4070.03	P		2.53	5.57	2½-2½	
4168.66	P		2.63	5.59	1½-1½	
4035.54	P		2.53	5.59	2½-1½	
3779.58	P		2.53	5.80	2½-2½	$a^2D-z^4P^\circ$
3833.02	P		2.63	5.85	1½-1½	(23)
3720.17	P		2.53	5.85	2½-1½	
3798.60	P		2.63	5.88	1½-½	
3896.11	P		2.63	5.80	1½-2½	
5607.12	P		2.57	4.77	2½-3½	$b^4P-z^6D^\circ$
5864.54	P		2.69	4.80	1½-2½	(24)
6021.18	P		2.77	4.82	½-1½	
5545.26	P		2.57	4.80	2½-2½	
5811.93	P		2.69	4.82	1½-1½	
5986.54	P		2.77	4.83	½-½	
5498.19	P		2.57	4.82	2½-1½	
5779.65	P		2.69	4.83	1½-½	
4670.170	A	0	2.57	5.21	2½-3½	$b^4P-z^6F^\circ$
4871.27	P		2.69	5.23	1½-2½	(25)
5000.73	P		2.77	5.23	½-1½	
4648.933	A	10	2.57	5.23	2½-2½	
4855.54	P		2.69	5.23	1½-1½	
4991.11	P		2.77	5.24	½-½	
4634.60	P		2.57	5.23	2½-1½	
4846.47	P		2.69	5.24	1½-½	
4580.055	A	1	2.57	5.27	2½-3½	$b^4P-z^6P^\circ$
4665.80	P		2.69	5.34	1½-2½	(26)
4713.18	P		2.77	5.39	½-1½	
4461.43	P		2.57	5.34	2½-2½	
4583.99	P		2.69	5.39	1½-1½	
4386.57	P		2.57	5.39	2½-1½	
4233.167	A	11	2.57	5.49	2½-3½	$b^4P-z^4D^\circ$
4351.764	A	9	2.69	5.53	1½-2½	(27)
4416.817	A	7	2.77	5.56	½-1½	
4173.450	A	8	2.57	5.53	2½-2½	
4303.166	A	8	2.69	5.56	1½-1½	
4385.381	A	7	2.77	5.58	½-½	
4128.735	A	3	2.57	5.56	2½-1½	
4273.317	A	3	2.69	5.58	1½-½	
4178.855	A	8	2.57	5.52	2½-3½	$b^4P-z^4F^\circ$
4296.567	A	6	2.69	5.57	1½-2½	(28)
4369.404	A	2	2.77	5.59	½-1½	
4122.638	A	4	2.57	5.57	2½-2½	
4258.155	A	3	2.69	5.59	1½-1½	
4087.27	P		2.57	5.59	2½-1½	
3824.913	A	4	2.57	5.80	2½-2½	$b^4P-z^4P^\circ$
3908.54	P		2.69	5.85	1½-1½	(29)
3964.57	P		2.77	5.88	½-½	
m3764.09	P	Fe	2.57	5.85	2½-1½	
3872.76	P		2.69	5.88	1½-½	
3974.160	A	3	2.69	5.80	1½-2½	
4002.073	A	2	2.77	5.85	½-1½	
4825.71	P		2.62	5.18	6½-5½	$a^4H-z^6F^\circ$
4833.21	P		2.65	5.20	5½-4½	(30)
4840.00	P		2.66	5.21	4½-3½	
4847.61	P		2.68	5.23	3½-2½	
4867.73	P		2.65	5.18	5½-5½	
4868.82	P		2.66	5.20	4½-4½	
4870.71	P		2.68	5.21	3½-3½	
4903.85	P		2.66	5.18	4½-5½	
4899.90	P		2.68	5.20	3½-4½	
4743.28	P		2.66	5.27	4½-3½	$a^4H-z^6P^\circ$
4644.09	P		2.68	5.34	3½-2½	(31)
4772.77	P		2.68	5.27	3½-3½	
4384.33	P		2.65	5.46	5½-4½	$a^4H-z^4F^\circ$
*4314.289§	A	4	2.66	5.52	4½-3½	(32)
4278.128	C	(1)	2.68	5.57	3½-2½	
4413.600	A	0	2.66	5.46	4½-4½	
4338.70	P		2.68	5.52	3½-3½	
4439.13	P		2.68	5.46	3½-4½	
4372.22	P		2.66	5.49	4½-3½	$a^4H-z^4D^\circ$
4332.88	P		2.68	5.53	3½-2½	(33)
4397.27	P		2.68	5.49	3½-3½	
6239.36	P		2.79	4.77	4½-3½	$b^4F-z^6D^\circ$ †
6229.34	P		2.82	4.80	3½-2½	(34)
6219.54	P		2.83	4.82	2½-1½	
6217.95	P		2.84	4.83	1½-½	
5171.62	P		2.79	5.18	4½-5½	$b^4F-z^6F^\circ$
5178.71	P		2.82	5.20	3½-4½	(35)
5180.53	P		2.83	5.21	2½-3½	
5178.95	P		2.84	5.23	1½-2½	
5132.67	P		2.79	5.20	4½-4½	
5146.12	P		2.82	5.21	3½-3½	
5154.40	P		2.83	5.23	2½-2½	
5161.18	P		2.84	5.23	1½-1½	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe II continued						
5100.66	P		2.79	5.21	4½-3½	$b^4F-z^6F^\circ$
5120.34	P		2.82	5.23	3½-2½	cont
5136.788	A	tr	2.83	5.23	2½-1½	
5150.93	P		2.84	5.24	1½-½	
4993.355	A	1	2.79	5.27	4½-3½	$b^4F-z^6P^\circ$
4893.780	A	0n	2.82	5.34	3½-2½	(36)
*5036.92 §	B	2	2.82	5.27	3½-3½	
4629.336	A	7	2.79	5.46	4½-4½	$b^4F-z^4F^\circ$
4555.890	A	8	2.82	5.52	3½-3½	(37)
4515.337	A	7	2.83	5,57	2½-2½	
4491.401	A	5	2.84	5.59	1½-1½	
4520.225	A	7	2.79	5.52	4½-3½	
4489.185	A	4	2.82	5.57	3½-2½	
4472.921	A	2	2.83	5.59	2½-1½	
4666.750	A	2	2.82	5.46	3½-4½	
4582.835	A	3	2.83	5.52	2½-3½	
4534.166	A	2	2.84	5.57	1½-2½	
4583.829	A	11	2.79	5.49	4½-3½	$b^4F-z^4D^\circ$
4549.467	A	10	2.82	5.53	3½-2½	(38)
4522.634	A	9	2.83	5.56	2½-1½	
4508.283	A	8	2.84	5.58	1½-½	
4620.513	A	3	2.82	5.49	3½-3½	
4576.331	A	4	2.83	5.53	2½-2½	
4541.523	A	4	2.84	5.56	1½-1½	
4648.23	P		2.83	5.49	2½-3½	
4595.68	P		2.84	5.53	1½-2½	
4138.40	P		2.82	5.80	3½-2½	$b^4F-z^4P^\circ$ †
4088.75	P		2.83	5.85	2½-1½	(39)
4064.75	P		2.84	5.88	1½-½	
4160.62	P		2.83	5.80	2½-2½	
4104.18	P		2.84	5.85	1½-1½	
6516.053	B	20	2.88	4.77	2½-3½	$a^6S-z^6D^\circ$
6432.654	B	8	2.88	4.80	2½-2½	(40)
6369.45	B	4	2.88	4.82	2½-1½	
5284.092	A	3	2.88	5.21	2½-3½	$a^6S-z^6F^\circ$
5256.89	P	1	2.88	5.23	2½-2½	(41)
5238.58	P		2.88	5.23	2½-1½	
5169.030	A	12	2.88	5.27	2½-3½	$a^6S-z^6P^\circ$
5018.434	A	12	2.88	5.34	2½-2½	(42)
4923.921	A	12	2.88	5.39	2½-1½	
*4731.439§	A	3	2.88	5.49	2½-3½	$a^6S-z^4D^\circ$
4656.974	A	1	2.88	5.53	2½-2½	(43)
4601.34	P		2.88	5.56	2½-1½	
4663.700	A	0	2.88	5.52	2½-3½	$a^6S-z^4F^\circ$ (44)
4227.14	P		2.88	5.80	2½-2½	$a^6S-z^4P^\circ$
4152.98	P		2.88	5.85	2½-1½	(45)
6044.53	P		3.14	5.18	5½-5½	$a^4G-z^6F^\circ$
6129.71	P		3.19	5.20	4½-4½	(46)
6150.10	P		3.21	5.21	3½-3½	
6141.01	P		3.22	5.23	2½-2½	
5991.383	B	10	3.14	5.20	5½-4½	
6084.11	B	5	3.19	5.21	4½-3½	
6113.33	B	2	3.21	5.23	3½-2½	
6116.04	P		3.22	5.23	2½-1½	
6185.34	P		3.19	5.18	4½-5½	
6196.71	P		3.21	5.20	3½-4½	
6178.13	P		3.22	5.21	2½-3½	
5932.05	P		3.19	5.27	4½-3½	$a^4G-z^6P^\circ$ †
5793.16	P		3.21	5.34	3½-2½	(47)
5691.38	P		3.22	5.39	2½-1½	
5362.864	A	5	3.19	5.49	4½-3½	$a^4G-z^4D^\circ$
5316.777	A	4	3.21	5.53	3½-2½	(48)
5264.801	A	2	3.22	5.56	2½-1½	
5414.089	A	2	3.21	5.49	3½-3½	
5337.713	A	0	3.22	5.53	2½-2½	
5435.79	P		3.22	5.49	2½-3½	
5316.609	A	8	3.14	5.46	5½-4½	$a^4G-z^4F^\circ$
5275.994	A	7	3.19	5.52	4½-3½	(49)
5234.620	A	7	3.21	5.57	3½-2½	
5197.569	A	6	3.22	5.59	2½-1½	
5425.269	A	2	3.19	5.46	4½-4½	
5325.559	A	2	3.21	5.52	3½-3½	
5254.92	P		3.22	5.57	2½-2½	
5477.67	P		3.21	5.46	3½-4½	
5346.56	P	1	3.22	5.52	2½-3½	
4763.79	P		3.21	5.80	3½-2½	$a^4G-z^4P^\circ$
4780.60	P		3.22	5.80	2½-2½	(50)
4685.95	P		3.22	5.85	2½-1½	
5728.74	P		3.18	5.34	1½-2½	$b^2P-z^6P^\circ$
5605.91	P		3.18	5.39	1½-1½	(51)
5990.59	P		3.32	5.39	½-1½	
5262.48	P		3.18	5.53	1½-2½	$b^2P-z^4D^\circ$
5519,83	P		3.32	5.56	½-1½	(52)
5191.58	P		3.18	5.56	1½-1½	
5470.81	P		3.32	5.58	½-½	
5148.19	P		3.18	5.58	1½-½	
5181.97	P		3.18	5.57	1½-2½	$b^2P-z^4F^\circ$
5445.97	P		3.32	5.59	½-1½	(53)
5126.19	P		3.18	5.59	1½-1½	
4720.15	P		3.18	5.80	1½-2½	$b^2P-z^4P^\circ$
4886.92	P		3.32	5.85	½-1½	(54)
4627.86	P		3.18	5.85	1½-1½	
4831.11	P		3.32	5.88	½-½	
4577.78	P		3.18	5.88	1½-½	

atory		E P		J	Multiplet
Ref	Int	Low	High		(No)
tinued					
A	4	3.23	5.46	5½-4½	$b^2H-z^4F^\circ$
P		3.25	5.52	4½-3½	(55)
P		3.25	5.46	4½-4½	
P		3.25	5.49	4½-3½	$b^2H-z^4D^\circ$ (56)
P		3.37	5.46	3½-4½	$a^2F-z^4F^\circ$
P		3.41	5.52	2½-3½	(57)
P		3.37	5.52	3½-3½	
P		3.41	5.57	2½-2½	
P		3.37	5.57	3½-2½	
P		3.41	5.59	2½-1½	
P		3.37	5.49	3½-3½	$a^2F-z^4D^\circ$
P		3.41	5.53	2½-2½	(58)
P		3.37	5.53	3½-2½	
P		3.41	5.56	2½-1½	
P		3.41	5.49	2½-3½	
A	1	3.37	7.46	3½-2½	$a^2F-y^4P^\circ$
A	2	3.41	7.57	2½-1½	(59)
P		3.37	7.51	3½-4½	$a^2F-z^4G^\circ$
A	2	3.41	7.53	2½-3½	(60)
A	1	3.37	7.53	3½-3½	
A	0	3.41	7.54	2½-2½	
A	7	3.37	7.54	3½-2½	
A	2	3.37	7.53	3½-4½	$a^2F-z^4H^\circ$
A	4	3.41	7.55	2½-3½	(61)
A	4	3.37	7.55	3½-3½	
A	7	3.37	7.54	3½-2½	$a^2F-z^2D^\circ$ †
A	4	3.41	7.54	2½-2½	(62)
P		3.80	5.57	3½-2½	$b^2G-z^4F^\circ$ (63)
P		3.80	7.51	3½-4½	$b^2G-z^4G^\circ$ (64)
A	0	3.75	7.52	4½-5½	$b^2G-z^4H^\circ$
P		3.80	7.53	3½-4½	(65)
A	4	3.75	7.53	4½-4½	
A	7	3.80	7.55	3½-3½	
P		3.75	7.55	4½-3½	
A	12	3.75	7.66	4½-4½	$b^2G-z^2G^\circ$
A	11	3.80	7.69	3½-3½	(66)
A	2	3.75	7.69	4½-3½	
A	3	3.80	7.66	3½-4½	
A	2	3.75	7.67	4½-4½	$b^2G-y^4F^\circ$
P	Fe⁺	3.79	7.66	3½-3½	(67)
A	2	3.75	7.66	4½-3½	
A	1	3.80	7.67	3½-2½	
P		3.80	7.67	3½-4½	
A	4	3.75	7.77	4½-3½	$b^2G-x^4D^\circ$
A	2	3.80	7.81	3½-2½	(68)
A	4	3.80	7.77	3½-3½	
P		3.75	7.89	4½-5½	$b^2G-y^4G^\circ$
P		3.80	7.89	3½-4½	(69)
A	2	3.75	7.89	4½-4½	
A	2	3.80	7.91	3½-3½	
A	5	3.75	7.91	4½-3½	
A	5	3.80	7.91	3½-2½	
A	8	3.80	7.95	3½-2½	$b^2G-z^2F^\circ$ †
A	3	3.80	7.94	3½-3½	(70)
P		3.89	5.20	3½-4½	$b^4D-z^6F^\circ$ †
P		3.87	5.21	2½-3½	(71)
P		3.87	5.23	1½-2½	
P		3.87	5.23	½-1½	
P		3.89	5.46	3½-4½	$b^4D-z^4F^\circ$ †
P		3.87	5.52	2½-3½	(72)
P		3.87	5.57	1½-2½	
P		3.87	5.59	½-1½	
B	2	3.89	5.52	3½-3½	
P	2	3.87	5.57	2½-2½	
P		3.87	5.59	1½-1½	
B	15	3.89	5.49	3½-3½	$b^4D-z^4D^\circ$
B	20	3.87	5.53	2½-2½	(73)
B	50	3.87	5.56	1½-1½	
B	12	3.87	5.58	½- ½	
B	6	3.89	5.53	3½-2½	
B	40	3.87	5.56	2½-1½	
B	8	3.87	5.58	1½- ½	
B	1	3.87	5.49	2½-3½	
B	6	3.87	5.53	1½-2½	
B	6	3.87	5.56	½-1½	
A	200	3.89	5.80	3½-2½	$b^4D-z^4P^\circ$
A	80	3.87	5.85	2½-1½	(74)
A	30?	3.87	5.88	1½- ½	
A	20	3.87	5.80	2½-2½	
A	20	3.87	5.85	1½-1½	
A	20	3.87	5.88	½- ½	
B	1	3.87	5.80	1½-2½	
P	2n	3.87	5.85	½-1½	
A	2	3.87	7.37	2½-1½	$b^4D-z^4S^\circ$
P		3.87	7.37	1½-1½	(75)
P		3.87	7.37	½-1½	
A	5	3.89	7.46	3½-2½	$b^4D-y^4P^\circ$
A	3	3.87	7.57	2½-1½	(76)
A	3	3.87	7.53	1½- ½	
P		3.87	7.46	2½-2½	
P		3.87	7.57	1½-1½	
P		3.87	7.53	½- ½	
P		3.87	7.46	1½-2½	
P		3.87	7.57	½-1½	

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe II continued						
3388.134	A	?2	3.89	7.53	3½-4½	$b^4D-z^4H^\circ$
3358.252	A	3	3.87	7.55	2½-3½	(77)
3376.24	P		3.89	7.54	3½-2½	$b^4D-z^2D^\circ$
3252.40	P		3.87	7.67	2½-1½	(78)
3250.34	P		3.87	7.67	½-1½	
3365.413	A	1	3.87	7.54	2½-2½	
3249.911	A	1	3.87	7.67	1½-1½	
3362.764	A	0	3.87	7.54	1½-2½	
3305.634	A	1	3.89	7.62	3½-3½	$b^4D-y^4D^\circ$
3193.76	P		3.87	7.74	2½-2½	(79)
3163.86	P		3.87	7.77	1½-1½	
3177.65	P		3.87	7.76	½- ½	
3203.509	A	1	3.89	7.74	3½-2½	
3166.22	P		3.87	7.77	2½-1½	
3177.260	A	1	3.87	7.76	1½- ½	
*3295.240§	A	4	3.87	7.62	2½-3½	
3191.374	A	1	3.87	7.74	1½-2½	
3164.26	P		3.87	7.77	½-1½	
3267.035	A	3	3.89	7.66	3½-4½	$b^4D-z^2G^\circ$
3231.702	A	5	3.87	7.69	2½-3½	(80)
3241.685	A	2	3.89	7.69	3½-3½	
3259.048	A	10	3.89	7.67	3½-4½	$b^4D-y^4F^\circ$
3258.773	A	10	3.87	7.66	2½-3½	(81)
3247.171	A	9	3.87	7.67	1½-2½	
3237.815	A	8	3.87	7.68	½-1½	
3268.92	P		3.89	7.66	3½-3½	
3249.657	A	4	3.87	7.67	2½-2½	
3237.402	A	5	3.87	7.68	1½-1½	
3259.75	P		3.89	7.67	3½-2½	
3239.87	P		3.87	7.68	2½-1½	
3177.531	A	10	3.89	7.77	3½-3½	$b^4D-x^4D^\circ$
3135.360	A	9	3.87	7.81	2½-2½	(82)
3114.295	A	7	3.87	7.83	1½-1½	
3105.548	A	5	3.87	7.85	½- ½	
3144.751	A	5	3.89	7.81	3½-2½	
*3116.590§	A	6	3.87	7.83	2½-1½	
*3105.166	A	5	3.87	7.85	1½- ½	
3167.94	P		3.87	7.77	2½-3½	
3133.048	A	4	3.87	7.81	1½-2½	
3114.680	A	4	3.87	7.83	½-1½	
3070.591	A	tr	3.89	7.91	3½-3½	$b^4D-y^4G^\circ$ (83)
3047.60	P		3.89	7.94	3½-3½	$b^4D-z^2F^\circ$
3025.99	P		3.87	7.95	2½-2½	(84)
3034.712	A	0	3.89	7.95	3½-2½	
3038.777	A	3	3.87	7.94	2½-3½	
3023.859	A	1	3.87	7.95	1½-2½	
2997.749	A	tr d	3.89	8.00	3½-4½	$b^4D-y^2G^\circ$ (85)
2989.01	P		3.87	8.00	2½-1½	$b^4D-z^2P^\circ$
2989.367	A	tr	3.87	8.00	1½- ½	(86)
2986.91	P		3.87	8.00	1½-1½	
2989.731	A	0	3.87	8.00	½- ½	
2987.27	P		3.87	8.00	½-1½	
7838.09	P		3.95	5.52	3½-3½	$b^2F-z^4F^\circ$ †
7534.83	P		3.93	5.57	2½-2½	(87)
3519.72	P		3.95	7.46	3½-2½	$b^2F-y^4P^\circ$
3386.452	A	1	3.93	7.57	2½-1½	(88)
3496.67	P		3.93	7.46	2½-2½	
3470.242	A	1n	3.95	7.51	3½-4½	$b^2F-z^4G^\circ$
3430.15	P		3.93	7.53	2½-3½	(89)
3452.33	P		3.95	7.53	3½-3½	
3420.184	A	0	3.93	7.54	2½-2½	
3442.239	A	3	3.95	7.54	3½-2½	
3448.433	A	1	3.95	7.53	3½-4½	$b^2F-z^4H^\circ$
3406.76	P		3.93	7.55	2½-3½	(90)
3428.64	P		3.95	7.55	3½-3½	
3436.112	A	5	3.95	7.54	3½-2½	$b^2F-z^2D^\circ$
3297.888	A	5	3.93	7.67	2½-1½	(91)
3414.144	A	2	3.93	7.54	2½-2½	
3323.066	A	8	3.95	7.66	3½-4½	$b^2F-z^2G^\circ$
3276.606	A	5	3.93	7.69	2½-3½	(92)
*3296.826§	A	2	3.95	7.69	3½-3½	
3314.80	P		3.95	7.67	3½-4½	$b^2F-y^4F^\circ$
3304.433	A	1	3.93	7.66	2½-3½	(93)
3325.012	A	1	3.95	7.66	3½-3½	
3295.06	P		3.93	7.67	2½-2½	
3315.53	P		3.95	7.67	3½-2½	
3284.996	A	0	3.93	7.68	2½-1½	
3257.358	A	1	3.95	7.74	3½-2½	$b^2F-y^4D^\circ$ (94)
3230.496	A	1	3.95	7.77	3½-3½	$b^2F-x^4D^\circ$
3177.61	P		3.93	7.81	2½-2½	(95)
3196.63	P		3.95	7.81	3½-2½	
3158.32	P		3.93	7.83	2½-1½	
3211.072	A	1	3.93	7.77	3½-3½	
3129.013	A	1	3.95	7.89	3½-4½	$b^2F-y^4G^\circ$
3120.023	A	1	3.95	7.91	3½-3½	(96)
3097.415	A	2	3.93	7.91	2½-2½	
3115.492	A	1	3.95	7.91	3½-2½	
3090.890	A	5	3.95	7.94	3½-3½	$b^2F-z^2F^\circ$
3065.315	A	6	3.93	7.95	2½-2½	(97)
3083.024	A	3	3.95	7.95	3½-2½	
m3078.44	P	Fe	3.93	7.94	2½-3½	
3044.843	A	5	3.95	8.00	3½-4½	$b^2F-y^2G^\circ$
3002.330	A	5	3.93	8.04	2½-3½	(98)
3027.38	P		3.93	8.00	2½-1½	$b^2F-z^2P^\circ$ (99)

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Fe II continued						
*2979.096	A	3	3.95	8.09	3½-4½	$b^2F-z^2H^\circ$ (100)
3602.60	P		4.06	7.48	6½-5½	$a^2I-z^4G^\circ$
3583.54	P		4.06	7.51	5½-4½	(101)
3607.05	P		4.06	7.48	5½-5½	
3511.25	P		4.06	7.57	6½-7½	$a^2I-z^4I^\circ$
3493.34	P		4.06	7.60	5½-6½	(102)
3489.17	P		4.06	7.60	6½-6½	
3486.08	P		4.06	7.60	5½-5½	
3481.92	P		4.06	7.60	6½-5½	
3495.16	P		4.06	7.59	5½-4½	
3426.81	P		4.06	7.66	5½-4½	$a^2I-z^2G^\circ$ (103)
3418.02	P		4.06	7.67	5½-4½	$a^2I-y^4F^\circ$ (104)
3398.355	A	4	4.06	7.69	6½-6½	$a^2I-z^2I^\circ$
3360.103	A	3	4.06	7.74	5½-5½	(105)
m3356.24	P	Fe⁺	4.06	7.74	6½-5½	
3402.32	P		4.06	7.69	5½-6½	
3220.835	A	0	4.06	7.89	5½-4½	$a^2I-y^4G^\circ$ (106)
3131.719	A	4	4.06	8.00	5½-4½	$a^2I-y^2G^\circ$ (107)
3077.168	A	10	4.06	8.07	6½-5½	$a^2I-z^2H^\circ$
3062.234	A	9	4.06	8.09	5½-4½	(108)
3080.405	A	2	4.06	8.07	5½-5½	
3056.802	A	5	4.06	8.10	6½-5½	$a^2I-x^4G^\circ$
3049.18	P		4.06	8.11	5½-4½	(109)
3060.023	A	0	4.06	8.10	5½-5½	
3020.001	A	?0	4.06	8.15	5½-4½	$a^2I-x^4F^\circ$ (110)
3680.98	P		4.13	7.48	4½-5½	$c^2G-z^4G^\circ$
3661.17	P		4.14	7.51	3½-4½	(111)
3656.50	P		4.13	7.51	4½-4½	
3641.22	P		4.14	7.53	3½-3½	
3636.61	P		4.13	7.53	4½-3½	
3629.99	P		4.14	7.54	3½-2½	
3645.78	P		4.13	7.52	4½-5½	$c^2G-z^4H^\circ$
3636.90	P		4.14	7.53	3½-4½	(112)
3632.292	A	3	4.13	7.53	4½-4½	
3614.873	A	5	4.14	7.55	3½-3½	
3610.33	P		4.13	7.55	4½-3½	
3555.08	P		4.13	7.60	4½-5½	$c^2G-z^4I^\circ$
3568.97	P		4.14	7.59	3½-4½	(113)
3564.54	P		4.13	7.59	4½-4½	
3493.468	A	10	4.13	7.66	4½-4½	$c^2G-z^2G^\circ$
3468.680	A	8	4.14	7.69	3½-3½	(114)
3464.497	A	3	4.13	7.69	4½-3½	
3497.73	P		4.14	7.66	3½-4½	
*3484.348§	A	1	4.13	7.67	4½-4½	$c^2G-y^4F^\circ$
3499.877	A	4	4.14	7.66	3½-3½	(115)
3495.616	A	4	4.13	7.66	4½-3½	
3424.17	P		4.13	7.74	4½-5½	$c^2G-z^2I^\circ$ (116)
3391.303	A	1	4.13	7.77	4½-3½	$c^2G-x^4D^\circ$
3357.965	A	0	4.14	7.81	3½-2½	(117)
3395.336	A	4	4.14	7.77	3½-3½	
3287.468	A	1	4.13	7.89	4½-5½	$c^2G-y^4G^\circ$
3283.40	P		4.14	7.89	3½-4½	(118)
3279.649	A	2	4.13	7.89	4½-4½	
3273.499	A	3	4.14	7.91	3½-3½	
3269.772	A	2	4.13	7.91	4½-3½	
3268.512	A	3	4.14	7.91	3½-2½	
3243.723	A	8	4.13	7.94	4½-3½	$c^2G-z^2F^\circ$
3232.791	A	7	4.14	7.95	3½-2½	(119)
3247.392	A	3	4.14	7.94	3½-3½	
3187.294	A	8	4.13	8.00	4½-4½	$c^2G-y^2G^\circ$
3162.799	A	8	4.14	8.04	3½-3½	(120)
3159.32	P		4.13	8.04	4½-3½	
3190.84	P		4.14	8.00	3½-4½	
3134.17	P		4.13	8.07	4½-5½	$c^2G-z^2H^\circ$ †
3118.74	P		4.14	8.09	3½-4½	(121)
3079.356	A	0	4.13	8.14	4½-3½	$c^2G-x^4G^\circ$
3068.757	A	2	4.14	8.16	3½-2½	(122)
*3105.166	A	5	4.14	8.11	3½-4½	
3071.653	A	2	4.13	8.15	4½-4½	$c^2G-x^4F^\circ$
3040.629	A	0	4.14	8.19	3½-3½	(123)
3029.681	A	0	4.13	8.20	4½-5½	$c^2G-y^4H^\circ$
3013.802	A	0	4.14	8.23	3½-3½	(124)
4270.39	P		4.48	7.36	2½-1½	$b^2D-z^4S^\circ$
4247.43	P		4.46	7.36	1½-1½	(125)
4046.81	P		4.48	7.53	2½-3½	$b^2D-z^4G^\circ$
4012.467	A	1	4.46	7.54	1½-2½	(126)
4032.946	A	3	4.48	7.54	2½-2½	
4024.552	A	5	4.48	7.54	2½-2½	$b^2D-z^2D^\circ$
m3845.18	P	Fe	4.46	7.67	1½-1½	(127)
*3863.953	A	1	4.48	7.67	2½-1½	
4004.15	P		4.46	7.54	1½-2½	
3872.98	P		4.48	7.66	2½-3½	$b^2D-y^4F^\circ$
3841.35	P		4.46	7.67	1½-2½	(128)
3860.12	P		4.48	7.67	2½-2½	
3827.67	P		4.46	7.68	1½-1½	
3846.31	P		4.48	7.68	2½-1½	

REVISED MULTIPLET TABLE

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ory f Int	E P Low	High	J	Multiplet (No)
	4.48	7.69	2½-3½	$b^2D-z^2G^\circ$ (129)
1	4.48	7.74	2½-2½	$b^2D-y^4D^\circ$
3	4.46	7.77	1½-1½	(130)
	4.48	7.77	2½-3½	$b^2D-x^4D^\circ$
	4.46	7.81	1½-2½	(131)
	4.48	7.81	2½-3½	
	4.46	7.83	1½-1½	
	4.48	7.83	2½-1½	
	4.46	7.85	1½- ½	
3	4.48	7.94	2½-3½	$b^2D-z^2F^\circ$
2	4.46	7.95	1½-2½	(132)
	4.48	7.95	2½-2½	
Fe	4.48	8.00	2½-1½	$b^2D-z^2P^\circ$
1	4.46	8.00	1½- ½	(133)
	4.46	8.00	1½-1½	
tr	4.48	8.14	2½-3½	$b^2D-x^4G^\circ$ (134)
0	4.46	8.18	1½- ½	$b^2D-z^2S^\circ$ (135)
	4.48	8.19	2½-3½	$b^2D-x^4F^\circ$
	4.48	8.22	2½-1½	(136)
Fe	4.48	8.27	2½-2½	$b^2D-y^2D^\circ$
1	4.46	8.30	1½-1½	(137)
	4.48	8.53	2½-2½	$b^2D-x^4P^\circ$
	4.46	8.56	1½-1½	(138)
	4.48	8.56	2½-1½	
	4.46	8.57	1½- ½	
	4.46	8.53	1½-2½	
7	4.48	8.59	2½-3½	$b^2D-y^2F^\circ$
8	4.46	8.60	1½-2½	(139)
1n	4.48	8.60	2½-2½	
	4.60	7.37	½-1½	$a^2S-z^4S^\circ$ (140)
	4.60	7.57	½-1½	$a^2S-y^4P^\circ$
	4.60	7.53	½- ½	(141)
	4.60	7.67	½-1½	$a^2S-z^2D^\circ$ (142)
	4.60	7.83	½-1½	$a^2S-x^4D^\circ$
	4.60	7.85	½- ½	(143)
6	4.60	8.00	½-1½	$a^2S-z^2P^\circ$
5	4.60	8.00	½- ½	(144)
	4.60	8.18	½- ½	$a^2S-z^2S^\circ$ (145)
	4.71	7.37	2½-1½	$c^2D-z^4S^\circ$
	4.72	7.37	1½-1½	(146)
	4.71	7.46	2½-2½	$c^2D-y^4P^\circ$†
	4.72	7.57	1½-1½	(147)
	4.71	7.54	2½-2½	$c^2D-z^2D^\circ$
	4.72	7.67	1½-1½	(148)
	4.71	7.67	2½-1½	
	4.72	7.54	1½-2½	
	4.71	7.66	2½-3½	$c^2D-y^4F^\circ$
	4.72	7.67	1½-2½	(149)
	4.71	7.67	2½-2½	
	4.72	7.68	1½-1½	
	4.71	7.68	2½-1½	
	4.71	7.69	2½-3½	$c^2D-z^2G^\circ$ (150)
1	4.71	7.77	2½-1½	$c^2D-y^4D^\circ$
	4.72	7.74	1½-2½	(151)
1	4.71	7.91	2½-3½	$c^2D-y^4G^\circ$
1	4.72	7.91	1½-2½	(152)
4	4.71	7.94	2½-3½	$c^2D-z^2F^\circ$
4	4.72	7.95	1½-2½	(153)
	4.71	7.95	2½-2½	
8	4.71	8.00	2½-1½	$c^2D-z^2P^\circ$
6	4.72	8.00	1½- ½	(154)
4	4.72	8.00	1½-1½	
2	4.72	8.18	1½- ½	$c^2D-z^2S^\circ$ (155)
Fe	4.71	8.27	2½-2½	$c^2D-y^2D^\circ$
	4.72	8.30	1½-1½	(156)
0	4.72	8.27	1½-2½	
8	4.71	8.59	2½-3½	$c^2D-y^2F^\circ$
7	4.72	8.60	1½-2½	(157)
4	4.71	8.60	2½-2½	
4	4.71	8.71	2½-3½	$c^2D-x^2G^\circ$ (158)
1	5.46	9.61	4½-4½	$z^4F^\circ-e^6D$
tr n	5.57	9.69	2½-2½	(159)
2n	5.49	9.61	3½-4½	$z^4D^\circ-e^6D$
1n	5.49	9.66	3½-3½	(160)
1n	5.53	9.69	2½-2½	
0	5.56	9.72	1½-1½	
0	5.58	9.73	½- ½	
	5.54	7.53	3½-4½	$c^2F-z^4H^\circ$
	5.55	7.55	2½-3½	(161)
	5.54	7.55	3½-3½	

Fe II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
6199.16	B	2	5.54	7.54	3½-2½	$c^2F-z^4G^\circ$ (162)
6179.378	A	5	5.54	7.54	3½-2½	$c^2F-z^2D^\circ$
5813.67	B	3	5.55	7.67	2½-1½	(163)
6184.94	P		5.55	7.54	2½-2½	
5823.17	B	3	5.54	7.66	3½-4½	$c^2F-z^2G^\circ$
5747.88	P		5.55	7.69	2½-3½	(164)
5797.81	P		5.54	7.67	3½-4½	$c^2F-y^4F^\circ$
5834.06	P		5.55	7.66	2½-3½	(165)
5829.12	P		5.54	7.66	3½-3½	
5804.91	P		5.55	7.67	2½-2½	
5800.02	P		5.54	7.67	3½-2½	
5773.75	P		5.55	7.68	2½-1½	
5544.76	P		5.54	7.77	3½-3½	$c^2F-x^4D^\circ$ (166)
5160.824	A	1	5.54	7.94	3½-3½	$c^2F-z^2F^\circ$
5127.866	A	1	5.55	7.95	2½-2½	(167)
5124.05	P		5.54	7.95	3½-2½	
5164.69	P		5.55	7.94	2½-3½	
5019.478	A	0	5.54	8.00	3½-4½	$c^2F-y^2G^\circ$
4953.979	A	0	5.55	8.04	2½-3½	(168)
4810.760	A	0	5.54	8.11	3½-4½	$c^2F-x^4G^\circ$
4760.15	P		5.55	8.14	2½-3½	(169)
4738.52	P		5.54	8.15	3½-4½	$c^2F-x^4F^\circ$
4661.19	P		5.55	8.19	2½-3½	(170)
4658.03	P		5.54	8.19	3½-3½	
4629.90	P		5.55	8.21	2½-2½	
4626.78	P		5.54	8.21	3½-2½	
4610.59	P		5.55	8.22	2½-1½	
m4526.58	P	Fe	5.54	8.27	3½-2½	$c^2F-y^2D^\circ$
4474.194	A	0n	5.55	8.30	2½-1½	(171)
4529.56	P		5.55	8.27	2½-2½	
4048.831	A	3	5.54	8.59	3½-3½	$c^2F-y^2F^\circ$
m4044.01	P	Fe	5.55	8.60	2½-2½	(172)
4041.64	P		5.54	8.60	3½-2½	
4051.21	P		5.55	8.59	2½-3½	
3935.948	A	6	5.54	8.68	3½-4½	$c^2F-x^2G^\circ$
3906.037	A	5	5.55	8.71	2½-3½	(173)
3673.35	P		5.54	8.90	3½-4½	$c^2F-x^2H^\circ$ (174)
3604.21	P		5.54	8.97	3½-3½	$c^2F-w^4D^\circ$
3610.38	P		5.55	8.96	2½-2½	(175)
3608.49	P		5.54	8.96	3½-2½	
3622.81	P		5.55	8.95	2½-1½	
3606.18	P		5.55	8.97	2½-3½	
3557.548	A	2	5.54	9.01	3½-3½	$c^2F-x^2F^\circ$
m3554.50	P	Fe	5.55	9.02	2½-2½	(176)
3366.960	A	3	5.54	9.21	3½-2½	$c^2F-x^2D^\circ$
3381.003	A	4	5.55	9.20	2½-1½	(177)
3368.626	A	0	5.55	9.21	2½-2½	
3257.894	A	3	5.54	9.33	3½-3½	$c^2F-w^2F^\circ$
3226.378	A	2	5.55	9.37	2½-2½	(178)
3224.86	P		5.54	9.37	3½-2½	
3259.44	P		5.55	9.33	2½-3½	
3045.313	A	0	5.54	9.60	3½-2½	$c^2F-v^2F^\circ$
3046.675	A	1	5.55	9.60	2½-2½	(179)
2959.841	A	4	5.54	9.71	3½-2½	$c^2F-w^2D^\circ$
°2979.096	A	3	5.55	9.69	2½-1½	(180)
2961.119	A	tr	5.55	9.71	2½-2½	
3078.698	A	8n	5.80	9.81	2½-3½	$z^4P^\circ-e^4D$
3076.455	A	6n	5.85	9.86	1½-2½	(181)
3071.141	A	4n	5.88	9.90	½-1½	
3036.986	A	5n	5.80	9.86	2½-2½	
3049.011	A	5n	5.85	9.90	1½-1½	
3055.368	A	4n	5.88	9.93	½- ½	
°3010.220§	A	1	5.80	9.90	2½-1½	
3033.445	A	2n	5.85	9.92	1½- ½	
5952.55	P		5.93	8.00	2½-1½	$d^2D-z^2P^\circ$
5835.50	P		5.89	8.00	1½- ½	(182)
5826.12	P		5.89	8.00	1½-1½	
5856.45	P		5.93	8.04	2½-3½	$d^2D-y^2G^\circ$ (183)
5451.60	P		5.93	8.19	2½-3½	$d^2D-x^4F^\circ$
5304.26	P		5.89	8.21	1½-2½	(184)
5408.842	A	1	5.93	8.21	2½-2½	
5278.955	A	0n	5.89	8.22	1½-1½	
5382.52	P		5.93	8.22	2½-1½	
5272.413	A	2	5.93	8.27	2½-2½	$d^2D-y^2D^\circ$
5100.840	A	4n	5.89	8.30	1½-1½	(185)
5173.002	A	0	5.89	8.27	1½-2½	
4635.328	A	5	5.93	8.59	2½-3½	$d^2D-y^2F^\circ$
4549.214	A	4	5.89	8.60	1½-2½	(186)
4625.911	A	1	5.93	8.60	2½-2½	
4446.248	A	1n	5.93	8.71	2½-3½	$d^2D-x^2G^\circ$ (187)
4111.902	A	1	5.93	8.93	2½-3½	$d^2D-w^4F^\circ$
4069.883	A	1	5.89	8.92	1½-2½	(188)
4131.17	P		5.93	8.92	2½-2½	
4081.42	P		5.89	8.91	1½-1½	
4143.07	P		5.93	8.91	2½-1½	
4061.787	A	1	5.93	8.97	2½-3½	$d^2D-w^4D^\circ$
4007.72	P		5.89	8.96	1½-2½	(189)

Fe II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4003.549	A	3	5.93	9.01	2½-3½	$d^2D-x^2F^\circ$
3938.969	A	4	5.89	9.02	1½-2½	(190)
3996.36	P		5.93	9.02	2½-2½	
3975.029	A	2	5.93	9.04	2½-1½	$d^2D-y^2P^\circ$
3918.51	P		5.89	9.03	1½- ½	(191)
3762.894	A	5	5.93	9.21	2½-2½	$d^2D-x^2D^\circ$
m3727.04	P	Fe	5.89	9.20	1½-1½	(192)
3778.37	P		5.93	9.20	2½-1½	
3711.974	A	1	5.89	9.21	1½-2½	
3627.168	A	1	5.93	9.33	2½-3½	$d^2D-w^2F^\circ$ (193)
3321.491	A	1	5.93	9.65	2½-3½	$d^2D-v^2F^\circ$
3324.838	A	1	5.89	9.60	1½-2½	(194)
3365.640	A	0	5.93	9.60	2½-2½	
3261.509	A	1	5.93	9.71	2½-2½	$d^2D-w^2D^\circ$ (195)
3203.741	A	0	5.93	9.78	2½-1½	$d^2D-w^2P^\circ$ (196)
7287.36	B	6	6.19	7.89	4½-5½	$c^4F-y^4G^\circ$
7264.99	B	10	6.20	7.89	3½-4½	(197)
7193.23	B	8	6.19	7.91	2½-3½	
7134.99	B	5	6.18	7.91	1½-2½	
6966.9	B	2	6.18	7.95	1½-2½	$c^4F-z^2F^\circ$ (198)
6482.205	A	1	6.19	8.10	4½-5½	$c^4F-x^4G^\circ$
6446.43	B	20	6.20	8.11	3½-4½	(199)
6331.969	B	12	6.19	8.14	2½-3½	
6433.85	B	3	6.19	8.11	4½-4½	
6305.318	B	15	6.19	8.15	4½-4½	$c^4F-x^4F^\circ$
6175.158	B	15	6.20	8.19	3½-3½	(200)
6103.54	B	8	6.19	8.21	2½-2½	
6045.497	B	6	6.18	8.22	1½-1½	
4444.563	A	1	6.19	8.97	4½-4½	$c^4F-w^4F^\circ$ (201)
4359.12	P		6.19	9.03	4½-4½	$c^4F-w^2G^\circ$
4355.03	P		6.20	9.03	3½-3½	(202)
4349.28	P		6.19	9.03	4½-3½	
4364.89	P		6.20	9.02	3½-4½	
4346.50	P		6.19	9.03	2½-3½	
6487.43	B	4	6.78	8.68	3½-4½	$d^2F-x^2G^\circ$
6386.75	B	2	6.77	8.71	2½-3½	(203)
5519.72	P		6.78	9.01	3½-3½	$d^2F-x^2F^\circ$
5497.70	P		6.77	9.02	2½-2½	(204)
5074.063	A	1	6.78	9.21	3½-2½	$d^2F-x^2D^\circ$
5093.470	A	1	6.77	9.20	2½-1½	(205)
4830.40	P		6.78	9.33	3½-3½	$d^2F-w^2F^\circ$
4750.49	P		6.77	9.37	2½-2½	(206)
°3451.614§	A	2	6.78	10.35	3½-2½	$d^2F-v^2D^\circ$
3390.082	A	2	6.77	10.41	2½-1½	(207)
3451.228	A	2	6.78	10.35	3½-4½	$d^2F-v^2G^\circ$
3515.818	A	2	6.77	10.28	2½-3½	(208)
7334.66	B	8	7.24	8.92	4½-5½	$d^2G-x^2H^\circ$
7425.12	P		7.24	8.90	3½-4½	(209)
6677.33	B	3	7.24	9.09	4½-5½	$d^2G-w^2H^\circ$
6627.28	B	5	7.24	9.10	3½-4½	(210)
5891.36	B	8	7.24	9.33	4½-3½	$d^2G-w^2F^\circ$
5795.87	B	4n	7.24	9.37	3½-2½	(211)
3960.895	A	3	7.24	10.35	4½-4½	$d^2G-v^2G^\circ$
4057.457	A	2	7.24	10.28	3½-3½	(212)
4354.358	A	2n	7.62	10.45	3½-3½	$y^4D^\circ-f^4D$
4507.195	A	0n	7.74	10.48	2½-2½	(213)
4066.328	A	?2	7.67	10.70	1½-1½	$z^2D^\circ-e^4F$ (214)
5785.0	B	5N	7.67	9.81	4½-3½	$y^4F^\circ-e^4D$ (215)
4366.165	A	tr	7.67	10.50	2½-1½	$y^4F^\circ-f^4D$ (216)
6061.04	B	3n	7.77	9.81	3½-3½	$x^4D^\circ-e^4D$ (217)
4913.366	A	1	7.83	10.35	1½-2½	x^4D°-32 (218)
4598.528	A	1n	7.77	10.45	3½-3½	$x^4D^\circ-f^4D$
4628.821	A	0n	7.81	10.48	2½-2½	(219)
4631.895	A	0n	7.83	10.50	1½-1½	
4625.549	A	tr	7.85	10.51	½- ½	
4652.280	A	tr	7.85	10.50	½-1½	
4313.034	A	1n	7.77	10.63	3½-4½	$x^4D^\circ-e^4F$
4319.717	A	1n	7.81	10.67	2½-3½	(220)
4321.341	A	1n	7.83	10.69	1½-2½	
4318.216	A	0N	7.85	10.70	½-1½	
5081.920	A	tr	7.91	10.33	3½-3½?	y^4G°-30 (221)
4493.579	A	1n	7.89	10.63	5½-4½	$y^4G^\circ-e^4F$
4449.663	A	1n	7.89	10.67	4½-3½	(222)
4431.626	A	1n	7.91	10.69	3½-2½	
m4508.26	P	Fe+	7.89	10.63	4½-4½	

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atory Ref	Int	E P Low	High	J	Multiplet (No)
A	1n	8.00	12.13	4½-5½	$y^2G^{\circ}-e^4H$ (223)
A	2	8.18	10.41	½-1½	$z^2S^{\circ}-e^6P$ (224)
A	0n	8.15	10.48	4½-5½	$x^4F^{\circ}-e^4G$ (225)
A	0n	8.19	10.52	3½-4½	
A	0n	8.21	10.55	2½-3½	
A	0	8.19	12.15	3½-4½	$x^4F^{\circ}-e^4H$ (226)
A	1	8.20	12.13	5½-5½	$y^4H^{\circ}-e^4H$ (227)
A	1n	8.22	12.15	4½-4½	
A	tr	8.40	12.13	4½-5½?	$y^2H^{\circ}-e^4H$ (228)

Unclassified Lines of Fe II

B	20	5070.957	A	2
B	20	5061.794	A	1
B	5	5035.773	A	3
B	5	5032.794	A	1
B	5	*5030.740§§	A	3
B	8	5022.874	A	1
B	4	5004.264	A	3
B	6	4948.848	A	1
B	5	4579.523	A	1
B	15	4480.687	A	1
B	4n	4455.258	A	3
B	4	4451.545	A	4
B	3	4402.875	A	2
		4368.262	A	1
B	30N	4361.249	A	2
B	4N	4357.574	A	4
B	8N	4331.529	A	3
B	3	4286.311	A	1
B	3n	4263.895	A	1
B	10	3860.915	A	3
A	3	3822.737	A	3
A	1	3725.901	A	?2
		3652.748	A	1
B	20	3624.688	A	2
A	2	*3482.426§§	A	2
B	30	*3473.825§§	A	2
A	2	3453.595	A	2
A	2	3451.318	A	2
A	0	3386.724	A	2
A	1	3356.265	A	2
A	2	*3329.070§	A	2
A	1	*3299.771§§	A	1
B	4			
B	6	*3228.600§	A	?3
A	3	3223.444	A	1
B	2	3171.016	A	1
A	0	3165.957	A	3n
B	2N			
B	15	3123.715	A	1
A	2	3119.660	A	?1
A	?1	3115.352	A	2
A	1			
A	0	3071.270	A	2
B	3	*3063.814§§	A	1
A	1	2968.906	A	2
		2963.897	A	3n

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atory Ref	Int	E P Low	High	J	Multiplet (No)
B	4	6.21	10.23	4-4	$b^3F-z^7P^{\circ}$ (1)
B	1	6.21	10.16	3-3	
B	2	6.20	10.12	2-2	
B	5	6.21	10.23	3-4	
B	1	6.20	10.16	2-3	
B	1	7.84	10.23	4-4?	$a^5G-z^7P^{\circ}$ (2)
P		8.31	10.23	3-4	$a^5P-z^7P^{\circ}$ (3)
P		8.21	10.16	2-3	
P		8.22	10.12	1-2	
P		8.21	10.16	3-3	
P		8.21	10.12	2-2	
P		8.31	10.12	3-2	
A	10	8.21	11.00	3-3	$a^5P-z^5P^{\circ}$ (4)
B	1	8.21	11.03	2-2	
B	3	8.22	11.05	1-1	
B	1	8.31	11.03	3-2	
B	4	8.21	11.05	2-1	
A	7	8.21	11.00	2-3	
A	6	8.22	11.03	1-2	
A	4	8.60	11.00	4-3	$b^5D-z^5P^{\circ}$ (5)
B	6	8.62	11.03	3-2	
B	3	8.62	11.05	2-1	
B	4	8.62	11.00	3-3	
B	6	8.62	11.03	2-2	
B	3	8.62	11.05	1-1	
B	4	8.62	11.00	2-3	
B	1	8.62	11.03	1-2	
B	2	8.61	11.05	0-1	

e III continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3198.81	A	5	10.17	14.03	3-4	$c^3D-z^5G^{\circ}$ (6)
3204.76	A	6	10.17	14.02	2-3	
3215.60	A	8	10.18	14.02	1-2	
3201.90	A	1	10.17	14.02	3-3	
3206.98	A	4	10.17	14.02	2-2	
3266.88	A	20	10.26	14.04	5-6	$a^5F-z^5G^{\circ}$ (7)
3276.08	A	15	10.27	14.03	4-5	
3288.81	A	15	10.28	14.03	3-4	
3305.22	A	10	10.29	14.02	2-3	
3339.36	A	10	10.33	14.02	1-2	
*3273.53 §	A	6	10.26	14.03	5-5	
3280.58	A	6	10.27	14.03	4-4	
*3292.04§§	A	8	10.28	14.02	3-3	
3307.53	A	5	10.29	14.02	2-2	
3278.04	B	1d	10.26	14.03	5-4	
3283.75	A	2	10.27	14.02	4-3	
3109.32	B	1	10.26	14.23	5-5	$a^5F-z^5H^{\circ}$ (8)
*3129.04 §	B	5	10.27	14.21	4-4?	
3111.609	A	8	10.27	14.23	4-5	
3164.67	A	3	10.29	14.19	2-3	
3013.125	A	20	10.26	14.36	5-5	$a^5F-z^5F^{\circ}$ † (9)
3001.589	A	12	10.27	14.38	4-4	
3002.99	A	5	10.33	14.44	1-1	
3015.230	A	7	10.27	14.36	4-5	
3008.506	A	5	10.28	14.38	3-4	
3000.836	B	tr	10.27	14.38	4-3	$a^5F-z^5D^{\circ}$ † (10)
3012.847	B	2	10.28	14.37	3-2	
3027.46	A	3	10.29	14.37	2-1	
3055.55	A	5	10.33	14.37	1-0	
3007.802	A	6	10.28	14.38	3-3	
3023.85	A	8	10.29	14.37	2-2	
3054.134	A	7	10.33	14.37	1-1	
3018.744	A	6	10.29	14.38	2-3	
3050.463	A	5	10.33	14.37	1-2	
*3419.49	A	3	10.42	14.02	2-3	$c^3F-z^5G^{\circ}$ (11)
3421.97	A	3	10.42	14.02	2-2	
3108.85	A	3	10.39	14.36	4-5	$c^3F-z^5F^{\circ}$ (12)
3143.36	A	2	10.45	14.38	3-3	$c^3F-z^5D^{\circ}$ (13)
3283.30	A	2	10.85	14.61	3-4	$b^1F-z^3F^{\circ}$ (14)
3294.50	A	4	10.85	14.60	3-3	
4003.41	A	4	10.95	14.03	4-4	$b^3H-z^5G^{\circ}$ (15)
3464.27	B	1	10.95	14.51	4-4	$b^3H-z^5D^{\circ}$ (16)
3367.54	A	3	10.95	14.61	4-4	$b^3H-z^3F^{\circ}$ (17)
3396.71	A	7	10.98	14.61	6-6	$b^3H-z^3H^{\circ}$ (18)
3347.70	A	8	10.95	14.64	5-5	
3329.89	A	7	10.95	14.65	4-4	
3373.51	A	2	10.98	14.64	6-5	
*3333.27	A	3	10.95	14.65	5-4	
3357.07	B	tr	10.95	14.62	4-3	$b^3H-y^5P^{\circ}$ (19)
3090.772	B	1	10.95	14.94	4-3	$b^3H-y^5F^{\circ}$ (20)
3026.985	A	6	10.98	15.05	6-5	$b^3H-z^3G^{\circ}$ (21)
m3006.95	P	Fe III	10.95	15.05	5-4	
3006.122	A	4	10.95	15.05	4-3	
*3004.109	B	3	10.95	15.05	4-4	
4205.92	A	2	11.10	14.03	5-5	$c^3G-z^5G^{\circ}$ (22)
4184.09	A	4	11.08	14.03	4-5	
4196.69	B	1	11.08	14.03	4-3	
*3947.10	A	4	11.08	14.21	4-4	$c^3G-z^5H^{\circ}$ (23)
3663.98	B	tr	11.08	14.45	4-3	$c^3G-z^5F^{\circ}$ (24)
3664.98	B	1	11.07	14.44	3-2	
3620.37	A	3	11.10	14.51	5-4	$c^3G-z^5D^{\circ}$ (25)
3514.87	A	2	11.10	14.61	5-4	$c^3G-z^3F^{\circ}$ (26)
3512.34	P		11.08	14.60	4-3	
3511.93	B	tr	11.07	14.59	3-2?	
3499.57	A	7	11.08	14.61	4-4	
*3501.75	A	8	11.07	14.60	3-3	
3489.07	P		11.07	14.61	3-4	
3514.39	P		11.10	14.61	5-6	$c^3G-z^3H^{\circ}$ (27)
3474.41	P		11.08	14.64	4-5	
3448.63	P		11.07	14.65	3-4	
3489.48	P		11.10	14.64	5-5	
3458.91	B	2	11.08	14.65	4-4	
*3473.82 §	B	5	11.10	14.65	5-4	
3167.54	B	1	11.10	15.00	5-5	$c^3G-y^5F^{\circ}$ (28)
*3120.03 §	A	3	11.10	15.05	5-5	$c^3G-z^3G^{\circ}$ (29)
3108.78	P		11.08	15.05	4-4	
3102.55	P		11.07	15.05	3-3	
3120.84	A	2	11.10	15.05	5-4	
3110.85	A	3	11.08	15.05	4-3	
3107.950	A	8	11.08	15.05	4-5	
3100.48	P		11.07	15.05	3-4	
3070.072	A	5	11.08	15.10	4-3	$c^3G-z^3D^{\circ}$ (30)
3035.802	A	3	11.07	15.14	3-2	
3011.060	B	1	11.07	15.17	3-2	$c^3G-y^5D^{\circ}$ (31)

Fe III continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4323.81	B	2	11.17	14.02	3-3	$d^3F-z^5G^{\circ}$ (32)
4057.51	B	4	11.17	14.21	4-4	$d^3F-z^5H^{\circ}$ (33)
3773.80	B	tr	11.17	14.44	3-2	$d^3F-z^5F^{\circ}$ (34)
*3697.45§§	B	3	11.17	14.51	3-4	$d^3F-z^5D^{\circ}$ (35)
3845.68	B	1	11.16	14.37	2-2	
3586.12	A	9	11.17	14.61	4-4	$d^3F-z^3F^{\circ}$ (36)
3600.93	A	10	11.17	14.60	3-3	
3603.88	A	9	11.16	14.59	2-2	
3599.49	A	3	11.17	14.60	4-3	
3611.72	A	3	11.17	14.59	3-2	
3587.53	A	3	11.17	14.61	3-4	
3593.15	A	4	11.16	14.60	2-3	
3250.27	B	1	11.17	14.97	3-4	$d^3F-y^5F^{\circ}$ (37)
3294.85	B	1	11.17	14.92	3-2	
3302.19	B	1	11.16	14.90	2-1	
3176.00	A	10	11.17	15.05	4-5	$d^3F-z^3G^{\circ}$ (38)
3178.03	A	10	11.17	15.05	3-4	
3174.09	A	10	11.16	15.05	2-3	
3176.86	B	2	11.17	15.05	4-4	
3180.17	P		11.17	15.05	3-3	
3179.08	B	1	11.17	15.05	4-3	
3136.43	A	10	11.17	15.10	4-3	$d^3F-z^3D^{\circ}$ (39)
3110.052	A	10	11.17	15.14	3-2	
m3083.66	P	Fe I	11.16	15.16	2-1	
3089.649	B	1	11.17	15.16	4-3	$d^3F-y^5D^{\circ}$ (40)
3084.09	A	6	11.17	15.17	3-2	
*3004.109	B	3	11.17	15.28	4-3	$d^3F-x^5P^{\circ}$ (41)
3009.998	B	1	11.17	15.27	3-2	
3004.490	B	1	11.16	15.27	2-2	
4391.26	B	1	11.42	14.23	5-5	$a^1H-z^5H^{\circ}$ (42)
4927.56	A	2	11.53	14.03	4-5	$e^3F-z^5G^{\circ}$ (43)
4226.14	B	2	11.53	14.45	2-3	$e^3F-z^5F^{\circ}$ (44)
m4005.04	P	Fe I	11.53	14.61	4-4	$e^3F-z^3F^{\circ}$ (45)
4022.36	A	4	11.53	14.60	3-3	
4039.12	A	3	11.53	14.59	2-2	
4021.75	P		11.53	14.60	4-3	
4035.82	P		11.53	14.59	3-2	
4005.64	P		11.53	14.61	3-4	
4025.67	P		11.53	14.60	2-3	
3990.81	B	tr	11.53	14.62	3-3	$e^3F-y^5P^{\circ}$ (46)
3800.43	B	1	11.53	14.78	3-2?	$e^3F-z^3P^{\circ}$ (47)
3500.29	A	7	11.53	15.05	4-5	$e^3F-z^3G^{\circ}$ (48)
*3501.75	A	8	11.53	15.05	3-4	
3506.93	A	5	11.53	15.05	2-3	
3501.32	P		11.53	15.05	4-4	
3504.40	A	2	11.53	15.05	3-3	
3503.96	P		11.53	15.05	4-3	
m3452.31	P	Fe I	11.53	15.10	4-3	$e^3F-z^3D^{\circ}$ (49)
*3419.49	A	3	11.53	15.14	3-2	
3301.09	B	tr	11.53	15.27	2-2	$e^3F-x^5P^{\circ}$ (50)
*3118.75 §	A	5	11.53	15.49	4-4	$e^3F-y^3F^{\circ}$ (51)
3100.31	P		11.53	15.51	3-3	
3098.93	P		11.53	15.51	2-2	
4590.68	B	tr	11.54	14.23	4-5	$c^1G-z^5H^{\circ}$ (52)
4663.78	B	1	11.54	14.19	4-3	
4025.07	A	3	11.54	14.61	4-4	$c^1G-z^3F^{\circ}$ (53)
3515.57	A	5	11.54	15.05	4-5	$c^1G-z^3G^{\circ}$ (54)
3516.58	P		11.54	15.05	4-4	
3519.25	B	1	11.54	15.05	4-3	
3189.74	A	3	11.54	15.41	4-3	$c^1G-y^3D^{\circ}$ (55)
5532.65	B	1	11.98	14.21	3-4	$c^1F-z^5H^{\circ}$ (56)
4714.53	B	1	11.98	14.60	3-3	$c^1F-z^3F^{\circ}$ (57)
4671.25	B	tr	11.98	14.62	3-3	$c^1F-y^5P^{\circ}$ (58)
3519.85	B	1	11.98	15.49	3-4	$c^1F-y^3F^{\circ}$ (59)
3525.17	A	3	13.07	16.58	2-2	$d^3D-x^3P^{\circ}$ (60)
3488.92	A	3	13.07	16.61	1-1	
3403.51	A	2	13.07	16.70	2-2	$d^3D-x^3D^{\circ}$ (61)
3406.18	A	2	13.08	16.70	3-2	
*3410.74	A	3	13.07	16.69	2-1	
*3410.74	A	3	13.08	16.70	3-4	$d^3D-y^5G^{\circ}$ (62)
*3357.40	A	4	13.08	16.75	3-3	$d^3D-w^3D^{\circ}$ (63)
3370.23	A	2n	13.07	16.85	1-1	
*3339.04§§	A	2	13.08	16.89	3-2	
3263.04	A	1	13.07	16.85	1-2	$d^3D-w^3F^{\circ}$ (64)
3238.74	A	2	13.08	16.89	3-3	
3264.22	A	2	13.07	16.85	2-2	
3096.86	A	2	13.07	17.06	2-3	$d^3D-x^3G^{\circ}$ (65)
3099.05	A	2	13.08	17.06	3-3	

y Int	E P Low	High	J	Multiplet (No)
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4	13.53	16.23	2–2	$c^1D-z^1D^\circ$ (66)
3	13.53	17.12	2–1	$c^1D-z^1P^\circ$ (67)
4	14.11	16.33	5–6	$d^3G-y^3H^\circ$ (68)
3	14.12	16.37	4–5	
3	14.12	16.38	3–4	
4	14.11	17.22	5–5	$d^3G-w^3G^\circ$ (69)
Fe III	14.12	17.24	4–4	
4	14.12	17.24	3–3	
3	14.12	17.24	4–3	
2	14.12	17.34	4–3	$d^3G-y^1F^\circ$ (70)
Fe II	14.11	17.41	5–4	$d^3G-v^3F^\circ$ (71)
3	14.12	17.37	4–3	
4	14.12	17.38	3–2	
6	14.11	17.76	5–5	$d^3G-v^3G^\circ$ (72)
6	14.12	17.79	4–4	
4	14.12	17.79	3–3	
3	14.11	17.79	5–4	
4	14.12	17.79	4–3	
5	14.11	17.82	5–4	$d^3G-t^3F^\circ$ (73)
4	14.12	17.85	4–3	
3	14.12	17.84	3–2	
3	14.12	17.82	4–4	
6	14.11	17.90	5–4	$d^3G-x^1G^\circ$ (74)
2	14.12	17.91	4–3	$d^3G-x^1F^\circ$ (75)
3	14.11	18.20	5–5	$d^3G-u^3G^\circ$ (76)
3	14.12	18.17	4–4	
1	14.26	18.19	6–5	$z^5H^\circ-e^7D$ (77)
1	14.19	18.19	3–4	
tr	14.38	18.43	4–3	$z^5F^\circ-e^7S$ (78)
1	14.44	18.43	2–3?	
1	14.37	18.18	2–2	$z^5D^\circ-e^7D$ (79)
1	14.38	18.43	3–3	$z^5D^\circ-e^7S$ (80)
tr	14.43	18.43	2–3	$z^5S^\circ-e^7S$ (81)
4	14.56	17.26	4–4	$d^1G-y^1G^\circ$ (82)
3	14.56	17.85	4–5	$d^1G-y^1H^\circ$ (83)
2	14.56	17.90	4–4	$d^1G-x^1G^\circ$ (84)
4	14.56	17.91	4–3	$d^1G-x^1F^\circ$ (85)
2	14.56	18.13	4–3	$d^1G-u^3G^\circ$ (86)
6	14.56	18.40	4–4	$d^1G-w^1G^\circ$ (87)
tr	14.61	18.19	4–5	$z^3F^\circ-e^7D$ (88)
tr	14.61	18.18	4–3	
1	14.60	18.71	3–3	$z^3F^\circ-e^5D$ † (89)
1	14.64	18.19	5–4	$z^3H^\circ-e^7D$ (90)
tr	14.65	18.19	4–5	
2	14.65	18.71	4–4	$z^3H^\circ-e^5D$ (91)
1	14.65	18.71	4–3	
4	14.66	18.71	2–3	$y^5P^\circ-e^5D$ (92)
3	14.67	18.71	1–2	
1	14.78	18.18	2–1	$z^3P^\circ-e^7D$ (93)
3	14.81	18.18	1–2	
tr	14.84	18.18	0–1	
3	14.78	18.71	2–3	$z^3P^\circ-e^5D$ (94)
1	14.81	18.71	1–2	
2	14.97	18.19	4–5	$y^5F^\circ-e^7D$ (95)
1	14.92	18.18	2–2	
3	15.00	18.71	5–4	$y^5F^\circ-e^5D$ (96)
4	14.97	18.71	4–3	
3	14.94	18.71	3–2	
4	14.97	18.71	4–4	
2	14.92	18.71	2–2	
1	14.94	18.71	3–4	
tr	15.05	18.71	4–4	$z^3G^\circ-e^5D$ (97)
2	15.14	18.18	2–3	$z^3D^\circ-e^7D$ (98)
1	15.14	18.18	2–2	
3	15.10	18.43	3–3	$z^3D^\circ-e^7S$ (99)
tr	15.14	18.71	2–2	$z^3D^\circ-e^5D$ (100)
1	15.16	18.71	1–2	

Fe III continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4098.54	B	1	15.17	18.18	2–2	$y^5D^\circ-e^7D$ (101)
3768.91	B	tr	15.17	18.43	2–3	$y^5D^\circ-e^7S$ (102)
3496.29	A	4	15.18	18.71	4–4	$y^5D^\circ-e^5D$ (103)
*3482.36 §	B	4d	15.16	18.71	3–4	
3491.16	B	2	15.17	18.71	2–3	
4237.21	B	2	15.27	18.18	2–2	$x^5P^\circ-e^7D$ (104)
*4238.78§§	B	5	15.27	18.18	2–1	
4211.51	B	2	15.25	18.18	1–2	
3598.22	B	2	15.28	18.71	3–3	$x^5P^\circ-e^5D$ (105)
3572.46	B	1	15.25	18.71	1–2	
4462.90	B	3	15.42	18.18	2–3?	$y^3D^\circ-e^7D$ (106)
4467.36	B	1	15.42	18.18	2–1?	
4100.52	B	3	15.42	18.43	2–3	$y^3D^\circ-e^7S$ (107)
4621.39	B	3	15.51	18.18	2–3	$y^3F^\circ-e^7D$ (108)
4616.95	B	1	15.51	18.18	3–2	
4626.53	B	1	15.51	18.18	2–1	
4624.42	B	tr	15.51	18.18	2–2	
3831.75	B	tr	15.49	18.71	4–3	$y^3F^\circ-e^5D$ (109)
3860.46	B	1	15.51	18.71	3–3	
5436.80	B	1	15.91	18.18	2–3	$y^3P^\circ-e^7D$ (110)
5286.74	B	tr	15.85	18.18	0–1	
5443.88	B	2	15.91	18.18	2–1	
4908.74	B	1	15.91	18.43	2–3	$y^3P^\circ-e^7S$ (111)
5269.15	B	4	16.37	18.71	5–4	$y^3H^\circ-e^5D$ (112)
5243.3	A	10	18.19	20.54	5–4	$e^7D-y^7P^\circ$ (113)
5282.1	A	7	18.19	20.52	4–3	
5306.6	A	4	18.18	20.51	3–2	
*5235.3 §	A	5	18.19	20.54	4–4	
*5276.2 §	A	7	18.18	20.52	3–3	
5302.5	A	6	18.18	20.51	2–2	
5229.57	B	2	18.18	20.54	3–4	
5272.0	A	3	18.18	20.52	2–3	
5299.9	A	5	18.18	20.51	1–2	
5833.65	C	10	18.43	20.54	3–4	$e^7S-y^7P^\circ$ (114)
5891.5	C	6	18.43	20.52	3–3	
5929.5	A	5	18.43	20.51	3–2	
5953.65	C	6	18.71	20.78	4–3	$e^5D-w^5P^\circ$ (115)
5920.0	C	7w	18.71	20.79	–2	
5901.0	A	3	18.71	20.80	–1	
3007.2	A	20wn	18.71	22.81		$e^5D-w^5F^\circ$ (116)
6032.30	C	7	18.73	20.78	2–3	$e^5S-w^5P^\circ$ (117)
5999.30	C	5	18.73	20.79	2–2	
5978.90	C	5n	18.73	20.80	2–1	
4164.79	A	20	20.54	23.51	4–5	$y^7P^\circ-f^7D$ (118)
4137.93	A	10	20.52	23.51	3–4	
4120.97	A	8	20.51	23.50	2–3	
4166.86	A	9	20.54	23.51	4–4	
4139.37	A	8	20.52	23.51	3–3	
4122.06	A	8	20.51	23.50	2–2	
4168.41	A	4	20.54	23.51	4–3	
4140.51	A	6	20.52	23.50	3–2	
4122.98	A	8	20.51	23.50	2–1	
4081.19	A	7	20.54	23.57	4–3	$y^7P^\circ-f^7S$ (119)
4053.28	A	5	20.52	23.57	3–3	
4035.54	A	4	20.51	23.57	2–3	
*3954.38	A	12	20.78	23.90	3–4	$w^5P^\circ-f^5D$ (120)
3968.78	A	8	20.79	23.90	2–3	
3978.43	A	4	20.80	23.90	1–2	
*3954.38	A	12	20.78	23.90	3–3	
m3969.43	P	Fe I	20.79	23.90	2–2	
3979.42	A	5	20.80	23.90	1–1	
3980.14	A	3	20.80	23.90	1–0	
4310.37	A	12n	22.77	25.63	6–7	$z^7F^\circ-e^7G$ (121)
4304.81	A	10n	22.77	25.63	5–6	
4296.86	A	10n	22.76	25.63	4–5	
4286.13	A	10n	22.75	25.63	3–4	
4273.42	A	7n	22.75	25.63	2–3	
4372.4	A	20wn	22.81	25.63		$w^5F^\circ-e^5G$ (122)

Strongest Unclassified Lines of Fe III
(Some possibly Fe II)

I A	Ref	Int	I A	Ref	Int
6185.1	B	5	5353.78	B	5
5875.6	B	5	5340.92	B	5
5854.1	B	5	5339.92	B	7
5587.9	B	5	5291.78	B	5
5466.46	B	5	5284.85	B	5
5430.14	B	5	5272.86	B	6
5402.27	B	5	5260.25	B	10
5387.35	B	5	5227.53	B	6
5375.68	B	5	5216.99	B	8
5363.80	B	6	5177.73	B	5

Fe III continued

I A	Ref	Int	I A	Ref	Int
5149.33	B	7	4143.87	B	7
5100.706	B	10	4121.31	B	6
*5030.75§	B	6	4113.45	B	7
5002.02	B	8	4113.23	B	7
4948.54	B	5	4109.95	B	5
4596.09	B	5	4008.81	B	5
4573.14	B	5	3964.11	B	5
4559.09	B	6	3743.40	B	8
4535.50	B	5	3652.65	B	6
4271.47	B	6	3589.77	B	5
4266.88	B	5	3367.02	B	6
4255.20	B	5	3338.72	B	7
4249.95	B	7	3309.40	B	6
4243.85	B	8	3304.31	B	9
4235.54	B	10	*3295.24§	B	6
4222.39	B	8	3190.81	B	8
4220.32	B	5	3151.86	B	5
4210.87	B	10	3123.18	B	10
4200.38	B	6	3121.08	B	10
4200.06	B	6	3086.311	B	6
			3044.438	B	5
4189.10	B	7			
4179.25	B	5			
4174.27	B	10			
4154.98	B	8			
4145.74	B	5			

Co I I P 7.84 Anal A List B Feb 1942

I A	Ref	Int	E P Low	High	J	Multiplet (No)
4233.996	E	2	0.00	2.91	4½–5½	$a^4F-z^6F^\circ$ (1)
4339.13	P		0.10	2.94	3½–4½	
4361.913	A	(1N)	0.17	3.00	2½–3½	
4361.031	C	(1n)	0.22	3.05	1½–2½	
4190.712	A	20	0.00	2.94	4½–4½	
4252.302	A	12	0.10	3.00	3½–3½	
4285.782	A	6	0.17	3.05	2½–2½	
4303.235	A	3	0.22	3.09	1½–1½	
*4109.706	E	(1d)	0.00	3.00	4½–3½	
4179.90	P		0.10	3.05	3½–2½	
4229.955	A	(2n)	0.17	3.09	2½–1½	
4268.032	C	(1n)	0.22	3.11	1½– ½	
4059.321	G	(1)	0.00	3.04	4½–4½	$a^4F-z^6D^\circ$ (2)
4088.291	A	1	0.10	3.12	3½–3½	
4108.488	F	(1)	0.17	3.18	2½–2½	
3956.270	A	(2)	0.00	3.12	4½–3½	
4011.089	A	2	0.10	3.18	3½–2½	
4054.018	A	(2)	0.17	3.22	2½–1½	
4198.425	C	(2)	0.10	3.04	3½–4½	
4189.50	H	(1)	0.17	3.12	2½–3½	
4177.59	H	(1)	0.22	3.18	1½–2½	
3909.933	A	15	0.00	3.16	4½–5½	$a^4F-z^6G^\circ$ † (3)
3979.518	A	10	0.10	3.20	3½–4½	
4027.032	A	10	0.17	3.24	2½–3½	
4057.195	A	5	0.22	3.27	1½–2½	
3992.014	G	(1)	0.17	3.26	2½–2½	
3526.847	A	100R	0.00	3.50	4½–4½	$a^4F-z^4F^\circ$ (4)
3575.361	A	60r	0.10	3.55	3½–3½	
3594.870	A	50R	0.17	3.61	2½–2½	
3602.079	A	40R	0.22	3.65	1½–1½	
*3474.018	F	100R	0.00	3.55	4½–3½	
3520.075	A	15	0.10	3.61	3½–2½	
3550.592	A	20r	0.17	3.65	2½–1½	
3631.390	A	20r	0.10	3.50	3½–4½	
3652.541	A	15	0.17	3.55	2½–3½	
3647.658	A	12	0.22	3.61	1½–2½	
3465.792	A	100R	0.00	3.56	4½–5½	$a^4F-z^4G^\circ$ † (5)
3513.478	A	50R	0.10	3.61	3½–4½	
3529.032	A	30r	0.17	3.67	2½–3½	
3533.356	A	25r	0.22	3.72	1½–2½	
3415.519	A	5	0.00	3.61	4½–4½	
3456.924	A	9	0.10	3.67	3½–3½	
3483.80	A	(6)	0.17	3.72	2½–2½	
3412.633	C	80R	0.00	3.62	4½–3½	$a^4F-z^4D^\circ$ (6)
3431.582	A	50r	0.10	3.70	3½–2½	
3442.918	A	40r	0.17	3.76	2½–1½	
3455.237	A	25r	0.22	3.80	1½– ½	
3510.426	A	30r	0.10	3.62	3½–3½	
3502.63	A	20r	0.17	3.70	2½–2½	
3491.316	A	15	0.22	3.76	1½–1½	
3584.801	C	15	0.17	3.62	2½–3½	
3552.720	A	8	0.22	3.70	1½–2½	
3153.692	E	(1)	0.00	3.91	4½–4½	$a^4F-z^2G^\circ$ † (7)
3132.218	A	4	0.10	4.04	3½–3½	
3237.028	A	8	0.10	3.91	3½–4½	
3191.297	A	4	0.17	4.04	2½–3½	
3136.726	A	5	0.00	3.93	4½–3½	$a^4F-z^2F^\circ$ (8)
3219.150	A	5	0.10	3.93	3½–3½	
3186.350	A	5	0.17	4.05	2½–2½	
3281.585	A	2	0.17	3.93	2½–3½	
3227.752	A	2	0.22	4.05	1½–2½	
3121.415	C	10	0.00	3.95	4½–3½	$a^4F-y^4D^\circ$ (9)
3139.947	A	12	0.10	4.03	3½–2½	
3149.310	A	10	0.17	4.09	2½–1½	
*3159.662	A	10	0.22	4.13	1½– ½	
3203.026	A	4	0.10	3.95	3½–3½	
3199.322	A	4	0.17	4.03	2½–2½	
3189.752	A	5	0.22	4.09	1½–1½	
m3264.83	P	Co	0.17	3.95	2½–3½	
3241.05	A	(3)	0.22	4.03	1½–2½	

atory Ref	Int	E P Low	High	J	Multiplet (No)
inued					
A	12r	0.00	4.00	4½-5½	$a^4F-y^4G^\circ$
A	12	0.10	4.01	3½-4½	(10)
A	15r	0.17	4.10	2½-3½	
A	10	0.22	4.16	1½-2½	
A	5	0.00	4.01	4½-4½	
A	10	0.10	4.10	3½-3½	
A	10	0.17	4.16	2½-2½	
A	8	0.00	4.10	4½-3½	
A	8	0.10	4.16	3½-2½	
A	30R	0.00	4.05	4½-4½	$a^4F-y^4F^\circ$
A	20r	0.10	4.13	3½-3½	(11)
A	15r	0.17	4.19	2½-2½	
A	15r	0.22	4.22	1½-1½	
A	15r	0.00	4.13	4½-3½	
A	15r	0.10	4.19	3½-2½	
A	12r	0.17	4.22	2½-1½	
C	10	0.10	4.05	3½-4½	
A	5	0.17	4.13	2½-3½	
A	5	0.22	4.19	1½-2½	
A	5	0.10	4.13	3½-2½	$a^4F-z^2D^\circ$
A	6	0.17	4.24	2½-1½	(12)
A	1	0.17	4.13	2½-2½	
A	6	0.22	4.24	1½-1½	
E	(1)	0.22	4.13	1½-2½	
A	15r	0.00	4.13	4½-4½	$a^4F-y^2G^\circ$ †
A	7	0.10	4.21	3½-3½	(13)
A	5	0.10	4.13	3½-4½	
C	4	0.17	4.21	2½-3½	
A	2	0.43	2.91	4½-5½	$b^4F-z^6F^\circ$
P		0.51	2.94	3½-4½	(14)
G	(1)	0.58	3.10	2½-3½	
G	(1)	0.63	3.05	1½-2½	
C	(2)	0.43	2.94	4½-4½	
A	2	0.51	3.00	3½-3½	
A	2	0.58	3.05	2½-2½	
A	(2)	0.63	3.09	1½-1½	
A	1	0.43	3.00	4½-3½	
A	(1)	0.51	3.05	3½-2½	
A	1	0.58	3.09	2½-1½	
A	(1)	0.63	3.11	1½-½	
A	3	0.43	3.04	4½-4½	$b^4F-z^6D^\circ$
A	(5)	0.51	3.12	3½-3½	(15)
A	1	0.43	3.12	4½-3½	
A	(1)	0.51	3.18	3½-2½	
F	(1)	0.58	3.22	2½-1½	
H	(2)	0.51	3.04	3½-4½	
G	(1)	0.58	3.12	2½-3½	
G	(2)	0.63	3.18	1½-2½	
A	20	0.43	3.50	4½-4½	$b^4F-z^4F^\circ$
A	8	0.51	3.55	3½-3½	(16)
A	3	0.58	3.61	2½-2½	
A	2	0.63	3.65	1½-1½	
C	8	0.43	3.55	4½-3½	
A	6	0.51	3.61	3½-2½	
A	5	0.58	3.65	2½-1½	
E	(1n)	0.51	3.50	3½-4½	
A	2	0.58	3.55	2½-3½	
A	20	0.43	3.56	4½-5½	$b^4F-z^4G^\circ$
A	10	0.51	3.61	3½-4½	(17)
A	6	0.58	3.67	2½-3½	
A	6	0.63	3.72	1½-2½	
A	20	0.43	3.61	4½-4½	
A	10	0.51	3.67	3½-3½	
A	6	0.58	3.72	2½-2½	
A	10	0.43	3.67	4½-3½	
A	4	0.51	3.72	3½-2½	
A	60	0.43	3.62	4½-3½	$b^4F-z^4D^\circ$
A	40	0.51	3.70	3½-2½	(18)
A	25	0.58	3.76	2½-1½	
A	20	0.63	3.80	1½-½	
A	10	0.51	3.62	3½-3½	
A	15	0.58	3.70	2½-2½	
A	12	0.63	3.76	1½-1½	
A	(0)	0.58	3.62	2½-3½	
P	Co	0.63	3.70	1½-2½	
E	2	0.43	3.91	4½-4½	$b^4F-z^2G^\circ$
C	15	0.51	4.04	3½-3½	(19)
C	6	0.43	4.04	4½-3½	
A	25r	0.51	3.91	3½-4½	
A	25r	0.58	4.04	2½-3½	
C	30r	0.43	3.93	4½-3½	$b^4F-z^2F^\circ$
A	10	0.51	4.05	3½-2½	(20)
A	20r	0.51	3.93	3½-3½	
A	12	0.58	4.05	2½-2½	
F	(1)	0.58	3.93	2½-3½	
C	3	0.63	4.05	1½-2½	
A	100R	0.43	3.95	4½-3½	$b^4F-y^4D^\circ$
A	80R	0.51	4.03	3½-2½	(21)
A	60R	0.58	4.09	2½-1½	
A	25r	0.63	4.13	1½-½	
A	25R	0.51	3.95	3½-3½	
A	25r	0.58	4.03	2½-2½	
A	20r	0.63	4.09	1½-1½	
A	7	0.58	3.95	2½-3½	
A	8	0.63	4.03	1½-2½	
A	200R	0.43	4.00	4½-5½	$b^4F-y^4G^\circ$
A	80R	0.51	4.01	3½-4½	(22)
A	50r	0.58	4.10	2½-3½	
A	50r	0.63	4.16	1½-2½	
C	80R	0.43	4.01	4½-4½	
A	80R	0.51	4.10	3½-3½	
C	60R	0.58	4.16	2½-2½	
A	30r	0.43	4.10	4½-3½	
A	25r	0.51	4.16	3½-2½	

Co I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3405.120	C	150R	0.43	4.05	4½-4½	$b^4F-y^4F^\circ$
3409.177	C	60r	0.51	4.13	3½-3½	(23)
3417.154	A	50r	0.58	4.19	2½-2½	
3433.045	A	60R	0.63	4.22	1½-1½	
3334.146	A	30r	0.43	4.13	4½-3½	
3354.374	A	20	0.51	4.19	3½-2½	
*3388.163§	A	30r	0.58	4.22	2½-1½	
3483.410	A	20r	0.51	4.05	3½-4½	
*3474.018	F	100R	0.58	4.13	2½-3½	
3462.804	A	60r	0.63	4.19	1½-2½	
3409.646	C	(2)	0.51	4.13	3½-2½	$b^4F-z^2D^\circ$ †
3370.322	A	10	0.58	4.24	2½-1½	(24)
3474.530	A	6	0.58	4.13	2½-2½	
*3521.731	C	5	0.63	4.13	1½-2½	
3337.171	A	8	0.43	4.13	4½-4½	$b^4F-y^2G^\circ$
3333.388	A	10	0.51	4.21	3½-3½	(25)
3412.339	C	80R	0.51	4.13	3½-4½	
3395.370	A	40r	0.58	4.21	2½-3½	
3127.252	A	7	0.43	4.38	4½-3½	$b^4F-y^2F^\circ$
3105.929	A	3	0.51	4.48	3½-2½	(26)
3193.164	A	5	0.51	4.38	3½-3½	
*3159.662	A	10	0.58	4.48	2½-2½	
3249.995	A	6	0.58	4.38	2½-3½	
3198.660	A	5	0.63	4.48	1½-2½	
4580.139	A	4	0.92	3.61	3½-4½	$a^2F-z^4G^\circ$
4699.180	A	(0)	1.04	3.67	2½-3½	(27)
4484.513	A	(2)	0.92	3.67	3½-3½	
4619.329	G	(1)	1.04	3.72	2½-2½	
4411.786	E	(1)	0.92	3.72	3½-2½	
4121.318	A	60	0.92	3.91	3½-4½	$a^2F-z^2G^\circ$
4118.774	A	50	1.04	4.04	2½-3½	(28)
3952.917	C	25	0.92	4.04	3½-3½	
4092.386	A	25	0.92	3.93	3½-3½	$a^2F-z^2F^\circ$
4110.532	A	25	1.04	4.05	2½-2½	(29)
3945.326	A	15	0.92	4.05	3½-2½	
4270.437	A	(1n)	1.04	3.93	2½-3½	
4066.365	A	15	0.92	3.95	3½-3½	$a^2F-y^4D^\circ$
4132.155	C	4	1.04	4.03	2½-2½	(30)
3965.236	A	2	0.92	4.03	3½-2½	
3995.306	A	60	0.92	4.01	3½-4½	$a^2F-y^4G^\circ$
4045.386	A	20	1.04	4.10	2½-3½	(31)
3885.275	A	6	0.92	4.10	3½-3½	
3965.011	E	1	1.04	4.16	2½-2½	
3811.065	A	5	0.92	4.16	3½-2½	
3935.964	A	30	0.92	4.05	3½-4½	$a^2F-y^4F^\circ$
3997.901	A	40	1.04	4.13	2½-3½	(32)
3841.458	A	5	0.92	4.13	3½-3½	
3922.755	A	7	1.04	4.19	2½-2½	
3884.601	A	10	1.04	4.22	2½-1½	
3842.047	A	30	0.92	4.13	3½-2½	$a^2F-z^2D^\circ$
3861.164	A	20	1.04	4.24	2½-1½	(33)
3998.554	E	(1n)	1.04	4.13	2½-2½	
3845.468	A	60	0.92	4.13	3½-4½	$a^2F-y^2G^\circ$
3894.073	A	60	1.04	4.21	2½-3½	(34)
3745.491	A	25	0.92	4.21	3½-3½	
3569.370	A	80R	0.92	4.38	3½-3½	$a^2F-y^2F^\circ$
3587.186	A	70R	1.04	4.48	2½-2½	(35)
3460.719	C	4	0.92	4.48	3½-2½	
3704.060	A	25	1.04	4.38	2½-3½	
3489.399	A	60r	0.92	4.46	3½-2½	$a^2F-y^2D^\circ$
3518.340	A	50R	1.04	4.55	2½-1½	(36)
3618.010	A	4	1.04	4.46	2½-2½	
6450.230	A	60	1.70	3.62	2½-3½	$a^4P-z^4D^\circ$
6282.636	A	40	1.73	3.70	1½-2½	(37)
6230.968	C	10	1.78	3.76	½-1½	
6189.005	A	10	1.70	3.70	2½-2½	
6093.144	A	10	1.73	3.76	1½-1½	
6116.994	A	8	1.78	3.80	½-½	
6005.030	A	(3)	1.70	3.76	2½-1½	
5984.092	A	3	1.73	3.80	1½-½	
5530.780	A	10	1.70	3.93	2½-3½	$a^4P-z^2F^\circ$
*5265.523	F	(1)	1.70	4.05	2½-2½	(38)
5483.354	A	40	1.70	3.95	2½-3½	$a^4P-y^4D^\circ$
5369.591	A	20	1.73	4.03	1½-2½	(39)
5331.456	A	15	1.78	4.09	½-1½	
5301.042	A	15	1.70	4.03	2½-2½	
5230.210	A	25	1.73	4.09	1½-1½	
5247.921	A	15	1.78	4.13	½-½	
5165.156	A	3	1.70	4.09	2½-1½	
5149.796	A	4	1.73	4.13	1½-½	
3726.653	A	5	1.70	5.01	2½-1½	$a^4P-z^4S^\circ$
3760.401	A	4	1.73	5.01	1½-1½	(40)
3812.470	C	4	1.78	5.01	½-1½	
3548.438	A	7	1.70	5.18	2½-2½	$a^4P-z^4P^\circ$
3577.260	A	3	1.73	5.18	1½-1½	(41)
3626.020	A	2	1.78	5.18	½-½	
3546.707	A	6	1.70	5.18	2½-1½	
3578.903	C	6	1.73	5.18	1½-½	
3579.029	C	6	1.73	5.18	1½-2½	
3624.337	A	5	1.78	5.18	½-1½	
3377.060	A	5	1.70	5.36	2½-3½	$a^4P-w^4D^\circ$
3422.900	A	4	1.73	5.34	1½-2½	(42)
3463.499	C	3	1.78	5.34	½-1½	
3394.916	C	2	1.70	5.34	2½-2½	
3420.474	A	5	1.73	5.34	1½-1½	
m3442.98	P	Co	1.78	5.36	½-½	
3400.471	A	1	1.73	5.36	1½-½	

Co I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3326.564	C	2	1.70	5.41	2½-3½	$a^4P-w^4F^\circ$
*3314.073	A	8	1.73	5.46	1½-2½	(43)
3287.827	C	(2)	1.70	5.46	2½-2½	
3275.66	A	(1)	1.73	5.50	1½-1½	
3359.284	A	6	1.70	5.38	2½-3½	$a^4P-x^2F^\circ$
3401.617	C	2	1.73	5.36	1½-2½	(44)
3373.969	A	4	1.70	5.36	2½-2½	
3318.398	A	4	1.70	5.42	2½-3½	$a^4P-x^2D^\circ$
3346.310	C	1	1.73	5.42	1½-1½	(45)
3319.561	C	(2)	1.70	5.42	2½-1½	
3345.146	E	(1)	1.73	5.42	1½-2½	
3387.47	A	1	1.78	5.42	½-1½	
3286.545	C	1	1.73	5.49	1½-½	$a^4P-z^2S^\circ$
*3326.27	A	(1)	1.78	5.49	½-½	(46)
3258.035	A	4	1.70	5.49	2½-2½	$a^4P-y^4P^\circ$
3264.719	E	(3)	1.73	5.51	1½-1½	(47)
3282.232	C	1	1.78	5.54	½-½	
3239.256	E	(1)	1.70	5.51	2½-1½	
3243.579	C	2	1.73	5.54	1½-½	
3283.777	C	3	1.73	5.49	1½-2½	
3303.881	A	4	1.78	5.51	½-1½	
3103.983	C	5	1.70	5.68	2½-2½	$a^4P-x^4P^\circ$
3136.999	C	1	1.73	5.67	1½-1½	(48)
3113.473	A	6	1.70	5.67	2½-1½	
3131.829	A	1	1.73	5.67	1½-½	
3173.140	A	1	1.78	5.67	½-1½	
3107.044	C	3	1.70	5.68	2½-3½	$a^4P-v^4D^\circ$
3095.716	A	3	1.73	5.72	1½-2½	(49)
3137.755	A	4	1.78	5.71	½-1½	
3102.405	A	4	1.73	5.71	1½-1½	
3114.118	A	(10)Ni?	1.78	5.74	½-½	
*3079.394	A	5	1.70	5.71	2½-1½	
3040.812	A	1	1.70	5.76	2½-2½	$a^4P-v^2D^\circ$
3109.506	A	4	1.73	5.70	1½-1½	(50)
3086.393	A	4	1.70	5.70	2½-1½	
3063.25	A	(1)	1.73	5.76	1½-2½	
3145.022	A	3	1.78	5.70	½-1½	
3050.932	C	(3)	1.70	5.75	2½-1½	$a^4P-y^4S^\circ$ †
3073.520	A	3	1.73	5.75	1½-1½	(51)
3039.563	A	3	1.70	5.76	2½-1½	$a^4P-y^2P^\circ$
*3024.400	A	(1)	1.73	5.81	1½-½	(52)
3061.983	E	(1)	1.73	5.76	1½-1½	
3096.402	A	3	1.78	5.76	½-1½	
7354.579	A	3	1.87	3.55	2½-3½	$b^4P-z^4F^\circ$
7437.16	C	1	1.95	3.61	1½-2½	(53)
7478.77	C	(1)	2.00	3.65	½-1½	
7124.47	C	1	1.87	3.61	2½-2½	
7250.12	C	1	1.95	3.65	1½-1½	
7084.974	A	100	1.87	3.62	2½-3½	$b^4P-z^4D^\circ$
7052.872	A	60	1.95	3.70	1½-2½	(54)
7016.602	A	35	2.00	3.76	½-1½	
6771.040	A	50	1.87	3.70	2½-2½	
6814.950	A	40	1.95	3.76	1½-1½	
6872.32	A	40	2.00	3.80	½-½	
6551.466	A	3	1.87	3.76	2½-1½	
6678.818	A	5	1.95	3.80	1½-½	
5935.391	A	6	1.87	3.95	2½-3½	$b^4P-y^4D^\circ$
5922.365	C	(1n)	1.95	4.03	1½-2½	(55)
5469.305	C	4	1.87	4.13	2½-2½	$b^4P-z^2D^\circ$
5381.105	C	5	1.95	4.24	1½-1½	(56)
*5651.734	C	(1n)	1.95	4.13	1½-2½	
4781.432	A	3	1.87	4.46	2½-2½	$b^4P-y^2D^\circ$
4737.769	A	2	1.95	4.55	1½-1½	(57)
4608.908	A	(0)	1.87	4.55	2½-1½	
4920.272	A	1	1.95	4.46	1½-2½	
4834.359	G	—	2.00	4.55	½-1½	
4086.300	A	15	1.87	4.89	2½-3½	$b^4P-x^4D^\circ$
4068.541	A	8	1.95	4.98	1½-2½	(58)
4058.600	A	6	2.00	5.04	½-1½	
3973.144	A	10	1.87	4.98	2½-2½	
3990.299	A	6	1.95	5.04	1½-1½	
4013.942	A	7	2.00	5.07	½-½	
3898.485	A	4	1.87	5.04	2½-1½	
3947.125	A	3	1.95	5.07	1½-½	
3930.076	G	(1)	1.87	5.01	2½-1½	$b^4P-z^4S^\circ$
4023.399	A	4	1.95	5.01	1½-1½	(59)
4092.848	C	3	2.00	5.01	½-1½	
3856.796	A	4	1.87	5.07	2½-2½	b^4P-2°
3946.633	A	2	1.95	5.07	1½-2½	(60)
3568.426	C	2	1.87	5.33	2½-2½	$b^4P-x^4G^\circ$
3645.190	A	5	1.95	5.33	1½-2½	(61)
3732.390	A	20	1.87	5.18	2½-2½	$b^4P-z^4P^\circ$
3814.457	A	5	1.95	5.18	1½-1½	(62)
3878.750	A	(4)	2.00	5.18	½-½	
3730.476	A	20	1.87	5.18	2½-1½	
3816.318	A	15	1.95	5.18	1½-½	
3816.458	A	15	1.95	5.18	1½-2½	
*3876.831	A	20	2.00	5.18	½-1½	
3525.872	C	3	1.87	5.37	2½-1½	$b^4P-z^2P^\circ$ †
3654.441	A	5	1.95	5.32	1½-½	(63)
3600.803	A	3	1.95	5.37	1½-1½	
3711.646	A	3	2.00	5.32	½-½	

REVISED MULTIPLET TABLE

ued

ory f Int	E P Low	E P High	J	Multiplet (No)
15	1.87	5.36	2½-3½	$b^4P-w^4D^\circ$
10	1.95	5.34	1½-2½	(64)
2	2.00	5.34	½-1½	
7	1.87	5.34	2½-2½	
6	1.95	5.34	1½-1½	
3	2.00	5.36	½- ½	
5	1.87	5.34	2½-1½	
(0)	1.95	5.36	1½- ½	
8	1.87	5.41	2½-3½	$b^4P-w^4F^\circ$ †
1	1.95	5.46	1½-2½	(65)
7	1.87	5.38	2½-3½	$b^4P-x^2F^\circ$
6	1.95	5.36	1½-2½	(66)
7	1.87	5.42	2½-2½	$b^4P-x^2D^\circ$
8	1.95	5.42	1½-1½	(67)
6	1.87	5.42	2½-1½	
2	1.95	5.42	1½-2½	
(0)	2.00	5.42	½-1½	
4	1.95	5.49	1½- ½	$b^4P-z^2S^\circ$
1	2.00	5.49	½- ½	(68)
8	1.87	5.68	2½-2½	$b^4P-x^4P^\circ$
(0)	1.95	5.67	1½-1½	(69)
3	2.00	5.67	½- ½	
12	1.87	5.67	2½-1½	
7	1.95	5.67	1½- ½	
7	1.95	5.68	1½-2½	
2	2.00	5.67	½-1½	
8	1.87	5.68	2½-3½	$b^4P-v^4D^\circ$
8	1.95	5.72	1½-2½	(70)
10	2.00	5.71	½-1½	
(1)	1.87	5.72	2½-2½	
5	1.95	5.71	1½-1½	
6	2.00	5.74	½- ½	
1	1.87	5.71	2½-1½	
1	1.95	5.74	1½- ½	
4	1.87	5.76	2½-2½	$b^4P-v^2D^\circ$
7	1.95	5.70	1½-1½	(71)
4	1.87	5.70	2½-1½	
6	1.95	5.76	1½-2½	
Co	2.00	5.70	½-1½	
(1)	1.87	5.76	2½-1½	$b^4P-y^2P^\circ$
3	1.95	5.81	1½- ½	(72)
1	1.95	5.76	1½-1½	
(2)	2.00	5.81	½- ½	
6	2.00	5.76	½-1½	
10	1.87	5.79	2½-3½	$b^4P-u^4D^\circ$
5	1.95	5.85	1½-2½	(73)
7	2.00	5.88	½-1½	
5	1.87	5.85	2½-2½	
Co	1.95	5.88	1½-1½	
6	2.00	5.91	½- ½	
2	1.87	5.88	2½-1½	
2	1.95	5.91	1½- ½	
(3)	1.87	5.83	2½-3½	$b^4P-w^2F^\circ$
7	1.95	5.82	1½-2½	(74)
3	1.87	5.82	2½-2½	
2	1.95	5.93	1½- ½	$b^4P-x^2S^\circ$
2	2.00	5.93	½- ½	(75)
3	1.87	5.97	2½-1½	$b^4P-x^2P^\circ$ †
(1?)	1.95	5.93	1½- ½	(76)
6	1.87	5.95	2½-3½	$b^4P-t^4D^\circ$
5	1.95	5.98	1½-2½	(77)
4	2.00	5.99	½-1½	
3	1.87	5.98	2½-2½	
3	1.95	5.99	1½-1½	
3	2.00	6.00	½- ½	
1	1.87	5.99	2½-1½	
2	1.95	6.00	1½- ½	
3	1.87	5.96	2½-3½	$b^4P-v^2F^\circ$
Co	1.95	6.00	1½-2½	(78)
(1)	2.03	3.61	4½-4½	$a^2G-z^4G^\circ$
(1)	2.13	3.67	3½-3½	(79)
40	2.03	3.91	4½-4½	$a^2G-z^2G^\circ$
Co	2.13	4.04	3½-3½	(80)
(3)	2.03	4.04	4½-3½	
(2)	2.13	3.91	3½-4½	
6	2.03	3.93	4½-3½	$a^2G-z^2F^\circ$
4	2.13	4.05	3½-2½	(81)
(1)	2.13	3.93	3½-3½	
12	2.03	4.13	4½-4½	$a^2G-y^2G^\circ$
10	2.13	4.21	3½-3½	(82)
3	2.03	4.21	4½-3½	
(1)	2.13	4.13	3½-4½	
25	2.03	4.38	4½-3½	$a^2G-y^2F^\circ$
15	2.13	4.48	3½-2½	(83)
6	2.03	5.36	4½-3½	$a^2G-w^4D^\circ$
4	2.13	5.34	3½-2½	(84)
4	2.03	5.41	4½-3½	$a^2G-w^4F^\circ$ †
—	2.13	5.46	3½-2½	(85)
7	2.03	5.38	4½-3½	$a^2G-x^2F^\circ$
5	2.13	5.36	3½-2½	(86)
4	2.03	5.62	4½-5½	$a^2G-z^2H^\circ$
3	2.13	5.57	3½-4½	(87)
4	2.03	5.68	4½-4½	$a^2G-x^2G^\circ$
3	2.13	5.65	3½-3½	(88)

<u>Co I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7987.36	A	5	2.07	3.62	2½-3½	$a^2D-z^4D^\circ$
7417.38	A	10	2.03	3.70	1½-2½	(89)
7590.57	C	2	2.07	3.70	2½-2½	
7154.688	A	8	2.03	3.76	1½-1½	
7315.73	C	(3)	2.07	3.76	2½-1½	
7004.81	C	3	2.03	3.80	1½- ½	
5991.890	A	20	2.07	4.13	2½-2½	$a^2D-z^2D^\circ$
5590.744	A	10	2.03	4.24	1½-1½	(90)
5688.593	C	2	2.07	4.24	2½-1½	
5883.421	A	(3)	2.03	4.13	1½-2½	
m5354.01	P	Co	2.07	4.38	2½-3½	$a^2D-y^2F^\circ$
5034.06	H	(3)	2.03	4.48	1½-2½	(91)
5113.232	C	6	2.07	4.48	2½-2½	
5176.085	A	20	2.07	4.46	2½-2½	$a^2D-y^2D^\circ$
4899.520	A	2	2.03	4.55	1½-1½	(92)
4974.47	G	(1)	2.07	4.55	2½-1½	
5094.955	A	8	2.03	4.46	1½-2½	
4371.130	A	5	2.07	4.89	2½-3½	$a^2D-x^4D^\circ$ †
4187.246	A	4	2.03	4.98	1½-2½	(93)
4192.856	A	(2N)	2.07	5.01	2½-1½	$a^2D-z^4S^\circ$
4139.452	A	3	2.03	5.01	1½-1½	(94)
3735.928	C	12	2.07	5.37	2½-1½	$a^2D-z^2P^\circ$
3749.930	A	9	2.03	5.32	1½- ½	(95)
3693.476	A	8	2.03	5.37	1½-1½	
3755.447	A	10	2.07	5.36	2½-3½	$a^2D-w^4D^\circ$
3734.139	A	7	2.03	5.34	1½-2½	(96)
3777.543	A	6	2.07	5.34	2½-2½	
3731.268	A	2	2.03	5.34	1½-1½	
3774.599	A	8	2.07	5.34	2½-1½	
3707.465	A	6	2.03	5.36	1½- ½	
3693.106	A	8	2.07	5.41	2½-3½	$a^2D-w^4F^\circ$
3605.015	C	5	2.03	5.46	1½-2½	(97)
3645.440	E	3	2.07	5.46	2½-2½	
3559.597	E	1	2.03	5.50	1½-1½	
3733.483	A	12	2.07	5.38	2½-3½	$a^2D-x^2F^\circ$
3708.823	A	12	2.03	5.36	1½-2½	(98)
3751.625	A	5	2.07	5.36	2½-2½	
3683.047	A	20	2.07	5.42	2½-2½	$a^2D-x^2D^\circ$
3643.181	A	9	2.03	5.42	1½-1½	(99)
3684.479	C	10	2.07	5.42	2½-1½	
3641.784	A	6	2.03	5.42	1½-2½	
3585.808	C	4	2.07	5.51	2½-1½	$a^2D-y^4P^\circ$ †
*3521.731	C	5	2.03	5.54	1½- ½	(100)
3458.028	C	3	2.07	5.64	2½-2½	$a^2D-w^2D^\circ$
m3334.12	P	Co	2.03	5.73	1½-1½	(101)
3368.67	G	(1)	2.07	5.73	2½-1½	
3421.628	A	3	2.03	5.64	1½-2½	
3420.790	A	7	2.07	5.68	2½-2½	$a^2D-x^4P^\circ$
3396.457	C	1	2.03	5.67	1½-1½	(102)
3432.318	C	3	2.07	5.67	2½-1½	
3390.396	A	5	2.03	5.67	1½- ½	
3424.500	A	10	2.07	5.68	2½-3½	$a^2D-v^4D^\circ$ †
3348.112	A	8	2.03	5.72	1½-2½	(103)
3355.940	A	2	2.03	5.71	1½-1½	
3356.464	A	6	2.07	5.75	2½-1½	$a^2D-y^4S^\circ$
*3322.198	A	8	2.03	5.75	1½-1½	(104)
3342.734	C	8	2.07	5.76	2½-1½	$a^2D-y^2P^\circ$
3264.842	A	5	2.03	5.81	1½- ½	(105)
3308.688	E	(1)	2.03	5.76	1½-1½	
3321.912	C	2	2.07	5.79	2½-3½	$a^2D-u^4D^\circ$
3232.874	A	(9)	2.03	5.85	1½-2½	(106)
3265.352	A	3	2.07	5.85	2½-2½	
3210.219	A	5	2.03	5.88	1½-1½	
3180.290	A	2	2.03	5.91	1½- ½	
3283.466	A	9	2.07	5.83	2½-3½	$a^2D-w^2F^\circ$
3260.614	A	9	2.03	5.82	1½-2½	(107)
3293.861	C	2	2.07	5.82	2½-2½	
3168.060	C	6	2.07	5.97	2½-1½	$a^2D-x^2P^\circ$
3154.678	C	5	2.03	5.95	1½- ½	(108)
3137.454	E	3	2.03	5.97	1½-1½	
3169.766	A	9	2.07	5.96	2½-3½	$a^2D-v^2F^\circ$
3110.021	C	5	2.03	6.00	1½-2½	(109)
6946.31	C	(2)	2.27	4.05	1½-2½	$a^2P-z^2F^\circ$ (110)
6632.438	A	15	2.27	4.13	1½-2½	$a^2P-z^2D^\circ$ †
6417.334	C	15	2.32	4.24	½-1½	(111)
5647.234	A	12	2.27	4.46	1½-2½	$a^2P-y^2D^\circ$
5523.310	A	8	2.32	4.55	½-1½	(112)
5408.119	C	2	2.27	4.55	1½-1½	
3915.503	A	(2)	2.27	5.42	1½-2½	$a^2P-x^2D^\circ$
3977.184	A	3	2.32	5.42	½-1½	(113)
3917.115	A	8	2.27	5.42	1½-1½	
3835.497	C	(2)	2.27	5.49	1½- ½	$a^2P-z^2S^\circ$
3893.067	E	2	2.32	5.49	½- ½	(114)
3662.158	A	12	2.27	5.64	1½-2½	$a^2P-w^2D^\circ$
3611.701	A	10	2.32	5.73	½-1½	(115)
3562.097	A	6	2.27	5.73	1½-1½	
3620.422	A	5	2.27	5.68	1½-2½	$a^2P-x^4P^\circ$
3684.960	A	2	2.32	5.67	½-1½	(116)
3633.340	A	2	2.27	5.67	1½-1½	
3677.835	G	(1)	2.32	5.67	½- ½	

<u>Co I</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3578.076	A	6	2.27	5.73	1½-2½	$a^2P-v^4D^\circ$
3637.319	A	4	2.32	5.71	½-1½	(117)
3556.120	G	(1)	2.27	5.74	1½- ½	
3534.769	A	4	2.27	5.76	1½-2½	$a^2P-v^2D^\circ$
3647.081	A	5	2.32	5.70	½-1½	(118)
3596.510	A	5	2.27	5.70	1½-1½	
3421.039	E	(1)	2.27	5.88	1½-1½	$a^2P-u^4D^\circ$
3387.061	C	1	2.27	5.91	1½- ½	(119)
3478.555	C	8	2.27	5.82	1½-2½	$a^2P-w^2F^\circ$ (120)
3378.736	A	5	2.27	5.92	1½- ½	$a^2P-y^2S^\circ$
3423.35	A	(1)	2.32	5.92	½- ½	(121)
3373.226	A	7	2.27	5.93	1½- ½	$a^2P-x^2S^\circ$
3417.673	C	5	2.32	5.93	½- ½	(122)
3338.519	C	1	2.27	5.97	1½-1½	$a^2P-x^2P^\circ$
3402.064	C	4	2.32	5.95	½- ½	(123)
*3358.003	A	3	2.27	5.95	1½- ½	
3382.071	E	2	2.32	5.97	½-1½	
3263.213	A	4	2.27	6.05	1½-1½	$a^2P-w^2P^\circ$ †
3226.986	A	4	2.32	6.14	½- ½	(124)
3072.664	C	(1)	2.27	6.29	1½-1½	$a^2P-v^2P^\circ$ †
3107.540	A	1	2.32	6.29	½- ½	(125)
7712.661	A	6	2.53	4.13	1½-2½	$b^2P-z^2D^\circ$
7610.24	C	2	2.62	4.24	½-1½	(126)
7217.34	C	(2)	2.53	4.24	1½-1½	
4268.446	A	2	2.53	5.42	1½-2½	$b^2P-x^2D^\circ$
4404.932	A	3	2.62	5.42	½-1½	(127)
3969.116	A	8	2.53	5.64	1½-2½	$b^2P-w^2D^\circ$
3960.997	A	6	2.62	5.73	½-1½	(128)
3851.848	A	2	2.53	5.73	1½-1½	
3870.534	A	4	2.53	5.72	1½-2½	$b^2P-v^4D^\circ$ †
3991.831	C	(2)	2.62	5.71	½-1½	(129)
3819.908	A	4	2.53	5.76	1½-2½	$b^2P-v^2D^\circ$
4003.596	A	2	2.62	5.70	½-1½	(130)
3892.118	A	3	2.53	5.70	1½-1½	
3817.940	A	(4)	2.53	5.76	1½-1½	$b^2P-y^2P^\circ$
3863.607	C	2	2.62	5.81	½- ½	(131)
3759.684	A	3	2.53	5.81	1½- ½	
3925.151	A	3	2.62	5.76	½-1½	
3754.346	A	4	2.53	5.82	1½-2½	$b^2P-w^2F^\circ$ (132)
3631.948	C	2	2.53	5.93	1½- ½	$b^2P-x^2S^\circ$
3728.840	A	3	2.62	5.93	½- ½	(133)
3591.746	A	4	2.53	5.97	1½-1½	$b^2P-x^2P^\circ$
3614.34	A	(1)	2.53	5.95	1½- ½	(134)
3686.477	A	2	2.62	5.97	½-1½	
3504.728	A	5	2.53	6.05	1½-1½	$b^2P-w^2P^\circ$
3502.998	E	(2d)	2.62	6.14	½- ½	(135)
3417.353	E	(1d)	2.53	6.14	1½- ½	
m3594.87	P	Co	2.62	6.05	½-1½	
3496.070	C	3	2.69	6.22	5½-5½	$a^2H-y^2H^\circ$
3604.469	A	4	2.77	6.20	4½-4½	(136)
3469.683	E	(2n)	2.69	6.25	5½-4½	$a^2H-w^2G^\circ$
3553.161	C	2	2.77	6.25	4½-3½	(137)
3174.140	A	2	2.69	6.58	5½-4½	$a^2H-v^2G^\circ$
*3235.532	A	6	2.77	6.59	4½-3½	(138)
3245.750	A	(1)	2.77	6.58	4½-4½	
7388.689	A	5	2.71	4.38	2½-3½	$b^2D-y^2F^\circ$
7586.72	C	(4)	2.86	4.48	1½-2½	(139)
6937.81	C	4	2.71	4.48	2½-2½	
7054.042	A	10	2.71	4.46	2½-2½	$b^2D-y^2D^\circ$ †
7285.28	C	4	2.86	4.55	1½-1½	(140)
4624.561	A	(0)	2.71	5.37	2½-1½	$b^2D-z^2P^\circ$
5004.187	G	(1)	2.86	5.32	1½- ½	(141)
4904.172	A	1	2.86	5.37	1½-1½	
4543.810	A	6	2.71	5.42	2½-2½	$b^2D-x^2D^\circ$
4815.900	A	1	2.86	5.42	1½-1½	(142)
4545.985	A	1	2.71	5.42	2½-1½	
m4813.45	P	Co	2.86	5.42	1½-2½	
4375.540	A	2	2.86	5.68	4½-4½	$b^2G-x^2G^\circ$
4431.608	A	3	2.86	5.65	3½-3½	(143)
4158.420	A	4	2.86	5.83	4½-3½	$b^2G-w^2F^\circ$
4179.226	A	2	2.86	5.82	3½-2½	(144)
3676.552	A	12	2.86	6.22	4½-5½	$b^2G-y^2H^\circ$
3702.237	A	12	2.86	6.20	3½-4½	(145)
3699.017	C	2n	2.86	6.20	4½-4½	
3649.329	A	8	2.86	6.24	4½-3½	$b^2G-u^2F^\circ$
3634.713	A	7	2.86	6.26	3½-2½	(146)
3632.839	A	7	2.86	6.26	4½-5½	$b^2G-x^2H^\circ$ †
3609.752	A	4	2.86	6.28	3½-4½	(147)
3341.341	A	5	2.86	6.56	4½-3½	$b^2G-s^2F^\circ$
3339.15	A	(4)	2.86	6.56	3½-2½	(148)
*3322.198	A	8	2.86	6.58	4½-4½	$b^2G-v^2G^\circ$ †
*3314.073	A	8	2.86	6.59	3½-3½	(149)

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tory ef	Int	E P Low	High	J	Multiplet (No)
A	30	2.91	5.64	5½-5½	$z^6F^\circ-e^6F$ (150)
A	15	2.94	5.71	4½-4½	
A	10	3.00	5.77	3½-3½	
A	5	3.05	5.81	2½-2½	
A	4	3.09	5.85	1½-1½	
A	3	3.11	5.87	½-½	
A	4	2.91	5.71	5½-4½	
A	3	2.94	5.77	4½-3½	
A	4	3.00	5.81	3½-2½	
A	5	3.05	5.85	2½-1½	
A	4	3.09	5.87	1½-½	
A	20	2.94	5.64	4½-5½	
A	15	3.00	5.71	3½-4½	
A	10	3.05	5.77	2½-3½	
A	7	3.09	5.81	1½-2½	
A	4	3.11	5.85	½-1½	
E	(1)	2.91	6.61	5½-5½	$z^6F^\circ-f^4G$ (151)
A	(0)	2.94	6.69	4½-4½	
A	(1)	2.92	6.69	5½-4½	
C	(2)	2.94	6.61	4½-5½	
A	1	3.00	6.69	3½-4½	
A	3	3.05	6.73	2½-3½	
A	(1)	3.09	6.81	1½-2½	
C	8	2.91	6.62	5½-5½	$z^6F^\circ-f^6F$ (152)
A	3	2.94	6.71	4½-4½	
C	2	3.00	6.78	3½-3½	
C	(2)	3.05	6.82	2½-2½	
A	(2)	2.91	6.71	5½-4½	
A	(4)	2.94	6.78	4½-3½	
A	(3)	3.00	6.82	3½-2½	
C	4	2.94	6.62	4½-5½	
A	2	3.00	6.71	3½-4½	
C	2	3.05	6.78	2½-3½	
A	2	3.09	6.82	1½-2½	
C	2	3.11	6.86	½-1½	
A	4	2.91	6.63	5½-4½	$z^6F^\circ-e^6D$ (153)
A	2	2.94	6.71	4½-3½	
P	Co	3.00	6.78	3½-2½	
A	(6)	3.05	6.84	2½-1½	
A	8	2.94	6.63	4½-4½	
A	5	3.00	6.71	3½-3½	
A	4	3.05	6.78	2½-2½	
A	(1)	3.09	6.84	1½-1½	
E	(1)	3.05	6.71	2½-3½	
A	2	3.11	6.84	½-1½	
C	8	2.91	6.63	5½-6½	$z^6F^\circ-e^6G$ (154)
A	4	2.94	6.71	4½-5½	
A	3	3.00	6.75	3½-4½	
A	3	3.05	6.79	2½-3½	
A	2	3.09	6.85	1½-2½	
C	3	3.11	6.85	½-1½	
A	(5w)	2.91	6.71	5½-5½	
C	(2)	3.00	6.79	3½-3½	
A	(9)	3.05	6.85	2½-2½	
C	(2)	3.09	6.85	1½-1½	
A	(4)	2.94	6.79	4½-3½	
A	8	2.94	6.64	4½-3½	$z^6F^\circ-e^6P$ (155)
C	4	3.00	6.72	3½-2½	
A	4	3.05	6.78	2½-1½	
A	10	3.04	5.64	4½-5½	$z^6D^\circ-e^6F$ (156)
C	6	3.12	5.71	3½-4½	
A	5	3.18	5.77	2½-3½	
A	3	3.22	5.81	1½-2½	
A	2	3.24	5.85	½-1½	
A	15	3.04	5.71	4½-4½	
A	12	3.12	5.77	3½-3½	
A	9	3.18	5.81	2½-2½	
A	6	3.22	5.85	1½-1½	
A	3	3.24	5.87	½-½	
A	2	3.04	5.77	4½-3½	
F	(1)	3.12	5.81	3½-2½	
A	(2N)	3.18	5.85	2½-1½	
A	(1)	3.22	5.87	1½-½	
A	5?	3.04	6.71	4½-5½	$z^6D^\circ-e^6G$ † (157)
A	3	3.12	6.75	3½-4½	
C	(2n)	3.22	6.85	1½-2½	
A	35	3.10	5.64	6½-5½	$z^6G^\circ-e^6F$ † (158)
A	25	3.16	5.71	5½-4½	
A	20	3.20	5.77	4½-3½	
A	15	3.24	5.81	3½-2½	
A	10	3.27	5.85	2½-1½	
A	6	3.28	5.87	1½-½	
A	2	3.16	5.64	5½-5½	
A	2	3.20	5.71	4½-4½	
A	2	3.24	5.77	3½-3½	
A	3	3.27	5.81	2½-2½	
A	2	3.28	5.85	1½-1½	
A	4	3.16	6.62	5½-6½	$z^6G^\circ-f^4H$ † (159)
E	4	3.20	6.71	4½-5½	
C	3	3.24	6.77	3½-4½	
A	3	3.27	6.82	2½-3½	
A	3	3.10	6.62	6½-5½	$z^6G^\circ-f^6F$ † (160)
C	(1n)	3.16	6.71	5½-4½	
A	(2)	3.20	6.78	4½-3½	
C	6	3.10	6.63	6½-6½	$z^6G^\circ-e^6G$ † (161)
A	7	3.16	6.71	5½-5½	
A	4	3.20	6.75	4½-4½	
C	5n	3.24	6.79	3½-3½	
C	3	3.27	6.85	2½-2½	
E	1	3.28	6.85	1½-1½	

Co I continued

Laboratory I A	Ref	Int	E P• Low	High	J	Multiplet (No)
3485.368	A	15	3.10	6.64	6½-7½	$z^6G^\circ-e^6H$ † (162)
3461.173	A	15	3.16	6.72	5½-6½	
3446.088	C	12	3.20	6.78	4½-5½	
3437.680	A	6n	3.24	6.83	3½-4½	
3448.358	C	4	3.24	6.82	3½-3½	$z^6G^\circ-3$ (163)
6908.08	C	(5)	3.39	5.18	2½-2½	$c^2D-z^4P^\circ$ (164)
7398.72	D	(1)	3.51	5.18	1½-1½	
6901.52	C	(2)	3.39	5.18	2½-1½	
7406.23	D	(1)	3.51	5.18	1½-2½	
6086.663	A	7	3.39	5.42	2½-2½	$c^2D-x^2D^\circ$ † (165)
6474.558	A	(3)	3.51	5.42	1½-1½	
5495.682	A	2	3.39	5.64	2½-2½	$c^2D-w^2D^\circ$ † (166)
5558.825	A	2	3.51	5.73	1½-1½	
5210.042	A	3	3.39	5.76	2½-1½	$c^2D-y^2P^\circ$ (167)
5368.904	A	(2)	3.51	5.81	1½-½	
4331.231	A	3	3.39	6.24	2½-3½	$c^2D-u^2F^\circ$ (168)
4494.746	A	2	3.51	6.26	1½-2½	
6082.431	A	15	3.50	5.53	4½-4½	$z^4F^\circ-e^4F$ † (169)
6122.640	A	8	3.55	5.57	3½-3½	
*6000.668	A	5	3.61	5.66	2½-2½?	
5946.484	A	5	3.65	5.73	1½-1½	
5965.040	F	(2)	3.50	5.57	4½-3½	
5846.575	A	2	3.55	5.66	3½-2½	
5826.299	A	(2)	3.61	5.73	2½-1½	
5212.699	A	25	3.50	5.87	4½-4½	$z^4F^\circ-f^4F$ † (170)
5146.753	A	15	3.55	5.95	3½-3½	
5126.201	A	10	3.61	6.01	2½-2½	
5122.767	A	8	3.65	6.06	1½-1½	
5332.652	A	5	3.55	5.87	3½-4½	
5265.786	A	4	3.61	5.95	2½-3½	
5219.008	A	2	3.65	6.01	1½-2½	
3972.506	A	6	3.50	6.61	4½-5½	$z^4F^\circ-f^4G$ (171)
3938.856	A	3	3.55	6.69	3½-4½	
3951.717	A	(1n)	3.61	6.73	2½-3½	
3904.790	E	3	3.65	6.81	1½-2½	
5352.046	A	20	3.56	5.87	5½-4½	$z^4G^\circ-f^4F$ † (172)
5280.631	A	20	3.61	5.95	4½-3½	
5266.302	A	10	3.67	6.01	3½-2½	
5268.498	A	10	3.72	6.06	2½-1½	
4035.542	A	8	3.56	6.62	5½-6½	$z^4G^\circ-f^4H$ (173)
3991.528	A	4	3.61	6.71	4½-5½	
3978.864	C	4	3.67	6.77	3½-4½	
m3972.53	P	Co	3.72	6.82	2½-3½	
6454.998	A	40	3.62	5.53	3½-4½	$z^4D^\circ-e^4F$ † (174)
6595.869	A	12	3.70	5.57	2½-3½	
6477.861	A	10	3.76	5.66	1½-2½	
6395.158	A	8	3.80	5.73	½-1½	
5483.962	A	10	3.62	5.87	3½-4½	$z^4D^\circ-f^4F$ † (175)
5477.089	A	5	3.70	5.95	2½-3½	
5470.460	A	4	3.76	6.01	1½-2½	
5452.305	A	3	3.80	6.06	½-1½	
5287.574	C	3	3.62	5.95	3½-3½	
5326.247	C	3	3.70	6.01	2½-2½	
4594.633	A	4	3.62	6.30	3½-3½	$z^4D^\circ-e^4D$ † (176)
4625.767	A	2	3.70	6.37	2½-2½	
4596.903	A	5	3.62	6.30	3½-2½	$z^4D^\circ-e^4P$ † (177)
4526.794	A	2	3.70	6.42	2½-1½	
4570.024	A	2	3.62	6.32	3½-4½	$z^4D^\circ-g^4F$ † (178)
4704.386	A	(2)	3.70	6.32	2½-3½	
7027.797	A	6	3.91	5.67	4½-3½	$z^2G^\circ-e^2F$ † (179)
7134.290	A	5	4.04	5.77	3½-2½	
5133.467	A	15	3.91	6.32	4½-5½	$z^2G^\circ-e^4H$ (180)
5156.366	A	10	4.04	6.43	3½-4½	
4756.722	A	(1)	3.91	6.51	4½-3½	
5125.715	A	7	3.91	6.32	4½-5½	$z^2G^\circ-e^4G$ † (181)
5108.903	A	10	3.91	6.33	4½-4½	
4746.115	A	(1)	3.91	6.51	4½-3½	$z^2G^\circ-g^2F$ (182)
4767.142	A	(2)	4.04	6.63	3½-2½	
7743.27	C	(5)	3.93	5.53	3½-4½	$z^2F^\circ-e^4F$ (183)
8112.13	D	(1)	4.05	5.57	2½-3½	
7553.970	A	4	3.93	5.57	3½-3½	
7634.50	C	(5)	4.05	5.66	2½-2½	
5211.832	A	3	3.93	6.30	3½-3½	$z^2F^\circ-e^4D$ (184)
5077.410	A	3	3.93	6.36	3½-2½	
4795.853	A	2	3.93	6.51	3½-3½	$z^2F^\circ-e^4H$ (185)
4785.070	A	(1)	3.93	6.51	3½-3½	$z^2F^\circ-g^2F$ (186)
4778.233	A	2	4.05	6.63	2½-2½	
5254.652	A	8	3.95	6.30	3½-3½	$y^4D^\circ-e^4D$ † (187)
5287.785	A	5	4.03	6.37	2½-2½	
5230.363	G	(1)	4.09	6.45	1½-1½	
5210.834	A	3	4.13	6.50	½-½	

Co I continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
5257.621	A	10	3.95	6.30	3½-2½	$y^4D^\circ-e^4P$ † (188)
5158.854	A	2	4.03	6.42	2½-1½	
8093.932	A	8	4.00	5.53	5½-4½	$y^4G^\circ-e^4F$ † (189)
7908.679	A	6	4.01	5.57	4½-3½	
7869.868	A	2	4.10	5.66	3½-2½	
7871.370	A	2	4.16	5.73	2½-1½	
5342.703	A	50	4.00	6.31	5½-6½	$y^4G^\circ-e^4H$ † (190)
5343.383	A	20	4.01	6.32	4½-5½	
5276.183	A	8	4.10	6.43	3½-4½	
5250.003	A	7	4.16	6.51	2½-3½	
5333.647	A	5	4.00	6.32	5½-5½	
5334.821	A	6	4.00	6.32	5½-4½	$y^4G^\circ-g^4F$ † (191)
5336.163	A	3	4.01	6.32	4½-3½	
5344.570	A	(1n)	4.01	6.32	4½-4½	
5545.937	A	2	4.10	6.32	3½-3½	
5325.276	A	10	4.00	6.32	5½-5½	$y^4G^\circ-e^4G$ † (192)
5316.772	A	7	4.01	6.33	4½-4½	
5524.990	A	4	4.10	6.33	3½-4½	
5407.520	A	5	4.16	6.44	2½-3½	
8372.79	A	(10)	4.05	5.53	4½-4½	$y^4F^\circ-e^4F$ † (193)
*8589.78	A	(3)	4.13	5.57	3½-3½	
8379.44	A	(3)	4.19	5.66	2½-2½	
8208.57	A	(8)	4.22	5.73	1½-1½	
8151.95	A	(6)	4.05	5.57	4½-3½	
8055.996	A	2	4.13	5.66	3½-2½	
8043.306	A	2	4.19	5.73	2½-1½	
5453.338	A	(1)	4.05	6.32	4½-5½	$y^4F^\circ-e^4H$ (194)
5359.200	A	6	4.13	6.43	3½-4½	
5325.949	A	4	4.19	6.51	2½-3½	
5454.573	A	20	4.05	6.32	4½-4½	$y^4F^\circ-g^4F$ † (195)
5637.734	A	3	4.13	6.32	3½-3½	
5515.990	A	(1)	4.19	6.43	2½-2½	
5402.000	A	3	4.22	6.51	1½-1½	
5444.585	A	20	4.05	6.32	4½-5½	$y^4F^\circ-e^4G$ † (196)
5381.776	A	6	4.22	6.51	1½-2½	
5425.621	A	(2)	4.05	6.33	4½-4½	
5347.499	A	4	4.13	6.44	3½-3½	
5310.219	A	(1n)	4.19	6.51	2½-2½	
5312.650	A	8	4.19	6.51	2½-3½	$y^4F^\circ-g^2F$ † (197)
5124.718	A	2	4.22	6.63	1½-2½	
5353.500	A	25	4.13	6.43	4½-5½	$y^2G^\circ-e^2H$ (198)
5362.781	A	15	4.21	6.52	3½-4½	
5341.328	A	7	4.13	6.44	4½-4½	$y^2G^\circ-e^2G$ † (199)
5339.528	C	4	4.21	6.53	3½-3½	
6347.843	A	10	4.38	6.32	3½-3½	$y^2F^\circ-g^4F$ † (200)
6351.448	A	2	4.48	6.43	2½-2½	
5984.253	A	3	4.38	6.44	3½-4½	$y^2F^\circ-e^2G$ (201)
6049.110	A	6	4.48	6.53	2½-3½	
6617.126	A	6n	4.46	6.32	2½-1½	$y^2D^\circ-e^2P$ (202)
6591.834	E	(1)	4.55	6.42	1½-½	
8819.11	A	100	5.13	6.53	5½-4½	$x^4G^\circ-h^4F$ † (203)
8750.13	B	60	5.22	6.63	4½-3½	

Strongest Unclassified Lines of Co I

3443.203	C	5	III?
3177.266	A	8	III

Co II I P 17.1 Anal C List A Mar 1942

3621.22	A	100	2.19	5.60	3-4	$4s^5P-4p^5F^\circ$ (1)
3578.03	A	30	2.23	5.68	2-3	
3555.93	A	10	2.26	5.73	1-2	
3545.03	A	25	2.19	5.68	3-3	
3517.48	A	10	2.23	5.73	2-2	
3514.21	A	5	2.26	5.78	1-1	
3501.73	A	200	2.19	5.72	3-4	$4s^5P-4p^5D^\circ$ (2)
3446.40	A	100	2.23	5.81	2-3	
3423.85	A	75	2.26	5.87	1-2	
3415.78	A	75	2.19	5.81	3-3	
*3388.18 §	A	50	2.23	5.87	2-2	
3387.73	A	60	2.26	5.91	1-1	
3358.59	A	10	2.19	5.87	3-2	
3352.80	A	30	2.23	5.91	2-1	
3370.94	A	50	2.26	5.92	1-0	

Measures inadequate for preparation of list of stronger unclassified lines of Co II.

REVISED MULTIPLET TABLE

.61 Anal A List B March 1942

Int	E P Low	E P High	J	Multiplet (No)
	0.16	3.29	3-3	$a^3F-z^5D^\circ$ (1)
8	0.00	3.29	4-3	
5	0.16	3.38	3-2	
	0.27	3.45	2-1	
	0.16	3.18	3-4	
15	0.00	3.40	4-5	$a^3F-z^5G^\circ$ (2)
10	0.16	3.47	3-4	
5	0.27	3.53	2-3	
10	0.00	3.47	4-4	
12	0.16	3.53	3-3	
4	0.27	3.58	2-2	
	0.00	3.53	4-3	
	0.16	3.58	3-2	
8	0.00	3.52	4-5	$a^3F-z^5F^\circ$ (3)
15	0.16	3.59	3-4	
30R	0.00	3.59	4-4	
8	0.16	3.68	3-3	
2	0.27	3.72	2-2	
	0.00	3.68	4-3	
12	0.16	3.72	3-2	
20r	0.27	3.75	2-1	
20	0.16	3.53	3-2	$a^3F-z^3P^\circ$ (4)
20	0.27	3.64	2-1	
8	0.27	3.53	2-2	
50R	0.00	3.64	4-4	$a^3F-z^3F^\circ$ (5)
50R	0.16	3.62	3-3	
20R	0.27	3.78	2-2	
8	0.00	3.62	4-3	
25R	0.16	3.78	3-2	
8	0.16	3.64	3-4	
15	0.27	3.62	2-3	
80R	0.00	3.66	4-3	$a^3F-z^3D^\circ$ (6)
25R	0.16	3.69	3-2	
25R	0.27	3.82	2-1	
15	0.16	3.66	3-3	
30R	0.27	3.69	2-2	
4	0.27	3.66	2-3	
25R	0.00	3.82	4-5	$a^3F-z^3G^\circ$ (7)
15r	0.16	3.82	3-4	
15r	0.27	3.92	2-3	
5	0.00	3.82	4-4	
8	0.16	3.92	3-3	
3	0.00	3.92	4-3	
10r	0.00	3.83	4-3	$a^3F-z^1F^\circ$ (8)
20R	0.16	3.83	3-3	
15	0.27	3.83	2-3	
20R	0.16	3.88	3-2	$a^3F-z^1D^\circ$ (9)
5	0.27	3.88	2-2	
6	0.27	4.07	2-1	$a^3F-z^1P^\circ$ (10)
10r	0.00	4.07	4-4	$a^3F-y^3F^\circ$ (11)
8	0.16	4.09	3-3	
8	0.27	4.15	2-2	
20R	0.00	4.09	4-3	
15r	0.16	4.15	3-2	
3	0.16	4.07	3-4	
4	0.27	4.09	2-3	
12R	0.00	4.14	4-3	$a^3F-y^3D^\circ$ (12)
10r	0.16	4.22	3-2	
15r	0.27	4.25	2-1	
4	0.16	4.14	3-3	
7	0.27	4.22	2-2	
6	0.27	4.14	2-3	
12r	0.16	4.15	3-4	$a^3F-z^1G^\circ$ (13)
4	0.27	4.40	2-3	$a^3F-y^1F^\circ$ † (14)
5	0.03	3.18	3-4	$a^3D-z^5D^\circ$ (15)
15	0.21	3.38	1-2	
5	0.03	3.39	3-3	
(2)	0.21	3.45	1-1	
10	0.03	3.38	3-2	
8	0.11	3.45	2-1	
6	0.21	3.48	1-0	
12	0.03	3.47	3-4	$a^3D-z^5G^\circ$ (16)
15	0.11	3.53	2-3	
8	0.21	3.58	1-2	
10	0.03	3.53	3-3	
7	0.11	3.58	2-2	
125R	0.03	3.59	3-4	$a^3D-z^5F^\circ$ (17)
40R	0.11	3.68	2-3	
15	0.21	3.73	1-2	
15r	0.03	3.68	3-3	
12r	0.11	3.73	2-2	
10	0.21	3.75	1-1	
4	0.03	3.73	3-2	
3	0.11	3.75	2-1	
200R	0.03	3.53	3-2	$a^3D-z^3P^\circ$ (18)
150R	0.11	3.64	2-1	
80R	0.21	3.73	1-0	
60R	0.11	3.53	2-2	
50R	0.21	3.64	1-1	
15	0.21	3.53	1-2	
150R	0.03	3.64	3-4	$a^3D-z^3F^\circ$ (19)
150R	0.11	3.62	2-3	
125R	0.21	3.78	1-2	
70R	0.03	3.62	3-3	
20R	0.11	3.78	2-2	
8	0.03	3.78	3-2	

Ni I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3392.992	B	100R	0.03	3.66	3-3	$a^3D-z^3D^\circ$ (20)
3446.263	B	100R	0.11	3.69	2-2	
3423.711	B	50R	0.21	3.82	1-1	
3367.892	B	8	0.03	3.69	3-2	
3328.714	B	5	0.11	3.82	2-1	
3472.545	B	70R	0.11	3.66	2-3	
*3548.185	B	20r	0.21	3.69	1-2	
3248.457	B	8	0.03	3.82	3-4	$a^3D-z^3G^\circ$ (21)
3234.649	B	10r	0.11	3.92	2-3	
3165.508	B	3	0.03	3.92	3-3	
3243.058	B	25R	0.03	3.83	3-3	$a^3D-z^1F^\circ$ (22)
3315.663	B	30R	0.11	3.83	2-3	
3200.423	B	5	0.03	3.88	3-2	$a^3D-z^1D^\circ$ (23)
3271.118	B	10	0.11	3.88	2-2	
3362.806	B	6	0.21	3.88	1-2	
3114.124	B	20R	0.11	4.07	2-1	$a^3D-z^1P^\circ$ (24)
3197.113	B	10r	0.21	4.07	1-1	
3050.819	B	100R	0.03	4.07	3-4	$a^3D-y^3F^\circ$ (25)
3101.554	B	100R	0.11	4.09	2-3	
3134.108	B	60R	0.21	4.15	1-2	
3037.935	B	60R	0.03	4.09	3-3	
3054.316	B	50R	0.11	4.15	2-2	
2992.595	B	20R	0.03	4.15	3-2	
3002.491	B	100R	0.03	4.14	3-3	$a^3D-y^3D^\circ$ † (26)
3003.629	B	60R	0.11	4.22	2-2	
3057.638	B	50R	0.21	4.25	1-1	
2981.651	B	20R	0.11	4.25	2-1	
3064.623	B	25R	0.11	4.14	2-3	
3080.755	B	20R	0.21	4.22	1-2	
2994.460	B	25R	0.03	4.15	3-4	$a^3D-z^1G^\circ$ (27)
4298.767	B	(2)	0.42	3.29	2-3	$a^1D-z^5D^\circ$ (28)
4164.636	D	1	0.42	3.38	2-2	
4074.897	B	2	0.42	3.45	2-1	
3972.171	B	10	0.42	3.53	2-3	$a^1D-z^5G^\circ$ (29)
3904.64	P		0.42	3.58	2-2	
3783.530	B	30r	0.42	3.68	2-3	$a^1D-z^5F^\circ$ (30)
3736.813	B	15	0.42	3.72	2-2	
3705.12	P		0.42	3.75	2-1	
3973.562	B	25	0.42	3.53	2-2	$a^1D-z^3P^\circ$ (31)
3831.690	B	20	0.42	3.64	2-1	
3858.301	B	40r	0.42	3.62	2-3	$a^1D-z^3F^\circ$ (32)
*3674.15	P	15	0.42	3.78	2-2	
3807.144	B	35r	0.42	3.66	2-3	$a^1D-z^3D^\circ$ (33)
3775.572	B	30r	0.42	3.69	2-2	
3634.941	B	12	0.42	3.82	2-1	
3523.074	B	4	0.42	3.92	2-3	$a^1D-z^3G^\circ$ (34)
3619.392	B	150R	0.42	3.83	2-3	$a^1D-z^1F^\circ$ (35)
3566.372	B	100R	0.42	3.88	2-2	$a^1D-z^1D^\circ$ (36)
3380.574	B	80R	0.42	4.07	2-1	$a^1D-z^1P^\circ$ (37)
3365.766	B	15r	0.42	4.09	2-3	$a^1D-y^3F^\circ$ (38)
3310.202	B	5	0.42	4.15	2-2	
3322.310	B	15r	0.42	4.14	2-3	$a^1D-y^3D^\circ$ (39)
3250.743	B	9	0.42	4.22	2-2	
3225.020	B	10r	0.42	4.25	2-1	
3101.879	B	40R	0.42	4.40	2-3	$a^1D-y^1F^\circ$ (40)
3012.004	B	75R	0.42	4.52	2-2	$a^1D-y^1D^\circ$ (41)
6128.990	B	(3)	1.67	3.68	2-3	$b^1D-z^5F^\circ$ (42)
6007.313	D	3	1.67	3.72	2-2	
5925.81	P		1.67	3.75	2-1	
6643.641	C	20	1.67	3.53	2-2	$b^1D-z^3P^\circ$ (43)
6256.365	C	15	1.67	3.64	2-1	
6327.603	B	5	1.67	3.62	2-3	$b^1D-z^3F^\circ$ (44)
5847.010	B	(3)	1.67	3.78	2-2	
6191.186	B	12	1.67	3.66	2-3	$b^1D-z^3D^\circ$ (45)
6108.121	C	8	1.67	3.69	2-2	
5748.343	B	2	1.67	3.82	2-1	
5709.559	B	12	1.67	3.83	2-3	$b^1D-z^1F^\circ$ (46)
5578.734	B	5	1.67	3.88	2-2	$b^1D-z^1D^\circ$ (47)
5137.075	B	8	1.67	4.07	2-1	$b^1D-z^1P^\circ$ (48)
5102.971	B	(4)	1.67	4.09	2-3	$b^1D-y^3F^\circ$ (49)
4976.345	B	(2)	1.67	4.15	2-2	
5003.751	B	(2)	1.67	4.14	2-3	$b^1D-y^3D^\circ$ (50)
4843.165	B	(2)	1.67	4.22	2-2	
4786.293	B	(2)	1.67	4.25	2-1	
4519.986	B	4	1.67	4.40	2-3	$b^1D-y^1F^\circ$ (51)
4331.645	B	12	1.67	4.52	2-2	$b^1D-y^1D^\circ$ (52)
3435.469	B	2	1.67	5.26	2-3	$b^1D-x^3D^\circ$ (53)
3338.758	B	3	1.67	5.37	2-1	$b^1D-y^1P^\circ$ (54)
3287.221	B	2	1.67	5.42	2-2	$b^1D-x^1D^\circ$ (55)
*3029.297	B	3	1.67	5.74	2-2	$b^1D-x^3P^\circ$ (56)
6767.778	C	20	1.82	3.64	0-1	$a^1S-z^3P^\circ$ (57)
6177.258	B	(3)	1.82	3.82	0-1	$a^1S-z^3D^\circ$ (58)
5476.906	B	50	1.82	4.07	0-1	$a^1S-z^1P^\circ$ (59)
5079.961	B	(3)	1.82	4.25	0-1	$a^1S-y^3D^\circ$ (60)
7028.95	P		1.93	3.68	2-3	$a^3P-z^5F^\circ$ (61)
6928.52	P		1.94	3.72	1-2	
7714.27	G	3	1.93	3.53	2-2	$a^3P-z^3P^\circ$ (62)
7261.94	G	3	1.94	3.64	1-1	
7197.07	G	5	1.93	3.64	2-1	
6914.562	D	50	1.94	3.73	1-0	
7788.95	G	2	1.94	3.53	1-2	
7414.51	G	2	1.98	3.64	0-1	
7291.48	B	(8)	1.93	3.62	2-3	$a^3P-z^3F^\circ$ (63)
7110.91	B	(6)	1.93	3.66	2-3	$a^3P-z^3D^\circ$ (64)
7062.97	B	(4)	1.94	3.69	1-2	
7001.57	B	(4)	1.93	3.69	2-2	
6586.328	B	6	1.94	3.82	1-1	
6532.891	B	(3)	1.93	3.82	2-1	
*6180.093	B	(1n)	1.93	3.92	2-3	$a^3P-z^3G^\circ$ (65)
6482.811	B	5	1.93	3.83	2-3	$a^3P-z^1F^\circ$ (66)
6314.666	C	15	1.93	3.88	2-2	$a^3P-z^1D^\circ$ (67)
6364.597	D	(1)	1.94	3.88	1-2	
5754.675	B	10	1.93	4.07	2-1	$a^3P-z^1P^\circ$ (68)
5796.078	B	(2)Fe?	1.94	4.07	1-1	
5892.878	C	12	1.98	4.07	0-1	
5711.905	B	5	1.93	4.09	2-3	$a^3P-y^3F^\circ$ (69)
5592.283	B	8	1.94	4.15	1-2	
5553.693	B	2	1.93	4.15	2-2	
5587.865	D	5	1.93	4.14	2-3	$a^3P-y^3D^\circ$ (70)
5424.654	B	4	1.94	4.22	1-2	
5435.871	B	5	1.98	4.25	0-1	
5388.350	B	(2)	1.93	4.22	2-2	
5353.415	B	3	1.94	4.25	1-1	
4762.627	B	3	1.93	4.52	2-2	$a^3P-y^1D^\circ$ (71)
4791.00	E	(1)	1.94	4.52	1-2	
4019.055	D	(3)	1.93	5.00	2-2	a^3P-2° (72)
3564.67	P		1.93	5.39	2-3	$a^3P-x^3F^\circ$ (73)
3696.65	P		1.93	5.27	2-2	$a^3P-y^3P^\circ$ (74)
3713.336	D	(2)	1.94	5.27	1-1	
3696.29	P		1.93	5.27	2-1	
3713.696	D	1	1.94	5.27	1-2	
3642.387	B	2	1.98	5.37	0-1	$a^3P-y^1P^\circ$ (75)
3529.625	D	(1)	1.93	5.42	2-2	$a^3P-x^1D^\circ$ (76)
3545.16	E	(1)	1.94	5.42	1-2	
3176.292	B	2	1.94	5.83	1-1?	$a^3P-x^3P^\circ$ (77)
3181.740	B	5	1.93	5.81	2-3	$a^3P-v^3D^\circ$ (78)
3183.251	B	4	1.94	5.82	1-2	
3183.038	B	3	1.98	5.85	0-1	
3170.715	B	2	1.93	5.82	2-2	
3154.585	B	2	1.94	5.85	1-1	
3164.166	B	2	1.94	5.84	1-2	a^3P-4° (79)
*2991.095	B	4	1.93	6.05	2-3	a^3P-6° (80)
11196.70	P		2.73	3.83	4-3	$a^1G-z^1F^\circ$ (81)
8770.68	A	10	2.73	4.14	4-3	$a^1G-y^3D^\circ$ (82)
8702.49	A	6	2.73	4.15	4-4	$a^1G-z^1G^\circ$ (83)
7385.24	B	1	2.73	4.40	4-3	$a^1G-y^1F^\circ$ (84)
4837.65	P		2.73	5.28	4-3	$a^1G-w^3D^\circ$ (85)
4401.547	B	30	3.18	5.98	4-5	$z^5D^\circ-e^5F$ (86)
4459.037	B	20	3.29	6.06	3-4	
4470.483	B	15	3.38	6.15	2-3	
4462.460	B	10	3.45	6.22	1-2	
4436.981	B	5	3.48	6.26	0-1	
4284.683	B	6	3.18	6.06	4-4	
4325.607	B	6	3.29	6.15	3-3	
4359.585	B	10	3.38	6.22	2-2	
4384.543	B	5	3.45	6.26	1-1	
4161.34	P		3.18	6.15	4-3	
4221.696	B	(2)	3.29	6.22	3-2	
4285.19	P		3.38	6.26	2-1	
4389.870	B	3	3.45	6.26	1-1	$z^5D^\circ-f^3D$ (87)
4574.03	E	(1)	3.38	6.08	2-3	
4442.441	B	(4)	3.48	6.26	0-1	
4414.20	P		3.29	6.09	3-3	$z^5D^\circ-e^3F$ (88)
4410.516	B	4	3.29	6.09	3-4	
4565.13	P		3.38	6.09	2-3	
4367.36	P	(1)	3.45	6.28	1-2	

ory f Int	E P Low	 High	J	Multiplet (No)
ued				
(2)	3.29	6.33	3-3	$z^5D^{\circ}-f^3F$
5	3.29	6.23	3-4	(89)
(4)	3.38	6.33	2-3	
	3.45	6.42	1-2	
4	3.29	7.00	3-2	$z^5D^{\circ}-f^3P$
(1)	3.38	7.13	2-1	(90)
(1)	3.45	7.22	1-0	
	3.28	7.00	2-2	
8	3.18	7.01	4-3	$z^5D^{\circ}-e^5P$
4	3.29	7.11	3-2	(91)
5n	3.38	7.22	2-1	
2n	3.45	7.22	1-1	
	3.48	7.22	0-1	
3	3.18	7.01	4-4	$z^5D^{\circ}-i^3F$
	3.29	7.16	3-3	(92)
2	3.29	7.01	3-4	
7	3.18	7.02	4-4	$z^5D^{\circ}-e^5D$ †
5	3.29	7.13	3-3	(93)
5	3.18	7.03	4-5	$z^5D^{\circ}-f^5F$
5	3.29	7.14	3-4	(94)
4n	3.38	7.23	2-3	
3	3.45	7.28	1-2	
3	3.48	7.31	0-1	
	3.18	7.14	4-4	
2	3.18	7.14	4-5	$z^5D^{\circ}-e^5G$ (95)
4	3.29	7.05	3-3	$z^5D^{\circ}-i^3D$
	3.38	7.05	2-3	(96)
2	3.47	5.26	4-3	$z^5G^{\circ}-e^3D$
1	3.53	5.28	3-2	(97)
(1)	3.58	5.45	2-1	
(2)	3.53	5.26	3-3	
(1)	3.58	5.28	2-2	
25	3.37	5.98	6-5	$z^5G^{\circ}-e^5F$
15	3.40	6.06	5-4	(98)
12	3.47	6.15	4-3	
10	3.53	6.22	3-2	
6	3.58	6.26	2-1	
15	3.40	5.98	5-5	
10	3.47	6.06	4-4	
8	3.53	6.15	3-3	
5	3.58	6.22	2-2	
(1)	3.47	5.98	4-5	
(2)	3.53	6.06	3-4	
(2)	3.58	6.15	2-3	
	3.37	6.07	6-5	$z^5G^{\circ}-e^3G$
(1)	3.47	6.07	4-4	(99)
	3.53	6.26	3-3	
(2)	3.47	6.07	4-5	
(1)	3.53	6.07	3-4	
(1)	3.58	6.26	2-3	
3	3.58	6.26	2-1	$z^5G^{\circ}-f^3D$
Ni	3.53	6.08	3-3	(100)
	3.58	6.09	2-2	
(4n)	3.40	6.09	5-4	$z^5G^{\circ}-e^3F$
(1)	3.47	6.09	4-3	(101)
(2)	3.47	6.09	4-4	
2	3.40	6.23	5-4	$z^5G^{\circ}-f^3F$
	3.47	6.33	4-3	(102)
(3)	3.47	6.23	4-4	
3	3.53	6.33	3-3	
(1)	3.53	6.23	3-4	
(1)	3.58	6.33	2-3	
(1)	3.53	6.26	3-4	$z^5G^{\circ}-e^1G$ (103)
5	3.40	6.99	5-6	$z^5G^{\circ}-e^3H$
4	3.47	7.12	4-5	(104)
4n	3.53	7.22	3-4	
	3.40	7.13	5-4	$z^5G^{\circ}-g^3G$
	3.40	7.01	5-5	(105)
4	3.47	7.13	4-4	
3	3.47	7.01	4-5	
4	3.53	7.13	3-4	
15	3.37	7.02	6-7	$z^5G^{\circ}-e^5H$
10	3.40	7.13	5-6	(106)
5	3.47	7.23	4-5	
5	3.53	7.29	3-4	
4	3.58	7.31	2-3	
	3.40	7.22	5-5	
5	3.37	7.03	6-5	$z^5G^{\circ}-f^5F$
2	3.40	7.14	5-4	(107)
	3.47	7.23	4-3	
Ni	3.53	7.28	3-2	
	3.58	7.31	2-1	
8	3.40	7.03	5-5	
5	3.47	7.14	4-4	
	3.53	7.23	3-3	
10	3.37	7.03	6-6	$z^5G^{\circ}-e^5G$
6	3.40	7.14	5-5	(108)
4n	3.47	7.27	4-4	
4	3.53	7.24	3-3	
6	3.58	7.30	2-2	
	3.40	7.27	5-4	
Ni	3.47	7.24	4-3	
(1)	3.53	7.30	3-2	
8	3.40	7.03	5-6	
8	3.47	7.14	4-5	
2n	3.58	7.24	2-3	

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
Ni I continued						
7393.63	B	10	3.59	5.26	4-3	$z^5F^{\circ}-e^3D$
7715.63	B	(7)	3.68	5.28	3-2	(109)
7167.01	B	(4)	3.72	5.45	2-1	
7826.81	B	(4)	3.68	5.26	3-3	
7917.48	B	(7)	3.72	5.28	2-2	
7286.56	B	(2)	3.75	5.45	1-1	
8034.56	B	(1)	3.72	5.26	2-3	
6928.25	B	(2)	3.68	5.46	3-2	$z^5F^{\circ}-e^1D$ (110)
5017.591	B	10	3.52	5.98	5-5	$z^5F^{\circ}-e^5F$
4998.233	B	2	3.59	6.06	4-4	(111)
5012.464	B	2	3.68	6.15	3-3	
4953.204	B	3	3.72	6.22	2-2	
4912.030	B	2	3.75	6.26	1-1	
4866.267	B	10	3.52	6.06	5-4	
4831.183	B	10	3.59	6.15	4-3	
4873.437	B	4	3.68	6.22	3-2	
4857.382	B	2	3.72	6.26	2-1	
5157.993	B	(2)	3.59	5.98	4-5	
5192.524	B	2	3.68	6.06	3-4	
5096.874	B	2	3.72	6.15	2-3	
5010.045	B	(2)	3.75	6.22	1-2	
4849.12	P		3.52	6.07	5-5	$z^5F^{\circ}-e^3G$
4976.155	B	(1n)	3.59	6.07	4-4	(112)
4980.161	B	12	3.59	6.07	4-5	
5168.660	B	6	3.68	6.07	3-4	
4873.27	P		3.72	6.26	2-3	
4952.334	D	(1n)	3.59	6.08	4-3	$z^5F^{\circ}-f^3D$
5128.03	E	(1)	3.68	6.09	3-2	(113)
4863.931	B	(2n)	3.72	6.26	2-1	
m5142.98	P	Ni	3.68	6.08	3-3	
5216.512	D	2	3.72	6.09	2-2	
4918.712	B	(2)	3.75	6.26	1-1	
4808.52	E	(1)	3.52	6.09	5-4	$z^5F^{\circ}-e^3F$
4941.920	B	(2)	3.59	6.09	4-3	(114)
4760.23	P		3.68	6.28	3-2	
4937.337	B	4	3.59	6.09	4-4	
5131.770	D	3	3.68	6.09	3-3	
4836.27	E	(1)	3.72	6.28	2-2	
5220.307	B	2	3.72	6.09	2-3	
4890.45	P		3.75	6.28	1-2	
4559.945	B	(3)	3.52	6.23	5-4	$z^5F^{\circ}-f^3F$
4501.692	D	(1)	3.68	6.42	3-2	(115)
4675.639	B	(2)	3.59	6.23	4-4	
4655.661	B	(2)	3.68	6.33	3-3	
4845.17	E	(1)	3.68	6.23	3-4	
4728.42	E	(1)	3.72	6.33	2-3	
4617.94	E	(1)	3.75	6.42	1-2	
4325.361	B	2	3.59	6.44	4-3	$z^5F^{\circ}-g^3D$
4521.924	D	(1)	3.72	6.45	2-2	(116)
3908.931	B	8n	3.59	6.75	4-5	$z^5F^{\circ}-f^3G$
4025.44	D	(1N)	3.68	6.75	3-4	(117)
3559.930	B	2	3.52	6.99	5-6	$z^5F^{\circ}-e^3H$
3496.350	B	5	3.59	7.12	4-5	(118)
3485.110	B	2n	3.68	7.22	3-4	
3396.50	P		3.59	7.22	4-4	
3542.00	E	(1)	3.52	7.01	5-4	$z^5F^{\circ}-i^3F$
3611.418	D	(1)	3.59	7.01	4-4	(119)
3537.634	D	(1)	3.52	7.01	5-5	$z^5F^{\circ}-g^3G$
3482.73	E	(1)	3.59	7.13	4-4	(120)
3483.62	P		3.68	7.23	3-3	
*3606.852	B	4	3.59	7.01	4-5	
3575.952	B	2	3.68	7.13	3-4	
3530.595	B	4	3.52	7.02	5-4	$z^5F^{\circ}-e^5D$
3488.293	B	2	3.59	7.13	4-3	(121)
3599.530	D	(1)	3.59	7.02	4-4	
m3624.72	P	Ni	3.72	7.13	2-3	
3421.342	B	7	3.52	7.13	5-6	$z^5F^{\circ}-e^5H$
3396.184	B	6	3.59	7.22	4-5	(122)
3422.878	B	4	3.68	7.29	3-4	
3444.251	B	5	3.72	7.31	2-3	
3337.36	P		3.59	7.29	4-4	
3405.50	P		3.68	7.31	3-3	
3516.234	B	8	3.52	7.03	5-5	$z^5F^{\circ}-f^5F$
*3480.183	B	4	3.59	7.14	4-4	(123)
3476.63	B	2n	3.68	7.23	3-3	
3467.732	B	4	3.72	7.28	2-2	
3467.12	E	(1)	3.75	7.31	1-1	
3415.67	P		3.52	7.14	5-4	
3428.42	P		3.68	7.28	3-2	
3573.27	P		3.68	7.14	3-4	
3517.03	P		3.72	7.23	2-3	
3518.634	B	8	3.52	7.03	5-6	$z^5F^{\circ}-e^5G$
3477.864	B	2	3.59	7.14	4-5	(124)
3444.559	B	4n	3.68	7.27	3-4	
3511.94	E	(1)	3.72	7.24	2-3	
*3480.183	B	4	3.75	7.30	1-2	
m3413.46	P	Ni	3.52	7.14	5-5	
3471.63	P		3.68	7.24	3-3	
3191.875	B	2	3.52	7.39	5-5	$z^5F^{\circ}-g^5F$ (125)
7122.24	B	100	3.53	5.26	2-3	$z^3P^{\circ}-e^3D$
7522.78	B	3	3.64	5.28	1-2	(126)
7182.00	B	8	3.73	5.45	0-1	
7030.06	B	3	3.53	5.28	2-2	
6842.07	B	8	3.64	5.45	1-1	
6432.06	G	(1)	3.53	5.45	2-1	
6370.383	B	(4)	3.53	5.46	2-2	$z^3P^{\circ}-e^1D$
6772.36	B	5	3.64	5.46	1-2	(127)

Laboratory I A	 Ref	 Int	E P Low	 High	J	Multiplet (No)
Ni I continued						
4713.84	P		3.53	6.15	2-3	$z^3P^{\circ}-e^5F$
4795.84	E	(1)	3.64	6.22	1-2	(128)
4864.282	B	(2n)	3.73	6.26	0-1	
4705.93	E	(1)	3.64	6.26	1-1	
4904.413	B	10	3.53	6.04	2-1	$z^3P^{\circ}-e^3S$
5139.255	B	3	3.64	6.04	1-1	(129)
5328.70	P		3.73	6.04	0-1	
4855.414	B	15	3.53	6.07	2-2	$z^3P^{\circ}-e^3P$
5082.354	B	(4)	3.64	6.07	1-1	(130)
4852.560	B	(2n)	3.53	6.07	2-1	
4811.999	B	(2)	3.64	6.21	1-0	
5085.479	B	(2)	3.64	6.07	1-2	
4829.026	B	15	3.53	6.08	2-3	$z^3P^{\circ}-f^3D$
5042.195	B	4	3.64	6.09	1-2	(131)
4870.845	B	2	3.73	6.26	0-1	
4815.92	E	(1)	3.53	6.09	2-2	
4712.069	B	(2)	3.64	6.26	1-1	
4513.90	P		3.53	6.26	2-1	
4752.426	B	4	3.64	6.24	1-1	$z^3P^{\circ}-e^1P$
4913.970	B	3	3.73	6.24	0-1	(132)
4506.302	D	(1)	3.53	6.27	2-2	$z^3P^{\circ}-f^1D$
4703.808	B	4	3.64	6.27	1-2	(133)
*4490.541	B	(3)	3.53	6.28	2-3	$z^3P^{\circ}-e^1F$ (134)
4553.175	B	(3)	3.64	6.35	1-0	$z^3P^{\circ}-e^1S$ (135)
4231.040	B	5	3.53	6.44	2-3	$z^3P^{\circ}-g^3D$
4390.322	B	(2n)	3.64	6.45	1-2	(136)
4252.107	B	(2)	3.73	6.63	0-1	
3844.276	B	(3N)	3.53	6.74	2-1	$z^3P^{\circ}-f^3S$
3987.090	D	(2)	3.64	6.74	1-1	(137)
3701.63	P		3.53	6.86	2-3	$z^3P^{\circ}-f^1F$ (138)
7617.00	B	5	3.64	5.26	4-3	$z^3F^{\circ}-e^3D$
7422.30	B	15	3.62	5.28	3-2	(139)
7409.39	B	8	3.78	5.45	2-1	
7525.14	B	2	3.62	5.26	3-3	
6690.80	B	(2)	3.62	5.46	3-2	$z^3F^{\circ}-e^1D$
7327.67	B	(4)	3.78	5.46	2-2	(140)
5265.748	B	(2)	3.64	5.98	4-5	$z^3F^{\circ}-e^5F$
5058.03	B	(2)	3.62	6.06	3-4	(141)
5099.322	B	5	3.64	6.06	4-4	
4886.992	B	(3)	3.62	6.15	3-3	
5067.82	E	(1)	3.78	6.22	2-2	
4925.578	B	2	3.64	6.15	4-3	
4754.768	B	3	3.62	6.22	3-2	
4967.551	D	(1)	3.78	6.26	2-1	
5039.259	B	(2r)	3.62	6.07	3-2	$z^3F^{\circ}-e^3P$ (142)
5080.523	B	30	3.64	6.07	4-5	$z^3F^{\circ}-e^3G$
5035.374	B	12	3.62	6.07	3-4	(143)
4984.126	B	10	3.78	6.26	2-3	
5076.321	B	(2)	3.64	6.07	4-4	
4681.05	P		3.62	6.26	3-3	
5051.527	B	(2N)	3.64	6.08	4-3	$z^3F^{\circ}-f^3D$
4996.850	B	(2n)	3.62	6.09	3-2	(144)
5010.961	B	(3n)	3.62	6.08	3-3	
5035.961	B	(3N)	3.64	6.09	4-4	$z^3F^{\circ}-e^3F$
5000.335	B	4	3.62	6.09	3-3	(145)
4945.458	B	2	3.78	6.28	2-2	
4646.94	P		3.62	6.28	3-2	
4995.65	P		3.62	6.09	3-4	
5347.71	P		3.78	6.09	2-3	
4763.950	B	4	3.64	6.23	4-4	$z^3F^{\circ}-f^3F$
4547.234	B	3	3.62	6.33	3-3	(146)
4666.994	B	2	3.78	6.42	2-2	
4580.619	B	(3)	3.64	6.33	4-3	
4400.26	E	(1)	3.62	6.42	3-2	
4737.851	B	(2)	3.62	6.23	3-4	
4832.704	B	2	3.78	6.33	2-3	
4664.32	P		3.62	6.27	3-2	$z^3F^{\circ}-f^1D$
4965.14	E	(1)	3.78	6.27	2-2	(147)
4647.42	P	(1)	3.62	6.28	3-3	$z^3F^{\circ}-e^1F$
4946.037	B	(3)	3.78	6.28	2-3	(148)
4400.870	B	3	3.64	6.44	4-3	$z^3F^{\circ}-g^3D$
4355.911	B	3	3.62	6.45	3-2	(149)
4330.720	B	2	3.78	6.63	2-1	
4370.041	B	(3)	3.62	6.44	3-3	
4038.27	P		3.64	6.70	4-4	$z^3F^{\circ}-g^3F$
4009.984	B	(3)	3.62	6.76	3-3	(150)
3958.60	P		3.78	6.90	2-2	
4035.96	P		3.64	6.70	4-3	
4230.39	P		3.78	6.70	2-3	
3970.503	B	10n	3.64	6.75	4-5	$z^3F^{\circ}-f^3G$
3944.136	B	12n	3.62	6.75	3-4	(151)
3912.310	B	8n	3.78	6.93	2-3	
3511.613	D	2	3.62	7.13	3-4?	$z^3F^{\circ}-g^3G$ (152)
3651.67	P		3.64	7.02	4-4	$z^3F^{\circ}-e^5D$
3537.243	D	(1)	3.64	7.13	4-3	(153)
3528.891	B	(3)	3.64	7.14	4-4	$z^3F^{\circ}-f^5F$
m3523.47	P	Ni	3.78	7.28	2-2	(154)
3494.703	D	(1)	3.78	7.31	2-1	
3526.540	B	3	3.64	7.14	4-5	$z^3F^{\circ}-e^5G$ (155)

FINDING LIST

ype	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
	Yb I	3	6560.099		He II	2	6634.10	P	Fe I	1258
	Zr I	65	6560.68		Si I	62	6634.36		Gd II	94
	Co I	81	6561.032		D	1	6635.15		Ni I	264
	Fe II		6562.817		H	1	6635.68	P	Fe I	1155
	N I	21	6563.403		Co I	80	6636.53		La II	61
	Ti II	91	6563.86		Hf II	81	6637.01		N I	20
	Mn I	39	6565.62		Ti I		6638.24		A II	20
	N II	45	6565.88		V I	48	6639.35	P	Fe I	1279
	Fe II		6567.22	P	Fe I	168	6639.71	P	Fe I	1195
	Ca I	18	6567.39		Hf II	90	6639.72		A II	20
	Gd II	123	6568.00		Gd II	121	6639.90	P	Fe I	1007
	Fe I	1255	6569.201		Fe I	1253	6640.90		O II	4
	Fe I	168	6569.31		Sm II	62	6641.06		S II	25
	Al II	65	6527.10		He II	7	6642.79		La II	103
	Fe I	1253	6570.834		Mn I	51	6643.023		Cr I	256
	Fe I	1258	6570.96		La II	47	6643.536		Sr I	8
	Ba II	2	6571.22		Fe I	1121	6643.641		Ni I	43
	Ti I	102	6572.781		Ca I	1	6643.79		A II	20
	La II	104	6572.900		Cr I	16	6644.60		Hf II	34
	Ba I	6	6574.238		Fe I	13	6644.96		N I	20
	Fe I	13	6575.022		Fe I	206	6645.11		Eu II	8
	N I	21	6575.180		Ti I	286	6646.52		N I	20
	Ca I	18	6576.95	P	Ni I	283	6646.90	P	Fe I	1156
	A II	26	6578.03		C II	2	6646.98		Fe I	206
	Cr I	16	6578.51		La I	1	6647.06		Hf II	65
	Fe I		6578.96		V I	32	6647.90	P	Fe I	551
	Sr I	8	6580.22		Ni I	265	6648.08	P	Fe I	13
	V I	48	6580.96		Cr I	16	6653.41		N I	20
	N II	45	6581.22		Fe I	34	6653.75		Cl II	38
	Fe II		6582.85		C II	2	6653.78		O I	65
	N I	21	6584.53		Hf II	99	6653.88		Fe I	1052
	Ne I	3	6584.89		Y I	1	6656.61		N I	20
	Ti I	102	6586.328		Ni I	64	6657.54		Cr I	282
	Ca I	18	6586.343		Mn I	51	6660.49		Si II	
	A II	21	6586.69		Fe II		6661.076		Cr I	282
	Fe I	1012	6587.75		C I	22	6661.39		Ni I	246
	Hf II	69	6588.91		Sm I	1	6661.68		Cl II	38
	Hf II	49	6591.32		Fe I	1229	6663.26		Fe I	1195
	Cr I	265	6591.834		Co I	202	6663.446		Fe I	111
	Fe II	40	6592	P	C IV	10	6665.42	P	Fe I	1156
	Fe II		6592.472		Ni I	248	6665.43	P	Fe I	34
	V II	230	6592.91	P	Ti I	102	6666.36		A II	25
	Fe I	342	6592.919		Fe I	268	6666.548		Ti I	101
	Mn I	39	6593.878		Fe I	168	6666.94		O II	85
	S II	25	6595.326		Ba I	6	6667.17	P	Fe I	110
	N II	45	6595.869		Co I	174	6667.42	P	Fe I	168
	Cl II	59	6597.556		Cr I	282	6667.73		Fe I	1228
	Fe I	1280	6597.607		Fe I	1253	6669.257		Cr I	282
	La II	33	6598.594		Ni I	249	6671.36		Fe I	1343
	Si I	52	6598.9529		Ne I	6	6671.41		La II	33
	Ba I	6	6599.112		Ti I	49	6671.43	P	Fe I	1255
	Si I	62	6601.13	P	Fe I	1280	6671.51		Sm I	1
	Fe I		6603.20	P	Fe I	862	6671.88		Si II	
	Cr I	265	6603.67	P	Fe I	860	6672.84		V II	229
	V I	48	6604.60		Sc II	19	6672.88	P	Fe I	205
	Hf II	48	6604.67		Fe I	1254	6673.84	P	Fe I	1254
	Ni I	64	6605.546		Mn I	51	6675.271		Ba I	6
	N II	45	6605.98		V I	48	6676.66	P	Fe I	1194
	Fe I	1197	6607.02	P	Ti II	91	6677.24		Cr I	256
	Cr I	16	6607.82		V I	59	6677.25		Ti I	274
	Fe I	405	6608.03		Fe I	109	6677.33		Fe II	210
	Fe I	1195	6609.116		Fe I	206	6677.49	P	Fe I	1280
	Hf II	100	6609.20		Hf II	105	6677.54	P	Fe I	551
	La I	7	6609.56		Fe I		6677.96	P	Fe I	205
	V I	48	6609.64		Al II	76	6677.993		Fe I	268
	Fe I	1139	6609.68	P	Fe I	13	6678.03		Zr II	128
	N II	45	6610.04		Gd II	108	6678.149		He I	46
	Mg II	23	6610.58		N II	31	6678.19		O II	85
	Fe I	268	6612.17		Cr I	282	6678.2764		Ne I	6
	Ti I	102	6613.74		Y II	26	6678.60	P	Ti I	213
	Sr I	8	6613.83	P	Fe I	13	6678.818		Co I	54
	Fe I	13	6615.03	P	Fe I	1155	6680.19		Cr I	282
	Hf II		6617.126		Co I	202	6680.26		Ti II	112
	Hf II	111	6617.14	P	Ni I	248	6681.03		Cl II	38
	Sr I	12	6617.266		Sr I	8	6681.23		Gd II	94
	Co I	54	6621.24		Ni I	97	6681.34	P	Fe I	1155
	Fe I	13	6622.28		Gd II	110	6682.23	P	Fe I	1008
	Fe I	1325	6622.41	P	Fe I	1157	6683.2		He II	7
	La II	109	6622.53		N I	20	6684.36		A II	20
	Ti I	102	6623.78	P	Fe I	1010	6686.04		Cl II	38
	Si I	62	6624.86		V I	48	6687.57		Y I	1
	Fe I	1007	6625.04		Fe I	13	6690.80		Ni I	140
	Ti I	102	6627.28		Fe II	210	6692.47	P	Fe I	1192
	Fe I	1255	6627.558		Fe I	1174	6693.842		Ba I	6
	Y I	1	6627.62		O II	85	6695.97		Al I	5
	Sc I	24	6630.015		Cr I	16	6696.30	P	Fe I	1255
	Hf II	66	6630.5		N II	41	6696.39		Al II	29
	V I	59	6632.438		Co I	111	6698.63		Al I	5
	Sc I	24	6633.44		Fe I	1258	6699.14		Fe I	1228
	Ti II	91	6633.764		Fe I	1197	6699.46		Al II	29

REVISED MULTIPLET TABLE

ry	E P		J	Multiplet (No)
Int	Low	High		
ed				
(1)	4.22	6.27	2-2	$y^3D^\circ-f^1D$ (251)
6n	4.25	6.27	1-2	
2n	4.22	6.28	2-3	$y^3D^\circ-e^1F$ (252)
(2)	4.25	6.35	1-0	$y^3D^\circ-e^1S$ (253)
(2)	4.14	6.70	3-4	$y^3D^\circ-g^3F$ (254)
	4.22	6.70	2-3	
(1)	4.25	6.90	1-2	
(2)	4.14	6.70	3-3	
(3)	4.14	7.13	3-4	$y^3D^\circ-g^3G$ (255)
	4.22	7.23	2-3	
	4.14	7.05	3-3	$y^3D^\circ-i^3D$ (256)
(1)	4.22	7.05	2-3	
(2)Fe?	4.15	6.06	4-4	$z^1G^\circ-e^5F$ (257)
(5n)	4.15	6.07	4-5	$z^1G^\circ-e^3G$ (258)
(1)	4.15	6.23	4-4	$z^1G^\circ-f^3F$ (259)
(2)	4.15	6.33	4-3	
(1)	4.15	6.70	4-4	$z^1G^\circ-g^3F$ (260)
2	4.15	6.70	4-3	
5	4.15	6.86	4-3	$z^1G^\circ-f^1F$ (261)
(1)	4.15	6.94	4-4	$z^1G^\circ-f^1G$ (262)
(2)Fe?	4.40	6.08	3-3	$y^1F^\circ-f^3D$ (263)
3	4.40	6.26	3-4	$y^1F^\circ-e^1G$ (264)
(2n)	4.40	6.28	3-3	$y^1F^\circ-e^1F$ (265)
(1)	4.52	6.07	2-1	$y^1D^\circ-e^3P$ (266)
(3)	4.52	6.08	2-3	$y^1D^\circ-f^3D$ (267)
(3)	4.52	6.09	2-2	
(1)	4.52	6.26	2-1	
(5)	4.52	6.09	2-3	$y^1D^\circ-e^3F$ (268)
(2)	4.52	6.24	2-1	$y^1D^\circ-e^1P$ (269)
(2)	4.52	6.27	2-2	$y^1D^\circ-f^1D$ (270)
3	4.52	6.28	2-3	$y^1D^\circ-e^1F$ (271)
3	4.52	6.70	2-3	$y^1D^\circ-g^3F$ (272)
2	4.52	6.86	2-3	$y^1D^\circ-f^1F$ (273)
2	4.52	7.00	2-2?	$y^1D^\circ-f^3P$ (274)
10	5.26	6.70	3-4	$x^3D^\circ-g^3F$ (275)
(4)Fe?	5.26	7.00	3-2	$x^3D^\circ-f^3P$ (276)
(2)	5.26	7.01	3-4	$x^3D^\circ-i^3F$ (277)
(3)	5.39	7.00	3-2	$x^3F^\circ-f^3P$ (278)
(1)	5.26	7.01	4-5	$x^3F^\circ-g^3G$ (279)
(3)	5.39	7.05	3-3	$x^3F^\circ-i^3D$ (280)
(1)	5.27	6.86	2-3	$y^3P^\circ-f^1F$ (281)
(2)	5.28	7.00	3-2	$w^3D^\circ-f^3P$ (282)
(2)	5.49	7.13	2-1	
(1)	5.57	7.22	1-0	
(1)	5.28	7.01	3-4	$w^3D^\circ-i^3F$ (283)
	5.49	7.16	2-3	
Ni	5.57	7.24	1-2	
	5.28	7.16	3-3	
30	5.32	6.70	5-4	$y^3G^\circ-g^3F$ (284)
10	5.47	6.70	4-3	
10	5.47	6.86	4-3	$y^3G^\circ-f^1F$ (285)
1	5.59	6.86	3-3	
(7)	5.32	6.99	5-6	$y^3G^\circ-e^3H$ (286)
(5)	5.47	7.12	4-5	
	5.59	7.22	3-4	
(1)	5.32	7.01	5-5	$y^3G^\circ-g^3G$ (287)
(2)	5.47	7.13	4-4	
(2)	5.59	7.23	3-3	
(3)	5.32	7.13	5-6	$y^3G^\circ-e^5H$ (288)
(2)	5.47	7.22	4-5	
(4)	5.59	7.29	3-4	
30	5.34	6.70	4-4	$w^3F^\circ-g^3F$ (289)
5	5.50	6.70	3-3	
(1)	5.61	7.13	2-1	$w^3F^\circ-f^3P$ (290)
(4)	5.34	7.01	4-4	$w^3F^\circ-i^3F$ (291)
(1)	5.50	7.16	3-3	
(1)	5.61	7.24	2-2	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
<u>Ni I</u> continued						
7381.94	B	(5)	5.34	7.01	4-5	$w^3F^\circ-g^3G$ (292)
7559.62	B	(3)	5.50	7.13	3-4	
7624.75	G	(2)	5.61	7.23	2-3	
6861.24	B	(3)	5.34	7.14	4-5	$w^3F^\circ-e^5G$ (293)
7297.75	B	(3)	5.61	7.30	2-2	
7220.79	B	(3)	5.34	7.05	4-3	$w^3F^\circ-i^3D$ (294)
9689.35	A	3	5.42	6.70	2-3	$x^1D^\circ-g^3F$ (295)
8586.20	P	1	5.42	6.86	2-3	$x^1D^\circ-f^1F$ (296)

Strongest Unclassified Lines of <u>Ni I</u>

I A	Ref	Int	
10295.05	A	5	
9396.57	A	20	
6362.414	D	(5)	
6012.251	B	(5)	
4594.908	B	(5n)	
4142.320	B	(4)	
4006.136	B	3	V
3762.618	B	(3)	
3665.924	B	2	III
3647.71	E	2	II
3335.59	E	2n	V
3332.180	B	6n	V
3309.428	B	2n	V
3268.064	B	4n	V
3264.44	E	2n	V
3233.88	E	2	V
3199.342	B	3n	V
3151.259	B	4n	V

<u>Ni II</u>   I P 18.4   Anal C   List A   Apr 1942

I A	Ref	Int	Low	High	J	Multiplet (No)
*3513.933§	B	8	2.85	6.36	2½-3½	$b^2D-z^4D^\circ$ (1)
3454.16	A	5	2.94	6.51	1½-2½	
3373.98	A	4	2.85	6.51	2½-2½	
3350.42	A	5	2.94	6.62	1½-1½	
3274.90	A	3	2.85	6.62	2½-1½	
3290.69	A	1	2.94	6.69	1½- ½	
3208.91	A	1	2.85	6.70	2½-3½	$b^2D-z^4G^\circ$ (2)
3032.44	A	2	2.85	6.92	2½-3½	$b^2D-z^4F^\circ$ (3)
3063.93	A	2	2.94	6.97	1½-1½	
3769.455	B	5	3.09	6.36	2½-3½	$a^4P-z^4D^\circ$ (4)
3576.762	B	3	3.06	6.51	1½-2½	
3471.35	C	2	3.07	6.62	½-1½	
3608.7	P		3.09	6.51	2½-2½	
3465.62	C	1	3.06	6.62	1½-1½	
3407.30	A	8	3.07	6.69	½- ½	
3495.6	P		3.09	6.62	2½-1½	
3401.76	A	2	3.06	6.69	1½- ½	
3290.54	A	1?	3.09	6.84	2½-3½	$a^4P-z^4F^\circ$ (5)
2988.05	A	5	3.09	7.22	2½-2½	$a^4P-z^2F^\circ$ (6)
3087.07	A	20	3.09	7.09	2½-2½	$a^4P-z^2D^\circ$ † (7)
3397.82	A	1	3.59	7.22	1½-2½	$a^2P-z^2F^\circ$ (8)
4362.10	C	1	4.01	6.84	4½-3½	$a^2G-z^4F^\circ$ (9)
4244.80	C	1	4.01	6.92	3½-2½	
4384.6	P		4.01	6.83	4½-4½	$a^2G-z^2G^\circ$ (10)
4192.07	C	1	4.01	6.96	3½-3½	
4067.051	B	3	4.01	7.05	4½-3½	$a^2G-z^2F^\circ$ (11)
3849.58	B	2	4.01	7.22	3½-2½	
4071.0	P		4.01	7.05	3½-3½	
4015.50	C	1	4.01	7.09	3½-2½	$a^2G-z^2D^\circ$ (12)
3881.92	C	1	8.22	11.40	2½-3½	$z^4P^\circ-e^4F$ (13)

Measures inadequate for preparation of list of stronger unclassified lines of <u>Ni II</u>

<u>Cu I</u>   I P 7.69   Anal A   List D   Apr 1942

I A	Ref	Int	Low	High	J	Multiplet (No)
3247.540//	A	1000	0.00	3.80	½-1½	$4^2S-4^2P^\circ$ (1)
3273.957	A	600	0.00	3.77	½- ½	
5105.541	A	300	1.38	3.80	2½-1½	$4s^2\ ^2D-4^2P^\circ$ (2)
5782.132	A	200	1.64	3.77	1½- ½	
5700.240	A	30	1.64	3.80	1½-1½	
3093.989	A	40	1.38	5.37	2½-3½	$4s^2\ ^2D-4s4p^4D^\circ$ † (3)
3208.231	A	60	1.64	5.48	1½-2½	
3010.838	A	100	1.38	5.48	2½-2½	
3194.099	A	100	1.64	5.50	1½-1½	
3063.411	A	80	1.64	5.66	1½-1½	$4s^2\ ^2D-4s4p^2P^\circ$ † (4)
2997.364	A	80	1.64	5.75	1½-2½	$4s^2\ ^2D-4s4p^2D^\circ$ † (5)
3036.101	A	100	1.64	5.70	1½-1½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
<u>Cu I</u> continued						
8092.634	A	300	3.80	5.33	1½- ½	$4^2P^\circ-5^2S$ (6)
7933.130	A	160	3.77	5.33	½- ½	
5218.202	A	80	3.80	6.17	1½-2½	$4^2P^\circ-4^2D$ (7)
5153.235	A	100	3.77	6.16	½-1½	
5220.070	A	25	3.80	6.16	1½-1½	
4530.785	A	110	3.80	6.52	1½- ½	$4^2P^\circ-6^2S$ (8)
4480.350	A	100	3.77	6.52	½- ½	

<u>Cu II</u>   I P 20.18   Anal A   List D   May 1942

I A	Ref	Int	Low	High	J	Multiplet (No)
4555.922	A	(100)	8.20	10.91	2-2	$4p^3P^\circ-s^2\ ^3P$ (1)
4832.236	A	30	8.38	10.94	1-1	
4505.997	A	(75)	8.20	10.94	2-1	
4758.421	A	30	8.38	10.98	1-0	
4889.690	A	30	8.38	10.91	1-2	
5060.635	A	30	8.50	10.94	0-1	
3686.555	A	(100)	8.45	11.80	3-4	$4p^3F^\circ-s^2\ ^1G$ (2)
4043.502	A	75	8.75	11.80	3-4	$4p^3D^\circ-s^2\ ^1G$ (3)
4671.686	A	40	14.14	16.78	1-2	$4d^3S-4f^3P^\circ$ (4)
4681.990	A	50	14.14	16.77	1-1	
4673.555	A	30	14.14	16.78	1-0	
4909.726	A	100	14.27	16.78	5-6	$4d^3G-4f^3H^\circ$ † (5)
4931.653	A	100	14.28	16.78	4-5	
4918.373	A	30	14.54	17.05	3-4	
4985.503	A	40	14.33	16.81	3-4	$4d^3D-4f^3F^\circ$ † (6)
5088.260	A	30	14.37	16.79	2-3	
4937.196	A	20	14.56	17.06	1-2	
5051.778	A	60	14.37	16.81	4-5	$4d^3F-4f^3G^\circ$ † (7)
5012.611	A	20	14.36	16.82	3-4	
5067.082	A	30	14.63	17.07	2-3	
4812.940	A	40	14.47	17.04	1-2	$4d^1P-4f^1D^\circ$ (8)
4953.733	A	50	14.55	17.04	4-5	$4d^1G-4f^1H^\circ$ (9)
5006.787	A	30	14.59	17.05	2-3	$4d^1D-4f^1F^\circ$ (10)
5065.448	A	40	14.63	17.06	3-4	$4d^1F-4f^1G^\circ$ (11)

<u>Zn I</u>   I P 9.35   Anal A   List B   May 1942

I A	Ref	Int	Low	High	J	Multiplet (No)
3075.901	A	90	0.00	4.01	0-1	$4^1S-4^3P^\circ$ (1)
4810.534	A	65	4.06	6.63	2-1	$4^3P^\circ-5^3S$ (2)
4722.159	A	75	4.01	6.63	1-1	
4680.138	A	45	3.99	6.63	0-1	
4292.885	A	8	4.01	6.89	1-0	$4^3P^\circ-5^1S$ (3)
3345.020	A	150	4.06	7.75	2-3	$4^3P^\circ-4^3D$ (4)
3302.588	A	150	4.01	7.75	1-2	
3282.333	A	100	3.99	7.75	0-1	
3345.572	A	100	4.06	7.75	2-2	
3302.941	A	125	4.01	7.75	1-1	
3345.934	A	30	4.06	7.75	2-1	
3072.062	A	70	4.06	8.08	2-1	$4^3P^\circ-6^3S$ (5)
3035.781	A	35	4.01	8.08	1-1	
3018.352	A	30	3.99	8.08	0-1	
6362.347	A	100	5.77	7.71	1-2	$4^1P^\circ-4^1D$ (6)
5181.995	A	30	5.77	8.16	1-0	$4^1P^\circ-6^1S$ (7)
4629.814	A	12	5.77	8.44	1-2	$4^1P^\circ-5^1D$ (8)
4113.210	A	12	5.77	8.77	1-2	$4^1P^\circ-6^1D$ (9)
6928.319	A	10	6.63	8.41	1-2	$5^3S-6^3P^\circ$ (10)
6938.472	A	6	6.63	8.40	1-1	
6943.202	A	2	6.63	8.40	1-0	

<u>Zn II</u>   I P 17.89   Anal A   List C   May 1942

I A	Ref	Int	Low	High	J	Multiplet (No)
7478.79	B	20	6.09	7.74	1½-2½	$4^2P^\circ-d^9s^2\ ^2D$ (1)
5894.351	A	20	5.98	8.08	½-1½	
6214.58	B	12	6.09	8.08	1½-1½	
7588.48	B	15	10.92	12.54	½-1½	$5^2S-5^2P^\circ$ (2)
7732.50	B	10	10.92	12.51	½- ½	
4911.664	A	25	11.96	14.48	2½-3½	$4^2D-4^2F^\circ$ (3)
4924.043	A	30	11.97	14.48	1½-2½	

97 Anal A List B May 1942

ry Int	E P Low	E P High	J	Multiplet (No)
10R	0.10	3.06	1½-½	$4^2P^\circ-5^2S$ (1)
10R	0.00	3.06	½-½	

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09 Anal A List B June 1942

Int	E P Low	E P High	J	Multiplet (No)
(20)	0.88	4.83	2-2	$4p\,^1D-5s\,^3P^\circ$ (1)
(40)	0.88	4.65	2-1	
(60)	0.88	4.94	2-1	$4p\,^1D-5s\,^1P^\circ$ (2)
(30)	2.02	4.65	0-1	$4p\,^1S-5s\,^3P^\circ$ (3)
(50)	2.02	4.94	0-1	$4p\,^1S-5s\,^1P^\circ$ (4)
(10)	2.02	6.04	0-1	$4p\,^1S-4d\,^3D^\circ$ (5)
25	4.83	5.94	2-3	$5s\,^3P^\circ-5p\,^3D$ † (6)
30	4.65	5.78	1-2	
25	4.62	5.77	0-1	
40	4.83	6.02	2-2	$5s\,^3P^\circ-5p\,^3P$ † (7)
35	4.65	5.94	1-1	

5.9 Anal A List B May 1942

Int	E P Low	E P High	J	Multiplet (No)
25	7.70	9.80	½-1½	$5^2S-5^2P^\circ$ (1)
20	7.70	9.75	½-½	
(200)	9.80	12.36	1½-2½	$5^2P^\circ-5^2D$ (2)
(50)	9.75	12.36	½-1½	
(10)	9.80	12.36	1½-1½	

Anal B List B May 1942

Int	E P Low	E P High	J	Multiplet (No)
40	2.30	6.37	1½-1½	$4p\,^2P^\circ-5s\,^4P$ † (1)
20	2.24	6.26	½-½	
50	2.30	6.26	1½-½	
(150)	6.53	7.77	2½-2½	$5s\,^4P-5p\,^4P^\circ$ (2)
(100)	6.37	7.60	1½-1½	
(80)	6.26	7.51	½-½	
100	6.53	7.96	2½-3½	$5s\,^4P-5p\,^4D^\circ$ (3)
100	6.37	7.81	1½-2½	
50	6.26	7.70	½-1½	
(140)	6.53	7.81	2½-2½	
25	6.37	7.70	1½-1½	
150	6.26	7.66	½-½	
(100)	6.37	7.66	1½-½	
100	6.53	7.92	2½-2½	$5s\,^4P-5p\,^2D^\circ$ † (4)
100	6.26	7.72	½-1½	
50	6.53	7.86	2½-1½	$5s\,^4P-5p\,^4S^\circ$ (5)
50	6.37	7.86	1½-1½	

.78 Anal B List C June 1942

Int	E P Low	E P High	J	Multiplet (No)
10	9.77	11.77	1-1	$5s\,^3P^\circ-5p\,^1P$ (1)
10	9.72	11.77	0-1	
10	10.06	12.25	2-3	$5s\,^3P^\circ-5p\,^3D$ † (2)
10	9.77	11.99	1-2	
10	10.06	12.38	2-2	$5s\,^3P^\circ-5p\,^3P$ † (3)
8	9.77	12.24	1-1	
10	9.77	12.38	1-2	
10	10.06	12.48	2-1	$5s\,^3P^\circ-5p\,^3S$ † (4)
8	9.77	12.48	1-1	
10	10.22	12.24	1-1	$5s\,^1P^\circ-5p\,^3P$ † (5)
10	10.22	12.64	1-2	$5s\,^1P^\circ-5p\,^1D$ (6)
10	10.22	13.06	1-0	$5s\,^1P^\circ-5p\,^1S$ (7)

1 Anal B List C June 1942

Int	E P Low	E P High	J	Multiplet (No)
25	5.95	7.33	2-3	$5^5S^\circ-5^5P$ (1)
15	5.95	7.32	2-2	
10	5.95	7.31	2-1	
3	6.30	7.49	1-2	$5^3S^\circ-5^3P$ (2)
2	6.30	7.48	1-1	
1	6.30	7.49	1-0	

roduction

roduction

Br II See introduction

Kr I See introduction

Kr II See introduction

Rb I I P 4.16 Anal A List C May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7800.227//	A	10R	0.00	1.58	½-1½	$5^2S-5^2P^\circ$ (1)
7947.60	A	10R	0.00	1.55	½-½	
4201.851	B	8R	0.00	2.94	½-1½	$5^2S-6^2P^\circ$ (2)
4215.556	B	7R	0.00	2.93	½-½	

Rb II See introduction

Sr I I P 5.67 Anal A List C May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6892.585	A	200	0.00	1.79	0-1	$5^1S-5^3P^\circ$ (1)
4607.331//	A	600R	0.00	2.68	0-1	$5^1S-5^1P^\circ$ (2)
7070.071	A	2000	1.84	3.58	2-1	$5^3P^\circ-6^3S$ (3)
6878.313	A	1000	1.79	3.58	1-1	
6791.022	A	500	1.77	3.58	0-1	
4962.263	A	40	1.84	4.33	2-3	$5^3P^\circ-5^3D$ (4)
4872.493	A	40	1.79	4.32	1-2	
*4832.075	B	50	1.77	4.32	0-1	
4967.944	A	20	1.84	4.32	2-2	
4876.06	C	15	1.79	4.32	1-1	
4971.668	A	2	1.84	4.32	2-1	
4811.881	A	40	1.84	4.40	2-2	$5^3P^\circ-5p^2\ ^3P$ (5)
4784.320	A	30	1.79	4.37	1-1	
4876.325	B	20	1.84	4.37	2-1	
*4832.075	B	50	1.79	4.34	1-0	
4722.278	A	30	1.79	4.40	1-2	
4741.922	A	30	1.77	4.37	0-1	
4438.044	A	25	1.84	4.62	2-1	$5^3P^\circ-7^3S$ (6)
4361.710	A	20	1.79	4.62	1-1	
4326.445	A	8	1.77	4.62	0-1	
3351.246	A	150	1.84	5.52	2-2	$5^3P^\circ-4d^2\ ^3P$ (7)
3322.231	A	30	1.79	5.51	1-1	
3366.333	A	50	1.84	5.51	2-1	
3329.988	A	30	1.79	5.50	1-0	
3307.534	A	50n	1.79	5.52	1-2	
3301.734	A	50	1.77	5.51	0-1	
6408.463	A	100	2.26	4.19	3-4	$4^3D-4d5p\,^3F^\circ$ (8)
6503.989	A	80	2.25	4.15	2-3	
6617.266	A	50	2.24	4.11	1-2	
6546.791	A	20	2.26	4.15	3-3	
6643.536	A	20	2.25	4.11	2-2	
5480.865	A	40	2.26	4.51	3-3	$4^3D-4d5p\,^3D^\circ$ (9)
5504.184	A	30	2.25	4.49	2-2	
5521.765	A	25	2.24	4.48	1-1	
5534.794	A	15	2.26	4.49	3-2	
5540.051	A	15	2.25	4.48	2-1	
5450.836	A	15	2.25	4.51	2-3	
5486.136	A	15	2.24	4.49	1-2	
4891.980	A	25	2.26	4.78	3-4	$4^3D-4^3F^\circ$ (10)
4868.700	A	20	2.25	4.78	2-3	
4855.045	A	20	2.24	4.78	1-2	
5156.040	A	8	2.49	4.88	2-3	$4^1D-4^1F^\circ$ (11)
6550.244	A	60	2.68	4.56	1-2	$5^1P^\circ-5p^2\ ^1D$ (12)

Sr II I P 10.98 Anal B List A May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4077.714//	A	400r	0.00	3.03	½-1½	$5^2S-5^2P^\circ$ (1)
4215.524	A	300r	0.00	2.93	½-½	
10327.314	A	1000	1.83	3.03	2½-1½	$4^2D-5^2P^\circ$ (2)
10914.877	A	200	1.80	2.93	1½-½	
10036.658	A	300	1.80	3.03	1½-1½	
4305.447	A	40	3.03	5.89	1½-½	$5^2P^\circ-6^2S$ (3)
4161.796	A	30	2.93	5.89	½-½	
3464.457	A	50	3.03	6.59	1½-2½	$5^2P^\circ-5^2D$ (4)
3380.711	A	50	2.93	6.58	½-1½	
3474.887	A	10	3.03	6.58	1½-1½	

Y I I P 6.5 Anal A List C June 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6584.89	A	5	0.07	1.94	2½-3½	$a^2D-z^4F^\circ$ (1)
6557.40	A	30	0.00	1.88	1½-2½	
6793.71	A	80	0.07	1.88	2½-2½	
6687.57	A	80	0.00	1.85	1½-1½	
6933.55	A	6	0.07	1.85	2½-1½	

Y I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6435.02	A	500	0.07	1.98	2½-2½	$a^2D-z^2D^\circ$ (2)
6191.73	A	100?	0.00	1.99	1½-1½	
6402.005	B	50	0.07	1.99	2½-1½	
6222.59	A	50?	0.00	1.98	1½-2½	
6138.44	A	15?	0.07	2.08	2½-2½	$a^2D-z^4D^\circ$ † (3)
6023.41	A	20?	0.00	2.05	1½-1½	
4674.84	A	125	0.07	2.71	2½-3½	$a^2D-z^2F^\circ$ (4)
4643.69	A	150	0.00	2.66	1½-2½	
4760.98	A	40	0.07	2.66	2½-2½	
4128.31	A	300	0.07	3.05	2½-2½	$a^2D-y^2D^\circ$ (5)
4142.86	A	200	0.00	2.98	1½-1½	
4235.94	A	100	0.07	2.98	2½-1½	
4039.83	A	60	0.00	3.05	1½-2½	
4174.14	A	100	0.07	3.02	2½-1½	$a^2D-y^2P^\circ$ (6)
4047.64	A	80	0.00	3.05	1½-½	
4083.71	A	100	0.00	3.02	1½-1½	
4102.38	A	350	0.07	3.07	2½-3½	$a^2D-y^2F^\circ$ (7)
4077.38	A	300	0.00	3.03	1½-2½	
4167.52	A	100	0.07	3.03	2½-2½	
3620.95	A	400	0.07	3.47	2½-1½	$a^2D-x^2P^\circ$ (8)
3592.92	A	200	0.00	3.43	1½-½	
3552.70	A	40	0.00	3.47	1½-1½	
3021.74	A	15	0.07	4.15	2½-3½	$a^2D-y^4D^\circ$ (9)
2996.94	A	20	0.00	4.12	1½-2½	
3045.36	A	20	0.07	4.12	2½-2½	
3005.26	A	12	0.00	4.11	1½-1½	
2984.25	A	50	0.07	4.20	2½-3½	$a^2D-x^2F^\circ$ (10)
2974.59	A	35	0.00	4.15	1½-2½	
3022.28	A	12	0.07	4.15	2½-2½	
2964.96	A	30	0.07	4.23	2½-2½	$a^2D-x^2D^\circ$ † (11)
2995.26	A	10	0.07	4.19	2½-1½	
*5466.46//	A	300	1.42	3.68	4½-5½	$a^4F-z^4G^\circ$ † (12)
5527.54	A	250	1.39	3.63	3½-4½	
5581.87	A	150	1.37	3.58	2½-3½	
5630.14	A	100	1.35	3.54	1½-2½	
4839.87	A	60	1.42	3.97	4½-4½	$a^4F-y^4F^\circ$ (13)
4845.67	A	50	1.39	3.94	3½-3½	
4852.69	A	50	1.37	3.91	2½-2½	
4859.84	A	40	1.35	3.89	1½-1½	
4906.11	A	6	1.42	3.94	4½-3½	
4893.44	A	6	1.37	3.89	2½-1½	
4781.04	A	10	1.39	3.97	3½-4½	
4799.30	A	15	1.37	3.94	2½-3½	
4819.64	A	10	1.35	3.91	1½-2½	
4527.25	A	80	1.42	4.15	4½-3½	$a^4F-y^4D^\circ$ † (14)
4527.80	A	50	1.39	4.12	3½-2½	
4505.95	A	50	1.37	4.11	2½-1½	
4487.47	A	40	1.35	4.10	1½-½	
4475.72	A	20	1.39	4.15	3½-3½	
4487.28	A	20	1.37	4.12	2½-2½	
4477.45	A	25	1.35	4.11	1½-1½	
4513.58	A	4	1.89	4.63	2½-2½	$a^2F-y^4P^\circ$ (15)
4581.32	A	6	1.89	4.59	2½-1½	
6845.24	A	10	2.36	4.17	2½-3½	$z^4P^\circ-e^4D$ † (16)
6950.32	A	8	2.35	4.12	1½-2½	

Strongest Unclassified Lines of Y I

3587.75	A	20	III
3424.16	A	7	IIIA
3278.43	A	5	IIIA
3091.70	A	15	III

Y II I P 12.3 Anal A List A June 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4204.69	A	10	0.00	2.94	0-1	$a^1S-z^3P^\circ$ (1)
3633.13	A	200	0.00	3.40	0-1	$a^1S-z^1P^\circ$ (2)
3496.08	A	80	0.00	3.53	0-1	$a^1S-z^3D^\circ$ (3)
3112.05	A	4	0.00	3.97	0-1	$a^1S-y^3P^\circ$ (4)
4309.62	A	50	0.18	3.04	3-2	$a^3D-z^3P^\circ$ (5)
4398.02	A	50	0.13	2.94	2-1	
4422.59	A	40	0.10	2.89	1-0	
4235.73	A	20	0.13	3.04	2-2	
4358.73	A	30	0.10	2.94	1-1	
4199.27	A	5	0.10	3.04	1-2	
4047.88	P		0.18	3.23	3-2	$a^3D-z^1D^\circ$ (6)
3982.59	A	150	0.13	3.23	2-2	
3950.35	A	200	0.10	3.23	1-2	
3710.30//	A	500	0.18	3.51	3-4	$a^3D-z^3F^\circ$ (7)
3774.33	A	300	0.13	3.40	2-3	
3788.70	A	200	0.10	3.36	1-2	
3832.89	A	100	0.18	3.40	3-3	
3818.34	A	60	0.13	3.36	2-2	
3878.28	A	20	0.18	3.36	3-2	
3776.56	A	75	0.13	3.40	2-1	$a^3D-z^1P^\circ$ (8)
3747.55	A	40	0.10	3.40	1-1	

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ory f	Int	E P Low	E P High	J	Multiplet (No)
A	300	0.18	3.61	3-3	$a^3D-z^3D^\circ$ (9)
A	200	0.13	3.55	2-2	
A	100	0.10	3.53	1-1	
A	150	0.18	3.55	3-2	
A	100	0.13	3.53	2-1	
A	100	0.13	3.61	2-3	
A	100	0.10	3.55	1-2	
A	150	0.18	3.99	3-2	$a^3D-y^3P^\circ$ (10)
A	100	0.13	3.97	2-1	
A	60	0.10	3.96	1-0	
A	50	0.13	3.99	2-2	
A	50	0.10	3.97	1-1	
A	10	0.10	3.99	1-2	
A	5	0.18	4.12	3-3	$a^3D-z^1F^\circ$ (11)
A	5	0.13	4.12	2-3	
A	20	0.41	3.04	2-2	$a^1D-z^3P^\circ$ (12)
A	2	0.41	2.94	2-1	
A	300	0.41	3.23	2-2	$a^1D-z^1D^\circ$ (13)
A	15	0.41	3.40	2-3	$a^1D-z^3F^\circ$ (14)
A	125	0.41	3.36	2-2	
A	2	0.41	3.40	2-1	$a^1D-z^1P^\circ$ (15)
P		0.41	3.61	2-3	$a^1D-z^3D^\circ$ (16)
A	15	0.41	3.55	2-2	
A	5	0.41	3.53	2-1	
A	10	0.41	3.99	2-2	$a^1D-y^3P^\circ$ (17)
A	5	0.41	3.97	2-1	
A	100	0.41	4.12	2-3	$a^1D-z^1F^\circ$ (18)
A	2	1.03	3.23	3-2	$a^3F-z^1D^\circ$ (19)
A	30 l	0.99	3.23	2-2	
A	100 l	1.08	3.51	4-4	$a^3F-z^3F^\circ$ (20)
A	80	1.03	3.40	3-3	
A	60	0.99	3.36	2-2	
A	4 l	1.08	3.40	4-3	
A	5 l	1.03	3.36	3-2	
A	15 l	1.03	3.51	3-4	
A	20 l	0.99	3.40	2-3	
A	50 l	0.99	3.40	2-1	$a^3F-z^1P^\circ$ (21)
A	200	1.08	3.61	4-3	$a^3F-z^3D^\circ$ (22)
A	150	1.03	3.55	3-2	
A	150	0.99	3.53	2-1	
A	20	1.03	3.61	3-3	
A	30	0.99	3.55	2-2	
B	(1)	0.99	3.61	2-3	
A	?	1.03	3.99	3-2	$a^3F-y^3P^\circ$ (23)
A	2	1.08	4.12	4-3	$a^3F-z^1F^\circ$ (24)
A	1	1.03	4.12	3-3	
A	2	0.99	4.12	2-3	
A	5	1.74	3.40	2-1	$a^3P-z^1P^\circ$ (25)
A	2	1.73	3.40	1-1	
A	2	1.71	3.40	0-1	
A	20	1.74	3.61	2-3	$a^3P-z^3D^\circ$ (26)
A	30	1.73 1.71	3.55 3.53	1-2 0-1	
A	4	1.74	3.55	2-2	
A	5	1.73	3.53	1-1	
A	10	1.74	3.53	2-1	
A	50	1.74	3.99	2-2	$a^3P-y^3P^\circ$ (27)
P	20	1.73	3.97	1-1	
A	10 l	1.74	3.97	2-1	
A	10 l	1.73	3.96	1-0	
A	20 l	1.73	3.99	1-2	
A	15 l	1.71	3.97	0-1	
A	10 l	1.74	4.12	2-3	$a^3P-z^1F^\circ$ (28)
A	? Ag	1.74	5.50	2-1	$a^3P-y^1P^\circ$ (29)
A	?	1.83	3.23	2-2	$b^1D-z^1D^\circ$ (30)
A	?	1.83	3.36	2-2	$b^1D-z^3F^\circ$ (31)
A	10	1.83	3.40	2-1	$b^1D-z^1P^\circ$ (32)
A	3	1.83	3.61	2-3	$b^1D-z^3D^\circ$ (33)
A	1	1.83	3.55	2-2	
A	10	1.83	3.53	2-1	
A	10 l	1.83	3.99	2-2	$b^1D-y^3P^\circ$ (34)
A	5 l	1.83	3.97	2-1	
A	50 l	1.83	4.12	2-3	$b^1D-z^1F^\circ$ (35)
A	30nl	1.83	5.50	2-1	$b^1D-y^1P^\circ$ (36)
A	1	1.94	3.61	4-3	$a^1G-z^3D^\circ$ (37)
A	200	1.94	4.12	4-3	$a^1G-z^1F^\circ$ (38)
A	5nl	3.04	6.87	2-3	$z^3P^\circ-e^3D$ (39)
C	2n	2.94	6.79	1-2	

<u>Y II</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3461.0	A	20nl	3.23	6.79	2-2	$z^1D^\circ-e^3D$ (40)
3470.18	C	5nl	3.23	6.78	2-1	
3380.114	C	5nl	3.23	6.88	2-2	$z^1D^\circ-e^1D$ (41)
3086.858	C	30nl	3.23	7.23	2-3	$z^1D^\circ-e^1F$ (42)
3069.26	A	5n	3.23	7.25	2-1	$z^1D^\circ-f^3D$ (43)
3026.47	C	10nl	3.23	7.31	2-3	$z^1D^\circ-e^3G$ (44)
2978.18	A	3n	3.23	7.37	2-1	$z^1D^\circ-e^1P$ (45)
3668.489	C	50nl	3.51	6.87	4-3	$z^3F^\circ-e^3D$ (46)
3635.334	C	20nl	3.40	6.79	3-2	
3605.46	C	10nl	3.36	6.78	2-1	
3556.083	C	5nl	3.40	6.87	3-3	
3507.964	C	8nl	3.36	6.88	2-2	$z^3F^\circ-e^1D$ (47)
3193.48	A	2nl	3.36	7.23	2-3	$z^3F^\circ-e^1F$ (48)
3232.00	A	3n	3.51	7.32	4-3	$z^3F^\circ-f^3D$ (49)
3182.42	A	3nl	3.40	7.28	3-2	
3144.37	A	2n	3.40	7.32	3-3	
*3114.45	A	10n	3.36	7.32	2-3?	
*3110.65	A	2n	3.40	7.37	3-2?	$z^3F^\circ-e^3P$ (50)
3081.600	C	2n	3.36	7.37	2-2	
3173.07	A	100nl	3.51	7.39	4-5	$z^3F^\circ-e^3G$ (51)
3129.933	C	40nl	3.40	7.34	3-4	
3128.789	C	20nl	3.36	7.31	2-3	
3077.14	A	4n	3.36	7.37	2-1	$z^3F^\circ-e^1P$ (52)
3001.42	A	2	3.36	7.47	2-2	$z^3F^\circ-f^1D$ (53)
2980.69	C	20nl	3.51	7.65	4-4	$z^3F^\circ-e^3F$ † (54)
3006.0	A	2nl	3.51	7.61	4-3	
3643.4	A	3nl	3.40	6.78	1-1	$z^1P^\circ-e^3D$ (55)
3544.001	C	3nl	3.40	6.88	1-2	$z^1P^\circ-e^1D$ (56)
3109.3	A	1	3.40	7.37	1-2	$z^1P^\circ-e^3P$ (57)
3160.60	A	1n	3.40	7.30	1-1	
*3114.45	A	10n	3.40	7.36	1-0?	$z^1P^\circ-e^1S$ (58)
3104.82	A	4n	3.40	7.37	1-1	$z^1P^\circ-e^1P$ (59)
3027.75	A	3	3.40	7.47	1-2	$z^1P^\circ-f^1D$ (60)
3782.302	C	50nl	3.61	6.87	3-3	$z^3D^\circ-e^3D$ (61)
3800.883	C	15nl	3.55	6.79	2-2	
3792.56	C	10nl	3.53	6.78	1-1	
3872.308	C	5nl	3.61	6.79	3-2	
3812.18	C	5nl	3.55	6.78	2-1	
3714.3	A	5nl	3.55	6.87	2-3	
3703.323	C	5nl	3.55	6.88	2-2	$z^3D^\circ-e^1D$ (62)
3684.903	C	5nl	3.53	6.88	1-2	
3409.87	C	4nl	3.61	7.23	3-3	$z^3D^\circ-e^1F$ (63)
3319.78	C	15nl	3.61	7.32	3-3	$z^3D^\circ-f^3D$ (64)
3308.4	A	20nl	3.55	7.28	2-2	
3318.6	A	4nl	3.53	7.25	1-1	
3333.606	C	2n	3.55	7.25	2-1	
3293.9	A	3n	3.53	7.28	1-2?	
3282.51	A	2	3.61	7.37	3-2	$z^3D^\circ-e^3P$ (65)
3286.71	A	3n	3.55	7.30	2-1	
3312.39	C	4nl	3.53	7.26	1-0	
3231.20	A	2n	3.55	7.37	2-2	
3304.01	C	2n	3.61	7.34	3-4	$z^3D^\circ-e^3G$ (66)
3336.35	C	4nl	3.61	7.31	3-3	
3212.40	A	5nl	3.53	7.37	1-1	$z^3D^\circ-e^1P$ (67)
3055.3	A	50nl	3.61	7.65	3-4	$z^3D^\circ-e^3F$ (68)
3036.59	C	25nl	3.55	7.61	2-3	
3053.27	C	15nl	3.53	7.57	1-2	
3082.16	A	3n	3.61	7.61	3-3	
3066.02	A	4n	3.55	7.57	2-2	
3050.5	A	1n	3.53	7.58	1-0	$z^3D^\circ-f^1S$ (69)
4279.3	A	5nl	3.99	6.87	2-3	$y^3P^\circ-e^3D$ (70)
4364.01	A	?	3.97	6.79	1-2	
4364.17	A	?	3.96	6.78	0-1	
4264.88	A	1n	3.99	6.88	2-2	$y^3P^\circ-e^1D$ (71)
3848.194	C	8nl	3.99	7.19	2-1	$y^3P^\circ-e^3S$ (72)
3824.78	C	5nl	3.97	7.19	1-1	
3813.8	A	2nl	3.96	7.19	0-1	
3808.7	A	1n	3.99	7.23	2-3	$y^3P^\circ-e^1F$ (73)
3696.6	A	25nl	3.99	7.32	2-3	$y^3P^\circ-f^3D$ (74)
3727.09	C	20nl	3.97	7.28	1-2	
3758.9	A	3nl	3.97	7.25	1-1	
3650.45	A	2n	3.99	7.37	2-2	$y^3P^\circ-e^3P$ (75)
*3721.398§	C	4	3.99	7.30	2-1	
3689.2	A	2n	3.96	7.30	0-1	
3716.91	C	7nl	3.99	7.31	2-3	$y^3P^\circ-e^3G$ (76)

<u>Y II</u> continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3457.088	C	4nl	3.99	7.56	2-1	$y^3P^\circ-f^3S$ (77)
3429.42	C	3n	3.96	7.56	0-1	
3093.76	A	10n	3.99	7.97	2-2	$y^3P^\circ-f^3P$ (78)
*3110.65	A	2n	3.97	7.93	1-1	
*3126.16	A	4n	3.99 3.97	7.93 7.91	2-1 1-0	
3078.64	A	4n	3.97	7.97	1-2	
3103.3	A	2n	3.96	7.93	0-1	
3030.214	C	4n	3.99	8.06	2-3	$y^3P^\circ-g^3D$ (79)
3023.50	A	2n	3.97	8.05	1-2	
4607.94	A	—	4.12	6.79	3-2?	$z^1F^\circ-e^3D$ (80)
4465.4	A	10nl	4.12	6.88	3-2	$z^1F^\circ-e^1D$ (81)
3967.69	C	15nl	4.12	7.23	3-3	$z^1F^\circ-e^1F$ (82)
3846.516	C	3n	4.12	7.32	3-3	$z^1F^\circ-f^3D$ (83)
3675.64	C	5nl	4.12	7.47	3-2	$z^1F^\circ-f^1D$ (84)
3330.880	C	20nl	4.12	7.82	3-4	$z^1F^\circ-e^1G$ (85)
3896.804	C	10nl	5.50	8.67	1-2	$y^1P^\circ-h^1D$ (86)

Strongest Unclassified Lines of <u>Y II</u>

Laboratory I A	Ref	Int
8429.36	A	10n
4734.52	A	5n
3407.7	A	3n

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Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6832.93	A	12	0.07	1.88	3-3	$a^3F-z^5G^\circ$ † (1)
6762.38	A	30	0.00	1.83	2-2	
6127.49	A	200	0.15	2.17	4-4	$a^3F-z^3F^\circ$ (2)
6143.23	A	150	0.07	2.08	3-3	
6134.58	A	125	0.00	2.01	2-2	
6407.03	A	4	0.15	2.08	4-3	
6357.10	P		0.07	2.01	3-2	
5885.61	A	8	0.07	2.17	3-4	
5935.23	A	10	0.00	2.08	2-3	
6062.88	A	12	0.07	2.11	3-2	$a^3F-z^5F^\circ$ † (3)
5955.37	A	12	0.00	2.07	2-1	
5879.79	A	40	0.15	2.25	4-3	$a^3F-z^3D^\circ$ † (4)
5797.76	A	25	0.07	2.20	3-2	
5735.70	A	20	0.00	2.15	2-1	
4688.45	A	40	0.15	2.79	4-5	$a^3F-z^3G^\circ$ † (5)
4633.99	A	50	0.07	2.73	3-4	
4575.52	A	40	0.00	2.70	2-3	
3916.64	A	10	0.15	3.30	4-5	$a^3F-y^5G^\circ$ (6)
3879.04	A	10	0.07	3.25	3-4	
3849.26	A	30	0.00	3.21	2-3	
3900.51	A	(10)	0.00	3.16	2-2	
3989.29	A	7	0.07	3.16	3-2	
3968.25	A	80	0.15	3.26	4-5	$a^3F-y^3G^\circ$ † (7)
*3929.53§	A	150	0.07	3.21	3-4	
3885.41	A	100	0.00	3.18	2-3	
3690.32	A	125	0.15	3.33	4-4	$a^3F-x^3F^\circ$ (8)
3663.88	A	100	0.07	3.26	3-3	
3835.96	A	100	0.00	3.22	2-2	
3966.65	A	50	0.15	3.26	4-3	
3921.80	A	100	0.07	3.22	3-2	
3791.39	A	80	0.07	3.33	3-4	
3780.53	A	100	0.00	3.26	2-3	
3090.53	A	10	0.07	3.84	3-3	$a^3F-x^1F^\circ$ † (9)
3864.33	A	40	0.15	3.35	4-3	$a^3F-x^3D^\circ$ (10)
3847.01	A	30	0.07	3.28	3-2	
3822.41	A	40	0.00	3.23	2-1	
3766.71	A	60	0.07	3.35	3-3	
3764.38	A	80	0.00	3.28	2-2	
3891.39	A	100	0.15	3.32	4-4	$a^3F-z^1G^\circ$ † (11)
3663.64	A	300	0.15	3.52	4-4	$a^3F-w^3F^\circ$ (12)
3623.87	A	300	0.07	3.48	3-3	
3586.28	A	100	0.00	3.44	2-2	
3714.13	A	30	0.15	3.48	4-3	
3661.20	A	30	0.07	3.44	3-2	
3575.79	A	100	0.07	3.52	3-4	
3550.46	A	30	0.00	3.48	2-3	
3601.18	A	400	0.15	3.58	4-5	$a^3F-x^3G^\circ$ † (13)
3547.69	A	100	0.07	3.55	3-4	
3519.60	A	125	0.00	3.51	2-3	
3533.22	A	60	0.15	3.65	4-5	$a^3F-y^5F^\circ$ † (14)
3501.33	A	15	0.07	3.60	3-4	
3566.10	A	100	0.15	3.61	4-3	$a^3F-v^3D^\circ$ † (15)
3509.32	A	100	0.07	3.59	3-2	
*3471.18 §	A	100	0.00	3.56	2-1	
3447.36	A	100	0.00	3.58	2-1	$a^3F-z^1P^\circ$ (16)
3430.29	A	8	0.15	3.75	4-4	$a^3F-x^5D^\circ$ † (17)
3465.63	A	10	0.15	3.71	4-3	
*3414.66 §	A	20	0.07	3.68	3-2	
3368.63	A	5	0.00	3.66	2-1	

REVISED MULTIPLET TABLE

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tory ef	Int	E P Low	E P High	J	Multiplet (No)
A	20	0.15	3.83	4-4	$a^3F-y^1G^{\circ}$ (18)
A	100	0.15	3.97	4-5	$a^3F-w^3G^{\circ}$
A	100	0.07	3.91	3-4	(19)
A	100	0.00	3.87	2-3	
A	15	0.15	3.91	4-4	
A	35	0.07	3.87	3-3	
A	12	0.07	4.07	3-2	$a^3F-v^3F^{\circ}$ (20)
A	15	0.00	4.09	2-2	$a^3F-u^3F^{\circ}$ † (21)
A	300	0.15	4.23	4-3	$a^3F-u^3D^{\circ}$ †
A	250	0.07	4.17	3-2	(22)
A	200	0.00	4.13	2-1	
A	20	0.52	2.25	2-3	$a^3P-z^3D^{\circ}$ †
A	10	0.54	2.30	1-2	(23)
A	5	0.52	2.15	0-1	
A	4	0.52	2.20	2-2	
A	15	0.52	2.53	2-2	$a^3P-z^3P^{\circ}$
A	5	0.54	2.53	1-1	(24)
A	(5)	0.52	2.53	2-1	
A	(3)	0.54	2.50	1-0	
A	8	0.54	2.53	1-2	
A	5	0.52	2.53	0-1	
A	15	0.52	2.71	2-1	$a^3P-z^3S^{\circ}$ †
A	15	0.54	2.71	1-1	(25)
A	40	0.52	2.81	2-2	$a^3P-y^1D^{\circ}$ (26)
A	6	0.52	2.92	2-3	$a^3P-y^3D^{\circ}$ †
A	8	0.54	2.88	1-2	(27)
A	6	0.52	2.84	0-1	
A	6	0.52	2.88	2-2	
A	6	0.54	2.84	1-1	
A	2	0.52	3.01	2-3	$a^3P-y^1F^{\circ}$ (28)
A	8	0.52	3.20	2-3	$a^3P-z^5P^{\circ}$ † (29)
A	30	0.52	3.24	2-3	$a^3P-x^1F^{\circ}$ (30)
A	15	0.52	3.35	2-3	$a^3P-x^3D^{\circ}$ †
A	30	0.54	3.28	1-2	(31)
A	12	0.52	3.23	0-1	
A	30	0.52	3.57	2-2	$a^3P-x^3P^{\circ}$ †
A	15	0.54	3.54	1-1	(32)
A	30	0.54	3.53	1-0	
A	15	0.52	3.93	2-1	$a^3P-y^3S^{\circ}$ † (33)
A	40	0.52	4.29	2-2	$a^3P-y^5P^{\circ}$ † (34)
A	40	0.52	4.30	2-2	$a^3P-w^1D^{\circ}$ † (35)
	10	0.52	4.57	2-2	$a^3P-v^3P^{\circ}$
	15	0.52	4.50	2-1	(36)
	50	0.54	4.45	1-0	
	8	0.54	4.57	1-2	
	12	0.52	4.50	0-1	
	125	0.52	4.47	2-3	$a^3P-t^3D^{\circ}$
	50	0.54	4.48	1-2	(37)
	25	0.52	4.46	0-1	
	8	0.52	4.48	2-3	
	25	0.54	4.46	1-1	
	8	0.52	4.46	2-1	
	40	0.52	4.62	2-2	$a^3P-u^3P^{\circ}$ †
	10	0.54	4.51	1-0	(38)
	20	0.73	2.10	5-6	$a^5F-z^5G^{\circ}$ †
	25	0.68	2.01	4-5	(39)
	25	0.65	1.94	3-4	
	20	0.62	1.88	2-3	
	12	0.60	1.83	1-2	
	(25)	0.73	2.26	5-5	$a^5F-z^5F^{\circ}$
	(20)	0.68	2.20	4-4	(40)
	(18)	0.65	2.15	3-3	
	(15)	0.62	2.11	2-2	
	(8)	0.60	2.07	1-1	
	(10)	0.73	2.20	5-4	
	(7)	0.68	2.15	4-3	
	(10)	0.65	2.11	3-2	
	(10)	0.62	2.07	2-1	
	(15)	0.68	2.26	4-5	
	(15)	0.65	2.20	3-4	
	(10)	0.62	2.15	2-3	
	(10)	0.60	2.11	1-2	
	(12)	0.68	2.25	4-3	$a^5F-z^3D^{\circ}$ †
	(7)	0.65	2.20	3-2	(41)
	(7)	0.62	2.15	2-1	
	150	0.73	2.45	5-4	$a^5F-z^5D^{\circ}$ †
	150	0.68	2.42	4-3	(42)
	80	0.65	2.39	3-2	
	40	0.62	2.36	2-1	
	20	0.60	2.34	1-0	
	150	0.73	3.36	5-6	$a^5F-y^5G^{\circ}$
	100	0.68	3.30	4-5	(43)
	100	0.65	3.25	3-4	
	80	0.62	3.21	2-3	
	60	0.60	3.16	1-2	
	8	0.73	3.30	5-5	
	15	0.68	3.25	4-4	
	12	0.65	3.21	3-3	
	12	0.62	3.16	2-2	
	(2)	0.73	3.25	5-4	
	2	0.68	3.21	4-3	
	(4)	0.65	3.16	3-2	

Zr I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4866.07	A	5	0.73	3.26	5-5	$a^5F-y^3G^{\circ}$ †
4883.61	A	5	0.68	3.21	4-4	(44)
4881.25	A	4	0.65	3.18	3-3	
4784.94	A	12	0.68	3.26	4-5	
4815.05	A	12	0.65	3.21	3-4	
4828.05	A	10	0.62	3.18	2-3	
4227.76	A	200	0.73	3.65	5-5	$a^5F-y^5F^{\circ}$
4239.31	A	150	0.68	3.60	4-4	(45)
4241.68	A	80	0.65	3.56	3-3	
4241.20	A	50	0.62	3.53	2-2	
4240.35	A	50	0.60	3.51	1-1	
4302.88	A	15	0.73	3.60	5-4	
4294.78	A	20	0.68	3.56	4-3	
*4282.20 §	A	20	0.65	3.53	3-2	
4268.01	A	20	0.62	3.51	2-1	
4166.37	A	20	0.68	3.65	4-5	
4187.56	A	20	0.65	3.60	3-4	
4201.45	A	20	0.62	3.56	2-3	
4213.86	A	15	0.60	3.53	1-2	
4081.22	A	100	0.73	3.75	5-4	$a^5F-x^5D^{\circ}$
4072.71	A	100	0.68	3.71	4-3	(46)
4064.16	A	100	0.65	3.68	3-2	
4055.03	A	60	0.62	3.66	2-1	
4044.57	A	25	0.60	3.65	1-0	
4023.99	A	30	0.68	3.75	4-4	
4024.92	A	40	0.65	3.71	3-3	
4027.20	A	40	0.62	3.68	2-2	
4030.03	A	30	0.60	3.66	1-1	
3977.32	A	3	0.65	3.75	3-4	
*3988.68	A	10	0.62	3.71	2-3	
4002.55	A	8	0.60	3.68	1-2	
5664.55	A	25	0.63	2.81	2-2	$a^1D-y^1D^{\circ}$ (47)
4732.34	A	15	0.63	3.24	2-3	$a^1D-x^1F^{\circ}$ (48)
4542.22	A	20	0.63	3.35	2-3	$a^1D-x^3D^{\circ}$ † (49)
4135.68	A	10	0.63	3.61	2-3	$a^1D-v^3D^{\circ}$ † (50)
4183.31	A	10	0.63	3.58	2-1	$a^1D-z^1P^{\circ}$ (51)
3530.22	A	15	0.63	4.13	2-3	$a^1D-u^3F^{\circ}$ † (52)
3360.45	A	25	0.63	4.30	2-2	$a^1D-w^1D^{\circ}$ (53)
3090.44	A	6	0.63	4.62	2-2	$a^1D-u^3P^{\circ}$
3136.95	A	30	0.63	4.56	2-1	(54)
*3157.82	A	50	0.63	4.54	2-3	$a^1D-w^1F^{\circ}$ (55)
3139.79	A	20	0.63	4.56	2-3	$a^1D-v^3G^{\circ}$ (56)
6445.76	A	10	0.99	2.91	4-3	$a^1G-y^3F^{\circ}$ (57)
3877.60	A	40	0.99	4.18	4-5	$a^1G-z^1H^{\circ}$ (58)
3535.16	A	20	0.99	4.49	4-4	$a^1G-x^1G^{\circ}$ (59)
3005.50	A	60	0.99	5.10	4-4	$a^1G-w^1G^{\circ}$ (60)
4341.13	A	20	1.39	4.23	3-4	$a^5P-w^5D^{\circ}$ †
4366.45	A	15	1.36	4.19	2-3	(61)
4394.94	A	8	1.34	4.15	1-2	
4413.04	A	12	1.39	4.19	3-3	
4420.45	A	12	1.36	4.15	2-2	
4431.48	A	10	1.34	4.13	1-1	
5046.61	A	10	1.52	3.97	4-5	$b^3F-w^3G^{\circ}$ †
5064.92	A	15	1.48	3.91	3-4	(62)
5078.28	A	20	1.44	3.87	2-3	
4683.43	A	15	1.52	4.16	4-4	$b^3F-v^3F^{\circ}$ †
4707.78	A	4	1.48	4.10	3-3	(63)
4711.91	A	8	1.52	4.14	4-4	$b^3F-u^3F^{\circ}$ †
4657.64	A	7	1.48	4.13	3-3	(64)
*4644.82	A	8	1.44	4.09	2-2	
6313.05	A	50	1.58	3.53	5-6	$a^3G-z^3H^{\circ}$ †
6470.25	A	15	1.58	3.48	4-5	(65)
6489.68	A	25	1.54	3.45	3-4	
4753.06	A	3	1.87	4.46	6-7	$a^3H-z^3I^{\circ}$
4719.12	A	10	1.85	4.47	5-6	(66)
4762.78	A	8	1.83	4.42	4-5	

Zr II I P 13.97 Anal A List A July 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3391.96 //	A	100	0.16	3.80	4½-5½	$a^4F-z^4G^{\circ}$
3438.23	A	100	0.09	3.88	3½-4½	(1)
3496.18	A	50	0.04	3.57	2½-3½	
3572.47	A	30	0.00	3.45	1½-2½	
3505.67	A	12	0.16	3.68	4½-4½	
3551.94	A	18	0.09	3.57	3½-3½	
3613.08	A	12	0.04	3.45	2½-2½	
3672.65	A	2	0.09	3.45	3½-2½	
3419.10	A	5	0.16	3.77	4½-3½	$a^4F-z^2F^{\circ}$
3478.29	A	4	0.09	3.64	3½-2½	(2)
3424.82	A	7	0.04	3.64	2½-2½	
3305.15	A	15	0.04	3.77	2½-3½	
3388.29	A	15	0.00	3.64	1½-2½	
3273.04	A	75	0.16	3.93	4½-4½	$a^4F-z^4F^{\circ}$
3279.26	A	65	0.09	3.86	3½-3½	(3)
3306.27	A	25	0.04	3.77	2½-2½	
3357.26	A	15	0.00	3.68	1½-1½	

Zr II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3340.55	A	15	0.16	3.86	4½-3½	$a^4F-z^4F^{\circ}$
3356.08	A	18	0.09	3.77	3½-2½	cont
3393.12	A	10	0.04	3.68	2½-1½	
3214.19	A	40	0.09	3.93	3½-4½	
3231.69	A	30	0.04	3.86	2½-3½	
3272.21	A	8	0.00	3.77	1½-2½	
*3288.81	A	10	0.09	3.85	3½-2½	$a^4F-z^2D^{\circ}$
3319.03	A	8	0.04	3.76	2½-1½	(4)
3241.01	A	25	0.04	3.85	2½-2½	
3284.72	A	20	0.00	3.76	1½-1½	
3208.32	A	4	0.00	3.85	1½-2½	
3165.98	A	10	0.16	4.06	4½-3½	$a^4F-z^4D^{\circ}$
3138.66	A	25	0.09	4.03	3½-2½	(5)
3129.76	A	12	0.04	3.98	2½-1½	
3125.92	A	12	0.00	3.95	1½- ½	
3110.87	A	8	0.09	4.06	3½-3½	
3095.07	A	12	0.04	4.03	2½-2½	
3099.22	A	10	0.00	3.98	1½-1½	
3068.02	A	2	0.04	4.06	2½-3½	
3065.20	A	2	0.00	4.03	1½-2½	
3061.33	A	3	0.09	4.13	3½-2½	$a^4F-y^2D^{\circ}$
3060.11	A	3	0.04	4.07	2½-1½	(6)
3019.84	A	3	0.04	4.13	2½-2½	
3030.91	A	10	0.00	4.07	1½-1½	
2991.40	A	5	0.00	4.13	1½-2½	
3697.49	A	20	0.46	3.80	4½-5½	$b^4F-z^4G^{\circ}$
3766.83	A	25	0.41	3.68	3½-4½	(7)
3843.03	A	30	0.36	3.57	2½-3½	
3934.14	A	20	0.32	3.45	1½-2½	
3832.94	A	1	0.46	3.68	4½-4½	
3903.77	A	1	0.41	3.57	3½-3½	
3984.76	A	4	0.36	3.45	2½-2½	
3729.74	A	5	0.46	3.77	4½-3½	$b^4F-z^2F^{\circ}$
3814.97	A	2	0.41	3.64	3½-2½	(8)
3667.06	A	3	0.41	3.77	3½-3½	
3756.96	A	1	0.36	3.64	2½-2½	
*3613.43	A	2	0.36	3.77	2½-3½	
3711.95	A	1	0.32	3.64	1½-2½	
3556.61	A	30	0.46	3.93	4½-4½	$b^4F-z^4F^{\circ}$
3576.88	A	20	0.41	3.86	3½-3½	(9)
3614.79	A	18	0.36	3.77	2½-2½	
3674.74	A	40	0.32	3.68	1½-1½	
3636.46	A	8	0.46	3.86	4½-3½	
3668.46	A	8	0.41	3.77	3½-2½	
3718.86	A	6	0.36	3.68	2½-1½	
3499.58	A	8	0.41	3.93	3½-4½	
3525.81	A	8	0.36	3.86	2½-3½	
3573.09	A	8	0.32	3.77	1½-2½	
3588.32	A	6	0.41	3.85	3½-2½	$b^4F-z^2D^{\circ}$
3630.03	A	10	0.36	3.76	2½-1½	(10)
3536.94	A	5	0.36	3.85	2½-2½	
3587.98	A	7	0.32	3.76	1½-1½	
3497.00	A	2	0.32	3.85	1½-2½	
3430.53	A	30	0.46	4.06	4½-3½	$b^4F-z^4D^{\circ}$
3410.26	A	20	0.41	4.03	3½-2½	(11)
3404.84	A	12	0.36	3.98	2½-1½	
3399.36	A	10	0.32	3.95	1½- ½	
3377.45	A	6	0.41	4.06	3½-3½	
3363.81	A	5	0.36	4.03	2½-2½	
3367.81	A	5	0.32	3.98	1½-1½	
3331.90	A	2	0.36	4.06	2½-3½	
3327.67	A	2	0.32	4.03	1½-2½	
3275.15	A	2	0.36	4.13	2½-2½	$b^4F-y^2D^{\circ}$
3287.31	A	3	0.32	4.07	1½-1½	(12)
3240.85	P		0.32	4.13	1½-2½	
2998.34	A	1	0.32	4.43	1½-1½	$b^4F-z^2P^{\circ}$ (13)
2968.95	A	12	0.46	4.62	4½-3½	$b^4F-y^4F^{\circ}$ †
2978.07	A	12	0.41	4.55	3½-2½	(14)
2979.18	A	12	0.36	4.50	2½-1½	
4096.63	A	4	0.56	3.57	2½-3½	$a^2D-z^4G^{\circ}$
4211.88	A	12	0.52	3.45	1½-2½	(15)
4258.05	A	12	0.56	3.45	2½-2½	
3836.76	A	60	0.56	3.77	2½-3½	$a^2D-z^2F^{\circ}$
3958.24	A	50	0.52	3.64	1½-2½	(16)
3998.98	A	30	0.56	3.64	2½-2½	
3738.13	A	5	0.56	3.86	2½-3½	$a^2D-z^4F^{\circ}$
3800.73	A	5	0.52	3.77	1½-2½	(17)
3838.28	A	5	0.56	3.77	2½-2½	
3915.94	A	25	0.52	3.68	1½-1½	
3955.82	P		0.56	3.68	2½-1½	
3750.65	A	6	0.56	3.85	2½-2½	$a^2D-z^2D^{\circ}$
3817.59	A	12	0.52	3.76	1½-1½	(18)
3855.43	A	3	0.56	3.76	2½-1½	
3714.77	A	15	0.52	3.85	1½-2½	
3520.87	A	5	0.56	4.06	2½-3½	$a^2D-z^4D^{\circ}$
m3556.54	P	Zr^+	0.56	4.03	2½-2½	(19)
3457.56	A	12	0.56	4.13	2½-2½	$a^2D-y^2D^{\circ}$
3479.02	A	5	0.52	4.07	1½-1½	(20)
3510.46	A	7	0.56	4.07	2½-1½	
3334.62	A	9	0.56	4.26	2½-3½	$a^2D-z^2G^{\circ}$ (21)
3271.13	A	7	0.52	4.30	1½- ½	$a^2D-z^2S^{\circ}$ (22)
3182.86	A	35	0.56	4.43	2½-1½	$a^2D-z^2P^{\circ}$
3129.16	A	10	0.52	4.47	1½- ½	(23)
3157.00	A	10	0.52	4.43	1½-1½	

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ory f Int	E P Low	E P High	J	Multiplet (No)
12	0.56	4.70	2½-3½	$a^2D-y^4D^\circ$ (24)
7	0.52	4.59	1½-2½	
2	0.52	4.52	1½-1½	
2	0.56	4.52	2½-1½	
4	0.52	4.47	1½- ½	
15	0.56	4.62	2½-3½	$a^2D-y^4F^\circ$ (25)
3	0.52	4.55	1½-2½	
1	0.56	4.55	2½-2½	
15	0.56	4.66	2½-3½	$a^2D-y^2F^\circ$ (26)
5	0.52	4.61	1½-2½	
4	0.56	4.61	2½-2½	
8	0.56	4.65	2½-1½	$a^2D-z^4S^\circ$ (27)
3	0.52	4.65	1½-1½	
4	0.75	3.64	1½-2½	$a^2P-z^2F^\circ$ (28)
10	0.75	3.77	1½-2½	$a^2P-z^4F^\circ$ (29)
15	0.71	3.68	½-1½	
3	0.75	3.68	1½-1½	
40	0.75	3.85	1½-2½	$a^2P-z^2D^\circ$ (30)
15	0.71	3.76	½-1½	
3	0.75	3.76	1½-1½	
4	0.75	4.03	1½-2½	$a^2P-z^4D^\circ$ (31)
5	0.71	3.98	½-1½	
1	0.75	3.98	1½-1½	
2	0.71	3.95	½- ½	
3	0.75	4.13	1½-2½	$a^2P-y^2D^\circ$ (32)
1	0.71	4.07	½-1½	
	0.75	4.07	1½-1½	
12	0.75	4.30	1½- ½	$a^2P-z^2S^\circ$ (33)
10	0.71	4.30	½- ½	
7	0.75	4.43	1½-1½	$a^2P-z^2P^\circ$ (34)
3	0.71	4.47	½- ½	
10	0.75	4.47	1½- ½	
4	0.71	4.43	½-1½	
1	0.75	4.59	1½-2½	$a^2P-y^4D^\circ$ (35)
7	0.75	4.47	1½- ½	
1	0.71	4.47	½- ½	
1	0.75	4.50	1½-1½	$a^2P-y^4F^\circ$ (36)
2	0.75	4.61	1½-2½	$a^2P-y^2F^\circ$ (37)
1	0.75	4.75	1½-2½	$a^2P-z^4P^\circ$ (38)
1	0.75	4.70	1½- ½	
1	0.71	4.70	½- ½	
1	0.75	4.84	1½-1½	$a^2P-x^4D^\circ$ (39)
2wl	0.71	4.81	½- ½	
4	0.80	3.68	3½-4½	$a^2F-z^4G^\circ$ (40)
12	0.71	3.57	2½-3½	
10	0.80	3.57	3½-3½	
15	0.71	3.45	2½-2½	
75	0.80	3.77	3½-3½	$a^2F-z^2F^\circ$ (41)
30	0.71	3.64	2½-2½	
3	0.80	3.64	3½-2½	
20	0.71	3.77	2½-3½	
7	0.80	3.93	3½-4½	$a^2F-z^4F^\circ$ (42)
	0.71	3.86	2½-3½	
5	0.80	3.86	3½-3½	
2	0.71	3.77	2½-2½	
10	0.80	3.77	3½-2½	
20	0.71	3.68	2½-1½	
25	0.80	3.85	3½-2½	$a^2F-z^2D^\circ$ (43)
15	0.71	3.76	2½-1½	
20	0.71	3.85	2½-2½	
4	0.80	4.06	3½-3½	$a^2F-z^4D^\circ$ (44)
2	0.71	4.03	2½-2½	
3	0.80	4.03	3½-2½	
2	0.71	3.98	2½-1½	
2	0.71	4.06	2½-3½	
60	0.80	4.13	3½-2½	$a^2F-y^2D^\circ$ (45)
20	0.71	4.07	2½-1½	
2	0.71	4.13	2½-2½	
35	0.80	4.34	3½-4½	$a^2F-z^2G^\circ$ (46)
30	0.71	4.26	2½-3½	
4	0.80	4.26	3½-3½	
10	0.71	4.43	2½-1½	$a^2F-z^2P^\circ$ (47)
8	0.80	4.70	3½-3½	$a^2F-y^4D^\circ$ (48)
7	0.71	4.59	2½-2½	
15	0.80	4.62	3½-3½	$a^2F-y^4F^\circ$ (49)
6	0.71	4.55	2½-2½	
1	0.71	4.50	2½-1½	
1	0.71	4.62	2½-3½	
12	0.80	4.66	3½-3½	$a^2F-y^2F^\circ$ (50)
20	0.71	4.61	2½-2½	
1	0.80	4.61	3½-2½	
Zr	0.71	4.66	2½-3½	
1	0.80	4.75	3½-2½	$a^2F-z^4P^\circ$ (51)
3	0.71	4.75	2½-2½	
0	0.80	4.89	3½-2½	$a^2F-x^4D^\circ$ (52)

Zr II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4442.50	A	2	0.99	3.77	2½-3½	$a^4P-z^2F^\circ$ (53)
4024.45	A	12	0.99	4.06	2½-3½	$a^4P-z^4D^\circ$ (54)
4018.38	A	10	0.96	4.03	1½-2½	
4040.24	A	4	0.93	3.98	½-1½	
4071.09	A	4	0.99	4.03	2½-2½	
4077.05	A	3	0.96	3.98	1½-1½	
4085.68	A	5	0.93	3.95	½- ½	
4131.31	A	1	0.99	3.98	2½-1½	
4123.38	A	1	0.96	3.95	1½- ½	
3941.92	A	3	0.99	4.13	2½-2½	$a^4P-y^2D^\circ$ (55)
3692.60	A	1	0.96	4.30	1½- ½	$a^4P-z^2S^\circ$ (56)
3588.80	A	2	0.99	4.43	2½-1½	$a^4P-z^2P^\circ$ (57)
3512.67	A	3	0.96	4.47	1½- ½	
3485.31	A	5	0.93	4.47	½- ½	
3334.25	A	10	0.99	4.70	2½-3½	$a^4P-y^4D^\circ$ (58)
3396.34	A	7	0.96	4.59	1½-2½	
3432.41	A	7	0.93	4.52	½-1½	
3433.90	A	8	0.99	4.59	2½-2½	
3458.93	A	10	0.96	4.52	1½-1½	
3480.40	A	5	0.93	4.47	½- ½	
*3497.90	A	12	0.99	4.52	2½-1½	
3507.66	A	4	0.96	4.47	1½- ½	
3403.69	A	8	0.99	4.62	2½-3½	$a^4P-y^4F^\circ$ (59)
3431.57	A	6	0.96	4.55	1½-2½	
3454.57	A	4	0.93	4.50	½-1½	
3469.94	A	4	0.99	4.55	2½-2½	
3481.44	A	2	0.96	4.50	1½-1½	
m3520.91	P	Zr+	0.99	4.50	2½-1½	
3362.70	A	4	0.99	4.66	2½-3½	$a^4P-y^2F^\circ$ (60)
3376.25	A	7	0.96	4.61	1½-2½	
3413.39	A	5	0.99	4.61	2½-2½	
3374.71	A	15	0.99	4.65	2½-1½	$a^4P-z^4S^\circ$ (61)
3338.41	A	10	0.96	4.65	1½-1½	
3313.70	A	8	0.93	4.65	½-1½	
3285.89	A	4	0.99	4.75	2½-2½	$a^4P-z^4P^\circ$ (62)
*3288.81	A	10	0.96	4.71	1½-1½	
3272.30	P		0.93	4.70	½- ½	
3324.03	P		0.99	4.71	2½-1½	
3296.41	A	7	0.96	4.70	1½- ½	
3251.46	P		0.96	4.75	1½-2½	
3264.81	A	6	0.93	4.71	½-1½	
3106.58	A	35	0.99	4.97	2½-3½	$a^4P-x^4D^\circ$ (63)
3133.49	A	25	0.96	4.89	1½-2½	
3155.68	A	10	0.93	4.84	½-1½	
3165.45	A	7	0.99	4.89	2½-2½	
3178.10	A	15	0.96	4.84	1½-1½	
3181.58	A	8	0.93	4.81	½- ½	
3210.98	A	3	0.99	4.84	2½-1½	
3204.36	A	4	0.96	4.81	1½- ½	
2975.16	A	1	0.96	5.10	1½-1½	$a^4P-y^2P^\circ$ † (64)
3009.85	A	2	0.93	5.03	½- ½	
3048.42	A	2	0.99	5.04	2½-3½	$a^4P-y^2G^\circ$ (65)
4816.47	A	1	1.01	3.57	4½-3½	$a^2G-z^4G^\circ$ (66)
4461.22	A	10	1.01	3.77	4½-3½	$a^2G-z^2F^\circ$ (67)
4613.95	A	5	0.97	3.64	3½-2½	
4399.44	A	2	0.97	3.77	3½-3½	
4215.76	A	1	1.01	3.93	4½-4½	$a^2G-z^4F^\circ$ (68)
4401.35	A	2	0.97	3.77	3½-2½	
4286.51	A	5	0.97	3.85	3½-2½	$a^2G-z^2D^\circ$ (69)
4034.84	A	0	0.97	4.03	3½-3½	$a^2G-z^4D^\circ$ (70)
3698.17	A	100	1.01	4.34	4½-4½	$a^2G-z^2G^\circ$ (71)
3751.60	A	75	0.97	4.26	3½-3½	
3796.47	A	20	1.01	4.26	4½-3½	
3655.56	A	7	0.97	4.34	3½-4½	
3344.80	A	15	1.01	4.70	4½-3½	$a^2G-y^4D^\circ$ (72)
3408.09	A	10	0.97	4.59	3½-2½	
3309.90	A	4	0.97	4.70	3½-3½	
*3414.65 §	A	12	1.01	4.62	4½-3½	$a^2G-y^4F^\circ$ (73)
3443.57	A	7	0.97	4.55	3½-2½	
3378.30	A	5	0.97	4.62	3½-3½	
3373.42	A	8	1.01	4.66	4½-3½	$a^2G-y^2F^\circ$ (74)
3387.87	A	12	0.97	4.61	3½-2½	
3337.93	A	2	0.97	4.66	3½-3½	
3115.73	A	2	1.01	4.97	4½-3½	$a^2G-x^4D^\circ$ (75)
3054.84	A	30	1.01	5.05	4½-4½	$a^2G-y^2G^\circ$ (76)
3028.05	A	20	0.97	5.04	3½-3½	
3057.22	A	5	1.01	5.04	4½-3½	
3025.70	A	2	0.97	5.05	3½-4½	
2976.61	A	10	1.01	5.15	4½-4½	$a^2G-z^2H^\circ$ † (77)
4854.65	A	0	1.23	3.77	2½-3½	$b^4P-z^2F^\circ$ (78)
4359.74	A	10	1.23	4.06	2½-3½	$b^4P-z^4D^\circ$ (79)
4370.96	A	8	1.20	4.03	1½-2½	
4403.35	A	6	1.18	3.98	½-1½	
4414.54	A	5	1.23	4.03	2½-2½	
4440.45	A	10	1.20	3.98	1½-1½	
*4457.42 §	A	8	1.18	3.95	½- ½	
4485.44	A	2	1.23	3.98	2½-1½	
4495.44	A	3	1.20	3.95	1½- ½	

Zr II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4222.41	A	3	1.20	4.13	1½-2½	$b^4P-y^2D^\circ$ (80)
4266.72	A	1	1.18	4.07	½-1½	
3853.07	A	2	1.23	4.43	2½-1½	$b^4P-z^2P^\circ$ (81)
3819.84	A	2	1.20	4.43	1½-1½	
3792.32	A	2	1.18	4.43	½-1½	
3717.02	A	2	1.20	4.52	1½-1½	$b^4P-y^4D^\circ$ (82)
3561.11	A	1	1.23	4.70	2½-3½	
3690.98	P		1.18	4.52	½-1½	
3607.39	A	7	1.23	4.65	2½-1½	$b^4P-z^4S^\circ$ (83)
3578.22	A	7	1.20	4.65	1½-1½	
3554.09	A	7	1.18	4.65	½-1½	
3506.04	A	4	1.23	4.75	2½-2½	$b^4P-z^4P^\circ$ (84)
3521.28	P		1.20	4.71	1½-1½	
3506.48	A	2	1.18	4.70	½- ½	
3549.51	A	10	1.23	4.71	2½-1½	
3529.99	A	5	1.20	4.70	1½- ½	
3478.50	A	3	1.20	4.75	1½-2½	
*3497.90	A	12	1.18	4.71	½-1½	
3302.66	A	7l	1.23	4.97	2½-3½	$b^4P-x^4D^\circ$ (85)
3343.81	A	4	1.20	4.89	1½-2½	
3369.27	A	3	1.23	4.89	2½-2½	
3394.63	A	3	1.20	4.84	1½-1½	
3402.52	A	1	1.18	4.81	½- ½	
3424.64	A	1	1.20	4.81	1½- ½	
3008.13	A	3	1.23	5.33	2½-2½	$b^4P-y^4P^\circ$ (86)
3015.67	A	1	1.20	5.30	1½-1½	
m3036.33	P	Zr+	1.23	5.30	2½-1½	
3025.16	A	3w	1.20	5.28	1½- ½	
2987.80	A	5	1.20	5.33	1½-2½	
2998.49	A	2	1.18	5.30	½-1½	
5124.98	A	2	1.53	3.93	5½-4½	$a^2H-z^4F^\circ$ (87)
4379.78	A	9	1.53	4.34	5½-4½	$a^2H-z^2G^\circ$ (88)
4442.99	A	25	1.48	4.26	4½-3½	
4308.94	A	4	1.48	4.34	4½-4½	
3874.37	A	1	1.48	4.66	4½-3½	$a^2H-y^2F^\circ$ (89)
3505.47	A	15	1.53	5.05	5½-4½	$a^2H-y^2G^\circ$ (90)
3463.02	A	35	1.48	5.04	4½-3½	
3459.95	A	3	1.48	5.05	4½-4½	
3326.81	A	15	1.53	5.24	5½-5½	$a^2H-z^2H^\circ$ (91)
3359.96	A	12	1.48	5.15	4½-4½	
3402.87	A	7	1.53	5.15	5½-4½	
3285.77	A	3	1.48	5.24	4½-5½	
3275.65	A	1	1.48	5.25	4½-3½	$a^2H-x^2F^\circ$ (92)
6100.04	A	2	1.75	3.77	2½-3½	$b^2D-z^4F^\circ$ (93)
6114.78	A	2	1.66	3.68	1½-1½	
5418.01	A	1	1.75	4.03	2½-2½	$b^2D-z^4D^\circ$ (94)
5191.60	A	7	1.75	4.13	2½-2½	$b^2D-y^2D^\circ$ (95)
5112.28	A	7	1.66	4.07	1½-1½	
5311.78	A	2	1.75	4.07	2½-1½	
5000.91	A	3	1.66	4.13	1½-2½	
4445.88	A	1	1.66	4.43	1½-1½	$b^2D-z^2P^\circ$ (96)
4186.70	A	12	1.75	4.70	2½-3½	$b^2D-y^4D^\circ$ (97)
4310.62	A	5	1.66	4.59	1½-2½	
4383.10	A	1	1.66	4.47	1½- ½	
4296.74	A	8	1.75	4.62	2½-3½	$b^2D-y^4F^\circ$ (98)
4264.91	A	4	1.66	4.55	1½-2½	
4342.23	A	1	1.66	4.50	1½-1½	
4231.64	A	8	1.75	4.66	2½-3½	$b^2D-y^2F^\circ$ (99)
4179.81	A	15	1.66	4.61	1½-2½	
4312.23	A	3	1.75	4.61	2½-2½	
3833.87	A	2	1.75	4.97	2½-3½	$b^2D-x^4D^\circ$ (100)
3813.98	A	0	1.66	4.89	1½-2½	
3923.92	A	1	1.75	4.89	2½-2½	
3678.91	A	10	1.75	5.10	2½-1½	$b^2D-y^2P^\circ$ (101)
3662.14	A	8	1.66	5.03	1½- ½	
3582.08	A	2	1.66	5.10	1½-1½	
3633.49	A	10	1.75	5.15	2½-2½	$b^2D-x^2D^\circ$ (102)
3565.41	A	5	1.66	5.12	1½-1½	
3661.33	A	4	1.75	5.12	2½-1½	
3539.05	A	4	1.66	5.15	1½-2½	
3527.42	A	7	1.75	5.25	2½-3½	$b^2D-x^2F^\circ$ (103)
3396.66	A	6	1.66	5.29	1½-2½	
m3483.59	P	Zr+	1.75	5.29	2½-2½	
3222.48	A	15	1.75	5.58	2½-3½	$b^2D-w^2D^\circ$ (104)
3161.01	A	2	1.66	5.56	1½-1½	
3236.17	A	1	1.75	5.56	2½-1½	
3183.26	P		1.75	5.63	2½-1½	$b^2D-x^2P^\circ$ (105)
3074.55	A	1	1.66	5.67	1½- ½	
3110.52	A	1	1.66	5.63	1½-1½	
*6106.47	A	2	1.75	3.77	4½-3½	$b^2G-z^2F^\circ$ (106)
4761.67	A	1	1.75	4.34	4½-4½	$b^2G-z^2G^\circ$ (107)
4894.43	A	0	1.74	4.26	3½-3½	
4925.90	A	1	1.75	4.26	4½-3½	
4191.50	A	6	1.75	4.70	4½-3½	$b^2G-y^4D^\circ$ (108)
4325.64	A	3	1.74	4.59	3½-2½	

tinued

atory Ref	Int	E P Low	E P High	J	Multiplet (No)
A	5	1.75	4.62	4½-3½	$b^2G-y^4F^\circ$
A	1	1.74	4.55	3½-2½	(109)
A	5	1.75	4.66	4½-3½	$b^2G-y^2F^\circ$
A	7	1.74	4.61	3½-2½	(110)
A	1	1.74	4.97	3½-3½	$b^2G-x^4D^\circ$ (111)
A	40	1.75	5.05	4½-4½	$b^2G-y^2G^\circ$
A	35	1.74	5.04	3½-3½	(112)
P		1.75	5.04	4½-3½	
A	10	1.74	5.05	3½-4½	
A	25	1.75	5.24	4½-5½	$b^2G-z^2H^\circ$
A	15	1.74	5.15	3½-4½	(113)
A	1	1.75	5.15	4½-4½	
A	6	1.75	5.25	4½-3½	$b^2G-x^2F^\circ$
A	8	1.74	5.29	3½-2½	(114)
A	4	1.74	5.25	3½-3½	
A	5	1.82	4.13	2½-2½	$c^2D-y^2D^\circ$
A	5	1.77	4.07	1½-1½	(115)
A	2	1.82	4.07	2½-1½	
A	1	1.82	4.43	2½-1½	$c^2D-z^2P^\circ$
A	3	1.77	4.47	1½-½	(116)
A	1	1.77	4.43	1½-1½	
A	2	1.82	4.70	2½-3½	$c^2D-y^4D^\circ$ (117)
A	2	1.82	4.62	2½-3½	$c^2D-y^4F^\circ$
A	2	1.77	4.55	1½-2½	(118)
A	2	1.82	4.66	2½-3½	$c^2D-y^2F^\circ$
A	5	1.77	4.61	1½-2½	(119)
A	8	1.82	5.10	2½-1½	$c^2D-y^2P^\circ$
A	5	1.77	5.03	1½-½	(120)
A	1	1.82	5.04	2½-3½	$c^2D-y^2G^\circ$ (121)
A	1	1.82	5.15	2½-2½	$c^2D-x^2D^\circ$
A	1	1.77	5.12	1½-1½	(122)
A	2	1.77	5.15	1½-2½	
A	7	1.82	5.25	2½-3½	$c^2D-x^2F^\circ$
A	4	1.77	5.29	1½-2½	(123)
A	2	1.82	5.33	2½-2½	$c^2D-y^4P^\circ$
P		1.82	5.30	2½-1½	(124)
A	12	1.82	5.58	2½-2½	$c^2D-w^2D^\circ$
A	20	1.77	5.56	1½-1½	(125)
A	4	1.77	5.58	1½-2½	
A	3	1.82	5.63	2½-1½	$c^2D-x^2P^\circ$
A	5	1.77	5.67	1½-½	(126)
A	3	1.77	5.63	1½-1½	
A	2	1.82	5.91	2½-2½	$c^2D-w^2F^\circ$ (127)
A	1	2.40	4.34	3½-4½	$b^2F-z^2G^\circ$
A	3	2.41	4.26	2½-3½	(128)
A	5	2.40	5.05	3½-4½	$b^2F-y^2G^\circ$
A	4	2.41	5.04	2½-3½	(129)
A	8	2.40	5.15	3½-2½	$b^2F-x^2D^\circ$
A	12	2.41	5.12	2½-1½	(130)
A	3	2.40	5.15	3½-4½	$b^2F-z^2H^\circ$ (131)
A	15	2.40	5.25	3½-3½	$b^2F-x^2F^\circ$
A	6	2.41	5.29	2½-2½	(132)
P		2.40	5.29	3½-2½	
P		2.41	5.25	2½-3½	
A	2	2.40	5.33	3½-2½	$b^2F-y^4P^\circ$ (133)
A	7	2.40	5.58	3½-2½	$b^2F-w^2D^\circ$
A	7	2.41	5.56	2½-1½	(134)
A	2	2.48	4.30	1½-½	$b^2P-z^2S^\circ$ (135)
A	1	2.48	4.43	1½-1½	$b^2P-z^2P^\circ$
A	2	2.42	4.47	½-½	(136)
A	2	2.48	4.50	1½-1½	$b^2P-y^4F^\circ$ (137)
A	5	2.48	5.10	1½-1½	$b^2P-y^2P^\circ$
A	1	2.42	5.03	½-½	(138)
A	0	2.48	5.03	1½-½	
A	2	2.42	5.10	½-1½	
A	5	2.48	5.15	1½-2½	$b^2P-x^2D^\circ$
A	6	2.42	5.12	½-1½	(139)
A	1	2.48	5.12	1½-1½	
A	2	2.48	5.39	1½-2½	$b^2P-x^2F^\circ$ (140)
A	2	2.48	5.33	1½-2½	$b^2P-y^4P^\circ$ (141)
A	3	2.48	5.58	1½-2½	$b^2P-w^2D^\circ$
A	8	2.42	5.56	½-1½	(142)
A	2	2.48	5.56	1½-1½	
A	1	2.48	5.63	1½-1½	$b^2P-x^2P^\circ$ (143)
A	5	2.48	6.53	1½-1½	$b^2P-w^2P^\circ$
A	3	2.42	6.49	½-½	(144)
A	1	2.48	6.49	1½-½	

Zr II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4908.67	A	1	3.11	5.63	½-1½	$a^2S-x^2P^\circ$ (145)
3612.34	A	3	3.11	6.53	½-1½	$a^2S-w^2P^\circ$
3650.73	A	7	3.11	6.49	½-½	(146)
3026.18	A	3wl	3.93	8.01	4½-4½	$z^4F^\circ-e^4F$ †
3018.53	A	3w	3.86	7.95	3½-3½	(147)
3000.59	A	3w	3.77	7.88	2½-2½	
3024.72	A	3w	3.77	7.85	2½-1½	
2988.74	A	4w	4.13	8.25	2½-2½	$y^2D^\circ-e^2D$
2966.27	A	2w	4.07	8.23	1½-1½	(148)
3229.73	A	1l	4.43	8.25	1½-2½	$z^2P^\circ-e^2D$
3278.89	A	2	4.47	8.23	½-1½	(149)

Strongest Unclassified Lines of Zr II

I A	Ref	Int
3827.27	A	1
3423.82	A	3 l
3068.32	A	2 w
*3063.63 §	A	3 wl
3038.59	A	2
3018.08	A	2 w
2994.05	A	4 w

Cb I   I P ?   Anal C   List D   July 1942

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4058.933//	A	2000w	0.13	3.17	4½-5½	$a^6D-y^6F^\circ$ †
4079.726	A	1000w	0.09	3.11	3½-4½	(1)
4100.918	A	600w	0.05	3.06	2½-3½	
4123.812	A	400	0.02	3.01	1½-2½	
4137.090	A	200	0.00	2.98	½-1½	
4139.702	A	400w	0.13	3.11	4½-4½	
4152.575	A	500	0.09	3.06	3½-3½	
4164.661	A	300	0.05	3.01	2½-2½	
4163.658	A	250	0.02	2.98	1½-1½	
4168.122	A	250w	0.00	2.96	½-½	
3791.209	A	300r	0.13	3.38	4½-4½	$a^6D-y^6D^\circ$ †
3834.883	A	100	0.09	3.31	3½-3½	(2)
3713.018	A	300r	0.13	3.45	4½-4½	$a^6D-x^6D^\circ$ †
3739.80	A	300r	0.09	3.39	3½-3½	(3)
3759.556	A	200r	0.05	3.33	2½-2½	
3790.138	A	200r	0.13	3.39	4½-3½	
3802.928	A	400r	0.09	3.33	3½-2½	
3798.127	A	300r	0.05	3.30	2½-1½	
3787.064	A	150	0.02	3.28	1½-½	
3697.850	A	200	0.05	3.39	2½-3½	
3726.235	A	250	0.02	3.33	1½-2½	
3742.393	A	200r	0.00	3.30	½-1½	
3580.277	A	400r	0.13	3.58	4½-3½	$a^6D-y^6P^\circ$ †
3575.850	A	200	0.09	3.54	3½-2½	(4)
*3535.304	A	400w	0.09	3.58	3½-3½	

Cb II   I P ?   Anal C   List C   July 1942

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3094.172//	A	2000wR	0.51	4.50	5-6	$a^5F-z^5G^\circ$ †
3130.780	A	1500wR	0.44	4.38	4-5	(1)
3163.403	A	1000R	0.37	4.28	3-4	
3194.983	A	700R	0.32	4.19	2-3	
3225.478	A	500wR	0.29	4.12	1-2	
3191.096	A	200w	0.51	4.38	5-5	
3215.595	A	300wr	0.44	4.28	4-4	
3236.403	A	300r	0.37	4.19	3-3	
3254.070	A	200r	0.32	4.12	2-2	
3028.436	A	300w	0.44	4.51	4-3	$a^5F-z^3D^\circ$ †
3076.864	A	200	0.37	4.39	3-2	(2)
3099.180	A	100	0.32	4.31	2-1	
2982.100	A	100	0.37	4.51	3-3	
3412.934	A	150	0.90	4.51	2-3	$a^3P-z^3D^\circ$ †
3408.678	A	100	0.76	4.39	1-2	(3)
3409.191	A	100	0.69	4.31	0-1	
3540.961	A	200	1.03	4.51	4-3	$a^3F-z^3D^\circ$ †
3619.514	A	200	0.98	4.39	3-2	(4)
3651.182	A	300	0.93	4.31	2-1	
3145.405	A	500rs	1.03	4.95	4-5	$a^3F-z^3G^\circ$ †
3180.290	A	400	0.98	4.86	3-4	(5)
3206.350	A	300rs	0.93	4.78	2-3	
3223.332	A	100	1.03	4.86	4-4	
3247.478	A	150w	0.98	4.78	3-3	
3440.589	A	200	1.36	4.95	5-5	$a^3G-z^3G^\circ$ †
3479.567	A	150	1.31	4.86	4-4	(6)
3515.421	A	200w	1.27	4.78	3-3	
3425.432	A	300w	1.36	4.97	5-4	$a^3G-z^3F^\circ$ †
3426.562	A	250w	1.31	4.91	4-3	(7)
3478.79	A	100	1.27	4.81	3-2	
4367.966	A	100n	1.69	4.51	4-3	$b^3F-z^3D^\circ$ †
4579.446	A	150n	1.69	4.39	3-2	(8)
4527.648	A	50n	1.58	4.31	2-1	

Cb II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3781.379	A	200	1.69	4.95	4-5	$b^3F-z^3G^\circ$ †
3898.292	A	200	1.69	4.86	3-4	(9)
3863.056	A	150	1.58	4.78	2-3	
3763.13	A	8n	1.69	4.97	4-4	$b^3F-z^3F^\circ$ †
3831.840	A	200	1.69	4.91	3-3	(10)
3818.862	A	200	1.58	4.81	2-2	
3952.367	A	100n	1.69	4.81	3-2	

Strongest Unclassified Lines of Cb II

I A	Ref	Int
3717.06	A	300
3659.602	A	300
3510.262	A	400
3432.708	A	400
3283.463	A	400
3263.365	A	300
3260.564	A	350w
3127.526	A	500
3064.530	A	250r
3034.95	A	200wR
3032.767	A	400rs
2994.725	A	300w

Mo I   I P 7.06   Anal C   List D   July 1942

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3798.259 //	A	50R	0.00	3.25	3-4	$a^7S-z^7P^\circ$
3864.115	A	50R	0.00	3.19	3-3	(1)
3902.968	A	50R	0.00	3.16	3-2	
3112.125	A	5n	0.00	3.97	3-4	$a^7S-z^7D^\circ$
3158.156	A	5R	0.00	3.91	3-3	(2)
3208.838	A	10n	0.00	3.85	3-2	
3132.591	A	10R	0.00	3.94	3-4	$a^7S-y^7P^\circ$
3170.333	A	10R	0.00	3.89	3-3	(3)
3193.969	A	10R	0.00	3.86	3-2	
5506.51	B	40R	1.33	3.57	2-3	$a^5S-z^5P^\circ$
5533.01	B	30R	1.33	3.56	2-2	(4)
5570.46	B	25R	1.33	3.54	2-1	
6030.66	B	9	1.52	3.57	4-3	$a^5D-z^5P^\circ$ †
5888.32	B	6	1.46	3.56	3-2	(5)
5791.86	B	6	1.41	3.54	2-1	
5858.28	B	7	1.46	3.57	3-3	
5751.41	B	6	1.41	3.56	2-2	
5689.22	B	7	1.38	3.54	1-1	
4626.467	A	10	1.52	4.19	4-3	$a^5D-y^5P^\circ$ †
4662.767	A	5	1.46	4.11	3-2	(6)
4661.933	A	5	1.41	4.06	2-1	
4524.344	A	10	1.46	4.19	3-3	
4576.500	A	10	1.41	4.11	2-2	
4595.160	A	10	1.38	4.06	1-1	
4277.246	A	12	1.52	4.41	4-5	$a^5D-z^5F^\circ$ †
4288.65	A	5n	1.46	4.34	3-4	(7)
4293.228	A	10	1.41	4.29	2-3	
3833.757	A	10n	1.52	4.74	4-4	$a^5D-z^5D^\circ$ †
3828.883	A	10	1.46	4.69	3-3	(8)
3826.701	A	10	1.41	4.64	2-2	
3822.987	A	5	1.38	4.60	1-1	
3901.775	A	10	1.52	4.69	4-3	
3886.825	A	(3)	1.46	4.64	3-2	
3869.085	A	10	1.41	4.60	2-1	
3847.252	A	10	1.38	4.58	1-0	
3763.356	A	5	1.46	4.74	3-4	
3770.517	A	8	1.41	4.69	2-3	
3781.597	A	10	1.38	4.64	1-2	
3405.934	A	10r	1.52	5.15	4-5	$a^5D-y^5F^\circ$ †
3384.617	A	10n	1.46	5.11	3-4	(9)
3358.130	A	10	1.41	5.09	2-3	
3344.750	A	10	1.38	5.07	1-2	
3327.308	A	10r	1.35	5.06	0-1	
3361.371	A	10r	1.52	5.20	4-4	a^5D-8° † (10)
3289.016	A	10r	1.41	5.17	2-3	a^5D-7° † (11)
4012.51	C	(1)	2.07	5.15	6-5	$a^5G-y^5F^\circ$ †
4062.09	A	5Nr	2.07	5.11	5-4	(12)
4084.391	A	10n	2.07	5.09	4-3	
4107.477	A	8r	2.06	5.07	3-2	
4102.158	A	10	2.05	5.06	2-1	
4056.027	A	10	2.07	5.11	4-4	

Mo II   I P ?   Anal D   List D   Aug 1942

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3446.085	A	6	2.94	6.52	4½-4½	$^4F-\,^4F^\circ$
3524.646	A	8	2.94	6.45	3½-3½	(1)
3596.351	A	4	2.95	6.39	2½-2½	
3670.668	A	3	2.98	6.34	1½-1½	
3522.063	A	2	2.94	6.45	4½-3½	
3585.91	B	2n	2.94	6.39	3½-2½	
3643.47	A	2	2.95	6.34	2½-1½	
3448.542	A	2	2.94	6.52	3½-4½	
3534.688	A	3	2.95	6.45	2½-3½	
3622.850	A	2	2.98	6.39	1½-2½	
3136.465	A	4	2.94	6.88	4½-3½	$^4F-\,^4D^\circ$ †
3187.592	A	4	2.94	6.82	3½-2½	(2)
3250.747	A	3	2.95	6.75	2½-1½	

ued

Int	E P Low	E P High	J	Multiplet (No)
10	3.13	6.03	3½-2½	$^{4}D-{}^{4}P^{\circ}$ † (3)
10	3.10	5.93	2½-1½	
8	3.04	5.83	1½-½	
5	3.10	6.03	2½-2½	
10	3.04	5.93	1½-1½	
10	3.01	5.83	½-½	
10	3.13	6.26	3½-4½	$^{4}D-{}^{6}D^{\circ}$ † (4)
15	3.13	6.24	3½-3½	
6	3.10	6.20	2½-1½	
20	3.13	6.52	3½-4½	$^{4}D-{}^{4}F^{\circ}$ † (5)
15	3.10	6.45	2½-3½	
10	3.04	6.39	1½-2½	
8	3.01	6.34	½-1½	
3	3.13	6.45	3½-3½	
5	3.10	6.39	2½-2½	
6	3.04	6.34	1½-1½	
12	3.13	6.88	3½-3½	$^{4}D-{}^{4}D^{\circ}$ (6)
5	3.10	6.82	2½-2½	
5	3.04	6.75	1½-1½	
3	3.01	6.70	½-½	
4	3.13	6.82	3½-2½	
3	3.10	6.75	2½-1½	
3	3.04	6.70	1½-½	
3	3.10	6.88	2½-3½	
4	3.04	6.82	1½-2½	
3	3.01	6.75	½-1½	

5 Anal C List D Aug 1942

Int	E P Low	E P High	J	Multiplet (No)
(8)	0.00	3.25	5-4	$a^{5}F-z^{5}D^{\circ}$ † (1)
(8)	0.15	3.40	4-3?	
(10R)	0.00	3.31	5-5	$a^{5}F-z^{5}F^{\circ}$ † (2)
(10R)	0.15	3.46	4-4	
(4)	0.26	3.57	3-3	
(10)	0.33	3.63	2-2	
(4)	0.38	3.67	1-1	
(6)	0.15	3.52	4-5	$a^{5}F-z^{3}G^{\circ}$ † (3)
(20)	0.26	3.87	3-4	
(7)	0.33	3.93	2-3	
(50R)	0.00	3.53	5-6	$a^{5}F-z^{5}G^{\circ}$ † (4)
(30R)	0.15	3.74	4-5	
(20)	0.26	3.69	3-4	
(20)	0.33	3.77	2-3	
(5)	0.38	3.82	1-2	
(8)	0.00	3.74	5-5	
(10R)	0.81	3.52	4-5	$a^{3}F-z^{3}G^{\circ}$ † (5)
(10)	1.00	3.87	3-4	
(8)	1.13	3.93	2-3	
(10)	0.81	3.74	4-5	$a^{3}F-z^{5}G^{\circ}$ † (6)
30	1.00	3.69	3-4	
10	1.13	3.77	2-3	
(20)	0.81	3.83	4-3	$a^{3}F-y^{5}F^{\circ}$ † (7)
(10)	1.00	3.98	3-2	
(10)	0.81	3.75	4-4	$a^{3}F-z^{3}F^{\circ}$ † (8)
(8)	0.81	4.00	4-3	$a^{3}F-z^{3}D^{\circ}$ † (9)
(10)	1.00	4.10	3-2	
(10)	1.13	4.15	2-1	
20	0.92	3.25	4-4	$a^{5}D-z^{5}D^{\circ}$ † (10)
35	1.06	3.25	3-4	
12	1.12	3.51	1-2	
40	0.92	3.31	4-5	$a^{5}D-z^{5}F^{\circ}$ † (11)
8	1.06	3.46	3-4	
6	1.12	3.57	2-3	
3	1.12	3.63	1-2	
25	0.92	3.46	4-4	
12	1.06	3.57	3-3	
8	1.12	3.63	2-2	
8	0.92	3.57	4-3	
20	0.92	3.52	4-5	$a^{5}D-z^{3}G^{\circ}$ † (12)
(10)	0.92	3.75	4-4	$a^{5}D-z^{3}F^{\circ}$ † (13)
35	1.13	3.75	4-4	$b^{3}F-z^{3}F^{\circ}$ † (14)

Ru II I P ? Anal D List C Sept 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3690.032	A	80	2.39	5.74	3½-4½	$^{4}D-{}^{6}D^{\circ}$ † (1)
3657.574	A	50	2.39	5.77	3½-3½	
3734.454	A	25	2.53	5.84	2½-2½	
3777.919	A	10	2.62	5.89	1½-1½	
3177.060	A	100	2.39	6.28	3½-4½	$^{4}D-{}^{6}F^{\circ}$ † (2)
3294.220	A	80	2.53	6.28	2½-3½	
3339.810	A	50	2.62	6.32	1½-2½	
3369.295	A	25	2.67	6.34	½-1½	
3175.317	A	10	2.39	6.28	3½-3½	
3143.657	A	15	2.39	6.32	3½-2½	
3107.586	A	10	2.39	6.36	3½-3½	$^{4}D-{}^{6}P^{\circ}$ † (3)
3094.555	A	8	2.53	6.52	2½-2½	
3221.378	A	15	2.53	6.36	2½-3½	
2976.593	A	100	2.39	6.54	3½-4½	$^{4}D-{}^{4}F^{\circ}$ † (4)
2965.564	A	100	2.53	6.69	2½-3½	
2979.957	A	60	2.62	6.76	1½-2½	
2977.226	A	30	2.67	6.82	½-1½	
2979.726	A	40	2.53	6.67	2½-2½	$^{4}D-{}^{4}D^{\circ}$ † (5)
2991.626	A	40	2.62	6.75	1½-1½	
2998.896	A	20	2.67	6.79	½-½	
3259.007?	A	20	2.75	6.54	3½-4½	$^{2}F-{}^{4}F^{\circ}$ † (6)
3060.252	A	8	2.66	6.69	2½-3½	
3221.978	A	20	2.75	6.58	3½-3½	$^{2}F-{}^{4}D^{\circ}$ † (7)
3075.336	A	6	2.66	6.67	2½-2½	

Rh I I P 7.7 Anal C List D Aug 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3692.357	A	50	0.00	3.34	4½-3½	$a^{4}F-z^{4}D^{\circ}$ † (1)
3657.987	A	50	0.19	3.56	3½-2½	
3596.194	A	20	0.32	3.75	2½-1½	
3612.470	A	15	0.43	3.85	1½-½	
3434.893//	A	200R	0.00	3.59	4½-5½	$a^{4}F-z^{4}G^{\circ}$ † (2)
3700.909	A	30	0.19	3.52	3½-4½	
3507.316	A	20	0.32	3.84	2½-3½	
3474.780	A	20	0.43	3.98	1½-2½	
3502.524	A	50	0.00	3.52	4½-4½	
3396.85	A	100R	0.00	3.63	4½-4½	$a^{4}F-z^{4}F^{\circ}$ † (3)
3528.024	A	30	0.19	3.69	3½-3½	
3462.040	A	30	0.32	3.89	2½-2½	
3470.657	A	20	0.43	3.98	1½-1½	
3583.098	A	10	0.19	3.63	3½-4½	
3666.215	A	15	0.32	3.69	2½-3½	
3323.092	A	50R	0.19	3.90	3½-4½	$a^{4}F-z^{2}G^{\circ}$ † (4)
3283.573	A	20R	0.32	4.08	2½-3½	
3597.147	A	20	0.41	3.84	2½-3½	$a^{2}D-z^{4}G^{\circ}$ † (5)
3478.906	A	15	0.41	3.96	2½-2½	$a^{2}D-z^{2}D^{\circ}$ (6)
3543.948	A	10	0.70	4.18	1½-1½	
3371.612	A	10	0.41	4.18	2½-1½	
3788.474	A	15	0.70	3.96	1½-2½	
3856.515	A	10	0.70	3.90	3½-4½	$a^{2}F-z^{2}G^{\circ}$ † (7)
3958.865	A	30	0.96	4.08	2½-3½	
3799.311	A	20	0.70	3.95	3½-3½	$a^{2}F-z^{2}F^{\circ}$ (8)
3822.262	A	15	0.96	4.19	2½-2½	
4128.870	A	20	0.96	3.95	2½-3½	
3538.142	A	4	0.70	4.19	3½-2½	
3793.217	A	15	0.70	3.96	3½-2½	$a^{2}F-z^{2}D^{\circ}$ (9)
3833.889	A	10	0.96	4.18	2½-1½	
4121.682	A	15	0.96	3.96	2½-2½	

Rh II I P ? Anal C List D Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3207.297	A	250	3.13	6.98	4-4	$^{3}F-{}^{5}D^{\circ}$ † (1)
3028.608	A	75	3.39	7.46	3-3	
3074.061	A	50	3.56	7.57	2-2	
3434.57	P		3.39	6.98	3-4	
3162.284	A	100	3.56	7.46	2-3	
3159.254	A	300	3.13	7.04	4-5	$^{3}F-{}^{5}F^{\circ}$ † (2)
3151.500	A	75	3.39	7.30	3-4	
3386.129	A	2	3.56	7.20	2-3	
3233.324	A	250	3.39	7.20	3-3	
3239.101	A	30	3.56	7.37	2-2	
3019.819	A	150	3.56	7.65	2-3	$^{3}F-{}^{5}G^{\circ}$ † (3)
2988.367	A	50	3.56	7.69	2-2	

Rh II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3477.828	A	200	3.43	6.98	3-4	$^{5}P-{}^{5}D^{\circ}$ (4)
3093.481	A	200	3.47	7.46	2-3	
3096.740	A	150	3.59	7.57	1-2	
3062.201	A	100	3.43	7.46	3-3	
3008.996	A	200	3.47	7.57	2-2	
3047.160	A	200	3.59	7.64	1-1	
2979.382	A	2	3.43	7.57	3-2	
2962.167	A	75	3.47	7.64	2-1	
3035.013	A	200	3.59	7.66	1-0	
3187.889	A	200	3.43	7.30	3-4	$^{5}P-{}^{5}F^{\circ}$ (5)
3307.362	A	200	3.47	7.20	2-3	
3264.291	A	75	3.59	7.37	1-2	
3166.948	A	200	3.47	7.37	2-2	
3173.678	A	100	3.59	7.48	1-1	
3081.585	A	100	3.47	7.48	2-1	
3267.480	A	250	3.92	7.69	5-4	$^{3}G-{}^{3}F^{\circ}$ (6)
3240.516	A	150	4.03	7.83	4-3	
3211.947	A	150	4.18	8.02	3-2	
3815.012	A	100	4.23	7.46	2-3	$^{3}P-{}^{5}D^{\circ}$ (7)
3754.12	P		4.29	7.57	1-2	
3720.69	P		4.32	7.64	0-1	
3269.60	P		4.23	8.00	2-3	$^{3}P-{}^{3}D^{\circ}$ (8)
3188.603	A	150	4.29	8.16	1-2	
3147.931	A	8	4.32	8.24	0-1	
3140.272	A	50	4.23	8.16	2-2	
3119.837	A	5	4.29	8.24	1-1	

Pd I I P 8.30 Anal A List D Aug 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3634.71	B	700R	0.81	4.21	3-2	$5s^{3}D-5p^{3}P^{\circ}$ (1)
3516.95	A	500r	0.96	4.47	2-1	
3571.16	A	200	1.25	4.70	1-0	
3799.17	B	75	0.96	4.21	2-2	
3832.31	B	75	1.25	4.47	1-1	
3404.60 //	A	1000R	0.81	4.44	3-4	$5s^{3}D-5p^{3}F^{\circ}$ (2)
3609.56	A	600R	0.96	4.38	2-3	
3481.17	A	400r	1.25	4.79	1-2	
3460.76	A	300r	0.81	4.38	3-3	
3218.98	A	20	0.96	4.79	2-2	
3242.72	A	1000R	0.81	4.62	3-3	$5s^{3}D-5p^{3}D^{\circ}$ (3)
3421.24	A	500	0.96	4.56	2-2	
3302.15	A	400	1.25	4.98	1-1	
3287.26	A	50	0.81	4.56	3-2	
3065.30	A	100	0.96	4.98	2-1	
3372.02	A	300	0.96	4.62	2-3	
3718.92	B	100	1.25	4.56	1-2	
3002.66	A	50	0.81	4.92	3-3	$5s^{3}D-5p^{1}F^{\circ}$ (4)
3114.05	A	200	0.96	4.92	2-3	
3027.92	A	100	0.96	5.03	2-2	$5s^{3}D-5p^{1}D^{\circ}$ † (5)
3258.80	A	300	1.25	5.03	1-2	
3021.74	A	10	0.96	5.04	2-1	$5s^{3}D-5p^{1}P^{\circ}$ (6)
3251.66	A	200	1.25	5.04	1-1	
4212.95	B	200	1.45	4.38	2-3	$5s^{1}D-5p^{3}F^{\circ}$ (7)
3690.35	B	200	1.45	4.79	2-2	
3894.19	B	200	1.45	4.62	2-3	$5s^{1}D-5p^{3}D^{\circ}$ (8)
3958.66	B	200	1.45	4.56	2-2	
3489.79	A	200r	1.45	4.98	2-1	
3553.10	A	500r	1.45	4.92	2-3	$5s^{1}D-5p^{1}F^{\circ}$ (9)
3441.40	A	300	1.45	5.03	2-2	$5s^{1}D-5p^{1}D^{\circ}$ (10)
3433.44	A	250	1.45	5.04	2-1	$5s^{1}D-5p^{1}P^{\circ}$ (11)

Pd II See introduction

Ag I I P 7.54 Anal A List C May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3280.682//	A	1000R	0.00	3.76	½-1½	$5^{2}S-5^{2}P^{\circ}$ (1)
3382.890	A	1000R	0.00	3.65	½-½	
8273.519	A	1000	3.76	5.25	1½-½	$5^{2}P^{\circ}-6^{2}S$ (2)
7687.779	A	500	3.65	5.25	½-½	

Ag II See introduction

.96   Anal A   List D   Aug 1942

Int	E P Low	E P High	J	Multiplet (No)
10R	0.00	3.78	0-1	$5^1S-5^3P^o$ (1)
100R	3.93	6.36	2-1	$5^3P^o-6^3S$ (2)
100R	3.78	6.36	1-1	
50	3.72	6.36	0-1	
100	5.39	7.31	1-2	$5^1P^o-5^1D$ (3)

ntroduction

.76   Anal A   List D   Aug 1942

Int	E P Low	E P High	J	Multiplet (No)
10	0.27	3.01	1½-½	$5^2P^o-6^2S$ (1)
10	0.00	3.01	½-½	

ntroduction

.30   Anal A   List D   Aug 1942

Int	E P Low	E P High	J	Multiplet (No)
700R	0.21	4.31	1-1	$5p^3P-6s^3P^o$ † (1)
2000R	0.42	4.31	2-1	
900R	0.21	4.28	1-0	
500r	1.06	4.77	2-2	$5p^1D-6s^3P^o$ (2)
2000R	1.06	4.31	2-1	
2500R	1.06	4.85	2-1	$5p^1D-6s^1P^o$ (3)
500	2.12	4.31	0-1	$5p^1S-6s^3P^o$ (4)
1000	2.12	4.85	0-1	$5p^1S-6s^1P^o$ (5)

14.57   Anal A   List D   Aug 1942

Int	E P Low	E P High	J	Multiplet (No)
70	7.02	8.93	½-1½	$6^2S-6^2P^o$ (1)
25	7.02	8.83	½-½	
60	7.34	11.02	2½-3½	$p^2\ ^2D-4^2F^o$ (2)
50	7.26	11.02	1½-2½	

.64   Anal A   List D   Sept 1942

Int	E P Low	E P High	J	Multiplet (No)
5	2.28	5.97	1½-2½	$5p^2P^o-6s^4P$ (1)
100	2.02	5.67	½-1½	
250	2.28	5.67	1½-1½	
200r	2.02	5.34	½-½	
200	2.28	5.34	1½-½	
600r	2.28	6.10	1½-1½	$5p^2P^o-6s^2P$ (2)
700r	2.02	5.80	½-½	
50	2.28	5.80	1½-½	
500r	2.02	6.10	½-1½	

ntroduction

.96   Anal B   List D   June 1942

Int	E P Low	E P High	J	Multiplet (No)
100	5.46	6.73	2-3	$6^5S^o-6^5P$ (1)
50	5.46	6.69	2-2	
25	5.46	6.69	2-1	

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Cs I   I P 3.88   Anal A   List D   Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
8521.10 //	A	4000R	0.00	1.45	½-1½	$6^2S-6^2P^o$ (1)
8943.50	A	2000R	0.00	1.38	½-½	
4555.421	B	(2000R)	0.00	2.71	½-1½	$6^2S-7^2P^o$ (2)
4593.195	B	(1000R)	0.00	2.69	½-½	

Cs II   See introduction

Ba I   I P 5.19   Anal A   List C   Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7911.338	A	(200)	0.00	1.56	0-1	$6^1S-6^3P^o$ (1)
5535.484//	A	1000R	0.00	2.23	0-1	$6^1S-6^1P^o$ (2)
3501.107	A	200R	0.00	3.53	0-1	$6^1S-5d6p^1P^o$ (3)
3071.583	A	100R	0.00	4.02	0-1	$6^1S-7^1P^o$ (4)
7059.941	A	(2000)	1.18	2.93	3-4	$5^3D-5d6p^3F^o$ † (5)
7280.298	A	(1000)	1.14	2.83	2-3	
7672.092	A	(600)	1.12	2.72	1-2	
7488.083	A	(200)	1.18	2.83	3-3	
7780.479	A	(400)	1.14	2.72	2-2	
6498.759	A	300r	1.18	3.08	3-3	$5^3D-5d6p^3D^o$ (6)
6527.312	A	250	1.14	3.03	2-2	
6595.326	A	200	1.12	2.99	1-1	
6693.842	A	70	1.18	3.03	3-2	
6675.271	A	80	1.14	2.99	2-1	
6341.682	A	150	1.14	3.08	2-3	
6450.854	A	125	1.12	3.03	1-2	
6110.784	A	300r	1.18	3.20	3-2	$5^3D-5d6p^3P^o$ † (7)
6063.117	A	200	1.14	3.17	2-1	
6019.470	A	100	1.12	3.17	1-0	
5971.699	A	100	1.14	3.20	2-2	
5997.088	A	100	1.12	3.17	1-1	
3993.401	A	80	1.18	4.28	3-4	$5^3D-4^3F^o$ (8)
3935.717	A	50	1.14	4.27	2-3	
3909.910	A	40	1.12	4.27	1-2	
3995.656	A	30	1.18	4.27	3-3	
3937.870	A	20	1.14	4.27	2-2	
5777.622	A	400r	1.67	3.80	2-3	$6^3P^o-6^3D$ † (9)
5519.047	A	200	1.56	3.80	1-2	
5424.551	A	100	1.51	3.79	0-1	
5800.229	A	100	1.67	3.80	2-2	
7905.751	A	500	1.67	3.23	2-1	$6^3P^o-7^3S$ (10)
7392.411	A	400	1.56	3.23	1-1	
7195.235	A	200	1.51	3.23	0-1	

Ba II   I P 9.96   Anal A   List B   Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4554.033//	A	1000R	0.00	2.71	½-1½	$6^2S-6^2P^o$ (1)
4934.086	B	700R	0.00	2.50	½-½	
6141.718	A	600r	0.70	2.71	2½-1½	$5^2D-6^2P^o$ (2)
6496.896	A	600r	0.60	2.50	1½-½	
5853.675	A	200	0.60	2.71	1½-1½	
4899.934	A	35	2.71	5.23	1½-½	$6^2P^o-7^2S$ (3)
4524.928	A	35	2.50	5.23	½-½	
4130.648	A	80	2.71	5.70	1½-2½	$6^2P^o-6^2D$ (4)
3891.781	A	50	2.50	5.67	½-1½	
4166.003	A	20	2.71	5.67	1½-1½	
8710.82	C	(3n)	5.70	7.11	2½-3½	$6^2D-5^2F^o$ (5)
8737.74	C	(3n)	5.67	7.08	1½-2½	
5391.60	D	(10)	5.70	7.99	2½-3½	$6^2D-6^2F^o$ (6)
5361.35	D	(8)	5.67	7.97	1½-2½	
5421.05	D	(2)	5.70	7.97	2½-2½	
4326.74	D	(2)	5.70	8.55	2½-3½	$6^2D-7^2F^o$ (7)
4297.60	D	(2)	5.67	8.54	1½-2½	
6874.09	D	(10)	5.99	7.78	3½-	$4^2F^o-5^2G$ (8)
6769.62	D	(10)	5.96	7.78	2½-	
5480.30	D	(3)	5.99	8.24	3½-2½	$4^2F^o-8^2D$ (9)
5428.79	D	(2)	5.96	8.23	2½-1½	

Ba II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5013.00	D	(10)	5.99	8.45	3½-	$4^2F^o-6^2G$ (10)
4957.15	D	(10)	5.96	8.45	2½-	
4309.32	D	(8)	5.99	8.85	3½-	$4^2F^o-7^2G$ (11)
4267.95	D	(8)	5.96	8.85	2½-	
6378.91	D	(5)	6.17	8.11	1½-½	$7^2P^o-9^2S$ (12)
6135.83	D	(4)	6.10	8.11	½-½	
5981.25	D	(8)	6.17	8.24	1½-2½	$7^2P^o-8^2D$ (13)
5784.18	D	(8)	6.10	8.23	½-1½	
5999.85	D	(3)	6.17	8.23	1½-1½	
4997.81	D	(3)	6.17	8.64	1½-½	$7^2P^o-10^2S$ (14)
4847.14	D	(3)	6.10	8.64	½-½	
4843.46	D	(8)	6.17	8.72	1½-2½	$7^2P^o-9^2D$ (15)
4708.94	D	(8)	6.10	8.72	½-1½	
4850.84	D	(2)	6.17	8.72	1½-1½	
4405.23	D	(4)	6.17	8.98	1½-½	$7^2P^o-11^2S$ (16)
4287.80	D	(3)	6.10	8.98	½-½	
4325.73	D	(6)	6.17	9.03	1½-2½	$7^2P^o-10^2D$ (17)
4216.04	D	(5)	6.10	9.02	½-1½	
4329.62	D	(3)	6.17	9.02	1½-1½	

La I   I P 5.59   Anal A   List C   Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6455.99	A	300	0.13	2.04	2½-3½	$a^2D-z^2F^o$ (1)
6578.51	A	400	0.00	1.88	1½-2½	
7068.37	A	100	0.13	1.88	2½-2½	
5930.61	A	(200)	0.13	2.21	2½-3½	$a^2D-y^2F^o$ (2)
5930.68	A	(100)	0.00	2.08	1½-2½	
6325.90	A	150	0.13	2.08	2½-2½	
5455.14	A	400	0.13	2.39	2½-2½	$a^2D-y^2D^o$ † (3)
5501.34	A	300	0.00	2.24	1½-1½	
5271.18	A	150	0.13	2.47	2½-1½	$a^2D-y^2P^o$ † (4)
4949.76	A	200	0.00	2.49	1½-½	
4280.27	A	100	0.13	3.01	2½-3½	$a^2D-w^2F^o$ † (5)
4187.31	A	125	0.00	2.95	1½-2½	
6709.49	A	200	0.37	2.21	2½-3½	$a^4F-y^2F^o$ † (6)
7045.96	A	300d?	0.33	2.08	1½-2½	
6249.92 //	A	500	0.51	2.48	4½-5½	$a^4F-z^4G^o$ † (7)
6394.23	A	600	0.43	2.36	3½-4½	
6410.98	A	300	0.37	2.30	2½-3½	
6543.17	A	500d	0.33	2.22	1½-2½	
5791.32	A	400d?	0.51	2.64	4½-4½	$a^4F-y^4F^o$ † (8)
5789.22	A	250d?	0.43	2.56	3½-3½	
5769.32	A	80	0.37	2.51	2½-2½	
5740.65	A	100	0.33	2.48	1½-1½	
5211.85	A	300d	0.51	2.88	4½-3½	$a^4F-y^4D^o$ † (9)
5177.30	A	300d	0.43	2.82	3½-2½	
5145.42	A	200	0.37	2.77	2½-1½	
5106.23	A	150d	0.33	2.75	1½-½	
5234.27	A	300d	0.51	2.87	4½-3½	a^4F-1^o † (10)
4570.02	A	250	0.51	3.21	4½-4½	$a^4F-x^4F^o$ † (11)
4567.90	A	200	0.43	3.13	3½-3½	
4549.50	A	50	0.37	3.08	2½-2½	
4494.71	A	30	0.33	3.08	1½-1½	

La II   I P 11.38   Anal A   List B   Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7282.36	A	150	0.24	1.94	4-4	$a^3F-z^3F^o$ † (1)
7483.48	A	30	0.13	1.77	3-3	
7066.24	A	300	0.00	1.75	2-2	
6808.88	A	30	0.13	1.94	3-4	
6954.54	A	20	0.00	1.77	2-3	
6774.28	A	100	0.13	1.95	3-3	$a^3F-z^1F^o$ † (2)
6834.07	A	20	0.24	2.05	4-4	$a^3F-z^1G^o$ † (3)
5797.57	A	150	0.24	2.37	4-4	$a^3F-y^3F^o$ (4)
5805.77	A	120	0.13	2.25	3-3	
5808.31	A	60	0.00	2.12	2-2	
6146.53	A	15	0.24	2.25	4-3	
6172.72	A	10	0.13	2.12	3-2	
5493.45	A	20	0.13	2.37	3-4	
5482.27	A	40	0.00	2.25	2-3	

REVISED MULTIPLET TABLE

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ory f Int	E P Low	E P High	J	Multiplet (No)
10	0.24	2.20	4-4	$a^3F-z^3H^\circ$ (5)
50	0.00	2.33	2-2	$a^3F-z^1D^\circ$ † (6)
300	0.24	2.75	4-5	$a^3F-z^3G^\circ$ (7)
300	0.13	2.63	3-4	
200	0.00	2.52	2-3	
40	0.24	2.63	4-4	
40	0.13	2.52	3-3	
4	0.24	2.52	4-3	
80	0.24	2.78	4-3	$a^3F-z^3D^\circ$ (8)
120	0.13	2.73	3-2	
200	0.00	2.65	2-1	
100	0.13	2.78	3-3	
400	0.00	2.73	2-2	
10	0.00	2.78	2-3	
60	0.00	2.87	2-2	$a^3F-z^3P^\circ$ † (9)
300	0.00	3.02	2-2	$a^3F-y^1D^\circ$ (10)
20?	0.24	3.03	4-3	$a^3F-y^1F^\circ$ † (11)
40	0.00	3.03	2-3	
400	0.24	3.50	4-3	$a^3F-y^3D^\circ$ (12)
300	0.13	3.38	3-2	
100	0.00	3.21	2-1	
30	0.13	3.50	3-3	
80	0.00	3.38	2-2	
8	0.00	3.50	2-3	
300	0.24	3.53	4-4	$a^3F-x^3F^\circ$ (13)
200	0.13	3.31	3-3	
15	0.00	3.26	2-3	
50	0.13	3.26	3-2	
60	0.13	3.53	3-4	
20	0.00	3.31	2-3	
200	0.00	3.39	2-1	$a^3F-z^1P^\circ$ (14)
15	0.13	3.64	3-2	$a^3F-y^3P^\circ$ (15)
6	0.00	3.48	2-1	
8	0.00	3.97	2-1	$a^3F-x^3P^\circ$ (16)
8	0.24	3.98	4-3	$a^3F-x^1F^\circ$ † (17)
50	0.00	3.98	2-3	
10	0.17	1.95	2-3	$a^1D-z^1F^\circ$ (18)
20	0.17	2.25	2-3	$a^1D-y^3F^\circ$ (19)
200	0.17	2.12	2-2	
20	0.17	2.33	2-2	$a^1D-z^1D^\circ$ (20)
50	0.17	2.52	2-3	$a^1D-z^3G^\circ$ (21)
100	0.17	2.78	2-3	$a^1D-z^3D^\circ$ (22)
20	0.17	2.73	2-2	
100	0.17	2.65	2-1	
200	0.17	2.87	2-2	$a^1D-z^3P^\circ$ (23)
50	0.17	2.80	2-1	
500	0.17	3.02	2-2	$a^1D-y^1D^\circ$ (24)
100	0.17	3.03	2-3	$a^1D-y^1F^\circ$ (25)
100	0.17	3.50	2-3	$a^1D-y^3D^\circ$ (26)
20	0.17	3.38	2-2	
100	0.17	3.21	2-1	
300	0.17	3.31	2-3	$a^1D-x^3F^\circ$ (27)
400	0.17	3.26	2-2	
60	0.17	3.39	2-1	$a^1D-z^1P^\circ$ (28)
8	0.17	3.64	2-2	$a^1D-y^3P^\circ$ (29)
10	0.17	3.48	2-1	
40	0.17	3.75	2-1	$a^1D-y^1P^\circ$ (30)
40	0.17	4.10	2-2	$a^1D-x^3P^\circ$ (31)
80	0.17	3.97	2-1	
150	0.17	3.98	2-3	$a^1D-x^1F^\circ$ (32)
300	0.40	2.37	3-4	$a^3D-y^3F^\circ$ (33)
200	0.32	2.25	2-3	
200	0.23	2.12	1-2	
40	0.40	2.25	3-3	
15	0.32	2.12	2-2	
5	0.40	2.20	3-4	$a^3D-z^3H^\circ$ (34)

La II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5880.63	A	50	0.23	2.33	1-2	$a^3D-z^1D^\circ$ † (35)
5183.42	A	400	0.40	2.78	3-3	$a^3D-z^3D^\circ$ (36)
5122.99	A	200	0.32	2.73	2-2	
5114.55	A	200	0.23	2.65	1-1	
5301.97	A	200	0.40	2.73	3-2	
5303.54	A	100	0.32	2.65	2-1	
4946.47	A	50	0.23	2.73	1-2	
4999.46	A	200	0.40	2.87	3-2	$a^3D-z^3P^\circ$ (37)
4970.39	A	100	0.32	2.80	2-1	
4809.00	A	100	0.23	2.80	1-0	
4840.02	A	30	0.32	2.87	2-2	
4804.04	A	80	0.23	2.80	1-1	
4682.12	A	5	0.23	2.87	1-2	
4712.92	A	40	0.40	3.02	3-2	$a^3D-y^1D^\circ$ (38)
4570.97	A	10	0.32	3.02	2-2	
4429.90	A	400	0.23	3.02	1-2	
4699.62	A	50	0.40	3.03	3-3	$a^3D-y^1F^\circ$ (39)
4558.46	A	200	0.32	3.03	2-3	
3988.51	A	500	0.40	3.50	3-3	$a^3D-y^3D^\circ$ (40)
4031.68	A	300	0.32	3.38	2-2	
4151.98	A	250	0.23	3.21	1-1	
4141.73	A	200	0.40	3.38	3-2	
4275.64	A	100	0.32	3.21	2-1	
3886.37	A	150	0.32	3.50	2-3	
3921.54	A	200	0.23	3.38	1-2	
3949.10 //	A	600	0.40	3.53	3-4	$a^3D-x^3F^\circ$ (41)
4123.23	A	400	0.32	3.31	2-3	
4077.35	A	300	0.23	3.26	1-2	
4238.38	A	400	0.40	3.31	3-3	
4196.55	A	250	0.32	3.26	2-2	
4315.90	A	30	0.40	3.26	3-2	
4025.87	A	50	0.32	3.39	2-1	$a^3D-z^1P^\circ$ (42)
3916.05	A	300	0.23	3.39	1-1	
3808.79	A	15	0.40	3.64	3-2	$a^3D-y^3P^\circ$ † (43)
3910.81	A	10 l	0.32	3.48	2-1	
3715.53	A	50	0.32	3.64	2-2	
3601.07	A	20nl	0.32	3.75	2-1	$a^3D-y^1P^\circ$ (44)
3512.93	A	10	0.23	3.75	1-1	
3337.49	A	300	0.40	4.10	3-2	$a^3D-x^3P^\circ$ (45)
3380.91	A	300	0.32	3.97	2-1	
3344.56	A	200	0.23	3.92	1-0	
3265.67	A	600	0.32	4.10	2-2	
3303.11	A	150	0.23	3.97	1-1	
3193.02	A	25	0.23	4.10	1-2	
3453.17	A	50	0.40	3.98	3-3	$a^3D-x^1F^\circ$ (46)
3376.33	A	50	0.32	3.98	2-3	
6129.57	A	50	0.77	2.78	2-3	$a^3P-z^3D^\circ$ (47)
6100.37	A	30	0.71	2.73	1-2	
6174.15	A	6	0.65	2.65	0-1	
*6296.08	A	300	0.77	2.73	2-2	
6358.12	A	30	0.71	2.65	1-1	
6570.96	A	?	0.77	2.65	2-1	
5874.00	A	6	0.77	2.87	2-2	$a^3P-z^3P^\circ$ † (48)
6067.13	A	6	0.77	2.80	2-1	
5892.66	A	4	0.71	2.80	1-0	
5703.32	A	20	0.71	2.87	1-2	
5727.29	A	20	0.65	2.80	0-1	
5464.37	A	25	0.77	3.03	2-3	$a^3P-y^1F^\circ$ (49)
4526.12	A	200	0.77	3.50	2-3	$a^3P-y^3D^\circ$ (50)
4613.38	A	200	0.71	3.38	1-2	
4824.05	A	100	0.65	3.21	0-1	
4724.42	A	40	0.77	3.38	2-2	
4935.61	A	10	0.71	3.21	1-1	
5062.91	A	20	0.77	3.21	2-1	
*4850.58	A	30	0.77	3.31	2-3	$a^3P-x^3F^\circ$ (51)
4830.51	A	10	0.71	3.26	1-2	
4716.44	A	80	0.77	3.39	2-1	$a^3P-z^1P^\circ$ (52)
4605.78	A	100	0.71	3.39	1-1	
4508.48	A	10	0.65	3.39	0-1	
4296.05	A	300	0.77	3.64	2-2	$a^3P-y^3P^\circ$ (53)
4455.79	A	50	0.71	3.48	1-1	
4559.28	A	100	0.77	3.48	2-1	
4580.05	A	150	0.71	3.40	1-0	
4204.03	A	100	0.71	3.64	1-2	
4364.66	A	100	0.65	3.48	0-1	
4143.77	A	15	0.77	3.75	2-1	$a^3P-y^1P^\circ$ (54)
4058.08	A	5	0.71	3.75	1-1	

La II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3705.81	A	80	0.77	4.10	2-2	$a^3P-x^3P^\circ$ (55)
3780.67	A	50?	0.71	3.97	1-1	
3854.91	A	30	0.77	3.97	2-1	
3835.09	A	50	0.71	3.92	1-0	
3637.15	A	40	0.71	4.10	1-2	
3714.87	A	40	0.65	3.97	0-1	
5380.97	A	100	0.91	3.21	0-1	$a^1S-y^3D^\circ$ (56)
4991.27	A	80	0.91	3.39	0-1	$a^1S-z^1P^\circ$ (57)
4354.40	A	200	0.91	3.75	0-1	$a^1S-y^1P^\circ$ (58)
4036.59	A	15d	0.91	3.97	0-1	$a^1S-x^3P^\circ$ (59)
9657.00	A	20	0.92	2.20	4-4	$a^1G-z^3H^\circ$ (60)
6636.53	A	5	0.92	2.78	4-3	$a^1G-z^3D^\circ$ (61)
5863.70	A	80	0.92	3.03	4-3	$a^1G-y^1F^\circ$ (62)
4796.67	A	25	0.92	3.50	4-3	$a^1G-y^3D^\circ$ (63)
4739.80	A	15	0.92	3.53	4-4	$a^1G-x^3F^\circ$ † (64)
4748.73	A	150	0.92	3.52	4-5	$a^1G-z^1H^\circ$ (65)
4042.91	A	300	0.92	3.98	4-3	$a^1G-x^1F^\circ$ (66)
6958.11	A	100	1.25	3.02	2-2	$b^1D-y^1D^\circ$ (67)
5486.86	A	5	1.25	3.50	2-3	$b^1D-y^3D^\circ$ † (68)
*6296.08	A	300	1.25	3.21	2-1	
5971.09	A	8	1.25	3.31	2-3	$b^1D-x^3F^\circ$ (69)
6126.09	A	50	1.25	3.26	2-2	
5769.06	A	60	1.25	3.39	2-1	$b^1D-z^1P^\circ$ (70)
5535.66	A	80	1.25	3.48	2-1	$b^1D-y^3P^\circ$ † (71)
4934.83	A	100	1.25	3.75	2-1	$b^1D-y^1P^\circ$ (72)
4530.54	A	15	1.25	3.97	2-1	$b^1D-x^3P^\circ$ (73)
*4522.37	A	400	1.25	3.98	2-3	$b^1D-x^1F^\circ$ (74)
4286.97	A	300	1.94	4.82	4-5	$z^3F^\circ-e^3G$ † (75)
4385.20	A	40	1.77	4.59	3-4	
4692.50	A	200	1.75	4.38	2-3	
4655.49	A	400	1.94	4.59	4-4	
4743.08	A	250	1.77	4.38	3-3	
4525.31	A	100	1.94	4.67	4-4	$z^3F^\circ-e^3F$ (76)
4437.53	A	100	1.77	4.56	3-3	
4619.87	A	300	1.75	4.42	2-2	
4703.27	A	150	1.94	4.56	4-3	
4668.91	A	250	1.77	4.42	3-2	
4269.50	A	300	1.77	4.67	3-4	
4383.44	A	100	1.75	4.56	2-3	
4647.50	A	100	1.94	4.59	4-3	$z^3F^\circ-e^1F$ (77)
4378.10	A	50	1.77	4.59	3-3	
4334.96	A	100	1.75	4.59	2-3	
4217.56	A	200	1.94	4.86	4-3	$z^3F^\circ-e^3D$ † (78)
4192.35	A	100	1.77	4.72	3-2	
4099.54	A	150	1.75	4.76	2-1	
3994.50	A	10	1.77	4.86	3-3	
4152.78	A	100	1.75	4.72	2-2	
4249.99	A	100	1.94	4.84	4-4	$z^3F^\circ-e^1G$ (79)
4023.58	A	40	1.77	4.84	3-4	
4671.82	A	200	1.95	4.59	3-4	$z^1F^\circ-e^3G$ (80)
5080.21	A	40	1.95	4.38	3-3	
4540.71	A	10	1.95	4.67	3-4	$z^1F^\circ-e^3F$ † (81)
4719.93	A	150	1.95	4.56	3-3	
4663.76	A	300	1.95	4.59	3-3	$z^1F^\circ-e^1F$ (82)
4230.95	A	150	1.95	4.86	3-3	$z^1F^\circ-e^3D$ (83)
4263.59	A	200	1.95	4.84	3-4	$z^1F^\circ-e^1G$ (84)
4050.08	A	200	1.95	4.99	3-2	$z^1F^\circ-e^1D$ (85)
4859.18	A	5n	2.05	4.59	4-4	$z^1G^\circ-e^3G$ † (86)
5302.62	A	150	2.05	4.38	4-3	

atory Ref	Int	E P Low	High	J	Multiplet (No)
tinued					
A	50	2.05	4.67	4-4	$z^1G^\circ-e^3F$
A	10	2.05	4.56	4-3	(87)
A	30	2.05	4.59	4-3	$z^1G^\circ-e^1F$ (88)
A	30	2.05	4.84	4-4	$z^1G^\circ-e^1G$ (89)
A	30 l	2.37	4.82	4-5	$y^3F^\circ-e^3G$
A	40	2.25	4.59	3-4	(90)
A	25	2.12	4.38	2-3	
A	40	2.37	4.59	4-4	
A	8	2.25	4.38	3-3	
A	50	2.37	4.67	4-4	$y^3F^\circ-e^3F$ †
A	100	2.25	4.56	3-3	(91)
A	100	2.12	4.42	2-2	
A	40	2.37	4.86	4-3	$y^3F^\circ-e^3D$ †
A	40	2.25	4.72	3-2	(92)
A	40	2.12	4.76	2-1	
A	50	2.37	4.84	4-4	$y^3F^\circ-e^1G$ (93)
A	10	2.25	4.99	3-2	$y^3F^\circ-e^1D$ (94)
A	500	2.44	4.82	6-5	$z^3H^\circ-e^3G$
A	200	2.29	4.59	5-4	(95)
A	100	2.20	4.38	4-3	
A	10	2.29	4.82	5-5	
A	10	2.20	4.59	4-4	
A	300	2.29	4.67	5-4	$z^3H^\circ-e^3F$
A	40 l	2.20	4.56	4-3	(96)
A	150	2.20	4.59	4-3	$z^3H^\circ-e^1F$ (97)
A	5	2.29	4.84	5-4	$z^3H^\circ-e^1G$ (98)
A	50	2.33	4.59	2-3	$z^1D^\circ-e^1F$ (99)
A	20 l	2.33	4.72	2-2	$z^1D^\circ-e^3D$ †
A	20 l	2.33	4.76	2-1	(100)
A	80	2.33	4.99	2-2	$z^1D^\circ-e^1D$ (101)
A	5	2.33	6.44	2-3	$z^1D^\circ-f^1F$ (102)
A	120 l	2.75	4.82	5-5	$z^3G^\circ-e^3G$ †
A	200	2.63	4.59	4-4	(103)
A	100	2.52	4.38	3-3	
A	80	2.75	4.59	5-4	
A	10 n	2.63	4.82	4-5	
A	200	2.75	4.67	5-4	$z^3G^\circ-e^3F$ †
A	400	2.63	4.56	4-3	(104)
A	250	2.52	4.42	3-2	
A	20	2.52	4.59	3-3	$z^3G^\circ-e^1F$ (105)
A	10	2.63	4.86	4-3	$z^3G^\circ-e^3D$
A	20	2.52	4.72	3-2	(106)
A	40 l	2.75	4.84	5-4	$z^3G^\circ-e^1G$ (107)
A	6	2.78	4.59	3-4	$z^3D^\circ-e^3G$ † (108)
A	?	2.78	4.67	3-4	$z^3D^\circ-e^3F$
A	40	2.73	4.56	2-3	(109)
A	25	2.65	4.42	1-2	
A	50	2.78	4.59	3-3	$z^3D^\circ-e^1F$ † (110)
A	30	2.78	4.86	3-3	$z^3D^\circ-e^3D$ †
A	50 l	2.73	4.72	2-2	(111)
A	20	2.65	4.76	1-1	
A	30	2.78	4.72	3-2	
A	10	2.73	4.76	2-1	
A	10	2.73	4.99	2-2	$z^3D^\circ-e^1D$ † (112)
A	10 l	2.78	6.32	3-3	$z^3D^\circ-f^3D$ †
A	5	2.73	6.32	2-3	(113)
A	6	2.78	6.63	3-3	$z^3D^\circ-g^3D$ †
A	5	2.73	6.51	2-2	(114)
A	10n	2.65	6.44	1-1	

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
La II continued						
3049.39	A	5	2.78	6.83	3-4	$z^3D^\circ-f^3F$ †
3054.02	A	6	2.73	6.77	2-3	(115)
3081.42	A	6n	2.65	6.65	1-2	
3022.26	A	5nl	2.73	6.81	2-2	$z^3D^\circ-g^1D$ (116)
6188.09	A	100 l	2.87	4.86	2-3	$z^3P^\circ-e^3D$ †
6443.05	A	50 n	2.80	4.72	1-2	(117)
6307.25	A	20 n	2.80	4.76	0-1	
6315.79	A	50	2.80	4.76	1-1	
5808.63	A	8	2.87	4.99	2-2	$z^3P^\circ-e^1D$ (118)
3460.31	A	5 l	2.87	6.44	2-3	$z^3P^\circ-f^1F$ (119)
3283.95	A	8 n	2.87	6.63	2-3	$z^3P^\circ-g^3D$ †
3329.07	A	8	2.80	6.51	1-2	(120)
3326.21	A	5	2.87	6.58	2-1	$z^3P^\circ-e^1P$ † (121)
3212.56	A	5	2.87	6.71	2-1	$z^3P^\circ-e^3S$ † (122)
3932.53	A	10 l	3.02	6.16	2-2	$y^1D^\circ-f^3D$ † (123)
3694.27	A	7 n	3.02	6.36	2-2	$y^1D^\circ-f^1D$ (124)
3612.34	A	50	3.02	6.44	2-3	$y^1D^\circ-f^1F$ (125)
3420.54	A	5 n	3.02	6.63	2-3	$y^1D^\circ-g^3D$ † (126)
3520.72	A	10 nl	3.02	6.53	2-3	$y^1D^\circ-f^3G$ (127)
3397.77	A	40 nl	3.02	6.65	2-2	$y^1D^\circ-f^3F$ (128)
6718.68	A	60	3.03	4.86	3-3	$y^1F^\circ-e^3D$ † (129)
6801.38	A	5	3.03	4.84	3-4	$y^1F^\circ-e^1G$ (130)
6273.76	A	100	3.03	4.99	3-2	$y^1F^\circ-e^1D$ (131)
3427.57	A	8	3.03	6.63	3-3	$y^1F^\circ-g^3D$ (132)
4363.05	A	50 l	3.50	6.32	3-3	$y^3D^\circ-f^3D$
4443.94	A	20 nl	3.38	6.16	2-2	(133)
4207.61	A	10 l	3.21	6.14	1-1	
4634.95	A	25 l	3.50	6.16	3-2	
4474.03	A	10	3.38	6.14	2-1	
m4193.37	P	La+	3.38	6.32	2-3	
4180.97	A	12 l	3.21	6.16	1-2	
3939.85	A	20 l	3.50	6.63	3-3	$y^3D^\circ-g^3D$ †
3816.25	A	10 n	3.21	6.44	1-1	(134)
3925.09	A	5	3.38	6.53	2-3	$y^3D^\circ-f^3G$ (135)
3701.81	A	40 l	3.50	6.83	3-4	$y^3D^\circ-f^3F$ †
3641.66	A	50 l	3.38	6.77	2-3	(136)
3581.68	A	20 nl	3.21	6.65	1-2	
3731.42	A	8 n	3.50	6.80	3-4	$y^3D^\circ-e^3H$ (137)
4411.21	A	25 nl	3.53	6.32	4-3	$x^3F^\circ-f^3D$ †
4337.78	A	10 l	3.31	6.16	3-2	(138)
4098.73	A	5	3.31	6.32	3-3	
3981.36	A	10 l	3.26	6.36	2-2	$x^3F^\circ-f^1D$ (139)
3979.08	A	8 l	3.53	6.63	4-3	$x^3F^\circ-g^3D$ † (140)
3864.49	A	100 l	3.53	6.72	4-5	$x^3F^\circ-f^3G$ †
3773.12	A	150 l	3.31	6.58	3-4	(141)
3780.53	A	50 ?	3.26	6.53	2-3	
3736.41	A	15 l	3.53	6.83	4-4	$x^3F^\circ-f^3F$ †
3570.10	A	30 nl	3.31	6.77	3-3	(142)
3474.84	A	8 l	3.26	6.81	2-2	$x^3F^\circ-g^1D$ † (143)
3423.9	A	5	3.31	6.92	3-4	$x^3F^\circ-f^1G$ † (144)
2985.43	A	5	3.26	7.39	2-2	$x^3F^\circ-h^1D$ (145)
4481.21	A	25 nl	3.39	6.14	1-1	$z^1P^\circ-f^3D$ (146)
3059.91	A	8	3.39	7.42	1-0	$z^1P^\circ-f^3P$ † (147)

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
La II continued						
°4600.59	A	5n	(3.64	6.32	2-3	$y^3P^\circ-f^3D$ †
			3.48	6.16	1-2	(148)
4538.87	A	8nl	3.64	6.36	2-2	$y^3P^\circ-f^1D$ (149)
4132.50	A	10nl	3.64	6.63	2-3	$y^3P^\circ-g^3D$ (150)
3767.05	A	5n	3.64	6.92	2-2	$y^3P^\circ-e^3P$ †
3885.09	A	4	3.64	6.82	2-1	(151)
9346.69	A	15	3.52	4.84	5-4	$z^1H^\circ-e^1G$ (152)
4880.20	A	10n	4.10	6.63	2-3	$x^3P^\circ-g^3D$ † (153)
4502.16	A	10nl	3.97	6.71	1-1	$x^3P^\circ-e^3S$ (154)
3411.76	A	20nl	4.10	7.72	2-2	$x^3P^\circ-f^3P$ †
3580.10	A	8n	4.10	7.55	2-1	(155)
3578.89	A	5n	3.97	7.42	1-0	
3294.44	A	10	3.97	7.72	1-2	
3407.00	A	8nl	3.92	7.55	0-1	
3217.12	A	8n	4.10	7.94	2-2	$x^3P^\circ-g^3P$ †
3112.63	A	8n	3.97	7.94	1-2	(156)
3174.88	A	10nl	4.10	7.99	2-3	$x^3P^\circ-h^3D$ †
3191.39	A	10n	4.10	7.97	2-2	(157)
5173.83	A	25 l	3.98	6.36	3-2	$x^1F^\circ-f^1D$ (158)
5014.45	A	30nl	3.98	6.44	3-3	$x^1F^\circ-f^1F$ (159)
4194.36	A	30n	3.98	6.92	3-4	$x^1F^\circ-f^1G$ (160)
4562.5	A	5n	4.38	7.08	3-3	e^3G-1° (161)
5066.99	A	20n	4.82	7.25	5-4	e^3G-2° (162)
4241.20	A	15nl	4.59	7.50	4-4	e^3G-4° † (163)
5107.54	A	6n	4.67	7.08	4-3	e^3F-1° (164)
4304.11	A	10nl	4.67	7.53	4-	e^3F-5° † (165)
4113.28	A	40 l	4.59	7.59	3-	e^1F-6° (166)
4131.74	A	5n	4.86	7.85	3-	e^3D-7° (167)
3817.24	A	8n	4.72	7.95	2-3	e^3D-8° (168)

Strongest Unclassified Lines of La II
(Some may be La III)

5217.83	A	10n
4516.38	A	5nl
4310.22	A	50nl
4201.50	A	6n
4193.34	A	5
4161.94	A	8n
4133.33	A	6nl
4007.64	A	7n
3963.04	A	5 l
3962.03	A	10 l
3747.96	A	5 l
3665.22	A	10 l
3610.25	A	30 l
3298.72	A	5 n
3208.13	A	6
3018.95	A	6nl
3004.68	A	5n

La III I P 19.1 Anal C List A Nov 1942

3171.68	A	300	1.68	5.57	$\frac{1}{2}-1\frac{1}{2}$	$6^2S-6^2P^\circ$
3517.14	A	200	1.68	5.19	$\frac{1}{2}-\frac{1}{2}$	(1)

Ce I No analysis May 1942 (Temperature Class)

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ry Int	E P Low	E P High	J	Multiplet (No)
Anal B	List B	Dec 1941		
600	0.38	3.33	6½-7½	$a^4H-z^4I^\circ$ (1)
200	0.20	3.11	5½-6½	
100	0.04	2.90	4½-5½	
400	0.00	2.71	3½-4½	
150	0.38	3.11	6½-6½	
250	0.20	2.90	5½-5½	
500	0.04	2.71	4½-4½	
200	0.38	3.18	6½-6½	$a^4H-z^4H^\circ$ (2)
200	0.20	3.02	5½-5½	
200	0.04	2.91	4½-4½	
400	0.00	2.77	3½-3½	
(2)	0.38	3.02	6½-5½	
60	0.20	2.91	5½-4½	
125	0.04	2.77	4½-3½	
200	0.20	3.18	5½-6½	
400	0.04	3.02	4½-5½	
200	0.00	2.91	3½-4½	
100	0.38	3.14	6½-5½	$a^4H-z^2H^\circ$ (3)
75	0.20	2.98	5½-4½	
(25)	0.20	3.14	5½-5½	
60	0.04	2.98	4½-4½	
	0.04	3.14	4½-5½	
(10)	0.00	2.98	3½-4½	
500	0.38	3.37	6½-5½	$a^4H-z^4G^\circ$ (4)
150	0.20	3.20	5½-4½	
500	0.04	3.02	4½-3½	
200	0.00	3.03	3½-2½	
150	0.00	3.02	3½-3½	
125	0.38	3.39	6½-6½	$a^4H-z^2I^\circ$ (5)
(8)	0.38	3.20	6½-5½	
50	0.43	3.11	5½-6½	$a^2H-z^4I^\circ$ (6)
200	0.22	2.90	4½-5½	
75	0.43	3.02	5½-5½	$a^2H-z^4H^\circ$ (7)
(10)	0.22	2.91	4½-4½	
125	0.43	3.14	5½-5½	$a^2H-z^2H^\circ$ (8)
200	0.22	2.98	4½-4½	
	0.43	2.98	5½-4½	
100	0.22	3.14	4½-5½	
60	0.22	3.20	4½-4½	$a^2H-z^4G^\circ$ (9)
200	0.43	3.39	5½-6½	$a^2H-z^2I^\circ$ (10)
150	0.22	3.20	4½-5½	
50	0.43	3.20	5½-5½	
30	0.43	3.31	5½-4½	$a^2H-z^2G^\circ$ (11)
200	0.22	3.21	4½-3½	
200	0.43	3.52	5½-4½	$a^2H-y^2G^\circ$ (12)
200	0.22	3.37	4½-3½	
25	0.39	2.71	4½-4½	$b^2H-z^4I^\circ$ (13)
20	0.55	2.98	5½-4½	$b^2H-z^2H^\circ$ (14)
75	0.90	3.33	8½-7½	$a^4K-z^4I^\circ$ (15)
60	0.73	3.11	7½-6½	
75	0.56	2.90	6½-5½	
50	0.40	2.71	5½-4½	
25	0.73	3.18	7½-6½	$a^4K-z^4H^\circ$ (16)
20	0.56	3.02	6½-5½	
(5)	0.61	3.37	4½-5½	$a^4F-z^4G^\circ$ (17)
—	0.58	3.20	3½-4½	
(8)	0.48	3.02	2½-3½	
50	0.44	3.03	1½-2½	
25	0.58	3.21	3½-3½	$a^4F-z^2G^\circ$ (18)
100	0.61	3.39	4½-5½	$a^4F-y^4G^\circ$ (19)
	0.58	3.36	3½-4½	
60	0.48	3.50	2½-3½	
60	0.44	3.22	1½-2½	
	0.61	3.36	4½-4½	
30	0.58	3.50	3½-3½	
25	0.48	3.22	2½-2½	
(18)	0.61	3.50	4½-3½	
60	0.48	3.24	2½-1½	$a^4F-z^4D^\circ$ (20)
50	0.61	3.52	4½-4½	$a^4F-y^2G^\circ$ (21)
(25)	0.58	3.37	3½-3½	
50	0.48	3.37	2½-3½	
(20)	0.61	3.60	4½-4½	$a^4F-z^4F^\circ$ (22)
50	0.58	3.61	3½-3½	
(20)	0.48	3.47	2½-2½	
150	0.44	3.44	1½-1½	
(18)	0.48	3.44	2½-1½	
15	0.92	3.33	7½-7½	$a^4I-z^4I^\circ$ (23)
15	0.77	3.11	6½-6½	
80	0.62	2.90	5½-5½	
40	0.53	2.71	4½-4½	
Ce I	0.92	3.18	7½-6½	$a^4I-z^4H^\circ$ (24)
30	0.77	3.02	6½-5½	
100	0.62	2.91	5½-4½	
150	0.53	2.77	4½-3½	
75	0.92	4.59	7½-7½	$a^4I-y^4I^\circ$ (25)
60	0.77	4.47	6½-6½	
50	0.62	4.35	5½-5½	
50	0.53	4.24	4½-4½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
5518.491	A	10	0.67	2.91	3½-4½	$a^4G-z^4H^\circ$ (26)
5610.257	C	20	0.57	2.77	2½-3½	
4624.899	A	60	0.64	3.31	3½-4½	$a^2F-z^2G^\circ$ (27)
4148.901	A	(25)	0.61	3.58	2½-2½	$a^2F-z^4D^\circ$ (28)
4167.804	A	(12)	0.64	3.60	3½-4½	$a^2F-z^4F^\circ$ (29)
4110.381	A	80	0.61	3.61	2½-3½	
4155.532	A	(6)	0.64	3.61	3½-3½	
6035.487	C	(4)	1.13	3.18	6½-6½	$b^4H-z^4H^\circ$ † (30)
6034.204	C	(4)	0.98	3.02	5½-5½	
5975.830	A	20	0.85	2.91	4½-4½	
6043.386	A	60	0.72	2.77	3½-3½	
4893.968	C	15	0.85	3.37	4½-3½	$b^4H-y^2G^\circ$ (31)
5613.698	A	(5)	0.94	3.14	6½-5½	$a^2I-z^2H^\circ$ (32)
5768.895	C	20	0.84	2.98	5½-4½	
4410.641	C	30	0.87	3.66	4½-3½	$a^2G-y^2F^\circ$ (33)
4339.317	A	30	0.87	3.71	4½-4½	$a^2G-x^2G^\circ$ (34)
4062.223	A	60	0.88	3.92	3½-3½	
4117.013	C	75	0.87	3.86	4½-5½	$a^2G-y^2H^\circ$ (35)
4163.516	A	(20)	0.88	3.85	3½-4½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II Group II See Introduction						
3562.091	A	(6)	(0.52	3.98)	6½-7½	$a^4H^\circ-z^4I$ † (36)
4053.506	A	100	(0.00	3.04)	3½-4½	
3848.597	C	150	(0.52	3.73)	6½-6½	
4080.435	B	(5)	(0.36	3.38)	5½-5½	
4222.599	A	300	(0.12	3.04)	4½-4½	
3718.380	C	200	(0.52	3.84)	6½-5½	$a^4H^\circ-z^4G$ † (37)
3803.097	A	200	(0.36	3.60)	5½-4½	
3815.831	C	250	(0.12	3.36)	4½-3½	
3942.151	B	125	(0.00	3.13)	3½-2½	
3653.108	A	125	(0.36	3.73)	5½-4½	$a^4H^\circ-z^4F$ (38)
3668.719	A	(12)	(0.00	3.36)	3½-2½	
3853.164	A	125	(0.00	3.20)	3½-3½	$a^4H^\circ-z^2G$ (39)
3709.286	A	400	(0.52	3.85)	6½-6½	$a^4H^\circ-z^4H$ † (40)
3667.981	A	400	(0.36	3.72)	5½-5½	
3709.933	A	500	(0.12	3.45)	4½-4½	
3716.365	A	600	(0.00	3.32)	3½-3½	
3764.117	A	150	(0.36	3.63)	5½-5½	$a^4H^\circ-y^2H$ (41)
3660.641	C	250	(0.12	3.49)	4½-3½	$a^4H^\circ-116$ † (42)
3927.383	B	(4)	(0.36	3.50)	5½-4½	$a^4H^\circ-x^2H$ (43)
3534.051	C	300	(0.52	4.01)	6½-5½	$a^4H^\circ-y^4G$ (44)
3545.603	B	(3)	(0.36	3.84)	5½-4½	
3426.208	C	250	(0.12	3.72)	4½-3½	
3485.054	C	400	(0.00	3.54)	3½-2½	
3441.210	C	150	(0.36	3.94)	5½-4½	$a^4H^\circ-159$ (45)
3393.920	C	50	(0.52	4.16)	6½-6½	$a^4H^\circ-z^2I$ (46)
3142.312	A	(25)	(0.12	4.05)	4½-5½	
3728.423	A	250	(0.67	3.98)	7½-7½	$a^4I^\circ-z^4I$ † (47)
3788.753	A	75	(0.47	3.73)	6½-6½	
4028.411	A	150	(0.32	3.38)	5½-5½	
4299.362	B	60	(0.17	3.04)	4½-4½	
3757.862	A	(15)	(0.32	3.60)	5½-4½	$a^4I^\circ-z^4G$ (48)
3878.372	A	150	(0.17	3.36)	4½-3½	
4024.491	C	60	(0.47	3.53)	6½-5½	$a^4I^\circ-z^2H$ (49)
3834.556	B	100	(0.32	3.53)	5½-5½	
3931.088	A	125	(0.17	3.31)	4½-4½	
*3672.166§	B	(5d)	(0.17	3.53)	4½-5½	
3889.990	C	300	(0.67	3.85)	7½-6½	$a^4I^\circ-z^4H$ (50)
3795.256	C	(5)	(0.47	3.72)	6½-5½	
3940.338	B	100	(0.32	3.45)	5½-4½	
3922.005	C	(2s)	(0.17	3.32)	4½-3½	
3653.670	C	250	(0.47	3.85)	6½-6½	
3769.046	B	(5)	(0.17	3.45)	4½-4½	
3560.798	C	500	(0.67	4.14)	7½-6½	$a^4I^\circ-y^4H$ (51)
3577.458	C	500	(0.47	3.92)	6½-5½	
3698.650	B	(5)	(0.32	3.69)	5½-4½	
3786.632	B	150	(0.17	3.43)	4½-3½	
3426.583	B	(4)	(0.32	3.92)	5½-5½	
3507.945	A	125	(0.17	3.69)	4½-4½	
3655.851	A	500	(0.32	3.69)	5½-4½	
3898.273	C	100	(0.47	3.63)	6½-5½	$a^4I^\circ-y^2H$ † (52)
3719.797	A	(15)	(0.32	3.63)	5½-5½	
3718.190	B	150	(0.17	3.49)	4½-3½	$a^4I^\circ-116$ (53)
3659.227	A	125	(0.17	3.55)	4½-3½	$a^4I^\circ-123$ (54)
3520.523	A	150	(0.17	3.68)	4½-3½	$a^4I^\circ-132$ (55)
3448.721	A	(15)	(0.32	3.90)	5½-4½	$a^4I^\circ-156$ (56)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Ce II continued						
3942.746	C	150	(0.85	3.98)	6½-7½	$b^4H^\circ-z^4I$ (57)
4075.714	C	150	(0.70	3.73)	5½-6½	
3999.242	B	500	(0.29	3.38)	4½-5½	
4386.835	A	(15)	(0.23	3.04)	3½-4½	
4296.786	A	(5)	(0.85	3.73)	6½-6½	
4486.909	A	150	(0.29	3.04)	4½-4½	
4242.723	A	(15)	(0.29	3.20)	4½-3½	$b^4H^\circ-z^2G$ (58)
4349.789	A	100	(0.70	3.53)	5½-5½	$b^4H^\circ-z^2H$ (59)
4087.297	B	(4)	(0.29	3.31)	4½-4½	
3808.124	B	300	(0.29	3.53)	4½-5½	
4123.872	A	150	(0.85	3.85)	6½-6½	$b^4H^\circ-z^4H$ (60)
4083.233	A	200	(0.70	3.72)	5½-5½	
3912.424	B	300	(0.29	3.45)	4½-4½	
4077.470	B	75	(0.29	3.32)	4½-3½	
3919.813	A	100	(0.70	3.85)	5½-6½	
3836.112	A	(15)	(0.23	3.45)	3½-4½	
3931.369	B	100	(0.29	3.43)	4½-3½	$b^4H^\circ-y^4H$ (61)
3854.322	B	100	(0.23	3.43)	3½-3½	
3854.187	B	100	(0.23	3.43)	3½-2½	$b^4H^\circ-112$ (62)
3694.911	A	60	(0.29	3.63)	4½-5½	$b^4H^\circ-y^2H$ (63)
4407.278	A	(40)	(0.70	3.50)	5½-4½	$b^4H^\circ-x^2H$ † (64)
3908.408	A	125	(0.85	4.01)	6½-5½	$b^4H^\circ-y^4G$ (65)
3646.965	C	200	(0.29	3.68)	4½-3½	$b^4H^\circ-131$ † (66)
3501.453	B	60	(0.23	3.76)	3½-2½	$b^4H^\circ-141$ (67)
3279.842	B	125	(0.29	4.06)	4½-3½	$b^4H^\circ-171$ † (68)
3164.154	A	200	(0.29	4.19)	4½-3½	$b^4H^\circ-186$ † (69)
3146.407	B	200	(0.29	4.22)	4½-3½	$b^4H^\circ-188$ † (70)
3622.145	A	100	(0.85	4.26)	6½-6½	$b^4H^\circ-y^2I$ (71)
2990.873	A	80	(0.29	4.42)	4½-4½	$b^4H^\circ-209$ (72)
3272.253	A	250	(0.70	4.47)	5½-4½	$b^4H^\circ-213$ (73)
3169.183	C	150	(0.70	4.59)	5½-4½	$b^4H^\circ-221$ (74)
3218.944	C	200	(0.85	4.69)	6½-5½	$b^4H^\circ-229$ (75)
3201.714	C	300	(0.85	4.71)	6½-5½	$b^4H^\circ-232$ (76)
4117.288	A	(20)	(0.74	3.73)	3½-4½	$a^4D^\circ-z^4F$ (77)
4253.356	A	50	(0.46	3.36)	1½-2½	
4246.711	A	(30)	(0.46	3.17)	1½-1½	
3914.949	A	(18)	(0.46	3.61)	1½-2½	$a^4D^\circ-126$ (78)
4193.094	C	50	(0.74	3.68)	3½-3½	$a^4D^\circ-132$ (79)
3234.274	C	300	(0.26	4.08)	½-1½	$a^4D^\circ-173$ (80)
3933.731	C	(60)	(0.70	3.84)	4½-5½	$a^4F^\circ-z^4G$ (81)
4046.341	B	100	(0.55	3.60)	3½-4½	
4071.814	C	150	(0.33	3.36)	2½-3½	
4391.661	A	250	(0.32	3.13)	1½-2½	
4255.784	A	60	(0.70	3.60)	4½-4½	
4398.787	A	(20)	(0.55	3.36)	3½-3½	
4399.203	A	60	(0.33	3.13)	2½-2½	
4068.836	A	75	(0.70	3.73)	4½-4½	$a^4F^\circ-z^4F$ † (82)
4330.445	A	30	(0.32	3.17)	1½-1½	
4337.777	A	125	(0.33	3.17)	2½-1½	
3876.974	A	(15)	(0.55	3.73)	3½-4½	
4054.991	A	50	(0.32	3.36)	1½-2½	
4119.877	A	(20)	(0.33	3.32)	2½-3½	$a^4F^\circ-z^4H$ † (83)
3967.048	A	100	(0.33	3.44)	2½-1½	$a^4F^\circ-z^2D$ (84)
3960.914	A	125	(0.32	3.44)	1½-1½	
4193.874	A	(35)	(0.55	3.49)	3½-3½	$a^4F^\circ-116$ (85)
4187.323	A	(35)	(0.55	3.50)	3½-4½	$a^4F^\circ-x^2H$ (86)
3882.446	A	75	(0.32	3.50)	1½- ½	$a^4F^\circ-z^4D$ (87)
3631.194	B	125	(0.33	3.72)	2½-3½	$a^4F^\circ-y^4G$ (88)
4336.255	A	50	(0.70	3.55)	4½-3½	$a^4F^\circ-123$ (89)
4119.015	A	(25)	(0.55	3.55)	3½-3½	
3722.759	A	(12)	(0.32	3.64)	1½-1½	$a^4F^\circ-129$ (90)
4098.981	A	(15)	(0.70	3.71)	4½-3½	$a^4F^\circ-136$ † (91)
3904.340	B	(5)	(0.55	3.71)	3½-3½	
3760.694	A	(6)	(0.55	3.83)	3½-2½	$a^4F^\circ-148$ (92)
3519.077	A	(25)	(0.33	3.83)	2½-2½	
3276.251	A	(18)	(0.33	4.09)	2½-2½	$a^4F^\circ-175$ (93)
3436.304	A	(15)	(0.55	4.14)	3½-2½	$a^4F^\circ-180$ † (94)
3229.363	A	(25)	(0.32	4.14)	1½-2½	
*3227.114§	A	300	(0.32	4.14)	1½-1½	$a^4F^\circ-181$ (95)
3405.977	C	100	(0.55	4.17)	3½-4½	$a^4F^\circ-184$ (96)
3189.638	A	(30)	(0.33	4.19)	2½-3½	$a^4F^\circ-186$ (97)
3379.172	C	100	(0.55	4.20)	3½-4½	$a^4F^\circ-187$ (98)
3366.554	B	150	(0.55	4.22)	3½-3½	$a^4F^\circ-188$ (99)
3171.615	B	200	(0.33	4.22)	2½-3½	

tory		E P		J	Multiple
ef	Int	Low	High		(No)
inued					
A	125	(0.70	4.31)	4½-4½	a^4F°-199 (100)
A	150	(0.55	4.36)	3½-3½	a^4F°-205 (101)
A	30	(0.70	4.42)	4½-4½	a^4F°-209 (102)
A	60	(0.70	4.44)	4½-3½	a^4F°-210 (103)
A	(20)	(0.55	4.44)	3½-3½	
C	150	(0.70	4.47)	4½-4½	a^4F°-213 (104)
A	(20)	(0.55	4.55)	3½-3½	a^4F°-217 (105)
A	(25)	(0.70	4.56)	4½-4½	a^4F°-218 (106)
A	80	(0.70	4.79)	4½-3½	a^4F°-237 (107)
	———	———	———		
B	150	(0.32	3.38)	4½-5½	$a^2G^\circ-z^4I$ (108)
B	200	(0.33	3.04)	3½-4½	
A	200	(0.32	3.04)	4½-4½	
B	(2)	(0.32	3.60)	4½-4½	$a^2G^\circ-z^4G$ † (109)
A	(20)	(0.33	3.36)	3½-3½	
A	150	(0.32	3.73)	4½-4½	$a^2G^\circ-z^4F$ (110)
A	(20)	(0.32	3.20)	4½-3½	$a^2G^\circ-z^2G$ (111)
A	300	(0.33	3.20)	3½-3½	
B	(3)	(0.32	3.53)	4½-5½	$a^2G^\circ-z^2H$ (112)
B	100	(0.33	3.31)	3½-4½	
A	150	(0.32	3.31)	4½-4½	
A	(10)	(0.32	3.72)	4½-5½	$a^2G^\circ-z^4H$ † (113)
B	125	(0.33	3.45)	3½-4½	
B	(5)	(0.32	3.45)	4½-4½	
B	(4)	(0.32	3.84)	4½-4½	$a^2G^\circ-y^4G$ (114)
A	(10)	(0.33	3.72)	3½-3½	
A	150	(0.33	3.54)	3½-2½	
A	50	(0.32	3.55)	4½-4½	a^2G°-122 (115)
B	(4)	(0.33	3.55)	3½-4½	
B	50	(0.33	3.76)	3½-2½	a^2G°-141 (116)
A	150	(0.32	3.79)	4½-4½	$a^2G^\circ-y^2G$ (117)
A	300	(0.32	3.81)	4½-3½	a^2G°-145 † (118)
B	300	(0.33	4.14)	3½-2½	a^2G°-180 (119)
A	150	(0.33	4.25)	3½-2½	a^2G°-193 (120)
B	200	(0.33	4.36)	3½-3½	a^2G°-205 † (121)
A	125	(0.32	4.42)	4½-4½	a^2G°-209 (122)
	———	———	———		
B	75	(0.42	3.36)	2½-3½	$a^2F^\circ-z^4G$ † (123)
A	(20)	(0.46	3.36)	3½-3½	
B	(5)	(0.42	3.13)	2½-2½	
B	(4n)	(0.46	3.73)	3½-4½	$a^2F^\circ-z^4F$ (124)
B	(5)	(0.42	3.36)	2½-2½	
A	30	(0.42	3.17)	2½-1½	
A	60	(0.46	3.31)	3½-4½	$a^2F^\circ-z^2H$ (125)
B	(2)	(0.46	3.45)	3½-4½	$a^2F^\circ-z^4H$ (126)
A	50	(0.46	3.32)	3½-3½	
B	(4)	(0.42	3.61)	2½-2½	a^2F°-126 (127)
B	100	(0.46	3.61)	3½-2½	
A	75	(0.42	3.70)	2½-1½	a^2F°-134 (128)
A	50	(0.46	3.71)	3½-3½	a^2F°-136 † (129)
A	60	(0.42	4.22)	2½-3½	a^2F°-188 (130)
	———	———	———		
A	150	(1.31	4.79)	2½-2½	a^4P°-238 (131)
A	(20)	(1.19	4.79)	1½-2½	
A	150	(1.31	4.86)	2½-3½	a^4P°-244 (132)
	———	———	———		
A	(35)	(0.44	3.60)	4½-4½	$b^2G^\circ-z^4G$ (133)
A	(30)	(0.49	3.36)	3½-3½	
A	100	(0.49	3.60)	3½-4½	
A	125	(0.44	3.53)	4½-5½	$b^2G^\circ-z^2H$ (134)
A	60	(0.49	3.31)	3½-4½	
A	60	(0.44	3.31)	4½-4½	
A	(25)	(0.44	3.32)	4½-3½	$b^2G^\circ-z^4H$ (135)
A	(12)	(0.49	3.45)	3½-4½	
A	125	(0.49	3.32)	3½-3½	
A	(4)	(0.44	3.69)	4½-4½	$b^2G^\circ-y^4H$ † (136)
B	(4)	(0.44	3.43)	4½-3½	
B	(4)	(0.49	3.43)	3½-3½	
A	(30)	(0.49	3.49)	3½-3½	b^2G°-116 (137)
C	(15)	(0.44	4.41)	4½-5½	$b^2G^\circ-x^2H$ (138)
B	200	(0.49	3.50)	3½-4½	
A	300	(0.44	3.50)	4½-4½	
B	(5d)	(0.49	3.50)	3½-2½	b^2G°-118 (139)
A	200	(0.49	3.55)	3½-4½	b^2G°-122 (140)
A	(12)	(0.49	3.61)	3½-2½	b^2G°-126 (141)

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Ce II continued						
3782.524	B	75	(0.49	3.76)	3½-2½	b^2G°-141 (142)
3687.802	A	30	(0.44	3.79)	4½-4½	$b^2G^\circ-y^2G$ (143)
3422.708	C	300	(0.44	4.05)	4½-5½	$b^2G^\circ-z^2I$ (144)
3390.515	A	(20)	(0.44	4.08)	4½-3½	b^2G°-174 (145)
3271.151	A	(18)	(0.44	4.22)	4½-3½	b^2G°-188 (146)
3314.721	A	100	(0.49	4.22)	3½-3½	
3295.289	A	80	(0.49	4.24)	3½-2½	b^2G°-192 (147)
3285.224	A	125	(0.49	4.25)	3½-2½	b^2G°-193 (148)
3231.236	A	200	(0.49	4.31)	3½-2½	b^2G°-200 (149)
3127.530	A	80	(0.44	4.39)	4½-3½	b^2G°-207 † (150)
3103.377	A	125	(0.44	4.42)	4½-4½	b^2G°-209 (151)
3110.278	A	100	(0.49	4.46)	3½-2½	b^2G°-212 (152)
		———	———	———		
4678.94	P		(1.20	3.84)	4½-5½	$b^4F^\circ-z^4G$ (153)
4696.12	P		(0.97	3.60)	3½-4½	
4508.083	A	(8)	(0.62	3.36)	2½-3½	
4725.090	C	20	(0.52	3.13)	1½-2½	
4495.389	A	(4)	(0.62	3.36)	2½-2½	$b^4F^\circ-z^4F$ (154)
4654.286	A	30	(0.52	3.17)	1½-1½	
4380.060	A	(30)	(0.62	3.44)	2½-1½	$b^4F^\circ-z^2D$ (155)
4104.996	C	50	(0.62	3.63)	2½-3½	b^4F°-127 (156)
		———	———	———		
4361.661	A	(18)	(0.53	3.36)	3½-3½	$c^2G^\circ-z^4G$ † (157)
4739.49	B	25	(0.53	3.13)	3½-2½	
4014.899	A	125	(0.53	3.60)	3½-4½	
3857.032	B	(5)	(0.72	3.92)	4½-5½	$c^2G^\circ-y^4H$ † (158)
*4149.936	B	50	(0.72	3.69)	4½-4½	
4245.976	B	(6)	(0.53	3.43)	3½-3½	
3343.861	C	200	(0.72	4.41)	4½-5½	$c^2G^\circ-x^2H$ † (159)
4153.67	P		(0.53	3.50)	3½-4½	
3748.056	C	150	(0.72	4.01)	4½-5½	$c^2G^\circ-y^4G$ (160)
3958.266	B	(6)	(0.72	3.84)	4½-4½	
4106.134	A	(30)	(0.72	3.72)	4½-3½	
4093.955	A	30	(0.53	3.54)	3½-2½	
4169.773	A	(12)	(0.72	3.68)	4½-3½	c^2G°-131 (161)
4123.230	B	(5)	(0.72	3.71)	4½-3½	c^2G°-136 (162)
3875.036	B	(6d)	(0.53	3.71)	3½-3½	
4017.596	A	(10s)	(0.72	3.79)	4½-4½	$c^2G^\circ-y^2G$ (163)
3781.620	A	150	(0.53	3.79)	3½-4½	
3357.215	A	125	(0.53	4.20)	3½-4½	c^2G°-187 (164)
3344.761	A	300	(0.53	4.22)	3½-3½	c^2G°-188 † (165)
3300.152	C	60	(0.72	4.46)	4½-3½	c^2G°-211 (166)
3186.126	C	125	(0.72	4.59)	4½-4½	c^2G°-221 (167)
2976.905	A	100	(0.53	4.67)	3½-2½	c^2G°-228 (168)
		———	———	———		
4190.626	C	(30)	(0.89	3.84)	5½-5½	$a^4G^\circ-z^4G$ † (169)
4437.612	B	(4)	(0.82	3.60)	4½-4½	
4313.036	A	(15)	(0.67	3.60)	3½-4½	
4372.401	A	(35)	(0.53	3.36)	2½-3½	
4234.737	A	(12)	(0.82	3.73)	4½-4½	$a^4G^\circ-z^4F$ † (170)
4443.743	A	(18)	(0.67	3.45)	3½-4½	$a^4G^\circ-z^4H$ † (171)
4427.917	B	(6)	(0.53	3.32)	2½-3½	
3801.529	C	500	(0.89	4.14)	5½-6½	$a^4G^\circ-y^4H$ (172)
3982.901	B	60	(0.82	3.92)	4½-5½	
4085.232	B	100	(0.67	3.69)	3½-4½	
4256.156	B	(5)	(0.53	3.43)	2½-3½	
4296.069	B	(6)	(0.82	3.69)	4½-4½	
4169.878	B	30	(0.53	3.49)	2½-3½	a^4G°-116 † (173)
4090.947	A	(6)	(0.82	3.84)	4½-4½	$a^4G^\circ-y^4G$ (174)
3978.650	C	125	(0.53	3.64)	2½-1½	a^4G°-129 (175)
4259.748	A	(15)	(0.89	3.79)	5½-4½	$a^4G^\circ-y^2G$ (176)
*3956.901	B	(4)	(0.67	3.79)	3½-4½	
*3952.573	B	125	(0.82	3.94)	4½-4½	a^4G°-159 (177)
3607.625	A	200	(0.67	4.09)	3½-2½	a^4G°-175 (178)
*3468.113§	A	6	(0.53	4.09)	2½-2½	
3609.687	C	250	(0.89	4.31)	5½-4½	a^4G°-199 (179)
3051.975	C	60°	(0.53	4.58)	2½-1½	a^4G°-220 (180)
3037.731	C	80	(0.53	4.60)	2½-1½	a^4G°-222 (181)
3252.483	C	30	(0.89	4.69)	5½-5½	a^4G°-229 (182)
2995.644	A	80	(0.67	4.79)	3½-3½	a^4G°-237 (183)
3051.924	C	60°	(0.82	4.86)	4½-3½	a^4G°-244 (184)
3063.010	C	400	(0.89	4.92)	5½-4½	a^4G°-248 (185)
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Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
Ce II continued						
4202.944	A	150	(0.56	3.49)	2½-3½	b^4G°-116 (186)
3488.553	A	75	(0.87	4.41)	4½-5½	$b^4G^\circ-x^2H$ † (187)
4003.771	C	100	(0.93	4.01)	5½-5½	$b^4G^\circ-y^4G$ (188)
4135.443	A	(20)	(0.56	3.54)	2½-2½	
3896.804	A	100	(0.56	3.72)	2½-3½	
*4149.936	B	60	(0.71	3.68)	3½-3½	b^4G°-132 (189)
3924.644	B	60	(0.56	3.70)	2½-1½	b^4G°-134 (190)
3923.109	C	125	(0.56	3.70)	2½-2½	b^4G°-135 (191)
3912.191	B	(5)	(0.56	3.71)	2½-3½	b^4G°-136 (192)
4001.049	B	(4)	(0.71	3.79)	3½-4½	$b^4G^\circ-y^2G$ (193)
3980.895	B	100	(0.71	3.81)	3½-3½	b^4G°-145 (194)
3921.731	B	100	(0.71	3.85)	3½-3½	b^4G°-153 (195)
3442.380	A	75	(0.56	4.14)	2½-2½	b^4G°-180 (196)
3439.831	C	60	(0.56	4.14)	2½-1½	b^4G°-181 (197)
3341.868	A	100	(0.56	4.25)	2½-2½	b^4G°-193 (198)
*3286.029§	A	(18)	(0.56	4.31)	2½-2½	b^4G°-200 † (199)
3349.967	A	(30)	(0.71	4.39)	3½-3½	b^4G°-207 (200)
3055.243	C	150	(0.56	4.60)	2½-1½	b^4G°-222 (201)
		———	———	———		
3956.284	C	150	(0.61	3.73)	5½-6½	$a^2H^\circ-z^4I$ (202)
4373.818	A	50	(0.56	3.38)	4½-5½	
4449.336	A	200	(0.61	3.38)	5½-5½	
4214.041	B	50	(0.61	3.53)	5½-5½	$a^2H^\circ-z^2H$ (203)
4479.359	A	50	(0.56	3.31)	4½-4½	
4146.234	A	75	(0.56	3.53)	4½-5½	
3809.224	A	(25)	(0.61	3.85)	5½-6½	$a^2H^\circ-z^4H$ † (204)
4270.189	A	60	(0.56	3.45)	4½-4½	
3938.086	B	(7)	(0.56	3.69)	4½-4½	$a^2H^\circ-y^4H$ † (205)
4292.767	B	(4)	(0.56	3.43)	4½-3½	
4075.853	B	125	(0.61	3.63)	5½-5½	$a^2H^\circ-y^2H$ (206)
4275.561	C	(25)	(0.56	3.44)	4½-4½	
4012.389	B	300	(0.56	3.63)	4½-5½	
4198.431	B	(4)	(0.56	3.50)	4½-4½	$a^2H^\circ-x^2H$ (207)
3820.871	B	(5)	(0.61	3.84)	5½-4½	$a^2H^\circ-y^4G$ (208)
3765.044	A	(12)	(0.56	3.84)	4½-4½	
*4197.998§	B	(5)	(0.61	3.55)	5½-4½	a^2H°-122 (209)
4130.706	A	100	(0.56	3.55)	4½-4½	
3895.114	B	125	(0.61	3.77)	5½-4½	a^2H°-142 (210)
3521.880	C	200	(0.61	4.11)	5½-4½	a^2H°-177 (211)
3373.729	B	125	(0.56	4.22)	4½-3½	a^2H°-188 (212)
3377.127	C	300	(0.61	4.26)	5½-6½	$a^2H^\circ-y^2I$ (213)
3243.370	A	200	(0.56	4.36)	4½-3½	a^2H°-205 (214)
3221.171	A	250	(0.56	4.39)	4½-3½	a^2H°-207 (215)
3183.523	A	250	(0.56	4.44)	4½-3½	a^2H°-210 (216)
3194.825	C	200	(0.61	4.47)	5½-4½	a^2H°-213 (217)
3155.704	A	(20)	(0.56	4.47)	4½-4½	
		———	———	———		
4037.665	A	(25)	(0.73	3.79)	3½-4½	$b^2F^\circ-y^2G$ (218)
3599.974	A	(10)	(0.58	4.01)	2½-1½	b^2F°-167 (219)
		———	———	———		
4352.733	B	75	(0.60	3.43)	1½-2½	a^2D°-112 (220)
4007.589	A	(15)	(0.60	3.68)	1½-1½	a^2D°-130 (221)
3817.455	A	(25)	(0.60	3.83)	1½- ½	a^2D°-147 (222)
3699.920	B	50	(0.63	3.97)	2½-2½	a^2D°-161 (223)
		———	———	———		
4326.826	A	(15)	(0.73	3.58)	1½-1½	a^2P°-124 (224)
4280.141	A	(15)	(0.73	3.61)	1½-2½	a^2P°-126 (225)
3992.913	A	(15)	(0.73	3.82)	1½-1½	a^2P°-146 (226)
		———	———	———		
4368.234	A	(8)	(0.90	3.73)	6½-6½	$a^2I^\circ-z^4I$ (227)
4129.176	A	(5)	(0.74	3.73)	5½-6½	
*5347.806§	A	(8)	(0.74	3.04)	5½-4½	
4684.605	A	30	(0.90	3.53)	6½-5½	$a^2I^\circ-z^2H$ (228)
4789.68	P		(0.74	3.31)	5½-4½	
4551.297	A	(20)	(0.74	3.45)	5½-4½	$a^2I^\circ-z^4H$ (229)
3517.380	C	300	(0.90	4.41)	6½-5½	$a^2I^\circ-x^2H$ (230)
4469.850	C	(4)	(0.74	3.50)	5½-4½	
3725.675	A	(40)	(0.74	4.05)	5½-5½	$a^2I^\circ-z^2I$ (231)
3590.598	A	125	(0.74	4.17)	5½-4½	a^2I°-184 (232)
3672.789	A	60	(0.90	4.26)	6½-6½	$a^2I^\circ-y^2I$ (233)
		———	———	———		

ry Int	E P Low	High	J	Multiplet (No)
ied				
100	(0.79	3.92)	4½-5½	$d^2G^\circ-y^4H$ (234)
200	(0.79	4.19)	4½-3½	$d^2G^\circ-186$ (235)
60	(0.79	4.22)	4½-3½	$d^2G^\circ-188$ (236)
100	(0.79	4.79)	4½-3½	$d^2G^\circ-237$ (237)
(20)	(0.80	3.58)	2½-1½	$c^2F^\circ-124$ (238)
(10)	(0.90	3.79)	3½-4½	$c^2F^\circ-y^2G$ (239)
30	(0.90	3.99)	3½-3½	$c^2F^\circ-164$ (240)
(10)	(0.90	4.19)	3½-3½	$c^2F^\circ-186$ (241)
(10)	(0.90	4.22)	3½-3½	$c^2F^\circ-188$ (242)
(6)	(0.90	4.36)	3½-3½	$c^2F^\circ-205$ (243)
100	(0.90	4.55)	3½-3½	$c^2F^\circ-217$ (244)
(25)	(0.81	3.64)	1½-1½	$b^2D^\circ-129$ (245)
50	(1.02	3.99)	2½-3½	$b^2D^\circ-164$ (246)
40	(0.81	4.55)	1½-2½	$b^2D^\circ-216$ (247)
200	(0.89	4.04)	2½-2½	$c^4F^\circ-169$ (248)
50	(1.27	4.86)	3½-3½	$c^4F^\circ-244$ (249)
30	(1.10	3.72)	5½-5½	$b^2H^\circ-z^4H$ (250)
(6)	(1.10	3.94)	5½-4½	$b^2H^\circ-159$ (251)
(8)	(1.10	4.16)	5½-6½	$b^2H^\circ-z^2I$ (252)
100	(0.95	4.05)	4½-5½	
125	(1.10	4.26)	5½-6½	$b^2H^\circ-y^2I$ (253)
(40)	(1.04	3.93)	3½-2½	$b^4D^\circ-158$ (254)
(20)	(0.97	4.09)	1½-2½	$b^4D^\circ-175$ (255)
(20)	(1.04	4.11)	3½-4½	$b^4D^\circ-177$ (256)
50	(1.01	4.36)	2½-3½	$b^4D^\circ-205$ (257)
60	(1.01	4.79)	2½-2½	$b^4D^\circ-238$ (258)
(30)	(1.25	4.06)	2½-3½	$e^2F^\circ-171$ (259)

assified Lines of Ce II

20	V
20	V
40	V
15	V
20	V
60	V
20	V
75	V
30	V
60	V
15	V
60	V

9.5   Anal A   List B   Jan 1942

600	(2.25	6.29)	4-5	$fs^3F^\circ-fp^3G$ (1)
500	(2.00	6.C7)	3-4	
150	(1.97	5.55)	2-3	
400	(2.25	6.07)	4-4	
300	(2.00	5.55)	3-3	
150	(2.25	5.93)	4-4	$fs^3F^\circ-fp^3F$ (2)
200	(2.00	5.92)	3-3	
125	(1.97	5.57)	2-2	
Ce+	(2.25	5.92)	4-3	
150	(2.00	5.57)	3-2	
250	(2.00	5.93)	3-4	
400	(1.97	5.98)	2-3	
200	(2.25	5.81)	4-3	$fs^3F^\circ-fp^1F$ † (3)
200	(2.25	6.21)	4-3	$fs^3F^\circ-fp^3D$ † (4)
200	(2.00	5.97)	3-2	
100	(1.97	6.01)	2-1	
200	(1.97	5.97)	2-2	
200	(2.25	6.33)	4-4	$fs^3F^\circ-fp^1G$ (5)
100	(2.29	5.81)	3-3	$fs^1F^\circ-fp^1F$ (6)
300	(2.29	6.21)	3-3	$fs^1F^\circ-fp^3D$ (7)
200	(2.29	6.33)	3-4	$fs^1F^\circ-fp^1G$ (8)
125	(2.29	6.33)	3-2	$fs^1F^\circ-fp^1D$ (9)

ysis   May 1942   (Temperature Class)

Pr II   I P ?   Anal C   List B   Dec 1941

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4628.751	A	100	0.05	2.72	5-5	$a^5I^\circ-2$ (1)
4535.921	A	60	0.00	2.72	4-5	
4517.595	A	40	0.05	2.79	5-5	$a^5I^\circ-3$ † (2)
*4429.238	A	60	0.00	2.79	4-5	
4744.925	A	40	0.20	2.80	6-6	$a^5I^\circ-4$ (3)
4487.821	A	20	0.05	2.80	5-6	
4100.746//	A	150	0.55	3.56	8-9	$a^5I^\circ-z^5K$ (4)
4143.136	A	150	0.37	3.35	7-8	
4179.422	A	150	0.20	3.16	6-7	
4222.98	A	150	0.05	2.98	5-6	
4408.844	A	200	0.00	2.80	4-5	
4405.849	A	80	0.55	3.35	8-8	
*4429.238	A	100	0.37	3.16	7-7	
4449.867	A	150	0.20	2.98	6-6	
*4496.429	A	250	0.05	2.80	5-5	
4734.177	A	25	0.37	2.98	7-6	
4754.635	A	(15)	0.20	2.80	6-5	
4707.541	A	20	0.20	2.83	6-5	$a^5I^\circ-5$ (5)
4454.382	A	30	0.05	2.83	5-5	
4368.327	A	150	0.00	2.83	4-5	
4651.517	A	75	0.20	2.86	6-6	$a^5I^\circ-6$ (6)
4297.764	A	80	0.00	2.87	4-5	$a^5I^\circ-7$ (7)
4206.739	A	100	0.55	3.48	8-8	$a^5I^\circ-z^5I$ (8)
4189.518	A	125	0.37	3.32	7-7	
4164.192	A	100	0.20	3.17	6-6	
4118.481	A	200	0.05	3.05	5-5	
4225.327	A	150	0.00	2.92	4-4	
4458.336	A	25	0.55	3.32	8-7	
4412.155	A	20	0.37	3.17	7-6	
4333.913	A	100	0.20	3.05	6-5	
4305.763	A	100	0.05	2.92	5-4	
3966.573	A	80	0.37	3.48	7-8	
3965.263	A	150	0.20	3.32	6-7	
3964.825	A	250	0.05	3.17	5-6	
4044.818	A	60	0.00	3.05	4-5	
3953.516	A	125	0.55	3.67	8-8	$a^5I^\circ-z^3K$ † (0)
3997.054	A	40	0.37	3.46	7-7	
4241.019	A	60	0.55	3.46	8-7	
4141.257	A	80	0.55	3.53	8-7	$a^5I^\circ-z^3I$ (10)
4578.139	A	25	0.37	3.07	7-6	
3908.033	A	150	0.55	3.71	8-7	$a^5I^\circ-z^5H$ (11)
3918.856	A	150	0.37	3.52	7-6	
3947.633	A	100	0.20	3.33	6-5	
3994.834	A	200	0.05	3.14	5-4	
3908.431	B	200	0.00	3.16	4-3	
3699.952	A	(12)	0.37	3.71	7-7	
3925.456	A	75	0.00	3.14	4-4	
4191.615	A	20	0.20	3.15	6-5	$a^5I^\circ-16$ (12)
3989.718	A	100	0.05	3.15	5-5	
3920.524	A	15	0.00	3.15	4-5	
4421.231	A	40	0.37	3.16	7-6	$a^5I^\circ-17$ (13)
4172.273	A	50	0.20	3.16	6-6	
3972.164	A	100	0.05	3.16	5-6	
4081.018	A	50	0.20	3.23	6-5	$a^5I^\circ-19$ (14)
3889.330	A	75	0.05	3.23	5-5	
3823.571	A	(10)	0.00	3.23	4-5	
4272.271	A	80	0.37	3.26	7-6	$a^5I^\circ-22$ (15)
4039.357	A	30	0.20	3.26	6-6	
4171.824	A	40	0.37	3.33	7-6	$a^5I^\circ-z^3H$ (16)
3949.438	A	125	0.20	3.33	6-6	
3769.695	A	30	0.05	3.33	5-6	
3912.898	A	125	0.20	3.36	6-5	$a^5I^\circ-26$ (17)
3885.190	A	75	0.20	3.38	6-6	$a^5I^\circ-27$ † (18)
*3711.099	A	(25)	0.05	3.38	5-6	
4282.440	A	60	0.55	3.43	8-8	$a^5I^\circ-30$ (19)
4033.857	A	75	0.37	3.43	7-8	
4534.154	A	60	0.63	3.35	7-8	$a^3I^\circ-z^5K$ (20)
4510.160	A	100	0.42	3.16	6-7	
4468.712	A	150	0.22	2.98	5-6	
4879.121	A	(30)	0.63	3.16	7-7	
4826.649	A	(40)	0.42	2.98	6-6	
5251.738	A	12	0.63	2.98	7-6	
4672.081	A	40	0.22	2.86	5-6	$a^3I^\circ-6$ † (21)
4646.059	A	30	0.22	2.87	5-5	$a^3I^\circ-7$ (22)
4323.551	A	25	0.63	3.48	7-8	$a^3I^\circ-z^5I$ (23)
4261.796	A	15	0.42	3.32	6-7	
4180.68	A	(8)	0.22	3.17	5-6	
4589.76	A	(5d)	0.63	3.32	7-7	
4492.427	A	15	0.42	3.17	6-6	
4351.849	A	50	0.22	3.05	5-5	
4561.461	A	(6)	0.22	2.92	5-4	
5292.10	A	60*	0.63	2.96	7-8	$a^3I^\circ-10$ (24)
4859.038	A	12	0.42	2.96	6-6	$a^3I^\circ-11$ † (25)
*4496.429	A	250	0.22	2.96	5-6	
4056.543	A	80	0.63	3.67	7-8	$a^3I^\circ-z^3K$ (26)
4062.817	A	125	0.42	3.46	6-7	
4413.765	A	50	0.22	3.01	5-6	
4359.795	A	30	0.63	3.46	7-7	
4762.727	A	20	0.42	3.01	6-6	

Pr II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4254.420	A	20	0.63	3.53	7-7	$a^3I^\circ-z^3I$ † (27)
4664.647	A	20	0.42	3.07	6-6	
3971.164	A	40	0.42	3.53	6-7	
4329.415	A	25	0.22	3.07	5-6	
4008.714	A	75	0.63	3.71	7-7	$a^3I^\circ-z^5H$ † (28)
3982.063	A	150	0.42	3.52	6-6	
3962.445	A	40	0.22	3.33	5-5	
4395.788	A	30	0.42	3.23	6-5	$a^3I^\circ-19$ (29)
4096.822	A	25	0.22	3.23	5-5	
4347.490	A	30	0.42	3.26	6-6	$a^3I^\circ-22$ † (30)
4054.845	A	80	0.22	3.26	5-6	
4338.694	A	25	0.42	3.26	6-7	$a^3I^\circ-23$ † (31)
4302.100	A	(60)	0.42	3.29	6-5	$a^3I^\circ-25$ (32)
4015.389	A	40	0.22	3.29	5-5	
4568.545	A	(30)	0.63	3.33	7-6	$a^3I^\circ-z^3H$ (33)
4243.528	A	20	0.42	3.33	6-6	
3964.261	A	40	0.22	3.33	5-6	
4403.605	A	25	0.63	3.43	7-8	$a^3I^\circ-30$ (34)
5110.768	A	60	1.14	3.56	10-9	$a^5L^\circ-z^5K$ † (35)
5173.898	A	60	0.96	3.35	9-8	
5220.113	A	50	0.79	3.16	8-7	
5259.743	A	80	0.63	2.98	7-6	
5322.778	A	60	0.48	2.80	6-5	
4801.150	A	15	0.48	3.05	6-5	$a^5L^\circ-z^5I$ † (36)
5034.415	A	20	1.11	3.56	9-9	$a^5K^\circ-z^5K$ † (37)
5135.185	A	20	0.95	3.35	8-8	
5219.053	A	20	0.79	3.16	7-7	
5292.630	A	30	0.65	2.98	6-6	
5381.262	A	60	0.51	2.80	5-5	
5195.110	A	20	1.11	3.48	9-8	$a^5K^\circ-z^5I$ (38)
5206.562	A	20	0.95	3.32	8-7	
5196.307	A	30	0.79	3.17	7-6	
5129.520	A	40	0.65	3.05	6-5	
5110.382	A	60	0.51	2.92	5-4	
6025.723	A	20	1.43	3.48	8-8	$b^5I^\circ-z^5I$ † (39)
6305.262	A	4	1.36	3.32	7-7	
6244.344	A	5	1.19	3.17	6-6	
6161.194	A	50	1.05	3.05	5-5	
6165.945	A	60	0.92	2.92	4-4	

Strongest Unclassified Lines of Pr II

3880.466	B	100	V
3877.225	B	200	V
3865.458	B	100	V
3854.905	B	100	V
3852.805	B	150	V
3851.617	B	200	V
3850.825	B	150	V
3846.605	B	125	V
3830.719	B	125	V
3826.292	B	100	V
3818.281	B	125	V
3816.166	B	125	V
3800.303	B	200	V
3792.524	B	100	V
3772.854	B	100	V
3764.811	B	125	IV
3761.867	B	250	V
3739.193	B	100	IV
3687.039	B	125	IV
3668.830	B	150	IV

Nd I   No analysis   May 1942   (Temperature Class)

Nd II   I P ?   Anal C   List B   Apr 1942

*4959.130§	A	60	0.06	2.55	4½-4½	a^6I-1° (1)
4835.982	A	15	0.00	2.55	3½-4½	
4920.692	A	60	0.06	2.57	4½-3½	$a^6I-20830$ (2)
4799.423	A	10	0.00	2.57	3½-3½	
4859.030	A	100	0.32	2.86	6½-5½	$a^6I-z^6H^\circ$ (3)
4825.482	A	150	0.18	2.74	5½-4½	
4811.343	A	100	0.06	2.63	4½-3½	
*4706.542§	A	100	0.00	2.62	3½-2½	
4609.148	A	(1)	0.18	2.85	5½-5½	
4612.473	A	4	0.06	2.74	4½-4½	
4414.432	A	8	0.06	2.86	4½-5½	
4505.75	A	(8)	0.00	2.74	3½-4½	
4680.734	A	30	0.06	2.70	4½-3½	$a^6I-21871$ (4)
4569.849	A	2	0.06	2.76	4½-3½	a^6I-3° (5)
4465.075	A	10	0.00	2.76	3½-3½	
4763.865	A	20	0.18	2.77	5½-4½	a^6I-4° (6)
4556.136	A	12	0.06	2.77	4½-4½	
4451.978	A	50	0.00	2.77	3½-4½	
4709.714	A	20	0.18	2.80	5½-5½	a^6I-5° † (7)
4506.582	A	30	0.06	2.80	4½-5½	

REVISED MULTIPLET TABLE

f	Int	E P Low	E P High	J	Multiplet (No)
.nued					
A	150	0.18	2.98	5½-5½	a^{6}I-z^{6}I° †
A	20	0.06	2.91	4½-4½	(8)
A	30	0.00	2.82	3½-3½	
A	150	0.06	2.98	4½-5½	
A	200	0.00	2.91	3½-4½	
A	20	0.06	2.86	4½-4½	a^{6}I-23171
A	50	0.00	2.86	3½-4½	(9)
A	300	0.63	3.70	8½-9½	a^{6}I-z^{6}K°
A	200	0.47	3.51	7½-8½	(10)
A	200	0.32	3.32	6½-7½	
A	250	0.18	3.15	5½-6½	
A	200	0.06	3.02	4½-5½	
A	400	0.00	2.87	3½-4½	
A	100	0.63	3.51	8½-8½	
A	150	0.47	3.32	7½-7½	
A	200	0.32	3.15	6½-6½	
A	40	0.18	3.02	5½-5½	
A	100	0.06	2.87	4½-4½	
A	60	0.06	2.89	4½-3½	a^{6}I-6°
A	30	0.00	2.89	3½-3½	(11)
A	12	0.18	2.89	5½-4½	a^{6}I-7°
A	12	0.06	2.89	4½-4½	(12)
A	25	0.00	2.89	3½-4½	
A	10	0.18	2.95	5½-5½	a^{6}I-8° †
A	15	0.06	2.95	4½-5½	(13)
A	(10)	0.06	2.97	4½-4½	a^{6}I-9° †
A	30	0.00	2.97	3½-4½	(14)
A	20	0.18	3.00	5½-4½	a^{6}I-10°
A	10	0.06	3.00	4½-4½	(15)
A	40	0.00	3.00	3½-4½	
A	8	0.06	3.02	4½-3½	a^{6}I-11°
A	30	0.00	3.02	3½-3½	(16)
A	6	0.18	3.07	5½-5½	a^{6}I-12° †
A	100	0.06	3.07	4½-5½	(17)
A	(5)	0.32	3.09	6½-5½	a^{6}I-25014
A	50	0.06	3.09	4½-5½	(18)
A	80	0.63	3.73	8½-8½	a^{6}I-y^{6}I°
A	60	0.47	3.56	7½-7½	(19)
A	60	0.32	3.39	6½-6½	
A	150	0.18	3.31	5½-5½	
A	30	0.06	3.13	4½-4½	
A	80	0.00	3.09	3½-3½	
A	40	0.63	3.56	8½-7½	
A	30	0.47	3.39	7½-6½	
A	50	0.32	3.31	6½-5½	
A	30	0.18	3.13	5½-4½	
A	50	0.06	3.09	4½-3½	
A	20	0.47	3.73	7½-8½	
A	100	0.32	3.56	6½-7½	
A	50	0.18	3.39	5½-6½	
A	(15)	0.06	3.31	4½-5½	
A	5	0.00	3.13	3½-4½	
A	6	0.18	3.10	5½-5½	a^{6}I-13° †
A	80	0.06	3.10	4½-5½	(20)
A	60	0.00	3.10	3½-3½	a^{6}I-25138 (21)
A	10	0.63	3.12	8½-7½	a^{6}I-25235
A	(5)	0.32	3.12	6½-7½	(22)
A	(4)	0.06	3.12	4½-3½	a^{6}I-14°
A	100	0.00	3.12	3½-3½	(23)
A	10	0.32	3.13	6½-5½	a^{6}I-15°
A	8	0.18	3.13	5½-5½	(24)
A	30	0.06	3.13	4½-5½	
A	20	0.18	3.18	5½-4½	a^{6}I-16°
A	40	0.06	3.18	4½-4½	(25)
A	60	0.00	3.19	3½-2½	a^{6}I-y^{6}H° (26)
A	150	0.06	3.19	4½-4½	a^{6}I-17° †
A	20	0.00	3.19	3½-4½	(27)
A	80	0.00	3.21	3½-2½	a^{6}I-26041 (28)
A	40	0.06	3.23	4½-5½	a^{6}I-26182 (29)
A	100	0.18	3.24	5½-6½	a^{6}I-18° (30)
A	20	0.18	3.24	5½-4½	a^{6}I-19°
A	30	0.06	3.24	4½-4½	(31)
A	20	0.00	3.24	3½-4½	
A	20	0.32	3.24	6½-5½	a^{6}I-21°
A	25	0.18	3.24	5½-5½	(32)
A	40	0.06	3.24	4½-5½	
A	60	0.06	3.29	4½-3½	a^{6}I-20°
A	30	0.00	3.29	3½-3½	(33)
A	15	0.32	3.37	6½-6½	a^{6}I-22°
A	30	0.18	3.37	5½-6½	(34)
A	60	0.18	3.39	5½-4½	a^{6}I-23°
A	20	0.06	3.39	4½-4½	(35)
A	8	0.47	3.39	7½-7½	a^{6}I-24° †
A	80	0.32	3.39	6½-7½	(36)
A	60	0.32	3.43	6½-6½	a^{6}I-27744 (37)
A	(8)	0.06	3.48	4½-4½	a^{6}I-28170 (38)
A	50	0.63	3.58	8½-8½	a^{6}I-29027
A	60	0.47	3.58	7½-8½	(39)

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Nd II continued						
3328.270	A	80	0.00	3.71	3½-2½	a^{6}I-30037 (40)
3339.063	A	60	0.06	3.76	4½-3½	a^{6}I-30453
3282.777	A	8	0.00	3.76	3½-3½	(41)
3334.471	A	50	0.18	3.88	5½-4½	a^{6}I-25°
*3231.349§	A	(8)	0.06	3.88	4½-4½	(42)
5255.510	A	50	0.20	2.55	4½-4½	a^{4}I-1° (43)
5212.365	A	30	0.20	2.57	4½-3½	a^{4}I-20830 (44)
5603.651	A	5	0.38	2.58	5½-5½	a^{4}I-2°
*5191.448§	A	100	0.20	2.58	4½-5½	(45)
5361.174	A	3	0.56	2.86	6½-5½	a^{4}I-z^{6}H°
5228.427	A	6	0.38	2.74	5½-4½	(46)
5089.837	A	8	0.20	2.63	4½-3½	
*4867.839§	A	3	0.20	2.74	4½-4½?	
4647.759	A	3	0.20	2.86	4½-5½	
4820.336	A	30	0.20	2.76	4½-3½	a^{4}I-3° (47)
5092.797	A	30	0.38	2.80	5½-5½	a^{4}I-5° † (48)
4446.387	A	200	0.20	2.98	4½-5½	a^{4}I-z^{6}I°
4567.606	A	12	0.20	2.91	4½-4½	(49)
4715.589	A	25	0.20	2.82	4½-3½	
4456.394	A	40	0.74	3.51	7½-8½	a^{4}I-z^{6}K° †
4462.985	A	250	0.56	3.32	6½-7½	(50)
4451.566	A	400	0.38	3.15	5½-6½	
4385.663	A	150	0.20	3.02	4½-5½	
4597.013	A	20	0.20	2.89	4½-3½	a^{4}I-6° (51)
4914.385	A	15	0.38	2.89	5½-4½	a^{4}I-7°
4594.447	A	6	0.20	2.89	4½-4½	(52)
4501.808	A	50	0.20	2.95	4½-5½	a^{4}I-8° † (53)
4763.624	A	5	0.38	2.97	5½-4½	a^{4}I-9°
4462.407	A	30	0.20	2.97	4½-4½	(54)
4703.576	A	15	0.38	3.00	5½-4½	a^{4}I-10° (55)
4381.290	A	(10)	0.20	3.02	4½-3½	a^{4}I-11° (56)
4120.654	A	6	0.74	3.73	7½-8½	a^{4}I-y^{6}I°
4106.582	A	8	0.56	3.56	6½-7½	(57)
4100.240	A	15	0.38	3.39	5½-6½	
3979.479	A	60	0.20	3.31	4½-5½	
4371.069	A	(10)	0.74	3.56	7½-7½	
4358.699	A	15	0.56	3.39	6½-6½	
4217.282	A	5	0.38	3.31	5½-5½	
4211.286	A	40	0.20	3.13	4½-4½	
4541.269	A	50	0.38	3.10	5½-5½	a^{4}I-13°
4266.716	A	30	0.20	3.10	4½-5½	(58)
4256.239	A	8	0.20	3.10	4½-3½	a^{4}I-25138 (59)
4797.157	A	20	0.56	3.13	6½-5½	a^{4}I-15° † (60)
4144.553	A	20	0.20	3.18	4½-4½	a^{4}I-16° (61)
4075.116	A	60	0.20	3.23	4½-5½	a^{4}I-26182 † (62)
4307.778	A	15	0.38	3.24	5½-5½	a^{4}I-21°
4059.961	A	50	0.20	3.24	4½-5½	(63)
4000.493	A	30	0.20	3.29	4½-3½	a^{4}I-20° (64)
4123:881	A	40	0.38	3.37	5½-6½	a^{4}I-22° (65)
4051.145	A	60	0.38	3.43	5½-6½	a^{4}I-27744 † (66)
3982.355	A	20	0.38	3.48	5½-4½	a^{4}I-28170
3769.644	A	40	0.20	3.48	4½-4½	(67)
4338.697	A	80	0.74	3.58	7½-8½	a^{4}I-29027 (68)
3811.073	A	20	0.38	3.62	5½-4½	a^{4}I-29298
3615.817	A	30	0.20	3.62	4½-4½	(69)
3470.866	A	20	0.20	3.76	4½-3½	a^{4}I-30453 (70)
3522.044	A	25	0.38	3.88	5½-4½	a^{4}I-25°
3354.621	A	10	0.20	3.88	4½-4½	(71)
6257.834	A	(25)	0.55	2.55	5½-4½	a^{6}L-1° (72)
5548.474	A	8	0.55	2.77	5½-4½	a^{6}L-4° (73)
5361.474	A	60	0.68	2.98	6½-5½	a^{6}L-z^{6}I°
5234.195	A	50	0.55	2.91	5½-4½	(74)
5130.596	A	40	1.30	3.70	10½-9½	a^{6}L-z^{6}K° †
5192.621	A	80	1.13	3.51	9½-8½	(75)
5249.585	A	100	0.97	3.32	8½-7½	
5293.168	A	100	0.82	3.15	7½-6½	
5273.431	A	50	0.68	3.02	6½-5½	
5319.818	A	125	0.55	2.87	5½-4½	
5442.274	A	40	0.68	2.95	6½-5½	a^{6}L-8° (76)
5165.140	A	10	0.68	3.07	6½-5½	a^{6}L-12° (77)
5934.747	A	(10)	0.74	2.82	4½-3½	a^{6}K-z^{6}I°
5811.572	A	12	0.86	2.98	5½-5½	(78)
5702.244	A	20	0.74	2.91	4½-4½	
5371.935	A	20	1.41	3.70	9½-9½	a^{6}K-z^{6}K° †
5485.699	A	80	1.26	3.51	8½-8½	(79)
5594.425	A	150	1.12	3.32	7½-7½	
5688.525	A	150	0.98	3.15	6½-6½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Nd II continued						
5708.280	A	40	0.86	3.02	5½-5½	a^{6}K-z^{6}K° †
5804.020	A	60	0.74	2.87	4½-4½	cont
5421.559	A	20	0.74	3.02	4½-5½?	
5302.279	A	6	1.41	3.73	9½-8½	a^{6}K-y^{6}I° †
*5356.976§	A	15	1.26	3.56	8½-7½	(80)
5431.526	A	40	1.12	3.39	7½-6½	
5311.461	A	12	0.98	3.31	6½-5½	
5416. .31	A	15	0.86	3.13	5½-4½	
5250.816	A	8	0.74	3.09	4½-3½	
5276.879	A	8	0.86	3.19	5½-4½	a^{6}K-17° (81)
5474.734	A	10	0.98	3.24	6½-6½	a^{6}K-18° (82)
5455.815	A	20	0.98	3.24	6½-5½	a^{6}K-21° (83)
5668.868	A	15	1.41	3.58	9½-8½	a^{6}K-29027 † (84)
*6385.196§	A	150	1.16	3.09	5½-5½?	b^{6}I-25014 (85)
*5620.62 §	P	500	1.54	3.73	8½-8½	b^{6}I-y^{6}I° †
5718.120	A	12	1.40	3.56	7½-7½	(86)
5842.391	A	8	1.28	3.39	6½-6½	
5740.862	A	15	1.16	3.31	5½-5½	
5891.528	A	15	1.04	3.13	4½-4½	
5706.206	A	15	0.93	3.09	3½-3½	
5614.303	A	(10)	1.04	3.24	4½-4½	b^{6}I-19° (87)

Strongest Unclassified Lines of Nd II

5451.115	B	100	IV
4632.276	B	20	III
4542.603	B	60	IV
4282.443	B	50	IV
*4135.325	B	50	IV
4031.807	B	100	IV
4023.002	B	80	IV
4012.704	B	50	III
4007.435	B	50	IV
4004.010	B	60	III
3994.684	B	80	III
3953.525	B	60	IV
3934.823	B	50	IV
3920.965	B	100	III
3911.169	B	60	IV
3905.886	B	100	III
3901.850	B	50	IV
3900.226	B	60	III
3890.940	B	60	III
3890.580	B	50	IV
3889.929	B	50	IV
3878.582	C	50	IV
3848.524	B	80	IV
3836.541	B	60	IV
3814.725	B	60	III
3808.772	B	30	III
3803.474	B	40	III
3784.250	B	80	III
3763.475	B	60	III
3758.944	B	40	III
3741.427	B	50	III
3728.130	B	50	III
3723.506	B	50	III
3685.804	C	60	IV
3673.542	C	50	V
3672.363	C	50	V
3665.180	B	50	IV
3609.788	B	40	III
3592.595	B	60	IV
3587.504	B	50	IV
3543.352	B	50	IV
3393.641	B	60	IV
3364.950	B	50	IV
3300.148	B	70	IV
3285.093	B	50	IV
3275.218	B	60	IV
3134.897	B	50	V
3133.603	B	100	V
3116.141	B	60	V
3115.172	B	100	V
3098.476	B	50	V
3092.915	B	60	V
3075.390	B	50d	V
3014.165	B	60	V
3007.975	B	50	V

Sm I   I P 5.6?   Anal C   List D   Apr 1942

6671.51	A	800	0.50	2.35	6-7	a^{7}F-z^{9}G° †
6588.91	A	500	0.39	2.26	5-6	(1)
5659.86	B	400	0.10	2.28	2-1	a^{7}F-38°
*5516.09	B	500d	(0.04 0.28	2.27 2.52	1-2 4-	(2) 37° 59°)
4841.701	B	400	0.50	3.05	6-5	102°
3925.216	B	400	0.10	3.24	2-1	118°
*3756.411§	B	600	0.10	3.39	2-3	127°
4296.743//	B	300	0.50	3.37	6-7	a^{7}F-z^{7}G° † (3)

ied

ry Int	E P Low	High	J	Multiplet (No)
100	(0.79	3.92)	4½-5½	d^{2}G°-y^{4}H (234)
200	(0.79	4.19)	4½-3½	d^{2}G°-186 (235)
60	(0.79	4.22)	4½-3½	d^{2}G°-188 (236)
100	(0.79	4.79)	4½-3½	d^{2}G°-237 (237)
(20)	(0.80	3.58)	2½-1½	c^{2}F°-124 (238)
(10)	(0.90	3.79)	3½-4½	c^{2}F°-y^{2}G (239)
30	(0.90	3.99)	3½-3½	c^{2}F°-164 (240)
(10)	(0.90	4.19)	3½-3½	c^{2}F°-186 (241)
(10)	(0.90	4.22)	3½-3½	c^{2}F°-188 (242)
(6)	(0.90	4.36)	3½-3½	c^{2}F°-205 (243)
100	(0.90	4.55)	3½-3½	c^{2}F°-217 (244)
(25)	(0.81	3.64)	1½-1½	b^{2}D°-129 (245)
50	(1.02	3.99)	2½-3½	b^{2}D°-164 (246)
40	(0.81	4.55)	1½-2½	b^{2}D°-216 (247)
200	(0.89	4.04)	2½-2½	c^{4}F°-169 (248)
50	(1.27	4.86)	3½-3½	c^{4}F°-244 (249)
30	(1.10	3.72)	5½-5½	b^{2}H°-z^{4}H (250)
(6)	(1.10	3.94)	5½-4½	b^{2}H°-159 (251)
(8)	(1.10	4.16)	5½-6½	b^{2}H°-z^{2}I
100	(0.95	4.05)	4½-5½	(252)
125	(1.10	4.26)	5½-6½	b^{2}H°-y^{2}I (253)
(40)	(1.04	3.93)	3½-2½	b^{4}D°-158 (254)
(20)	(0.97	4.09)	1½-2½	b^{4}D°-175 (255)
(20)	(1.04	4.11)	3½-4½	b^{4}D°-177 (256)
50	(1.01	4.36)	2½-3½	b^{4}D°-205 (257)
60	(1.01	4.79)	2½-2½	b^{4}D°-238 (258)
(30)	(1.25	4.06)	2½-3½	e^{2}F°-171 (259)

assified Lines of Ce II

20	V
20	V
40	V
15	V
20	V
60	V
20	V
75	V
30	V
60	V
15	V
60	V

9.5 Anal A List B Jan 1942

600	(2.25	6.29)	4-5	fs^{3}F°-fp^{3}G
500	(2.00	6.C7)	3-4	(1)
150	(1.97	5.55)	2-3	
400	(2.25	6.07)	4-4	
300	(2.00	5.55)	3-3	
150	(2.25	5.93)	4-4	fs^{3}F°-fp^{3}F
200	(2.00	5.92)	3-3	(2)
125	(1.97	5.57)	2-2	
Ce$^+$	(2.25	5.92)	4-3	
150	(2.00	5.57)	3-2	
250	(2.00	5.93)	3-4	
400	(1.97	5.92)	2-3	
200	(2.25	5.81)	4-3	fs^{3}F°-fp^{1}F † (3)
200	(2.25	6.21)	4-3	fs^{3}F°-fp^{3}D †
200	(2.00	5.97)	3-2	(4)
100	(1.97	6.01)	2-1	
200	(1.97	5.97)	2-2	
200	(2.25	6.33)	4-4	fs^{3}F°-fp^{1}G (5)
100	(2.29	5.81)	3-3	fs^{1}F°-fp^{1}F (6)
300	(2.29	6.21)	3-3	fs^{1}F°-fp^{3}D (7)
200	(2.29	6.33)	3-4	fs^{1}F°-fp^{1}G (8)
125	(2.29	6.33)	3-2	fs^{1}F°-fp^{1}D (9)

ysis May 1942 (Temperature Class)

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
Pr II	I P ?	Anal C	List B	Dec 1941		
4628.751	A	100	0.05	2.72	5-5	a^{5}I°-2
4535.921	A	60	0.00	2.72	4-5	(1)
4517.595	A	40	0.05	2.79	5-5	a^{5}I°-3 †
*4429.238	A	60	0.00	2.79	4-5	(2)
4744.925	A	40	0.20	2.80	6-6	a^{5}I°-4
4487.821	A	20	0.05	2.80	5-6	(3)
4100.746//	A	150	0.55	3.56	8-9	a^{5}I°-z^{5}K
4143.136	A	150	0.37	3.35	7-8	(4)
4179.422	A	150	0.20	3.16	6-7	
4222.98	A	150	0.05	2.98	5-6	
4408.844	A	200	0.00	2.80	4-5	
4405.849	A	80	0.55	3.35	8-8	
*4429.238	A	100	0.37	3.16	7-7	
4449.867	A	150	0.20	2.98	6-6	
*4496.429	A	250	0.05	2.80	5-5	
4734.177	A	25	0.37	2.98	7-6	
4754.635	A	(15)	0.20	2.80	6-5	
4707.541	A	20	0.20	2.83	6-5	a^{5}I°-5
4454.382	A	30	0.05	2.83	5-5	(5)
4368.327	A	150	0.00	2.83	4-5	
4651.517	A	75	0.20	2.86	6-6	a^{5}I°-6 (6)
4297.764	A	80	0.00	2.87	4-5	a^{5}I°-7 (7)
4206.739	A	100	0.55	3.48	8-8	a^{5}I°-z^{5}I
4189.518	A	125	0.37	3.32	7-7	(8)
4164.192	A	100	0.20	3.17	6-6	
4118.481	A	200	0.05	3.05	5-5	
4225.327	A	150	0.00	2.92	4-4	
4458.336	A	25	0.55	3.32	8-7	
4412.155	A	20	0.37	3.17	7-6	
4333.913	A	100	0.20	3.05	6-5	
4305.763	A	100	0.05	2.92	5-4	
3966.573	A	80	0.37	3.48	7-8	
3965.263	A	150	0.20	3.32	6-7	
3964.825	A	250	0.05	3.17	5-6	
4044.818	A	60	0.00	3.05	4-5	
3953.516	A	125	0.55	3.67	8-8	a^{5}I°-z^{3}K †
3997.054	A	40	0.37	3.46	7-7	(9)
4241.019	A	60	0.55	3.46	8-7	
4141.257	A	80	0.55	3.53	8-7	a^{5}I°-z^{3}I
4578.139	A	25	0.37	3.07	7-6	(10)
3908.033	A	150	0.55	3.71	8-7	a^{5}I°-z^{5}H
3918.856	A	150	0.37	3.52	7-6	(11)
3947.633	A	100	0.20	3.33	6-5	
3994.834	A	200	0.05	3.14	5-4	
3908.431	B	200	0.00	3.16	4-3	
3699.952	A	(12)	0.37	3.71	7-7	
3925.456	A	75	0.00	3.14	4-4	
4191.615	A	20	0.20	3.15	6-5	a^{5}I°-16
3989.718	A	100	0.05	3.15	5-5	(12)
3920.524	A	15	0.00	3.15	4-5	
4421.231	A	40	0.37	3.16	7-6	a^{5}I°-17
4172.273	A	50	0.20	3.16	6-6	(13)
3972.164	A	100	0.05	3.16	5-6	
4081.018	A	50	0.20	3.23	6-5	a^{5}I°-19
3889.330	A	75	0.05	3.23	5-5	(14)
3823.571	A	(10)	0.00	3.23	4-5	
4272.271	A	80	0.37	3.26	7-6	a^{5}I°-22
4039.357	A	30	0.20	3.26	6-6	(15)
4171.824	A	40	0.37	3.33	7-6	a^{5}I°-z^{3}H
3949.438	A	125	0.20	3.33	6-6	(16)
3769.695	A	30	0.05	3.33	5-6	
3912.898	A	125	0.20	3.36	6-5	a^{5}I°-26 (17)
3885.190	A	75	0.20	3.38	6-6	a^{5}I°-27 †
*3711.099	A	(25)	0.05	3.38	5-6	(18)
4282.440	A	60	0.55	3.43	8-8	a^{5}I°-30
4033.857	A	75	0.37	3.43	7-8	(19)
4534.154	A	60	0.63	3.35	7-8	a^{3}I°-z^{5}K
4510.160	A	100	0.42	3.16	6-7	(20)
4468.712	A	150	0.22	2.98	5-6	
4879.121	A	(30)	0.63	3.16	7-7	
4826.649	A	(40)	0.42	2.98	6-6	
5251.738	A	12	0.63	2.98	7-6	
4672.081	A	40	0.22	2.86	5-6	a^{3}I°-6 † (21)
4646.059	A	30	0.22	2.87	5-5	a^{3}I°-7 (22)
4323.551	A	25	0.63	3.48	7-8	a^{3}I°-z^{5}I
4261.796	A	15	0.42	3.32	6-7	(23)
4180.68	A	(8)	0.22	3.17	5-6	
4589.76	A	(5d)	0.63	3.32	7-7	
4492.427	A	15	0.42	3.17	6-6	
4351.849	A	50	0.22	3.05	5-5	
4561.461	A	(6)	0.22	2.92	5-4	
5292.10	A	60*	0.63	2.96	7-8	a^{3}I°-10 (24)
4859.038	A	12	0.42	2.96	6-6	a^{3}I°-11 †
*4496.429	A	250	0.22	2.96	5-6	(25)
4056.543	A	80	0.63	3.67	7-8	a^{3}I°-z^{3}K
4062.817	A	125	0.42	3.46	6-7	(26)
4413.765	A	50	0.22	3.01	5-6	
4359.795	A	30	0.63	3.46	7-7	
4762.727	A	20	0.42	3.01	6-6	

Pr II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
4254.420	A	20	0.63	3.53	7-7	a^{3}I°-z^{3}I †
4664.647	A	20	0.42	3.07	6-6	(27)
3971.164	A	40	0.42	3.53	6-7	
4329.415	A	25	0.22	3.07	5-6	
4008.714	A	75	0.63	3.71	7-7	a^{3}I°-z^{5}H †
3982.063	A	150	0.42	3.52	6-6	(28)
3962.445	A	40	0.22	3.33	5-5	
4395.788	A	30	0.42	3.23	6-5	a^{3}I°-19
4096.822	A	25	0.22	3.23	5-5	(29)
4347.490	A	30	0.42	3.26	6-6	a^{3}I°-22 †
4054.845	A	80	0.22	3.26	5-6	(30)
4338.694	A	25	0.42	3.26	6-7	a^{3}I°-23 † (31)
4302.100	A	(60)	0.42	3.29	6-5	a^{3}I°-25
4015.389	A	40	0.22	3.29	5-5	(32)
4568.545	A	(30)	0.63	3.33	7-6	a^{3}I°-z^{3}H
4243.528	A	20	0.42	3.33	6-6	(33)
3964.261	A	40	0.22	3.33	5-6	
4403.605	A	25	0.63	3.43	7-8	a^{3}I°-30 (34)
5110.768	A	60	1.14	3.56	10-9	a^{5}L°-z^{5}K †
5173.898	A	60	0.96	3.35	9-8	(35)
5220.113	A	50	0.79	3.16	8-7	
5259.743	A	80	0.63	2.98	7-6	
5322.778	A	60	0.48	2.80	6-5	
4801.150	A	15	0.48	3.05	6-5	a^{5}L°-z^{5}I † (36)
5034.415	A	20	1.11	3.56	9-9	a^{5}K°-z^{5}K †
5135.125	A	20	0.95	3.35	8-8	(37)
5219.053	A	20	0.79	3.16	7-7	
5292.630	A	30	0.65	2.98	6-6	
5381.262	A	60	0.51	2.80	5-5	
5195.110	A	20	1.11	3.48	9-8	a^{5}K°-z^{5}I
5206.562	A	20	0.95	3.32	8-7	(38)
5195.307	A	30	0.79	3.17	7-6	
5129.520	A	40	0.65	3.05	6-5	
5110.382	A	60	0.51	2.92	5-4	
6025.723	A	20	1.43	3.48	8-8	b^{5}I°-z^{5}I †
6305.262	A	4	1.36	3.32	7-7	(39)
6244.344	A	5	1.19	3.17	6-6	
6161.194	A	50	1.05	3.05	5-5	
6165.945	A	60	0.92	2.92	4-4	

Strongest Unclassified Lines of Pr II

3880.466	B	100	V
3877.225	B	200	V
3865.458	B	100	V
3854.905	B	100	V
3852.805	B	150	V
3851.617	B	200	V
3850.825	B	150	V
3846.605	B	125	V
3830.719	B	125	V
3826.292	B	100	V
3818.281	B	125	V
3816.166	B	125	V
3800.303	B	200	V
3792.524	B	100	V
3772.854	B	100	V
3764.811	B	125	IV
3761.867	B	250	V
3739.193	B	100	IV
3687.039	B	125	IV
3668.830	B	150	IV

Nd I No analysis May 1942 (Temperature Class)

Nd II I P ? Anal C List B Apr 1942

*4959.130§	A	60	0.06	2.55	4½-4½	a^{6}I-1°
4835.982	A	15	0.00	2.55	3½-4½	(1)
4920.692	A	60	0.06	2.57	4½-3½	a^{6}I-20830
4799.423	A	10	0.00	2.57	3½-3½	(2)
4859.030	A	100	0.32	2.86	6½-5½	a^{6}I-z^{6}H°
4825.482	A	150	0.18	2.74	5½-4½	(3)
4811.343	A	100	0.06	2.63	4½-3½	
*4706.542§	A	100	0.00	2.62	3½-2½	
4609.148	A	(1)	0.18	2.86	5½-5½	
4612.473	A	4	0.06	2.74	4½-4½	
4414.432	A	8	0.06	2.86	4½-5½	
4505.75	A	(8)	0.00	2.74	3½-4½	
4680.734	A	30	0.06	2.70	4½-3½	a^{6}I-21871 (4)
4569.849	A	2	0.06	2.76	4½-3½	a^{6}I-3°
4465.075	A	10	0.00	2.76	3½-3½	(5)
4763.865	A	20	0.18	2.77	5½-4½	a^{6}I-4°
4556.136	A	12	0.06	2.77	4½-4½	(6)
4451.978	A	50	0.00	2.77	3½-4½	
4709.714	A	20	0.18	2.80	5½-5½	a^{6}I-5° †
4506.582	A	30	0.06	2.80	4½-5½	(7)

nued

ory f	Int	E P Low	E P High	J	Multiplet (No)
A	150	0.18	2.98	5½-5½	$a^6I-z^6I^\circ$ †
A	20	0.06	2.91	4½-4½	(8)
A	30	0.00	2.82	3½-3½	
A	150	0.06	2.98	4½-5½	
A	200	0.00	2.91	3½-4½	
A	20	0.06	2.86	4½-4½	a^6I-23171
A	50	0.00	2.86	3½-4½	(9)
A	300	0.63	3.70	8½-9½	$a^6I-z^6K^\circ$
A	200	0.47	3.51	7½-8½	(10)
A	200	0.32	3.32	6½-7½	
A	250	0.18	3.15	5½-6½	
A	200	0.06	3.02	4½-5½	
A	400	0.00	2.87	3½-4½	
A	100	0.63	3.51	8½-8½	
A	150	0.47	3.32	7½-7½	
A	300	0.32	3.15	6½-6½	
A	40	0.18	3.02	5½-5½	
A	100	0.06	2.87	4½-4½	
A	60	0.06	2.89	4½-3½	a^6I-6°
A	30	0.00	2.89	3½-3½	(11)
A	12	0.18	2.89	5½-4½	a^6I-7°
A	12	0.06	2.89	4½-4½	(12)
A	25	0.00	2.89	3½-4½	
A	10	0.18	2.95	5½-5½	a^6I-8° †
A	15	0.06	2.95	4½-5½	(13)
A	(10)	0.06	2.97	4½-4½	a^6I-9° †
A	30	0.00	2.97	3½-4½	(14)
A	20	0.18	3.00	5½-4½	a^6I-10°
A	10	0.06	3.00	4½-4½	(15)
A	40	0.00	3.00	3½-4½	
A	8	0.06	3.02	4½-3½	a^6I-11°
A	30	0.00	3.02	3½-3½	(16)
A	6	0.18	3.07	5½-5½	a^6I-12° †
A	100	0.06	3.07	4½-5½	(17)
A	(5)	0.32	3.09	6½-5½	a^6I-25014
A	50	0.06	3.09	4½-5½	(18)
A	80	0.63	3.73	8½-8½	$a^6I-y^6I^\circ$
A	60	0.47	3.56	7½-7½	(19)
A	60	0.32	3.39	6½-6½	
A	150	0.18	3.31	5½-5½	
A	30	0.06	3.13	4½-4½	
A	80	0.00	3.09	3½-3½	
A	40	0.63	3.56	8½-7½	
A	30	0.47	3.39	7½-6½	
A	50	0.32	3.31	6½-5½	
A	30	0.18	3.13	5½-4½	
A	50	0.06	3.09	4½-3½	
A	20	0.47	3.73	7½-8½	
A	100	0.32	3.56	6½-7½	
A	50	0.18	3.39	5½-6½	
A	(15)	0.06	3.31	4½-5½	
A	5	0.00	3.13	3½-4½	
A	6	0.18	3.10	5½-5½	a^6I-13° †
A	80	0.06	3.10	4½-5½	(20)
A	60	0.00	3.10	3½-3½	a^6I-25138 (21)
A	10	0.63	3.12	8½-7½	a^6I-25235
A	(5)	0.32	3.12	6½-7½	(22)
A	(4)	0.06	3.12	4½-3½	a^6I-14°
A	100	0.00	3.12	3½-3½	(23)
A	10	0.32	3.13	6½-5½	a^6I-15°
A	8	0.18	3.13	5½-5½	(24)
A	30	0.06	3.13	4½-5½	
A	20	0.18	3.18	5½-4½	a^6I-16°
A	40	0.06	3.18	4½-4½	(25)
A	60	0.00	3.19	3½-2½	$a^6I-y^6H^\circ$ (26)
A	150	0.06	3.19	4½-4½	a^6I-17° †
A	20	0.00	3.19	3½-4½	(27)
A	80	0.00	3.21	3½-2½	a^6I-26041 (28)
A	40	0.06	3.23	4½-5½	a^6I-26182 (29)
A	100	0.18	3.24	5½-6½	a^6I-18° (30)
A	20	0.18	3.24	5½-4½	a^6I-19°
A	30	0.06	3.24	4½-4½	(31)
A	20	0.00	3.24	3½-4½	
A	20	0.32	3.24	6½-5½	a^6I-21°
A	25	0.18	3.24	5½-5½	(32)
A	40	0.06	3.24	4½-5½	
A	60	0.06	3.29	4½-3½	a^6I-20°
A	30	0.00	3.29	3½-3½	(33)
A	15	0.32	3.37	6½-6½	a^6I-22°
A	30	0.18	3.37	5½-6½	(34)
A	60	0.18	3.39	5½-4½	a^6I-23°
A	20	0.06	3.39	4½-4½	(35)
A	8	0.47	3.39	7½-7½	a^6I-24° †
A	80	0.32	3.39	6½-7½	(36)
A	60	0.32	3.43	6½-6½	a^6I-27744 (37)
A	(8)	0.06	3.48	4½-4½	a^6I-28170 (38)
A	50	0.63	3.58	8½-8½	a^6I-29027
A	60	0.47	3.58	7½-8½	(39)

Nd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3328.270	A	80	0.00	3.71	3½-2½	a^6I-30037 (40)
3339.063	A	60	0.06	3.76	4½-3½	a^6I-30453
3282.777	A	8	0.00	3.76	3½-3½	(41)
3334.471	A	50	0.18	3.88	5½-4½	a^6I-25°
*3231.349§	A	(8)	0.06	3.88	4½-4½	(42)
5255.510	A	50	0.20	2.55	4½-4½	a^4I-1° (43)
5212.365	A	30	0.20	2.57	4½-3½	a^4I-20830 (44)
5603.651	A	5	0.38	2.58	5½-5½	a^4I-2°
*5191.448§	A	100	0.20	2.58	4½-5½	(45)
5361.174	A	3	0.56	2.86	6½-5½	$a^4I-z^6H^\circ$
5228.427	A	6	0.38	2.74	5½-4½	(46)
5089.837	A	8	0.20	2.63	4½-3½	
*4867.839§	A	3	0.20	2.74	4½-4½?	
4647.759	A	3	0.20	2.86	4½-5½	
4820.336	A	30	0.20	2.76	4½-3½	a^4I-3° (47)
5092.797	A	30	0.38	2.80	5½-5½	a^4I-5° † (48)
4446.387	A	200	0.20	2.98	4½-5½	$a^4I-z^6I^\circ$
4567.606	A	12	0.20	2.91	4½-4½	(49)
4715.589	A	25	0.20	2.82	4½-3½	
4456.394	A	40	0.74	3.51	7½-8½	$a^4I-z^6K^\circ$ †
4462.985	A	250	0.56	3.32	6½-7½	(50)
4451.566	A	400	0.38	3.15	5½-6½	
4385.663	A	150	0.20	3.02	4½-5½	
4597.013	A	20	0.20	2.89	4½-3½	a^4I-6° (51)
4914.385	A	15	0.38	2.89	5½-4½	a^4I-7°
4594.447	A	6	0.20	2.89	4½-4½	(52)
4501.808	A	50	0.20	2.95	4½-5½	a^4I-8° † (53)
4763.624	A	5	0.38	2.97	5½-4½	a^4I-9°
4462.407	A	30	0.20	2.97	4½-4½	(54)
4703.576	A	15	0.38	3.00	5½-4½	a^4I-10° (55)
4381.290	A	(10)	0.20	3.02	4½-3½	a^4I-11° (56)
4120.654	A	6	0.74	3.73	7½-8½	$a^4I-y^6I^\circ$
4106.582	A	8	0.56	3.56	6½-7½	(57)
4100.240	A	15	0.38	3.39	5½-6½	
3979.479	A	60	0.20	3.31	4½-5½	
4371.069	A	(10)	0.74	3.56	7½-7½	
4358.699	A	15	0.56	3.39	6½-6½	
4217.282	A	5	0.38	3.31	5½-5½	
4211.286	A	40	0.20	3.13	4½-4½	
4541.269	A	50	0.38	3.10	5½-5½	a^4I-13°
4266.716	A	30	0.20	3.10	4½-5½	(58)
4256.239	A	8	0.20	3.10	4½-3½	a^4I-25138 (59)
4797.157	A	20	0.56	3.13	6½-5½	a^4I-15° † (60)
4144.553	A	20	0.20	3.18	4½-4½	a^4I-16° (61)
4075.116	A	60	0.20	3.23	4½-5½	a^4I-26182 † (62)
4307.778	A	15	0.38	3.24	5½-5½	a^4I-21°
4059.961	A	50	0.20	3.24	4½-5½	(63)
4000.493	A	30	0.20	3.29	4½-3½	a^4I-20° (64)
4123.881	A	40	0.38	3.37	5½-6½	a^4I-22° (65)
4051.145	A	60	0.38	3.43	5½-6½	a^4I-27744 † (66)
3982.355	A	20	0.38	3.48	5½-4½	a^4I-28170
3769.644	A	40	0.20	3.48	4½-4½	(67)
4338.697	A	80	0.74	3.58	7½-8½	a^4I-29027 (68)
3811.073	A	20	0.38	3.62	5½-4½	a^4I-29298
3615.817	A	30	0.20	3.62	4½-4½	(69)
3470.866	A	20	0.20	3.76	4½-3½	a^4I-30453 (70)
3522.044	A	25	0.38	3.88	5½-4½	a^4I-25°
3354.621	A	10	0.20	3.88	4½-4½	(71)
6257.834	A	(25)	0.55	2.55	5½-4½	a^6L-1° (72)
5548.474	A	8	0.55	2.77	5½-4½	a^6L-4° (73)
5361.474	A	60	0.68	2.96	6½-5½	$a^6L-z^6I^\circ$
5234.195	A	50	0.55	2.91	5½-4½	(74)
5130.596	A	40	1.30	3.70	10½-9½	$a^6L-z^6K^\circ$ †
5192.621	A	80	1.13	3.51	9½-8½	(75)
5249.585	A	100	0.97	3.32	8½-7½	
5293.168	A	100	0.82	3.15	7½-6½	
5273.431	A	60	0.68	3.02	6½-5½	
5319.818	A	125	0.55	2.87	5½-4½	
5442.274	A	40	0.68	2.95	6½-5½	a^6L-8° (76)
5165.140	A	10	0.68	3.07	6½-5½	a^6L-12° (77)
5934.747	A	(10)	0.74	2.82	4½-3½	$a^6K-z^6I^\circ$
5811.572	A	12	0.86	2.98	5½-5½	(78)
5702.244	A	20	0.74	2.91	4½-4½	
5371.935	A	20	1.41	3.70	9½-9½	$a^6K-z^6K^\circ$ †
5485.699	A	80	1.26	3.51	8½-8½	(79)
5594.425	A	150	1.12	3.32	7½-7½	
5688.525	A	150	0.98	3.15	6½-6½	

Nd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5708.280	A	40	0.86	3.02	5½-5½	$a^6K-z^6K^\circ$ †
5804.020	A	60	0.74	2.87	4½-4½	cont
5421.559	A	20	0.74	3.02	4½-5½?	
5302.279	A	6	1.41	3.73	9½-8½	$a^6K-y^6I^\circ$ †
*5356.976§	A	15	1.26	3.56	8½-7½	(80)
5431.526	A	40	1.12	3.39	7½-6½	
5311.461	A	12	0.98	3.31	6½-5½	
5416. .31	A	15	0.86	3.13	5½-4½	
5250.816	A	8	0.74	3.09	4½-3½	
5276.879	A	8	0.86	3.19	5½-4½	a^6K-17° (81)
5474.734	A	10	0.98	3.24	6½-6½	a^6K-18° (82)
5455.815	A	20	0.98	3.24	6½-5½	a^6K-21° (83)
5668.868	A	15	1.41	3.58	9½-8½	a^6K-29027 † (84)
*6385.196§	A	150	1.16	3.09	5½-5½?	b^6I-25014 (85)
*5620.62 §	P	500	1.54	3.73	8½-8½	$b^6I-y^6I^\circ$ †
5718.120	A	12	1.40	3.56	7½-7½	(86)
5842.391	A	8	1.28	3.39	6½-6½	
5740.862	A	15	1.16	3.31	5½-5½	
5891.528	A	15	1.04	3.13	4½-4½	
5706.206	A	15	0.93	3.09	3½-3½	
5614.303	A	(10)	1.04	3.24	4½-4½	b^6I-19° (87)

Strongest Unclassified Lines of Nd II

5451.115	B	100	IV
4632.276	B	20	III
4542.603	B	60	IV
4282.443	B	50	IV
*4135.325	B	50	IV
4031.807	B	100	IV
4023.002	B	80	IV
4012.704	B	50	III
4007.435	B	50	IV
4004.010	B	60	III
3994.684	B	80	III
3953.525	B	60	IV
3934.823	B	50	IV
3920.965	B	100	III
3911.169	B	60	IV
3905.886	B	100	III
3901.850	B	50	IV
3900.226	B	60	III
3890.940	B	60	III
3890.580	B	50	IV
3889.929	B	50	IV
3878.582	C	50	IV
3848.524	B	80	IV
3836.541	B	60	IV
3814.725	B	60	III
3808.772	B	30	III
3803.474	B	40	III
3784.250	B	80	III
3763.475	B	60	III
3758.944	B	40	III
3741.427	B	50	III
3728.130	B	50	III
3723.506	B	50	III
3685.804	C	60	IV
3673.542	C	50	V
3672.363	C	50	V
3665.180	B	50	IV
3609.788	B	40	III
3592.595	B	60	IV
3587.504	B	50	IV
3543.352	B	50	IV
3393.641	B	60	IV
3364.950	B	50	IV
3300.148	B	70	IV
3285.093	B	50	IV
3275.218	B	60	IV
3134.897	B	50	V
3133.603	B	100	V
3116.141	B	60	V
3115.172	B	100	V
3098.476	B	50	V
3092.915	B	60	V
3075.380	D	50d	V
3014.165	B	60	V
3007.975	B	50	V

Sm I I P 5.6? Anal C List D Apr 1942

6671.51	A	800	0.50	2.35	6-7	$a^7F-z^9G^\circ$ †
6588.91	A	500	0.39	2.26	5-6	(1)
5659.86	B	400	0.10	2.28	2-1	a^7F-38°
*5516.09	B	500d	(0.04	2.27	1-2	(2) 37°
			0.28	2.53	4-	59°)
4841.701	B	400	0.50	3.05	6-5	102°
3925.216	B	400	0.10	3.24	2-1	118°
*3756.411§	B	600	0.10	3.39	2-3	127°
4296.743//	B	300	0.50	3.37	6-7	$a^7F-z^7G^\circ$ † (3)

11.4 Anal B List C Mar 1942

ory f Int	E P Low	High	J	Multiplet (No)
500	0.00	2.62	½-½	a^{8}F-1°
100	0.00	2.66	½-1½	(1) 2°
100	0.00	2.68	½-1½	5°
400	0.00	3.02	½-1½	33°
200	0.00	3.11	½-1½	35°
300	0.00	3.13	½-1½	37°
200d	0.00	3.29	½-½	a^{8}F-z^{8}G°
1200	0.00	3.34	½-1½	(2) z^{8}G°
200	0.00	3.73	½-½	124°
200d	0.00	3.80	½-1½	129°
400	0.00	3.85	½-1½	134°
200	0.04	2.62	1½-½	a^{8}F-1°
200	0.04	2.66	1½-1½	(3) 2°
400	0.04	2.67	1½-½	4°
500	0.04	2.68	1½-1½	5°
150	0.04	2.77	1½-2½	9°
300	0.04	2.96	1½-1½	a^{8}F-18°
150	0.04	2.99	1½-½	(4) 20°
200	0.04	3.09	1½-1½	33°
300	0.04	3.11	1½-2½	34°
200	0.04	3.13	1½-1½	37°
600	0.04	3.21	1½-2½	a^{8}F-47°
150	0.04	3.29	1½-½	(5) z^{8}G°
100	0.04	3.30	1½-1½	61°
200	0.04	3.34	1½-1½	z^{8}G°
200	0.04	3.35	1½-2½	72°
200	0.04	3.37	1½-2½	76°
1000	0.04	3.41	1½-2½	a^{8}F-z^{8}G°
200	0.04	3.44	1½-1½	(6) 85°
100	0.04	3.45	1½-2½	86°
800	0.04	3.73	1½-½	124°
500	0.04	3.83	1½-2½	133°
500	0.04	3.85	1½-1½	134°
200	0.10	2.68	2½-1½	a^{8}F-5°
500	0.10	2.70	2½-1½	(7) 6°
500	0.10	2.75	2½-2½	8°
400	0.10	2.87	2½-3½	14°
150	0.10	2.94	2½-2½	17°
200	0.10	2.96	2½-1½	a^{8}F-18°
200	0.10	3.02	2½-1½	(8) 23°
150	0.10	3.03	2½-2½	24°
100	0.10	3.07	2½-3½	30°
200	0.10	3.08	2½-2½	32°
250	0.10	3.16	2½-3½	a^{8}F-42°
200	0.10	3.21	2½-2½	(9) 47°
300	0.10	3.23	2½-3½	50°
200	0.10	3.23	2½-2½	51°
200	0.10	3.25	2½-2½	54°
150	0.10	3.28	2½-1½	a^{8}F-59°
150	0.10	3.30	2½-1½	(10) 61°
200	0.10	3.33	2½-3½	66°
150	0.10	3.34	2½-1½	z^{8}G°
200	0.10	3.35	2½-3½	71°
150	0.10	3.35	2½-2½	a^{8}F-72°
500	0.10	3.36	2½-3½	(11) 73°
600	0.10	3.41	2½-2½	z^{8}G°
100	0.10	3.45	2½-1½	87°
1000	0.10	3.47	2½-3½	z^{8}G°
100	0.10	3.51	2½-2½	a^{8}F-95°
200	0.10	3.51	2½-2½	(12) 96°
600	0.10	3.51	2½-3½	97°
100	0.10	3.55	2½-3½	102°
150	0.10	3.62	2½-	108°
300	0.10	3.85	2½-1½	a^{8}F-134°
200	0.10	3.92	2½-3½	(13) 139°
300	0.10	3.94	2½-3½	141°
300	0.10	3.98	2½-3½	144°
400	0.18	2.75	3½-2½	a^{8}F- 8°
150	0.18	2.81	3½-3½	(14) 11°
600	0.18	2.82	3½-3½	12°
100	0.18	2.87	3½-3½	14°
200	0.18	2.92	3½-4½	15°
600	0.18	2.99	3½-4½	a^{8}F-21°
400	0.18	3.03	3½-2½	(15) 24°
200	0.18	3.05	3½-3½	27°
100d	0.18	3.08	3½-2½	32°
200	0.18	3.11	3½-2½	34°
100d	0.18	3.14	3½-2½	a^{8}F-39°
200	0.18	3.16	3½-3½	(16) 42°
100	0.18	3.18	3½-3½	45°
80	0.18	3.23	3½-2½	51°
80	0.18	3.25	3½-2½	54°
150	0.18	3.28	3½-4½	a^{8}F-58°
200	0.18	3.31	3½-4½	(17) 63°
400	0.18	3.33	3½-3½	66°
200	0.18	3.36	3½-3½	73°
200	0.18	3.37	3½-2½	76°
300	0.18	3.37	3½-4½	a^{8}F-77°
100d	0.18	3.40	3½-	(18) 81°
200	0.18	3.41	3½-2½	z^{8}G°
500	0.18	3.47	3½-3½	z^{8}G°
500	0.18	3.48	3½-4½	92°
100	0.18	3.50	3½-4½	a^{8}F-94°
100	0.18	3.51	3½-2½	(19) 96°
300	0.18	3.51	3½-3½	97°
300	0.18	3.57	3½-4½	103°
1500d?	0.18	3.58	3½-4½	z^{8}G°

Sm II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3601.692	A	200	0.18	3.61	3½-3½	a^{8}F-107°
3583.394	A	150	0.18	3.63	3½-4½	(20) 110°
3530.600	A	150	0.18	3.68	3½-4½	118°
3382.399	A	600	0.18	3.83	3½-2½	133°
3320.155	A	600d	0.18	3.90	3½-2½	136°
3312.415	A	400	0.18	3.91	3½-2½	a^{8}F-137°
*3301.678	A	100	0.18	3.92	3½-4½	(21) 138°
3285.664	A	200	0.18	3.94	3½-3½	141°
3230.559	A	400	0.18	4.00	3½-4½	146°
3187.006	A	200	0.18	4.06	3½-4½	149°
3178.125	A	200	0.18	4.07	3½-4½	151°
4615.690	A	300	0.19	2.86	½-1½	a^{6}F-13°
4403.360	A	100	0.19	2.99	½-½	(22) 20°
4225.328	A	400	0.19	3.11	½-1½	35°
4041.675	A	200	0.19	3.24	½-½	53°
3891.210	A	100	0.19	3.36	½-½	74°
3799.542	A	300	0.19	3.44	½-1½	85°
3241.586	A	100	0.19	3.99	½-1½	145°
4938.100	A	100	0.25	2.75	1½-2½	a^{6}F-8°
4577.690	A	250	0.25	2.94	1½-2½	(23) 17°
4552.659	A	150	0.25	2.96	1½-1½	18°
4499.475	A	125	0.25	2.99	1½-½	20°
4360.720	A	150	0.25	3.08	1½-2½	32°
4169.478	A	200	0.25	3.21	1½-2½	a^{6}F-47°
4129.231	A	100	0.25	3.24	1½-2½	(24) 52°
4083.584	A	100	0.25	3.27	1½-1½	55°
*4064.576	A	300	0.25	3.28	1½-1½	59°
3966.045	A	150	0.25	3.36	1½-½	74°
3788.125	A	400	0.25	3.51	1½-2½	a^{6}F-95°
3762.588	A	200	0.25	3.53	1½-2½	(25) 99°
3712.764	A	200	0.25	3.57	1½-2½	104°
3711.543	A	200	0.25	3.57	1½-1½	105°
3650.188	A	200	0.25	3.63	1½-2½	111°
3214.125	A	150	0.25	4.09	1½-2½	152°
4844.208	A	300	0.28	2.82	4½-3½	a^{8}F-12°
4669.650	A	500	0.28	2.92	4½-4½	(26) 15°
4646.684	A	200	0.28	2.93	4½-4½	16°
4473.015	A	150	0.28	3.04	4½-5½	25°
4452.727	A	250	0.28	3.05	4½-3½	27°
4334.153	A	400	0.28	3.12	4½-3½	a^{8}F-36°
4318.936	A	500	0.28	3.13	4½-5½	(27) 38°
4285.496	A	200	0.28	3.16	4½-3½	42°
4279.678	A	200	0.28	3.16	4½-4½	43°
4244.702	A	200	0.28	3.18	4½-3½	45°
4109.405	A	150	0.28	3.28	4½-4½	a^{8}F-58°
4066.737	A	200	0.28	3.31	4½-4½	(28) 63°
3987.428	A	80	0.28	3.37	4½-4½	77°
3935.704	A	150	0.28	3.41	4½-5½	83°
3857.912	A	100	0.28	3.48	4½-5½	91°
3851.880	A	150	0.28	3.48	4½-4½	a^{8}F-92°
3833.828	A	200	0.28	3.50	4½-4½	(29) 94°
3800.887	A	400	0.28	3.52	4½-5½	98°
3735.980	A	500	0.28	3.58	4½-4½	z^{8}G°
3692.221	A	150	0.28	3.62	4½-5½	109°
*3667.932§	A	150d	0.28	3.64	4½-5½	a^{8}F-112°
3627.014	A	400	0.28	3.68	4½-5½	(30) 117°
3609.491	A	1200	0.28	3.70	4½-5½	z^{8}G°
*3384.658	A	300	0.28	3.92	4½-3½	139°
3368.568	A	200	0.28	3.94	4½-3½	141°
3336.124	A	200	0.28	3.98	4½-3½	a^{8}F-144°
3310.661	A	500	0.28	4.00	4½-4½	(31) 146°
3187.787	A	200	0.28	4.15	4½-5½	155°
3169.875	A	250	0.28	4.17	4½-5½	157°
4952.371	A	150	0.33	2.82	2½-3½	a^{6}F-12°
4566.206	A	200	0.33	3.03	2½-2½	(32) 24°
4543.948	A	250	0.33	3.05	2½-3½	27°
4420.526	A	200	0.33	3.12	2½-3½	36°
4292.182	A	150	0.33	3.21	2½-2½	47°
*4064.576	A	300	0.33	3.37	2½-2½	a^{6}F-76°
4035.110	A	250	0.33	3.39	2½-	(33) 79°
3976.430	A	200	0.33	3.44	2½-1½	85°
3947.838	A	100	0.33	3.46	2½-1½	88°
3881.383	A	100	0.33	3.51	2½-3½	97°
3847.511	A	150	0.33	3.54	2½-3½	a^{6}F-100°
3838.941	A	200	0.33	3.55	2½-2½	(34) 102°
3764.370	A	300	0.33	3.61	2½-3½	107°
3755.276	A	200	0.33	3.62	2½-	108°
*3743.868	A	500	0.33	3.63	2½-2½	111°
*3707.167§	A	100d	0.33	3.66	2½-1½	a^{6}F-116°
3645.387	A	200	0.33	3.72	2½-3½	(35) 133°
3369.455	A	200	0.33	3.99	2½-1½	145°
3305.185	A	200	0.33	4.07	2½-2½	150°
4854.365	A	150	0.38	2.92	5½-4½	a^{8}F-15°
4829.568	A	250	0.38	2.93	5½-4½	(36) 16°
4642.235	A	500	0.38	3.04	5½-5½	25°
4593.544	A	150	0.38	3.06	5½-5½	28°
4434.323	A	400	0.38	3.16	5½-4½	43°
4421.138	A	200	0.38	3.17	5½-6½	a^{8}F-44°
4368.031	A	150d	0.38	3.20	5½-6½	(37) 46°
4347.801	A	400	0.38	3.22	5½-4½	49°
4262.677	A	300	0.38	3.27	5½-5½	56°
4256.393	A	400	0.38	3.28	5½-6½	57°
4206.138	A	100	0.38	3.31	5½-4½	a^{8}F-63°
3983.138	A	200	0.38	3.48	5½-5½	(38) 91°
3922.397	A	800	0.38	3.52	5½-5½	98°
3780.927	A	150	0.38	3.64	5½-5½	112°
3718.877	A	500	0.38	3.70	5½-5½	z^{8}G°

Sm II continued

Laboratory I A	Ref	Int	E P Low	High	J	Multiplet (No)
3662.905	A	200	0.38	3.75	5½-4½	a^{8}F-125°
3592.603	A	1500	0.38	3.81	5½-6½	(39) z^{8}G°
3402.464	A	500	0.38	4.00	5½-4½	146°
*3384.658	A	300	0.38	4.02	5½-5½	147°
3354.185	A	150	0.38	4.06	5½-4½	149°
3344.353	A	200	0.38	4.07	5½-4½	151°
3321.179	A	800	0.38	4.09	5½-5½	a^{8}F-153°
3272.807	A	200	0.38	4.15	5½-5½	(40) 155°
3253.943	A	200	0.38	4.17	5½-5½	157°
3215.262	A	200	0.38	4.22	5½-6½	162°
3196.182	A	150	0.38	4.24	5½-5½	164°
*3187.216	A	300	0.38	4.25	5½-5½	166°
4961.936	A	250	0.43	2.92	3½-4½	a^{6}F-15°
4816.012	A	100	0.43	2.99	3½-4½	(41) 21°
4717.718	A	150	0.43	3.05	3½-3½	27°
4523.912	A	250	0.43	3.16	3½-4½	43°
4433.885	A	300	0.43	3.22	3½-4½	49°
4373.462	A	100	0.43	3.25	3½-2½	a^{6}F-54°
4286.640	A	100	0.43	3.31	3½-4½	(42) 63°
4234.573	A	200	0.43	3.35	3½-3½	71°
4203.051	A	125	0.43	3.37	3½-2½	76°
4068.334	A	100	0.43	3.47	3½-3½	z^{8}G°
3971.397	A	300	0.43	3.54	3½-2½	a^{6}F-100°
3843.500	A	200	0.43	3.64	3½-3½	(43) 113°
3831.501	A	400	0.43	3.65	3½-4½	114°
3800.370	A	100	0.43	3.68	3½-4½	118°
*3774.294	A	150	0.43	3.70	3½-2½	122°
*3756.411§	A	600	0.43	3.72	3½-3½	a^{6}F-123°
3535.653	A	150	0.43	3.92	3½-3½	(44) 139°
3396.187	A	250	0.43	4.07	3½-2½	150°
4834.618	A	100	0.48	3.04	6½-5½	a^{8}F-25°
4595.291	A	250	0.48	3.17	6½-6½	(45) 44°
4537.952	A	200	0.48	3.20	6½-6½	46°
4424.339	A	600	0.48	3.27	6½-5½	56°
4362.040	A	300	0.48	3.31	6½-5½	64°
4350.465	A	300d	0.48	3.32	6½-7½	a^{8}F-65°
4280.789	A	400	0.48	3.37	6½-7½	(46) 75°
4123.956	A	150	0.48	3.48	6½-5½	91°
3885.286	A	1000	0.48	3.66	6½-6½	115°
3767.358	A	200	0.48	3.76	6½-6½	126°
3706.752	A	300	0.48	3.81	6½-6½	a^{8}F-z^{8}G°
3649.537	A	500	0.48	3.76	6½-6½	(47) 126°
3604.285	A	800	0.48	3.91	6½-7½	128°
3568.271	A	1500	0.48	3.94	6½-7½	z^{8}G°
3418.514	A	500	0.48	4.09	6½-5½	153°
3347.298	A	150	0.48	4.17	6½-5½	a^{8}F-157°
*3306.388	A	500	0.48	4.22	6½-6½	(48) 162°
*3301.678	A	100	0.48	4.22	6½-6½	163°
3286.229	A	300	0.48	4.24	6½-5½	164°
3276.747	A	200	0.48	4.25	6½-5½	166°
3239.657	A	300	0.48	4.29	6½-6½	168°
4948.627	A	150	0.54	3.04	4½-5½	a^{6}F-35°
4713.057	A	150	0.54	3.16	4½-4½	(49) 43°
4615.441	A	150	0.54	3.22	4½-4½	49°
4519.633	A	200	0.54	3.27	4½-5½	56°
4454.629	A	200	0.54	3.31	4½-5½	64°
*4220.659	A	200	0.54	3.47	4½-3½	a^{6}F-z^{8}G°
4188.128	A	200	0.54	3.49	4½-3½	(50) 93°
*4178.019	A	100d	0.54	3.50	4½-4½	94°
*4155.217	A	100	0.54	3.51	4½-3½	97°
4107.387	A	200	0.54	3.55	4½-4½	101°
4075.845	A	250	0.54	3.57	4½-4½	a^{6}F-103°
3979.200	A	150	0.54	3.64	4½-3½	(51) 113°
3826.202	A	400	0.54	3.77	4½-4½	127°
*3760.694	A	500	0.54	3.82	4½-4½	173°
3650.998	A	150	0.54	3.92	4½-4½	138°
3389.325	A	200	0.54	4.18	4½-3½	a^{6}F-159°
3371.209	A	150	0.54	4.20	4½-3½	(52) 161°
3333.635	A	150	0.54	4.24	4½-4½	165°
3228.784	A	200	0.54	4.36	4½-	171°
4913.248	A	150	0.66	3.17	5½-6½	a^{6}F-44°
4847.760	A	200	0.66	3.20	5½-6½	(53) 46°
4718.329	A	150	0.66	3.27	5½-5½	56°
4467.342	A	500	0.66	3.42	5½-6½	84°
4378.236	A	150	0.66	3.48	5½-5½	91°
4236.745	A	250	0.66	3.57	5½-4½	103°
4153.332	A	100	0.66	3.63	5½-4½	a^{6}F-110°
4118.551	A	400	0.66	3.65	5½-4½	(54) 114°
4082.600	A	100d	0.66	3.68	5½-4½	118°
3728.469	A	400	0.66	3.97	5½-6½	143°
3467.874	A	100	0.66	4.22	5½-6½	162°
3440.502	A	100	0.66	4.24	5½-4½	165°
7082.77	A	400d	0.88	2.62	1½-½	a^{8}H-1°
6862.82	A	100d	0.88	2.68	1½-1½	(55) 5°
6790.00	A	200d	0.93	2.75	2½-2½	a^{8}H-8°
5116.700	A	100d	0.93	3.34	2½-1½	(56) z^{8}G°
*7039.22	A	600d	0.99	2.75	3½-2½	a^{8}H-8° (57)
7042.24	A	500d	1.07	2.82	4½-3½	a^{8}H-12°
6856.03	A	400d	1.07	2.87	4½-3½	(58) 14°

R E V I S E D   M U L T I P L E T   T A B L E

tory		E P		J	Multiplet
ef	Int	Low	High		(No)
inued					
A	800d	1.16	2.92	5½-4½	a^8H-15°
A	500d	1.16	2.99	5½-4½	(59) 21°
A	300d	1.37	3.28	7½-6½	a^8H-57° (60)
A	250d	1.41	2.94	3½-2½	a^8G-17°
A	600d	1.41	3.16	3½-4½	(61) 43°
A	1000d	1.49	3.37	8½-7½	a^8H-75° (62)
A	400	1.51	3.05	3½-3½	b^8F-27° (63)
A	200d	1.59	3.04	4½-5½	b F-25°
A	150d	1.59	3.06	4½-5½	(64) 28°
A	400	1.59	3.16	4½-4½	43°
A	800	1.60	3.16	3½-4½	a^8P-43° (65)
A	400d	1.68	3.13	6½-5½	a^8G-38° (66)
A	400d	1.74	3.27	6½-5½	b^8F-56°
A	500d	1.74	3.28	6½-6½	(67) 57°
A	800	1.74	3.27	4½-5½	a^8P-56° (68)
A	500d	1.79	3.28	7½-6½	a^8G-57°
A	400d	1.79	3.37	7½-7½	(69) 75°

Jnclassified Lines of Sm II

A	150	III
A	125	IV
A	150	IV
A	200	IV
A	100	III
A	200d	III
A	100	III
A	500	III
A	100	III
A	300	III
A	200d	IV
A	600	III
A	200	III
A	400	III
A	150	III
A	200	III
A	300	III
A	300	III
A	300	III
A	200	III
A	400	III
A	100	III
A	200	IV
A	150	IV
A	200	III
A	150	III
A	200	IV
A	200	IV
A	400	IV
A	400	III
A	200	III
A	150	III
A	300d	III
A	300	IV
A	400	IV
A	400	III
A	200	IV
A	200	IV
A	200	IV
A	300	IV
A	300	IV
A	500	IV
A	500	III
A	500	III
A	300	IV
A	500	IV
A	300	IV
A	400	IV
A	300	IV
A	400	IV
A	300	IV

Eu I I P 5.64 Anal A List D Apr 1942

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
4594.03//	A	10000R	0.00	2.69	3½-4½	a^8S°-y^8P
4627.22	A	8000R	0.00	2.67	3½-3½	(1)
4661.88	A	7000R	0.00	2.65	3½-2½	

Eu II I P 11.21 Anal B List C May 1942

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3819.67//	A	6000R	0.00	3.23	4-5	a^9S°-z^9P
4129.73	A	5000r	0.00	2.99	4-4	(1)
4205.05	A	6000r	0.00	2.93	4-3	
3724.94	A	4000	0.00	3.31	4-4	a^9S°-z^7P
3688.42	A	1500	0.00	3.35	4-3	(2)
2991.33	A	300	0.00	4.13	4-5	a^9S°-z^9D
3077.358	A	200	0.00	4.01	4-4	(3)
3173.607	A	100	0.00	3.89	4-3	
4435.58	A	3000	0.21	2.99	3-4	a^7S°-z^9P
4522.59	A	2000	0.21	2.93	3-3	(4)
3971.98	A	4000r	0.21	3.31	3-4	a^7S°-z^7P
3930.50	A	4000r	0.21	3.35	3-3	(5)
3907.10	A	3000r	0.21	3.36	3-2	
3097.45	A	100	0.21	4.19	3-2	a^7S°-103 (6)
3054.94	A	600	0.21	4.25	3-3	a^7S°-y^9P † (7)
6645.11	A	8000	1.37	3.23	6-5	a^9D°-z^9P
7370.22	A	2500	1.31	2.99	5-4	(8)
7426.57	A	1500	1.27	2.93	4-3	
6437.64	A	4000	1.31	3.23	5-5	
7194.81	A	1500	1.27	2.99	4-4	
7301.17	A	2500	1.24	2.93	3-3	
6303.41	A	2000	1.27	3.23	4-5	
7077.10	A	3000	1.24	2.99	3-4	
7217.55	A	1500	1.22	2.93	2-3	
6173.05	A	2000	1.31	3.31	5-4	a^9D°-z^7P †
6049.51	A	2000	1.27	3.31	4-4	(9)
5872.98	A	500	1.24	3.35	3-3	
5966.07	A	1200	1.24	3.31	3-4	
5818.74	A	1000	1.22	3.35	2-3	
*3917.29 §	A	60	1.37	4.52	6-5	a^9D°-y^9P †
4017.58	A	100	1.31	4.39	5-4	(10)
4151.52	A	20	1.27	4.25	4-3	
*3964.90 §	A	60	1.27	4.39	4-4	
4112.04	A	30	1.24	4.25	3-3	
3928.87	A	15	1.24	4.39	3-4	
4085.38	A	40	1.22	4.25	2-3	
3741.31	A	400	1.37	4.67	6-5	a^9D°-x^9P †
3761.12	A	300	1.31	4.60	5-4	(11)
3799.009	A	100	1.27	4.52	4-3	
3674.634	A	50	1.31	4.67	5-5	
3714.904	A	100	1.27	4.60	4-4	
3765.93	A	150	1.24	4.52	3-3	
3683.267	A	40	1.24	4.60	3-4	
3743.556	A	100	1.22	4.52	2-3	
3713.45	A	125	1.24	4.57	3-2	a^9D°-115 (12)
3508.852	A	20	1.31	4.83	5-4	a^9D°-y^7P
3508.731	A	10	1.27	4.79	4-3	(13)
3646.75	A	35	1.22	4.61	2-2	
3440.999	A	80	1.24	4.83	3-4	
3461.38	A	80	1.22	4.79	2-3	
3710.870	A	80	1.31	4.64	5-6	a^9D°-116 † (14)
3611.57	A	100	1.27	4.69	4-4	a^9D°-121 † (15)
3603.20	A	200	1.27	4.70	4-4	a^9D°-122 † (16)
3391.989	A	100	1.24	4.88	3-4	a^9D°-x^7P †
3542.152	A	80	1.22	4.71	2-2	(17)
3622.54	A	150	1.37	4.78	6-7	a^9D°-125 (18)
3552.516	A	100	1.31	4.79	5-5	a^9D°-126 † (19)
3369.055	A	200	1.31	4.98	5-6	a^9D°-131
3425.022	A	80	1.37	4.98	6-6	(20)
3321.857	A	100	1.37	5.09	6-5	a^9D°-134 (21)
4355.09	A	300	3.23	6.06	5-4	z^9P-e^9S°
4011.69	A	100	2.99	6.06	4-4	(22)
3943.08	A	40	2.93	6.06	3-4	
3380.25	A	100	2.99	6.64	4-4	z^9P-1° (23)
3521.09	A	100	3.23	6.74	5-6	z^9P-e^9D° †
3301.95	A	150	2.99	6.73	4-5	(24)
3266.39	A	200	2.93	6.71	3-4	

Eu II continued

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3531.151	A	60	3.23	6.73	5-5	z^9P-e^9D° †
3313.33	A	400	2.99	6.71	4-4	(24)
3272.77	A	400	2.93	6.71	3-3	cont
3319.89	A	80	2.99	6.71	4-3	
3277.78	A	600	2.93	6.70	3-2	
3308.02	A	200	2.99	6.72	4-5	z^9P-e^7D° † (25)
4485.15	A	100	3.31	6.06	4-4	z^7P-e^9S° † (26)
4383.17	A	200	3.31	6.13	4-3	z^7P-e^7S° †
4464.97	A	200	3.36	6.13	2-3	(27)
3616.152	A	100	3.31	6.73	4-5	z^7P-e^9D° †
3673.19	A	80	3.35	6.71	3-3	(28)
3678.259	A	100	3.36	6.72	2-1	z^7P-e^7D° † (29)
3396.58	A	200	3.31	6.95	4-5	z^7P-f^7D° † (30)

Strongest Unclassified Lines of Eu II

3861.18	A	80	V
3815.495	A	80	V
3738.08	A	80	V
3717.69	A	80	V
3687.78	A	80	V
3679.500	A	80	V
3390.783	A	80	V
3130.73	A	80	V

Gd I I P 6.16 Anal C List D June 1943

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
7168.37	A	3000	0.21	1.93	6-5	a^9D°-z^9P †
7733.50	A	1500	0.12	1.72	5-4	(1)
6730.73	A	1500	0.12	1.96	5-6	a^9D°-$z^{11}F$ †
6828.25	A	1500	0.07	1.87	4-5	(2)
6916.57	A	2000	0.03	1.81	3-4	
6991.92	A	1500	0.00	1.77	2-3	
5856.22	A	4000	0.12	2.23	5-6	a^9D°-z^9F †
5696.22	A	8000	0.07	2.23	4-5	(3)
5643.24	A	6000	0.03	2.21	3-4	
5617.91	A	4000	0.00	2.20	2-3	
6114.07	A	2000	0.21	2.23	6-6	
5851.63	A	5000	0.12	2.23	5-5	
5632.25	A	2500	0.00	2.19	2-2	
5791.38	A	4000	0.07	2.20	4-3	
5701.35	A	2500	0.03	2.19	3-2	
4225.850//	A	3000	0.21	3.13	6-7	a^9D°-y^9F †
4346.458	A	1500	0.12	2.96	5-5	(4)
4313.845	A	2000	0.03	2.89	3-3	
4306.340	A	1500	0.00	2.87	2-2	
4175.538	A	2000	0.21	3.17	6-6	a^9D°-y^9D †
4053.642	A	2500	0.12	3.17	5-6	(5)
4078.700	A	3000	0.07	3.09	4-5	
4058.219	A	2500	0.03	3.07	3-4	
5015.04	A	1500	1.05	3.51	8-9	$a^{11}F^\circ$-$z^{11}G$ †
5103.45	A	2000	0.98	3.40	7-8	(6)
5155.845	A	1500	0.92	3.32	6-7	
5197.768	A	1200	0.88	3.25	5-6	
5219.40	A	2000	0.84	3.20	4-5	
5255.805	A	1500	0.81	3.16	3-4	
5251.180	A	2000	1.05	3.40	8-8	
5283.076	A	3000	0.98	3.32	7-7	
5301.67	A	4000	0.92	3.25	6-6	
5307.30	A	4000	0.88	3.20	5-5	
5321.777	A	4000	0.84	3.16	4-4	
5302.76	A	3000	0.81	3.14	3-3	
5321.496	A	2000	0.79	3.11	2-2	
5348.67	A	2000	0.79	3.09	2-1	
5350.38	A	4000	1.54	3.85	7-8	a^9F°-z^9G †
5353.26	A	3000	1.46	3.77	6-7	(7)
5343.00	A	3000	1.39	3.70	5-6	
5333.30	A	2000	1.34	3.66	4-5	

Gd II I P ? Anal C List B Sept 1943

Laboratory			E P		J	Multiplet
I A	Ref	Int	Low	High		(No)
3763.00	A	50	0.24	3.52	6½-5½	$a^{10}D^\circ$-$z^{10}P$
3952.00	A	300	0.14	3.27	5½-4½	(1)
3993.213	A	200	0.08	3.17	4½-3½	
3656.152	A	1500	0.14	3.52	5½-5½	
3871.54	A	80	0.08	3.27	4½-4½	
3934.824	A	300?	0.03	3.17	3½-3½	
3587.186	A	40	0.08	3.52	4½-5½	
3816.64	A	250	0.03	3.27	3½-4½	
3894.696	A	2000	0.00	3.17	2½-3½	

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3422.466	A	10000	0.24	3.84	6½-7½	a^{10}D°-z^{10}F (2)
3545.797	A	3000	0.14	3.62	5½-6½	
3671.20	A	1500	0.08	3.44	4½-5½	
3716.36	A	1000	0.03	3.35	3½-4½	
3759.00	A	300	0.00	3.28	2½-3½	
3646.19	A	3000	0.24	3.62	6½-6½	
3743.47	A	2000	0.14	3.44	5½-5½	
3768.39	A	2000	0.08	3.35	4½-4½	
3796.37	A	2500	0.03	3.28	3½-3½	
3813.97	A	2000	0.00	3.24	2½-2½	
3855.56	A	200	0.24	3.44	6½-5½	
3844.579	A	500	0.14	3.35	5½-4½	
3850.69	A	800	0.08	3.28	4½-3½	
3852.45	A	1000	0.03	3.24	3½-2½	
3850.97	A	1200	0.00	3.20	2½-1½	
3968.261	A	60	0.14	3.25	5½-4½	a^{10}D°-2 (3)
3887.157	A	40	0.08	3.25	4½-4½	
3831.80	A	100	0.03	3.25	3½-4½	
3367.093	A	100	0.14	3.81	5½-4½	a^{10}D°-z^{8}P (4)
3654.62	A	2000d	0.08	3.46	4½-3½	
3697.73	A	1000	0.03	3.37	3½-2½	
3308.517	A	80	0.08	3.81	4½-4½	
3605.665	A	100	0.03	3.46	3½-3½	
3662.26	A	800	0.00	3.37	2½-2½	
3268.335	A	400	0.03	3.81	3½-4½	
3571.933	A	300	0.00	3.46	2½-3½	
3732.45	A	100	0.08	3.38	4½-3½	a^{10}D°-3 (5)
3524.196	A	1000	0.03	3.53	3½-2½	a^{10}D°-4 (6)
3491.954	A	2000	0.00	3.53	2½-2½	
3439.990	A	6000	0.24	3.83	6½-6½	a^{10}D°-z^{10}D (7)
3454.145	A	1500	0.14	3.72	5½-5½	
3518.632	A	30	0.08	3.59	4½-4½	
3449.616	A	800	0.03	3.61	3½-3½	
*3423.92 §	A	1500	0.00	3.60	2½-2½	
3549.365	A	3000	0.24	3.72	6½-5½	
3584.962	A	3000	0.14	3.59	5½-4½	
3494.404	A	3000	0.08	3.61	4½-3½	
3454.904	A	2000	0.03	3.60	3½-2½	
3350.474	A	10000	0.14	3.83	5½-6½	
3392.530	A	2000	0.08	3.72	4½-5½	
3473.219	A	2000	0.03	3.59	3½-4½	
3418.733	A	2000	0.00	3.61	2½-3½	
3462.997	A	200	0.14	3.71	5½-4½	a^{10}D°-z^{8}D † (8)
3365.591	A	400	0.03	3.70	3½-2½	
3345.985	A	2000	0.00	3.69	2½-1½	
3422.751	A	500	0.14	3.75	5½-5½	
3401.067	A	300	0.08	3.71	4½-4½	
3360.711	A	1000	0.03	3.70	3½-3½	
3336.180	A	2500	0.00	3.70	2½-2½	
3362.233	A	10000	0.08	3.75	4½-5½	
3358.620	A	8000	0.03	3.71	3½-4½	
3331.383	A	4000	0.00	3.70	2½-3½	
3196.532	A	150	0.08	3.94	4½-3½	a^{10}D°-z^{6}P † (9)
3052.511	A	50	0.00	4.04	2½-2½	
3133.094	A	150	0.00	3.94	2½-3½	
3161.369	A	2500	0.24	4.14	6½-6½	a^{10}D°-z^{8}F (10)
3145.00	A	2500	0.14	4.07	5½-5½	
3119.08	A	60	0.08	4.03	4½-4½	
3101.911	A	250d	0.03	4.01	3½-3½	
3098.899	A	300	0.00	3.98	2½-2½	
3223.740	A	1000?	0.24	4.07	6½-5½	
3171.09	A	125	0.14	4.03	5½-4½	
3138.094	A	80	0.08	4.01	4½-3½	
3124.250	A	150	0.03	3.98	3½-2½	
3119.336	A	25	0.00	3.96	2½-1½	
3085.621	A	60	0.14	4.14	5½-6½	
3093.846	A	25	0.08	4.07	4½-5½	
3083.350	A	200	0.03	4.03	3½-4½	
3076.925	A	2000	0.00	4.01	2½-3½	
*3160.69 §	A	200	0.08	3.98	4½-3½	a^{10}D°-y P † (11)
3135.034	A	200	0.03	3.97	3½-2½	
3156.532	A	2000	0.08	3.99	4½-4½	
3123.989	A	1000	0.03	3.98	3½-3½	
3119.941	A	800	0.03	3.99	3½-4½	
3098.644	A	800	0.00	3.98	2½-3½	
3100.504	A	10000	0.24	4.22	6½-5½	a^{10}D°-y^{10}P (12)
3081.993	A	8000	0.14	4.15	5½-4½	
3068.643	A	4000	0.08	4.10	4½-3½	
3027.602	A	8000	0.14	4.22	5½-5½	
3032.845	A	10000	0.08	4.15	4½-4½	
3034.051	A	8000	0.03	4.10	3½-3½	
2980.154	A	6000	0.08	4.22	4½-5½	
2999.045	A	8000	0.03	4.15	3½-4½	
3010.129	A	8000	0.00	4.10	2½-3½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4506.931	A	60	0.42	3.16	3½-4½	a^{8}D°-1 † (13)
4225.148	A	100	0.60	3.52	5½-5½	a^{8}D°-z^{10}P † (14)
4446.487	A	250	0.49	3.27	4½-4½	
4494.853	A	25	0.42	3.17	3½-3½	
4341.282	A	600	0.42	3.27	3½-4½	
4426.151	A	80	0.38	3.17	2½-3½	

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4078.444	A	1200	0.60	3.62	5½-6½	a^{8}D°-z^{10}F (15)
4184.252	A	2000	0.49	3.44	4½-5½	
4212.001	A	800	0.42	3.35	3½-4½	
4251.733	A	2000	0.38	3.28	2½-3½	
4280.490	A	1500	0.35	3.24	1½-2½	
4342.179	A	1500	0.60	3.44	5½-5½	
4310.981	A	200	0.49	3.35	4½-4½	
4322.195	A	125	0.38	3.24	2½-2½	
*4327.125§	A	1500	0.35	3.20	1½-1½	
4478.795	A	250	0.60	3.35	5½-4½	
4419.032	A	800	0.49	3.28	4½-3½	
4387.674	A	300	0.42	3.24	3½-2½	
4369.771	A	500	0.38	3.20	2½-1½	
4360.917	A	250	0.42	3.25	3½-4½	a^{8}D°-2 (16)
3843.80	A	25	0.60	3.81	5½-4½	a^{8}D°-z^{8}P † (17)
4162.732	A	500	0.49	3.46	4½-3½	
4188.099	A	60	0.42	3.37	3½-2½	
3719.53	A	300	0.49	3.81	4½-4½	
4070.390	A	200	0.42	3.46	3½-3½	
3645.62	A	300	0.42	3.81	3½-4½	
4013.953	A	60	0.38	3.46	2½-3½	
4167.159	A	40	0.42	3.38	3½-3½	a^{8}D°-3 † (18)
3822.17	A	80	0.60	3.83	5½-6½	a^{8}D°-z^{10}D † (19)
3826.05	A	200	0.49	3.72	4½-5½	
3902.398	A	1000	0.42	3.59	3½-4½	
3957.672	A	1000	0.60	3.72	5½-5½	
3987.214	A	600	0.49	3.59	4½-4½	
3872.62	A	60	0.42	3.61	3½-3½	
*4130.372	A	3000	0.60	3.59	5½-4½	
3916.508	A	3000	0.60	3.75	5½-5½	a^{8}D°-z^{8}D † (20)
3836.91	A	300	0.49	3.71	4½-4½	
3760.92	A	100	0.42	3.70	3½-3½	
3699.73	A	800	0.35	3.69	1½-1½	
3969.293	A	300	0.60	3.71	5½-4½	
3839.64	A	300	0.49	3.70	4½-3½	
3767.04	A	500	0.42	3.70	3½-2½	
3730.84	A	1000	0.38	3.69	2½-1½	
3787.56	A	400	0.49	3.75	4½-5½	
3758.31	A	200	0.42	3.71	3½-4½	
3712.70	A	2000	0.38	3.70	2½-3½	
3687.74	A	800	0.35	3.70	1½-2½	
3578.596	A	30	0.49	3.94	4½-3½	a^{8}D°-z^{6}P † (21)
3409.297	A	500	0.42	4.04	3½-2½	
3321.348	A	30	0.38	4.10	2½-1½	
3510.133	A	30	0.42	3.94	3½-3½	
*3369.818	A	400	0.38	4.04	2½-2½	
3296.668	A	30	0.35	4.10	1½-1½	
3468.083	A	200	0.38	3.94	2½-3½	
3481.275	A	5000	0.60	4.14	5½-6½	a^{8}D°-z^{8}F † (22)
3450.376	A	4000	0.49	4.07	4½-5½	
3416.948	A	2500	0.42	4.03	3½-4½	
3399.406	A	500	0.38	4.01	2½-3½	
3399.991	A	1200	0.35	3.98	1½-2½	
3557.053	A	1000	0.60	4.07	5½-5½	
3481.797	A	3000	0.49	4.03	4½-4½	
3439.784	A	1500	0.42	4.01	3½-3½	
3424.592	A	1200	0.35	3.96	1½-1½	
3590.468	A	100	0.60	4.03	5½-4½	
3505.512	A	2000	0.49	4.01	4½-3½	
3467.267	A	3500	0.42	3.98	3½-2½	
3451.233	A	2000	0.38	3.96	2½-1½	
3432.994	A	1500	0.35	3.95	1½- ½	
*3640.18 §	A	50	0.60	3.99	5½-4½	a^{8}D°-y^{8}P † (23)
3480.547	A	60	0.42	3.97	3½-2½	
3528.545	A	300	0.49	3.99	4½-4½	
3466.952	A	600	0.42	3.98	3½-3½	
3439.208	A	3000	0.38	3.97	2½-2½	
*3461.952§	A	300	0.42	3.99	3½-4½	
3425.930	A	600	0.38	3.98	2½-3½	
3412.753	A	80	0.35	3.97	1½-2½	
3407.61	A	1500?	0.60	4.22	5½-5½	a^{8}D°-y^{10}P (24)
3374.688	A	300	0.49	4.15	4½-4½	
3356.513	A	80	0.42	4.10	3½-3½	
3419.069	A	50	0.49	4.10	4½-3½	
3309.582	A	60	0.49	4.22	4½-5½	
3313.731	A	600	0.42	4.15	3½-4½	
3318.055	A	100	0.38	4.10	2½-3½	
3161.638	A	40	0.60	4.50	5½-5½	a^{8}D°-y^{8}D † (25)
3003.583	A	150	0.42	4.53	3½-3½	
2960.926	A	500	0.38	4.55	2½-2½	
3143.131	A	400	0.60	4.52	5½-4½	
3053.570	A	600	0.49	4.53	4½-3½	
2991.520	A	150	0.42	4.55	3½-2½	
3077.077	A	800	0.49	4.50	4½-5½	
3009.366	A	60	0.42	4.52	3½-4½	
2972.742	A	150	0.38	4.53	2½-3½	
3028.981	A	200	0.60	4.67	5½-4½	a^{8}D°-7 † (26)

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3009.650	A	150	0.60	4.70	5½-4½	a^{8}D°-8 † (27)
2969.267	A	50	0.60	4.75	5½-5½	a^{8}D°-9 (28)
2965.428	A	400	0.60	4.76	5½-5½	a^{8}D°-z^{6}F † (29)
3012.190	A	600	0.60	4.69	5½-4½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4510.380	A	30d?	0.43	3.16	3½-4½	a^{8}S°-1 (30)
4344.487	A	40	0.43	3.27	3½-4½	a^{8}S°-z^{10}P (31)
4498.276	A	300	0.43	3.17	3½-3½	
4215.023	A	600	0.43	3.35	3½-4½	a^{8}S°-z^{10}F (32)
4390.953	A	300	0.43	3.24	3½-2½	
4364.140	A	25	0.43	3.25	3½-4½	a^{8}S°-2 (33)
4073.195	A	400	0.43	3.46	3½-3½	a^{8}S°-z^{8}P † (34)
4191.067	A	800	0.43	3.37	3½-2½	
*4170.108§	A	150	0.43	3.38	3½-3½	a^{8}S°-3 (35)
3881.84	A	50	0.43	3.60	3½-2½	a^{8}S°-z^{10}D † (36)
3760.71	A	200	0.43	3.71	3½-4½	a^{8}S°-z^{8}D (37)
3763.33	A	60	0.43	3.70	3½-3½	
3769.45	A	100	0.43	3.70	3½-2½	
3512.219	A	800	0.43	3.94	3½-3½	a^{8}S°-z^{6}P † (38)
3441.790	A	400	0.43	4.01	3½-3½	a^{8}S°-z^{8}F † (39)
3460.307	A	100	0.43	3.98	3½-2½	
3463.984	A	5000	0.43	3.99	3½-4½	a^{8}S°-y^{8}P (40)
3468.989	A	3000	0.43	3.98	3½-3½	
3482.602	A	800	0.43	3.97	3½-2½	
3315.590	A	400	0.43	4.15	3½-4½	a^{8}S°-y^{10}P (41)
3358.434	A	300	0.43	4.10	3½-3½	
3010.899	A	250	0.43	4.52	3½-4½	a^{8}S°-y^{8}D (42)
2993.038	A	500	0.43	4.55	3½-2½	

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4734.427	A	100	0.66	3.27	5½-4½	a^{10}F°-z^{10}P † (43)
4802.575	A	80	0.60	3.17	4½-3½	
4316.052	A	600	0.66	3.52	5½-5½	
4627.66	A	40	0.60	3.27	4½-4½	
4719.040	A	60	0.55	3.17	3½-3½	
4227.140	A	200	0.60	3.52	4½-5½	
4073.759	A	1500	0.82	3.84	7½-7½	a^{10}F°-z^{10}F † (44)
*4262.092§	A	2500	0.73	3.62	6½-6½	
4438.266	A	150	0.66	3.44	5½-5½	
4481.056	A	300	0.60	3.35	4½-4½	
4521.296	A	100	0.55	3.28	3½-3½	
4558.080	A	250	0.50	3.20	1½-1½	
4394.719	A	25	0.82	3.62	7½-6½	
4550.954	A	150	0.73	3.44	6½-5½	
4581.086	A	200	0.66	3.35	5½-4½	
*4597.91 §	A	500	0.60	3.28	4½-3½	
4601.05	A	500	0.55	3.24	3½-2½	
4596.978	A	400	0.52	3.20	2½-1½	
3959.523	A	500?	0.73	3.84	6½-7½	
*4163.092§	A	250	0.66	3.62	5½-6½	
4344.300	A	100	0.60	3.44	4½-5½	
4408.248	A	400	0.55	3.35	3½-4½	
*4466.547§	A	500	0.52	3.28	2½-3½	
4506.333	A	200	0.50	3.24	1½-2½	
4757.791	A	80	0.66	3.25	5½-4½	a^{10}F°-2 † (45)
4321.110	A	200	0.60	3.46	4½-3½	a^{10}F°-z^{8}P † (46)
4382.061	A	60	0.55	3.37	3½-2½	
4253.366	A	800	0.55	3.46	3½-3½	
4330.606	A	600	0.52	3.37	2½-2½	
3791.72	A	30	0.55	3.81	3½-4½	
4204.857	A	300	0.52	3.46	2½-3½	
4296.076	A	1000	0.50	3.37	1½-2½	
*4359.152	A	40	0.55	3.38	3½-3½	a^{10}F°-3 † (47)
4308.233	A	40	0.52	3.38	2½-3½	
4140.450	A	100	0.55	3.53	3½-2½	a^{10}F°-4 (48)
4094.478	A	300	0.52	3.53	2½-2½	
4063.59	A	200	0.50	3.53	1½-2½	
4098.606	A	3000	0.82	3.83	7½-6½	a^{10}F°-z^{10}D † (49)
*4130.372	A	3000	0.73	3.72	6½-5½	
4217.195	A	500	0.66	3.59	5½-4½	
4098.900	A	400	0.60	3.61	4½-3½	
4045.148	A	100	0.55	3.60	3½-2½	
3983.008	A	80	0.73	3.83	6½-6½	
4037.332	A	1500	0.66	3.72	5½-5½	
4132.275	A	2000	0.60	3.59	4½-4½	
4037.897	A	1200	0.55	3.61	3½-3½	
4001.257	A	600	0.52	3.60	2½-2½	
3959.436	A	300?	0.60	3.72	4½-5½	
4070.288	A	600	0.55	3.59	3½-4½	
3994.165	A	800	0.52	3.61	2½-3½	
3971.754	A	300	0.50	3.60	1½-2½	

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4085.564	A	2000	0.73	3.75	6½-5½	$a^{10}F^{\circ}-z^{8}D$ †
4049.429	A	1200	0.66	3.71	5½-4½	(50)
3973.981	A	500	0.60	3.70	4½-3½	
3923.246	A	300	0.55	3.70	3½-2½	
3895.230	A	200	0.52	3.69	2½-1½	
3971.062	A	100	0.60	3.71	4½-4½	
m3916.61	P	Gd^{+}	0.55	3.70	3½-3½	
3881.94	A	30	0.52	3.70	2½-2½	
3867.26	A	60	0.50	3.69	1½-1½	
3918.236	A	150	0.60	3.75	4½-5½	
3875.46	A	100	0.52	3.70	2½-3½	
3854.177	A	50	0.50	3.70	1½-2½	
3709.13	A	50	0.82	4.14	7½-6½	$a^{10}F^{\circ}-z^{8}F$ †
3576.772	A	25	0.50	3.95	1½- ½	(51)
*3614.21 §	A	100	0.73	4.14	6½-6½	
3591.912	A	30	0.60	4.03	4½-4½	
3569.566	A	40	0.55	4.01	3½-3½	
3567.654	A	40	0.50	3.96	1½-1½	
3542.768	A	500	0.66	4.14	5½-6½	
3558.468	A	250	0.60	4.07	4½-5½	
3544.985	A	60	0.55	4.03	3½-4½	
3593.445	A	60	0.55	3.99	3½-4½	$a^{10}F^{\circ}-y^{8}P$ †
3564.046	A	60	0.52	3.98	2½-3½	(52)
3554.802	A	30	0.50	3.97	1½-2½	
3466.498	A	150	0.66	4.22	5½-5½	$a^{10}F^{\circ}-y^{10}P$ † (53)
3193.174	A	200	0.66	4.52	5½-4½	$a^{10}F^{\circ}-y^{8}D$ †
3137.940	A	80	0.60	4.53	4½-3½	(54)
3089.204	A	30	0.55	4.55	3½-2½	
3212.274	A	50	0.66	4.50	5½-5½	
3162.764	A	25	0.60	4.50	4½-5½	
3108.230	A	30	0.55	4.52	3½-4½	
3040.34	A	150	0.60	4.66	4½-3½	$a^{10}F^{\circ}-6$ (55)
3075.422	A	30	0.66	4.67	5½-4½	$a^{10}F^{\circ}-7$ † (56)
3058.119	A	80	0.66	4.69	5½-4½	$a^{10}F^{\circ}-z^{6}F$ †
2987.074	A	80	0.60	4.73	4½-3½	(57)
5860.73	A	1000	1.06	3.16	5½-4½	$b^{8}D^{\circ}-1$ † (58)
5010.821	A	400	1.06	3.52	5½-5½	$b^{8}D^{\circ}-z^{10}P$ †
6049.50	A	80	1.13	3.17	3½-3½	(59)
5583.68	A	800	1.06	3.27	5½-4½	
5956.48	A	200	1.10	3.17	4½-3½	
5096.063	A	200	1.10	3.52	4½-5½	
4805.817	A	100	1.06	3.62	5½-6½	$b^{8}D^{\circ}-z^{10}F$ †
5267.322	A	40	1.10	3.44	4½-5½	(60)
5176.285	A	800	1.06	3.44	5½-5½	
*5469.72 §	A	800	1.10	3.35	4½-4½	
5728.32	A	60	1.13	3.28	3½-3½	
5371.621	A	40	1.06	3.35	5½-4½	
5644.84	A	300	1.10	3.28	4½-3½	
5856.96	A	150	1.13	3.24	3½-2½	
6011.12	A	30	1.15	3.20	2½-1½	
5616.21	A	300	1.06	3.25	5½-4½	$b^{8}D^{\circ}-2$ (61)
4483.328	A	300	1.06	3.81	5½-4½	$b^{8}D^{\circ}-z^{8}P$ †
4551.455	A	30	1.10	3.81	4½-4½	(62)
5304.923	A	25	1.13	3.46	3½-3½	
5357.790	A	50	1.15	3.46	2½-3½	
5394.321	A	125	1.10	3.38	4½-3½	$b^{8}D^{\circ}-3$ †
5470.53	A	50	1.13	3.38	3½-3½	(63)
4453.931	A	60	1.06	3.83	5½-6½	$b^{8}D^{\circ}-z^{10}D$
4711.975	A	80	1.10	3.72	4½-5½	(64)
5023.133	A	200	1.13	3.59	3½-4½	
*5020.368§	A	80	1.15	3.61	2½-3½	
5062.862	A	150	1.17	3.60	1½-2½	
*4639.001	A	200	1.06	3.72	5½-5½	
*4958.788§	A	800	1.10	3.59	4½-4½	
4973.896	A	30	1.13	3.61	3½-3½	
5031.562	A	80	1.15	3.60	2½-2½	
4878.049	A	30	1.06	3.59	5½-4½	
4910.838	A	50	1.10	3.61	4½-3½	
4984.905	A	60	1.13	3.60	3½-2½	
4582.53	A	400	1.06	3.75	5½-5½	$b^{8}D^{\circ}-z^{8}D$ †
4728.468	A	300	1.10	3.71	4½-4½	(65)
4791.150	A	40	1.13	3.70	3½-3½	
4894.30	A	600	1.17	3.69	1½-1½	
4654.986	A	100	1.06	3.71	5½-4½	
4732.60	A	600	1.10	3.70	4½-3½	
4801.05	A	500	1.13	3.70	3½-2½	
4865.02	A	400	1.15	3.69	2½-1½	
4786.908	A	150	1.13	3.71	3½-4½	
4834.232	A	300	1.15	3.70	2½-3½	
4873.339	A	150	1.17	3.70	1½-2½	

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4427.606	A	60	1.15	3.94	2½-3½	$b^{8}D^{\circ}-z^{6}P$ † (66)
3997.764	A	300	1.06	4.14	5½-6½	$b^{8}D^{\circ}-z^{8}F$ †
4154.862	A	250	1.10	4.07	4½-5½	(67)
4246.568	A	150	1.13	4.03	3½-4½	
*4316.266	A	150	1.15	4.01	2½-3½	
4383.119	A	150	1.17	3.98	1½-2½	
4359.636	A	30	1.15	3.98	2½-2½	
4424.102	A	40	1.17	3.96	1½-1½	
4400.18	A	25	1.15	3.96	2½-1½	
4438.13	A	30	1.17	3.95	1½- ½	
4268.731	A	150	1.10	3.99	4½-4½	$b^{8}D^{\circ}-y^{8}P$ †
4324.064	A	150	1.13	3.98	3½-3½	(68)
4380.642	A	100	1.15	3.97	2½-2½	
*4316.266	A	150	1.13	3.99	3½-4½	
*4359.152	A	40	1.15	3.98	2½-3½	
3581.91	A	200	1.06	4.50	5½-5½	$b^{8}D^{\circ}-y^{8}D$
3600.963	A	200	1.10	4.52	4½-4½	(69)
3626.32	A	40	1.13	4.53	3½-3½	
3629.51	A	80	1.17	4.57	1½-1½	
3558.189	A	400	1.06	4.52	5½-4½	
*3592.709	A	1500d	1.10	4.53	4½-3½	
3608.753	A	200	1.13	4.55	3½-2½	
3613.392	A	150	1.15	4.57	2½-1½	
3625.26	A	60	1.10	4.50	4½-5½	
3634.757	A	100	1.13	4.52	3½-4½	
3650.95	A	100	1.15	4.53	2½-3½	
3649.44	A	80	1.17	4.55	1½-2½	
3412.583	A	60	1.06	4.67	5½-4½	$b^{8}D^{\circ}-7$ †
*3451.914§	A	25	1.10	4.67	4½-4½	(70)
3388.065	A	40	1.06	4.70	5½-4½	$b^{8}D^{\circ}-8$ † (71)
3336.984	A	200	1.06	4.75	5½-5½	$b^{8}D^{\circ}-9$
3374.584	A	50	1.10	4.75	4½-5½	(72)
3332.133	A	1000	1.06	4.76	5½-5½	$b^{8}D^{\circ}-z^{6}F$ †
3426.342	A	50	1.13	4.73	3½-3½	(73)
3412.020	A	200	1.15	4.77	2½-2½	
3403.081	A	150	1.17	4.79	1½-1½	
3391.294	A	150	1.06	4.69	5½-4½	
3390.498	A	30	1.13	4.77	3½-2½	
3388.912	A	100	1.15	4.79	2½-1½	
3390.878	A	200	1.17	4.81	1½- ½	
*3369.618	A	400	1.10	4.76	4½-5½	
3460.776	A	30	1.13	4.69	3½-4½	
3300.976	A	60	1.10	4.84	4½-3½	$b^{8}D^{\circ}-x^{8}P$ †
3292.210	A	800	1.10	4.85	4½-4½	(74)
3329.345	A	400	1.13	4.84	3½-3½	
3366.532	A	50	1.15	4.82	2½-2½	
3320.438	A	300	1.13	4.85	3½-4½	
3350.097	A	400	1.15	4.84	2½-3½	
3380.515	A	300	1.17	4.82	1½-2½	
3226.318	A	1000	1.06	4.88	5½-4½	$b^{8}D^{\circ}-z^{6}D$ †
3236.106	A	150	1.10	4.91	4½-3½	(75)
3242.834	A	50	1.13	4.93	3½-2½	
3249.747	A	40	1.15	4.95	2½-1½	
*3262.515	A	80	1.10	4.88	4½-4½	
3263.373	A	125	1.13	4.91	3½-3½	
*3262.515	A	80	1.15	4.93	2½-2½	
3289.150	A	100	1.13	4.88	3½-4½	
3102.551	A	1000	1.06	5.03	5½-6½	$b^{8}D^{\circ}-y^{8}F$ †
3133.852	A	1000	1.10	5.03	4½-5½	(76)
3145.516	A	800	1.13	5.05	3½-4½	
3146.878	A	250	1.15	5.07	2½-3½	
3142.900	A	300	1.17	5.09	1½-2½	
3101.407	A	50	1.06	5.03	5½-5½	
3120.181	A	125	1.10	5.05	4½-4½	
3128.560	A	200	1.13	5.07	3½-3½	
3130.812	A	200	1.15	5.09	2½-2½	
3129.955	A	100	1.17	5.11	1½-1½	
3117.974	A	40	1.15	5.11	2½-1½	
3121.760	A	80	1.17	5.12	1½- ½	
2975.110	A	30	1.13	5.28	3½-2½	$b^{8}D^{\circ}-y^{6}P$
2972.17	A	100	1.15	5.30	2½-1½	(77)
2985.521	A	100	1.13	5.26	3½-3½	
2983.060	A	60	1.17	5.30	1½-1½	
3002.197	A	50	1.15	5.26	2½-3½	
3002.710	A	60	1.17	5.28	1½-2½	
5586.16	A	100	1.25	3.46	4½-3½	$a^{6}D^{\circ}-z^{8}P$ (78)
5871.81	A	30	1.28	3.38	3½-3½	$a^{6}D^{\circ}-3$ † (79)
5303.43	A	30	1.28	3.61	3½-3½	$a^{6}D^{\circ}-z^{10}D$ †
5220.297	A	300	1.31	3.61	2½-3½	(80)
5019.361	A	100	1.25	3.70	4½-3½	$a^{6}D^{\circ}-z^{8}D$ †
5107.406	A	60	1.28	3.70	3½-2½	(81)

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4582.38	A	300	1.25	3.94	4½-3½	$a^{6}D^{\circ}-z^{6}P$ †
4471.29	A	200	1.28	4.04	3½-2½	(82)
4433.635	A	60	1.31	4.10	2½-1½	
4646.326	A	40	1.28	3.94	3½-3½	
4520.070	A	150	1.31	4.04	2½-2½	
4467.227	A	80	1.33	4.10	1½-1½	
4554.989	A	50	1.33	4.04	1½-2½	
4488.401	A	80	1.35	4.10	½-1½	
4374.243	A	30	1.25	4.07	4½-5½	$a^{6}D^{\circ}-z^{8}F$ †
4463.247	A	80	1.25	4.01	4½-3½	(83)
4781.273	A	50	1.33	3.95	1½- ½	
4570.977	A	40	1.28	3.98	3½-3½	$a^{6}D^{\circ}-y^{8}P$ †
4509.082	A	50	1.25	3.98	4½-3½	(84)
3791.17	A	300	1.25	4.50	4½-5½	$a^{6}D^{\circ}-y^{8}D$ †
3807.65	A	25	1.28	4.52	3½-4½	(85)
3764.60	A	50	1.25	4.52	4½-4½	
3755.56	A	40	1.25	4.53	4½-3½	
3641.39	A	125	1.28	4.67	3½-4½	$a^{6}D^{\circ}-7$ † (86)
3613.490	A	80	1.28	4.70	3½-4½	$a^{6}D^{\circ}-8$ (87)
3517.890	A	60	1.25	4.75	4½-5½	$a^{6}D^{\circ}-9$ (88)
3512.496	A	600	1.25	4.76	4½-5½	$a^{6}D^{\circ}-z^{6}F$ †
3617.164	A	200	1.28	4.69	3½-4½	(89)
3610.76	A	200	1.31	4.73	2½-3½	
*3592.709	A	1500d	1.33	4.77	1½-2½	
3580.618	A	40	1.35	4.79	½-1½	
3579.549	A	25	1.28	4.73	3½-3½	
*3567.116	A	30	(1.33 1.35	4.79 4.81	1½-1½ ½- ½	
3553.716	A	40	1.33	4.81	1½- ½	
3428.467	A	500	1.25	4.85	4½-4½	$a^{6}D^{\circ}-x^{8}P$ †
3464.132	A	100?	1.28	4.85	3½-4½	(90)
3503.206	A	60	1.31	4.84	2½-3½	
3395.120	A	1000	1.25	4.88	4½-4½	$a^{6}D^{\circ}-z^{6}D$
*3402.072	A	1000	1.28	4.91	3½-3½	(91)
3407.56	A	600?	1.31	4.93	2½-2½	
3413.273	A	400	1.33	4.95	1½-1½	
3417.330	A	150	1.35	4.96	½- ½	
3367.661	A	150	1.25	4.91	4½-3½	
3379.756	A	400	1.28	4.93	3½-2½	
3393.630	A	400	1.31	4.95	2½-1½	
3405.038	A	150	1.33	4.96	1½- ½	
3430.238	A	40	1.31	4.91	2½-3½	
3427.362	A	80	1.33	4.93	1½-2½	
3425.624	A	50	1.35	4.95	½-1½	
3257.072	A	100	1.25	5.03	4½-5½	$a^{6}D^{\circ}-y^{8}F$ †
3274.183	A	300	1.28	5.05	3½-4½	(92)
3281.607	A	200	1.31	5.07	2½-3½	
3282.305	A	400?	1.33	5.09	1½-2½	
3279.529	A	200	1.35	5.11	½-1½	
3242.304	A	150	1.25	5.05	4½-4½	
3255.819	A	150	1.28	5.07	3½-3½	
3264.137	A	60	1.31	5.09	2½-2½	
3270.515	A	100	1.35	5.12	½- ½	
3224.297	A	60	1.25	5.07	4½-3½	
3238.621	A	300	1.28	5.09	3½-2½	
3250.187	A	300	1.31	5.11	2½-1½	
3259.250	A	250	1.33	5.12	1½- ½	
3072.565	A	1000	1.25	5.26	4½-3½	$a^{6}D^{\circ}-y^{6}P$ †
3089.954	A	400	1.28	5.28	3½-2½	(93)
3092.058	A	150	1.31	5.30	2½-1½	
3101.185	A	125	1.28	5.26	3½-3½	
3113.172	A	250	1.31	5.28	2½-2½	
3108.360	A	150	1.33	5.30	1½-1½	
3129.696	A	80	1.33	5.28	1½-2½	
3118.600	A	150	1.35	5.30	½-1½	
5877.26	A	1000	1.42	3.52	5½-5½	$a^{10}P^{\circ}-z^{10}P$
6634.36	A	1500	1.31	3.17	3½-3½	(94)
6681.23	A	1000	1.42	3.27	5½-4½	
6846.60	A	1200	1.37	3.17	4½-3½	
5733.86	A	1000	1.37	3.52	4½-5½	
6305.15	A	1500	1.31	3.27	3½-4½	
5597.21	A	200	1.42	3.62	5½-6½	$a^{10}P^{\circ}-z^{10}F$
5951.60	A	80	1.37	3.44	4½-5½	(95)
6106.19	A	100	1.42	3.44	5½-5½	
6727.83	A	125	1.42	3.25	5½-4½	$a^{10}P^{\circ}-2$
6346.65	A	400	1.31	3.25	3½-4½	(96)
5164.542	A	150	1.42	3.81	5½-4½	$a^{10}P^{\circ}-z^{8}P$ †
5987.11	A	150	1.31	3.37	3½-2½	(97)
5749.41	A	500	1.31	3.46	3½-3½	
5545.01	A	250	1.31	3.53	3½-2½	$a^{10}P^{\circ}-4$ (98)

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5125.56	A	400	1.42	3.83	5½-6½	$a^{10}P^{\circ}-z^{10}D$ †
*5252.14 §	A	500	1.37	3.72	4½-5½	(99)
5419.876	A	150	1.31	3.59	3½-4½	
5372.216	A	300	1.42	3.72	5½-5½	
5560.69	A	600	1.37	3.59	4½-4½	
5500.43	A	600	1.37	3.61	4½-3½	
5375.393	A	100	1.31	3.60	3½-2½	
5393.659	A	100	1.42	3.71	5½-4½	$a^{10}P^{\circ}-z^{8}D$ †
5179.919	A	125	1.37	3.75	4½-5½	(100)
*4666.448§	A	40	1.37	4.01	4½-3½	$a^{10}P^{\circ}-z^{8}F$ † (101)
4803.536	A	80	1.42	3.99	5½-4½	$a^{10}P^{\circ}-y^{8}P$ †
4716.576	A	30	1.37	3.98	4½-3½	(102)
*4639.001	A	200	1.31	3.97	3½-2½	
4406.67	A	400	1.42	4.22	5½-5½	$a^{10}P^{\circ}-y^{10}P$ †
4421.24	A	200	1.31	4.10	3½-3½	(103)
*4522.82 §	A	250	1.42	4.15	5½-4½	
4514.505	A	200	1.37	4.10	4½-3½	
4325.566	A	200	1.37	4.22	4½-5½	
4347.310	A	400	1.31	4.15	3½-4½	
4003.850	A	30	1.42	4.50	5½-5½	$a^{10}P^{\circ}-y^{8}D$ † (104)
3748.88	A	50	1.37	4.66	4½-3½	$a^{10}P^{\circ}-6$ (105)
3489.281	A	40	1.31	4.85	3½-4½	$a^{10}P^{\circ}-x^{8}P$ (106)
3414.207	A	60	1.42	5.03	5½-6½	$a^{10}P^{\circ}-y^{8}F$ †
3363.974	A	30	1.37	5.03	4½-5½	(107)
		———	———	———		
6610.04	A	80	1.65	3.52	5½-5½	$a^{8}F^{\circ}-z^{10}P$ † (108)
6480.11	A	200	1.72	3.62	6½-6½	$a^{8}F^{\circ}-z^{10}F$ †
7172.26	A	600	1.72	3.44	6½-5½	(109)
7252.70	A	400	1.65	3.35	5½-4½	
7394.90	A	150	1.61	3.28	4½-3½	
7505.35	A	80	1.59	3.24	3½-2½	
5721.99	A	200	1.65	3.81	5½-4½	$a^{8}F^{\circ}-z^{8}P$ †
6704.18	A	60	1.61	3.46	4½-3½	(110)
6622.28	A	50	1.59	3.46	3½-3½	
6260.31	A	40	1.61	3.59	4½-4½	$a^{8}F^{\circ}-z^{10}D$
*6180.42 §	A	300	1.72	3.72	6½-5½	(111)
6380.95	A	600	1.65	3.59	5½-4½	
6080.65	A	300	1.72	3.75	6½-5½	$a^{8}F^{\circ}-z^{8}D$
6004.57	A	500	1.65	3.71	5½-4½	(112)
5904.07	A	800	1.61	3.70	4½-3½	
5855.24	A	300	1.59	3.70	3½-2½	
5845.71	A	80	1.58	3.69	2½-1½	
5884.59	A	30	1.65	3.75	5½-5½	
5897.62	A	200	1.61	3.71	4½-4½	
5840.47	A	200	1.59	3.70	3½-3½	
5815.85	A	250	1.58	3.70	2½-2½	
5820.99	A	200	1.57	3.69	1½-1½	
5801.30	A	40	1.58	3.70	2½-3½	
5807.05	A	100	1.56	3.69	½-1½	
*4881.925	A	200	1.57	4.10	1½-1½?	$a^{8}F^{\circ}-z^{6}P$ † (113)
5092.251	A	600	1.72	4.14	6½-6½	$a^{8}F^{\circ}-z^{8}F$ †
5108.91	A	500	1.65	4.07	5½-5½	(114)
5098.38	A	400	1.61	4.03	4½-4½	
5100.937	A	100	1.59	4.01	3½-3½	
5175.839	A	50	1.56	3.95	½- ½	
5256.030	A	50	1.72	4.07	6½-5½	
5178.104	A	100	1.65	4.03	5½-4½	
5187.237	A	250	1.58	3.96	2½-1½	
5186.915	A	200	1.57	3.95	1½- ½	
4954.025	A	50	1.65	4.14	5½-6½	
5031.290	A	250	1.61	4.07	4½-5½	
5050.878	A	300	1.59	4.03	3½-4½	
5071.023	A	200	1.58	4.01	2½-3½	
5111.930	A	30	1.57	3.98	1½-2½	
5156.76	A	200	1.56	3.96	½-1½	
5210.488	A	200	1.61	3.98	4½-3½	$a^{8}F^{\circ}-y^{8}P$ †
5191.081	A	250	1.59	3.97	3½-2½	(115)
5199.211	A	60	1.61	3.99	4½-4½	
5160.896	A	100	1.59	3.98	3½-3½	
5160.105	A	40	1.58	3.97	2½-2½	
5149.841	A	50	1.59	3.99	3½-4½	
5130.28	A	200	1.58	3.98	2½-3½	
5140.839	A	400	1.57	3.97	1½-2½	
4936.155	A	50	1.72	4.22	6½-5½	$a^{8}F^{\circ}-y^{10}P$ †
4806.165	A	40	1.65	4.22	5½-5½	(116)
4892.11	A	30	1.58	4.10	2½-3½	
4436.225	A	200	1.72	4.50	6½-5½	$a^{8}F^{\circ}-y^{8}D$ †
4296.30	A	400	1.65	4.52	5½-4½	(117)
4229.803	A	200	1.61	4.53	4½-3½	
4173.556	A	100	1.59	4.55	3½-2½	
4127.721	A	25	1.58	4.57	2½-1½	

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4241.276	A	80	1.61	4.52	4½-4½	$a^{8}F^{\circ}-y^{8}D$ †
4197.069	A	150	1.59	4.53	3½-3½	(117)
4153.510	A	125	1.58	4.55	2½-2½	cont
4115.376	A	80	1.57	4.57	1½-1½	
4141.017	A	25	1.57	4.55	1½-2½	
4108.401	A	50	1.56	4.57	½-1½	
4059.370	A	80	1.72	4.76	6½-5½	$a^{8}F^{\circ}-z^{6}F$ † (118)
3722.068	A	100	1.72	5.03	6½-5½	$a^{8}F^{\circ}-y^{8}F$ † (119)
		———	———	———		
7908.06	A	40d?	2.19	3.75	5½-5½	$c^{8}D^{\circ}-z^{8}D$ † (120)
6314.22	A	50	2.19	4.14	5½-6½	$c^{8}D^{\circ}-z^{8}F$ †
7197.08	A	80	2.27	3.98	1½-2½	(121)
6568.00	A	100	2.19	4.07	5½-5½	
6996.76	A	1500	2.22	3.98	2½-2½	
6857.13	A	600	2.19	3.99	5½-4½	$c^{8}D^{\circ}-y^{8}P$
6920.62	A	250	2.20	3.98	4½-3½	(122)
7000.75	A	200	2.21	3.97	3½-2½	
6900.73	A	200	2.20	3.99	4½-4½	
6945.98	A	150	2.21	3.98	3½-3½	
7051.00	A	200	2.22	3.97	2½-2½	
6299.07	A	40	2.19	4.15	5½-4½	$c^{8}D^{\circ}-y^{10}P$
6494.11	A	80	2.20	4.10	4½-3½	(123)
4968.575	A	50	2.19	4.67	5½-4½	$c^{8}D^{\circ}-7$ (124)
4916.78	A	25	2.19	4.70	5½-4½	$c^{8}D^{\circ}-8$ (125)
4799.859	A	60	2.19	4.76	5½-5½	$c^{8}D^{\circ}-z^{6}F$ †
4888.542	A	40	2.21	4.73	3½-3½	(126)
4839.616	A	40	2.22	4.77	2½-2½	
4923.578	A	60	2.19	4.69	5½-4½	
4875.966	A	50	2.20	4.73	4½-3½	
4664.272	A	30	2.20	4.85	4½-4½	$c^{8}D^{\circ}-x^{8}P$ † (127)
*4337.510§	A	80	2.19	5.03	5½-6½	$c^{8}D^{\circ}-y^{8}F$ †
4335.290	A	25	2.19	5.03	5½-5½	(128)
4304.087	A	25	2.21	5.07	3½-3½	
4292.747	A	25	2.22	5.09	2½-2½	
3191.044	A	125	2.19	6.06	5½-4½	$c^{8}D^{\circ}-w^{8}P$ †
3173.169	A	30	2.20	6.00	4½-3½	(129)
3200.454	A	60	2.20	6.06	4½-4½	
3177.490	A	30	2.21	6.09	3½-3½	
3206.466	A	400	2.27	6.12	1½-2½	
		———	———	———		
6752.67	A	2000	2.32	4.14	7½-6½	$a^{8}G^{\circ}-z^{8}F$ †
7006.16	A	1000	2.31	4.07	6½-5½	(130)
7118.86	A	800	2.30	4.03	5½-4½	
7054.62	A	200	2.26	4.01	4½-3½	
7085.52	A	50	2.24	3.98	3½-2½	
7164.90	A	25	2.23	3.96	2½-1½	
6718.14	A	150	2.31	4.14	6½-6½	
6988.75	A	100	2.30	4.07	5½-5½	
6959.24	A	150	2.26	4.03	4½-4½	
6971.66	A	100	2.24	4.01	3½-3½	
7058.02	A	80	2.23	3.98	2½-2½	
7116.77	A	150	2.22	3.96	1½-1½	
7146.13	A	40	2.22	3.95	½- ½	
6702.12	A	40	2.30	4.14	5½-6½	
7141.17	A	25	2.24	3.97	3½-2½	$a^{8}G^{\circ}-y^{8}P$ † (131)
5621.43	A	100	2.31	4.50	6½-5½	$a^{8}G^{\circ}-y^{8}D$ †
5510.58	A	80	2.26	4.50	4½-5½	(132)
4998.373	A	200	2.26	4.73	4½-3½	$a^{8}G^{\circ}-z^{6}F$ †
*4881.925	A	200	2.24	4.77	3½-2½	(133)
4821.955	A	60	2.23	4.79	2½-1½	
4800.100	A	60	2.22	4.79	1½-1½	
4772.728	A	30	2.22	4.81	½- ½	
4755.347	A	30	2.22	4.82	1½-2½	$a^{8}G^{\circ}-x^{8}P$ † (134)
4540.016	A	200	2.32	5.03	7½-6½	$a^{8}G^{\circ}-y^{8}F$ †
4521.94	A	150	2.31	5.03	6½-5½	(135)
4486.352	A	100	2.30	5.05	5½-4½	
4517.10	A	30	2.30	5.03	5½-6½	
3287.192	A	40	2.30	6.06	5½-4½	$a^{8}G^{\circ}-w^{8}P$ †
3252.743	A	30	2.26	6.06	4½-4½	(136)
		———	———	———		
7017.73	A	60	2.25	4.01	2½-3½	$1^{\circ}-z^{8}F$
7133.16	A	100	2.25	3.98	2½-2½	(137)
7242.24	A	60	2.25	3.96	2½-1½	
7189.57	A	800	2.25	3.97	2½-2½	$1^{\circ}-y^{8}P$ (138)
		———	———	———		

Gd II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
7385.97	A	80	2.34	4.01	2½-3½	$2^{\circ}-z^{8}F$ (139)
5162.47	A	50d	2.34	4.73	2½-3½	$2^{\circ}-z^{6}F$ † (140)
4223.020	A	60	2.34	5.26	2½-3½	$2^{\circ}-y^{6}P$ (141)
		———	———	———		
7748.37	A	40	2.40	3.99	4½-4½	$3^{\circ}-y^{8}P$ † (142)
4965.047	A	60	2.40	4.88	4½-4½	$3^{\circ}-z^{6}D$ (143)
4608.030	A	40	2.40	5.07	4½-3½	$3^{\circ}-y^{8}F$ † (144)
		———	———	———		
8089.96	A	60	2.46	3.99	3½-4½	$4^{\circ}-y^{8}P$ † (145)
5441.17	A	40	2.46	4.73	3½-3½	$4^{\circ}-z^{6}F$ (146)
*5178.843§	A	100	2.46	4.85	3½-4½	$4^{\circ}-x^{8}P$
5200.549	A	30	2.46	4.84	3½-3½	(147)
4726.725	A	40	2.46	5.07	3½-3½	$4^{\circ}-y^{8}F$ † (148)
*3402.072	A	1000	2.46	6.09	3½-3½	$4^{\circ}-w^{8}P$ † (149)

Strongest Unclassified Lines of Gd II

Laboratory I A	Ref	Int	
8442.58	A	300	V
8316.38	A	500	V
7963.25	A	500	V
7930.25	A	2000	V
7846.35	A	3000	V
*7844.87 §	A	300	V
7324.89	A	400	V
7147.31	A	500	V
7135.73	A	250	V
7037.26	A	600	V
6985.89	A	1500	V
*6980.86 §	A	250	V
6887.63	A	300	V
5913.55	A	800	V
*5911.45 §	A	500	V
*5754.17 §	A	250	V
5538.32	A	300	V
4397.51	A	300	IV
4304.895	A	400	V
4297.173	A	400	V
4253.612	A	800	V
4238.782	A	500	V
4197.681	A	800	V
4137.104	A	500	V
4111.438	A	500	V
4063.390	A	1500	IV
4062.590	A	500	V
4053.294	A	1000	V
4049.858	A	2000	IV
4022.333	A	300	V
4013.798	A	250	V
4008.913	A	400	V
3996.320	A	800	IV
3895.791	A	400	V
3842.20	A	400	IV
3801.29	A	400	V
3782.34	A	300	V
3770.69	A	300	V
3733.08	A	300	V
3719.45	A	800	V
3664.60	A	2000	IV
*3457.047§	A	300	V
3364.241	A	500	V
3330.340	A	800	V
3225.460	A	600	V
3084.007	A	250	V
3005.092	A	300	V
3002.860	A	1000	V
2963.605	A	400	V

Tb I No analysis May 1942 (Temperature Class)

Tb II No analysis May 1942 (Temperature Class)

Dy I No analysis May 1942 (Temperature Class)

Dy II No analysis May 1942 (Temperature Class)

Ho I No analysis May 1942 (Temperature Class)

Ho II No analysis May 1942 (Temperature Class)

Er Not separated May 1942

Tm I I P ? Anal D List D Jan 1943

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4386.434	A	200	0.00	2.81	3½-	a^2F°-2
4359.929	A	300	0.00	2.83	3½-	(1) 3
3887.347	A	200	0.00	3.17	3½-	5
3949.275	A	100	1.08	4.21	2½-	a^2F°-15
3916.476	A	200	1.08	4.23	2½-	(2) 16

Strongest Unclassified Lines of Tm I

I A	Ref	Int	Temperature Class
5971.28	A	200	I
5895.646	A	300	I
5764.300	A	200	I
5675.853	A	400	I
5631.404	A	150	I
5307.121	A	200	I
4203.730	A	300	I
4187.616	A	500	I
4105.843	A	600	I
4094.188	A	700	I
3883.133	A	400	I
3751.812	A	100	I
3744.066	A	300	I
3717.915	A	500	I

Tm II I P ? Anal B List B Jan 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4526.565	A	80	0.00	2.67	4-	a^3F°-1
4481.273	A	200	0.00	2.75	4-	(1) 2
4199.918	A	100	0.00	2.94	4-4	3
3958.101	A	200	0.00	3.12	4-4?	4
3890.528	A	60	0.00	3.17	4-	5
3848.023	A	1000	0.00	3.21	4-	a^3F°-6
3761.913	A	600	0.00	3.28	4-4	(2) 7
3761.331	A	800	0.00	3.28	4-3	8
3701.364	A	250	0.00	3.33	4-4	9
3668.088	A	120	0.00	3.36	4-4	10
3608.766	A	200	0.00	3.42	4-3	a^3F°-11
3536.576	A	80	0.00	3.49	4-3	(3) 12
3425.630	A	150	0.00	3.60	4-4	13
3397.499	A	100	0.00	3.63	4-3	14
3291.001	A	120	0.00	3.75	4-4	15
3276.811	A	50	0.00	3.77	4-4	a^3F°-16
3258.048	A	150	0.00	3.79	4-3	(4) 17
3241.530	A	200	0.00	3.81	4-4	18
3210.825	A	50	0.00	3.84	4-4	20
3133.886	A	250	0.00	3.94	4-4	22
4677.858	A	40	0.03	2.67	3-	a^3F°-1
4529.376	A	80	0.03	2.75	3-	(5) 2
4242.153	A	300	0.03	2.94	3-4	3
3995.586	A	80	0.03	3.12	3-4?	4
3883.437	A	200	0.03	3.21	3-	6
3795.759	A	600	0.03	3.28	3-4	a^3F°-7
3795.169	A	80	0.03	3.28	3-3	(6) 8
3734.124	A	300	0.03	3.33	3-4	9
3700.256	A	300	0.03	3.36	3-4	10
3566.472	A	100	0.03	3.49	3-3	12
3453.665	A	200	0.03	3.60	3-4	a^3F°-13
3425.082	A	300	0.03	3.63	3-3	(7) 14
3316.875	A	60	0.03	3.75	3-4	15
3302.454	A	150	0.03	3.77	3-4	16
3283.400	A	50	0.03	3.79	3-3	17
3266.633	A	80	0.03	3.81	3-4	a^3F°-18
3235.448	A	90	0.03	3.84	3-4	(8) 20
3172.828	A	200	0.03	3.92	3-3	21
3157.344	A	180	0.03	3.94	3-4	22
3098.597	A	100	0.03	4.01	3-2?	24
3015.296	A	100	0.03	4.12	3-4	27
3900.790	A	90	1.08	4.25	2-2?	a^3F°-33
3810.724	A	50	1.08	4.32	2-2	(9) 37
3756.860	A	100	1.08	4.37	2-	40
3704.848	A	50	1.08	4.41	2-3	41
3665.812	A	60	1.08	4.45	2-3	a^3F°-44
3653.614	A	80	1.08	4.46	2-3	(10) 45
3557.796	A	80	1.08	4.55	2-3	47
3481.750	A	30	1.08	4.63	2-2	48
3285.609	A	60	1.08	4.84	2-2	56
3929.583	A	100	1.11	4.25	3-2?	a^1F°-33
3838.198	A	200	1.11	4.32	3-2	(11) 37
3798.752	A	80	1.11	4.35	3-2	39
3783.561	A	60	1.11	4.37	3-	40
3730.810	A	40	1.11	4.41	3-3	41

Tm II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3678.862	A	80	1.11	4.46	3-3	a^1F°-45
3431.195	A	100	1.11	4.70	3-4	(12) 52
3399.951	A	70	1.11	4.74	3-4?	53
3374.512	A	100	1.11	4.76	3-2	54
3327.578	A	40	1.11	4.81	3-	55
3267.401	A	80	1.11	4.88	3-3	a^1F°-57
3236.806	A	150	1.11	4.92	3-4	(13) 58
3231.509	A	60	1.11	4.92	3-3	59

Strongest Unclassified Lines of Tm II

I A	Ref	Int	Temperature Class
5782.356	B	100	V
5709.976	B	100	IV
4626.565	B	80	IV
3996.518	B	200	III
3817.395	B	100	III
3725.061	B	200	III
3535.522	B	100	III
3462.198	B	300	III
3441.505	B	200	III
3362.619	B	300	III
3309.804	B	100	IV
3240.230	B	125	IV
3151.036	B	200	IV
3131.257	B	400	IV

Yb I I P 6.23 Anal B List D May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5556.48	A	1500	0.00	2.22	0-1	6^1S-6^3P° (1)
3987.98//	A	2000	0.00	3.09	0-1	6^1S-6^1P° (2)
7699.49	A	1500	2.43	4.04	2-1	6^3P°-7^3S
6799.61	A	1000	2.22	4.04	1-1	(3)
6489.10	A	800	2.13	4.04	0-1	

Yb II I P 12.05 Anal D List D May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3289.36	A	800	0.00	3.75	½-1½	6^2S-6^2P°
3694.19//	A	1000	0.00	3.34	½- ½	(1)

Lu I I P 5? Anal B List D May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
6004.53	A	100	0.25	2.30	2½-3½	a^2D- $^2F^\circ$? †
5736.55	A	40	0.00	2.15	1½-2½	(1)
5135.10	A	100	0.25	2.65	2½-2½	a^2D- $^2D^\circ$? †
5402.57	A	50	0.00	2.28	1½-1½	(2)
4658.03	A	50	0.00	2.65	1½-2½	
3841.17	A	100	0.25	3.46	2½-1½	a^2D- $^2P^\circ$?
4124.73	A	100	0.00	2.99	1½- ½	(3)
3567.84	A	80	0.00	3.46	1½-1½	

Strongest Unclassified Lines of Lu I

I A	Ref	Int	Temperature Class
5001.15	A	100	III
4518.58	A	200	II
3647.77	A	50	III

Lu II I P ? Anal A List B May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3507.39	A	100	0.00	3.52	0-1	a^1S-z^3P° (1)
5476.69	A	200	1.75	4.01	3-2	a^3D-z^3P°
6221.88	A	200	1.54	3.52	2-1	(2)
6463.11	A	200	1.46	3.37	1-0	
4994.14	A	120	1.54	4.01	2-2	
5983.90	A	100d	1.46	3.52	1-1	
4839.62	A	30d	1.46	4.01	1-2	
3876.65	A	100	1.54	4.72	2-1	a^3D-z^1P° (3)
3077.59	A	150	1.54	5.55	2-3	a^3D-z^3F° †
3397.07	A	150	1.46	5.09	1-2	(4)
3254.32	A	90	1.75	5.55	3-3	
3472.48	A	120	1.54	5.09	2-2	
4785.42	A	60	2.14	4.72	2-1	a^1D-z^1P° (5)
3623.98	A	40	2.14	5.55	2-3	a^1D-z^3F°
4184.26	A	120	2.14	5.09	2-2	(6)
3554.43	A	200	2.14	5.61	2-2	a^1D-z^1D° (7)

Hf I I P ? Anal D List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5550.60	A	50	0.00	2.22	2-2	a^3F- 2°
5181.86	A	40	0.00	2.38	2-3	(1) 5°
3777.64	A	50	0.00	3.27	2-1	17°
3682.25	A	200	0.00	3.35	2-2	18°
3497.49	A	150	0.00	3.53	2-3	24°
3472.38	A	100	0.00	3.55	2-1	25°

Hf I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3332.73	A	200	0.00	3.70	2-3	a^3F-29°
3162.57	A	80	0.00	3.90	2-2	(2) 32°
3072.88	A	300	0.00	4.02	2-2	34°
3018.32	A	80	0.00	4.09	2-2	35°
2980.82	A	100	0.00	4.14	2-2	37°
4174.33	A	50	0.29	3.25	3-3	a^3F-16°
3523.02	A	60	0.29	3.79	3-4	(3) 30°
3312.87	A	100	0.29	4.02	3-2	34°
3131.81	A	150	0.29	4.23	3-2	41°
3080.84	A	80	0.29	4.30	3-4	a^3F-43°
3067.41	A	80	0.29	4.31	3-2	(4) 45°
3020.54	A	100	0.29	4.38	3-3	46°
2964.88	A	150	0.29	4.45	3-4	47°
3820.74	A	50	0.56	3.79	4-4	a^3F-30°
3172.94	A	100	0.56	4.45	4-4	(5) 47°
3156.68	A	50	0.56	4.47	4-3	48°
5719.18	A	40	1.11	3.27	2-1	a^3P-17° (6)
5552.12	A	40	0.70	2.92	2-3	a^1D-11° (7)

Hf II I P 14.8 Anal B List B Nov 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3253.70	A	80	0.38	4.17	2½-3½	a^2D-z^4F°
3399.80	A	150	0.00	3.63	1½-2½	(1)
3793.37	A	60	0.38	3.63	2½-2½	
3561.65	A	80	0.00	3.47	1½-1½	
3193.53	A	40	0.38	4.24	2½-2½	a^2D-z^4D° †
3145.32	A	25	0.00	3.92	1½-1½	(2)
3479.29	A	40	0.38	3.92	2½-1½	
3428.37	A	20	0.00	3.60	1½- ½	
3000.09	A	40	0.38	4.49	2½-1½	a^2D-z^2P° †
3016.94	A	6	0.00	4.09	1½- ½	(3)
3317.99	A	20	0.38	4.10	2½-2½	a^2D-z^2D° †
3217.30	A	25	0.38	4.21	2½-1½	(4)
3012.90	A	100	0.00	4.10	1½-2½	
3134.72	A	150	0.38	4.31	2½-2½	a^2D-z^4G° † (5)
3352.06	A	80	1.03	4.71	4½-4½	a^4F-z^4F°
3644.35	A	60	0.78	4.17	3½-3½	(6)
4080.44	A	60	0.61	3.63	2½-2½	
4093.16	A	150	0.45	3.47	1½-1½	
3933.65	A	40	1.03	4.17	4½-3½	
4335.15	A	5	0.78	3.63	3½-2½	
3139.67	A	15	0.78	4.71	3½-4½	
3462.65	A	15	0.61	4.17	2½-3½	
3880.82	A	40	0.45	3.63	1½-2½	
3505.22	A	150	1.03	4.55	4½-3½	a^4F-z^4D°
3569.03	A	80	0.78	4.24	3½-2½	(7)
3719.27	A	70	0.61	3.92	2½-1½	
3918.10	A	100	0.45	3.60	1½- ½	
3273.66	A	6	0.78	4.55	3½-3½	
3394.58	A	25	0.61	4.24	2½-2½	
3552.70	A	40	0.45	3.92	1½-1½	
3126.27	A	6	0.61	4.55	2½-3½	
3255.28	A	25	0.45	4.24	1½-2½	
3176.85	A	50	0.61	4.49	2½-1½	a^4F-z^2P°
3389.83	A	70	0.45	4.09	1½- ½	(8)
3054.52	A	15	0.45	4.49	1½-1½	
3535.54	A	80	0.61	4.10	2½-2½	a^4F-z^2D° †
3279.98	A	20	0.45	4.21	1½-1½	(9)
3384.70	A	20	0.45	4.10	1½-2½	
2975.89	A	150	0.61	4.75	2½-3½	a^4F-z^4G° †
3194.19	A	100	0.45	4.31	1½-2½	(10)
3109.11	A	150	0.78	4.75	3½-3½	
3328.21	A	20	0.61	4.31	2½-2½	
3495.75	A	20	0.78	4.31	3½-2½	
3031.16	A	120	0.61	4.68	2½-1½	a^4F-y^2D° † (11)
3025.29	A	20	1.03	5.11	4½-3½	a^4F-z^2F° †
3101.39	A	100	0.78	4.76	3½-2½	(12)
2968.82	A	120	0.61	4.76	2½-2½	
4926.99	A	8	1.66	4.17	2½-3½	a^4P-z^4F° †
6279.84	A	20	1.66	3.63	2½-2½	(13)
6835.29	A	50	1.66	3.47	2½-1½	
4272.85	A	60	1.66	4.55	2½-3½	a^4P-z^4D° †
4664.14	A	150	1.60	4.24	1½-2½	(14)
5040.82	A	150	1.48	3.92	½-1½	
5299.85	A	10	1.60	3.92	1½-1½	
5809.50	A	30	1.48	3.60	½- ½	
5463.36	A	10	1.66	3.92	2½-1½	
4367.90	A	40	1.66	4.49	2½-1½	a^4P-z^2P°
4945.38	A	10	1.60	4.09	1½- ½	(15)
4262.72	A	10	1.60	4.49	1½-1½	
4719.10	A	30	1.48	4.09	½- ½	
5075.92	A	20	1.66	4.10	2½-2½	a^4P-z^2D° †
4844.00	A	15	1.66	4.21	2½-1½	(16)
4934.46	A	60	1.60	4.10	1½-2½	
4097.21	A	8	1.66	4.68	2½-1½	a^4P-y^2D° (17)

Hf II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3699.72	A	25	1.66	5.00	2½-2½	$a^4P-z^4P^\circ$ (18)
3800.39	A	5	1.60	4.84	1½-1½	
3780.09	A	7	1.48	4.74	½-½	
3883.77	A	20	1.66	4.84	2½-1½	
3923.91	A	40	1.60	4.74	1½-½	
3624.00	A	10	1.60	5.00	1½-2½	
3665.35	A	20	1.48	4.84	½-1½	
3984.03	A	8	1.66	4.76	2½-2½	$a^4P-z^2F^\circ$ † (19)
3413.74	A	8	1.66	5.28	2½-1½	$a^4P-y^2P^\circ$ † (20)
3349.17	A	5	1.60	5.28	1½-1½	
3203.67	A	10	1.66	5.52	2½-3½	$a^4P-y^2F^\circ$ † (21)
4605.79	A	30	1.49	4.17	2½-3½	$a^2F-z^4F^\circ$ † (22)
5348.40	A	15	1.86	4.17	3½-3½	
5767.18	A	30	1.49	3.63	2½-2½	
6980.91	A	200	1.86	3.63	3½-2½	
6248.95	A	100	1.49	3.47	2½-1½	
4586.25	A	10	1.86	4.55	3½-3½	$a^2F-z^4D^\circ$ (23)
4486.14	A	30	1.49	4.24	2½-2½	
5187.75	A	30	1.86	4.24	3½-2½	
5071.23	A	8	1.49	3.92	2½-1½	
4029.16	A	10	1.49	4.55	2½-3½	
4113.58	A	20	1.49	4.49	2½-1½	$a^2F-z^2P^\circ$ (24)
5524.35	A	50	1.86	4.10	3½-2½	$a^2F-z^2D^\circ$ (25)
4533.18	A	40	1.49	4.21	2½-1½	
4735.67	A	20	1.49	4.10	2½-2½	
3661.05	A	12	1.86	5.23	3½-4½	$a^2F-z^4G^\circ$ (26)
3782.78	A	8	1.49	4.75	2½-3½	
4269.67	A	20	1.86	4.75	3½-3½	
4370.95	A	100	1.49	4.31	2½-2½	
5034.33	A	8	1.86	4.31	3½-2½	
3747.48	A	7	1.86	5.16	3½-2½	$a^2F-y^2D^\circ$ † (27)
3872.55	A	20	1.49	4.68	2½-1½	
3932.40	A	10	1.86	5.00	3½-2½	$a^2F-z^4P^\circ$ † (28)
3797.95	A	10	1.86	5.11	3½-3½	$a^2F-z^2F^\circ$ (29)
3771.36	A	8	1.49	4.76	2½-2½	
3407.76	A	15	1.49	5.11	2½-3½	
3220.66	A	50	1.86	5.69	3½-4½	$a^2F-y^4F^\circ$ (30)
3092.26	A	20	1.49	5.48	2½-3½	
3410.18	A	40	1.86	5.48	3½-3½	
3162.61	A	40	1.49	5.39	2½-2½	
3405.94	A	10	1.86	5.39	3½-2½	
3283.39	A	6	1.49	5.25	2½-1½	
3376.68	A	4	1.86	5.52	3½-3½	$a^2F-y^2F^\circ$ † (31)
3140.77	A	15	1.49	5.42	2½-2½	
3064.68	A	20	1.49	5.52	2½-3½	
3046.03	A	20	1.86	5.91	3½-2½	$a^2F-y^4D^\circ$ † (32)
3116.95	A	8	1.86	5.82	3½-3½	$a^2F-z^2G^\circ$ † (33)
6644.60	A	200	1.77	3.63	1½-2½	$b^2D-z^4F^\circ$ † (34)
4999.69	A	40	1.77	4.24	1½-2½	$b^2D-z^4D^\circ$ † (35)
6935.16	A	50	2.14	3.92	2½-1½	
6754.61	A	100	1.77	3.60	1½-½	
5260.44	A	40	2.14	4.49	2½-1½	$b^2D-z^2P^\circ$ (36)
5324.26	A	30	1.77	4.09	1½-½	
4541.31	A	20	1.77	4.49	1½-1½	
5058.18	A	10	1.77	4.21	1½-1½	$b^2D-z^2D^\circ$ (37)
5311.60	A	150	1.77	4.10	1½-2½	
4731.36	A	40	2.14	4.75	2½-3½	$b^2D-z^4G^\circ$ (38)
4249.33	A	30	1.77	4.68	1½-1½	$b^2D-y^2D^\circ$ (39)
3648.35	A	6	1.77	5.16	1½-2½	
4320.69	A	40	2.14	5.00	2½-2½	$b^2D-z^4P^\circ$ (40)
4020.25	A	5	1.77	4.84	1½-1½	
4573.81	A	20	2.14	4.84	2½-1½	
4158.90	A	30	2.14	5.11	2½-3½	$b^2D-z^2F^\circ$ † (41)
4127.80	A	40	1.77	4.76	1½-2½	
3698.39	A	10	2.14	5.48	2½-3½	$b^2D-y^4F^\circ$ † (42)
3935.64	A	20	2.14	5.28	2½-1½	$b^2D-y^2P^\circ$ (43)
3485.16	A	3	1.77	5.31	1½-½	
3518.75	A	15	1.77	5.28	1½-1½	
3659.02	A	4	2.14	5.52	2½-3½	$b^2D-y^2F^\circ$ (44)
3384.14	A	10	1.77	5.42	1½-2½	
3195.63	A	8	1.77	5.63	1½-½	$b^2D-y^4D^\circ$ † (45)
3110.87	A	40	1.77	5.74	1½-½	$b^2D-z^2S^\circ$ (46)
3024.76	A	15	2.14	6.22	2½-1½	$b^2D-y^4P^\circ$ † (47)
5391.36	A	10	~~2.20~~	~~4.49~~	1½-1½	$a^2P-z^2P^\circ$ † (48)
5590.73	A	5	1.88	4.09	½-½	
6531.66	A	30	2.20	4.09	1½-½	
6512.61	A	10	2.20	4.10	1½-2½	$a^2P-z^2D^\circ$ † (49)
5298.06	A	100	1.88	4.21	½-1½	
5842.23	A	80	2.20	4.31	1½-2½	$a^2P-z^4G^\circ$ (50)
4177.50	A	20	2.20	5.16	1½-2½	$a^2P-y^2D^\circ$ † (51)
4417.37	A	100	1.88	4.68	½-1½	

Hf II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4319.51	A	8	1.88	4.74	½-½	$a^2P-z^4P^\circ$ † (52)
3867.32	A	15	2.20	5.39	1½-2½	$a^2P-y^4F^\circ$ † (53)
4049.44	A	10	2.20	5.25	1½-1½	
4008.46	A	8	2.20	5.28	1½-1½	$a^2P-y^2P^\circ$ † (54)
3597.42	A	10	1.88	5.31	½-½	
3964.96	A	15	2.20	5.31	1½-½	
3487.57	A	8	2.20	5.74	1½-½	$a^2P-z^2S^\circ$ (55)
3199.99	A	30	1.88	5.74	½-½	
3206.77	A	4	2.20	6.05	1½-2½	$a^2P-x^2D^\circ$ (56)
3055.43	A	9	1.88	5.92	½-1½	
4807.14	A	20	2.15	4.71	4½-4½	$a^2G-z^4F^\circ$ (57)
6222.81	A	10	2.19	4.17	3½-3½	
5128.53	A	20	2.15	4.55	4½-3½	$a^2G-z^4D^\circ$ † (58)
4050.67	A	7	2.19	5.23	3½-4½	$a^2G-z^4G^\circ$ † (59)
3998.51	A	6d	2.15	5.23	4½-4½	
4809.18	A	6	2.19	4.75	3½-3½	
4735.75	A	10	2.15	4.75	4½-3½	
5801.71	A	15	2.19	4.31	3½-2½	
4162.40	A	50	2.15	5.11	4½-3½	$a^2G-z^2F^\circ$ † (60)
4790.72	A	40	2.19	4.76	3½-2½	
3478.98	A	30	2.15	5.69	4½-4½	$a^2G-y^4F^\circ$ † (61)
3701.15	A	40	2.15	5.48	4½-3½	
3849.52	A	25	2.19	5.39	3½-2½	
3661.73	A	2	2.15	5.52	4½-3½	$a^2G-y^2F^\circ$ (62)
3817.20	A	20	2.19	5.42	3½-2½	
3705.40	A	15	2.19	5.52	3½-3½	
3080.64	A	100	2.15	6.15	4½-4½	$a^2G-z^2G^\circ$ † (63)
3394.99	A	30	2.19	5.82	3½-3½	
3358.30	A	8	2.15	5.82	4½-3½	
3011.24	A	20	2.19	6.28	3½-2½	$a^2G-x^2F^\circ$ † (64)
6647.06	A	100	2.86	4.71	4½-4½	$b^4F-z^4F^\circ$ (65)
8236.13	A	10	2.67	4.17	3½-3½	
6041.44	A	6	2.67	4.71	3½-4½	
7328.64	A	30	2.49	4.17	2½-3½	
7277.67	A	50	2.86	4.55	4½-3½	$b^4F-z^4D^\circ$ † (66)
7861.22	A	8	2.67	4.24	3½-2½	
8581.88	A	5?	2.49	3.92	2½-1½	
9742.28	A	?	2.33	3.60	1½-½	
6557.91	A	100	2.67	4.55	3½-3½	
7030.33	A	150	2.49	4.24	2½-2½	
7757.89	A	15	2.33	3.92	1½-1½	
5969.38	A	5	2.49	4.55	2½-3½	
*6156.25	A	3d	2.49	4.49	2½-1½	$b^4F-z^2P^\circ$ (67)
7021.23	A	30	2.33	4.09	1½-½	
7663.09	A	30	2.49	4.10	2½-2½	$b^4F-z^2D^\circ$ † (68)
4334.65	A	30	2.86	5.70	4½-5½	$b^4F-z^4G^\circ$ (69)
4817.22	A	80	2.67	5.23	3½-4½	
5444.07	A	30	2.49	4.75	2½-3½	
6230.84	A	20	2.33	4.31	1½-2½	
5194.57	A	6	2.86	5.23	4½-4½	
5929.35	A	5	2.67	4.75	3½-3½	
6511.62	A	6	2.86	4.75	4½-3½	
4622.71	A	100	2.49	5.16	2½-2½	$b^4F-y^2D^\circ$ (70)
5264.95	A	80	2.33	4.68	1½-1½	
5057.03	A	30	2.67	5.11	3½-3½	$b^4F-z^2F^\circ$ † (71)
4699.72	A	40	2.49	5.11	2½-3½	
5079.65	A	60	2.33	4.76	1½-2½	
4350.52	A	150	2.86	5.69	4½-4½	$b^4F-y^4F^\circ$ † (72)
4245.84	A	20	2.49	5.39	2½-2½	
4232.43	A	60	2.33	5.25	1½-1½	
4703.62	A	10	2.86	5.48	4½-3½	
4535.38	A	30	2.67	5.39	3½-2½	
4466.41	A	30	2.49	5.25	2½-1½	
4187.68	A	8	2.33	5.28	1½-1½	$b^4F-y^2P^\circ$ † (73)
4640.14	A	20	2.86	5.52	4½-3½	$b^4F-y^2F^\circ$ (74)
4490.60	A	20	2.67	5.42	3½-2½	
4336.66	A	200	2.67	5.52	3½-3½	
4206.59	A	80	2.49	5.42	2½-2½	
4071.22	A	6	2.49	5.52	2½-3½	
3877.11	A	40	2.86	6.04	4½-3½	$b^4F-y^4D^\circ$ † (75)
3806.07	A	40	2.67	5.91	3½-2½	
3766.92	A	50	2.49	5.76	2½-1½	
3737.88	A	15	2.33	5.63	1½-½	
3744.98	A	15	2.86	6.15	4½-4½	$b^4F-z^2G^\circ$ † (76)
3917.47	A	20	2.67	5.82	3½-3½	
3438.24	A	15	2.33	5.92	1½-1½	$b^4F-x^2D^\circ$ † (77)
3218.20	A	8	2.67	6.51	3½-2½	$b^4F-w^2D^\circ$ † (78)
3323.35	A	20	2.86	6.57	4½-3½	$b^4F-w^2F^\circ$ (79)
7561.08	A	10	3.37	5.00	1½-2½	$b^4P-z^4P^\circ$ (80)
6306.17	A	5	3.52	5.48	2½-3½	$b^4P-y^4F^\circ$ † (81)
6563.86	A	10	3.37	5.25	1½-1½	
6455.85	A	20	3.37	5.28	1½-1½	$b^4P-y^2P^\circ$ † (82)

Hf II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4904.51	A	30	3.52	6.04	2½-3½	$b^4P-y^4D^\circ$ † (83)
4848.46	A	20	3.37	5.91	1½-2½	
5080.44	A	10	3.33	5.76	½-1½	
5164.56	A	8	3.52	5.91	2½-2½	
5156.06	A	5	3.37	5.76	1½-1½	
4765.78	A	12	3.33	5.92	½-1½	$b^4P-x^2D^\circ$ (84)
4760.59	A	20	3.33	5.93	½-1½	$b^4P-z^4S^\circ$ (85)
4570.70	A	30	3.52	6.22	2½-1½	$b^4P-y^4P^\circ$ (86)
4321.36	A	30	3.37	6.22	1½-1½	
4268.10	A	5	3.33	6.22	½-1½	
4426.18	A	9	3.52	6.31	2½-1½	$b^4P-w^2D^\circ$ † (87)
4141.84	A	5	3.33	6.31	½-1½	
4007.36	A	10	3.52	6.60	2½-1½	$b^4P-x^4P^\circ$ † (88)
6997.83	A	20	3.47	5.23	4½-4½	$b^2G-z^4G^\circ$ (89)
6135.10	A	20	3.47	5.48	4½-3½	$b^2G-y^4F^\circ$ † (90)
6567.39	A	60	3.51	5.39	3½-2½	
6027.57	A	20	3.47	5.52	4½-3½	$b^2G-y^2F^\circ$ † (91)
6473.89	A	20	3.51	5.42	3½-2½	
4599.46	A	40	3.47	6.15	4½-4½	$b^2G-z^2G^\circ$ (92)
5346.30	A	40	3.51	5.82	3½-3½	
5247.10	A	60	3.47	5.82	4½-3½	
4675.45	A	10	3.51	6.15	3½-4½	
4865.43	A	10	3.51	6.05	3½-2½	$b^2G-x^2D^\circ$ (93)
4125.10	A	5	3.47	6.46	4½-3½	$b^2G-x^2F^\circ$ (94)
4452.70	A	10	3.51	6.28	3½-2½	
4123.54	A	10	3.51	6.51	3½-2½	$b^2G-w^2D^\circ$ (95)
3810.59	A	10	3.51	6.75	3½-2½	$b^2G-x^4D^\circ$ † (96)
3979.40	A	40	3.47	6.57	4½-3½	$b^2G-w^2F^\circ$ (97)
3864.75	A	20	3.47	6.66	4½-3½	$b^2G-y^2G^\circ$ † (98)
6584.53	A	40	3.82	5.69	5½-4½	$a^2H-y^4F^\circ$ (99)
7983.66	A	5	3.94	5.48	4½-3½	
7016.99	A	6	3.94	5.69	4½-4½	
5289.98	A	10	3.82	6.15	5½-4½	$a^2H-z^2G^\circ$ (100)
6542.80	A	50	3.94	5.82	4½-3½	
5565.56	A	5	3.94	6.15	4½-4½	
3762.51	A	25	3.94	7.22	4½-3½	$a^2H-x^4D^\circ$ (101)
4682.68	A	8	3.94	6.57	4½-3½	$a^2H-w^2F^\circ$ (102)
3900.64	A	20	3.82	6.98	5½-5½	$a^2H-z^2H^\circ$ † (103)
4613.74	A	50	3.94	6.61	4½-4½	
4422.76	A	150	3.82	6.61	5½-4½	
4047.96	A	50	3.82	6.87	5½-4½	$a^2H-y^2G^\circ$ † (104)
4524.74	A	30	3.94	6.66	4½-3½	
6609.20	A	8	4.05	5.91	2½-2½	$c^2D-y^4D^\circ$ (105)
5110.61	A	7	4.05	6.46	2½-3½	$c^2D-x^2F^\circ$ (106)
4486.65	A	20	4.05	6.80	2½-2½	$c^2D-x^4P^\circ$ (107)
4241.93	A	7	4.05	6.96	2½-1½	$c^2D-w^2P^\circ$ (108)
3945.36	A	10n	4.05	7.17	2½-2½	$c^2D-v^2D^\circ$ (109)
6719.40	A	50	4.62	6.46	3½-3½	$b^2F-x^2F^\circ$ (110)
7398.96	A	10	4.62	6.28	2½-2½	
6550.01	A	10	4.62	6.51	3½-2½	$b^2F-w^2D^\circ$ (111)
7278.72	A	6	4.62	6.31	2½-1½	
5673.58	A	10	4.62	6.80	3½-2½	$b^2F-x^4P^\circ$ † (112)
5493.22	A	6	4.62	6.87	3½-4½	$b^2F-y^2G^\circ$ † (113)
4179.55	A	10	4.62	7.57	2½-1½	$b^2F-u^2D^\circ$ (114)
3946.00	A	7n	4.62	7.75	3½-2½	$b^2F-v^2F^\circ$ † (115)

Strongest Unclassified Lines of Hf II

Laboratory I A	Ref	Int
7061.90	A	30?
6850.07	A	60?
6548.72	A	10
4519.02	A	10n
4443.07	A	20

Ta I I P ? Anal C ~~List~~ D ~~Dec 1942~~

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5402.51	A	40w	0.00	2.28	1½-½	a^4F-1°
5212.75	A	35w	0.00	2.37	1½-2½	(1) 2°
4574.32	A	15	0.00	2.70	1½-1½	8°
3970.10	A	15	0.00	3.11	1½-2½	17°
3077.24	A	15d?	0.00	4.01	1½-2½	52°
5328.38	A	20w	0.25	2.56	2½-1½	a^4F-4°
5037.65	A	30	0.25	2.70	2½-1½	(2) 8°
2965.54	A	20r	0.25	4.41	2½-1½	62°

Ta I continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5811.10	A	20d?	0.49	2.61	3½-2½	a^4F-6° (3)
5461.31	A	25	0.69	2.95	4½-3½	a^4F-12°
3063.56	A	18r	0.69	4.72	4½-3½	(4)78°
*6925.35	A	20d?	0.75	2.51	½-½	a^4P- 3°
5776.76	A	20	0.75	2.88	½-½	(5)10°
5413.47	A	20w	0.75	3.03	½-½	14°
5349.08	A	25w	0.75	3.05	½-1½	15°
5136.47	A	30w	0.75	3.15	½-½	18°
4921.29	A	25	0.75	3.25	½-1½	21°
5419.19	A	30w	0.75	3.03	1½-½	a^4P?-14°
5354.67	A	30w	0.75	3.05	1½-1½	(6) 15°
*5141.63	A	30w	0.75	3.15	1½-½	18°
4926.02	A	35	0.75	3.25	1½-1½	21°
5939.75	A	20w	1.20	3.28	½-1½	a^6D-23° (7)
5944.01	A	30d?	1.23	3.31	1½-2½	3-24° (8)
5435.27	A	30	1.35	3.62	1½-2½	a^6D?-35° (9)
6045.38	A	30	1.39	3.43	2½-3½	a^6D-28° (10)
7148.61	A	30	1.51	3.24	3½-2½	a^6D-20°
6430.78	A	30	1.51	3.43	3½-3½	(11)28°
4936.41	A	30	1.51	4.01	3½-2½	52°
7340.37	A	30	1.65	3.33	4½-3½	a^6D-26°
6485.36	A	30	1.65	3.55	4½-4½	(12)32°
5997.24	A	35w	1.65	3.71	4½-4½	39°
5037.33	A	30w	1.65	4.10	4½-3½	53°
5404.95	A	35w	2.13	4.41	2½-1½	9-62° (13)

Ta II See introduction

W I I P 7.94 Anal A List D June 1941

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4244.374	A	200	0.77	3.68	4-5	$d^4s^2\ ^5D-d^4sp\ ^7D^o$ †
4680.539	A	400	0.60	3.23	3-3	(1)
4843.829	A	500	0.41	2.96	2-2	
5053.300	A	500	0.21	2.65	1-1	
5006.169	A	400	0.77	3.23	4-3	
5224.680	A	400	0.60	2.96	3-2	
5514.712	A	500	0.41	2.65	2-1	
4102.713	A	150	0.77	3.78	4-3	$d^4s^2\ ^5D-d^4sp\ ^5P^o$ †
3881.402	A	100	0.60	3.78	3-3	(2)
3835.058	A	(5)	0.41	3.63	2-2	
*3757.093	A	(3)	0.77	4.05	4-4	$d^4s^2\ ^5D-d^4sp\ ^5D^o$ †
3864.335	A	(3)	0.41	3.60	2-2	(3)
3829.133	A	(3)	0.21	3.43	1-1	
4219.383	A	(5)	0.77	3.69	4-3	
*3570.662	A	(6)	0.60	4.05	3-4	
3760.133	A	(4)	0.41	3.69	2-3	
3631.959	A	(5)	0.21	3.60	1-2	
3682.101	A	(5)	0.77	4.12	4-5	$d^4s^2\ ^5D-d^4sp\ ^5F^o$ †
*3757.929	A	(3)	0.60	3.88	3-4	(4)
*3872.835	A	(4)	0.41	3.60	2-3	
4047.948	A	(2)	0.21	3.26	1-2	
3847.501	A	(3)	0.00	3.21	0-1	
*3570.662	A	(6)	0.41	3.87	2-1	$d^4s^2\ ^5D$-313°
3326.194	A	60	0.77	4.48	4-5	(5)362°
3300.819	A	150	0.60	4.34	3-4	351°
3215.578	A	150	0.77	4.61	4-5	373°
3191.577	A	60	0.00	3.87	0-1	313°
3176.602	A	30	0.21	4.09	1-2	331°
3046.452	A	50	0.21	4.26	1-2	344°
3041.876	A	25	0.41	4.47	2-1	361°
4008.769	A	1000	0.36	3.44	3-4	$d^5s\ ^7S-d^4sp\ ^7P^o$
4074.374	A	500	0.36	3.39	3-3	(6)
4294.623	A	1000	0.36	3.24	3-2	
3867.986	A	300	0.36	3.56	3-4	$d^5s\ ^7S-d^4sp\ ^7D^o$
4302.123	A	500	0.36	3.23	3-3	(7)
*4757.565	A	200	0.36	2.96	3-2	
3617.522	A	800	0.36	3.78	3-3	$d^5s\ ^7S-d^4sp\ ^5P^o$
3780.770	A	300	0.36	3.63	3-2	(8)
3207.248	A	80	0.36	4.21	3-4	$d^5s\ ^7S$- 341°
*3049.694	A	60	0.36	4.41	3-2	(9)357°
3017.447	A	60	0.36	4.45	3-4	360°

W II I P ? Anal D List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3641.42	A	150	1.08	4.46	1½-½	^4F-1°
3286.57	A	100	1.08	4.83	1½-1½	(1)3°

W II continued

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3657.59	A	120	1.09	4.46	½-½	1-1°
3361.11	A	100	1.09	4.76	½-½	(2)2°
3572.48	A	200	1.31	4.76	1½-½	2-2° (3)
3024.51	A	300	1.40	5.48	2½-2½	3-7° (4)
3149.87	A	500	1.63	5.54	½-1½	4-11° (5)
*3189.24	A	100 l	1.66	5.53	3½-4½	5- 9°
3177.22	A	150	1.66	5.54	3½-3½	(6)10°
3051.30	A	400	1.66	5.70	3½-3½	13°
3021.98	A	100	1.66	5.74	3½-4½	15°
3463.52	A	200	1.66	5.22	2½-1½	6- 5°
3179.44	A	150	1.66	5.54	2½-3½	(7)10°
3175.97	A	200	1.66	5.54	2½-1½	11°
3036.68	A	100	1.66	5.72	2½-2½	14°
3343.40	A	120	1.83	5.53	4½-4½	8- 9°
3160.03	A	300	1.83	5.74	4½-4½	(8)15°
3401.90	A	150	1.85	5.48	2½-2½	9- 7°
3342.46	A	300	1.85	5.54	2½-3½	(9)10°
3376.17	A	400	1.87	5.53	3½-4½	10- 9°
*3189.24	A	100 l	1.87	5.74	3½-4½	(10)15°
3555.18	A	120	2.00	5.48	2½-2½	11- 7°
3486.14	A	100	2.00	5.54	2½-1½	(11)11°
3529.57	A	100	2.04	5.54	4½-3½	12-10° (12)
3549.08	A	150	2.05	5.53	3½-4½	13- 9°
3358.62	A	200	2.05	5.72	3½-2½	(13)14°
3343.09	A	100	2.05	5.74	3½-4½	15°
*3243.36	A	100	2.05	5.85	3½-2½	17°
3010.76	A	100	2.35	6.45	4½-3½	15-27° (14)
*3243.36	A	100	2.47	6.28	3½-4½	16-23° (15)
3151.31	A	300	2.87	6.78	4½-5½	19-38° (16)
3345.86	A	200w	2.89	6.58	2½-1½	20-31° (17)

Re I I P 7.85 Anal B List D May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4889.15	A	2000	0.00	2.52	2½-3½	$a^6S-z^8P^o$
5275.54	A	1000	0.00	2.34	2½-2½	(1)
3460.47 //	A	1000	0.00	3.57	2½-3½	$a^6S-z^6P^o$
3464.72	A	800	0.00	3.56	2½-2½	(2)
3451.88	A	600	0.00	3.58	2½-1½	

Os I I P 8.7 Anal C List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4420.468	A	400R	0.00	2.79	4-4	1-26°
4260.854	A	200	0.00	2.90	4-5	(1)27°
3528.602	A	400R	0.00	3.50	4-4	32°
3301.559	A	500R	0.00	3.74	4-5	37°
3267.945	A	400R	0.00	3.78	4-4	39°
*3058.66	A	500R	0.00	4.03	4-4	41°
3752.524	A	400R	0.34	3.63	2-3	2-35° (2)
4135.784	A	200	0.51	3.50	3-4	3-32°
3963.628	A	500	0.51	3.63	3-3	(3)35°
3782.195	A	400R	0.51	3.78	3-4	39°
3336.150	A	200R	0.51	4.21	3-3	43°
3262.290	A	500R	0.51	4.30	3-4	45°
3232.055	A	500R	0.51	4.33	3-2	46°
4173.234	A	100	0.64	3.59	5-6	4-34°
3977.231	A	300	0.64	3.74	5-5	(4)37°
3370.588	A	300R	0.64	4.30	5-4	45°
3156.248	A	500R	0.64	4.55	5-5	53°
4112.018	A	150	0.71	3.71	1-2	5-36° (5)
3560.855	A	150R	1.08	4.55	4-5	7-53° (6)

Ir I I P 9.2 Anal B List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3800.122	A	60r	0.00	3.25	4½-4½	$a^4F-z^6D^o$ †
3448.967	A	60	0.50	4.08	1½-2½	(1)
3513.638	A	80r	0.00	3.51	4½-5½	$a^4F-z^6F^o$ †
3266.446	A	60	0.71	4.49	2½-1½	(2)
3437.006	A	60	0.78	4.37	3½-3½	$a^4F-z^6G^o$ † (3)
4268.096	A	80	0.88	3.77	3½-3½	$b^4F-z^6D^o$ † (4)
3368.472	A	60	0.35	4.01	4½-4½	$b^4F-z^6F^o$ †
3992.114	A	80	1.22	4.31	2½-2½	(5)
3220.772	A	100r	0.35	4.18	4½-3½	
3915.384	A	60	1.22	4.37	2½-3½	$b^4F-z^6G^o$ †
3068.897	A	60	0.35	4.37	4½-3½	(6)
3198.917	A	60	0.88	4.74	3½-2½	$b^4F-z^4D^o$ † (7)
3212.121	A	60	0.88	4.72	3½-4½	$b^4F-z^4G^o$ † (8)

Pt I I P 9.2 Anal B List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3315.05	A	8	0.00	3.72	3-4	$a^3D-z^5D^o$ †
3290.23	A	6	1.25	5.00	1-2	(1)
3064.71	A	60	0.00	4.03	3-2	$a^3D-z^3P^o$ †
3139.39	A	10	0.10	4.03	2-2	(2)
3156.59	A	10	1.25	5.16	1-1	
2997.97	A	30	0.10	4.21	2-3	$a^3D-z^3F^o$ (3)
3408.14	A	15	0.10	3.72	4-4	$a^3F-z^5D^o$ †
3966.37	A	6	1.25	4.36	3-3	(4)
3042.65	A	20	0.10	4.16	4-5	$a^3F-z^5G^o$ (5)
4164.54	A	5	1.25	4.21	3-3	$a^3F-z^3F^o$ †
3638.80	A	8	1.25	4.64	3-4	(6)
5368.97	A	3	1.91	4.21	2-3	
3301.87	A	10	0.81	4.55	2-2	a^3P-5° (7)

Pt II See introduction

Au I I P 9.2 Anal A List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3122.782	B	(150)	1.13	5.08	2½-1½	$a^2D-6^2P^o$
6278.30	A	35n	2.65	4.61	1½-½	(1)
*5064.69	A	15	2.65	5.08	1½-1½	
7510.74	A	200	5.08	6.73	1½-½	$6^2P^o-7^2S$
5837.29	A	40	4.61	6.73	½-½	(2)
4792.63	A	100	5.08	7.66	1½-2½	$6^2P^o-6^2D$
4065.09	A	45	4.61	7.65	½-1½	(3)
4811.61	A	60	5.08	7.65	1½-1½	

Au II See introduction

Hg I I P 10.39 Anal A List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5460.742	A	500R	5.44	7.70	2-1	$6^3P^o-7^3S$
4358.343	A	300	4.87	7.70	1-1	(1)
4046.557	A	100	4.65	7.70	0-1	
3663.274	A	50R	5.44	8.81	2-2	$6^3P^o-6^1D$
3131.845	A	100	4.87	8.81	1-2	(2)
3650.144	A	100R	5.44	8.82	2-3	$6^3P^o-6^3D$ †
3125.668	B	200R	4.87	8.81	1-2	(3)
5790.659	A	300	6.67	8.81	1-2	$6^1P^o-6^1D$ (4)
5769.598	A	300	6.67	8.81	1-2	$6^1P^o-6^3D$ † (5)

Many lines show fine structure

Hg II See introduction

Tl I I P 6.08 Anal A List D Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
5350.527 //	A	500R	0.96	3.27	1½-½	$6^2P^o-7^2S$
3775.724	A	500R	0.00	3.27	½-½	(1)
3519.24	B	500R	0.96	4.47	1½-2½	$6^2P^o-6^2D$ †
3529.38	B	100R	0.96	4.46	1½-1½	(2)

Many lines show fine structure

Tl II See introduction

Pb I   I P 7.38   Anal A   List D   Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3639.568	A	500R	0.97	4.36	1-1	$6p\,{}^3P-7s\,{}^3P^o$ † (1)
4057.812//	A	1000R	1.31	4.36	2-1	
3683.469	A	1000R	0.97	4.32	1-0	
3739.940	A	200	2.65	5.95	2-2	$6p\,{}^1D-7s\,{}^3P^o$ (2)
7228.974	B	(2000)	2.65	4.36	2-1	
3572.734	A	200R	2.65	6.10	2-1	$6p\,{}^1D-7s\,{}^1P^o$ (3)

Pb II   See introduction

Bi I   I P ?   Anal B   List D   Dec 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3067.712//	A	9R	0.00	4.02	1½- ½	$6p\,{}^4S^o-1$ (1)
4722.652 to 4722.333	B	(8) (10)	1.41	4.02	1½- ½	$6p\,{}^2D^o-1$ (2)

Wide fine structure

Bi II   See introduction

Rn I   See introduction

Ra I   I P 5.25   Anal A   List D   May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
4825.91 //	A	100	0.00	2.56	0-1	$7\,{}^1S-7\,{}^1P^o$ (1)

Ra II   I P 10.10   Anal A   List D   May 1942

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3814.42 //	A	200	0.00	3.24	½-1½	$7\,{}^2S-7\,{}^2P^o$ (1)
4682.28	A	100	0.00	2.64	½- ½	

Th I   No analysis   Dec 1942

Th II   I P ?   Anal C   List D   July 1944

Laboratory I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
3539.589	A	400	0.00	3.49	1½-2½	$a\,{}^2D-z\,{}^4F^o$ † (1)
4277.322	A	400	0.00	2.89	1½-1½	$a\,{}^2D-y\,{}^2P^o$ † (2)
3610.794	A	30	0.51	3.93	2½-3½	$a\,{}^2D-y\,{}^2F^o$ † (3)
4019.137//	A	1500	0.00	3.07	1½-2½	
3180.199	A	400	0.19	4.07	2½-3½	$a\,{}^4F-z\,{}^4F^o$ † (4)
3392.040	A	300	0.19	3.83	2½-3½	$a\,{}^4F-y\,{}^2G^o$ † (5)
4391.114	A	600	0.55	3.36	2½-3½	$a\,{}^2F^o-z\,{}^4G$ † (6)
4919.814	A	500	0.76	3.27	3½-2½	$a\,{}^4H^o-z\,{}^4G$ † (7)

Th III   See introduction

U   Not separated   Dec 1942

FORBIDDEN LINES

I A	E P Low	E P High	J	Multiplet (No)
Be I I P 9.28				
4548.3	0.00	(2.71)	0-1	$2s^2\ ^1S-2s2p\ ^3P^o$ (1F)
C I I P 11.20				
9849.5	0.01	1.26	2-2	$2p^2\ ^3P-2p^2\ ^1D$ (1F)
9823.4	0.00	1.26	1-2	
9808.9	0.00	1.26	0-2	
4627.3	0.01	2.67	2-0	$2p^2\ ^3P-2p^2\ ^1S$ (2F)
4621.5	0.00	2.67	1-0	
8727.4	1.26	2.67	2-0	$2p^2\ ^1D-2p^2\ ^1S$ (3F)
N I I P 14.49				
5200.7	0.00	2.37	1½-2½	$2p^3\ ^4S^o-2p^3\ ^2D^o$ (1F)
5198.5	0.00	2.37	1½-1½	
3466.4	0.00	3.56	1½-	$2p^3\ ^4S^o-2p^3\ ^2P^o$ (2F)
10395.4	2.37	3.56	2½-	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (3F)
10404.1	2.37	3.56	1½-	
N II I P 29.49				
6583.6 N	0.02	1.89	2-2	$2p^2\ ^3P-2p^2\ ^1D$ (1F)
6548.1 N	0.01	1.89	1-2	
6527.4	0.00	1.89	0-2	
3070.8	0.02	4.04	2-0	$2p^2\ ^3P-2p^2\ ^1S$ (2F)
3063.0	0.01	4.04	1-0	
5754.8 N	1.89	4.04	2-0	$2p^2\ ^1D-2p^2\ ^1S$ (3F)
O I I P 13.56				
6300.23 L	0.00	1.96	2-2	$2p^4\ ^3P-2p^4\ ^1D$ (1F)
6363.88 L	0.02	1.96	1-2	
2972.3	0.02	4.17	1-0	$2p^4\ ^3P-2p^4\ ^1S$ (2F)
5577.350A	1.96	4.17	2-0	$2p^4\ ^1D-2p^4\ ^1S$ (3F)
O II I P 35.00				
3728.91 N	0.00	3.31	1½-2½	$2p^3\ ^4S^o-2p^3\ ^2D^o$ (1F)
3726.16 N	0.00	3.31	1½-1½	
7319.4	3.31	5.00	2½-1½	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (2F)
7329.9	3.31	5.00	1½- ½	
7318.6	3.31	5.00	2½- ½	
7330.7	3.31	5.00	1½-1½	
O III I P 54.71				
5006.84 N	0.04	2.50	2-2	$2p^2\ ^3P-2p^2\ ^1D$ (1F)
4958.91 N	0.01	2.50	1-2	
4931.8	0.00	2.50	0-2	
4363.21 N	2.50	5.33	2-0	$2p^2\ ^1D-2p^2\ ^1S$ (2F)
F II I P 34.84				
4789.5	0.00	2.58	2-2	$2p^4\ ^3P-2p^4\ ^1D$ (1F)
4869.3	0.04	2.58	1-2	
4157.5	2.58	5.55	2-0	$2p^4\ ^1D-2p^4\ ^1S$ (2F)
F III I P 62.39				
5721.2	4.21	6.36	2½-	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (1F)
5733.0	4.21	6.36	1½-	
F IV I P 86.88				
4059.3	0.08	3.12	2-2	$2p^2\ ^3P-2p^2\ ^1D$ (1F)
3996.3	0.03	3.12	1-2	
3532.2	3.12	6.61	2-0	$2p^2\ ^1D-2p^2\ ^1S$ (2F)
Ne III I P 63.3				
3868.74 N	0.00	3.19	2-2	$2p^4\ ^3P-2p^4\ ^1D$ (1F)
3967.51 N	0.08	3.19	1-2	
3342.9	3.19	6.88	2-0	$2p^4\ ^1D-2p^4\ ^1S$ (2F)
Ne IV I P 96				
4716 ?	(4.76	7.38)	2½-1½	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (1F)
4720 ?	(4.76	7.38)	1½- ½	
4714 ?	(4.76	7.38)	2½- ½	
4717 ?	(4.76	7.38)	1½-1½	
Ne V I P 126				
3425.8 N	0.10	(3.74)	2-2	$2p^2\ ^3P-2p^2\ ^1D$ (1F)
3345.9 N	0.05	(3.74)	1-2	
2972 ?	(3.74	7.89)	2-0	$2p^2\ ^1D-2p^2\ ^1S$ (2F)
Na IV I P 98.5				
3319.3	0.00	3.72	2-2	$2p^4\ ^3P-2p^4\ ^1D$ (1F)
3445.9	0.14	3.72	1-2	
Na V I P 138.0				
4011.2	5.83	8.90	2½-1½	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (1F)
4021.6	5.83	8.90	1½- ½	
4017.5	5.83	8.90	2½- ½	
4015.3	5.83	8.90	1½-1½	
Mg VI I P 186.1				
3485.5	6.70	10.24	2½-1½	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (1F)
3503.0	6.70	10.23	1½- ½	
3500.4	6.70	10.23	2½- ½	
3488.1	6.70	10.24	1½-1½	
Al VII I P 241.1				
3074.0	7.59	11.61	2½-1½	$2p^3\ ^2D^o-2p^3\ ^2P^o$ (1F)
3093.4	7.59	11.58	1½- ½	
3098.7	7.59	11.58	2½- ½	
3068.8	7.59	11.61	1½-1½	
Si I I P 8.12				
6589.74	0.03	1.90	2-0	$3p^2\ ^3P-3p^2\ ^1S$ (1F)
6526.85	0.01	1.90	1-0	
10991.52	0.78	1.90	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
P I I P 10.9				
8787.6	0.00	1.40	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$ (1F)
8799.1	0.00	1.40	1½-1½	
5332.4	0.00	2.31	1½-1½	$3p^3\ ^4S^o-3p^3\ ^2P^o$ (2F)
5339.7	0.00	2.31	1½- ½	
P II I P 19.57				
11898.2	0.06	1.10	2-2	$3p^2\ ^3P-3p^2\ ^1D$ (1F)
11483.2	0.02	1.10	1-2	
4736.6	0.06	2.66	2-0	$3p^2\ ^3P-3p^2\ ^1S$ (2F)
4669.5	0.02	2.66	1-0	
P II continued				
7869.5	1.10	2.66	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (3F)
S I I P 10.31				
10819.8	0.00	1.14	2-2	$3p^4\ ^3P-3p^4\ ^1D$ (1F)
11305.8	0.05	1.14	1-2	
4506.9	0.00	2.74	2-0	$3p^4\ ^3P-3p^4\ ^1S$ (2F)
4589.0	0.05	2.74	1-0	
7724.7	1.14	2.74	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (3F)
S II I P 23.3				
4068.62 N	0.00	3.03	1½-1½	$3p^3\ ^4S^o-3p^3\ ^2P^o$ (1F)
4076.22 N	0.00	3.03	1½- ½	
6717.0	0.00	1.84	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$ (2F)
6731.3	0.00	1.83	1½-1½	
10317.7	1.84	3.03	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$ (3F)
10336.0	1.83	3.03	1½- ½	
10369.7	1.84	3.03	2½- ½	
10284.3	1.83	3.03	1½-1½	
S III I P 34.9				
9532.1	0.10	1.40	2-2	$3p^2\ ^3P-3p^2\ ^1D$ (1F)
9069.4	0.04	1.40	1-2	
3796.7	0.10	3.35	2-0	$3p^2\ ^3P-3p^2\ ^1S$ (2F)
3721.1	0.04	3.35	1-0	
6310.2	1.40	3.35	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (3F)
S VIII I P ?				
9917.9	0.00	1.24	1½- ½	$2p^5\ ^2P^o-2p^5\ ^2P^o$ (1F)
S XII I P ?				
7536	0.00	1.64	½-1½	$2p^2P-2p^2P$ (1F)
Cl II I P 23.70				
8579.5	0.00	1.44	2-2	$3p^4\ ^3P-3p^4\ ^1D$ (1F)
9125.8	0.09	1.44	1-2	
3583.2	0.00	(3.44)	2-0	$3p^4\ ^3P-3p^4\ ^1S$ (2F)
3675.0	0.09	(3.44)	1-0	
6152.9	1.44	(3.44)	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (3F)
Cl III I P 39.7				
3342.7	0.00	3.69	1½-1½	$3p^3\ ^4S^o-3p^3\ ^2P^o$ (2F)
3353.4	0.00	3.68	1½- ½	
5517.2	0.00	2.24	1½-2½	$3p^3\ ^4S^o-3p^3\ ^2D^o$ (1F)
5537.7	0.00	2.23	1½-1½	
8481.6	2.24	3.69	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$ (3F)
8501.8	2.23	3.68	1½- ½	
8550.5	2.24	3.68	2½- ½	
8433.7	2.23	3.69	1½-1½	
Cl IV I P 53.2				
8046.1	0.17	1.70	2-2	$3p^2\ ^3P-3p^2\ ^1D$ (1F)
7530.9	0.06	1.70	1-2	
3203.3	0.17	4.02	2-0	$3p^2\ ^3P-3p^2\ ^1S$ (2F)
3118.3	0.06	4.02	1-0	
5322.2	1.70	4.02	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (3F)

FORBIDDEN LINES

I A	E P		J	Multiplet (No)
	Low	High		
A III I P 40.8				
7135.8	0.00	1.73	2-2	$3p^4\ ^3P-3p^4\ ^1D$
7751.0	0.14	1.73	1-2	(1F)
3005.1	0.00	(4.11)	2-0	$3p^4\ ^3P-3p^4\ ^1S$
3109.0	0.14	(4.11)	1-0	(2F)
5191.4 N	1.73	(4.11)	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (3F)
A IV I P 61				
4711.4	0.00	2.62	1½-2½	$3p^3\ ^4S^\circ-3p^3\ ^2D^\circ$
4740.3	0.00	2.60	1½-1½	(1F)
7236.0	2.62	4.33	2½-1½	$3p^3\ ^2D^\circ-3p^3\ ^2P^\circ$
7263.3	2.60	4.30	1½- ½	(2F)
7332.0	2.62	4.30	2½- ½	
7169.0	2.60	4.33	1½-1½	
A V I P 78				
7006.3	0.25	2.01	2-2	$3p^2\ ^3P-3p^2\ ^1D$
6434.9	0.09	2.01	1-2	(1F)
4610 ?	2.01	(4.69)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
A X I P ?				
5534.6	0.00	2.23	1½- ½	$2p^5\ ^2P^\circ-2p^5\ ^2P^\circ$ (1F)
A XI I P ?				
6919	0.00	1.78	2-1	$2p^4\ ^3P-2p^4\ ^3P$ (1F)
A XIV I P ?				
4359 ?	0.00	2.83	½-1½	$2p\,^2P^\circ-2p\,^2P^\circ$ (1F)
K IV I P 62.5				
6101.1	0.00	2.02	2-2	$3p^4\ ^3P-3p^4\ ^1D$
6794.8	0.21	2.02	1-2	(1F)
4511.0	2.02	4.76	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
K V I P ?				
4125 ?	0.00	(2.99)	1½-2½	$3p^3\ ^4S^\circ-3p^3\ ^2D^\circ$
4166 ?	0.00	(2.96)	1½-1½	(1F)
6316.6	(2.99	4.95)	2½-1½	$3p^3\ ^2D^\circ-3p^3\ ^2P^\circ$
6349.5	(2.96	4.91)	1½- ½	(2F)
6446.5	(2.99	4.91)	2½- ½	
6223.4	(2.96	4.95)	1½-1½	
K VI I P ?				
6229.2	0.36	2.34	2-2	$3p^2\ ^3P-3p^2\ ^1D$
5603.2	0.14	2.34	1-2	(1F)
4097 ?	2.34	(5.35)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
Ca I I P 6.09				
4912.82	0.00	2.51	0-2	$4\,^1S-3\,^3D$
4916.18	0.00	2.51	0-1	(1F)
4575.46	0.00	2.70	0-2	$4\,^1S-3\,^1D$ (2F)
Ca II I P 11.82				
7291.46	0.00	1.69	½-2½	$4\,^2S-3\,^2D$
7323.88	0.00	1.69	½-1½	(1F)
Ca V I P 84				
5308.9	0.00	2.32	2-2	$3p^4\ ^3P-3p^4\ ^1D$
6085.9	0.30	2.32	1-2	(1F)
3996.3	2.32	5.41	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
Ca VI I P ?				
3646.3	0.00	3.38	1½-2½	$3p^3\ ^4S^\circ-3p^3\ ^2D^\circ$
3702.7	0.00	3.33	1½-1½	(1F)
5587.2	3.38	5.59	2½-1½	$3p^3\ ^2D^\circ-3p^3\ ^2P^\circ$
5631.0	3.33	5.52	1½- ½	(2F)
5766.4	3.38	5.52	2½- ½	
5460.0	3.33	5.59	1½-1½	
Ca VII I P ?				
5615.8	0.50	2.70	2-2	$3p^2\ ^3P-3p^2\ ^1D$
4938.6	0.20	2.70	1-2	(1F)
3688 ?	2.70	(6.05)	2-0	$3p^2\ ^1D-3p^2\ ^1S$ (2F)
Ca XII I P 655				
3329.3	0.00	3.71	1½- ½	$2p^5\ ^2P^\circ-2p^5\ ^2P^\circ$ (1F)
Ca XIII I P ?				
4086.5	0.00	3.02	2-1	$2p^4\ ^3P-2p^4\ ^3P$ (1F)
Ca XV I P ?				
5648 ?	0.00	(2.19)	0-1	$2p^2\ ^3P-2p^2\ ^3P$ (1F)
Sc II I P 12.8				
9285.20	0.02	1.35	3-2	a^3D-b^1D
9191.34	0.01	1.35	2-2	(1F)
9134.50	0.00	1.35	1-2	
8649.11	0.02	1.45	3-0	a^3D-a^1S
8567.60	0.01	1.45	2-0	(2F)
8518.20	0.00	1.45	1-0	
8347.24	0.02	1.50	3-2	a^3D-a^3P
8307.67	0.01	1.49	2-1	(3F)
8279.99	0.00	1.49	1-0	
8384.28	0.02	1.49	3-1	
8326.66	0.01	1.49	2-0	
8271.32	0.01	1.50	2-2	
8261.21	0.00	1.49	1-1	
8403.62	0.02	1.49	3-0	
8225.25	0.00	1.50	1-2	
11896.48	0.31	1.35	2-2	a^1D-b^1D (4F)
10872.05	0.31	1.45	2-0	a^1D-a^1S (5F)
10399.33	0.31	1.50	2-2	a^1D-a^3P
10456.86	0.31	1.49	2-1	(6F)
10486.97	0.31	1.49	2-0	
10780.17	0.62	1.76	4-4	a^3F-a^1G
10660.35	0.60	1.76	3-4	(7F)
10569.44	0.59	1.76	2-4	
Sc III I P 24.65				
3945.34	0.02	3.15	2½- ½	$3\,^2D-4\,^2S$
3914.83	0.00	3.15	1½- ½	(1F)
Sc VI I P 111?				
4672.2	0.00	2.64	2-2	$3p^4\ ^3P-3p^4\ ^1D$
5539.6	0.41	2.64	1-2	(1F)
3590.8	2.64	6.08	2-0	$3p^4\ ^1D-3p^4\ ^1S$ (2F)
Sc VII I P ?				
4987 ?	(0.08	2.56)	2½-1½	$3p^3\ ^2D^\circ-3p^3\ ^2P^\circ$
5045 ?	(0.00	2.45)	1½- ½	(1F)
5224 ?	(0.08	2.45)	2½- ½	
4824 ?	(0.00	2.56)	1½-1½	
Ti I I P 6.81				
12168.80	0.05	1.06	4-2	a^3F-a^3P
12012.60	0.02	1.05	3-1	(1F)
11849.83	0.00	1.04	2-0	
11856.02	0.02	1.06	3-2	
11771.95	0.00	1.05	2-1	
11621.54	0.00	1.06	2-2	
8777.26	0.05	1.45	4-4	a^3F-b^3F
8716.24	0.02	1.44	3-3	(2F)
8669.28	0.00	1.42	2-2	
8884.12	0.05	1.44	4-3	
8799.09	0.02	1.42	3-2	
8613.35	0.02	1.45	3-4	
8588.84	0.00	1.44	2-3	
8970.23	0.05	1.42	4-2	
8488.93	0.00	1.45	2-4	
8521.66	0.05	1.50	4-4	a^3F-a^1G
8367.07	0.02	1.50	3-4	(3F)
8249.61	0.00	1.50	2-4	
7287.25	0.05	1.74	4-3	a^3F-a^5P
7213.88	0.02	1.73	3-2	(4F)
7150.21	0.00	1.73	2-1	
7328.50	0.05	1.73	4-2	
7238.29	0.02	1.73	3-1	
7173.92	0.02	1.74	3-3	
7126.40	0.00	1.73	2-2	
7087.39	0.00	1.74	2-3	
6739.63	0.05	1.88	4-5	a^3F-a^3G
6670.76	0.02	1.87	3-4	(5F)
6617.12	0.00	1.87	2-3	
6768.65	0.05	1.87	4-4	
6692.48	0.02	1.87	3-3	
6791.02	0.05	1.87	4-3	
6642.57	0.02	1.88	3-5	
6595.88	0.00	1.87	2-4	
5828.12	0.05	2.17	4-3	a^3F-a^3D
5794.16	0.02	2.15	3-2	(6F)
5755.60	0.00	2.14	2-1	
5867.87	0.05	2.15	4-2	
5812.53	0.02	2.14	3-1	
5755.39	0.02	2.17	3-3	
5737.59	0.00	2.15	2-2	
5699.57	0.00	2.17	2-3	
5639.54	0.05	2.24	4-2	a^3F-b^3P
5587.73	0.02	2.23	3-1	(7F)
5555.33	0.00	2.22	2-0	
5561.66	0.02	2.24	3-2	
5535.09	0.00	2.23	2-1	
5509.51	0.00	2.24	2-2	
5614.62	0.05	2.25	4-6	a^3F-a^3H
5562.94	0.02	2.24	3-5	(8F)
5542.54	0.00	2.23	2-4	
5630.85	0.05	2.24	4-5	
5595.31	0.02	2.23	3-4	
5664.02	0.05	2.23	4-4	
5584.81	0.05	2.26	4-4	a^3F-b^1G
5518.00	0.02	2.26	3-4	(9F)
5466.67	0.00	2.26	2-4	
5396.71	0.05	2.33	4-2	a^3F-c^3P
5358.79	0.02	2.32	3-1	(10F)
5312.52	0.00	2.32	2-0	
5331.30	0.02	2.33	3-2	
5310.36	0.00	2.32	2-1	
5286.31	0.00	2.33	2-2	
5025.53	0.02	2.48	3-1	a^3F-a^1P
4982.92	0.00	2.48	2-1	(11F)
5043.30	0.05	2.49	4-2	a^3F-b^1D
4988.75	0.02	2.49	3-2	(12F)
4946.76	0.00	2.49	2-2	
4898.49	0.05	2.57	4-5	a^3F-a^1H
4847.01	0.02	2.57	3-5	(13F)
11933.60	0.84	1.88	5-5	a^5F-a^3G
11881.68	0.83	1.87	4-4	(14F)
11835.06	0.82	1.87	3-3	
12024.89	0.84	1.87	5-4	
11950.77	0.83	1.87	4-3	
11792.55	0.83	1.88	4-5	
11767.30	0.82	1.87	3-4	
11748.60	0.81	1.87	2-3	
12095.67	0.84	1.87	5-3	
11679.85	0.82	1.88	3-5	
11681.81	0.81	1.87	2-4	
11690.94	0.81	1.87	1-3	
9258.83	0.83	2.17	4-3	a^5F-a^3D
9288.45	0.82	2.15	3-2	(15F)
9281.86	0.81	2.14	2-1	
9189.22	0.82	2.17	3-3	
9235.10	0.81	2.15	2-2	
9245.82	0.81	2.14	1-1	
9137.01	0.81	2.17	2-3	
9199.44	0.81	2.15	1-2	

FORBIDDEN LINES

Ti I continued

I A	E P Low	E P High	J	Multiplet (No)
8705.08	0.82	2.24	3-2	a^{5}F-b^{3}P (16F)
8721.54	0.81	2.23	2-1	
8739.71	0.81	2.22	1-0	
8658.20	0.81	2.24	2-2	
8689.73	0.81	2.23	1-1	
8626.85	0.81	2.24	1-2	
8808.47	0.84	2.25	5-6	a^{5}F-a^{3}H (17F)
8770.71	0.83	2.24	4-5	
8787.81	0.82	2.23	3-4	
8848.50	0.84	2.24	5-5	
8851.45	0.83	2.23	4-4	
8930.70	0.84	2.23	5-4	
8731.38	0.83	2.25	4-6	
8708.23	0.82	2.24	3-5	
8740.05	0.81	2.23	2-4	
8160.66	0.82	2.33	3-2	a^{5}F-c^{3}P (18F)
8176.33	0.81	2.32	2-1	
8153.46	0.81	2.32	1-0	
8119.46	0.81	2.33	2-2	
8148.37	0.81	2.32	1-1	
8091.87	0.81	2.33	1-2	
4521.76	0.84	3.57	5-4	a^{5}F-a^{5}D (19F)
4515.52	0.83	3.57	4-3	
4509.85	0.82	3.56	3-2	
4504.71	0.81	3.55	2-1	
4500.00	0.81	3.55	1-0	
4536.05	0.84	3.57	5-3	
4526.55	0.83	3.56	4-2	
4517.36	0.82	3.55	3-1	
4508.52	0.81	3.55	2-0	
4501.36	0.83	3.57	4-4	
4498.90	0.82	3.57	3-3	
4497.23	0.81	3.56	2-2	
4496.21	0.81	3.55	1-1	
4484.84	0.82	3.57	3-4	
4486.35	0.81	3.57	2-3	
4488.76	0.81	3.56	1-2	
4472.37	0.81	3.57	2-4	
4477.91	0.81	3.57	1-3	
9720.20	0.90	2.17	2-3	a^{1}D-a^{3}D (20F)
9831.29	0.90	2.15	2-2	
9884.29	0.90	2.14	2-1	
9180.13	0.90	2.24	2-2	a^{1}D-b^{3}P (21F)
9251.37	0.90	2.23	2-1	
9308.03	0.90	2.22	2-0	
8576.73	0.90	2.33	2-2	a^{1}D-c^{3}P (22F)
8640.22	0.90	2.32	2-1	
8645.95	0.90	2.32	2-0	
7805.66	0.90	2.48	2-1	a^{1}D-a^{1}P (23F)
7717.29	0.90	2.49	2-2	a^{1}D-b^{1}D (24F)
4430.79	0.90	3.68	2-3	a^{1}D-a^{1}F (25F)
11185.14	1.06	2.17	2-3	a^{3}P-a^{3}D (26F)
11193.04	1.05	2.15	1-2	
11191.43	1.04	2.14	0-1	
11332.50	1.06	2.15	2-2	
11261.79	1.05	2.14	1-1	
11402.97	1.06	2.14	2-1	
11049.28	1.05	2.17	1-3	
11123.53	1.04	2.15	0-2	
10475.96	1.06	2.24	2-2	a^{3}P-b^{3}P (27F)
10447.44	1.05	2.23	1-1	
10568.84	1.06	2.23	2-1	
10519.77	1.05	2.22	1-0	
10356.68	1.05	2.24	1-2	
10386.86	1.04	2.23	0-1	
10642.86	1.06	2.22	2-0	
10297.14	1.04	2.24	0-2	
9697.42	1.06	2.33	2-2	a^{3}P-c^{3}P (28F)
9674.66	1.05	2.32	1-1	
9778.67	1.06	2.32	2-1	
9681.84	1.05	2.32	1-0	
9595.12	1.05	2.33	1-2	
9622.68	1.04	2.32	0-1	
9786.00	1.06	2.32	2-0	
9544.00	1.04	2.33	0-2	
8723.13	1.06	2.48	2-1	a^{3}P-a^{1}P (29F)
8640.27	1.05	2.48	1-1	
8598.79	1.04	2.48	0-1	
8612.91	1.06	2.49	2-2	a^{3}P-b^{1}D (30F)
8532.12	1.05	2.49	1-2	
11665.66	1.44	2.49	3-2	b^{3}F-b^{1}D (31F)
11520.46	1.42	2.49	2-2	
11084.87	1.45	2.57	4-5	b^{3}F-a^{1}H (32F)
11521.31	1.50	2.57	4-5	a^{1}G-a^{1}H (33F)

Ti II I P 13.6

I A	E P Low	E P High	J	Multiplet (No)
11971.26	0.05	1.08	4½-2½	a^{4}F-a^{2}D (1F)
11782.27	0.03	1.08	3½-1½	
11735.52	0.03	1.08	3½-2½	
11602.41	0.01	1.08	2½-1½	
11557.08	0.01	1.08	2½-2½	
11477.29	0.00	1.08	1½-1½	
11432.93	0.00	1.08	1½-2½	
11458.27	0.05	1.13	4½-4½	a^{4}F-a^{2}G (2F)
11396.50	0.03	1.11	3½-3½	
11618.68	0.05	1.11	4½-3½	
11242.12	0.03	1.13	3½-4½	
11228.14	0.01	1.11	2½-3½	
11078.26	0.01	1.13	2½-4½	
11110.92	0.00	1.11	1½-3½	
10956.10	0.05	1.18	4½-2½	a^{4}F-a^{4}P (3F)
10901.79	0.03	1.16	3½-1½	
10784.80	0.01	1.16	2½- ½	
10758.32	0.03	1.18	3½-2½	
10747.64	0.01	1.16	2½-1½	
10676.61	0.00	1.16	1½- ½	
10608.18	0.01	1.18	2½-2½	
10640.19	0.00	1.16	1½-1½	
10503.47	0.00	1.18	1½-2½	
10116.66	0.01	1.23	2½-1½	a^{4}F-a^{2}P (4F)
10148.57	0.00	1.22	1½- ½	
10031.39	0.00	1.23	1½-1½	
10379.73	0.05	1.24	4½-2½	a^{4}F-b^{4}P (5F)
10300.86	0.03	1.23	3½-1½	
10223.27	0.01	1.22	2½- ½	
10202.05	0.03	1.24	3½-2½	
10163.13	0.01	1.23	2½-1½	
10125.99	0.00	1.22	1½- ½	
10066.92	0.01	1.24	2½-2½	
10066.98	0.00	1.23	1½-1½	
9972.59	0.00	1.24	1½-2½	
8085.17	0.05	1.57	4½-2½	a^{4}F-b^{2}D (6F)
8060.16	0.03	1.56	3½-1½	
7976.95	0.03	1.57	3½-2½	
7975.58	0.01	1.56	2½-1½	
7894.10	0.01	1.57	2½-2½	
7916.25	0.00	1.56	1½-1½	
7835.98	0.00	1.57	1½-2½	
8074.29	0.05	1.58	4½-5½	a^{4}F-a^{2}H (7F)
8028.94	0.03	1.56	3½-4½	
8138.59	0.05	1.56	4½-4½	
7966.36	0.03	1.58	3½-5½	
7945.02	0.01	1.56	2½-4½	
6725.67	0.05	1.88	4½-4½	a^{4}F-b^{2}G (8F)
6647.05	0.03	1.88	3½-3½	
6722.02	0.05	1.88	4½-3½	
6650.61	0.03	1.88	3½-4½	
6589.42	0.01	1.88	2½-3½	
6592.93	0.01	1.88	2½-4½	
6548.87	0.00	1.88	1½-3½	
6095.96	0.03	2.05	3½-1½	a^{4}F-b^{2}P (9F)
6087.77	0.01	2.04	2½- ½	
6047.46	0.01	2.05	2½-1½	
6053.14	0.00	2.04	1½- ½	
6013.28	0.00	2.05	1½-1½	
4877.01	0.05	2.58	4½-3½	a^{4}F-b^{2}F (10F)
4823.44	0.03	2.59	3½-2½	
4862.80	0.05	2.59	4½-2½	
4837.42	0.03	2.58	3½-3½	
4793.03	0.01	2.59	2½-2½	
4806.83	0.01	2.58	2½-3½	
4771.54	0.00	2.59	1½-2½	
4785.21	0.00	2.58	1½-3½	
4031.15	0.05	3.11	4½-3½	a^{4}F-c^{2}D (11F)
4041.57	0.03	3.08	3½-1½	
4004.07	0.03	3.11	3½-2½	
4020.20	0.01	3.08	2½-1½	
3983.08	0.01	3.11	2½-3½	
4005.07	0.00	3.08	1½-1½	
3968.23	0.00	3.11	1½-3½	
11857.96	0.13	1.18	3½-2½	b^{4}F-a^{4}P (12F)
11884.57	0.12	1.16	2½-1½	
11823.03	0.11	1.16	1½- ½	
11714.28	0.12	1.18	2½-2½	
11778.39	0.11	1.16	1½-1½	
11611.10	0.11	1.18	1½-2½	
11117.80	0.12	1.23	2½-1½	b^{4}F-a^{2}P (13F)
11178.94	0.11	1.22	1½- ½	
11024.82	0.11	1.23	1½-1½	
11185.70	0.13	1.24	3½-2½	b^{4}F-b^{4}P (14F)
11173.94	0.12	1.23	2½-1½	
11151.54	0.11	1.22	1½- ½	
11057.76	0.12	1.24	2½-2½	
11080.02	0.11	1.23	1½-1½	
10965.77	0.11	1.24	1½-2½	
8661.20	0.15	1.57	4½-2½	b^{4}F-b^{2}D (15F)
8661.96	0.13	1.56	3½-1½	
8565.94	0.13	1.57	3½-2½	
8585.04	0.12	1.56	2½-1½	
8490.71	0.12	1.57	2½-2½	
8529.50	0.11	1.56	1½-1½	
8436.37	0.11	1.57	1½-2½	

Ti II continued

I A	E P Low	E P High	J	Multiplet (No)
8648.72	0.15	1.58	4½-5½	b^{4}F-a^{2}H (16F)
8625.93	0.13	1.56	3½-4½	
8722.54	0.15	1.56	4½-4½	
8553.73	0.13	1.58	3½-5½	
8549.64	0.12	1.56	2½-4½	
7119.56	0.15	1.88	4½-4½	b^{4}F-b^{2}G (17F)
7051.04	0.13	1.88	3½-3½	
7115.47	0.15	1.88	4½-3½	
7055.06	0.13	1.88	3½-4½	
6999.99	0.12	1.88	2½-3½	
7003.95	0.12	1.88	2½-4½	
6963.02	0.11	1.88	1½-3½	
6434.04	0.13	2.05	3½-1½	b^{4}F-b^{2}P (18F)
6436.55	0.12	2.04	2½- ½	
6391.51	0.12	2.05	2½-1½	
6405.27	0.11	2.04	1½- ½	
6360.66	0.11	2.05	1½-1½	
5080.84	0.15	2.58	4½-3½	b^{4}F-b^{2}F (19F)
5032.69	0.13	2.59	3½-2½	
5065.43	0.15	2.59	4½-2½	
5047.91	0.13	2.58	3½-3½	
5006.63	0.12	2.59	2½-2½	
5021.69	0.12	2.58	2½-3½	
4987.68	0.11	2.59	1½-2½	
5002.63	0.11	2.58	1½-3½	
4169.41	0.15	3.11	4½-2½	b^{4}F-c^{2}D (20F)
4187.46	0.13	3.08	3½-1½	
4147.21	0.13	3.11	3½-2½	
4169.40	0.12	3.08	2½-1½	
4129.49	0.12	3.11	2½-2½	
4156.25	0.11	3.08	1½-1½	
4116.60	0.11	3.11	1½-2½	
9649.94	0.60	1.88	3½-4½	a^{2}F-b^{2}G (21F)
9398.59	0.57	1.88	2½-3½	
9642.42	0.60	1.88	3½-3½	
9405.71	0.57	1.88	2½-4½	
6250.51	0.60	2.58	3½-3½	a^{2}F-b^{2}F (22F)
6124.57	0.57	2.59	2½-2½	
6227.19	0.60	2.59	3½-2½	
6147.13	0.57	2.58	2½-3½	
4925.84	0.60	3.11	3½-2½	a^{2}F-c^{2}D (23F)
4916.81	0.57	3.08	2½-1½	
4982.73	0.60	3.08	3½-1½	
4861.41	0.57	3.11	2½-2½	
8229.81	1.08	2.58	2½-3½	a^{2}D-b^{2}F (24F)
8166.83	1.08	2.59	1½-2½	
8189.44	1.08	2.59	2½-2½	
7917.03	1.08	2.63	1½- ½	a^{2}D-a^{2}S (25F)
6077.80	1.08	3.11	2½-2½	a^{2}D-c^{2}D (26F)
6151.82	1.08	3.08	1½-1½	
6164.64	1.08	3.08	2½-1½	
6065.34	1.08	3.11	1½-2½	
8491.16	1.13	2.58	4½-3½	a^{2}G-b^{2}F (27F)
8363.05	1.11	2.59	3½-2½	
8405.16	1.11	2.58	3½-3½	
6172.91	1.11	3.11	3½-2½	a^{2}G-c^{2}D (28F)
8789.70	1.18	2.58	2½-3½	a^{4}P-b^{2}F (29F)
8651.14	1.16	2.59	1½-2½	
8743.66	1.18	2.59	2½-2½	
8371.34	1.16	2.63	1½- ½	a^{4}P-a^{2}S (30F)
8348.93	1.16	2.63	½- ½	
6377.83	1.18	3.11	2½-2½	a^{4}P-c^{2}D (31F)
6422.66	1.16	3.08	1½-1½	
6473.52	1.18	3.08	2½-1½	
6328.46	1.16	3.11	1½-2½	
6409.46	1.16	3.08	½-1½	
9108.42	1.23	2.59	1½-2½	a^{2}P-b^{2}F (32F)
8798.79	1.23	2.63	1½- ½	a^{2}P-a^{2}S (33F)
8703.03	1.22	2.63	½- ½	
6569.73	1.23	3.11	1½-2½	a^{2}P-c^{2}D (34F)
6616.12	1.22	3.08	½-1½	
6671.31	1.23	3.08	1½-1½	
9199.54	1.24	2.58	2½-3½	b^{4}P-b^{2}F (35F)
9071.07	1.23	2.59	1½-2½	
9149.11	1.24	2.59	2½-2½	
8763.95	1.23	2.63	1½- ½	b^{4}P-a^{2}S (36F)
8719.70	1.22	2.63	½- ½	
6590.88	1.24	3.11	2½-2½	b^{4}P-c^{2}D (37F)
6651.26	1.23	3.08	1½-1½	
6693.12	1.24	3.08	2½-1½	
6550.29	1.23	3.11	1½-2½	
6625.75	1.22	3.08	½-1½	

Ti II continued

I A	E P Low	E P High	J	Multiplet (No)
11478.92	1.56	2.63	1½-½	b^2D-a^2S
				(38F)
8039.68	1.57	3.11	2½-2½	b^2D-c^2D
8106.38	1.56	3.08	1½-1½	(39F)
8192.33	1.57	3.08	2½-1½	
7956.90	1.56	3.11	1½-2½	

Ti III I P 27.6

I A	E P Low	E P High	J	Multiplet (No)
12417.8	0.05	1.05	4-2	a^3F-a^1D
12061.0	0.02	1.05	3-2	(1F)
11799.5	0.00	1.05	2-2	
9706.8	0.05	1.32	4-2	a^3F-a^3P
9594.5	0.02	1.31	3-1	(2F)
9488.3	0.00	1.30	2-0	
9487.4	0.02	1.32	3-2	
9428.3	0.00	1.31	2-1	
9324.8	0.00	1.32	2-2	
7152.8	0.05	1.78	4-4	a^3F-a^1G
7033.0	0.02	1.78	3-4	(3F)
6991.8	0.00	1.78	2-4	
3337.7	1.05	4.74	2-3	a^1D-a^3D
3363.2	1.05	4.72	2-2	(4F)
3378.4	1.05	4.70	2-1	
3008.4	1.05	5.15	2-2	a^1D-b^1D
				(5F)
3608.5	1.32	4.74	2-3	a^3P-a^3D
3622.9	1.31	4.72	1-2	(6F)
3631.8	1.30	4.70	0-1	
3638.4	1.32	4.72	2-2	
3640.6	1.31	4.70	1-1	
3656.3	1.32	4.70	2-1	
3593.3	1.31	4.74	1-3	
3226.7	1.32	5.15	2-2	a^3P-b^1D
3214.5	1.31	5.15	1-2	(7F)
3207.6	1.30	5.15	0-2	
4140.4 ?	1.73	4.72	0-2?	a^1S-a^3D
4163.6 ?	1.73	4.70	0-1?	(8F)
3615.5	1.73	5.15	0-2	a^1S-b^1D
				(9F)
4160.9	1.78	4.74	4-3	a^1G-a^3D
4200.6	1.78	4.72	4-2	(10F)
3661.3	1.78	5.15	4-2	a^1G-b^1D
				(11F)

Ti VII I P 140

I A	E P Low	E P High	J	Multiplet (No)
4144.8	0.00	2.98	2-2	$3p^4\ ^3P-3p^4\ ^1D$
5104.5	0.56	2.98	1-2	(1F)
3263.1	2.98	6.76	2-0	$3p^4\ ^1D-3p^4\ ^1S$
				(2F)

Ti VIII I P ?

I A	E P Low	E P High	J	Multiplet (No)
4468 ?	(0.13	2.90)	2½-1½	$3p^3\ ^2D^o-3p^3\ ^2P^o$
4545 ?	(0.00	2.72)	1½-½	(1F)
4779 ?	(0.13	2.72)	2½-½	
4263 ?	(0.00	2.90)	1½-1½	

V II I P 14.1

I A	E P Low	E P High	J	Multiplet (No)
11414.22	0.04	1.12	4-4	a^5D-a^3F
11580.17	0.03	1.09	3-3	(1F)
11715.20	0.01	1.07	2-2	
11757.66	0.04	1.09	4-3	
11857.28	0.03	1.07	3-2	
11246.87	0.03	1.12	3-4	
11444.61	0.01	1.09	2-3	
11619.10	0.00	1.07	1-2	
8545.12	0.03	1.47	3-2	a^5D-a^3P
8763.28	0.01	1.42	2-1	(2F)
8878.98	0.00	1.39	1-0	
8471.07	0.01	1.47	2-2	
8709.38	0.00	1.42	1-1	
8420.72	0.00	1.47	1-2	
8682.13	0.00	1.42	0-1	
7533.84	0.04	1.68	4-4	a^5D-b^3F
7497.68	0.03	1.67	3-3	(3F)
7469.44	0.01	1.67	2-2	
7571.69	0.04	1.67	4-3	
7526.94	0.03	1.67	3-2	
7460.57	0.03	1.68	3-4	
7440.62	0.01	1.67	2-3	
7430.26	0.00	1.67	1-2	

V II continued

I A	E P Low	E P High	J	Multiplet (No)
7459.30	0.04	1.70	4-3	a^5D-a^5P
7468.52	0.03	1.68	3-2	(4F)
7457.80	0.01	1.67	2-1	
7541.95	0.04	1.68	4-2	
7515.13	0.03	1.67	3-1	
7387.47	0.03	1.70	3-3	
7411.90	0.01	1.68	2-2	
7418.75	0.00	1.67	1-1	
7332.06	0.01	1.70	2-3	
7373.32	0.00	1.68	1-2	
7398.95	0.00	1.67	0-1	
7294.30	0.00	1.70	1-3	
7353.77	0.00	1.68	0-2	
5549.49	0.04	2.27	4-3	a^5D-a^3D
5527.92	0.03	2.26	3-2	(5F)
5504.22	0.01	2.26	2-1	
5509.63	0.03	2.27	3-3	
5496.84	0.01	2.26	2-2	
5482.91	0.00	2.26	1-1	
5478.76	0.01	2.27	2-3	
5475.59	0.00	2.26	1-2	
5472.09	0.00	2.26	0-1	
5282.88	0.03	2.36	3-2	a^5D-b^3P
5245.25	0.01	2.37	2-1	(6F)
5227.25	0.00	2.37	1-0	
5254.49	0.01	2.36	2-2	
5225.90	0.00	2.37	1-1	
5235.07	0.00	2.36	1-2	
5216.07	0.00	2.37	0-1	
4965.31	0.03	2.51	3-2	a^5D-c^3P
5002.88	0.01	2.48	2-1	(7F)
4968.65	0.00	2.49	1-0	
4940.22	0.01	2.51	2-2	
4985.27	0.00	2.48	1-1	
4923.05	0.00	2.51	1-2	
4976.33	0.00	2.48	0-1	
4928.68	0.04	2.55	4-3	a^5D-b^3D
4898.64	0.03	2.55	3-2	(8F)
4896.87	0.01	2.53	2-1	
4897.21	0.03	2.55	3-3	
4874.21	0.01	2.55	2-2	
4880.00	0.00	2.53	1-1	
4872.80	0.01	2.55	2-3	
4857.50	0.00	2.55	1-2	
4871.43	0.00	2.53	0-1	
9570.24	0.39	1.68	5-4	a^5F-b^3F
9454.15	0.37	1.67	4-3	(9F)
9358.90	0.35	1.67	3-2	
9395.23	0.37	1.68	4-4	
9313.72	0.35	1.67	3-3	
9253.44	0.33	1.67	2-2	
9256.51	0.35	1.68	3-4	
9209.25	0.33	1.67	2-3	
9183.58	0.32	1.87	1-2	
9279.59	0.37	1.70	4-3	a^5F-a^5P
9268.77	0.35	1.68	3-2	(10F)
9235.60	0.33	1.67	2-1	
9144.25	0.35	1.70	3-3	
9165.30	0.33	1.68	2-2	
9166.00	0.32	1.67	1-1	
9043.52	0.33	1.70	2-3	
9096.76	0.32	1.68	1-2	
8698.69	0.39	1.81	5-5	a^5F-a^3G
8627.35	0.37	1.80	4-4	(11F)
8579.15	0.35	1.79	3-3	
8774.69	0.39	1.80	5-4	
8698.18	0.37	1.79	4-3	
8553.87	0.37	1.81	4-5	
8510.24	0.35	1.80	3-4	
8490.44	0.33	1.79	2-3	
7477.26	0.39	2.04	5-5	a^5F-b^3G
7431.08	0.37	2.03	4-4	(12F)
7387.74	0.35	2.02	3-3	
7540.14	0.39	2.03	5-4	
7475.84	0.37	2.02	4-3	
7370.00	0.37	2.04	4-5	
7344.03	0.35	2.03	3-4	
7321.87	0.33	2.02	2-3	
6497.76	0.37	2.27	4-3	a^5F-a^3D
6456.04	0.35	2.26	3-2	(13F)
6415.69	0.33	2.26	2-1	
6431.11	0.35	2.27	3-3	
6405.67	0.33	2.26	2-2	
6382.03	0.32	2.26	1-1	
6381.13	0.33	2.27	2-3	
6372.11	0.32	2.26	1-2	
5662.62	0.37	2.55	4-3	a^5F-b^3D
5613.81	0.35	2.55	3-2	(14F)
5605.36	0.33	2.53	2-1	
5611.94	0.35	2.55	3-3	
5575.69	0.33	2.55	2-2	
5579.65	0.32	2.53	1-1	
5573.84	0.33	2.55	2-3	
5550.25	0.32	2.55	1-2	
10800.75	1.12	2.27	4-3	a^3F-a^3D
10576.98	1.09	2.26	3-2	(15F)
10382.14	1.07	2.26	2-1	
10510.25	1.09	2.27	3-3	
10355.93	1.07	2.26	2-2	
10291.94	1.07	2.27	2-3	

V II continued

I A	E P Low	E P High	J	Multiplet (No)
9982.17	1.12	2.36	4-4	a^3F-b^1G
9733.52	1.09	2.36	3-4	(16F)
8674.27	1.12	2.55	4-3	a^3F-b^3D
8490.18	1.09	2.55	3-2	(17F)
8413.83	1.07	2.53	2-1	
8485.90	1.09	2.55	3-3	
8347.16	1.07	2.55	2-2	
8343.02	1.07	2.55	2-3	
8235.69	1.09	2.59	3-2	a^3F-a^1D
8101.03	1.07	2.59	2-2	(18F)
6114.85	1.09	3.11	3-2	a^3F-b^1D
6040.31	1.07	3.11	2-2	(19F)
5634.78	1.12	3.31	4-3	a^3F-a^1F
5554.68	1.09	3.31	3-3	(20F)
5493.10	1.07	3.31	2-3	
11918.75	1.42	2.46	1-0	a^3P-a^1S
				(21F)
11852.49	1.47	2.51	2-2	a^3P-c^3P
11658.88	1.42	2.48	1-1	(22F)
12219.66	1.47	2.48	2-1	
11568.38	1.42	2.49	1-0	
11324.18	1.42	2.51	1-2	
11368.21	1.39	2.48	0-1	
11471.69	1.47	2.55	2-3	a^3P-b^3D
10983.23	1.42	2.55	1-2	(23F)
10835.22	1.39	2.53	0-1	
11479.51	1.47	2.55	2-2	
11098.96	1.42	2.53	1-1	
11606.00	1.47	2.53	2-1	
11019.11	1.47	2.59	2-2	a^3P-a^1D
10561.05	1.42	2.59	1-2	(24F)
9644.96	1.47	2.75	2-1	a^3P-a^1P
9292.19	1.42	2.75	1-1	(25F)
9106.60	1.39	2.75	0-1	
7526.46	1.47	3.11	2-2	a^3P-b^1D
7309.90	1.42	3.11	1-2	(26F)
9356.40	1.57	2.89	6-5	a^3H-a^1H
9282.92	1.56	2.89	5-5	(27F)
9217.51	1.55	2.89	4-5	
8582.52	1.67	3.11	3-2	b^3F-b^1D
8544.49	1.67	3.11	2-2	(28F)
7556.03	1.68	3.31	4-3	b^3F-a^1F
7518.35	1.67	3.31	3-3	(29F)
7489.15	1.67	3.31	2-3	
11444.66	1.81	2.89	5-5	a^3G-a^1H
11315.52	1.80	2.89	4-5	(30F)
8138.62	1.80	3.31	4-3	a^3G-a^1F
8076.58	1.79	3.31	3-3	(31F)
9595.85	2.03	3.31	4-3	b^3G-a^1F
9522.24	2.02	3.31	3-3	(32F)

V III I P 29.6

I A	E P Low	E P High	J	Multiplet (No)
8745.0	0.04	1.45	3½-2½	$3d^3\ ^4F-3d^3\ ^4P$
8735.0	0.02	1.43	2½-1½	(1F)
8683.4	0.00	1.42	1½-½	
8599.1	0.02	1.45	2½-2½	
8625.8	0.00	1.43	1½-1½	
8493.1	0.00	1.45	1½-2½	
8615.4	0.07	1.50	4½-4½	$3d^3\ ^4F-3d^3\ ^2G$
8598.3	0.04	1.48	3½-3½	(2F)
8782.6	0.07	1.48	4½-3½	
8437.9	0.04	1.50	3½-4½	
8457.2	0.02	1.48	2½-3½	
6233.9	0.04	2.02	3½-2½	$3d^3\ ^4F-3d^3\ ^2D$
6215.6	0.02	2.00	2½-1½	(3F)
6159.3	0.02	2.02	2½-2½	
6160.1	0.00	2.00	1½-1½	
6104.8	0.00	2.02	1½-2½	
6098.1	0.07	2.10	4½-5½	$3d^3\ ^4F-3d^3\ ^2H$
6065.2	0.04	2.08	3½-4½	(4F)

V IV I P 48.3

I A	E P Low	E P High	J	Multiplet (No)
8815.9	0.04	1.44	3-2	$3d^2\ ^3F-3d^2\ ^1D$
8575.4	0.00	1.44	2-2	(1F)
7611.2	0.04	1.66	3-2	$3d^2\ ^3F-3d^2\ ^3P$
7551.9	0.00	1.63	2-1	(2F)
7431.2	0.00	1.66	2-2	
5446.0	0.09	2.36	4-4	$3d^2\ ^3F-3d^2\ ^1G$
5326.5	0.04	2.36	3-4	(3F)
5237.7	0.00	2.36	2-4	

V VIII I P 173?

I A	E P Low	E P High	J	Multiplet (No)
3686	0.00	3.35	2-2	$3p^4\ ^3P-3p^4\ ^1D$
4734	0.74	3.35	1-2	(1F)

Cr I I P 6.74

I A	E P Low	E P High	J	Multiplet (No)
4577.32	0.00	2.70	3-3	a^7S-a^5P (1F)
4575.84	0.00	2.70	3-2	
4573.93	0.00	2.70	3-1	
4149.52	0.00	2.97	3-2	a^7S-a^3P (2F)
4251.99	0.00	2.90	3-1	
4117.09	0.00	3.00	3-4	a^7S-b^5D (3F)
4113.42	0.00	3.00	3-3	
4114.10	0.00	3.00	3-2	
4116.36	0.00	3.00	3-1	
3672.37	0.00	3.36	3-2	a^7S-b^3P (4F)
3678.71	0.00	3.35	3-1	
7016.80	0.94	2.70	2-3	a^5S-a^5P (5F)
7013.33	0.94	2.70	2-2	
7008.84	0.94	2.70	2-1	
6059.21	0.94	2.97	2-2	a^5S-a^3P (6F)
6280.22	0.94	2.90	2-1	
6420.88	0.94	2.86	2-0	
5990.31	0.94	3.00	2-4	a^5S-b^5D (7F)
5982.55	0.94	3.00	2-3	
5983.99	0.94	3.00	2-2	
5988.76	0.94	3.00	2-1	
5992.15	0.94	3.00	2-0	
5092.97	0.94	3.36	2-2	a^5S-b^3P (8F)
5105.16	0.94	3.35	2-1	
5108.53	0.94	3.35	2-0	
8251.14	1.03	2.53	4-5	a^5D-a^5G (9F)
8043.80	1.00	2.53	3-4	
7938.41	0.98	2.53	2-3	
7867.83	0.96	2.53	1-2	
8183.69	1.03	2.53	4-4	
8045.57	1.00	2.53	3-3	
7940.71	0.98	2.53	2-2	
8185.52	1.03	2.53	4-3	
8047.93	1.00	2.53	3-2	
7387.23	1.03	2.70	4-3	a^5D-a^5P (10F)
7269.33	1.00	2.70	3-2	
7177.04	0.98	2.70	2-1	
7383.38	1.03	2.70	4-2	
7264.51	1.00	2.70	3-1	
7273.06	1.00	2.70	3-3	
7181.74	0.98	2.70	2-2	
7117.45	0.96	2.70	1-1	
7185.39	0.98	2.70	2-3	
7122.07	0.96	2.70	1-2	
7087.10	0.96	2.70	0-1	
7125.65	0.96	2.70	1-3	
7091.68	0.96	2.70	0-2	
6333.46	1.03	2.97	4-2	a^5D-a^3P (11F)
6484.72	1.00	2.90	3-1	
6561.75	0.98	2.86	2-0	
6249.35	1.00	2.97	3-2	
6414.93	0.98	2.90	2-1	
6511.90	0.96	2.86	1-0	
6184.51	0.98	2.97	2-2	
6367.28	0.96	2.90	1-1	
6140.20	0.96	2.97	1-2	
6342.98	0.96	2.90	0-1	
6117.60	0.96	2.97	0-2	
6258.22	1.03	3.00	4-4	a^5D-b^5D (12F)
6167.84	1.00	3.00	3-3	
6106.17	0.98	3.00	2-2	
6067.88	0.96	3.00	1-1	
6249.75	1.03	3.00	4-3	
6169.37	1.00	3.00	3-2	
6111.14	0.98	3.00	2-1	
6071.35	0.96	3.00	1-0	
6176.08	1.00	3.00	3-4	
6104.67	0.98	3.00	2-3	
6062.98	0.96	3.00	1-2	
6045.80	0.96	3.00	0-1	
6251.33	1.03	3.00	4-2	
6174.44	1.00	3.00	3-1	
6114.66	0.98	3.00	2-0	
6112.75	0.98	3.00	2-4	
6061.50	0.96	3.00	1-3	
6040.94	0.96	3.00	0-2	
5975.39	1.03	3.09	4-5	a^5D-a^3G (13F)
5949.99	1.00	3.07	3-4	
5913.34	0.98	3.07	2-3	
6026.18	1.03	3.07	4-4	
5972.59	1.00	3.07	3-3	
6049.37	1.03	3.07	4-3	
5926.18	1.03	3.11	4-4	a^5D-a^3F (14F)
5876.92	1.00	3.10	3-3	
5876.23	0.98	3.08	2-2	
5951.24	1.03	3.10	4-3	
5934.73	1.00	3.08	3-2	
5852.48	1.00	3.11	3-4	
5819.54	0.98	3.10	2-3	
5836.21	0.96	3.08	1-2	
6010.53	1.03	3.08	4-2	
5795.58	0.98	3.11	2-4	
5780.29	0.96	3.10	1-3	
5815.79	0.96	3.08	0-2	
5285.34	1.03	3.36	4-2	a^5D-b^3P (15F)
5239.47	1.00	3.35	3-1	
5197.31	0.98	3.35	2-0	
5226.64	1.00	3.36	3-2	
5193.82	0.98	3.35	2-1	
5165.98	0.96	3.35	1-0	
5181.21	0.98	3.36	2-2	
5162.53	0.96	3.35	1-1	
5150.07	0.96	3.36	1-2	
5146.55	0.96	3.35	0-1	
5134.16	0.96	3.36	0-2	
5124.41	1.03	3.43	4-5	a^5D-b^3G (16F)
5098.44	1.00	3.42	3-4	
5082.54	0.98	3.41	2-3	
5154.28	1.03	3.42	4-4	
5126.25	1.00	3.41	3-3	
5182.71	1.03	3.41	4-3	

Cr II I P 16.6

I A	E P Low	E P High	J	Multiplet (No)
8000.12	0.00	1.54	2½-4½	a^6S-a^6D (1F)
8125.50	0.00	1.52	2½-3½	
8229.81	0.00	1.50	2½-2½	
8308.68	0.00	1.49	2½-1½	
8357.78	0.00	1.48	2½- ½	
4992.68	0.00	2.47	2½-3½	a^6S-a^4D (2F)
5049.73	0.00	2.44	2½-2½	
5092.60	0.00	2.42	2½-1½	
5119.47	0.00	2.41	2½- ½	
4581.18	0.00	2.69	2½-2½	a^6S-a^4P (3F)
4580.80	0.00	2.69	2½-1½	
4580.88	0.00	2.69	2½- ½	
3993.57	0.00	3.09	2½-3½	a^6S-b^4D (4F)
3991.47	0.00	3.09	2½-2½	
3992.08	0.00	3.09	2½-1½	
3993.29	0.00	3.09	2½- ½	
3239.07	0.00	3.81	2½-2½	a^6S-b^4P (5F)
3298.61	0.00	3.74	2½-1½	
3337.77	0.00	3.70	2½- ½	
3202.25	0.00	3.85	2½-4½	a^6S-a^4F (6F)
3207.46	0.00	3.85	2½-3½	
3212.75	0.00	3.84	2½-2½	
3216.32	0.00	3.84	2½-1½	
3188.79	0.00	3.87	2½-2½	a^6S-a^2D (7F)
3170.55	0.00	3.89	2½-1½	
3089.76	0.00	3.99	2½-3½	a^6S-a^2F (8F)
3066.29	0.00	4.02	2½-2½	
12471.70	1.54	2.53	4½-5½	a^6D-a^4G (9F)
12168.18	1.52	2.53	3½-4½	
11943.75	1.50	2.53	2½-3½	
11789.27	1.49	2.53	1½-2½	
12460.65	1.54	2.53	4½-4½	
12170.50	1.52	2.53	3½-3½	
11951.78	1.50	2.53	2½-2½	
12463.08	1.54	2.53	4½-3½	
12178.83	1.52	2.53	3½-2½	
10719.84	1.54	2.69	4½-2½	a^6D-a^4P (10F)
10500.65	1.52	2.69	3½-1½	
10331.86	1.50	2.69	2½- ½	
10502.67	1.52	2.69	3½-2½	
10331.43	1.50	2.69	2½-1½	
10210.20	1.49	2.69	1½- ½	
10333.39	1.50	2.69	2½-2½	
10209.78	1.49	2.69	1½-1½	
10137.00	1.48	2.69	½- ½	
10211.69	1.49	2.69	1½-2½	
10136.59	1.48	2.69	½-1½	
10138.47	1.48	2.69	½-2½	
7974.31	1.54	3.09	4½-3½	a^6D-b^4D (11F)
7845.41	1.52	3.09	3½-2½	
7752.86	1.50	3.09	2½-1½	
7688.64	1.49	3.09	1½- ½	
7965.96	1.54	3.09	4½-2½	
7847.76	1.52	3.09	3½-1½	
7757.43	1.50	3.09	2½- ½	
7853.51	1.52	3.09	3½-3½	
7750.56	1.50	3.09	2½-2½	
7684.16	1.49	3.09	1½-1½	
7647.06	1.48	3.09	½- ½	
7758.47	1.50	3.09	2½-3½	
7681.89	1.49	3.09	1½-2½	
7642.61	1.48	3.09	½-1½	
7689.65	1.49	3.09	1½-3½	
7640.39	1.48	3.09	½-2½	
5442.82	1.54	3.81	4½-2½	a^6D-b^4P (12F)
5552.93	1.52	3.74	3½-1½	
5615.19	1.50	3.70	2½- ½	
5386.27	1.52	3.81	3½-2½	
5505.25	1.50	3.74	2½-1½	
5579.06	1.49	3.70	1½- ½	
5341.39	1.50	3.81	2½-2½	
5470.51	1.49	3.74	1½-1½	
5557.14	1.48	3.70	½- ½	
5308.68	1.49	3.81	1½-2½	
5449.43	1.48	3.74	½-1½	
5288.83	1.48	3.81	½-2½	
5339.65	1.54	3.85	4½-4½	a^6D-a^4F (13F)
5299.42	1.52	3.85	3½-3½	
5270.19	1.50	3.84	2½-2½	
5247.84	1.49	3.84	1½-1½	
5354.15	1.54	3.85	4½-3½	
5313.88	1.52	3.84	3½-2½	
5279.80	1.50	3.84	2½-1½	
5285.21	1.52	3.85	3½-4½	
5255.97	1.50	3.85	2½-3½	
5238.35	1.49	3.84	1½-2½	
5228.44	1.48	3.84	½-1½	
5368.91	1.54	3.84	4½-2½	
5323.64	1.52	3.84	3½-1½	
5242.00	1.50	3.85	2½-4½	
5224.30	1.49	3.85	1½-3½	
5219.02	1.48	3.84	½-2½	
5248.64	1.52	3.87	3½-2½	a^6D-a^2D (14F)
5157.59	1.50	3.89	2½-1½	
5206.02	1.50	3.87	2½-2½	
5127.09	1.49	3.89	1½-1½	
5174.95	1.49	3.87	1½-2½	
5108.57	1.48	3.89	½-1½	
5034.05	1.54	3.99	4½-3½	a^6D-a^2F (15F)
4924.81	1.52	4.02	3½-2½	
4985.64	1.52	3.99	3½-3½	
4887.27	1.50	4.02	2½-2½	
4947.17	1.50	3.99	2½-3½	
4859.87	1.49	4.02	1½-2½	
9222.25	2.47	3.81	3½-2½	a^4D-b^4P (16F)
9512.58	2.44	3.74	2½-1½	
9686.70	2.42	3.70	1½- ½	
9033.73	2.44	3.81	2½-2½	
9364.08	2.42	3.74	1½-1½	
9590.94	2.41	3.70	½- ½	
8899.71	2.42	3.81	1½-2½	
9274.58	2.41	3.74	½-1½	
9806.20	2.47	3.73	3½-4½	a^4D-a^4H (17F)
9651.02	2.44	3.72	2½-3½	
9866.49	2.47	3.72	3½-3½	
8929.91	2.47	3.85	3½-4½	a^4D-a^4F (18F)
8792.09	2.44	3.85	2½-3½	
8703.79	2.42	3.84	1½-2½	
8652.17	2.41	3.84	½-1½	
8970.56	2.47	3.85	3½-3½	
8831.94	2.44	3.84	2½-2½	
8730.02	2.42	3.84	1½-1½	
9013.04	2.47	3.84	3½-2½	
8858.94	2.44	3.84	2½-1½	
8826.02	2.47	3.87	3½-2½	a^4D-a^2D (19F)
8520.22	2.44	3.89	2½-1½	
8653.20	2.44	3.87	2½-2½	
8400.89	2.42	3.89	1½-1½	
8530.15	2.42	3.87	1½-2½	
8328.78	2.41	3.89	½-1½	
8106.88	2.47	3.99	3½-3½	a^4D-a^2F (20F)
7806.88	2.44	4.02	2½-2½	
7947.28	2.47	4.02	3½-2½	
7960.85	2.44	3.99	2½-3½	
7706.58	2.42	4.02	1½-2½	
10373.30	2.53	3.72	5½-6½	a^4G-a^2I (21F)
10388.07	2.53	3.72	4½-5½	
10380.40	2.53	3.72	5½-5½	
10119.57	2.53	3.75	5½-6½	a^4G-a^4H (22F)
10223.27	2.53	3.74	4½-5½	
10305.67	2.53	3.73	3½-4½	
10366.26	2.53	3.72	2½-3½	
10215.85	2.53	3.74	5½-5½	
10307.34	2.53	3.73	4½-4½	
10372.30	2.53	3.72	3½-3½	
10299.79	2.53	3.73	5½-4½	
10373.98	2.53	3.72	4½-3½	
9337.40	2.53	3.85	5½-4½	a^4G-a^4F (23F)
9388.12	2.53	3.85	4½-3½	
9432.18	2.53	3.84	3½-2½	
9457.95	2.53	3.84	2½-1½	
9343.61	2.53	3.85	4½-4½	
9386.74	2.53	3.85	3½-3½	
9427.18	2.53	3.84	2½-2½	
9342.24	2.53	3.85	3½-4½	
9381.78	2.53	3.85	2½-3½	
9228.60	2.53	3.87	3½-2½	a^4G-a^2D (24F)
9072.86	2.53	3.89	2½-1½	
9223.81	2.53	3.87	2½-2½	
8446.39	2.53	3.99	4½-3½	a^4G-a^2F (25F)
8272.21	2.53	4.02	3½-2½	
8445.28	2.53	3.99	3½-3½	
8268.36	2.53	4.02	2½-2½	
8441.27	2.53	3.99	2½-3½	
11056.70	2.69	3.81	2½-2½	a^4P-b^4P (26F)
11785.17	2.69	3.74	1½-1½	
12300.16	2.69	3.70	½- ½	
11782.63	2.69	3.74	2½-1½	
12300.77	2.69	3.70	1½- ½	
11058.94	2.69	3.81	1½-2½	
11784.62	2.69	3.74	½-1½	

Cr II continued

I A	E P Low	E P High	J	Multiplet (No)
10696.87	2.69	3.85	2½-3½	a^4P-a^4F
10758.04	2.69	3.84	1½-2½	(27F)
10797.66	2.69	3.84	½-1½	
10755.91	2.69	3.84	2½-2½	
10798.14	2.69	3.84	1½-1½	
10796.00	2.69	3.84	2½-1½	
10491.99	2.69	3.87	2½-2½	a^4P-a^2D
10299.05	2.69	3.89	1½-1½	(28F)
10297.11	2.69	3.89	2½-1½	
10494.00	2.69	3.87	1½-2½	
10298.63	2.69	3.89	½-1½	
9491.15	2.69	3.99	2½-3½	a^4P-a^2F
9274.68	2.69	4.02	1½-2½	(29F)
9273.10	2.69	4.02	2½-2½	

Cr III I P 31

I A	E P Low	E P High	J	Multiplet (No)
5785.4	0.07	2.20	4-2	$3d^4\ {}^5D-3d^4\ {}^3P$
5945.1	0.04	2.12	3-1	(1F)
5712.7	0.04	2.20	3-2	
5884.9	0.02	2.12	2-1	
5689.3	0.02	2.20	2-2	
5843.6	0.01	2.12	1-1	
5618.9	0.01	2.20	1-2	
5823.2	0.00	2.12	0-1	
5600.1	0.00	2.20	0-2	
5550.3	0.07	2.29	4-4	$3d^4\ {}^5D-3d^4\ {}^3F$
5505.1	0.04	2.29	3-3	(2F)
5471.3	0.02	2.28	2-2	
5572.6	0.07	2.29	4-3	
5523.3	0.04	2.28	3-2	
5483.3	0.04	2.29	3-4	
5453.4	0.02	2.29	2-3	
5435.6	0.01	2.28	1-2	
5591.3	0.07	2.28	4-2	
5432.1	0.02	2.29	2-4	
*5418.0	(0.01	2.29	1-3	
	0.00	2.28	0-2	
4894.1	0.07	2.59	4-5	$3d^4\ {}^5D-3d^4\ {}^3G$
4876.0	0.04	2.57	3-4	(3F)
4870.8	0.02	2.56	2-3	
4928.9	0.07	2.57	4-4	
4911.9	0.04	2.56	3-3	
*4842.4	0.04	2.59	3-5	
4835.4	0.02	2.57	2-4	
*4842.4	0.01	2.56	1-3	
4965.6	0.07	2.56	4-3	

Cr IV I P 50.4

I A	E P Low	E P High	J	Multiplet (No)
7390.6	0.12	1.79	4½-2½	$3d^3\ {}^4F-3d^3\ {}^4P$
7338.0	0.07	1.75	3½-1½	(1F)
7233.4	0.03	1.74	2½- ½	
7180.4	0.07	1.79	3½-2½	
7171.6	0.03	1.75	2½-1½	
7111.4	0.00	1.74	1½- ½	
7021.0	0.03	1.79	2½-2½	
7051.7	0.00	1.75	1½-1½	
6906.1	0.00	1.79	1½-2½	
6915.6	0.12	1.90	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2G$
6893.2	0.07	1.86	3½-3½	(2F)
7086.7	0.12	1.86	4½-3½	
6731.2	0.07	1.90	3½-4½	
6746.2	0.03	1.86	2½-3½	
6591.0	0.03	1.90	2½-4½	
6640.0	0.00	1.86	1½-3½	
5296.3	0.07	2.40	3½-1½	$3d^3\ {}^4F-3d^3\ {}^2P$
5209.1	0.03	2.40	2½-1½	(3F)
5145.5	0.00	2.40	1½-1½	
5071.6	0.12	2.55	4½-2½	$3d^3\ {}^4F-3d^3\ {}^2D$
4976.5	0.07	2.55	3½-1½	(4F)
4971.8	0.07	2.55	3½-2½	
4899.4	0.03	2.55	2½-1½	
4894.8	0.03	2.55	2½-2½	
4843.1	0.00	2.55	1½-1½	
4838.7	0.00	2.55	1½-2½	
4907.6	0.12	2.63	4½-5½	$3d^3\ {}^4F-3d^3\ {}^2H$
4873.4	0.07	2.60	3½-4½	(5F)
4969.3	0.12	2.60	4½-4½	
4814.0	0.07	2.63	3½-5½	
4799.4	0.03	2.60	2½-4½	

Cr V I P 72.8

I A	E P Low	E P High	J	Multiplet (No)
7252.8	0.14	1.84	4-2	$3d^2\ {}^3F-3d^2\ {}^1D$
6932.4	0.06	1.84	3-2	(1F)
6700.1	0.00	1.84	2-2	
6705.5	0.14	1.98	4-2	$3d^2\ {}^3F-3d^2\ {}^3P$
6586.7	0.06	1.94	3-1	(2F)
6462.3	0.00	1.91	2-0	
6430.7	0.06	1.98	3-2	
6376.6	0.00	1.94	2-1	
6230.4	0.00	1.98	2-2	
4523.6	0.14	2.87	4-4	$3d^2\ {}^3F-3d^2\ {}^1G$
4396.9	0.06	2.87	3-4	(3F)
4302.3	0.00	2.87	2-4	

Cr V continued

I A	E P Low	E P High	J	Multiplet (No)
9635.9	1.84	3.12	2-0	$3d^2\ {}^1D-3d^2\ {}^1S$
				(4F)
10807.8	1.98	3.12	2-0	$3d^2\ {}^3P-3d^2\ {}^1S$
10394.3	1.94	3.12	1-0	(5F)

Cr VIII I P 184?

I A	E P Low	E P High	J	Multiplet (No)
10098.2	0.00	1.22	1½- ½	$3p^5\ {}^2P^o-3p^5\ {}^2P^o$
				(1F)

Cr IX I P 209?

I A	E P Low	E P High	J	Multiplet (No)
3273.5	0.00	3.77	2-2	$3p^4\ {}^3P-3p^4\ {}^1D$
4407.9	0.97	3.77	1-2	(1F)

Mn II I P 15.57

I A	E P Low	E P High	J	Multiplet (No)
10553.58	0.00	1.17	3-2	a^7S-a^5S (1F)
6978.57	0.00	1.77	3-4	a^7S-a^5D
6850.42	0.00	1.80	3-3	(2F)
6763.56	0.00	1.82	3-2	
6709.08	0.00	1.84	3-1	
3344.72	0.00	3.69	3-3	a^7S-a^5P
3341.38	0.00	3.69	3-2	(3F)
3337.82	0.00	3.70	3-1	
3049.05	0.00	4.05	3-4	a^7S-b^5D
3042.61	0.00	4.06	3-3	(4F)
3042.44	0.00	4.06	3-2	
3044.52	0.00	4.05	3-1	
4696.65	1.17	3.69	2-3	a^5S-a^5P
4889.49	1.17	3.69	2-2	(5F)
4881.87	1.17	3.70	2-1	
4275.21	1.17	4.06	2-3	a^5S-b^5D
4274.87	1.17	4.06	2-2	(6F)
4278.97	1.17	4.05	2-1	
7547.77	1.77	3.40	4-5	a^5D-a^5G
7696.30	1.80	3.41	3-4	(7F)
7805.96	1.82	3.41	2-3	
7879.32	1.84	3.41	1-2	
7540.74	1.77	3.41	4-4	
7693.38	1.80	3.41	3-3	
7805.47	1.82	3.41	2-2	
7537.93	1.77	3.41	4-3	
7692.91	1.80	3.41	3-2	
6423.45	1.77	3.69	4-3	a^5D-a^5P
6523.23	1.80	3.69	3-2	(8F)
6590.10	1.82	3.70	2-1	
6535.99	1.80	3.69	3-3	
6603.99	1.82	3.69	2-2	
6642.66	1.84	3.70	1-1	
6617.06	1.82	3.69	2-3	
6656.77	1.84	3.69	1-2	
6668.63	1.85	3.70	0-1	
5415.04	1.77	4.05	4-4	a^5D-b^5D
5473.94	1.80	4.06	3-3	(9F)
5530.11	1.82	4.06	2-2	
5574.04	1.84	4.05	1-1	
5394.78	1.77	4.06	4-3	
5473.37	1.80	4.06	3-2	
5536.99	1.82	4.05	2-1	
5579.73	1.84	4.05	1-0	
5494.80	1.80	4.05	3-4	
5530.69	1.82	4.06	2-3	
5567.08	1.84	4.06	1-2	
5561.21	1.85	4.05	0-1	

Mn IV I P 52

I A	E P Low	E P High	J	Multiplet (No)
4662.7	0.11	2.76	4-2	$3d^4\ {}^5D-3d^4\ {}^3P$
4823.3	0.07	2.63	3-1	(1F)
4908.8	0.03	2.55	2-0	
4591.4	0.07	2.76	3-2	
4761.9	0.03	2.63	2-1	
4863.9	0.01	2.55	1-0	
4535.7	0.03	2.76	2-2	
4719.7	0.01	2.63	1-1	
4497.4	0.01	2.76	1-2	
4699.3	0.00	2.63	0-1	
4478.8	0.00	2.76	0-2	
4528.3	0.11	2.83	4-4	$3d^4\ {}^5D-3d^4\ {}^3F$
4480.6	0.07	2.82	3-3	(2F)
4442.0	0.03	2.81	2-2	
4548.5	0.11	2.82	4-3	
4495.3	0.07	2.81	3-2	
4461.0	0.07	2.83	3-4	
4427.7	0.03	2.82	2-3	
4405.2	0.01	2.81	1-2	
4563.7	0.11	2.81	4-2	
4408.5	0.03	2.83	2-4	
4391.1	0.01	2.82	1-3	
4387.4	0.00	2.81	0-2	

Mn V I P 75.7

I A	E P Low	E P High	J	Multiplet (No)
6396.2	0.17	2.10	4½-2½	$3d^3\ {}^4F-3d^3\ {}^4P$
6346.2	0.10	2.05	3½-1½	(1F)
6220.7	0.04	2.03	2½- ½	
6167.7	0.10	2.10	3½-2½	
6159.3	0.04	2.05	2½-1½	
6088.5	0.00	2.03	1½- ½	
5991.0	0.04	2.10	2½-2½	
6029.7	0.00	2.05	1½-1½	
5868.3	0.00	2.10	1½-2½	
5889.0	0.17	2.27	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2G$
5863.1	0.10	2.21	3½-3½	(2F)
6069.2	0.17	2.21	4½-3½	
5694.8	0.10	2.27	3½-4½	
5703.3	0.04	2.21	2½-3½	
5543.9	0.04	2.27	2½-4½	
5591.9	0.00	2.21	1½-3½	
4528.7	0.10	2.83	3½-1½	$3d^3\ {}^4F-3d^3\ {}^2P$
4398.4	0.04	2.85	2½- ½	(3F)
4432.8	0.04	2.83	2½-1½	
4331.9	0.00	2.85	1½- ½	
4365.2	0.00	2.83	1½-1½	
4308.4	0.17	3.04	4½-2½	$3d^3\ {}^4F-3d^3\ {}^2D$
4196.3	0.10	3.04	3½-1½	(4F)
4203.5	0.10	3.04	3½-2½	
4113.7	0.04	3.04	2½-1½	
4120.7	0.04	3.04	2½-2½	
4055.5	0.00	3.04	1½-1½	
4062.2	0.00	3.04	1½-2½	

Mn VI I P ?

I A	E P Low	E P High	J	Multiplet (No)
6377.3	0.21	2.17	4-2	$3d^2\ {}^3F-3d^2\ {}^1D$
5933.4	0.09	2.17	3-2	(1F)
5679.3	0.00	2.17	2-2	
5907.1	0.21	2.30	4-2	$3d^2\ {}^3F-3d^2\ {}^3P$
5783.4	0.09	2.23	3-1	(2F)
5625.0	0.00	2.19	2-0	
5601.6	0.09	2.30	3-2	
5541.7	0.00	2.23	2-1	
5374.6	0.00	2.30	2-2	
3866.9	0.21	3.40	4-4?	$3d^2\ {}^3F-3d^2\ {}^1G$?
3733.6	0.09	3.40	3-4?	(3F)
3631.4	0.00	3.40	2-4?	

Mn IX I P 221?

I A	E P Low	E P High	J	Multiplet (No)
7978.7	0.00	1.55	1½- ½	$3p^5\ {}^2P^o-3p^5\ {}^2P^o$
				(1F)

Mn X I P 247?

I A	E P Low	E P High	J	Multiplet (No)
9997.3	0.00	1.23	2-1	$3p^4\ {}^3P-3p^4\ {}^3P$ (1F)
4122.6	1.23	4.23	1-2	$3p^4\ {}^3P-3p^4\ {}^1D$
				(2F)

Fe I I P 7.858

I A	E P Low	E P High	J	Multiplet (No)
8347.55	0.00	1.48	4-4	a^5D-a^3F
8231.57	0.05	1.55	3-3	(1F)
8151.33	0.09	1.60	2-2	
7959.00	0.00	1.55	4-3	
7904.27	0.05	1.60	3-2	
8647.89	0.05	1.48	3-4	
8431.56	0.09	1.55	2-3	
8275.57	0.11	1.60	1-2	
7708.83	0.00	1.60	4-2	
8868.91	0.09	1.48	2-4	
8564.56	0.11	1.55	1-3	
8337.65	0.12	1.60	0-2	
5696.36	0.00	2.17	4-3	a^5D-a^5P
5775.05	0.05	2.19	3-2	(2F)
5804.45	0.09	2.21	2-1	
5639.55	0.00	2.19	4-2	
5708.96	0.05	2.21	3-1	
5834.64	0.05	2.17	3-3	
5872.77	0.09	2.19	2-2	
5867.17	0.11	2.21	1-1	
5934.41	0.09	2.17	2-3	
5936.99	0.11	2.19	1-2	
5898.30	0.12	2.21	0-1	
5999.99	0.11	2.17	1-3	
5968.87	0.12	2.19	0-2	
5439.72	0.00	2.27	4-2	a^5D-a^3P
5224.15	0.05	2.41	3-1	(3F)
5170.84	0.09	2.47	2-0	
5565.68	0.05	2.27	3-2	
5303.99	0.09	2.41	2-1	
5220.56	0.11	2.47	1-0	
5656.39	0.09	2.27	2-2	
5356.32	0.11	2.41	1-1	
5715.94	0.11	2.27	1-2	
5382.26	0.12	2.41	0-1	
5745.49	0.12	2.27	0-2	

FORBIDDEN LINES

Fe I continued

I A	E P Low	E P High	J	Multiplet (No)
4843.34	0.00	2.55	4-4	a^5D-b^3F (4F)
4886.56	0.05	2.58	3-3	
4916.26	0.09	2.60	2-2	
4789.19	0.00	2.58	4-3	
4847.58	0.05	2.60	3-2	
4942.95	0.05	2,55	3-4	
4956.35	0.09	2.58	2-3	
4961.18	0.11	2.60	1-2	
4751.75	0.00	2.60	4-2	
5014.37	0.09	2.55	2-4	
5002.01	0.11	2.58	1-3	
4983.42	0.12	2.60	0-2	
4603.66	0.00	2.68	4-5	a^5D-a^3G (5F)
4631.93	0.05	2.72	3-4	
4640.05	0.09	2.75	2-3	
4544.36	0.00	2.72	4-4	
4578.83	0.05	2.75	3-3	
4693.56	0.05	2.68	3-5	
4694.59	0.09	2.72	2-4	
4680.05	0.11	2.75	1-3	
4493.23	0.00	2.75	4-3	
4377.37	0.00	2.82	4-2	a^5D-b^3P (6F)
4437.10	0.05	2.83	3-1	
4473.46	0.09	2.85	2-0	
4458.57	0.05	2.82	3-2	
4494.57	0.09	2.83	2-1	
4510.63	0.11	2.85	1-0	
4516.60	0.09	2.82	2-2	
4532.09	0.11	2.83	1-1	
4554.49	0.11	2.82	1-2	
4550.64	0.12	2.83	0-1	
4573.23	0.12	2.82	0-2	
4203.39	0.00	2.94	4-5	a^5D-b^3G (7F)
4217.71	0.05	2.98	3-4	
4229.86	0.09	3.00	2-3	
4144.97	0.00	2.98	4-4	
4178.93	0.05	3.00	3-3	
4278.21	0.05	2.94	3-5	
4269.60	0.09	2.98	2-4	
4263.07	0.11	3.00	1-3	
4107.51	0.00	3.00	4-3	
4108.02	0.00	3.00	4-2	a^5D-c^3P (8F)
4104.59	0.05	3.06	3-1	
4099.29	0.09	3.10	2-0	
4179.45	0.05	3.00	3-2	
4153.72	0.09	3.06	2-1	
4130.47	0.11	3.10	1-0	
4230.40	0.09	3.00	2-2	
4185.74	0.11	3.06	1-1	
4263.62	0.11	3.00	1-2	
4201.56	0.12	3.06	0-1	
4280.04	0.12	3.00	0-2	
3812.07	0.00	3.24	4-3	a^5D-a^3D (9F)
3814.58	0.05	3.29	3-2	
3889.58	0.09	3.26	2-1	
3754.98	0.00	3.29	4-2	
3846.46	0.05	3.26	3-1	
3873.51	0.05	3.24	3-3	
3856.98	0.09	3.29	2-2	
3917.64	0.11	3.26	1-1	
3917.23	0.09	3.24	2-3	
3884.57	0.11	3.29	1-2	
3931.50	0.12	3.26	0-1	
3945.70	0.11	3.24	1-3	
3898.19	0.12	3.29	0-2	
3403.65	0.00	3.63	4-3	a^5D-b^3D (10F)
3454.34	0.05	3.62	3-2	
3493.55	0.09	3.62	2-1	
3405.39	0.00	3.62	4-2	
3458.73	0.05	3.62	3-1	
3452.54	0.05	3.63	3-3	
3489.07	0.09	3.62	2-2	
3516.17	0.11	3.62	1-1	
3487.23	0.09	3.63	2-3	
3511.64	0.11	3.62	1-2	
3537.33	0.12	3.62	0-1	
3509.78	0.11	3.63	1-3	
3522.76	0.12	3.62	0-2	
9826.83	0.91	2.17	4-3	a^5F-a^5P (11F)
9998.31	0.95	2.19	3-2	
10055.97	0.99	2.21	2-1	
10178.29	0.95	2.17	3-3	
10262.84	0.99	2.19	2-2	
10229.79	1.01	2.21	1-1	
10452.56	0.99	2.17	2-3	
10443.95	1.01	2.19	1-2	
9386.96	0.95	2.27	3-2	a^5F-a^3P (12F)
8643.14	0.99	2.41	2-1	
8412.97	1.01	2.47	1-0	
8619.74	0.99	2.27	2-2	
8771.24	1.01	2.41	1-1	
8778.70	1.01	2.27	1-2	
8022.25	0.86	2.39	5-6	a^5F-a^3H (13F)
8164.85	0.91	2.42	4-5	
8289.45	0.95	2.44	3-4	
7876.34	0.86	2.42	5-5	
8054.83	0.91	2.44	4-4	
7773.91	0.86	2.44	5-4	
7290.42	0.86	2.55	5-4	a^5F-b^3F (14F)
7406.61	0.91	2.58	4-3	
7510.54	0.95	2.60	3-2	
7168.42	0.86	2.58	5-3	
7317.43	0.91	2.60	4-2	
7536.93	0.91	2.55	4-4	
7604.53	0.95	2.58	3-3	
7658.84	0.99	2.60	2-2	
7741.96	0.95	2.55	3-4	
7756.59	0.99	2.58	2-3	
7759.25	1.01	2.60	1-2	
7899.63	0.99	2.55	2-4	
7859.60	1.01	2.58	1-3	
6760.61	0.86	2.68	5-5	a^5F-a^3G (15F)
6836.94	0.91	2.72	4-4	
6884.50	0.95	2.75	3-3	
6633.48	0.86	2.72	5-4	
6721.89	0.91	2.75	4-3	
6972.07	0.91	2.68	4-5	
7005.23	0.95	2.72	3-4	
7008.89	0.99	2.75	2-3	
6525.11	0.86	2.75	5-3	
7147.16	0.95	2.68	3-5	
7134.08	0.99	2.72	2-4	
7092.89	1.01	2.75	1-3	
6616.18	0.95	2.82	3-2	a^5F-b^3P (16F)
6682.18	0.99	2.83	2-1	
6710.88	1.01	2.85	1-0	
6730.99	0.99	2.82	2-2	
6758.48	1.01	2.83	1-1	
6808.42	1.01	2.82	1-2	
5931.19	0.86	2.94	5-5	a^5F-b^3G (17F)
5971.33	0.91	2.98	4-4	
6018.54	0.95	3.00	3-3	
5815.53	0.86	2.98	5-4	
5893.89	0.91	3.00	4-3	
6093.32	0.91	2.94	4-5	
6099.31	0.95	2.98	3-4	
6113.40	0.99	3.00	2-3	
5742.07	0.86	3.00	5-3	
6226.64	0.95	2.94	3-5	
6196.75	0.99	2.98	2-4	
6177.21	1.01	3.00	1-3	
6019.63	0.95	3.00	3-2	a^5F-c^3P (18F)
5955.61	0.99	3.06	2-1	
5902.64	1.01	3.10	1-0	
6114.52	0.99	3.00	2-2	
6016.15	1.01	3.06	1-1	
6178.35	1.01	3.00	1-2	
5212.95	0.86	3.22	5-6	a^5F-b^3H (19F)
5268.82	0.91	3.25	4-5	
5289.66	0.95	3.29	3-4	
5147.16	0.86	3.25	5-5	
5193.13	0.91	3.29	4-4	
5074.90	0.86	3.29	5-4	
5180.78	0.86	3.24	5-3	a^5F-a^3D (20F)
5194.19	0.91	3.29	4-2	
5352.29	0.95	3.26	3-1	
5304.06	0.91	3.24	4-3	
5290.75	0.95	3.29	3-2	
5427.17	0.99	3.26	2-1	
5404.80	0.95	3.24	3-3	
5363.91	0.99	3.29	2-2	
5477.40	1.01	3.26	1-1	
5481.17	0.99	3.24	2-3	
5412.97	1.01	3.29	1-2	
5532.41	1.01	3.24	1-3	
4454.37	0.86	3.63	5-3	a^5F-b^3D (21F)
4548.32	0.91	3.62	4-2	
4630.06	0.95	3.62	3-1	
4545.20	0.91	3.63	4-3	
4622.19	0.95	3.62	3-2	
4685.99	0.99	3.62	2-1	
4618.97	0.95	3.63	3-3	
4677.94	0.99	3.62	2-2	
4723.39	1.01	3.62	1-1	
4674.64	0.99	3.63	2-3	
4715.21	1.01	3.62	1-2	
4711.86	1.01	3.63	1-3	
11537.68	1.48	2.55	4-4	a^3F-b^3F (22F)
12025.23	1.55	2.58	3-3	
12387.48	1.60	2.60	2-2	
11233.80	1.48	2.58	4-3	
11791.90	1.55	2.60	3-2	
12372.55	1.55	2.55	3-4	
12645.23	1.60	2.58	2-3	
10264.65	1.48	2.68	4-5	a^3F-a^3G (23F)
10592.32	1.55	2.72	3-4	
10771.88	1.60	2.75	2-3	
9974.41	1.48	2.72	4-4	
10318.68	1.55	2.75	3-3	
9731.40	1.48	2.75	4-3	
8466.95	1.48	2.94	4-5	a^3F-b^3G (24F)
8649.72	1.55	2.98	3-4	
8792.49	1.60	3.00	2-3	
8233.22	1.48	2.98	4-4	
8488.19	1.55	3.00	3-3	
8086.73	1.48	3.00	4-3	
8490.34	1.55	3.00	3-2	a^3F-c^3P (25F)
8469.75	1.60	3.06	2-1	
8794.80	1.60	3.00	2-2	
7935.32	1.48	3.03	4-4	a^3F-a^1G (26F)
8321.51	1.55	3.03	3-4	
6954.69	1.48	3.25	4-5	a^3F-b^3H (27F)
7107.04	1.55	3.29	3-4	
6823.42	1.48	3.29	4-4	
7016.21	1.48	3.24	4-3	a^3F-a^3D (28F)
7109.01	1.55	3.29	3-2	
7439.58	1.60	3.26	2-1	
7316.44	1.55	3.24	3-3	
7321.23	1.60	3.29	2-2	
7541.42	1.60	3.24	2-3	
6231.27	1.55	3.53	3-2	a^3F-a^1D (29F)
6393.72	1.60	3.53	2-2	
5746.99	1.48	3.63	4-3	a^3F-b^3D (30F)
5952.21	1.55	3.62	3-2	
6113.97	1.60	3.62	2-1	
5946.87	1.55	3.63	3-3	
6100.26	1.60	3.62	2-2	
6094.65	1.60	3.63	2-3	
5609.27	1.48	3.68	4-4	a^3F-b^1G (31F)
5799.53	1.55	3.68	3-4	
11524.46	2.17	3.24	3-3	a^5P-a^3D (32F)
11237.04	2.19	3.29	2-2	
11790.50	2.21	3.26	1-1	
11018.07	2.17	3.29	3-2	
11518.28	2.19	3.26	2-1	
11764.23	2.19	3.24	2-3	
11495.96	2.21	3.29	1-2	
8456.74	2.17	3.63	3-3	a^5P-b^3D (33F)
8596.27	2.19	3.62	2-2	
8775.19	2.21	3.62	1-1	
8467.54	2.17	3.62	3-2	
8623.51	2.19	3.62	2-1	
8585.14	2.19	3.63	2-3	
8746.99	2.21	3.62	1-2	
10908.34	2.27	3.40	2-1	a^3P-a^1P (34F)
9775.94	2.27	3.53	2-2	a^3P-a^1D (35F)
11044.11	2.41	3.53	1-2	
9093.67	2.27	3.63	2-3	a^3P-b^3D (36F)
10196.82	2.41	3.62	1-2	
10770.38	2.47	3.62	0-1	
9106.17	2.27	3.62	2-2	
10235.17	2.41	3.62	1-1	
9136.73	2.27	3.62	2-1	
10601.80	2.39	3.56	6-5	a^3H-a^1H (37F)
10867.84	2.42	3.56	5-5	
11069.08	2.44	3.56	4-5	
10075.00	2.39	3.62	6-6	a^3H-a^1I (38F)
10314.96	2.42	3.62	5-6	
9822.50	2.42	3.68	5-4	a^3H-b^1G (39F)
9986.60	2.44	3.68	4-4	
11450.66	2.55	3.63	4-3	b^3F-b^3D (40F)
11786.08	2.58	3.62	3-2	
12072.48	2.60	3.62	2-1	
11765.16	2.58	3.63	3-3	
12019.17	2.60	3.62	2-2	
11997.42	2.60	3.63	2-3	
10916.64	2.55	3.68	4-4	b^3F-b^1G (41F)
11202.11	2.58	3.68	3-4	

REVISED MULTIPLET TABLE

FORBIDDEN LINES

Fe II I P 16.16

I A	E P Low	E P High	J	Multiplet (No)
7419.42	0.00	1.66	4½-2½	a^6D-a^4P (1F)
7523.27	0.05	1.69	3½-1½	
7552.38	0.08	1.72	2½- ½	
7637.52	0.05	1.66	3½-2½	
7686.90	0.08	1.69	2½-1½	
7665.29	0.11	1.72	1½- ½	
7806.22	0.08	1.66	2½-2½	
7803.90	0.11	1.69	1½-1½	
7733.12	0.12	1.72	½- ½	
7926.90	0.11	1.66	1½-2½	
7874.23	0.12	1.69	½-1½	
7999.47	0.12	1.66	½-2½	
5650.39	0.08	2.27	2½-1½	a^6D-a^2P (2F)
5546.59	0.11	2.33	1½- ½	
5713.35	0.11	2.27	1½-1½	
5582.01	0.12	2.33	½- ½	
5750.95	0.12	2.27	½-1½	
4965.78	0.05	2.53	3½-2½	a^6D-a^2D (3F)
4843.51	0.08	2.63	2½-1½	
5036.55	0.08	2.53	2½-2½	
4889.70	0.11	2.63	1½-1½	
5086.52	0.11	2.53	1½-2½	
4917.22	0.12	2.63	½-1½	
4799.31	0.00	2.57	4½-2½	a^6D-b^4P (4F)
4665.65	0.05	2.69	3½-1½	
4598.07	0.08	2.77	2½- ½	
4889.63	0.05	2.57	3½-2½	
4728.07	0.08	2.69	2½-1½	
4639.68	0.11	2.77	1½- ½	
4958.23	0.08	2.57	2½-2½	
4772.07	0.11	2.69	1½-1½	
4664.45	0.12	2.77	½- ½	
5006.65	0.11	2.57	1½-2½	
4798.28	0.12	2.69	½-1½	
5035.50	0.12	2.57	½-2½	
4664.97	0.00	2.65	4½-5½	a^6D-a^4H (5F)
4716.36	0.05	2.66	3½-4½	
4750.57	0.08	2.68	2½-3½	
4632.27	0.00	2.66	4½-4½	
4687.56	0.05	2.68	3½-3½	
4604.48	0.00	2.68	4½-3½	
4416.27	0.00	2.79	4½-4½	a^6D-b^4F (6F)
4457.95	0.05	2.82	3½-3½	
4488.75	0.08	2.83	2½-2½	
4509.61	0.11	2.84	1½-1½	
4382.75	0.00	2.82	4½-3½	
4432.45	0.05	2.83	3½-2½	
4470.29	0.08	2.84	2½-1½	
4492.64	0.05	2.79	3½-4½	
4514.90	0.08	2.82	2½-3½	
4528.39	0.11	2.83	1½-2½	
4533.00	0.12	2.84	½-1½	
4358.10	0.00	2.83	4½-2½	
4414.45	0.05	2.84	3½-1½	
4550.48	0.08	2.79	2½-4½	
4555.01	0.11	2.82	1½-3½	
4551.98	0.12	2.83	½-2½	
4287.40	0.00	2.88	4½-2½	a^6D-a^6S (7F)
4359.34	0.05	2.88	3½-2½	
4413.78	0.08	2.88	2½-2½	
4452.11	0.11	2.88	1½-2½	
4474.91	0.12	2.88	½-2½	
3931.44	0.00	3.14	4½-5½	a^6D-a^4G (8F)
3932.72	0.05	3.19	3½-4½	
3949.27	0.08	3.21	2½-3½	
3968.27	0.11	3.22	1½-2½	
3874.07	0.00	3.19	4½-4½	
3905.62	0.05	3.21	3½-3½	
3937.80	0.08	3.22	2½-2½	
3847.78	0.00	3.21	4½-3½	
3894.40	0.05	3.22	3½-2½	
3836.89	0.00	3.22	4½-2½	
3991.84	0.05	3.14	3½-5½	
3976.97	0.08	3.19	2½-4½	
3979.93	0.11	3.21	1½-3½	
3996.39	0.12	3.22	½-2½	
3979.78	0.08	3.18	2½-1½	a^6D-b^2P (9F)
3834.73	0.11	3.32	1½- ½	
4010.91	0.11	3.18	1½-1½	
3851.63	0.12	3.32	½- ½	
4029.41	0.12	3.18	½-1½	
3659.96	0.00	3.37	4½-3½	a^6D-a^2F (10F)
3670.62	0.05	3.41	3½-2½	
3712.26	0.05	3.37	3½-3½	
3709.14	0.08	3.41	2½-2½	
3751.66	0.08	3.37	2½-3½	
3736.17	0.11	-3.41	1½-2½	
3175.38	0.00	3.89	4½-3½	a^6D-b^4D (11F)
3224.54	0.05	3.87	3½-2½	
3256.73	0.08	3.87	2½-1½	
3277.12	0.11	3.87	1½- ½	
3185.01	0.00	3.87	4½-2½	
3226.99	0.05	3.87	3½-1½	
3256.31	0.08	3.87	2½- ½	
3214.67	0.05	3.89	3½-3½	
3254.84	0.08	3.87	2½-2½	
3277.55	0.11	3.87	1½-1½	
3289.46	0.12	3.87	½- ½	
3244.18	0.08	3.89	2½-3½	
3275.02	0.11	3.87	1½-2½	
3289.89	0.12	3.87	½-1½	
3264.84	0.11	3.89	1½-3½	
3287.35	0.12	3.87	½-2½	

Fe II continued

I A	E P Low	E P High	J	Multiplet (No)
3124.18	0.00	3.95	4½-3½	a^6D-b^2F (12F)
3181.05	0.05	3.93	3½-2½	
3162.21	0.05	3.95	3½-3½	
3209.94	0.08	3.93	2½-2½	
3190.76	0.08	3.95	2½-3½	
3230.17	0.11	3.93	1½-2½	
8616.96	0.23	1.66	4½-2½	a^4F-a^4P (13F)
8891.88	0.30	1.69	3½-1½	
9033.45	0.35	1.72	2½- ½	
9051.92	0.30	1.66	3½-2½	
9226.60	0.35	1.69	2½-1½	
9267.54	0.38	1.72	1½- ½	
9399.02	0.35	1.66	2½-2½	
9470.93	0.38	1.69	1½-1½	
9652.70	0.38	1.66	1½-2½	
7155.14	0.23	1.96	4½-4½	a^4F-a^2G (14F)
7171.98	0.30	2.02	3½-3½	
6896.18	0.23	2.02	4½-3½	
7452.50	0.30	1.96	3½-4½	
7388.16	0.35	2.02	2½-3½	
7686.19	0.35	1.96	2½-4½	
7544.00	0.38	2.02	1½-3½	
6440.40	0.35	2.27	2½-1½	a^4F-a^2P (15F)
6339.70	0.38	2.33	1½- ½	
6558.51	0.38	2.27	1½-1½	
5413.34	0.23	2.51	4½-5½	a^4F-a^2H (16F)
5440.45	0.30	2.57	3½-4½	
5280.25	0.23	2.57	4½-4½	
5362.06	0.23	2.53	4½-2½	a^4F-a^2D (17F)
5295.70	0.30	2.63	3½-1½	
5527.33	0.30	2.53	3½-2½	
5412.64	0.35	2.63	2½-1½	
5654.85	0.35	2.53	2½-2½	
5495.82	0.38	2.63	1½-1½	
5745.70	0.38	2.53	1½-2½	
5273.38	0.23	2.57	4½-2½	a^4F-b^4P (18F)
5158.00	0.30	2.69	3½-1½	
5107.95	0.35	2.77	2½- ½	
5433.15	0.30	2.57	3½-2½	
5268.88	0.35	2.69	2½-1½	
5181.97	0.38	2.77	1½- ½	
5556.31	0.35	2.57	2½-2½	
5347.67	0.38	2.69	1½-1½	
5644.00	0.38	2.57	1½-2½	
5158.81	0.23	2.62	4½-6½	a^4F-a^4H (19F)
5261.61	0.30	2.65	3½-5½	
5333.65	0.35	2.66	2½-4½	
5376.47	0.38	2.68	1½-3½	
5111.63	0.23	2.65	4½-5½	
5220.06	0.30	2.66	3½-4½	
5296.84	0.35	2.68	2½-3½	
5072.40	0.23	2.66	4½-4½	
5184.80	0.30	2.68	3½-3½	
5039.10	0.23	2.68	4½-3½	
4814.55	0.23	2.79	4½-4½	a^4F-b^4F (20F)
4905.35	0.30	2.82	3½-3½	
4973.39	0.35	2.83	2½-2½	
5020.24	0.38	2.84	1½-1½	
4774.74	0.23	2.82	4½-3½	
4874.49	0.30	2.83	3½-2½	
4950.74	0.35	2.84	2½-1½	
4947.38	0.30	2.79	3½-4½	
5005.52	0.35	2.82	2½-3½	
5043.53	0.38	2.83	1½-2½	
4745.49	0.23	2.83	4½-2½	
4852.73	0.30	2.84	3½-1½	
5049.29	0.35	2.79	2½-4½	
5076.57	0.38	2.82	1½-3½	
4243.98	0.23	3.14	4½-5½	a^4F-a^4G (21F)
4276.83	0.30	3.19	3½-4½	
4319.62	0.35	3.21	2½-3½	
4358.37	0.38	3.22	1½-2½	
4177.21	0.23	3.19	4½-4½	
4244.81	0.30	3.21	3½-3½	
4305.90	0.35	3.22	2½-2½	
4146.65	0.23	3.21	4½-3½	
4231.56	0.30	3.22	3½-2½	
4134.01	0.23	3.22	4½-2½	
4346.85	0.30	3.14	3½-5½	
4352.78	0.35	3.19	2½-4½	
4372.43	0.38	3.21	1½-3½	
4356.14	0.35	3.18	2½-1½	a^4F-b^2P (22F)
4197.81	0.38	3.32	1½- ½	
4409.86	0.38	3.18	1½-1½	
4114.48	0.23	3.23	4½-5½	a^4F-b^2H (23F)
4178.95	0.30	3.25	3½-4½	
4083.78	0.23	3.25	4½-4½	
3929.35	0.23	3.37	4½-3½	a^4F-a^2F (24F)
3968.66	0.30	3.41	3½-2½	
3882.73	0.23	3.41	4½-2½	
4017.38	0.30	3.37	3½-3½	
4033.98	0.35	3.41	2½-2½	
4084.32	0.35	3.37	2½-3½	
4080.00	0.38	3.41	1½-2½	
4131.51	0.38	3.37	1½-3½	
3505.81	0.23	3.75	4½-4½	a^4F-b^2G (25F)
3528.28	0.30	3.80	3½-3½	
3460.20	0.23	3.80	4½-3½	
3575.72	0.30	3.75	3½-4½	
3579.81	0.35	3.80	2½-3½	
3628.65	0.35	3.75	2½-4½	
3616.00	0.38	3.80	1½-3½	

Fe II continued

I A	E P Low	E P High	J	Multiplet (No)
3376.20	0.23	3.89	4½-3½	a^4F-b^4D (26F)
3452.30	0.30	3.87	3½-2½	
3504.51	0.35	3.87	2½-1½	
3538.69	0.38	3.87	1½- ½	
3387.10	0.23	3.87	4½-2½	
3455.11	0.30	3.87	3½-1½	
3504.02	0.35	3.87	2½- ½	
3440.99	0.30	3.89	3½-3½	
3501.62	0.35	3.87	2½-2½	
3539.19	0.38	3.87	1½-1½	
3489.98	0.35	3.89	2½-3½	
3536.25	0.38	3.87	1½-2½	
3524.38	0.38	3.89	1½-3½	
3318.38	0.23	3.95	4½-3½	a^4F-b^2F (27F)
3402.50	0.30	3.93	3½-2½	
3339.14	0.23	3.93	4½-2½	
3380.95	0.30	3.95	3½-3½	
3450.39	0.35	3.93	2½-2½	
3428.24	0.35	3.95	2½-3½	
3484.01	0.38	3.93	1½-2½	
3461.42	0.38	3.95	1½-3½	
10028.62	1.04	2.27	2½-1½	a^4D-a^2P (28F)
9795.21	1.07	2.33	1½- ½	
10327.56	1.07	2.27	1½-1½	
9957.44	1.09	2.33	½- ½	
10508.07	1.09	2.27	½-1½	
7958.50	0.98	2.53	3½-2½	a^4D-a^2D (29F)
7740.11	1.04	2.63	2½-1½	
8245.12	1.04	2.53	2½-2½	
7916.98	1.07	2.63	1½-1½	
8446.11	1.07	2.53	1½-2½	
8022.63	1.09	2.63	½-1½	
7764.69	0.98	2.57	3½-2½	a^4D-b^4P (30F)
7449.45	1.04	2.69	2½-1½	
7281.67	1.07	2.77	1½- ½	
7214.69	0.98	2.69	3½-1½	
7131.77	1.04	2.77	2½- ½	
8037.29	1.04	2.57	2½-2½	
7613.15	1.07	2.69	1½-1½	
7370.94	1.09	2.77	½- ½	
8228.16	1.07	2.57	1½-2½	
7710.79	1.09	2.69	½-1½	
8342.34	1.09	2.57	½-2½	
6809.21	0.98	2.79	3½-4½	a^4D-b^4F (31F)
6933.67	1.04	2.82	2½-3½	
7011.24	1.07	2.83	1½-2½	
7047.99	1.09	2.84	½-1½	
6729.85	0.98	2.82	3½-3½	
6872.17	1.04	2.83	2½-2½	
6966.32	1.07	2.84	1½-1½	
6671.90	0.98	2.83	3½-2½	
6829.01	1.04	2.84	2½-1½	
7017.94	1.04	2.79	2½-4½	
7075.26	1.07	2.82	1½-3½	
7093.98	1.09	2.83	½-2½	
6631.20	0.98	2.84	3½-1½	
6507.62	0.98	2.88	3½-2½	a^4D-a^6S (32F)
6698.02	1.04	2.88	2½-2½	
6830.06	1.07	2.88	1½-2½	
5721.35	0.98	3.14	3½-5½	a^4D-a^4G (33F)
5741.11	1.04	3.19	2½-4½	
5778.35	1.07	3.21	1½-3½	
5809.43	1.09	3.22	½-2½	
5600.66	0.98	3.19	3½-4½	
5683.56	1.04	3.21	2½-3½	
5753.83	1.07	3.22	1½-2½	
5545.88	0.98	3.21	3½-3½	
5659.83	1.04	3.22	2½-2½	
5523.28	0.98	3.22	3½-2½	
5746.96	1.04	3.18	2½-1½	a^4D-b^2P (34F)
5477.25	1.07	3.32	1½- ½	
5843.90	1.07	3.18	1½-1½	
5527.61	1.09	3.32	½- ½	
5901.26	1.09	3.18	½-1½	
5183.94	0.98	3.37	3½-3½	a^4D-a^2F (35F)
5199.18	1.04	3.41	2½-2½	
5083.72	0.98	3.41	3½-2½	
5283.11	1.04	3.37	2½-3½	
5278.39	1.07	3.41	1½-2½	
4249.07	0.98	3.89	3½-3½	a^4D-b^4D (36F)
4347.35	1.04	3.87	2½-2½	
4407.16	1.07	3.87	1½-1½	
4438.92	1.09	3.87	½- ½	
4266.34	0.98	3.87	3½-2½	
4351.80	1.04	3.87	2½-1½	
4406.39	1.07	3.87	1½- ½	
4329.43	1.04	3.89	2½-3½	
4402.60	1.07	3.87	1½-2½	
4439.73	1.09	3.87	½-1½	
4270.62	0.98	3.87	3½-1½	
4351.05	1.04	3.87	2½- ½	
4384.21	1.07	3.89	1½-3½	
4435.08	1.09	3.87	½-2½	
4157.89	0.98	3.95	3½-3½	a^4D-b^2F (37F)
4268.67	1.04	3.93	2½-2½	
4190.53	0.98	3.93	3½-2½	
4234.81	1.04	3.95	2½-3½	
4321.92	1.07	3.93	1½-2½	
8119.16	1.66	3.18	2½-1½	a^4P-b^2P (38F)
7539.67	1.69	3.32	1½- ½	
8252.38	1.69	3.18	1½-1½	
7673.74	1.72	3.32	½- ½	
8413.26	1.72	3.18	½-1½	

Fe II continued

I A	E P Low	E P High	J	Multiplet (No)
5551.31	1.66	3.89	2½-3½	a^4P-b^4D (39F)
5643.44	1.69	3.87	1½-2½	
5725.92	1.72	3.87	½-1½	
5580.82	1.66	3.87	2½-2½	
5650.94	1.69	3.87	1½-1½	
5724.62	1.72	3.87	½- ½	
5588.15	1.66	3.87	2½-1½	
5649.67	1.69	3.87	1½- ½	
10431.10	1.96	3.14	4½-5½	a^2G-a^4G (40F)
10594.89	2.02	3.19	3½-4½	
10036.79	1.96	3.19	4½-4½	
10400.53	2.02	3.21	3½-3½	
9862.21	1.96	3.21	4½-3½	
10321.34	2.02	3.22	3½-2½	
9682.13	1.96	3.23	4½-5½	a^2G-b^2H (41F)
10013.88	2.02	3.25	3½-4½	
9513.87	1.96	3.25	4½-4½	
8715.84	1.96	3.37	4½-3½	a^2G-a^2F (42F)
8885.66	2.02	3.41	3½-3½	
9133.63	2.02	3.37	3½-3½	
6873.87	1.96	3.75	4½-4½	a^2G-b^2G (43F)
6944.91	2.02	3.80	3½-3½	
6700.68	1.96	3.80	4½-3½	
7131.13	2.02	3.75	3½-4½	
6188.55	1.96	3.95	4½-3½	a^2G-b^2F (44F)
6473.86	2.02	3.93	3½-2½	
6396.30	2.02	3.95	3½-3½	
10796.48	2.27	3.41	1½-2½	a^2P-a^2F (45F)
7674.06	2.27	3.87	1½-2½	a^2P-b^4D (46F)
8012.08	2.33	3.87	½-1½	
7687.94	2.27	3.87	1½-1½	
8009.53	2.33	3.87	½- ½	
7685.58	2.27	3.87	1½- ½	
7432.23	2.27	3.93	1½-2½	a^2P-b^2F (47F)
9949.32	2.51	3.75	5½-4½	a^2H-b^2G (48F)
10038.79	2.57	3.80	4½-3½	
10432.60	2.57	3.75	4½-4½	
8931.47	2.57	3.95	4½-3½	a^2H-b^2F (49F)
9755.81	2.53	3.80	2½-3½	a^2D-b^2G (50F)
9116.41	2.53	3.89	2½-3½	a^2D-b^4D (51F)
9918.01	2.63	3.87	1½-2½	
9196.26	2.53	3.87	2½-2½	
9941.20	2.63	3.87	1½-1½	
9216.20	2.53	3.87	2½-1½	
9937.27	2.63	3.87	1½- ½	
8706.79	2.53	3.95	2½-3½	a^2D-b^2F (52F)
9517.76	2.63	3.93	1½-2½	
8851.13	2.53	3.93	2½-2½	

Fe III I P 30.48

I A	E P Low	E P High	J	Multiplet (No)
5151.9	0.00	2.40	4-2	a^5D-a^3P (1F)
4936.4	0.05	2.55	3-1	
4883.9	0.09	2.62	2-0	
5270.4	0.05	2.40	3-2	
5011.3	0.09	2.55	2-1	
4930.5	0.12	2.62	1-0	
5355.9	0.00	2.40	2-2	
5060.3	0.12	2.55	1-1	
5412.0	0.12	2.40	1-2	
5084.8	0.13	2.55	0-1	
5439.9	0.13	2.40	0-2	
4985.9	0.00	2.48	4-6	a^5D-a^3H (2F)
5032.7	0.05	2.51	3-5	
5063.7	0.09	2.53	2-4	
4924.5	0.00	2.51	4-5	
4987.2	0.05	2.53	3-4	
4881.0	0.00	2.53	4-4	
4658.1	0.00	2.65	4-4	a^5D-a^3F (3F)
4701.5	0.05	2.68	3-3	
4733.9	0.09	2.70	2-2	
4607.0	0.00	2.68	4-3	
4667.0	0.05	2.70	3-2	
4754.7	0.05	2.65	3-4	
4769.4	0.09	2.68	2-3	
4777.7	0.12	2.70	1-2	
4573.9	0.00	2.70	4-2	
4824.1	0.09	2.65	2-4	
4813.9	0.12	2.68	1-3	
4799.5	0.13	2.70	0-2	
4070.7	0.00	3.03	4-5	a^5D-a^3G (4F)
4079.7	0.05	3.08	3-4	
4096.6	0.09	3.10	2-3	
4008.3	0.00	3.08	4-4	
4046.4	0.05	3.10	3-3	

Fe III continued

I A	E P Low	E P High	J	Multiplet (No)
3976.2	0.00	3.10	4-3	a^5D-a^3G (4F) cont
4144.3	0.05	3.03	3-5	
4130.7	0.09	3.08	2-4	
4129.4	0.12	3.10	1-3	
3322.54	0.00	3.71	4-3	a^5D-a^7S (5F)
3371.4	0.05	3.71	3-3	
3406.2	0.09	3.71	2-3	
3428.8	0.12	3.71	1-3	
3239.7	0.00	3.81	4-3	a^5D-a^3D (6F)
3301.6	0.05	3.79	3-2	
3333.8	0.09	3.79	2-1	
3254.7	0.00	3.79	4-2	
3300.5	0.05	3.79	3-1	
3286.2	0.05	3.81	3-3	
3334.9	0.09	3.79	2-2	
3355.5	0.12	3.79	1-1	
3319.2	0.09	3.81	2-3	
3356.6	0.12	3.79	1-2	
3366.2	0.13	3.79	0-1	
3340.7	0.12	3.81	1-3	
3367.3	0.13	3.79	0-2	
3236.7	0.00	3.81	4-4	a^5D-a^1G (7F)
3283.1	0.05	3.81	3-4	
3316.1	0.09	3.81	2-4	
8728.9	2.40	3.81	2-3	a^3P-a^3D (8F)
9969.6	2.55	3.79	1-2	
10504.3	2.62	3.79	0-1	
8838.2	2.40	3.79	2-2	
9960.0	2.55	3.79	1-1	
8830.7	2.40	3.79	2-1	
7078.2	2.55	4.30	1-0	a^3P-a^1S (9F)
6096.3	2.40	4.42	2-2	a^3P-a^1D (10F)
6614.0	2.55	4.42	1-2	
9701.3	2.48	3.75	6-6	a^3H-a^1I (11F)
9942.2	2.51	3.75	5-6	
9444.2	2.51	3.81	5-4	a^3H-a^1G (12F)
9608.6	2.53	3.81	4-4	
10640.4	2.65	3.81	4-3	a^3F-a^3D (13F)
11088.0	2.68	3.79	3-2	
11272.6	2.70	3.79	2-1	
10916.5	2.68	3.81	3-3	
11284.9	2.70	3.79	2-2	
11107.3	2.70	3.81	2-3	
10608.1	2.65	3.81	4-4	a^3F-a^1G (14F)
10882.6	2.68	3.81	3-4	
7088.3	2.68	4.42	3-2	a^3F-a^1D (15F)
7220.0	2.70	4.42	2-2	

Fe V I P ?

I A	E P Low	E P High	J	Multiplet (No)
3970.1	0.16	3.27	4-2	$3d^4\ {}^5D-3d^4\ {}^3P$ (1F)
4136.4	0.10	3.08	3-1	
4229.8	0.05	2.97	2-0	
3895.7	0.10	3.27	3-2	
4071.5	0.05	3.08	2-1	
4181.3	0.02	2.97	1-0	
3838.1	0.05	3.27	2-2	
4026.6	0.02	3.08	1-1	
3798.2	0.02	3.27	1-2	
4003.2	0.00	3.08	0-1	
3777.4	0.00	3.27	0-2	
4123.9	0.16	3.15	4-6	$3d^4\ {}^5D-3d^4\ {}^3H$ (2F)
4093.0	0.10	3.11	3-5	
4077.5	0.05	3.08	2-4	
4175.2	0.16	3.11	4-5	
4142.5	0.10	3.08	3-4	
4220.6	0.16	3.08	4-4	
3891.8	0.16	3.33	4-4	$3d^4\ {}^5D-3d^4\ {}^3F$ (3F)
3838.9	0.10	3.31	3-3	
3794.6	0.05	3.30	2-2	
3911.1	0.16	3.31	4-3	
3850.8	0.10	3.30	3-2	
3880.2	0.10	3.33	3-4	
3782.9	0.05	3.31	2-3	
3755.5	0.02	3.30	1-2	
3923.5	0.16	3.30	4-2	
3764.8	0.05	3.33	2-4	
3744.1	0.02	3.31	1-3	
3735.2	0.00	3.30	0-2	
3430.3	0.16	3.76	4-5	$3d^4\ {}^5D-3d^4\ {}^3G$ (4F)
3406.6	0.10	3.72	3-4	
3400.3	0.05	3.68	2-3	
3463.4	0.16	3.72	4-4	
3445.4	0.10	3.68	3-3	
3374.6	0.10	3.76	3-5	
3362.5	0.05	3.72	2-4	
3368.9	0.02	3.68	1-3	
3503.5	0.16	3.68	4-3	

Fe VI I P ?

I A	E P Low	E P High	J	Multiplet (No)
5678.0	0.25	2.42	4½-2½	$3d^3\ {}^4F-3d^3\ {}^4P$ (1F)
5631.6	0.15	2.34	3½-1½	
5485.7	0.06	2.31	2½- ½	
5428.6	0.15	2.42	3½-2½	
5425.3	0.06	2.34	2½-1½	
5336.4	0.00	2.31	1½- ½	
5236.6	0.06	2.42	2½-2½	
5279.2	0.00	2.34	1½-1½	
5100.4	0.00	2.42	1½-2½	
5177.0	0.25	2.63	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2G$ (2F)
5146.8	0.15	2.54	3½-3½	
5370.5	0.25	2.54	4½-3½	
4968.8	0.15	2.63	3½-4½	
4974.0	0.06	2.54	2½-3½	
4807.5	0.06	2.63	2½-4½	
4850.9	0.00	2.54	1½-3½	
3995.8	0.15	3.23	3½-1½	$3d^3\ {}^4F-3d^3\ {}^2P$ (3F)
3849.1	0.06	3.27	2½- ½	
3890.9	0.06	3.23	2½-1½	
3774.9	0.00	3.27	1½- ½	
3815.1	0.00	3.23	1½-1½	
3776.1	0.25	3.51	4½-2½	$3d^3\ {}^4F-3d^3\ {}^2D$ (4F)
3645.7	0.15	3.53	3½-1½	
3664.1	0.15	3.51	3½-2½	
3558.1	0.06	3.53	2½-1½	
3575.6	0.06	3.51	2½-2½	
3494.7	0.00	3.53	1½-1½	
3511.6	0.00	3.51	1½-2½	
3675.2	0.25	3.60	4½-5½	$3d^3\ {}^4F-3d^3\ {}^2H$ (5F)
3630.3	0.15	3.55	3½-4½	
3740.2	0.25	3.55	4½-4½	
3569.0	0.15	3.60	3½-5½	
3543.5	0.06	3.55	2½-4½	

Fe VII I P ?

I A	E P Low	E P High	J	Multiplet (No)
6599.7	0.29	2.16	4-2	$3d^2\ {}^3F-3d^2\ {}^1D$ (1F)
6085.5	0.13	2.16	3-2	
5720.9	0.00	2.16	2-2	
5276.1	0.29	2.63	4-2	$3d^2\ {}^3F-3d^2\ {}^3P$ (2F)
5158.3	0.13	2.52	3-1	
4989.4	0.00	2.47	2-0	
4942.3	0.13	2.63	3-2	
4893.9	0.00	2.52	2-1	
4699.0	0.00	2.63	2-2	
3759.9	0.29	3.57	4-4	$3d^2\ {}^3F-3d^2\ {}^1G$ (3F)
3587.2	0.13	3.57	3-4	
3457.3	0.00	3.57	2-4	
8738.1	2.16	3.57	2-4	$3d^2\ {}^1D-3d^2\ {}^1G$ (4F)

Fe X I P 261?

I A	E P Low	E P High	J	Multiplet (No)
6372.9) 6374.51 C)	0.00	1.94	1½- ½	$3p^5\ {}^2P^o-3p^5\ {}^2P^o$ (1F)

Fe XI I P 289?

I A	E P Low	E P High	J	Multiplet (No)
7888.6) 7891.94 C)	0.00	1.56	2-1	$3p^4\ {}^3P-3p^4\ {}^3P$ † (1F)
3986.1	1.56	4.66	1-2	$3p^4\ {}^3P-3p^4\ {}^1D$ † (2F)

Fe XIII I P 355?

I A	E P Low	E P High	J	Multiplet (No)
10796.2) 10797.95 C)	1.15	2.29	1-2	$3p^2\ {}^3P-3p^2\ {}^3P$ (1F)
10749.7) 10746.80 C)	0.00	1.15	0-1	
3387.7	2.29	5.93	2-2	$3p^2\ {}^3P-3p^2\ {}^1D$ (2F)

Fe XIV I P 390?

I A	E P Low	E P High	J	Multiplet (No)
5303.6) 5302.86 C)	0.00	2.33	½-1½	$3p\ {}^2P^o-3p\ {}^2P^o$ (1F)

Fe XV I P 454?

I A	E P Low	E P High	J	Multiplet (No)
7080.2) 7059.62 C)	(29.8	31.6)	1-2	$3p\ {}^3P^o-3p\ {}^3P^o$ (1F)

Co II I P 17.1

I A	E P Low	E P High	J	Multiplet (No)
10188.1	0.00	1.21	4-4	$3d^8\ {}^3F-4s\,{}^3F$ (1F)
10245.4	0.12	1.32	3-3	
10280.7	0.20	1.40	2-2	
9336.2	0.00	1.32	4-3	
9639.4	0.12	1.40	3-2	
11280.5	0.12	1.21	3-4	
10972.9	0.20	1.32	2-3	
8830.3	0.00	1.40	4-2	
12168.8	0.20	1.21	2-4	
5625.4	0.00	2.19	4-3	$3d^8\ {}^3F-4s\,{}^5P$ (2F)
5852.8	0.12	2.23	3-2	
5971.6	0.20	2.26	2-1	
5943.2	0.12	2.19	3-3	
6083.2	0.20	2.23	2-2	
6180.9	0.20	2.19	2-3	
7274.6	0.50	2.19	4-3	$4s\,{}^5F-4s\,{}^5P$ (3F)
7421.5	0.56	2.23	3-2	
7467.0	0.61	2.26	2-1	
7567.6	0.56	2.19	3-3	
7642.3	0.61	2.23	2-2	
7611.7	0.64	2.26	1-1	
7797.2	0.61	2.19	2-3	
7793.9	0.64	2.23	1-2	

Co VI I P ?

I A	E P Low	E P High	J	Multiplet (No)
3481.5	0.22	3.77	4-2	$3d^4\ {}^5D-3d^4\ {}^3P$ (1F)
3658.1	0.14	3.51	3-1	
3761.0	0.07	3.35	2-0	
3403.3	0.14	3.77	3-2	
3586.8	0.07	3.51	2-1	
3708.3	0.03	3.35	1-0	
3341.5	0.07	3.77	2-2	
3538.8	0.03	3.51	1-1	
3299.8	0.03	3.77	1-2	
3512.9	0.00	3.51	0-1	
3277.3	0.00	3.77	0-2	
3444.1	0.22	3.80	4-4	$3d^4\ {}^5D-3d^4\ {}^3F$ (2F)
3388.2	0.14	3.78	3-3	
3336.9	0.07	3.77	2-2	
3465.7	0.22	3.78	4-3	
3398.5	0.14	3.77	3-2	
3367.5	0.14	3.80	3-4	
3326.9	0.07	3.78	2-3	
3295.4	0.03	3.77	1-2	
3476.5	0.22	3.77	4-2	
3307.0	0.07	3.80	2-4	
3285.6	0.03	3.78	1-3	
3272.9	0.00	3.77	0-2	

Co VII I P ?

I A	E P Low	E P High	J	Multiplet (No)
5136.3	0.34	2.74	4½-2½	$3d^3\ {}^4F-3d^3\ {}^4P$ (1F)
5076.3	0.20	2.63	3½-1½	
4901.1	0.09	2.60	2½- ½	
4858.4	0.20	2.74	3½-2½	
4851.6	0.09	2.63	2½-1½	
4738.9	0.00	2.60	1½- ½	
4652.2	0.09	2.74	2½-2½	
4692.6	0.00	2.63	1½-1½	
4505.9	0.00	2.74	1½-2½	
4475.0	0.34	3.09	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2G$ (2F)
4435.1	0.20	2.98	3½-3½	
4665.5	0.34	2.98	4½-3½	
*4262.7	(0.20 0.09	3.09 2.98	3½-4½ 2½-3½	
4103.1	0.09	3.09	2½-4½	
4139.5	0.00	2.98	1½-3½	
3492.5	0.34	3.87	4½-2½	$3d^3\ {}^4F-3d^3\ {}^2D$ (3F)
3338.5	0.20	3.90	3½-1½	
3361.7	0.20	3.87	3½-2½	
3239.8	0.09	3.90	2½-1½	
3261.7	0.09	3.87	2½-2½	
3168.2	0.00	3.90	1½-1½	
3189.1	0.00	3.87	1½-2½	
3209.3	0.34	4.18	4½-5½	$3d^3\ {}^4F-3d^3\ {}^2H$ (4F)
3159.5	0.20	4.10	3½-4½	
3274.7	0.34	4.10	4½-4½	
3098.6	0.20	4.18	3½-5½	
3071.0	0.09	4.10	2½-4½	
10912.8	2.74	3.87	2½-2½	$3d^3\ {}^4P-3d^3\ {}^2D$ (5F)
9752.5	2.63	3.90	1½-1½	
10671.7	2.74	3.90	2½-1½	
9953.5	2.63	3.87	1½-2½	
9558.5	2.60	3.90	½-1½	
11347.6	3.09	4.18	4½-5½	$3d^3\ {}^2G-3d^3\ {}^2H$ (6F)
10986.0	2.98	4.10	3½-4½	
12209.6	3.09	4.10	4½-4½	

Co VIII I P ?

I A	E P Low	E P High	J	Multiplet (No)
5268.4	0.42	2.77	4-2	$3d^2\ {}^3F-3d^2\ {}^1D$ (1F)
4785.9	0.19	2.77	3-2	
4461.0	0.00	2.77	2-2	

Co VIII continued

I A	E P Low	E P High	J	Multiplet (No)
4564.7	0.42	3.13	4-2	$3d^2\ {}^3F-3d^2\ {}^3P$ (2F)
4492.3	0.19	2.94	3-1	
4422.4	0.00	2.79	2-0	
4198.0	0.19	3.13	3-2	
4204.9	0.00	2.94	2-1	
3946.0	0.00	3.13	2-2	

Co XI I P 304?

I A	E P Low	E P High	J	Multiplet (No)
5185	0.00	2.38	1½- ½	$3p^5\ {}^2P^o-3p^5\ {}^2P^o$ (1F)

Ni I I P 7.61

I A	E P Low	E P High	J	Multiplet (No)
7393.71	0.00	1.67	4-2	a^3F-b^1D (1F)
8201.77	0.16	1.67	3-2	
8843.42	0.27	1.67	2-2	
6404.46	0.00	1.93	4-2	a^3F-a^3P (2F)
6941.63	0.16	1.94	3-1	
7243.99	0.27	1.98	2-0	
7002.02	0.16	1.93	3-2	
7395.79	0.27	1.94	2-1	
7464.39	0.27	1.93	2-2	
4523.16	0.00	2.73	4-4	a^3F-a^1G (3F)
4813.27	0.16	2.73	3-4	
5027.34	0.27	2.73	2-4	
7507.44	0.03	1.67	3-2	a^3D-b^1D (4F)
7908.30	0.11	1.67	2-2	
8466.38	0.21	1.67	1-2	
6489.61	0.03	1.93	3-2	a^3D-a^3P (5F)
6730.25	0.11	1.94	2-1	
6989.04	0.21	1.98	1-0	
6437.70	0.03	1.94	3-1	
6604.30	0.11	1.98	2-0	
6787.00	0.11	1.93	2-2	
7130.24	0.21	1.94	1-1	
7193.97	0.21	1.93	1-2	
9887.18	0.42	1.67	2-2	a^1D-b^1D (6F)
8832.31	0.42	1.82	2-0	a^1D-a^1S (7F)
8194.57	0.42	1.93	2-2	a^1D-a^3P (8F)
8111.97	0.42	1.94	2-1	
7929.70	0.42	1.98	2-0	

Ni II I P 18.4

I A	E P Low	E P High	J	Multiplet (No)
10718.16	0.00	1.15	2½-3½	a^2D-a^4F (1F)
11616.88	0.19	1.25	1½-2½	
9885.74	0.00	1.25	2½-2½	
10921.07	0.19	1.32	1½-1½	
9377.33	0.00	1.32	2½-1½	
7379.57	0.00	1.67	2½-3½	a^2D-a^2F (2F)
7413.35	0.19	1.85	1½-2½	
6668.16	0.00	1.85	2½-2½	
8303.23	0.19	1.67	1½-3½	
4326.85	0.00	2.85	2½-2½	a^2D-b^2D (3F)
4485.87	0.19	2.94	1½-1½	
4201.74	0.00	2.94	2½-1½	
4628.77	0.19	2.85	1½-2½	
3993.65	0.00	3.09	2½-2½	a^2D-a^4P (4F)
4294.70	0.19	3.06	1½-1½	
4033.56	0.00	3.06	2½-1½	
4285.90	0.19	3.07	1½- ½	
4249.48	0.19	3.09	1½-2½	
4025.80	0.00	3.07	2½- ½	
3439.29	0.00	3.59	2½-1½	a^2D-a^2P (5F)
3559.86	0.19	3.65	1½- ½	
3378.55	0.00	3.65	2½- ½	
3627.35	0.19	3.59	1½-1½	
3074.11	0.00	4.01	2½-3½	a^2D-a^2G (6F)
6794.37	1.04	2.85	4½-2½	a^4F-b^2D (7F)
6911.05	1.15	2.94	3½-1½	
7256.16	1.15	2.85	3½-2½	
7307.82	1.25	2.94	2½-1½	
7694.82	1.25	2.85	2½-2½	
7612.96	1.32	2.94	1½-1½	
8033.86	1.32	2.85	1½-2½	
6007.34	1.04	3.09	4½-2½	a^4F-a^4P (8F)
6467.52	1.15	3.06	3½-1½	
6791.61	1.25	3.07	2½- ½	
6365.52	1.15	3.09	3½-2½	
6813.73	1.25	3.06	2½-1½	
7054.37	1.32	3.07	1½- ½	
6700.61	1.25	3.09	2½-2½	
7078.25	1.32	3.06	1½-1½	
6956.25	1.32	3.09	1½-2½	
5274.27	1.25	3.59	2½-1½	a^4F-a^2P (9F)
5281.46	1.32	3.65	1½- ½	
5431.39	1.32	3.59	1½-1½	

Ni II continued

I A	E P Low	E P High	J	Multiplet (No)
4147.30	1.04	4.01	4½-4½	a^4F-a^2G (10F)
4310.46	1.15	4.01	3½-3½	
4143.17	1.04	4.01	4½-3½	
4314.92	1.15	4.01	3½-4½	
4461.54	1.25	4.01	2½-3½	
4466.33	1.25	4.01	2½-4½	
4573.45	1.32	4.01	1½-3½	
10459.79	1.67	2.85	3½-2½	a^2F-b^2D (11F)
11359.87	1.85	2.94	2½-1½	
12323.27	1.85	2.85	2½-2½	
8704.24	1.67	3.09	3½-2½	a^2F-a^4P (12F)
10209.10	1.85	3.06	2½-1½	
9957.23	1.85	3.09	2½-2½	
7102.84	1.85	3.59	2½-1½	a^2F-a^2P (13F)
5275.83	1.67	4.01	3½-4½	a^2F-a^2G (14F)
5703.64	1.85	4.01	2½-3½	
5269.16	1.67	4.01	3½-3½	
5711.46	1.85	4.01	2½-4½	

Ni VII I P ?

I A	E P Low	E P High	J	Multiplet (No)
3191.2	0.29	4.16	4-2	$3d^4\ {}^5D-3d^4\ {}^3P$ (1F)
3379.7	0.19	3.84	3-1	
3503.8	0.10	3.62	2-0	
3106.0	0.19	4.16	3-2	
3299.6	0.10	3.84	2-1	
3440.3	0.03	3.62	1-0	
3038.3	0.10	4.16	2-2	
3243.2	0.03	3.84	1-1	
2990.4	0.03	4.16	1-2	
3214.5	0.00	3.84	0-1	
3413.3	0.29	3.91	4-5	$3d^4\ {}^5D-3d^4\ {}^3H$ (2F)
3396.7	0.19	3.83	3-4	
3486.6	0.29	3.83	4-4	
3165.4	0.29	4.19	4-4	$3d^4\ {}^5D-3d^4\ {}^3F$ (3F)
3106.1	0.19	4.16	3-3	
3048.8	0.10	4.15	2-2	
3191.3	0.29	4.16	4-3	
3117.1	0.19	4.15	3-2	
3081.6	0.19	4.19	3-4	
3038.4	0.10	4.16	2-3	
3000.6	0.03	4.15	1-2	

Ni VIII I P ?

I A	E P Low	E P High	J	Multiplet (No)
4772.4	0.46	3.05	4½-2½	$3d^3\ {}^4F-3d^3\ {}^4P$ (1F)
4644.2	0.27	2.93	3½-1½	
4493.3	0.13	2.87	2½- ½	
4446.2	0.27	3.05	3½-2½	
4404.4	0.13	2.93	2½-1½	
4297.8	0.00	2.87	1½- ½	
4225.9	0.13	3.05	2½-2½	
4216.4	0.00	2.93	1½-1½	
4052.5	0.00	3.05	1½-2½	
4106.1	0.46	3.46	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2G$ (2F)
4032.3	0.27	3.33	3½-3½	
4298.8	0.46	3.33	4½-3½	
3862.3	0.27	3.46	3½-4½	
3850.3	0.13	3.33	2½-3½	
3695.0	0.13	3.46	2½-4½	
3705.8	0.00	3.33	1½-3½	
3228.2	0.46	4.28	4½-2½	$3d^3\ {}^4F-3d^3\ {}^2D$ (3F)
3035.3	0.27	4.34	3½-1½	
3075.6	0.27	4.28	3½-2½	
3026.4	0.46	4.54	4½-4½	$3d^3\ {}^4F-3d^3\ {}^2H$ (4F)
9977.1	3.05	4.28	2½-2½	$3d^3\ {}^4P-3d^3\ {}^2D$ (5F)
8761.8	2.93	4.34	1½-1½	
9565.8	3.05	4.34	2½-1½	
9105.8	2.93	4.28	1½-2½	
8430.1	2.87	4.34	½-1½	
10627.5	3.46	4.63	4½-5½	$3d^3\ {}^2G-3d^3\ {}^2H$ (6F)
10225.3	3.33	4.54	3½-4½	
11509.6	3.46	4.54	4½-4½	

Ni IX I P ?

I A	E P Low	E P High	J	Multiplet (No)
5056.5	0.61	3.05	4-2	$3d^2\ {}^3F-3d^2\ {}^1D$ (1F)
4331.7	0.20	3.05	3-2	
4043.4	0.00	3.05	2-2	
4190.6	0.61	3.56	4-2	$3d^2\ {}^3F-3d^2\ {}^3P$ (2F)
4065.7	0.20	3.24	3-1	
4112.7	0.00	3.00	2-0	
3680.3	0.20	3.56	3-2	
3810.6	0.00	3.24	2-1	
3470.0	0.00	3.56	2-2	

Ni XII I P ?

I A	E P Low	E P High	J	Multiplet (No)
4231.4	0.00	(2.92)	1½- ½	$3p^5\ {}^2P^o-3p^5\ {}^2P^o$ (1F)

Ni XIII I P 350?

I A	E P Low	E P High	J	Multiplet (No)
5116.3	0.00	(2.41)	2-1	$3p^4\ ^3P-3p^4\ ^3P$ (1F)
5116.03 C				
3643.3	(2.41	5.80)	1-2	$3p^4\ ^3P-3p^4\ ^1D$ (2F)

Ni XV I P 455?

I A	E P Low	E P High	J	Multiplet (No)
8024	(1.84	3.38)	1-2	$3p^2\ ^3P-3p^2\ ^3P$ (1F)
8024.21 C				
6700.6	0.00	(1.84)	0-1	
6701.83 C				

Ni XVI I P ?

I A	E P Low	E P High	J	Multiplet (No)
3601.3	0.00	3.43	½-1½	$3p\,^2P^\circ-3p\,^2P^\circ$ (1F)

Cu II I P 20.18

I A	E P Low	E P High	J	Multiplet (No)
4375.71	0.00	2.82	0-2	$3d^{10}\ ^1S-4s\,^3D$ (1F)
4165.79	0.00	2.96	0-1	
3806.34	0.00	3.24	0-2	$3d^{10}\ ^1S-4s\,^1D$ (2F)

Kr III I P 36.8

I A	E P Low	E P High	J	Multiplet (No)
6826.9	0.00	1.81	2-2	$4p^4\ ^3P-4p^4\ ^1D$ (1F)
9902.2	0.56	1.81	1-2	

Sr II I P 10.98

I A	E P Low	E P High	J	Multiplet (No)
6738.40	0.00	1.83	½-2½	5^2S-4^2D (1F)
6868.18	0.00	1.80	½-1½	

Y II I P 12.3

I A	E P Low	E P High	J	Multiplet (No)
7091.17	0.00	1.74	0-2	a^1S-a^3P (1F)
7131.55	0.00	1.73	0-1	
6739.91	0.00	1.83	0-2	a^1S-b^1D (2F)
7904.04	0.18	1.74	3-2	a^3D-a^3P (3F)
7706.06	0.13	1.73	2-1	
7664.67	0.10	1.71	1-0	
7954.24	0.18	1.73	3-1	
7787.00	0.13	1.71	2-0	
7658.92	0.13	1.74	2-2	
7586.23	0.10	1.73	1-1	
7540.54	0.10	1.74	1-2	
7470.10	0.18	1.83	3-2	a^3D-b^1D (4F)
7350.78	0.13	1.83	2-2	
7144.60	0.10	1.83	1-2	
9255.10	0.41	1.74	2-2	a^1D-a^3P (5F)
9324.01	0.41	1.73	2-1	
9442.77	0.41	1.71	2-0	
8665.66	0.41	1.83	2-2	a^1D-b^1D (6F)

Y V I P 77

I A	E P Low	E P High	J	Multiplet (No)
8284.1	0.00	1.49	1½- ½	$4p^5\ ^2P^\circ-4p^5\ ^2P^\circ$ (1F)

Zr II I P 13.97

I A	E P Low	E P High	J	Multiplet (No)
10860.44	0.09	1.23	3½-2½	a^4F-b^4P (1F)
10603.65	0.04	1.20	2½-1½	
10464.94	0.00	1.18	1½- ½	
10355.58	0.04	1.23	2½-2½	
10261.18	0.00	1.20	1½-1½	
10028.71	0.00	1.23	1½-2½	
9058.16	0.16	1.53	4½-5½	a^4F-a^2H (2F)
8909.40	0.09	1.48	3½-4½	
9376.93	0.16	1.48	4½-4½	
7786.03	0.16	1.75	4½-2½	a^4F-b^2D (3F)
7893.57	0.09	1.66	3½-1½	
7460.93	0.09	1.75	3½-2½	
7623.44	0.04	1.66	2½-1½	
7319.15	0.04	1.75	2½-2½	
7444.80	0.00	1.66	1½-1½	
7058.76	0.00	1.75	1½-2½	
7769.35	0.16	1.75	4½-4½	a^4F-b^2G (4F)
7518.81	0.09	1.74	3½-3½	
7849.08	0.16	1.74	4½-3½	
7445.63	0.09	1.75	3½-4½	
7273.33	0.04	1.74	2½-3½	
7204.82	0.04	1.75	2½-4½	
7110.54	0.00	1.74	1½-3½	

Zr II continued

I A	E P Low	E P High	J	Multiplet (No)
7454.82	0.16	1.82	4½-2½	a^4F-c^2D (5F)
7386.11	0.09	1.77	3½-1½	
7156.26	0.09	1.82	3½-2½	
7149.08	0.04	1.77	2½-1½	
6933.53	0.04	1.82	2½-2½	
6991.75	0.00	1.77	1½-1½	
6785.44	0.00	1.82	1½-2½	
5855.37	0.16	2.27	4½-2½	a^4F-d^2D (6F)
5932.88	0.09	2.17	3½-1½	
5669.58	0.09	2.27	3½-2½	
5778.97	0.04	2.17	2½-1½	
5528.87	0.04	2.27	2½-2½	
5675.73	0.00	2.17	1½-1½	
5434.30	0.00	2.27	1½-2½	
5520.18	0.16	2.40	4½-3½	a^4F-b^2F (7F)
5331.46	0.09	2.41	3½-2½	
5495.42	0.16	2.41	4½-2½	
5354.76	0.09	2.40	3½-3½	
5206.84	0.04	2.41	2½-2½	
5229.06	0.04	2.40	2½-3½	
5122.88	0.00	2.41	1½-2½	
5144.39	0.00	2.40	1½-3½	
9607.90	0.46	1.75	4½-2½	b^4F-b^2D (8F)
9870.08	0.41	1.66	3½-1½	
9202.81	0.41	1.75	3½-2½	
9490.96	0.36	1.66	2½-1½	
8872.37	0.36	1.75	2½-2½	
9208.78	0.32	1.66	1½-1½	
8625.25	0.32	1.75	1½-2½	
9582.55	0.46	1.75	4½-4½	b^4F-b^2G (9F)
9291.03	0.41	1.74	3½-3½	
9704.10	0.46	1.74	4½-3½	
9179.54	0.41	1.75	3½-4½	
8954.34	0.36	1.74	2½-3½	
8850.73	0.36	1.75	2½-4½	
8702.70	0.32	1.74	1½-3½	
9108.53	0.46	1.82	4½-2½	b^4F-c^2D (10F)
9089.24	0.41	1.77	3½-1½	
8743.65	0.41	1.82	3½-2½	
8766.76	0.36	1.77	2½-1½	
8444.83	0.36	1.82	2½-2½	
8525.41	0.32	1.77	1½-1½	
8220.64	0.32	1.82	1½-2½	
6829.24	0.46	2.27	4½-2½	b^4F-d^2D (11F)
6984.07	0.41	2.17	3½-1½	
6622.05	0.41	2.27	3½-2½	
6793.01	0.36	2.17	2½-1½	
6449.21	0.36	2.27	2½-2½	
6646.31	0.32	2.17	1½-1½	
6317.64	0.32	2.27	1½-2½	
6377.59	0.46	2.40	4½-3½	b^4F-b^2F (12F)
6165.35	0.41	2.41	3½-2½	
6344.56	0.46	2.41	4½-2½	
6196.53	0.41	2.40	3½-3½	
6015.26	0.36	2.41	2½-2½	
6044.94	0.36	2.40	2½-3½	
5900.64	0.32	2.41	1½-2½	
5929.20	0.32	2.40	1½-3½	
10351.92	0.56	1.75	2½-2½	a^2D-b^2D (13F)
10890.02	0.52	1.66	1½-1½	
11203.92	0.56	1.66	2½-1½	
10083.37	0.52	1.75	1½-2½	
9774.53	0.56	1.82	2½-2½	a^2D-c^2D (14F)
9947.19	0.52	1.77	1½-1½	
10208.43	0.56	1.77	2½-1½	
9534.75	0.52	1.82	1½-2½	
7196.91	0.56	2.27	2½-2½	a^2D-d^2D (15F)
7479.79	0.52	2.17	1½-1½	
7626.54	0.56	2.17	2½-1½	
7066.07	0.52	2.27	1½-2½	
6697.09	0.56	2.40	2½-3½	a^2D-b^2F (16F)
6548.47	0.52	2.41	1½-2½	
6660.68	0.56	2.41	2½-2½	
6583.66	0.52	2.40	1½-3½	
6418.86	0.56	2.48	2½-1½	a^2D-b^2P (17F)
6506.40	0.52	2.42	1½- ½	
6617.17	0.56	2.42	2½- ½	
6314.58	0.52	2.48	1½-1½	
11595.50	0.75	1.82	1½-2½	a^2P-c^2D (18F)
11659.62	0.71	1.77	½-1½	
12211.22	0.75	1.77	1½-1½	
11096.98	0.71	1.82	½-2½	
8137.88	0.75	2.27	1½-2½	a^2P-d^2D (19F)
8408.39	0.71	2.17	½-1½	
8691.53	0.75	2.17	1½-1½	
7889.15	0.71	2.27	½-2½	
7156.94	0.75	2.48	1½-1½	a^2P-b^2P (20F)
7197.88	0.71	2.42	½- ½	
7404.36	0.75	2.42	1½- ½	
6963.85	0.71	2.48	½-1½	
12094.78	0.80	1.82	3½-2½	a^2F-c^2D (21F)
11698.62	0.71	1.77	2½-1½	
11132.24	0.71	1.82	2½-2½	
8380.68	0.80	2.27	3½-2½	a^2F-d^2D (22F)
8428.62	0.71	2.17	2½-1½	
8969.06	0.80	2.17	3½-1½	
7906.95	0.71	2.27	2½-2½	

Zr II continued

I A	E P Low	E P High	J	Multiplet (No)
7710.56	0.80	2.40	3½-3½	a^2F-b^2F (23F)
7264.43	0.71	2.41	2½-2½	
7662.36	0.80	2.41	3½-2½	
7307.76	0.71	2.40	2½-3½	
9670.04	0.99	2.27	2½-2½	a^4P-d^2D (24F)
10120.75	0.96	2.17	1½-1½	
10461.95	0.99	2.17	2½-1½	
9377.83	0.96	2.27	1½-2½	
8315.71	0.99	2.48	2½-1½	a^4P-b^2P (25F)
8416.96	0.96	2.42	1½- ½	
8098.70	0.96	2.48	1½-1½	
8261.59	0.93	2.42	½- ½	
7954.76	0.93	2.48	½-1½	
8862.47	1.01	2.40	4½-3½	a^2G-b^2F (26F)
8561.42	0.97	2.41	3½-2½	
8798.82	1.01	2.41	4½-2½	
8621.67	0.97	2.40	3½-3½	
9886.87	1.23	2.48	2½-1½	b^4P-b^2P (27F)
10128.19	1.20	2.42	1½- ½	
9670.87	1.20	2.48	1½-1½	
9937.20	1.18	2.42	½- ½	
9496.60	1.18	2.48	½-1½	

Zr III I P 24.0

I A	E P Low	E P High	J	Multiplet (No)
5539.74	0.18	2.41	4-3	$4d^2\ ^3F-5s\,^3D$ (1F)
5517.24	0.08	2.32	3-2	
5433.69	0.00	2.27	2-1	
5773.51	0.18	2.32	4-2	
5643.02	0.08	2.27	3-1	
5303.37	0.08	2.41	3-3	
5316.97	0.00	2.32	2-2	
5118.07	0.00	2.41	2-3	
7853.3	0.42	1.99	2-2	$4d^2\ ^1D-5s\,^1D$ (2F)
6193.7	0.42	2.41	2-3	$4d^2\ ^1D-5s\,^3D$ (3F)
6487.5	0.42	2.32	2-2	
6661.7	0.42	2.27	2-1	
6864.4	0.47	2.27	0-1	$4d^2\ ^1S-5s\,^3D$ (4F)
9349.2	1.09	2.41	2-3	$4d^2\ ^3P-5s\,^3D$ (5F)
9543.3	1.03	2.32	1-2	
9671.2	1.00	2.27	0-1	
10034.9	1.09	2.32	2-2	
9926.0	1.03	2.27	1-1	
8921.0	1.03	2.41	1-3	
9307.5	1.00	2.32	0-2	
10458.9	1.09	2.27	2-1	

Zr VI I P 99

I A	E P Low	E P High	J	Multiplet (No)
6408.5	0.00	1.93	1½- ½	$4p^5\ ^2P^\circ-4p^5\ ^2P^\circ$ (1F)

Xe II I P 21.1

I A	E P Low	E P High	J	Multiplet (No)
9487.5	0.00	1.30	1½- ½	$5p^5\ ^2P^\circ-5p^5\ ^2P^\circ$ (1F)

Xe III I P 32.0

I A	E P Low	E P High	J	Multiplet (No)
10206.5	0.00	1.21	2-1	$5p^4\ ^3P-5p^4\ ^3P$ (1F)
5846.3	0.00	2.11	2-2	$5p^4\ ^3P-5p^4\ ^1D$ (2F)

La II I P 11.38

I A	E P Low	E P High	J	Multiplet (No)
11011.70	0.13	1.25	3-2	a^3F-b^1D (1F)
9903.31	0.00	1.25	2-2	
11490.57	0.17	1.25	2-2	a^1D-b^1D (2F)

La III I P 19.1

I A	E P Low	E P High	J	Multiplet (No)
8339.72	0.20	1.68	2½- ½	5^2D-6^2S (1F)
7355.92	0.00	1.68	1½- ½	

Eu II I P 11.21

I A	E P Low	E P High	J	Multiplet (No)
8983.71	0.00	1.37	4-6	$a^9S-a^9D^\circ$ (1F)
9392.85	0.00	1.31	4-5	
9694.01	0.00	1.27	4-4	
9916.30	0.00	1.24	4-3	
10074.84	0.00	1.22	4-2	
5929.31	0.00	2.08	4-5	$a^9S-a^7D^\circ$ (2F)
5879.32	0.00	2.10	4-4	
5832.40	0.00	2.12	4-3	
5796.28	0.00	2.13	4-2	

Part II—Finding List of All Lines in the Table of Multiplets

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PART II. FINDING LIST

A MULTIPLET TABLE OF ASTROPHYSICAL INTEREST

PART II

Finding List of All Lines in the Table of Multiplets

1. Introduction

Any arrangement of the wave-lengths in a given spectrum, by multiplets makes it inconvenient to locate a given line. The difficulty is greatly increased when many spectra are involved. Consequently a "Finding List" containing *all* lines in the Revised Multiplet Table has been included as Part II of this Contribution. As in the R M T the Finding List is in two parts. The first contains permitted lines observed in the laboratory, permitted predicted lines, and a few forbidden lines observed in the laboratory when a strong electric field is present. The second contains only forbidden lines of the nebular, auroral and coronal type. See §5.

2. Part A—Observed and Permitted Predicted Lines

The lines are listed in order of increasing wave-length and cover the range λλ2951–13164. At the violet end of this long range, the proportion of known lines included is smaller than in the main body of the list, due to the masking by the ozone in our atmosphere of all but the strongest lines. The number of lines in the same wave-length interval decreases from the violet to the red. The incompleteness of laboratory material accentuates this in the infra-red. The total number of lines in this section is approximately 23,200.

Three entries are given for each line and a fourth if the line is predicted or forbidden. All entries are copied directly from Part I of this Contribution. The first is the laboratory wave-length. The source from which the wave-length is taken can be found from the references A, B, C etc. in the R M T and Table 7.

The second entry headed "Type" is blank for all lines observed in the laboratory, except the selected forbidden ones that appear under special conditions, (due to Stark effect). These are marked "Forb" and include 11 lines of *He* I, 6 of *Na* I, 11 of *Al* II, 2 of *Al* III and 2 of *K* I.

Predicted Lines. These fall into three classes. (a) For some faint lines observed in the laboratory but not well-measured, a predicted wave-length obtained from the spectroscopic term values is preferable to the observed value. (b) It is well-known that many predicted lines not yet observed in the laboratory are important astrophysically, and an attempt has been made to include these in the R M T. (c) If a line that would otherwise be included is masked by a strong line in the laboratory, the predicted position of the masked line is entered. Such cases are carefully noted and explained in the R M T. In every case where a predicted wave-length is used, the entry "P" occurs in the column headed "Type" in the Finding List. This column contains only the two entries "Forb" and "P". All other lines are observed laboratory wave-lengths in the usual sense of the word "observed".

The third entry for each line is the spectrum to which the line belongs. Here the chemical symbols of the elements are used and Roman numerals denote arc spectra (I) and spark spectra in successive stages of ionization, i.e. first spark spectrum (II), second spark spectrum (III) etc.

Finally the number of the multiplet to which the line of a given spectrum belongs, is given under the heading "Multiplet No." This number appears under the "Multiplet Designation" of each multiplet in the R M T and the numbers start with 1 for each spectrum. All lines of a given multiplet have the same multiplet number. A blank in this column indicates that the line is unclassified. In the R M T, under a given spectrum, unclassified lines follow the multiplets.

When two or more numbers appear in this column, the line is a blend and occurs in each of the multiplets indicated.

Examples: λ2957.56 is due to *Cr* II and appears in Multiplets 104 and 141 of *Cr* II (See pp. 44 and 45 of the R M T).

λ2984.89 is a predicted wave-length. The line is in Multiplet No. 60 of *Fe* II (See p. 67 of the R M T).

λ2991.632 is an unclassified line of *Fe* I (See p. 65 of the R M T).

3. Blends

Reference has been made above to a line appearing in two multiplets of a given spectrum, for example λ2957.56. Such blends can be readily detected in the Finding List by the presence of more than one multiplet number. In the R M T they are noted by an asterisk. This applies to blended lines in the same spectrum.

If, however, an arc and spark line of an element are blended the wave-length is repeated in the Finding List; or nearly identical wave-lengths are entered, if different measures were used in the two instances. For example λ2988.952 appears in Multiplet No. 11 of *Sc* I and in Multiplet No. 34 of *Sc* II. In the R M T such lines have an asterisk preceding the wave-length and the symbol "§" following it.

A careful examination of close pairs of lines of a given element in the Finding List will doubtless reveal more blends than have been noted in the R M T. Similarly, it is probable that erroneous identifications of lines due to impurities that have not heretofore been suspected, can be detected.

The predicted wave-lengths of masked lines (§2) fall close to observed lines. For example λ2965.25 is the predicted position of the line of *Fe* I in Multiplet No. 316, masked by the strong *Fe* I line at λ2965.255, which occurs in Multiplet No. 10.

All predicted lines have separate entries in the Finding List, regardless of how close the pairs in a given spectrum may be—for example, λλ2990.33 and 2990.34 are both predicted lines of *Fe* I. If observed in the laboratory these lines would undoubtedly be blended.

When identical wave-lengths appear in spectra of different elements, the lines are arranged in the alphabetical order of the chemical symbol. When similar wave-lengths occur in spectra of different stages of ionization of a given element, the arc spectrum comes first, then the spark spectra, in order of increasing ionization.

4. Scope of the Finding List

The users of this Finding List are emphatically warned that the list is *not complete*. The range is that useful to the astrophysicist, having the violet limit λ2951. Within the range covered, the elements to be included have been selected according to their astrophysical importance. For a given element, the spectra for different degrees of ionization and the lines of each have been similarly selected. It is fairly complete for the first spark spectra through the first long period. It lists only the leading arc lines for many elements, but includes all observed classified lines of *Fe* I. For any element, the List grading in the R M T can be used as a guide to the completeness of selection. On account of these restrictions this book is not a list of "Hauptlinien" or a compendium of wave-lengths of elements in general. On the other hand it does contain a large number of predicted lines which invite the attention of the laboratory worker in spectroscopy.

5. Part B. Forbidden Lines—Nebular, Auroral, Coronal etc.

The second part of the Finding List contains only forbidden lines. Here the word "forbidden" applies in the general sense—i.e. lines due to downward transitions from metastable states in the atoms. The number of lines listed is roughly 2550.

The arrangement is similar to Part A of the Finding List, with the exception that in Part B the great majority of lines are predicted. Consequently no column headed "Type" is given. The wave-lengths that are *not* predicted are noted by the following letters:

N Nebular Wave-length

L Laboratory Wave-length

A Auroral Wave-length

C Coronal Wave-length

Column two contains the chemical symbol and stage of ionization of the spectrum as in Part A, and column three the Multiplet Number. In order to avoid confusion with Multiplet Numbers in Part A, all Multiplets of forbidden lines have the letter "F" accompanying the Multiplet Number.

6. Contents

A complete list of all possible forbidden lines in the region useful to the astrophysicist would be prohibitively long. For simple spectra the lines are few, but for the complex spectra, particularly in the first long period, fairly rigid selection has been made. Anyone desiring to construct complete lists is advised to consult the references to the analysis of the various spectra.

7. Index of The Finding Lists

In order to facilitate the work of transferring from the Multiplet Number of the Finding List to the Multiplet in the R M T, a separate card is enclosed in the Finding List, containing an index of the R M T. The elements are in order of increasing atomic number. This index gives the multiplets of each element contained on each page of the R M T.

For example, λ2980.296 is in Multiplet No. 94 of *Ti* I. On the index card hunt *Ti* I and then this Multiplet Number. It is to be found on page 27 of the R M T, which contains Multiplets of *Ti* I from No. 55 through No. 140.

8. Errata

After the tabular material in the Finding List had been completed for publication, four errors were detected, as follows:

I A	Element	Multiplet No.		I A	Type	Element	Multiplet No.
3497.137	Fe I	78	should read	3497.15	P	Fe I	78
4618.568	Fe I	1151	Reject—Wave-length erroneous				
4061.3	*Sc* III		should read	4061.3		Sc III	1
4068.7	Sc III		should read	4068.7		Sc III	1

The writer will be grateful to those who use this Table if they will call to her attention any errors they detect, so that a list of errata may be published. In the compilation of a list containing about 25,750 lines, doubtless there are a number of mistakes in spite of the care that has been taken to avoid errors.

FINDING LIST

I A	Type	Element	Multiplet No.
2951.40		Cr II	59
2951.95		Cr II	59
2952.07		V II	2
2953.358		Cr II	27
2953.706		Cr II	66
2953.774		Fe II	2
2953.940		Fe I	10
2954.050		Fe II	61
2954.332		V I	18
2954.67		Cr II	104
2955.12		Cr II	59
2955.71		Cr II	58
2956.133		Ti I	30
2956.60		Cr II	58
2956.707		Ti I	30
2957.28		Cr I	
2957.33		V I	18
2957.365		Fe I	10
2957.520		V II	2
2957.56		Cr II	104,141
2958.20		Cr II	49
2958.528		Fe II	160
2958.54		Cr II	97
2959.601		Fe II	62
2959.841		Fe II	180
2959.97		Cr II	59
2959.992		Fe I	316
2960.303		Fe I	148
2960.926		Gd II	25
2961.119		Fe II	180
2961.272		Fe II	2
2961.732		Cr II	27,59
2962.11		Fe I	57
2962.167		Rh II	4
2962.772		V I	18
2962.930		Fe II	100
2963.249		V II	154
2963.46		Cr II	58
2963.605		Gd II	
2963.73		Cr I	
2963.897		Fe II	
2964.131		Fe II	60
2964.629		Fe II	8
2964.88		Hf I	4
2964.96		Y I	11
2965.036		Fe II	8
2965.19		Cr II	58,160
2965.231		Ti I	94
2965.25	P	Fe I	316
2965.255		Fe I	10
2965.395		Fe II	59
2965.428		Gd II	29
2965.54		Ta I	2
2965.564		Ru II	4
2965.68		Ti I	94
2965.707		Ti I	94
2965.80		Sc I	11
2966.051		Cr II	33
2966.26		Fe I	104
2966.27		Zr II	148
2966.901		Fe I	10
2967.225		Ti I	30
2967.642		Cr I	28
2968.119		Fe II	160
2968.21		Cr II	96
2968.231		Ti I	29
2968.373		V II	28
2968.67		Cr II	58
2968.738		Fe II	61
2968.82		Hf II	12
2968.906		Fe II	
2968.95		Zr II	14
2969.267		Gd II	28
2969.364		Fe I	11
2969.474		Fe I	30
2969.67		Cr II	66
2969.934		Fe II	70
2970.106		Fe I	10,11
2970.35		Si I	1
2970.384		Ti I	29
2970.510		Fe II	2
2970.556		Ti I	94
2970.66		Cr II	57
2970.682		Fe II	69
2971.112		Cr I	28
2971.616		Fe II	60
2971.906		Cr II	28
2972.016		Fe II	160
2972.17		Gd II	77
2972.263		V II	87
2972.277		Fe I	104
2972.64		Cr II	28
2972.742		Gd II	25
2972.769		Fe II	159
2973.137		Fe I	10
2973.236		Fe I	10
2973.975		V II	218
2974.006		Sc I	11
2974.59		Y I	10
2974.78		Fe I	335
2974.934		Ti I	94
2975.110		Gd II	77
2975.16		Zr II	64
2975.483		Cr I	28
2975.650		V II	28
2975.89		Hf II	10
2975.938		Fe II	2
2976.126		Fe I	146
2976.197		V II	28
2976.50	P	Fe I	56
2976.517		V II	28
2976.593		Ru II	4
2976.61		Zr II	77
2976.718		Cr II	27
2976.905		Ce II	168
2976.922		Fe I	334
2977.226		Ru II	4
2977.539		V I	18
2978.07		Zr II	14
2978.18		Y II	45
2978.226		V II	87
2978.850		Fe II	69
2979.05		A II	19
2979.096		Fe II	100,180
2979.102		V II	44
2979.18		Zr II	14
2979.199		Ti II	123
2979.349		Fe II	2
2979.362		Rh II	4
2979.683		Sc II	44
2979.726		Ru II	5
2979.741		Cr II	28
2979.957		Ru II	4
2980.154		Gd II	12
2980.296		Ti I	94
2980.532		Fe I	317
2980.60	P	Fe I	201
2980.69		Y II	54
2980.752		Sc I	11
2980.791		Cr I	28
2980.82		Hf I	2
2980.963		Fe II	61
2981.02		Zr II	24
2981.200		V II	87
2981.446		Fe I	11
2981.448		Ti I	29
2981.651		Ni I	28
2981.852		Fe I	104
2981.924		V II	114
2982.059		Fe II	139
2982.100		Cb II	2
2982.234		Fe I	460
2982.239		Fe II	70
2982.75		V II	28
2982.78		Cl II	53
2983.009		V II	22,28
2983.060		Gd II	77
2983.306		Ti I	29
2983.558		V II	28
2983.574		Fe I	9
2983.66		O III	7
2983.78		O III	6
2984.131		Ni I	12
2984.183		Na II	2
2984.25		Y I	10
2984.35	P	Ti II	28
2984.69		Cr II	27
2984.785		Fe I	29
2984.82		Cr I	15
2984.831		Fe II	8
2984.89	P	Fe II	60
2985.02		Cr II	56
2985.184		V II	218
2985.29	P	Fe II	69
2985.325		Cr II	28
2985.36		Zr I	22
2985.43		La II	145
2985.477		Ti I	29
2985.521		Gd II	77
2985.545		Fe II	8
2985.849		Cr I	28
2985.98		S III	14
2985.995		Cr I	28
2986.137		Cr I	28
2986.456		Fe I	11
2986.473		Cr I	28
2986.617		Fe II	62
2986.655		Fe I	200
2986.91	P	Fe II	86
2987.074		Gd II	57
2987.166		Co I	11
2987.27	P	Fe II	86
2987.292		Fe I	30
2987.40		Ti II	28
2987.542		Fe II	223
2987.65		Si I	1
2987.72		Ca II	11
2987.80		Zr II	86
2988.027		V II	27
2988.05		Ni II	6
2988.056		Cr II	28
2988.367		Rh II	3
2988.468		Fe I	56
2988.61		Ca III	2
2988.649		Cr I	14
2988.74		Zr II	148
2988.942		Fe I	316
2988.952		Sc I	11
2988.952		Sc II	34
2989.01	P	Fe II	86
2989.079		Fe II	159
2989.194		Cr II	28
2989.30		Ca III	4
2989.306		V II	87
2989.367		Fe II	86
2989.42		Ca II	11
2989.590		Co I	13
2989.594		V II	28
2989.731		Fe II	86
2989.74		V II	87
2990.10		Zr II	27
2990.16		Ti II	123
2990.33	P	Fe I	334
2990.34	P	Fe I	460
2990.392		Fe I	316
2990.873		Ce II	72
2990.948		V I	58
2991.095		Ni I	14,80
2991.244		Fe II	60
2991.33		Eu II	3
2991.40		Zr II	6
2991.520		Gd II	25
2991.626		Ru II	5
2991.632		Fe I	
2991.817		Fe II	160
2991.886		Cr I	28
2992.11		O III	10
2992.24		K III	2
2992.378		V II	114
2992.40		Cr II	28
2992.595		Ni I	25
2992.63		C II	8
2993.038		Gd II	42
2993.366		Fe II	139
2994.05		Zr II	
2994.069		Cr I	14
2994.259	P	Al II	14
2994.427		Fe I	9
2994.460		Ni I	27
2994.50		Fe I	11
2994.540		V II	218
2994.725		Cb II	
2994.737		Cr II	28
2994.958		Ca I	17
2995.10		Cr I	15
2995.26		Y I	11
2995.530	P	Al II	14
2995.546	P	Al II	14
2995.644		Ce II	183
2995.838		Fe I	460
2995.999		V II	27
2996.386		Fe I	148
2996.51		O III	10
2996.549		Co I	77
2996.580		Cr I	28
2996.63		Cl II	22
2996.70		V II	28
2996.88	P	Ti II	28
2996.94		Y I	9
2997.08		V I	116

FINDING LIST

I A	Type	Element	Multiplet No.
2997.298		Fe II	139
2997.309		Ca I	17
2997.364		Cu I	5
2997.749		Fe II	85
2997.71		O III	10
2997.87		V I	116
2997.945		V II	141
2997.97		Pt I	3
2998.158	P	Al II	14
2998.163	P	Al II	14
2998.34		Zr II	13
2998.49		Zr II	86
2998.787		Cr I	14
2998.855		Fe II	60
2998.896		Ru II	5
2999.045		Gd II	12
2999.238		V I	58
2999.30		Cr II	33
2999.512		Fe I	30
2999.641		Ca I	17
2999.92	P	Ti II	28
2999.96		Cr II	42
3000.059		Fe II	69
3000.09		Hf II	3
3000.14		A II	
3000.45		A II	72
3000.452		Fe I	56
3000.545		Co I	13
3000.59		Zr II	147
3000.836		Fe III	10
3000.863		Ca I	17
3000.868		Ti I	29
3000.890		Cr I	28
3000.950		Fe I	9
3001.203		V II	27
3001.42		Y II	53
3001.589		Fe III	9
3001.65		Ne II	4
3001.66	P	Fe I	506
3001.754		V II	141
3001.90		V I	116
3001.93		V II	43
3002.09	P	Fe II	138
3002.197		Gd II	77
3002.330		Fe II	98
3002.442		V I	
3002.491		Ni I	26
3002.65		V I	47
3002.650		Fe II	8
3002.66		Pd I	4
3002.710		Gd II	77
3002.728		Ti I	29
3002.860		Gd II	
3002.99		Fe III	9
3003.00		A II	
3003.031		Fe I	30
3003.282		Fe III	89
3003.37	P	Ti II	28
3003.461		V II	27
3003.583		Gd II	25
3003.629		Ni I	26
3003.73		Zr II	26
3003.924		Cr II	33
3004.109		Fe III	21,41
3004.119		Fe I	199
3004.249		Fe II	69
3004.35		O III	10
3004.39		Cl II	22
3004.47		Cr II	88
3004.48	P	Fe I	105
3004.490		Fe III	41
3004.62		Fe I	57
3004.68		La II	
3004.824		V I	47
3005.057		Cr I	28
3005.092		Gd II	
3005.26		Y I	9
3005.302		Fe I	199
3005.36		Zr I	38
3005.50		Zr I	60
3005.62		O II	
3005.766		Co I	77
3005.813		V II	86
3006.0		Y II	54
3006.04		O II	
3006.05		Cl II	22
3006.122		Fe III	21
3006.24		V I	116
3006.35		V I	75
3006.502		V II	141

I A	Type	Element	Multiplet No.
3006.82		O II	
3006.858		Ca I	17
3006.86		N II	18
3006.90		V I	116
3006.95	P	Fe III	21
3006.98		Cl II	53
3007.035		V II	141
3007.071		Na II	12
3007.08		O II	74
3007.146		Fe I	55
3007.2		Fe III	116
3007.284		Fe I	11
3007.296		V II	27
3007.32		La II	102
3007.442		Na II	1
3007.487		Ti I	
3007.655		Mn I	35
3007.74		O II	74
3007.75	P	Fe I	262
3007.802		Fe III	10
3007.975		Nd II	
3008.13		Zr II	86
3008.139		Fe I	9
3008.265		Mn I	35
3008.28		O II	74
3008.322		Ti II	85
3008.506		Fe III	9
3008.508		V II	141
3008.610		V II	26
3008.67		Cr II	75
3008.789		Ce II	122
3008.79		O III	10
3008.996		Rh II	4
3009.098		Fe I	198
3009.136		Sn I	1
3009.138		Na II	13
3009.205		Ca I	17
3009.366		Gd II	25
3009.570		Fe I	30
3009.650		Gd II	27
3009.85		Zr II	64
3009.998		Fe III	41
3010.129		Gd II	12
3010.220		Fe II	181
3010.28		Zr II	39
3010.42	P	Ti I	170
3010.76		W II	14
3010.838		Cu I	3
3010.899		Gd II	42
3011.060		Fe III	31
3011.162		Mn I	35
3011.24		Hf II	64
3011.376		Mn I	35
3011.42		Cr II	27
3011.482		Fe I	316
3011.73		Zr I	22
3012.004		Ni I	41
3012.01		Cr II	87
3012.020		V II	43
3012.190		Gd II	29
3012.34		Cr II	42
3012.59	P	Fe II	69
3012.847		Fe III	10
3012.90		Hf II	4
3013.030		Cr I	26
3013.102		V II	26
3013.125		Fe III	9
3013.32		Zr II	27
3013.37		O II	56
3013.38	P	Fe II	138
3013.592		Co I	10
3013.66		Zr II	52
3013.713		Cr I	26
3013.802		Fe II	124
3014.120		Fe I	458
3014.165		Nd II	
3014.176		Fe I	31
3014.37		V I	116
3014.44		Zr I	21
3014.49		A II	72
3014.668		Mn I	35
3014.760		Cr I	27
3014.822		V II	27
3014.915		Cr I	27
3015.194		Cr I	27
3015.230		Fe III	9
3015.296		Tm II	8
3015.364		Sc I	10
3015.400		Na II	5
3015.510		Cr II	87

I A	Type	Element	Multiplet No.
3015.67		Zr II	86
3015.686		Co I	76
3015.86		Zr II	127
3015.913		Fe I	198
3015.98		V II	42
3016.14		V II	26
3016.15		A IV	1
3016.16		V I	58
3016.186		Fe I	30
3016.454		Mn I	35
3016.775		V II	27
3016.94		Hf II	3
3017.187		Ti II	85
3017.195		Ce II	107
3017.254		Co I	78
3017.34		Ne II	8
3017.447		W I	9
3017.548		Co I	11
3017.569		Cr I	27
3017.628		Fe I	9
3017.63		O III	10
3017.80		Cr II	95
3018.08		Zr II	
3018.134		Fe I	199
3018.25	P	Fe I	269
3018.32		Hf I	2
3018.352		Zn I	5
3018.496		Cr I	26
3018.53		Zr II	147
3018.744		Fe III	10
3018.82		Cl II	22
3018.821		Cr I	26
3018.95		La II	
3018.983		Fe I	30
3019.09		V II	86
3019.143		Ni I	11
3019.291		Fe I	199
3019.350		Sc I	10
3019.819		Rh II	3
3019.84		Zr II	6
3020.001		Fe II	110
3020.45		Zr II	26
3020.495		Fe I	9
3020.54		Hf I	4
3020.643		Fe I	9
3020.65		V II	26
3020.673		Cr I	27
3021.074		Fe I	9
3021.407		Fe II	59
3021.558		Cr I	27
3021.74		Pd I	6
3021.74		Y I	9
3021.78		V I	75
3021.97		Zr II	39
3021.98		W II	6
3022.00		Fe III	76
3022.146		V II	86
3022.26		La II	116
3022.28		Y I	10
3022.57		V II	26
3022.736		Ce III	5
3022.749		Mn I	35
3022.804	P	Al II	13
3022.820		Ti II	126
3022.93		Cl II	57
3023.45		O III	4
3023.50		Y II	79
3023.583		Fe I	103
3023.80		N II	35
3023.85		Fe III	10
3023.859		Fe II	84
3023.86		Ti II	126
3023.882		V II	41
3024.033		Fe I	11
3024.05		A III	4
3024.098	P	Al II	13
3024.114	P	Al II	13
3024.350		Cr I	26
3024.36		O III	10
3024.400		Co I	52
3024.51		W II	4
3024.57		O III	4
3024.681		Cr I	117
3024.72		Zr II	147
3024.78		Hf II	47
3024.92	P	Fe II	138
3024.981		V II	85
3025.16		Zr II	86
3025.283		Fe I	29
3025.29		Hf II	12

I A	Type	Element	Multiplet No.
3025.40	P	Cr I	27
3025.638		Fe I	198
3025.68		V II	75
3025.70		Zr II	76
3025.75		O II	84
3025.843		Fe I	9
3025.99	P	Fe II	84
3026.18		Zr II	147
3026.373		Co I	77
3026.462		Fe I	30
3026.47		Y II	44
3026.647		Cr II	95
3026.75		A II	120
3026.776	P	Al II	13
3026.781	P	Al II	13
3026.85		Cr II	41
3026.985		Fe III	21
3027.04		Ne II	8
3027.38	P	Fe II	99
3027.46		Fe III	10
3027.600		V II	85
3027.602		Gd II	12
3027.75		Y II	60
3027.92		Pd I	5
3028.04		O IV	5
3028.042		V II	85
3028.05		Zr II	76
3028.125		Cr II	87
3028.436		Cb II	2
3028.608		Rh II	1
3028.66		Ca III	3
3028.82		O II	73
3028.84		Ne II	4
3028.93		A II	84
3028.981		Gd II	26
3029.041		Mn II	10
3029.164		Cr I	26
3029.237		Fe I	56
3029.297		Ni I	56
3029.52		Zr I	22
3029.56		V II	26
3029.681		Fe II	124
3029.730		Ti II	85
3029.83		Sb I	2
3030.149		Fe I	198
3030.214		Y II	79
3030.245		Cr I	27
3030.61	P	Fe I	145
3030.757		Fe I	459
3030.769		Sc I	10
3030.85		Ne II	17
3030.91		Zr II	6
3031.007		V I	74
3031.16		Hf II	11
3031.213		Fe I	198
3031.353		Cr I	27
3031.486		Cr I	117
3031.559		Ce III	1
3031.63		Cr II	87
3031.63	P	Fe II	138
3031.638		Fe I	30
3031.870		Ni I	11
3032.00		Zr II	144
3032.08		O II	83
3032.187		V II	75
3032.44		Ni II	3
3032.50		O II	83
3032.767		Cb II	
3032.845		Gd II	12
3032.85		As I	1
3032.927		Cr II	15
3033.104		Fe I	146
3033.445		Fe II	181
3033.445		V II	123
3033.52		A II	19
3033.591		Mn II	21
3033.821		V II	34
3034.05		Cr II	74
3034,051		Gd II	12
3034.120		Sn I	1
3034.190		Cr I	26
3034.32		O III	20
3034.432		Co I	12
3034.48		Ne II	8
3034.51		Fe I	57
3034.54		Cr II	33
3034.54		F III	3
3034.712		Fe II	84
3034.74		Si III	10
3034.810		Mn II	21
3034.95		Cb II	
3034.99		Cr II	42
3035.013		Rh II	4
3035.14		V II	245
3035.25	P	Fe I	506
3035.43		O III	4
3035.781		Zn I	5
3035.802		Fe III	30
3035.98		Ne II	17
3036.07		V II	40
3036.101		Cu I	5
3036.33	P	Zr II	86
3036.39		Zr II	25
3036.50		Zr II	24
3036.59		Y II	68
3036.68		W II	7
3036.784		Ti II	78
3036.986		Fe II	181
3037.044		Cr I	27
3037.26		Si III	10
3037.388		Fe I	9
3037.73		Ne II	8
3037.731		Ce II	181
3037.782		Fe I	31
3037.935		Ni I	25
3037.98		A IV	2
3037.98		Cl II	53
3038.00		V II	246
3038.04		Cr II	154
3038.52		Cr II	41
3038.520		V II	96
3038.59		Zr II	
3038.706		Ti II	85
3038.777		Fe II	84
3039.064		Ge I	2
3039.254		F III	3
3039.322		Fe I	199
3039.51		O II	72
3039.551		Mn II	10
3039.563		Co I	52
3039.65		Ne II	17
3039.67		C II	29
3039.74	P	Cr I	117
3039.746		F III	3
3039.76		O II	72
3039.767		V II	153
3039.780		Cr I	26
3039.92		Sc II	47
3040.34		Gd II	55
3040.428		Fe I	30
3040.603		Mn I	34
3040.812		Co I	50
3040.829		Fe II	123
3040.846		Cr I	27
3040.92		Cr II	65
3040.93		Si III	10
3041.224		Mn I	34
3041.278		Al II	28
3041.42		V II	40
3041.639		Fe I	56
3041.74		Cr II	95
3041.745		Fe I	30
3041.86		V I	
3041.876		W I	5
3042.020		Fe I	30
3042.27		V II	40
3042.481		Co I	10
3042.65		Pt I	5
3042.666		Fe I	30
3042.733		Mn I	34
3042.79		Cr II	47
3043.02		O III	4
3043.067		Fe III	91
3043.124		V I	17
3043.132		Mn II	21
3043.143		Mn I	34
3043.31	P	Fe II	138
3043.356		Mn I	34
3043.439		Fe III	91
3043.54		V II	40
3043.555		V I	17
3043.770		Mn I	34
3043.851		Ti II	78
3043.90		Cr II	48
3044.004		Co I	11
3044.04	P	Co I	78
3044.12		Zr II	26
3044.16		Ne II	17
3044.24		Cr II	154
3044.438		Fe III	
3044.567		Mn I	15
3044.843		Fe II	98
3044.936		V I	17
3045.00		Cl II	21
3045.006		Ni I	12
3045.077		Fe I	29
3045.085		Ti II	
3045.313		Fe II	179
3045.36		Y I	9
3045.53		Cr II	48
3045.58		Ne II	8
3045.593		Mn I	34
3045.593		Na II	11
3045.594		Fe I	198
3045.714		Sc II	37
3045.808		Mn I	34
3045.82		Zr I	36
3045.877		Fe III	76
3046.03		Hf II	32
3046.10		A II	
3046.266		Mn II	10
3046.399		Fe III	78
3046.452		W I	5
3046.675		Fe II	179
3046.685		Ti II	47
3046.714		Fe III	92
3046.819		Fe I	315
3046.929		Fe I	198
3047.035		Mn I	34
3047.047		Fe I	457
3047.119		Fe III	80
3047.13		O III	4
3047.160		Rh II	4
3047.201		Fe I	382
3047.455		Cr I	164
3047.57		Ne II	8
3047.60	P	Fe II	84
3047.605		Fe I	9
3047.63		Cr II	15
3047.76		Cr II	15
3047.9		O II	82
3048.108		Co I	77
3048.214		V II	123
3048.28		Zr II	144
3048.42		Zr II	65
3048.65		V II	67
3048.766		Ti II	78
3048.864		Mn I	34
3048.888		Co I	11
3048.891		V II	40
3049.011		Fe II	181
3049.027		Mn II	21
3049.18	P	Fe II	109
3049.39		La II	115
3049.44		C II	43
3049.694		W I	9
3049.883		Cr I	27
3050.073		Al I	7
3050.137		Cr II	65
3050.400		V I	74
3050.463		Fe III	10
3050.496		Co I	77
3050.5		Y II	69
3050.57		Ne II	48
3050.661		Mn II	21
3050.735		V II	66
3050.75		Cr II	95
3050.819		Ni I	25
3050.890		V I	16
3050.932		Co I	51
3051.30		W II	6
3051.308		V II	228
3051.924		Ce II	184
3051.975		Ce II	180
3052.07		K III	2
3052.194		V I	15
3052.229		Cr I	164
3052.511		Gd II	9
3052.54		O IV	5
3052.78	P	Fe I	262
3052.929		Sc II	37
3053.065		Fe I	146
3053.20		A II	
3053.27		Y II	68
3053.39		V II	34
3053.443		Fe I	31, 398
3053.570		Gd II	25
3053.65		Cr II	64
3053.65		V I	17
3053.664		Na II	15

I A	Type	Element	Multiplet No.
3053.74		Cl II	14
3053.880		Cr I	26
3053.894		V II	40
3054.02		La II	115
3054.134		Fe III	10
3054.24		V II	67
3054.316		Ni I	25
3054.362		Mn I	15
3054.39		Zr II	51
3054.52		Hf II	8
3054.69		Ne II	8
3054.694		Al I	7
3054.724		Co I	13
3054.62		A III	4
3054.84		Zr II	76
3054.89		V I	16
3054.94		Eu II	7
3054.949		Fe I	263
3055.243		Ce II	201
3055.263		Fe I	55
3055.3		Y II	68
3055.368		Fe II	181
3055.43		Hf II	56
3055.44		Cr II	33
3055.55		Fe III	10
3055.585		Ce III	1
3055.942		V II	123
3056.157		Na II	1
3056.334		V I	17
3056.556		Ce III	0
3056.68		Cr II	48
3056.740		Ti II	47
3056.775		Ce II	121
3056.802		Fe II	109
3056.84		K III	2
3057.08		V II	95
3057.155		Al I	7
3057.214		Ce III	8
3057.22		Zr II	76
3057.395		Ti II	5
3057.446		Fe I	28
3057.575		Ce III	4
3057.638		Ni I	26
3057.80	P	Fe I	29
3057.86		Cr II	65
3058.00		Cl II	14
3058.090		Ti II	47
3058.119		Gd II	57
3058.17		Cr I	164
3058.38		Cr II	48
3058.66		Os I	1
3058.68		O V	6
3059.047		Al I	7
3059.064		Mn II	21
3059.086		Fe I	9
3059.16		Ne II	17
3059.24		C II	47
3059.30		O III	4
3059.41		Cr II	15
3059.521		Cr II	15
3059.741		Ti II	5,47
3059.91		La II	147
3060.023		Fe II	109
3060.048		Co I	77
3060.11		Zr II	6
3060.162		Fe III	92
3060.252		Ru II	6
3060.460		V I	17
3060.531		Sc II	37
3060.545		Fe I	457
3060.63		Cr I	164
3060.93		V I	15
3060.94		A II	
3060.984		Fe I	55
3061.14	P	Cr II	103
3061.33		Zr II	6
3061.59		Cr II	41
3061.652		Cr I	55
3061.822		Co I	11
3061.983		Co I	52
3062.119		Mn I	15
3062.178		V II	113
3062.199		Co I	12
3062.201		Rh II	4
3062.234		Fe II	108
3062.702		V II	34
3062.872		Fe I	456
3063.010		Ce II	185
3063.149		Fe I	102
3063.247		V II	123
3063.25		Co I	59
3063.280		Ti II	119
3063.411		Cu I	4
3063.46		O IV	1
3063.502		Ti II	47
3063.56		Ta I	4
3063.58		Zr I	36
3063.63		Zr II	
3063.734		V I	16
3063.814		Fe II	
3063.84		Cr II	32
3063.93		Ni II	3
3063.939		Fe I	147
3064.302		Al I	7
3064.370		Co I	13
3064.372		Na II	6
3064.530		Cb II	
3064.623		Ni I	26
3064.64		Zr II	25
3064.68		Hf II	31
3064.71		Pt I	2
3064.77		A III	4
3065.01		O III	26
3065.067		Cr I	184
3065.106		Sc II	37
3065.20		Zr II	5
3065.30		Pd I	3
3065.315		Fe II	97
3065.61		V II	112
3066.019		Mn I	15
3066.02		Y II	68
3066.158		Al I	7
3066.220		Ti II	5
3066.354		Ti II	5
3066.375		V I	17
3066.487		Fe I	313
3066.51		V I	17
3066.514		Ti II	47
3066.536		Na II	18
3066.69	P	Fe I	456
3066.80		V II	123
3066.92		A II	
3067.104		V II	34
3067.123		Fe I	56
3067.132		Ge I	5
3067.18		Cr II	15
3067.22	P	Cr I	55
3067.23	P	Cr II	15
3067.244		Fe I	28
3067.41		Hf I	4
3067.712		Bi I	1
3067.952		Fe I	315a
3068	P	O VI	2
3068.02		Zr II	5
3068.06		O II	26
3068.175		Fe I	55
3068.32		Zr II	
3068.643		Gd II	12
3068.68		O III	28
3068.757		Fe II	122
3068.897		Ir I	6
3068.927		Fe I	53
3069.26		Y II	43
3069.335		Fe III	1
3069.645		V I	15
3070.072		Fe III	30
3070.12		V II	228
3070.266		Mn I	15
3070.591		Fe II	83
3070.692		Fe II	68
3071.03		Cr II	41
3071.08		Ne II	17
3071.141		Fe II	181
3071.238		Fe III	1
3071.242		Ti II	47
3071.270		Fe II	
3071.35		Cl II	14
3071.58		Cr II	47
3071.583		Ba I	4
3071.653		Fe II	123
3071.66		O IV	1
3071.69	P	Cr I	55
3071.77		V II	250
3071.957		Co I	12
3072.062		Zn I	5
3072.107		Ti II	5
3072.341		Co I	11
3072.47		Cr II	32, 116
3072.54		Ti II	119
3072.565		Gd II	93
3072.664		Co I	125
3072.68		Ne II	17,48
3072.88		Hf I	2
3072.971		Ti II	5
3073.126		Mn I	15
3073.244		Fe I	549
3073.25		Cr II	47
3073.520		Co I	51
3073.679		Cr I	184
3073.823		V I	15,17
3073.982		Fe I	313
3074.061		Rh II	1
3074.15		O III	26
3074.157		Fe I	457
3074.334		Na II	9
3074.47		Cr I	55
3074.55		Zr II	105
3074.66		V II	112
3074.665		Al II	27
3074.67		Cr II	73
3074.68		O III	26
3074.91		Cr II	73
3075.043		V II	228
3075.19		O III	26
3075.225		Ti II	5
3075.228		Fe II	68
3075.269		V I	105
3075.32		As I	1
3075.336		Ru II	7
3075.38		Sc II	37
3075.380		Nd II	
3075.422		Gd II	56
3075.474		V II	67
3075.55		Zr II	144
3075.58		V II	228
3075.721		Fe I	28
3075.901		Zn I	1
3075.933		V I	57
3075.95		O III	26
3076.016		V II	34
3076.455		Fe II	181
3076.58		Cr I	55
3076.864		Cb II	2
3076.925		Gd II	10
3077.077		Gd II	25
3077.14		Y II	52
3077.168		Fe II	108
3077.24		Cr II	103
3077.24		Ta I	1
3077.358		Eu II	3
3077.40		A IV	1
3077.59		Lu II	4
3077.79		Cr II	103
3077.831		Cr I	184
3078.014		Fe I	29
3078.15		A III	4
3078.315		Na II	2,8
3078.436		Fe I	146
3078.44	P	Fe II	97
3078.64		Y II	78
3078.645		Ti II	5
3078.698		Fe II	181
3078.948		V II	66
3079.34		Cr II	102
3079.356		Fe II	122
3079.394		Co I	10,49
3079.627		Mn I	15
3079.75		V II	113
3079.84	P	Fe I	102
3080.146		V I	15
3080.333		V I	57
3080.405		Fe II	108
3080.64		Hf II	63
3080.72		Cr I	184
3080.755		Ni I	26
3080.84		Hf I	4
3081.01		V II	112
3081.254		V II	66
3081.30		V II	164
3081.330		Mn I	15
3081.42		La II	115
3081.46		O II	
3081.575		Ti II	119
3081.585		Rh II	5
3081.600		Y II	50
3081.83	P	Fe I	53
3081.993		Gd II	12
3082.010		V I	105
3082.052		Mn I	15
3082.109		V I	17

FINDING LIST

I A	Type	Element	Multiplet No.
3082.159		Al I	3
3082.16		Y II	68
3082.304		Ce II	105
3082.524		V II	39
3082.56		Sc II	36
3082.614		Co I	10
3082.844		Co I	73
3082.99		A II	120
3083.024		Fe II	97
3083.07	P	Sc II	37
3083.152		Fe I	197
3083.208		V II	112
3083.350		Gd II	10
3083.539		V I	57
3083.62		Cr II	47
3083.65		O III	26
3083.670		Ce II	237
3083.68	P	Fe III	39
3083.742		Fe I	28
3084.007		Gd II	
3084.09		Fe III	40
3084.46		Cr II	71
3084.59		Cr I	184
3084.63		O III	26
3084.819		Ti I	93
3085.05		A II	
3085.089		Ce III	4
3085.34		Zr I	20
3085.36		Cr II	47
3085.47		V II	34
3085.621		Gd II	10
3086.210		V II	66
3086.225		Si III	1
3086.311		Fe III	
3086.393		Co I	50
3086.429		Si III	1
3086.44		Zr II	24
3086.507		V II	39
3086.620		Si III	1
3086.777		Co I	11
3086.83		Co I	76
3086.858		Y II	42
3086.880		Fe III	81
3087.02		Al I	19
3087.065		V I	57
3087.07		Ni II	7
3087.659		Fe III	77
3087.806		Co I	77
3087.90		Cr II	102
3088.027		Ti II	5
3088.04		O III	26
3088.114		V I	56
3088.23		Ne II	24
3088.24		A II	119
3088.28		Zr II	38
3088.523		Al II	20
3089.00		Zr II	25
3089.130		V I	37
3089.204		Gd II	54
3089.388		Fe II	158
3089.401		Ti II	90
3089.596		Co I	10
3089.633		V II	112
3089.649		Fe III	40
3089.75		Cr II	195
3089.954		Gd II	93
3090.051		Ti II	119
3090.137		Ti I	93
3090.209		Fe I	313
3090.251		Co I	77
3090.40		V I	15
3090.44		Zr I	54
3090.772		Fe III	20
3090.94		Cr II	126
3091.076		Mg I	5
3091.30		Zr II	38
3091.437		V I	15
3091.552		V I	15
3091.578		Fe I	28
3081.70		Y I	
3092.058		Gd II	93
3092.22		Cl II	14
3092.26		Hf II	30
3092.519		Sc II	36
3092.716		Al I	3
3092.72		V I	
3092.729		Na II	1
3092.785		Fe I	29
3092.843		Al I	3
3092.91		Ne II	44
3092.915		Nd II	
3092.997		Mg I	5
3093.108		V II	1
3093.16	P	V II	39
3093.24		V I	15
3093.41		A II	84
3093.423		Si III	1
3093.48		Cr II	125
3093.481		Rh II	4
3093.53	P	Fe I	102
3093.613		Si III	1
3093.76		Y II	78
3093.792		V I	57
3093.806		Fe I	55
3093.846		Gd II	10
3093.888		Fe I	261
3093.97		Cr II	47
3093.989		Cu I	3
3094.06	P	Fe I	165
3094.08		Ne II	24
3094.156		Fe III	78
3094.172		Cb II	1
3094.196		V II	39
3094.555		Ru II	3
3094.692		V I	56
3094.79		Zr I	36
3094.870		Fe I	315a
3094.94		Cr II	47,86
3094.98		A II	118
3095.07		Zr II	5
3095.22		Cr II	86
3095.270		Fe I	314
3095.716		Co I	49
3095.81		O III	26
3095.82		Zr I	36
3095.859		Cr I	
3095.88		Y II	11
3095.902		V I	57
3096.11		Cr II	126
3096.296		Fe II	97
3096.402		Co I	52
3096.424		Ti II	77
3096.531		Cr I	
3096.72		Cl II	31
3096.740		Rh II	4
3096.77	P	Sc II	6
3096.786		Si III	1
3096.86		Fe III	65
3096.902		Mg I	5
3097.063		Mn I	
3097.118		Ni I	11
3097.15		Ne II	44
3097.186		Ti II	67
3097.415		Fe II	96
3097.45		Eu II	6
3097.46		S IV	1
3097.49	P	Fe I	165
3097.626		Ti II	77
3098.16		Cr II	86
3098.191		Fe I	313
3098.194		Co I	10
3098.476		Nd II	
3098.597		Tm II	8
3098.644		Gd II	11
3098.88		Cr II	86
3098.899		Gd II	10
3098.93	P	Fe III	51
3099.05		Fe III	65
3099.115		Ni I	13
3099.180		Cb II	2
3099.22		Zr II	5
3099.667		Co I	75
3099.898		Fe I	28
3099.968		Fe I	28
3099.97		A II	
3100.304		Fe I	28
3100.31	P	Fe III	51
3100.48	P	Fe III	29
3100.504		Gd II	12
3100.666		Fe I	28
3100.666		Ti I	92,93
3100.838		Fe I	196a
3100.938		V II	39
3101.003		Fe I	313
3101.185		Gd II	93
3101.39		Hf II	12
3101.407		Gd II	76
3101.52	P	Ti II	58
3101.528		Ti I	181
3101.554		Ni I	25
3101.557		Mn I	
3101.77		Ti I	181
3101.879		Ni I	40
3101.911		Gd II	10
3102.295		V II	1
3102.36		Ca I	16
3102.405		Co I	49
3102.517		Ti I	181
3102.55	P	Fe III	29
3102.551		Gd II	76
3102.58		Cr II	116
3102.63		A II	
3102.64	P	Fe I	29
3102.71		Fe I	
3102.975		Ti II	58
3103.3		Y II	78
3103.377		Ce II	151
3103.48		Cr II	71
3103.60		V I	56
3103.735		Co I	73
3103.804		Ti II	90
3103.983		Co I	48
3103.994		V I	56
3104.29		Cr II	102
3104.38		A II	118
3104.396		Na II	17
3104.46		Cl III	3
3104.58		La II	17
3104.593		Ti II	90
3104.70		Cr I	163
3104.713		Mg II	6
3104.805		Mg II	6
3104.82		Y II	59
3104.906		V II	39
3105.084		Ti II	67
3105.166		Fe II	82,122
3105.220		Ti I	181
3105.469		Ni I	12
3105.548		Fe II	82
3105.57		Cr I	163
3105.929		Co I	21
3105.973		V II	140
3106.11		V I	56
3106.234		Ti II	67
3106.542		Fe I	196
3106.559		Fe II	68
3106.58		Zr II	63
3106.806		Ti I	92
3106.829		V II	139
3106.974		Ce III	4
3107.044		Co I	49
3107.142		V I	57
3107.387		Sc II	6
3107.388		Ca I	16
3107.468		Ti I	181
3107.529		Sc II	33
3107.540		Co I	125
3107.58		Cr II	125
3107.586		Ru II	3
3107.714		Ni I	12
3107.774		Mn I	38
3107.950		Fe III	29
3108.230		Gd II	54
3108.36		Zr I	38
3108.360		Gd II	93
3108.46		La II	16
3108.511		Sc II	36
3108.635		Mn I	38
3108.66		Cr II	55
3108.704		V II	39
3108.78	P	Fe III	29
3108.82		A II	18
3108.85		Fe III	12
3108.927		Ti II	77
3109.05		Fe I	165
3109.11		Hf II	10
3109.3		Y II	87
3109.32		Fe III	8
3109.336		Cr I	163
3109.375		V II	136
3109.506		Co I	50
3109.59		Fe III	1
3109.75		A II	
3109.92	P	Ti II	58
3110.021		Co I	109
3110.052		Fe III	39
3110.07		V II	139
3110.095		Ti II	77
3110.276		Ce II	152
3110.516		Ce III	4

FINDING LIST

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No
3110.52		Zr II	105	3119.60		As I	1	3128.640		Ti II	121
3110.620		Ti II	67	3119.66		Ca III	4	3128.686		V II	83
3110.65		Y II	50,78	3119.660		Fe II		3128.699		Cr II	5
3110.708		V II	1	3119.706		Cr I	183	3128.789		Y II	51
3110.821		Co I	11	3119.725		Ti I	137	3128.79		Zr II	38
3110.85		Fe III	29	3119.800		Ti II	67	3128.901		Fe I	54
3110.860		Cr I	163	3119.82		Cl II	20	3129.013		Fe II	96
3110.87		Hf II	46	3119.837		Rh II	8	3129.04		Fe III	8
3110.87		Zr II	5	3119.941		Gd II	11	3129.075		Ti I	192
3111.15		Zr II	24	3120.023		Fe II	96	3129.16		Zr II	23
3111.283		Ti I	181	3120.03	P	Fe I	161	3129.18	P	Fe I	161
3111.339		Co I	73	3120.03		Fe III	29	3129.314		Ni I	12
3111.609		Fe III	8	3120.10		Co I	74	3129.334		Fe I	52
3111.686		Fe I	260	3120.181		Gd II	76	3129.368		Na II	2
3111.95		Cr II	55	3120.24		Fe III	1	3129.44		O II	14
3112.05		Y II	4	3120.371		Cr II	5	3129.481		Co I	74
3112.050		Ti II	67	3120.435		Fe I	194	3129.696		Gd II	93
3112.079		Fe I	455	3120.72	P	Zr II	50	3129.76		Zr II	5
3112.125		Mo I	2	3120.726		V II	138	3129.933		Y II	51
3112.202		Ce II	138	3120.74		Zr I	37	3129.955		Gd II	76
3112.482		Ti I	92	3120.84		Fe III	29	3130.05		Zr I	37
3112.63		La II	156	3121.05		Cr II	72	3130.175		Ti I	180
3112.81	P	Cr II	125	3121.08		Fe III		3130.262		V II	1
3112.925		V I	56	3121.138		V II	1	3130.416		Be II	1
3113.172		Gd II	93	3121.415		Co I	9	3130.561		Fe II	66
3113.31	P	Fe I	161	3121.515		F III	1	3130.73		Eu II	
3113.473		Co I	48	3121.548		Ce III	2	3130.780		Cb II	1
3113.50		Zr I	37	3121.566		Co I	11	3130.804		Ti I	
3113.560		V II	174	3121.599		Ti II	4	3130.804		Ti II	4
3113.579		F III	1	3121.62		Cl II	20	3130.812		Gd II	76
3113.59		Cr II	186	3121.71		O III	12	3131.064		Be II	1
3113.67	P	Fe I	165	3121.749		V I	56	3131.11		Zr I	37
3113.71		O II	14	3121.76		Fe I	102	3131.211		Cr I	183
3114.05		Pd I	4	3121.700		Gd II	70	3131.257		Tm II	
3114.092		Ti I	181	3121.84		Cr II	72	3131.54		Cr II	53,55
3114.118		Co I	49	3121.97		Cr II	55	3131.719		Fe II	107
3114.124		Ni I	24	3122.065		Ti II	58	3131.81		Hf I	3
3114.295		Fe II	82	3122.542		Sc II	46	3131.829		Co I	48
3114.45		Y II	49,58	3122.596		Cr II	54	3131.845		Hg I	2
3114.680		Fe II	82	3122.61		Zr II	51	3132.058		Cr II	5
3115.088		Ti II	58	3122.62		O II	14	3132.06		Zr I	37
3115.16		V II	111	3122.665		Fe I	314	3132.12	P	Cr II	125
3115.172		Nd II		3122.782		Au I	1	3132.218		Co I	7
3115.28		Cr II	54	3122.887		V II	173	3132.22		Ne II	13
3115.352		Fe II		3122.954		Sc II	39	3132.514		Fe I	578
3115.465		Mn I	38	3123.074		Ti I	67	3132.591		Mo I	3
3115.492		Fe II	96	3123.18		Fe III		3132.793		V II	122
3115.51		Cr I	163	3123.29		Ca II	10	3132.820		Cr I	183
3115.65		Cr II	46	3123.353		Fe I	164	3132.86		O III	12
3115.669		F III	1	3123.715		Fe II		3133.048		Fe II	82
3115.73		O III	12	3123.72		Cl II	20	3133.094		Gd II	9
3115.73		Zr II	75	3123.769		Ti I	181	3133.096		Sc II	39
3116.02		V II	139	3123.989		Gd II	11	3133.329		V II	1
3116.11		V II	139	3124.02		O II	14	3133.49		Zr II	63
3116.141		Nd II		3124.08		Fe I	165	3133.603		Nd II	
3116.250		Fe I	165	3124.250		Gd II	10	3133.852		Gd II	76
3116.39	P	Fe I	261	3124.762		F III	1	3133.886		Tm II	4
3116.590		Fe II	82	3124.817		Ge I	1	3133.96	P	Fe I	161
3116.633		Fe I	28	3124.978		Cr II	5	3134.08	P	Fe I	160
3116.714		Ni I	95	3125.01		V II	84	3134.108		Ni I	25
3116.76		Cr II	126	3125.02		Cr II	70	3134.111		Fe I	28
3116.78		V II	237	3125.03	P	Fe I	53	3134.15	P	Fe I	29
3116.95		Hf II	33	3125.15		Ca II	10	3134.17	P	Fe II	121
3117.28		Cr II	46	3125.21		Zr II	24	3134.208		F III	1
3117.455		Ti I	92	3125.282		V II	1	3134.32		O II	14
3117.505		Fe II	226	3125.46		Cr II	55	3134.33		Cr II	94
3117.63		Fe I	29	3125.553		Ti I	192	3134.654		Ti I	91
3117.656		Ca I	16	3125.653		Fe I	28,160	3134.72		Hf II	5
3117.669		Ti II	67	3125.656		Ti I	192	3134.819		Mn II	15
3117.75		S IV	1	3125.668		Hg I	3	3134.82		O II	14
3117.899		Ti I	92	3125.68	P	Fe I	194	3134.897		Nd II	
3117.974		Gd II	76	3125.79		Cr II	186	3134.90		A IV	1
3118.02		Ne II	16	3125.92		Zr II	5	3134.928		V II	122
3118.130		Ti I	181	3126.02		Sc II	39	3135.034		Gd II	11
3118.14		Cr II	55	3126.16		Y II	78	3135.069		Ti I	180
3118.249		Co I	11	3126.175		Fe I		3135.17		Y II	11
3118.376		V II	1	3126.215		V II	1	3135.35		Cr II	124
3118.56	P	Ni I	94	3126.25		Si III	11	3135.360		Fe II	82
3118.600		Gd II	93	3126.27		Hf II	7	3135.483		Na II	3
3118.636		Co I	12	3126.79		V II	122	3135.507		Mn II	15
3118.652		Cr II	5	3126.84	P	Fe I	260	3135.74		Cr II	94
3118.74	P	Fe II	121	3127.252		Co I	26	3135.80		Fe III	77
3118.75		Fe III	51	3127.526		Cb II		3135.82		Ne II	3
3118.824		Ti II	27	3127.530		Ce II	150	3135.863		Fe I	194
3119.04	P	Fe I	315a	3127.684		Ti I	180	3135.875		Al II	19
3119.08		Gd II	10	3127.883		Ti II	121	3135.91		Cr I	183
3119.246		Cr I	163	3128.286		Sc II	39	3136.00		S III	13
3119.32		V II	110	3128.288		V II	84	3136.003		Ca I	15
3119.336		Gd II	10	3128.560		Gd II	76	3136.028		Ti I	91
3119.495		Fe I	194	3128.640		Ti I	92,192	3136.08	P	Fe I	160

I A	Type	Element	Multiplet No.
3136.17		Fe I	
3136.315		Mn II	15
3136.43		Fe III	39
3136.465		Mo II	2
3136.503		V II	122
3136.55		A II	
3136.680		Cr II	5
3136.726		Co I	8
3136.77		Ti II	27
3136.95		Zr I	54
3136.999		Co I	48
3137.328		Co I	10
3137.352		Ti I	91
3137.454		Co I	108
3137.55		Cr II	54
3137.66		A II	71
3137.755		Co I	49
3137.940		Gd II	54
3138.05		V II	205
3138.094		Gd II	10
3138.203		Cr I	183
3138.207		Fe II	227
3138.40	P	Fe I	53
3138.44		O II	14
3138.46		Sc II	39
3138.66		Zr II	5
3139.02		A II	47
3139.10	P	Fe I	161
3139.34		Cl III	3
3139.39		Pt I	2
3139.60	P	Fe I	161
3139.661		Fe I	155
3139.67		Hf II	6
3139.729		Sc II	39
3139.733		V II	122
3139.77		O II	14
3139.79		Zr I	56
3139.87		Ti I	180
3139.908		Fe I	
3139.91		Cr II	54
3139.947		Co I	9
3139.98	P	Co I	73
3140.04	P	Ti II	27
3140.08		Fe III	94
3140.21		Cr II	124
3140.272		Rh II	8
3140.385		Fe I	578
3140.67		Cr II	124
3140.692		Fe II	227
3140.715		Co I	75
3140.77		Hf II	31
3140.782		Ca I	15
3141.07		V II	205
3141.164		Ca I	15
3141.247		Ce III	2
3141.35		Ne II	47
3141.486		V II	152
3141.537		Ti I	66
3141.670		Ti I	192
3141.80		Cr II	175
3141.891		Cr I	116
3142.183		V II	172
3142.22		Fe III	1
3142.220		Fe II	7
3142.312		Ce II	46
3142.445		Fe I	164
3142.484		V II	52
3142.670		Mn I	
3142.74		Cr II	85
3142.76		La II	31
3142.777		F III	4
3142.888		Fe I	144
3142.900		Gd II	76
3142.97		Cr II	125
3143.131		Gd II	25
3143.16	P	Ti I	28
3143.242		Fe I	7
3143.350		Ti I	180
3143.36		Fe III	13
3143.477		V II	122
3143.657		Ru II	2
3143.68		Cr II	53
3143.68	P	Ti II	37
3143.74		Ne II	24
3143.756		Ti II	4
3143.91		Cr II	94
3143.956		Ce III	2
3143.990		Fe I	578
3144.37		Y II	49
3144.409		Cr I	92
3144.488		Fe I	161
3144.68		O V	2
3144.700		V II	122
3144.730		Ti II	111
3144.74	P	Ti II	10
3144.751		Fe II	82
3144.92	P	Fe I	195
3145.00		Gd II	10
3145.022		Co I	50
3145.057		Fe I	455
3145.10		Cr II	5
3145.121		Ni I	7
3145.283		Ce II	120
3145.32		Hf II	2
3145.337		V II	1
3145.402		Ti II	10,111
3145.405		Cb II	5
3145.46	P	Fe I	160
3145.515		Ti I	91
3145.516		Gd II	76
3145.536		F III	1
3145.719		Ni I	11
3145.77		Cr II	85
3145.971		V II	1
3146.226		V II	138
3146.407		Ce II	70
3146.47		A II	49
3146.475		Fe I	160
3146.748		Fe II	67
3146.818		V II	138
3146.878		Gd II	76
3146.91		Sc II	39
3146.962		F III	1
3147.05		Ce III	7
3147.060		Co I	10
3147.10	P	Cr II	54
3147.227		Cr II	5
3147.38		Si III	11
3147.792		Fe I	455
3147.84		Cr II	93
3147.86		Cl II	10
3147.931		Rh II	8
3148.033		Ti II	4
3148.179		Mn I	19
3148.24		A II	
3148.420		Fe I	194
3148.445		Cr I	115
3148.46	P	Fe I	161
3148.738		V II	249
3148.81		Zr I	37
3149.12		Cr II	84
3149.267		Na II	4
3149.310		Co I	9
3149.50	P	Fe I	453
3149.56		Si IV	2
3149.83		Cr II	54
3149.87		W II	5
3150.11		Cr II	54
3150.20	P	Fe I	161
3150.301		Fe I	578a
3150.568		V I	
3150.738		Ca I	15
3151.036		Tm II	
3151.11		Ti I	28
3151.16		Ne II	16
3151.259		Ni I	
3151.280		Ca I	15
3151.31		W II	16
3151.319		V II	138
3151.353		Fe I	311
3151.500		Rh II	2
3151.66		Fe III	
3151.867		Fe I	7
3152.14	P	Ti II	27
3152.21		Cr II	71
3152.251		Ti II	10
3152.525		Sm II	
3152.707		Co I	73
3152.881		Cr I	116
3153.064		Fe I	99,452
3153.200		Fe I	161
3153.322		Fe I	160
3153.54		Cr I	200
3153.549		V I	
3153.692		Co I	7
3153.80		A II	118
3154.04		Cr II	53
3154.10		Cr II	69
3154.11	P	Fe I	53
3154.195		Ti II	10
3154.201		Fe II	66
3154.387		F III	4
3154.41	P	Fe I	100
3154.510		Fe I	161
3154.585		Ni I	78
3154.66	P	Cr II	54
3154.678		Co I	108
3154.794		Co I	73
3154.80		V II	249
3154.82		Ne II	14
3155.12	P	Fe I	161
3155.149		Cr I	115
3155.293		Fe I	193
3155.409		V II	51
3155.50	P	Ti II	27
3155.63	P	Ti II	37
3155.670		Ti II	10
3155.68		Zr II	63
3155.704		Ce II	217
3155.80	P	Fe I	192a
3155.91	P	Ti II	121
3155.95		Zr II	49
3155.950		Fe II	67
3156.11		F III	4
3156.222		V I	
3156.248		Os I	4
3156.275		Fe I	578
3156.464		Fe I	454
3156.532		Gd II	11
3156.59		Pt I	2
3156.68		Hf I	5
3157.00		Zr II	23
3157.040		Fe I	160
3157.15	P	Fe I	144
3157.044		Tm II	8
3157.397		Ti II	4
3157.44	P	Sc II	32
3157.52		Cr II	93
3157.82		Zr I	36,55
3157.88		Fe I	164
3157.900		V II	50
3157.992		Fe I	159
3158.03		Cr II	70
3158.156		Mo I	2
3158.21	P	Fe I	160
3158.293		Co I	12
3158.32	P	Fe II	95
3158.772		Co I	10
3158.869		Ca II	4
3158.99		Fe I	452
3159.10		Cr II	5
3159.12		Zr II	126
3159.25	P	Fe I	259
3159.254		Rh II	2
3159.32	P	Fe II	120
3159.365		V II	83
3159.521		Ni I	11
3159.59		Cr I	92
3159.662		Co I	9,26
3159.86		Cr II	54
3160.03		W II	8
3160.09		Ti I	28
3160.11		Cr II	54
3160.200		Fe I	578
3160.342		Fe I	192a
3160.52		Cl II	
3160.60		Y II	57
3160.61		Cr I	115
3160.658		Fe I	155
3160.69		Gd II	11
3160.77	P	Fe I	159
3160.781		V II	65,138
3160.92	P	Fe I	160
3161	P	N V	2
3161.01		Zr II	104
3161.039		Mn I	19
3161.205		Ti II	10
3161.313		V II	151
3161.369		Gd II	10
3161.370		Fe I	52
3161.38		A II	97
3161.44		Cl II	11
3161.45		A II	
3161.55	P	Fe I	195
3161.638		Gd II	25
3161.652		Co I	73
3161.66	P	Ti II	27
3161.755		Ti II	10
3161.945		Fe II	7

I A	Type	Element	Multiplet No.
3161.949		Fe I	160
3162.284		Rh II	1
3162.335		Fe I	159,310
3162.46		Cr II	46
3162.57		Hf I	2
3162.570		Ti II	10
3162.61		Hf II	30
3162.714		V II	83
3162.764		Gd II	54
3162.799		Fe II	120
3163.024		V II	84
3163.091		Fe II	7
3163.403		Cb II	1
3163.61		A II	118
3163.731		Na II	7
3163.756		Cr I	115
3163.76		V II	249
3163.77	P	Cr II	123
3163.86	P	Fe II	79
3163.93		Cr II	69
3164.06		Cr I	200
3164.154		Ce II	69
3164.166		Ni I	79
3164.26		Fe II	79
3164.28		Cr II	46
3164.308		Fe I	163
3164.32		Zr II	50
3164.46		Ne II	13
3164.48		Cr II	115
3164.618		Ca I	14
3164.67		Fe III	8
3164.82		V II	8
3164.91		Ti II	
3165.005		Fe I	155
3165.08	P	Fe I	194
3165.16	P	Fe I	100
3165.24	P	Ti II	37
3165.31		A II	
3165.45		Zr II	63
3165.508		Ni I	21
3165.51		C II	9
3165.70		Ne II	13
3165.72		Si IV	2
3165.86	P	F III	1
3165.860		Fe I	160
3165.89		V II	84
3165.94		Mg II	14
3165.957		Fe II	
3165.98		Zr II	5
3165.99		C II	9
3166.22	P	Fe II	79
3166.24	P	Fe I	155
3166.29		Zr II	48
3166.39		V II	84
3166.435		Fe I	259
3166.59	P	Fe I	100
3166.670		Fe II	6
3166.948		Rh II	5
3166.98	P	Fe I	455
3167.420		V II	217
3167.49		V II	236
3167.54		Fe III	28
3167.78	P	Fe I	99
3167.853		Fe II	66
3167.907		Fe I	578
3167.94	P	Fe II	82
3167.95		C II	9
3168.060		Co I	108
3168.127		V II	8
3168.21		Fe III	94
3168.519		Ti II	10
3168.86		Fe I	160
3168.94	P	Fe I	160
3168.98		Mg II	14
3169.09	P	Fe I	813
3169.160		Co II	74
3169.20		Cr II	123
3169.21		V II	65
3169.30		Ne II	16
3169.58		Cr I	115
3169.58	P	Fe I	161
3169.68		A II	47
3169.766		Co I	109
3169.85		Cr II	173
3169.854		Ca I	14
3169.875		Sm II	31
3170.16		C III	8
3170.208		V II	217
3170.23		Cl II	
3170.333		Mo I	3
3170.337		Fe II	6
3170.40		Sc II	32
3170.715		Ni I	78
3171.016		Fe II	
3171.09		Gd II	10
3171.14		N III	
3171.353		Fe I	52,548
3171.615		Ce II	99
3171.659		Fe I	160
3171.68		La III	1
3171.739		V II	217
3172.067		Fe I	99,193
3172.08		Cr II	71
3172.11	P	Fe I	100
3172.169		Gd II	129
3172.230		V II	249
3172.30	P	Fe I	312
3172.731		Ti I	65
3172.79		Mg II	13
3172.828		Tm II	8
3172.94		Hf I	5
3172.97		N III	
3173.07		Y II	51
3173.140		Co I	48
3173.40		Fe I	333
3173.56		Co I	72
3173.58		Cr II	83
3173.58		Ne II	13
3173.607		Eu II	3
3173.608		Fe I	333
3173.66		Cl II	
3173.663		Fe I	101
3173.678		Rh II	5
3174.077		V II	84
3174.09		Fe III	38
3174.125		F III	2
3174.140		Co I	138
3174.22	P	Fe I	578
3174.531		V II	217
3174.725		F III	2
3174.80		Ti II	
3174.88		La II	157
3174.905		Co I	71
3175.046		Sn I	1
3175.077		Fe II	157
3175.16		P V	1
3175.317		Ru II	2
3175.447		Fe I	155
3175.66		Ti II	120
3175.84		Mg II	13
3175.97		Fe I	333
3175.97		W II	7
3176.00		Fe III	38
3176.16		Ne II	16
3176.292		Ni I	77
3176.366		Fe I	258
3176.602		W I	5
3176.70	P	Sc II	32
3176.85		Hf II	8
3176.86		Fe III	38
3177.060		Ru II	2
3177.137		Ce II	103
3177.22		W II	6
3177.260		Fe II	79
3177.266		Co I	
3177.490		Gd II	129
3177.52	P	Fe I	159
3177.531		Fe II	82
3177.61	P	Fe II	95
3177.65	P	Fe II	79
3177.696		V II	217
3177.80		O IV	7
3177.90		Cr II	40
3177.96	P	Fe I	159
3178.015		Fe I	156
3178.09		Fe III	38
3178.10		Zr II	63
3178.125		Sm II	21
3178.495		Mn I	19
3178.545		Fe I	454
3178.630		Ti II	120
3178.79		Cr II	173
3178.970		Fe I	192a
3179.055		Na II	7
3179.08		Fe III	38
3179.283		Cr I	92
3179.291		Ti I	65
3179.332		Ca II	4
3179.416		V II	217
3179.42		Y II	10
3179.44		W	7
3179.45		Cr	82
3179.479		Fe I	52
3179.504		Fe II	157
3179.538		Fe I	
3180.164		Fe II	157
3180.17	P	Fe III	38
3180.199		Th II	4
3180.223		Fe I	155
3180.225		Ti II	120
3180.290		Cb II	5
3180.290		Co I	[illegible]
3180.521		Ca I	
3180.701		Cr I	
3180.72		O IV	
3180.73		Cr II	[illegible]
3180.756		Fe I	7
3180.98	P	O IV	7
3181.05		A II	47
3181.275		Ca II	4
3181.428		Cr II	9
3181.522		Fe I	258
3181.58		Zr II	63
3181.740		Ni I	78
3181.84		Ti II	122
3181.85		Fe I	333
3181.922		Fe I	155,505
3181.94		Zr II	48
3182.076		Fe I	159,333
3182.118		Co I	73
3182.42		Y II	49
3182.57		Ti II	122
3182.59		V II	217
3182.674		V II	150
3182.86		Zr II	23
3182.970		Fe I	100
3183.038		Ni I	78
3183.115		Fe II	7
3183.251		Ni I	78
3183.26	P	Zr II	105
3183.325		Cr II	82
3183.406		V I	14
3183.523		Ce II	216
3183.58	P	Fe I	192a
3183.916		Sm II	
3183.96		V I	14
3183.982		V I	14
3184.09		Ti II	3
3184.36		Cr II	123
3184.367		Ni I	11
3184.43	P	Fe II	67
3184.631		Fe I	155,162
3184.896		Fe I	7
3185.095		Fe II	67
3185.16		S III	13
3185.16		Si III	8
3185.315		Fe II	7
3185.396		V I	14
3185.72		O IV	7
3186.01		Si III	
3186.10		V II	64
3186.126		Ce II	167
3186.19		A II	48
3186.350		Co I	8
3186.451		Ti I	27
3186.740		Fe II	6
3186.75		Cr II	69
3186.82	P	Fe I	100
3186.86		V II	63
3187.006		Sm II	21
3187.16	P	Fe I	333
3187.216		Sm II	13,40
3187.294		Fe II	120
3187.592		Mo II	2
3187.60		Ne II	3
3187.66	P	Fe I	52
3187.717		V II	8
3187.743		He I	3
3187.787		Sm II	31
3187.889		Rh II	5
3188.011		Cr I	92
3188.10		V II	49
3188.17	P	O IV	7
3188.377		Co I	74
3188.522		V II	8
3188.567		Fe I	159
3188.603		Rh II	8
3188.65	P	O IV	7
3188.74		Ne II	14
3188.819		Fe I	159

FINDING LIST

I A	Type	Element	Multiplet No.
3188.95		Si II	
3189.04		Cl II	65
3189.24		W II	6,10
3189.52		Ti II	120
3189.638		Ce II	97
3189.74		Fe III	55
3189.752		Co I	9
3189.76		V II	83
3189.783		Na II	4
3189.85		Cr II	123
3190.02		Fe I	259
3190.403		Sc II	42
3190.651		Fe I	548
3190.686		V II	8
3190.69		Cr II	174
3190.81		Fe III	
3190.825		Fe I	548
3190.84	P	Fe II	120
3190.86		Ne II	13
3190.874		Ti II	26
3191.005		Sc II	42
3191.044		Gd II	129
3191.096		Cb II	1
3191.11		Fe I	258
3191.180		Fe I	452
3191.23		Zr I	19
3191.297		Co I	7
3191.374		Fe II	79
3191.39		La II	157
3191.41	P	Fe I	682
3191.45		Cl III	3
3191.577		W I	5
3191.659		Fe I	8
3191.875		Ni I	125
3191.93		Zr II	50
3191.904		Ti I	27
3192.059		Fe II	66
3192.12		Cr I	13
3192.220		Co I	72
3192.26		Ti II	25
3192.417		Fe I	100,711
3192.68		Ti II	120
3192.699		V II	83
3192.799		Fe I	155
3192.84	P	Fe I	452
3192.917		Fe II	6
3193.014		Sm II	
3193.02		La II	45
3193.10		Si II	
3193.164		Co I	26
3193.174		Gd II	54
3193.200		V II	83
3193.214		Fe I	7
3193.314		Fe I	159
3193.41		Cr II	52
3193.48		Y II	48
3193.53		Hf II	2
3193.74	P	Fe I	682
3193.75	P	Ni I	92
3193.76	P	Fe II	79
3193.809		Fe II	6
3193.85	P	Fe II	67
3193.969		Mo I	3
3193.97		V II	49
3194.03	P	Fe I	156
3194.099		Cu I	3
3194.19		Hf II	10
3194.25		A II	46
3194.26		Ti II	120
3194.422		Fe I	155
3194.56		Ti II	120
3194.61		Ne II	16
3194.63		Cr II	70
3194.75		O IV	7
3194.76	P	Ni I	108
3194.76		Ti II	
3194.825		Ce II	217
3194.983		Cb II	1
3195.50		V II	
3195.573		Ni I	12
3195.62		Y II	10
3195.63		Hf II	45
3195.717		Ti II	25
3195.994		Ti II	46
3196.070		Fe II	7
3196.147		Fe I	333
3196.182		Sm II	40
3196.37	P	Cr I	79
3196.40		Cr II	9,115
3196.50		Si III	

I A	Type	Element	Multiplet No.
3196.532		Gd II	9
3196.574		V II	62
3196.63	P	Fe II	95
3196.930		Fe I	155
3196.96		Cr II	9
3197.00		Fe I	8
3197.08		Zr II	126
3197.113		Ni I	24
3197.12		Cr II	9
3197.518		Ti II	3
3197.53		Fe I	711
3197.574		V II	150
3198.00		Cr II	
3198.012		V I	14
3198.112		Cr I	91
3198.266		Fe I	258
3198.42		Y II	39
3198.62		Ne II	13
3198.660		Co I	26
3198.726		Ti I	191
3198.81		Fe III	6
3198.88	P	Ne II	13
3198.917		Ir I	7
3199.279		Ce II	106
3199.322		Co I	9
3199.34		Ti I	191
3199.342		Ni I	
3199.37		Sc II	42
3199.43		Ti I	191
3199.50	P	Fe I	7
3199.53		O IV	7
3199.530		Fe I	156
3199.54		Si II	
3199.87		Cr II	101
3199.915		Ti I	27
3199.93	P	Fe I	156
3199.99		Hf II	55
3200.28		Y II	10
3200.423		Ni I	23
3200.45		Cr II	114
3200.454		Gd II	129
3200.475		Fe I	155,162
3200.67		Zr II	37
3200.790		Fe I	8
3200.95		O III	31
3201.24	P	Cr I	79
3201.26		Cr II	114
3201.58		V II	
3201.594		Ti I	90
3201.714		Ce II	76
3201.891		Fe I	159
3201.90		Fe III	6
3201.95		K III	5
3201.97	P	Cr I	79
3202.142		Ni I	94
3202.381		V I	14
3202.52		Cr II	173
3202.535		Ti II	26
3202.562		Fe I	547
3202.66	P	Fe I	52
3202.711		V II	62
3202.740		F II	8
3203.026		Co I	9
3203.05		Cl II	
3203.104		He II	1
3203.33		Y II	10
3203.39		Al I	20
3203.435		Ti II	3
3203.509		Fe II	79
3203.53		Cr II	46
3203.58		Ti I	26
3203.67		Hf II	21
3203.741		Fe II	196
3203.828		Ti I	27
3203.89		Si II	7
3204.06		P V	1
3204.196		V I	13
3204.34		A II	71
3204.36		Zr II	63
3204.55	P	Cr I	79
3204.76		Fe III	6
3204.870		Ti I	90
3205.03		A II	133
3205.11		Cr II	114
3205.168		Ti I	26
3205.400		Fe I	155
3205.582		V I	73
3205.64	P	Ti II	46
3205.848		Ti I	26
3205.990		Ti II	26

I Å	Type	Element	Multiplet No.
3206.16		V II	
3206.344		Ti I	179
3206.350		Cb II	5
3206.466		Gd II	129
3206.77		Hf II	56
3206.825		Ti I	179
3206.908		Mn I	14
3206.952		Ni I	94
3206.98		Fe III	6
3207.092		Fe I	159
3207.12	P	O III	31
3207.185		Sm II	2
3207.248		W I	9
3207.297		Rh II	1
3207.337		Ti I	90
3207.410		V I	14
3207.61		A II	132
3207.649		Fe I	382
3207.897		Ti I	179
3208.02		Cr II	114
3208.13		La II	
3208.231		Cu I	3
3208.32		Zr II	4
3208.345		V II	8
3208.470		Fe I	711
3208.607		Ti II	120
3208.62		Cr II	9
3208.838		Mo I	2
3208.91		Ni II	2
3208.99		Ne II	14
3209.030		Ti I	179
3209.115		Fe I	97
3209.13		La II	114
3209.21		Cr II	9
3209.297		Fe I	333,711
3209.34		K III	5
3209.38		Ne II	16
3209.603		Fe II	137
3209.64		O IV	7
3209.80		Co I	70
3209.912		Ni I	94
3209.930		Ca I	13
3210.04		Si II	7
3210.219		Co I	106
3210.230		Fe I	159
3210.449		Fe II	6
3210.52		Si III	
3210.62		Cr I	13
3210.825		Tm II	4
3210.830		Fe I	156
3210.98		Zr II	63
3211.01		Co I	154
3211.07		Ti I	191
3211.072		Fe II	95
3211.309		Cr I	220
3211.494		Fe I	162
3211.693		Fe I	711
3211.734		Sm II	
3211.872		Fe I	98,711
3211.947		Rh II	6
3211.989		Fe I	158
3212.02		Zr I	19
3212.121		Ir I	8
3212.186		Na II	4
3212.274		Gd II	54
3212.40		Y II	67
3212.494		V I	73
3212.53		Cr II	81
3212.54		A II	47
3212.56		La II	122
3212.70	P	Ti II	9
3212.85		Zr II	49
3212.884		Mn I	14
3212.91		Cr II	114
3213.145		Ti I	90,191
3213.145		Ti II	3
3213.311		Fe II	6
3213.423		Ni I	91
3213.46		Cr II	153
3213.59		Ti II	120
3213.70		Ne II	13
3213.771		Fe I	452
3213.972		F III	2
3214.044		Fe I	156,711
3214.059		Ni I	93
3214.07	P	Fe I	158
3214.125		Sm II	25
3214.14		Ti II	84
3214.19		Zr II	3
3214.240		Ti I	27

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I A	Type	Element	Multiplet No.
3214.38		Ne II	14
3214.396		Fe I	7
3214.624		Fe I	143
3214.750		Ti II	3
3214.750		V II	8
3215.145		Ca I	13
3215.262		Sm II	40
3215.334		Ca I	13
3215.375		V I	13
3215.578		W I	5
3215.595		Cb II	1
3215.60		Fe III	6
3215.637		Fe I	332
3215.940		Fe I	156
3215.97		O III	31
3216.06	P	Fe I	682
3216.08		O II	107
3216.203		Ti I	90
3216.31	P	O IV	7
3216.55		Cr II	82
3216.70		Y II	10
3216.75		A II	
3216.76		O II	107
3216.821		Ni I	93
3216.850		Sm II	13
3216.88	P	Ti II	36
3216.946		Mn I	3
3216.996		Co I	70
3217.056		Ti II	2
3217.12		La II	156
3217.121		V I	14
3217.121		W II	38
3217.30		Hf II	4
3217.380		Fe I	157
3217.44		Cr II	9
3217.53	P	Fe I	254
3217.70		A II	132
3217.830		Ni I	91
3217.942		Ti I	179
3218.10		O II	107
3218.20		Hf II	78
3218.21		Ne II	13
3218.26	P	Ti II	46
3218.270		Ti II	84
3218.34		Fe III	87
3218.44	P	Ti II	46
3218.614		Sm II	
3218.68		Zr II	35
3218.683		Ti I	90
3218.70		Cr I	93
3218.869		V I	72
3218.944		Ce II	75
3218.98		Pd I	2
3219.13		Cr II	140
3219.150		Co I	8
3219.212		Ti I	179
3219.32		P III	4
3219.37	P	Fe I	308
3219.58		Fe I	156
3219.60	P	Fe I	254
3219.616		Cr I	220
3219.77	P	Fe I	8
3219.79		Cr II	63
3219.806		Fe I	158
3219.811		Ni I	94
3220.467		Ti II	9
3220.62		Co I	152
3220.66		Hf II	30
3220.772		Ir I	5
3220.835		Fe II	106
3221.151		Ti I	26
3221.171		Ce II	215
3221.273		Ni I	185
3221.378		Ru II	3
3221.380		V II	109
3221.381		Ti I	179
3221.64		A II	46
3221.652		Ni I	8
3221.76	P	Ti II	46
3221.936		Fe I	156
3221.978		Ru II	7
3222	P	O V	5,9
3222.05	P	Fe I	451
3222.069		Fe I	156
3222.42		A II	132
3222.46		Zr II	104
3222.741		Ti I	26
3222.843		Ti II	2
3223.08	P	Fe I	682
3223.273		Fe I	51
3223.332		Cb II	5
3223.444		Fe II	
3223.519		Ti I	179
3223.534		Ni I	92,94
3223.740		Gd II	10
3223.853		Fe I	27
3224.05	P	Fe I	920
3224.241		Ti II	84
3224.297		Gd II	92
3224.632		Co I	71
3224.761		Mn I	3
3224.82		Ne II	43
3224.86	P	Fe II	178
3225.020		Ni I	39
3225.17		Y II	39
3225.39		Cr II	140
3225.44		Cr II	45
3225.460		Gd II	
3225.478		Cb II	1
3225.607		Fe I	192,920
3225.789		Fe I	155
3225.896		Ca I	13
3225.976		Na II	17
3226.00		A II	46
3226.034		Mn I	14
3226.106		V I	14
3226.128		Ti I	179
3226.129		Ca I	13
3226.240		Ti I	27
3226.318		Gd II	75
3226.36		Cr II	114
3226.378		Fe II	178
3226.55		Cr I	25
3226.727		Fe I	8
3226.771		Ti II	3
3226.924		V II	185
3226.984		Ni I	7
3226.986		Co I	124
3227.067		Fe I	156
3227.114		Ce II	95
3227.17	P	Fe I	247
3227.23		Cr I	162
3227.409		V I	134
3227.48		Cr II	153
3227.732		Fe II	6
3227.752		Co I	8
3227.798		Fe I	157
3228.003		Fe I	379
3228.090		Mn I	14
3228.183		Ti I	179
3228.262		Fe I	157
3228.36	P	Ti II	46
3228.564		Ce III	1
3228.600		Fe II	
3228.605		Ti II	24
3228.784		Sm II	52
3228.81		Zr II	49
3228.900		Fe I	157
3229.123		Fe I	8
3229.193		Ti II	2
3229.204		Cr I	220
3229.36		Co I	152
3229.363		Ce II	94
3229.38		Cr II	46
3229.397		Ti II	36
3229.50		Ne II	43
3229.604		V I	134
3229.73		Zr II	149
3229.78		Fe I	247
3229.89		Cr II	114
3229.994		Fe I	546
3230	P	O V	9
3230.09	P	Fe I	27
3230.16	P	Fe I	156
3230.16		Ne II	11
3230.210		Fe I	158
3230.496		Fe II	95
3230.55		Si III	6
3230.559		Sm II	21
3230.646		V I	13
3230.719		Mn I	14
3230.919		V II	48
3230.963		Fe I	157
3231.09	P	Ni I	106
3231.10		S III	3
3231.20		Y II	65
3231.236		Ce II	149
3231.315		Ti II	9
3231.349		Nd II	42
3231.509		Tm II	13
3231.528		Sm II	13
3231.599		Fe I	50
3231.64		Cr II	122
3231.69		Zr II	3
3231.702		Fe II	80
3231.71	P	Ti II	46
3231.75		Cl II	73
3231.952		V II	61
3231.97		Ne II	11
3232.00		Y II	49
3232.055		Os I	3
3232.16	P	Fe I	258
3232.280		Ti II	36
3232.38		Ne II	11
3232.52		Sb I	2
3232.61		Li I	2
3232.791		Fe II	119
3232.791		Ti I	179
3232.874		Co I	106
3232.963		Ni I	7
3233.02		Ca III	4
3233.053		Fe I	620
3233.174		Ni I	91,184
3233.190		V I	72
3233.234		Cr I	25
3233.24		S III	3
3233.304		Fe I	142
3233.324		Rh II	2
3233.546		V II	61
3233.62		P III	4
3233.772		V II	61
3233.88		Ni I	
3233.967		Fe I	158
3233.968		Mn I	
3234.00		Si III	6
3234.06		Cr II	63
3234.119		Co I	72
3234.12		Zr I	19
3234.165		Ce II	119
3234.17		S III	3
3234.274		Ce II	80
3234.50	P	Ti II	46
3234.504		V II	61
3234.517		Ti II	2
3234.614		Fe I	8
3234.649		Ni I	21
3234.923		Fe II	1
3234.926		Na II	10
3235.003		Mn I	
3235.20		Cr II	139
3235.33	P	Fe I	309
3235.448		Tm II	8
3235.532		Co I	71,138
3235.592		Fe I	308
3235.753		Ni I	11
3235.783		Co I	72
3235.95	P	Ti I	47
3236.106		Gd II	75
3236.122		Ti II	24
3236.17		Zr II	104
3236.223		Fe I	7
3236.403		Cb II	1
3236.573		Ti II	2
3236.61		Zr II	125
3236.628		Sm II	
3236.735		Ce II	101
3236.778		Mn I	14
3236.806		Tm II	13
3236.82		A II	83
3237.028		Co I	7
3237.234		Fe I	256
3237.402		Fe II	81
3237.414		Mn I	
3237.54		Zr II	50
3237.729		Cr I	114
3237.815		Fe II	81
3237.876		V II	38
3238.087		Cr I	114
3238.224		Ti I	179
3238.31		Fe III	79
3238.32	P	Fe I	545
3238.50		Cr I	162
3238.535		Fe I	397
3238.57		O III	9
3238.621		Gd II	92
3238.74		Fe III	64
3238.77		Cr II	63
3239	P	O V	5
3239.029.		Fe I	141,142
3239.037		Ti I	2

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I A	Type	Element	Multiplet No.
3239.04		Fe III	63
3239.101		Rh II	2
3239.14		Cr I	92
3239.256		Co I	47
3239.35	P	Fe I	379
3239.436		Fe I	157
3239.46	P	Fe I	157
3239.657		Sm II	48
3239.664		Ti II	24
3239.833		V II	61
3239.87	P	Fe II	81
3240.013		Fe I	545
3240.07		Cr II	140
3240.11	P	Fe I	158
3240.230		Tm II	
3240.399		Mn I	13
3240.516		Rh II	6
3240.616		Mn I	14
3240.71		Ti II	9
3240.785		V II	61
3240.84	P	Ti I	47
3240.85	P	Zr II	12
3240.951		Cr I	25
3241.01		Zr II	4
3241.05		Co I	9
3241.161		Sm II	6
3241.38		Cr II	153
3241.43	P	Fe I	158
3241.50	P	Fe I	27
3241.500		Tm II	4
3241.586		Sm II	22
3241.67		Si III	6
3241.685		Fe II	80
3241.835		Be II	5
3241.984		Ti II	2
3242.18		Zr II	126
3242.268		Fe I	255
3242.30		Y II	10
3242.304		Gd II	92
3242.72		Pd I	3
3242.834		Gd II	75
3243.058		Ni I	22
3243.118		Fe I	192
3243.34		Ne II	15
3243.36		W II	13,15
3243.370		Ce II	214
3243.406		Fe I	381,710
3243.513		Ti I	179
3243.579		Co I	47
3243.70		A II	47
3243.723		Fe II	119
3243.74	P	V II	48
3243.780		Mn I	14
3243.803		Ti I	26
3243.840		Co I	69
3244.115		Cr I	25
3244.15		Ne II	14
3244.17	P	Sc II	5
3244.190		Fe I	156
3244.44		Cl III	6
3244.53	P	Ti I	47
3244.69		Cr I	114
3245	P	O V	9
3245.13		La II	32
3245.31		Cr II	62
3245.370		Ni I	108
3245.485		Cr I	25
3245.542		Cr I	113
3245.750		Co I	138
3245.80	P	Fe I	920
3245.984		Fe I	27
3246.005		Fe I	8
3246.05	P	Fe I	309
3246.492		Fe I	252
3246.674		Ce II	130
3246.973		Fe I	95
3247.01		Cr II	62
3247.170		Co I	70
3247.171		Fe II	81
3247.274		Cr I	25
3247.297		Fe I	157
3247.33		Cr II	61
3247.392		Fe II	119
3247.478		Cb II	5
3247.540		Cu I	1
3247.55		A II	
3247.908		V II	109
3248.15		Ne II	15
3248.206		Fe I	157
3248.457		Ni I	21
3248.516		Mn I	14
3248.602		Ti I	89
3248.602		Ti II	66
3248.70		Ti II	9
3249	P	O V	9
3249.037		Fe I	308
3249.16	P	Fe II	65
3249.204		Fe I	253
3249.35		La II	31
3249.370		Ti II	23
3249.440		Ni I	10
3249.464		V II	82
3249.566		V I	13
3249.617		V II	38
3249.657		Fe II	81
3249.742		Gd II	75
3249.82		A II	47
3249.911		Fe II	78
3249.995		Co I	26
3250.187		Gd II	92
3250.27		Fe III	37
3250.34	P	Fe II	78
3250.372		Sm II	2
3250.400		Fe I	142,379
3250.42		Zr I	19
3250.44		Zr II	125
3250.51		Co I	154
3250.58		Cr I	114
3250.634		Fe I	95
3250.743		Ni I	39
3250.747		Mo II	2
3250.775		V II	171
3250.79		Cr II	61
3251.135		Mn I	14
3251.236		Fe I	93
3251.32		Sc II	5
3251.34	P	Fe II	137
3251.46	P	Zr II	62
3251.656		Co I	152
3251.66		Pd I	6
3251.836		Cr I	113
3251.869		V II	108
3251.911		Ti II	2
3252.12	P	Fe I	247
3252.40	P	Fe II	78
3252.483		Ce II	182
3252.743		Gd II	136
3252.914		Ti II	2
3252.928		Fe I	252
3252.94		O III	9
3252.94	P	Ti II	23
3252.948		Mn I	14
3253.26		Cr I	114
3253.401		Sm II	
3253.41		La II	114
3253.416		Co I	70
3253.44		Si III	12
3253.610		Fe I	681
3253.70		Hf II	1
3253.839		Fe I	250
3253.943		Sm II	40
3253.954		Fe I	257
3254.03		A II	46
3254.039		Mn I	12
3254.070		Cb II	1
3254.202		Co I	69
3254.250		Ti II	2
3254.261		Fe I	249
3254.32		Lu II	4
3254.363		Fe I	620
3254.377		Sm II	6
3254.46	P	Fe I	156
3254.63		Co I	154
3254.734		Fe I	308
3254.773		V I	13
3254.773		V II	38
3254.95		Cr I	
3255.28		Hf II	7
3255.30		Cr II	138
3255.39		Ne II	23
3255.49		Fe III	96
3255.62		Cr II	153
3255.678		Sc I	9
3255.819		Gd II	92
3255.884		Fe II	1
3256.137		Mn I	14
3256.52		Fe I	158
3256.52	P	Fe I	397
3256.53		Zr II	49
3256.54		Fe III	75
3256.779		V I	138
3257.072		Gd II	92
3257.244		Fe I	27,451
3257.358		Fe II	94
3257.594		Fe I	90
3257.822		Cr I	113
3257.83		S II	17
3257.893		V II	108
3257.894		Fe II	178
3257.90		C III	6
3257.965		Na II	14
3258.01		Cr II	152
3258.035		Co I	47
3258.048		Tm II	4
3258.413		Mn I	14
3258.62	P	Fe I	157
3258.67		Si III	12
3258.77		Cr II	159
3258.773		Fe II	81
3258.80		Pd I	5
3259.007		Ru II	6
3259.04		Ti I	123
3259.048		Fe II	81
3259.20		Co I	153
3259.250		Gd II	92
3259.32		Cl III	6
3259.42		Ti I	123
3259.44		C III	6
3259.44	P	Fe II	178
3259.60		Cr I	25
3259.684		V II	48
3259.71		A II	
3259.75	P	Fe II	81
3259.975		Cr I	114
3259.991		Fe I	157
3260.11		Zr I	85
3260.231		Mn I	14
3260.259		Ti I	89
3260.259		Ti II	45
3260.276		Fe I	250
3260.286		Co I	154
3260.564		Cb II	
3260.814		Co I	107
3260.975		Ce II	258
3260.98		O III	8
3261.050		Cd I	1
3261.081		V I	
3261.332		Fe I	712
3261.509		Fe II	195
3261.56		Cr II	159
3261.596		Ti II	66,89
3261.80		V II	109
3262.009		Fe I	710
3262.23		C III	6
3262.284		Fe I	
3262.290		Os I	3
3262.340		Sn I	3
3262.44		Fe III	74
3262.515		Gd II	75
3262.63		Ti I	88
3263.04		Fe III	64
3263.213		Co I	124
3263.238		V I	12
3263.25	P	Cr I	25
3263.33		V II	38
3263.365		Cb II	
3263.373		Gd II	75
3263.378		Fe I	144
3263.43		Ne II	15
3263.45	P	Fe I	680
3263.60		A II	46
3263.686		Ti II	45
3263.98		La II	114
3264	P	O V	9
3264.137		Gd II	92
3264.22		Fe III	64
3264.26		Cr II	61
3264.281		Rh II	5
3264.44		Ni I	
3264.522		Fe I	90
3264.711		Mn I	13
3264.716		Fe I	157
3264.718		Co I	47
3264.76	P	Fe II	1
3264.81		Zr II	62
3264.82	P	Co I	153
3264.83	P	Co I	9
3264.842		Co I	105
3265.046		Fe I	8
3265.352		Co I	106

I A	Type	Element	Multiplet No.
3265.46		O III	8
3265.480		Ti I	123
3265.55	P	Fe I	308
3265.616		Fe I	91
3265.67		La II	45
3265.893		V II	74
3265.899		V I	138
3266.25		Cr II	121
3266.39		Eu II	24
3266.43		Ti II	57
3266.446		Ir I	2
3266.633		Tm II	8
3266.634		Cr I	25
3266.88		Fe III	7
3266.91		V II	137
3266.938		Fe II	65
3267.035		Fe II	80
3267.31		O III	8
3267.401		Tm II	13
3267.41		Ti I	64
3267.480		Rh II	6
3267.51		Sb I	2
3267.639		Mo II	6
3267.709		V II	7
3267.794		Mn I	
3267.945		Os I	1
3268.064		Ni I	
3268.234		Fe I	95
3268.335		Gd II	4
3268.49		Cr II	62
3268.512		Fe II	118
3268.61		Ti I	88
3268.722		Mn I	
3268.92	P	Fe II	81
3268.971		Ni I	91
3269.05		A II	46
3269.090		Ca I	12
3269.240		Fe I	710
3269.42	P	Fe I	95
3269.494		Ge I	1
3269.60	P	Rh II	8
3269.66		Zr I	34
3269.75	P	Cr II	152
3269.77		Cr II	138
3269.77		Ti II	57
3269.772		Fe II	118
3269.86		Ne II	15
3269.904		Sc I	9
3269.964		Fe I	90
3270.115		V II	94
3270.14		Cr II	61
3270.198		Co I	152
3270.23		Fe III	63
3270.351		Mn I	
3270.515		Gd II	92
3270.562		Ti I	123
3270.69	P	Fe I	954
3270.70		Cr I	219
3270.79		Ne II	2
3270.98		O II	39
3271.002		Fe I	91
3271.118		Ni I	23
3271.124		V II	7
3271.13		Zr II	22
3271.151		Ce II	146
3271.17	P	Ni I	108
3271.498		Fe I	680
3271.61		Rh II	2
3271.612		Rh I	6
3271.637		V I	12
3271.652		Ti II	66
3271.666		Mo II	6
3271.693		Fe I	49
3271.778		Co I	70
3272.080		Ti II	66
3272.21		Zr II	3
3272.25		S II	17
3272.253		Ce II	73
3272.30	P	Zr II	62
3272.405		Co I	152
3272.60		Fe I	51
3272.71		Fe I	712
3272.76		Co I	151
3272.77		Eu II	24
3272.807		Sm II	40
3273.027		V I	71
3273.04		Zr II	3
3273.36		A II	71
3273.483		Sm II	
3273.499		Fe II	118
3273.50		Ni I	108
3273.52		O II	39
3273.53		Fe III	7
3273.619		Sc I	9
3273.66		Hf II	7
3273.957		Cu I	1
3274.047		Ti I	123
3274.183		Gd II	92
3274.220		Na II	14
3274.24	P	Fe I	95
3274.452		Fe I	710
3274.50		V II	163
3274.640		Be II	2
3274.65		Fe III	96
3274.661		Ca I	12
3274.864		Ce II	104
3274.90		Ni II	1
3274.95		Fe III	96
3275.15		Zr II	12
3275.20		Ne II	29
3275.218		Nd II	
3275.24	P	Fe I	27
3275.293		Ti II	23
3275.60	P	Ni I	107
3275.65		Zr II	92
3275.66		Co I	43
3275.67		O V	5
3275.685		Fe I	308
3275.776		Al II	5
3275.846		Fe I	450a
3275.92		Cr II	151
3276.08		Fe III	7
3276.12		V II	7
3276.25		Si III	12
3276.251		Ce II	93
3276.28		Cr II	172
3276.37		Zr II	35
3276.477		Fe I	90
3276.483		Co I	154
3276.606		Fe II	92
3276.747		Sm II	48
3276.774		Ti II	45
3276.81		Cl II	30
3276.811		Tm II	4
3276.998		Ti II	8
3277.082		V II	137
3277.23		Ni I	90
3277.347		Fe II	1
3277.448		V II	194
3277.662		Co I	152
3277.69		O II	23
3277.71		V II	137
3277.78		Eu II	24
3277.82		P III	2
3277.853		Fe II	65
3277.86		Cr I	219
3277.939		V I	12
3278.04		Fe III	7
3278.105		Co I	153
3278.290		Ti II	66
3278.43		Y I	
3278.553		Mn I	12
3278.741		Fe I	144,250
3278.79		Cr II	113
3278.79		K III	1
3278.842		Co I	72
3278.89		Zr II	149
3278.922		Ti I	63
3278.922		Ti II	23
3279.25		Si III	12
3279.204		Co I	70
3279.26		Zr II	3
3279.529		Gd II	92
3279.54		Cr II	121
3279.649		Fe II	118
3279.743		Fe I	449
3279.842		Ce II	68
3279.844		V II	73
3279.97		O III	29
3279.97	P	Ti II	57
3279.98		Hf II	9
3279.995		Ti II	35
3280.22		P III	6
3280.261		Fe I	620
3280.391		Ti I	88
3280.58		Fe III	7
3280.682		Ag I	1
3280.75		Zr II	34
3280.756		Mn I	10
3280.763		Fe I	451
3280.91		Y II	29
3281.120		V II	136
3281.293		Fe II	1
3281.585		Co I	8
3281.607		Gd II	92
3281.72		A II	47
3281.755		V II	136
3281.83	P	Fe I	50
3281.880		Ni I	106
3281.94		O III	8
3282.232		Co I	47
3282.305		Gd II	92
3282.329		Ti II	66
3282.333		Zn I	4
3282.51		Y II	65
3282.534		V II	72
3282.696		Ni I	7
3282.725		Fe I	449
3282.73		Zr I	19
3282.777		Nd II	41
3282.827		Ni I	106
3282.84		Zr II	125
3282.891		Fe I	680
3283.04		Cr II	159
3283.11		Al III	10
3283.14	P	Ti II	57
3283.21		Sn II	2
3283.22		P III	2
3283.30		Fe III	14
3283.311		V I	12
3283.39		Hf II	30
3283.40	P	Fe II	118
3283.400		Tm II	7
3283.41		Cl III	2
3283.430		Fe I	27
3283.463		Cb II	
3283.466		Co I	107
3283.573		Rh I	4
3283.75		Fe III	7
3283.777		Co I	47
3283.95		La II	120
3284.360		V I	71
3284.432		Ni I	96
3284.57		O III	8
3284.588		Fe I	91
3284.72		Zr II	4
3284.996		Fe II	93
3285.022		V II	108
3285.093		Nd II	
3285.20		Fe I	396
3285.224		Ce II	148
3285.425		Fe II	1
3285.54	P	Fe I	248
3285.603		Na II	4
3285.609		Tm II	10
3285.664		Sm II	21
3285.672		V II	162
3285.77		Zr II	91
3285.85		A III	1
3285.89		Zr II	62
3285.96		Cr II	137
3286.026		Fe I	90
3286.029		Ce II	199
3286.067		Ca I	12
3286.229		Sm II	48
3286.34		Cr II	172
3286.463		Fe I	710
3286.545		Co I	46
3286.57		W II	1
3286.71		Y II	65
3286.755		Fe I	91
3286.756		Ti II	89
3286.946		Ni I	19
3286.98	P	Ni I	107
3287.117		Fe I	396
3287.192		Co I	71
3287.192		Gd II	136
3287.221		Ni I	55
3287.26		Pd I	3
3287.31		Zr II	12
3287.37		Al III	10
3287.468		Fe II	118
3287.575		Co I	154
3287.59		O II	23
3287.657		Ti II	89
3287.70		Cr I	
3287.827		Co I	43
3288.04		Cr II	62
3288.142		Ti II	8
3288.324		V II	89

A	Type	Element	Multiplet No.
.428		Ti II	66
.575		Ti II	66
.59	P	Ti I	63
.660		Fe I	144
.81		Fe III	7
.81		Zr II	4,62
.972		Fe I	90
.985		V II	109
.016		Mo I	11
.06		K III	4
.150		Gd II	75
.347		Fe II	65
.36		Yb II	1
.391		V II	7
.442		Fe I	380
.80		Cl III	2
.13		O II	23
.23		Pt I	1
.240		V II	108
.54		Ni II	5
.69		Ni II	1
.722		Fe I	90
.988		Fe I	95
.001		Tm II	3
.04		V II	60
.44	P	Fe I	954
.47		A II	
.676		V I	12
.75		Cr II	68
.022		Fe I	680
.04		Fe III	7
.078		Ti I	62
.210		Gd II	74
.22		Co I	153
.312		Mo II	6
.590		Fe I	91
.89	P	Fe II	136
.146		Fe I	51
.146		V II	235
.210		Co I	154
.48	P	Ti II	57
.66		A II	83
.674		Ni I	90
.81		Cr I	219
.861		Co I	107
.9		Y II	64
.95		A II	
.098		Co I	154
.220		Ru II	2
.44		La II	155
.50		Fe III	14
.536		Co I	152
.85		Fe III	37
.03		Zr II	36
.06	P	Fe II	93
.13		O II	23
.24		Fe III	
.240		Fe II	79
.289		Ce II	147
.427		Cr II	51
.813		Sm II	13
.814		Fe II	1
.027		Mn I	11
.052		V II	162
.41		Zr II	62
.467		Fe I	250
.668		Gd II	21
.786		He I	9
.806		Fe I	619
.826		Fe II	92
.882		Mn I	12
.883		Ce II	247
.528		V II	108
.68	P	Ti I	122
.684		Mo II	6
.74		Ne II	2
.888		Fe II	91
	P	O V	9
.02	P	Ni I	91
.104		Sm II	
.133		Fe I	90
.139		V I	12
.21		Ti II	44
.224		Mn I	
.318		Cr I	161
.680		Co I	70
.72		La II	
.738		V II	7
.079		Fe I	710
.086		V I	55

I A	Type	Element	Multiplet No.
3299.11		Co I	151
3299.36		O III	3
3299.41	P	Sc II	35
3299.413		Ti I	61
3299.44	P	Ti II	8
3299.511		Fe I	49
3299.77		Fe III	96
3299.771		Fe II	
3300.056		Fe II	228
3300.148		Nd II	
3300.152		Ce II	166
3300.20		Fe III	96
3300.819		W I	5
3300.905		V II	60
3300.976		Gd II	74
3301.09		Fe III	50
3301.21		Cr II	137
3301.227		Fe I	380
3301.559		Os I	1
3301.56		O II	23
3301.587		Ru I	4
3301.66		V II	
3301.678		Sm II	21,48
3301.71		Ti II	44
3301.734		Sr I	7
3301.87		Pt I	7
3301.88		A III	1
3301.927		Fe I	617
3301.95		Eu II	24
3302.096		Ti II	8
3302.15		Pd I	3
3302.19		Fe III	37
3302.34		Na I	2
3302.454		Tm II	7
3302.588		Zn I	4
3302.66		Zr II	85
3302.86		Cr I	161
3302.861		Fe II	1
3302.94		Na I	2
3302.941		Zn I	4
3303.11		La II	45
3303.278		Mn I	
3303.466		Fe II	1
3303.574		Fe I	449
3303.881		Co I	47
3304.01		Y II	66
3304.119		Co I	154
3304.31		Fe III	
3304.36	P	Fe I	710
3304.433		Fe II	93
3304.474		V II	136
3304.523		Sm II	2
3304.73		Cr II	120
3304.836		Ce II	103
3304.950		Ni I	108
3305.15		O II	23
3305.15		Zr II	2
3305.185		Sm II	35
3305.22		Fe III	7
3305.634		Fe II	79
3305.730		Co I	152
3305.75	P	Fe I	618
3305.77		O III	8
3305.971		Fe I	91
3306.053		Ti II	44
3306.27		Zr II	3
3306.35	P	Fe I	544
3306.356		Fe I	91
3306.388		Sm II	48
3306.45		Cl II	37
3306.495		Fe I	680
3306.50		A II	
3306.60		O II	23
3306.703		Fe I	396
3306.879		Ti I	190
3306.94		Fe III	73
3306.95		Cr II	150
3306.98		La II	17
3307.013		Ni I	107
3307.015		Fe I	450
3307.017		Sm II	
3307.044		Cr II	51
3307.156		Co I	69
3307.234		Fe I	617
3307.24		A II	83
3307.362		Rh II	5
3307.445		V II	60
3307.53		Fe III	7
3307.534		Sr I	7
3307.57	P	Fe II	65

I A	Type	Element	Multiplet No.
3307.717		Ti II	8
3307.755		Cr I	78
3307.90		Cl II	37
3308.02		Eu II	25
3308.15		Cr II	137
3308.246		V I	12
3308.391		Ti I	87
3308.4		Y II	64
3308.480		V II	137
3308.482		Co I	155
3308.517		Gd II	4
3308.688		Co I	105
3308.75	P	Fe I	190
3308.785		Mn I	11
3308.806		Ti II	7
3308.814		Co I	153
3308.86		P II	4
3308.91	P	Ni I	107
3309.176		V I	55
3309.32	P	Ni I	105
3309.32	P	Ti I	122
3309.40		Fe III	
3309.428		Ni I	
3309.501		Ti I	87
3309.53	P	Ti II	44
3309.582		Gd II	24
3309.730		Ti I	190
3309.78		Ne II	7
3309.804		Tm II	
3309.82		Cr I	161
3309.90		Zr II	72
3310.202		Ni I	38
3310.347		Fe I	449
3310.496		Fe I	679
3310.55		Ne II	23
3310.65		Cr II	120,158
3310.661		Sm II	31
3311.25		A III	1
3311.30		Ne II	2
3311.34		Zr II	34
3311.451		Fe I	27
3311.708		Sc II	41
3311.905		Mn I	10
3311.929		Cr II	51
3312.06		Cr I	78
3312.148		Co I	69
3312.18		Cr II	51
3312.215		Ce II	25
3312.232		Fe I	450a
3312.30		O III	3
3312.320		Ni I	106
3312.39		Y II	65
3312.415		Sm II	21
3312.690		Ti I	190
3312.707		Fe II	1
3312.736		Sc II	41
3312.78		Cl II	8
3312.87		Hf I	3
3312.90	P	Ti II	56
3312.992		Ni I	106
3313.08		Cr II	119
3313.116		Co I	153
3313.33		Eu II	24
3313.344		Al II	8
3313.470		Al II	8
3313.524		Mn I	30
3313.539		Sc II	35
3313.70		Zr II	61
3313.721		Cr I	161
3313.723		Fe I	50
3313.731		Gd II	24
3313.996		Fe II	1
3314	P	O VI	4
3314.06		Cr II	158
3314.070		Fe I	736
3314.073		Co I	43,149
3314.345		Co I	152
3314.393		Mn I	30
3314.422		Ti I	87
3314.450		Fe I	250
3314.49		Zr II	47
3314.50		S II	17
3314.523		Ti I	87
3314.56	P	Cr I	182
3314.57		Cr II	150
3314.60		Ne II	22
3314.721		Ce II	146
3314.742		Fe I	680
3314.756	Forb	Al II	8
3314.80	P	Fe II	93

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A	Type	Element	Multiplet No.
4.862		V II	136
4.876		Mn I	30
4.883		Al II	8
4.981		Al II	8
5.035		Co I	154
5.05		Pt I	1
5.17	P	Fe I	618
5.176		V II	71
5.19		Cr I	78
5.237		Ti I	190
5.29		Cr II	51
5.324		Ti II	65
5.44		Cl II	8,37
5.516	Forb	Al II	8
5.53	P	Fe II	93
5.53		V II	136
5.590		Gd II	41
5.608		Al II	8
5.663		Ni I	22
5.80		Fe III	73
6.18	P	Fe II	5
6.324		Mn I	11
6.440		Mn I	30
6.503		Cr I	255
6.579		Sm II	
6.79		Sc II	35
6.86		Cl II	37
6.873		V II	137
6.875		Tm II	7
7.038		Sc II	41
7.121		Fe I	139
7.295		V II	7
7.305		Mn I	30
7.693		Sc II	41
7.70		S II	42
7.797		Ce II	102
7.912		V II	108
7.93		Co I	69
7.90		Hf II	4
8.024		Ti II	7
8.032		Na II	16
8.055		Gd II	24
8.14		N II	22
8.362		Ti I	190
8.398		Co I	45
8.52		Zr II	35
8.6		Y II	64
8.60		Co I	151
8.62	P	Fe II	136
8.862		Fe II	135
8.907		V II	137
9.03		Zr II	4
9.083		Ti II	8
9.156		Co I	155
9.258		Fe I	449
9.478		Co I	154
9.561		Co I	45
9.75		Ne II	10
9.78		Y II	64
9.822		Co I	153
9.89		Eu II	24
0.14		Cl II	8
0.155		Sm II	20
0.257		Ni I	9
0.29		Ne II	12
0.422		Sc II	35
0.438		Gd II	74
0.57		Cl III	6
0.650		Fe I	190
0.690		Mn I	
0.709		Sc II	41
0.779		Ni I	108
0.780		V II	149
0.800		Fe I	396
0.902		Mo II	6
1.013		Be I	1
1.086		Be I	1
1.179		Sm II	40
1.19		Cr I	182
1.242		Ni I	92
1.347		Be I	1
1.348		Gd II	21
1.491		Fe II	194
1.539		V II	71
1.588		Ti I	87
1.700		Ti II	65
1.857		Eu II	21
1.912		Co I	106
2.198		Co I	104,149
2.231		Sr I	7

I A	Type	Element	Multiplet No.
3322.310		Ni I	39
3322.40		K III	1
3322.474		Fe I	396
3322.69		Cr II	51
3322.936		Ti II	7
3322.98	P	Ti II	44
3322.99		Zr II	34
3323.066		Fe II	92
3323.092		Rh I	4
3323.35		Hf II	79
3323.39	P	Ti II	43
3323.53		Cr II	51
3323.660		Ti I	255
3323.731		V II	81
3323.737		Fe I	379
3323.75		Ne II	7
3323.896		Ti I	255
3324.01		S III	2
3324.03	P	Zr II	62
3324.060		Cr II	4
3324.10		Cr II	120
3324.346		Cr II	80
3324.372		Fe I	617
3324.541		Fe I	191
3324.58		N II	22
3324.61		Ti I	60
3324.67	P	Cr II	92
3324.72		Fe III	96
3324.754		Ti I	190
3324.838		Fe II	194
3324.87		S III	2
3325.012		Fe II	93
3325.155		Ti I	190
3325.229		Ti I	190
3325.240		Co I	70
3325.258		Sm II	
3325.329		Ce II	25
3325.365		Ti I	255
3325.468		Fe I	191
3326.16		O III	28
3326.194		W I	5
3326.21		La II	121
3326.27		Co I	46
3326.564		Co I	43
3326.590		Cr I	182
3326.639		Ti I	87
3326.670		Ni I	108
3326.68	P	Ti II	56
3326.74	P	Sc II	41
3326.762		Ti II	7
3326.81		Zr II	91
3326.991		Co I	152
3327.16		Ne II	2
3327.308		Mo I	9
3327.392		Ni I	90
3327.498		Fe I	190
3327.578		Tm II	12
3327.63		Fe II	64
3327.67		Zr II	11
3327.865		Na II	16
3327.89		Y II	18
3327.961		Fe I	86
3328.21		Hf II	10
3328.270		Nd II	40
3328.326		Ti I	255
3328.351		Cr II	4
3328.714		Ni I	20
3328.79		N II	22
3328.80		Cr I	160
3328.867		Fe I	617
3329.013		Co I	152
3329.053		Cr I	182
3329.06		Cl III	2
3329.07		La II	120
3329.070		Fe II	
3329.12		Cl II	37
3329.20		Ne II	12
3329.215		Mo II	6
3329.3		S II	17
3329.345		Gd II	74
3329.45		Cr II	150
3329.455		Ti II	7
3329.466		Co I	153
3329.532		Fe I	542a
3329.855		V I	55
3329.89		Fe III	18
3329.93		Mg I	4
3329.988		Sr I	7
3330.30		N II	22
3330.340		Gd II	

I A	Type	Element	Multiplet No.
3330.40		O III	22,28
3330.620		Sn I	2
3330.668		Mn I	9
3330.78		Ne II	19
3330.880		Y II	85
3331.07		Sc II	35
3331.26	P	Ni I	107
3331.32		N II	22
3331.382		Gd II	8
3331.616		Fe I	191
3331.62		Fe III	73
3331.778		Fe I	144
3331.90		Zr II	11
3332.111		Ti II	65
3332.133		Gd II	73
3332.17		Mg I	4
3332.180		Ni I	
3332.42		Cl II	8
3332.49		O III	28
3332.73		Hf I	2
3332.879		Cr I	182
3333.00		O III	22
3333.16		Si II	6
3333.27		Fe III	18,73
3333.388		Co I	25
3333.41	P	Co I	71
3333.605		Cr I	
3333.606		Y II	64
3333.608		V II	59
3333.635		Sm II	52
3333.64		Cl II	8
3333.912		Ti I	25
3334.12	P	Co I	101
3334.146		Co I	23
3334.223		Fe I	190
3334.25		Zr II	58
3334.278		Fe I	617
3334.35		Ti I	190
3334.455		Ce II	25
3334.471		Nd II	42
3334.62		Zr II	21
3334.690		Cr I	
3334.87		Ne II	2
3334.925		Cr I	160
3335.192		Ti II	7
3335.28		Cr II	80
3335.403		Fe I	246
3335.46		Cr II	92
3335.482		V II	161
3335.513		Fe I	49
3335.59		Ni I	
3335.72	P	Fe I	307
3335.776		Fe I	379
3335.90	P	Fe II	76
3335.93		Cr II	119
3336.12		Ne II	46
3336.124		Sm II	31
3336.13		A III	3
3336.150		Os I	3
3336.16		Cl III	6
3336.16		Cr II	14
3336.180		Gd II	8
3336.25		Y II	66
3336.262		Fe I	618
3336.330		Cr II	4
3336.34	P	Fe II	76
3336.54	P	Fe I	450a
3336.69		Mg I	4
3336.78		O III	22,28
3336.97		Cr I	255
3336.984		Gd II	72
3336.998		Ti II	43
3337.014		Ni I	17
3337.171		Co I	25
3337.30	P	Ni I	122
3337.40		Ti I	190
3337.49		La II	45
3337.666		Fe I	304
3337.76	P	V II	136
3337.845		V II	184
3337.85		Ti II	55
3337.93		Zr II	74
3338.19	P	Fe II	5
3338.41		Zr II	61
3338.519		Co I	123
3338.522		Fe II	76
3338.643		Fe I	396
3338.72		Fe III	
3338.758		Ni I	54
3339.050		Ni I	104

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A	Type	Element	Multiplet No.
.063		Nd II	41
.15		Co I	148
.202		Fe I	190,446
.36		Fe III	7
.54		Ti I	178
.588		Fe I	502
.780		Co I	155
.804		Cr II	4
.810		Ru II	2
.84		Si II	6
.90		Cr II	92
.344		Ti II	7
.42		Cl III	2
.55		Zr II	3
.566		Fe I	139
.579		Sm II	6
.74		O III	3
.77		Ti I	190
.341		Co I	148
.554		Ti I	60,178
.77		A II	59
.868		Ce II	198
.875		Ti I	24
.875		Ti II	16
.906		Fe I	303
.98		Cr II	119
.151		Ti I	23
.225		Fe I	137
.298		Fe I	378
.46		W II	9
.51		Cr II	4
.707		Ti I	25
.734		Co I	105
.76	P	Fe I	396
.77		N III	7
.09		W II	13
.227		Cr I	159
.243		Fe I	88
.27		Sc II	35
.312		V II	234
.342		Cr I	159
.379		Ti I	178
.40		W II	8
.494		Sm II	
.530		Co I	151
.678		Fe I	449
.731		Mn I	9
.770		Ti II	7
.81		Zr II	85
.861		Ce II	159
.09	P	Fe I	450
.26		O III	22,28
.353		Sm II	39
.43		Ne II	2
.50		Cr I	160
.513		Ca I	11
.56		La II	45
.62	P	Ti I	25
.630		Ti I	178
.72		A III	3
.750		Mo I	9
.761		Ce II	165
.80		Zr II	72
.931		Ti I	178
.020		Zn I	4
.14		Cr I	218
.146		Co I	45
.352		Mn I	
.36		Cr I	218
.49		Ne II	10
.572		Zn I	4
.679		Fe I	141
.86		W II	17
.88		Ne II	10,12
.899		V II	244
.934		Zn I	4
.985		Gd II	8
.018		Cr I	112
.09		Cr I	
.310		Co I	45
.403		Mo II	6
.71		Cr I	112
.724		Ti II	7
.78		Cr I	112
.91	P	Ti II	43
.932		Co I	153
.942		Fe I	87
.99		Ca II	9
.10		Sb I	1
.269		Mo II	6

I A	Type	Element	Multiplet No.
3347.298		Sm II	48
3347.507		Fe I	449
3347.70		Fe III	18
3347.72		P IV	1
3347.837		Cr II	4
3347.927		Fe I	138
3348.05		O III	28
3348.08		O IV	4
3348.112		Co I	103
3348.372		V II	136
3348.535		Ti I	25
3348.683		Sm II	
3348.844		Ti II	7
3349.035		Ti II	16
3349.072		Cr I	
3349.11		O IV	4
3349.17		Hf II	20
3349.322		Cr I	159
3349.34		Cr II	4
3349.399		Ti II	1
3349.68	P	Cr II	14
3349.739		Fe I	377
3349.967		Ce II	200
3350.097		Gd II	74
3350.209		Ca I	11
3350.284		Fe I	191
3350.361		Ca I	11
3350.42		Ni II	1
3350.474		Gd II	7
3350.548		Ti I	178
3350.548		Ti II	43
3350.68		O III	22
3350.875		Sm II	
3350.94		A II	109
3350.99		O III	22
3351.06	P	Ni I	3
3351.138		Co I	151
3351.246		Sr I	7
3351.424		Mn I	9
3351.456		Al II	26
3351.529		Fe I	89
3351.53		V II	234
3351.596		Cr I	160
3351.67		Ti II	124
3351.750		Fe I	304
3351.966		Cr I	5
3351.97		Sn II	2
3352.048		Sc II	4
3352.06		Hf II	6
3352.071		Ti II	54
3352.43	P	Ti I	169
3352.80		Co II	2
3352.929		Fe I	190
3352.937		Ti I	25
3353.026		Cr I	255
3353.12		Cr II	4
3353.262		Ce III	2
3353.268		Fe I	190
3353.39		Cl II	4
3353.63		Ne II	23
3353.65		Zr I	18
3353.734		Sc II	12
3353.776		V II	107
3353.78		N III	5
3354.068		Fe I	378
3354.185		Sm II	39
3354.213		Co I	152
3354.29		N III	5
3354.31		O IV	8
3354.374		Co I	23
3354.39		Zr II	34
3354.54	P	Ti II	64
3354.550		He I	8
3354.621		Nd II	71
3354.634		Ti I	24
3355.05		Ne II	2
3355.228		Fe I	617
3355.366		V II	149
3355.47		N III	7
3355.517		Fe I	25
3355.92		O III	28
3355.940		Co I	103
3356.08		Zr II	3
3356.196		Ti I	178
3356.24	P	Fe II	105
3356.265		Fe II	
3356.332		Fe I	25
3356.35	P	Ce III	2
3356.35		Ne II	20
3356.352		V I	54

I A	Type	Element	Multiplet No.
3356.407		Fe I	137
3356.464		Co I	104
3356.513		Gd II	24
3356.842		Co I	151
3357.07		Fe III	19
3357.215		Ce II	164
3357.26		Zr II	3
3357.40		Cr II	79
3357.40		Fe III	63,72
3357.72		Cr II	91
3357.82	P	Fe I	448
3357.90		Ne II	12
3357.965		Fe II	117
3358.003		Co I	123
3358.130		Mo I	9
3358.252		Fe II	77
3358.271		Ti I	23
3358.30		Hf II	63
3358.434		Gd II	41
3358.49		A III	3
3358.501		Cr II	4
3358.56	P	Ti I	169
3358.59		Co II	2
3358.62		W II	13
3358.620		Gd II	8
3358.72		N III	5
3358.74		Fe III	72
3358.78	P	Fe II	5
3359.066		Co I	69
3359.106		Ni I	108
3359.18		Fe III	72
3359.284		Co I	44
3359.496		Fe I	25
3359.50		V II	148
3359.679		Sc II	4
3359.814		Fe I	617
3359.96		Zr II	91
3360.103		Fe II	105
3360.15		O II	52
3360.16	P	Ti II	54
3360.295		Cr II	21
3360.45		Zr I	53
3360.541		Ce II	25
3360.63		Ne II	2
3360.711		Gd II	8
3360.84		Fe III	72
3360.935		Fe I	142
3360.990		Ti I	24
3361.07	P	Ti II	64
3361.09		C II	7
3361.11		W II	2
3361.213		Ti II	1
3361.241		Ni I	107
3361.263		Ti I	23
3361.270		Sc II	4
3361.371		Mo I	10
3361.50		Ti I	178
3361.506		V II	70
3361.553		Co I	157
3361.556		Ni I	19
3361.73		A II	109
3361.75		C II	7
3361.770		Cr II	21
3361.835		Ti I	25
3361.90		N III	5
3361.918		Ca I	11
3361.935		Sc II	4
3361.959		Fe I	377
3362.00		Y II	36
3362.131		Ca I	11
3362.213		Cr I	54
3362.233		Gd II	8
3362.28		Ca I	11
3362.38		O III	22
3362.619		Tm II	
3362.63	P	O IV	8
3362.653		Ti II	64
3362.70		Cr I	54
3362.70		Zr II	60
3362.764		Fe II	78
3362.806		Ni I	23
3362.89		Ne II	12
3363.501		Sc II	38
3363.613		Ni I	105
3363.71		Cr II	3
3363.81		Zr II	11
3363.815		Fe I	307
3363.83		O III	11
3363.974		Gd II	107
3364.10	P	Ti I	169

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	Type	Element	Multiplet No.
.22	P	Fe II	5
.22		K III	5
.241		Gd II	
.30	P	Ti II	43
.44		P IV	1
.591		Ni I	107
.639		Fe I	245
.9		Ti II	124
.950		Nd II	
.014		Co I	69
.413		Fe II	78
.54		A II	109
.553		V I	54
.591		Gd II	8
.640		Fe II	194
.766		Ni I	38
.79		N III	5
.863		Sm II	
.168		Ni I	8
.176		Ti I	178
.176		Ti II	54
.333		Sr I	7
.46		Sc II	38
.532		Gd II	74
.554		Ce II	99
.59		A II	83
.790		Fe I	302
.807		Ni I	108
.870		Fe I	87
.880		V I	54
.960		Fe II	177
.00		O II	52
.02		Fe III	
.05	P	Ne II	12
.093		Gd II	4
.111		Co I	22
.161		Fe I	142
.18		S III	2
.20		Ne II	19
.29	P	Ni I	96
.36		N III	5
.42		Cr II	79
.53		Cr I	54
.54		Fe III	17
.661		Gd II	91
.666		V II	170
.81		Ca III	4
.81		Zr II	11
.892		Ni I	20
.054		Cr II	4
.09		S II	
.25	P	Fe I	678
.447		Fe II	134
.472		Ir I	5
.568		Sm II	30
.626		Fe II	177
.63		Zr I	17
.67		Co I	101
.73		Cr II	91
.946		Sc II	4
.983		Fe I	376
.05		Cr II	68
.054		Ti I	25
.055		Eu II	20
.14	P	Fe I	191
.212		Ti II	64
.27		Zr II	85
.295		Ru II	2
.349		Fe II	76
.40		O III	11
.455		Sm II	35
.49		S III	2
.549		Fe I	304
.573		Ni I	6
.618		Gd II	21,73
.67		Ti II	124
.80	P	Fe II	76
.8086		Ne I	2
.9081		Ne I	2
.23		O II	52
.322		Co I	24
.38		S III	2
.40		V II	88
.436		Ti I	23
.588		Os I	4
.786		Fe I	304
.94		Co II	2
.97		A II	57
1.015		Co I	151
1.10		P IV	1

I A	Type	Element	Multiplet No.
3371.209		Sm II	52
3371.447		Ti I	24
3371.85		O II	52
3371.87		Ne II	22
3371.90		S II	
3371.993		Ni I	7
3372.070		Fe I	83
3372.13		Cr II	91
3372.151		Sc II	4
3372.208		Ti II	16
3372.359		Fe I	447
3372.666		V II	106
3372.68		Ca III	1
3372.70		P II	34
3372.800		Ti II	1
3373.02		Pd I	3
3373.226		Co I	122
3373.42		Zr II	74
3373.455		Ce II	244
3373.51		Fe III	18
3373.57		Sc II	38
3373.729		Ce II	212
3373.87		A II	108
3373.874		Fe I	303
3373.96		Cr I	181
3373.969		Co I	44
3373.98		Ni II	1
3374.06		N III	5
3374.10		Ne II	12
3374.221		Fe I	89
3374.221		Ni I	17
3374.352		Ti II	54
3374.512		Tm II	12
3374.584		Gd II	72
3374.642		Ni I	106
3374.688		Gd II	24
3374.71		Zr II	61
3374.77		O II	96
3374.93		Cr I	181
3374.95		Cr II	4
3374.99		Cr II	149
3375.238		Co I	153
3375.50		O IV	8
3375.561		Ni I	108
3375.77		O II	52
3376.057		V I	54
3376.17		W II	10
3376.18		Cr I	
3376.24	P	Fe II	78
3[illegible].25		Zr II	60
3376.27		Cr II	78
3376.33		La II	46
3376.331		Ni I	104
3376.397		Cr I	254
3376.46		A II	109
3376.68		Hf II	31
3376.72		Cr II	112,148
3376.82		O III	27
3377.060		Co I	42
3377.127		Ce II	213
3377.20		O II	9
3377.23		Ne II	42
3377.36		Cr II	149
3377.394		V I	54
3377.45		Zr II	11
3377.485		Ti I	25
3377.52		P II	12
3377.577		Ti I	23
3377.625		V I	54
3377.77		Fe III	97
3378.09		O IV	4
3378.209		Sc II	38
3378.28		Ne II	7
3378.30		Zr II	73
3378.337		Cr II	21
3378.676		Fe I	301
3378.73	P	Fe I	137
3378.736		Co I	121
3379.017		Fe I	85
3379.171		Cr I	5
3379.172		Ce II	98
3379.18		Sc II	43
3379.216		Ti I	24
3379.371		Cr II	21
3379.39		Ne II	12
3379.397		Sc II	38
3379.48		A II	59
3379.564		Cr I	54
3379.58		A II	
3379.756		Gd II	91

I A	Type	Element	Multiplet No.
3379.762		Mo II	6
3379.825		Cr I	54
3379.825		Cr II	21
3379.930		Ti II	64
3380.004		Fe I	709
3380.111		Fe I	304
3380.114		Y II	41
3380.215		Mo II	6
3380.25		Eu II	23
3380.278		Ti II	1
3380.515		Gd II	74
3380.574		Ni I	37
3380.711		Sr II	4
3380.885		Ni I	7
3380.91		La II	45
3381.003		Fe II	177
3381.28		O IV	3
3381.33	P	O IV	3
3381.340		Fe I	376,677
3381.36	P	Fe II	5
3381.49		Co I	88
3382.07		Cr I	181
3382.071		Co I	123
3382.19		Fe III	72
3382.312		Ti I	86
3382.399		Sm II	20
3382.403		Fe I	84
3382.529		V II	107
3382.683		Cr II	3
3382.69		O III	27
3382.79	P	Cr II	112
3382.890		Ag I	1
3383.15		Sb I	1
3383.387		Fe I	245
3383.57	P	Ti II	63
3383.692		Fe I	85,444
3383.761		Ti II	1
3383.85		O III	27
3383.94		A II	92
3383.981		Fe I	83
3384.14		Hf II	44
3384.24		Cr I	54
3384.617		Mo I	9
3384.65		Cr I	54
3384.658		Sm II	30,39
3384.70		Hf II	9
3384.80	P	Fe I	25
3384.95		O III	27
3385.219		Co I	22
3385.31		Cr I	236
3385.55		O IV	3
3385.664		Ti I	24
3385.790		V II	183
3385.81		S II	
3385.944		Ti I	23
3386.129		Rh II	2
3386.22		Cl III	11
3386.24		Ne II	12
3386.452		Fe II	88
3386.50		Cr I	236
3386.724		Fe II	
3387.061		Co I	119
3387.13		S III	2
3387.410		Fe I	306
3387.466		Ni I	17
3387.47		Co I	45
3387.60		Cl III	2
3387.72		Co II	2
3387.73		Cr II	90
3387.834		Ti II	1
3387.87		Zr II	74
3387.96		Cr II	112
3388.065		Gd II	71
3388.134		Fe II	77
3388.163		Co I	23
3388.18		Co II	2
3388.29		Zr II	2
3388.46		Ne II	19
3388.54		A II	96
3388.71		Cr I	54
3388.755		Ti II	53
3388.81	P	Fe I	140
3388.88		Cr I	90
3388.912		Gd II	73
3388.966		Fe I	502
3389.325		Sm II	52
3389.748		Fe I	87
3389.83		Hf II	8
3390.082		Fe II	207
3390.25	P	Fe I	188

A	Type	Element	Multiplet No.
0.25		O II	9
0.37	P	O IV	3
0.396		Co I	102
0.498		Gd II	73
0.515		Ce II	145
0.56		Ne II	12
0.682		Ti I	86
0.77		Cr I	236
0.783		Eu II	
0.878		Gd II	73
1.01		V II	121
1.050		Ni I	5
1.11		Cr I	230
1.294		Gd II	73
1.303		Fe II	117
1.372		Cr I	254
1.434		Cr II	3
1.84	P	Fe I	678
1.85		A III	6
1.96		Zr II	1
1.989		Eu II	17
2.018		Fe I	499
2.040		Th II	5
2.304		Fe I	83
2.530		Gd II	7
2.652		Fe I	85
2.659		V II	70
2.713		Ti I	136
2.78		Ne II	7
2.89		Cl II	11
2.992		Ni I	20
3.00		Cr II	21
3.12		Zr II	3
3.382		Fe I	376
3.45		Cl III	11
3.609		Fe I	305,376
3.630		Gd II	91
3.641		Nd II	
3.86		Cr II	21
3.915		Fe I	136
3.920		Ce II	46
4.085		Fe I	188
4.26		O III	27
4.29		Sc II	38
4.32		Cr II	21
4.37	P	Ti II	63
4.574		Ti II	1
4.58		Hf II	7
4.583		Fe I	81
4.63		Zr II	85
4.916		Co I	42
4.92		V II	80
4.99		Hf II	63
5.120		Gd II	91
5.336		Fe II	117
5.370		Co I	25
5.62		Cr II	100
5.87	P	Fe I	543
5.90	P	Fe I	189
6.184		Ni I	122
6.187		Sm II	44
6.34		Zr II	58
6.386		Fe I	25
6.457		Co I	102
6.50	P	Ni I	118
6.58		Eu II	30
6.66		Zr II	103
6.71		Fe III	18
6.83		O IV	3
6.85		Rh I	3
6.978		Fe I	26
7.07		Lu II	4
7.221		Fe I	503
7.499		Tm II	3
7.560		Fe I	447
7.580		V I	54
7.642		Fe I	26
7.77		La II	128
7.82		Ni II	8
7.89		A II	59
7.90		Ne II	36
8.12	P	Fe I	615
8.226		Fe I	304
8.355		Fe II	105
8.634		Ti I	86
8.811		Co I	157
9.230		Fe I	302
9.336		Fe I	85
9.36		Zr II	11
9.406		Gd II	22

I A	Type	Element	Multiplet No.
3399.54		Cr II	100
3399.80		Hf II	1
3399.951		Tm II	12
3399.991		Gd II	22
3400.08		Cr II	67
3400.110		Na II	4
3400.395		V I	46
3400.471		Co I	42
3401.067		Gd II	8
3401.166		Ni I	107
3401.521		Fe I	26
3401.617		Co I	44
3401.740		V II	106
3401.76		Ni II	4
3401.90		W II	9
3401.913		Co I	157
3401.997		V II	47
3402.064		Co I	123
3402.072		Gd II	91,149
3402.256		Fe I	614
3402.32	P	Fe II	105
3402.422		Ti II	53
3402.43		Cr II	21
3402.464		Sm II	39
3402.52		Zr II	85
3402.571		V I	46
3402.87		Zr II	91
3403.081		Gd II	73
3403.159		V II	135
3403.29	P	Cr II	21
3403.29	P	Fe I	377
3403.299		Fe I	304
3403.322		Cr II	3
3403.369		Ti I	86
3403.432		Ni I	108
3403.51		Fe III	61
3403.58		O IV	2
3403.59		Cr I	254
3403.69		Zr II	59
3404.301		Fe I	25,301
3404.34		P II	12,21
3404.357		Fe I	83
3404.43		V II	243
3404.60		Pd I	2
3404.755		Fe I	300
3404.77		Ne II	51
3404.84		Zr II	11
3404.923		Fe I	300
3404.97		Ti II	63
3405.038		Gd II	91
3405.094		Ti I	86
3405.120		Co I	23
3405.160		V I	46
3405.50	P	Ni I	122
3405.74		O III	15
3405.83		Fe I	299
3405.934		Mo I	9
3405.97	P	O IV	3
3405.977		Ce II	96
3406.06		V II	119
3406.17	P	Fe I	376
3406.18		Fe III	61
3406.442		Fe I	676
3406.76	P	Fe II	90
3406.803		Fe I	85
3406.837		V I	46
3406.88		Ne II	51
3407.00		La II	155
3407.06	P	Fe I	377
3407.205		Ti II	1
3407.22		Cr I	
3407.30		Ni II	4
3407.38		O II	44
3407.461		Fe I	83
3407.53	P	Fe I	81
3407.56		Gd II	91
3407.61		Gd II	24
3407.7		Y II	
3407.76		Hf II	29
3407.960		Mn I	26
3408.01		Cr I	
3408.09		Zr II	72
3408.13		O III	15
3408.136		N II	7
3408.14		Pt I	4
3408.676		Sm II	
3408.678		Cb II	3
3408.765		Cr II	3
3408.955		V II	120
3408.96	P	Cr II	8

I A	Type	Element	Multiplet No.
3409.177		Co I	23
3409.191		Cb II	3
3409.20		Fe I	614
3409.297		Gd II	21
3409.36		Cr I	
3409.40	P	Fe I	445
3409.578		Ni I	5
3409.60	P	Cr II	8
3409.646		Co I	24
3409.75		O IV	3
3409.79	P	Cr II	8
3409.809		Ti II	1
3409.84		O II	44
3409.87		Y II	63
3410.031		Fe I	542
3410.171		Fe I	735
3410.18		Hf II	30
3410.26		Zr II	11
3410.46		V II	119
3410.56	P	Fe I	244
3410.74		Fe III	61,62
3410.905		Fe I	25
3411.01		Cr I	
3411.134		Fe I	299
3411.353		Fe I	301
3411.38		Ne II	45
3411.68	P	Ti II	63
3411.76		La II	155
3411.76		O IV	2
3411.88	P	Fe I	298
3412.020		Gd II	73
3412.339		Co I	25
3412.47	P	Ni I	90
3412.583		Gd II	70
3412.633		Co I	6
3412.753		Gd II	23
3412.934		Cb II	3
3413.13		Ne II	45
3413.135		Fe I	85
3413.273		Gd II	91
3413.39		Zr II	60
3413.46	P	Ni I	124
3413.478		Ni I	5
3413.71		O IV	2
3413.74		Hf II	20
3413.939		Ni I	17
3414.02		Ti II	127
3414.144		Fe II	91
3414.192		V II	135
3414.207		Gd II	107
3414.46		A II	107
3414.65		Zr II	73
3414.66		Zr I	17
3414.765		Ni I	19
3414.82		Ne II	20
3414.879		V II	135
3415.29		O III	15
3415.47		Cr II	100
3415.519		Co I	5
3415.530		Fe I	83
3415.67	P	Ni I	123
3415.78		Co II	2
3415.91		V II	169
3416.021		Fe II	16
3416.52	P	Fe I	708
3416.674		Sc I	21
3416.688		Fe I	142
3416.87		Ne II	21
3416.948		Gd II	22
3416.957		Ti II	53
3417.154		Co I	23
3417.273		Fe I	26
3417.330		Gd II	91
3417.353		Co I	135
3417.353		Ru I	3
3417.450		Ce II	100
3417.673		Co I	122
3417.71		Ne II	20
3417.795		Co I	19
3417.842		Fe I	81
3417.88	P	Ti I	86
3417.9036		Ne I	4
3418.02	P	Fe II	104
3418.151		Sm II	
3418.176		Fe I	577
3418.507		Fe I	81
3418.514		Sm II	47
3418.528		Sc I	21
3418.733		Gd II	7
3419.069		Gd II	24

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A	Type	Element	Multiplet No.
.10		Zr II	2
.157		Fe I	576
.25		P II	3
.358		Sc I	21
.49		Fe III	11,49
.706		Fe I	377
.87		O II	
.15		V II	119
.184		Fe II	89
.474		Co I	42
.54		La II	126
.61		O II	
.709		V II	105
.741		Ni I	9
.790		Co I	102
.795		Mn I	
.82		K III	1
.029		Co I	119
.20		Cr II	3
.22	P	Ni I	105
.24		Pd I	3
.342		Ni I	122
.62		Cr II	60
.628		Co I	101
.64		A II	57
.83		K III	4
.97		Fe III	11
.332		Ni I	105
.466		Gd II	2
.499		Fe I	444
.656		Fe I	85
.661		Ti II	63
.708		Ce II	144
.739		Cr II	3
.751		Gd II	8
.878		Ni I	122
.900		Co I	42
.172		Ti I	120
.35		Co I	121
.711		Ni I	20
.82		Zr II	
.85		Co II	2
.853		Ce II	131
.9		La II	144
.92		Gd II	7
.16		Y I	
.17	P	Fe II	116
.284		Fe I	81
.43	P	Cr II	8
.500		Co I	103
.592		Gd II	22
.64		Zr II	85
.82		Zr II	2
.88		P II	3
.009		Fe I	541
.022		Eu II	20
.070		V I	
.082		Tm II	7
.09	P	Cr II	8
.432		Cb II	7
.57		O IV	3
.582		Fe II	5
.624		Gd II	91
.630		Tm II	3
.930		Gd II	23
.96		Cr I	158
	P	O VI	6
.09	P	Fe I	502
.13		Cr II	111
.20		P II	3
.208		Ce II	44
.337		Fe I	135
.342		Gd II	73
.383		Fe I	25,82
.562		Cb II	7
.583		Ce II	51
.637		Fe I	82
.67	P	Fe I	615
.81	P	Fe II	103
.002		Fe I	26
.121		Fe I	81
.332		Ce III	2
.362		Gd II	91
.57		La II	132
.01	P	Fe I	616
.192		Fe I	81
.37		Hf II	2
.41	P	Fe I	302
.42	P	Ni I	123
.467		Gd II	90

I A	Type	Element	Multiplet No.
3428.64	P	Fe II	90
3428.67		O III	15
3428.746		Fe I	836
3428.76		Ne II	42
3428.916		Al II	25
3428.94		Cr II	99
3428.955		Ti I	168
3429.206		Sc I	21
3429.42		Y II	77
3429.483		Sc I	21
3429.64		A II	107
3429.80	P	Fe I	244
3429.82	P	Fe I	540
3430.15	P	Fe II	89
3430.238		Gd II	91
3430.29		Zr I	17
3430.42		Cr II	67
3430.44		A II	59
3430.53		Zr II	11
3430.60		O III	15
3430.772		Ru I	3
3430.874		Ti I	120
3430.88	P	Fe I	614
3431.08	P	Ti I	135
3431.195		Tm II	12
3431.284		Cr I	53
3431.358		Sc I	21
3431.45	P	Cr II	8
3431.57		Zr II	59
3431.582		Co I	6
3431.59		Cr I	53
3431.69		Cr I	53
3431.815		Fe I	376,676
3431.995		Cr I	53
3432.023		Fe I	377
3432.12	P	Cr II	8
3432.31		Cr I	53
3432.318		Co I	102
3432.32		Cr II	8
3432.41		Zr II	58
3432.64		A II	107
3432.708		Cb II	
3432.81		La II	113
3432.97		Fe III	67
3432.994		Gd II	22
3433	P	O VI	8
3433.045		Co I	23
3433.091		Ce II	249
3433.30		Cr II	3
3433.44		Pd I	11
3433.558		Ni I	19
3433.598		Cr I	52
3433.767		V II	134
3433.90		Zr II	58
3434	P	O VI	9
3434.024		V II	104
3434.029		Fe I	300
3434.112		Cr I	52
3434.46		V II	134
3434.57	P	Rh II	1
3434.69	P	Ti I	121
3434.893		Rh I	2
3434.95	P	Fe I	776
3435.38		V II	133
3435.408		Ti II	98
3435.432		Ti I	
3435.488		Cr I	53
3435.489		Ni I	53
3435.555		Sc I	21
3435.679		Cr I	52
3435.819		Cr I	53
3436.045		Fe I	614
3436.112		Fe II	91
3436.187		Cr I	52
3436.304		Ce II	94
3436.393		V II	79
3436.737		Ru I	4
3437.006		Ir I	3
3437.046		Fe I	539
3437.16		Zr II	33
3437.162		N II	13
3437.280		Ni I	3
3437.631		Fe I	187
3437.680		Co I	162
3437.93		Cr II	111
3437.958		Fe I	614
3438	P	O VI	7
3438.10	P	Fe I	300
3438.14		A II	58
3438.23		Zr II	1

I A	Type	Element	Multiplet No.
3438.24		Hf II	77
3438.306		Fe I	
3438.46		Cr II	110
3438.713		Co I	87
3438.97		Ne II	45
3438.978		Mn II	1
3439.050		Fe I	299
3439.208		Gd II	23
3439.305		Ti I	120
3439.352		Al I	2
3439.40		Sc I	21
3439.784		Gd II	22
3439.831		Ce II	197
3439.990		Gd II	7
3440.25	P	Fe II	156
3440.39		O III	13
3440.502		Sm II	54
3440.589		Cb II	6
3440.610		Fe I	6
3440.74	P	Fe I	301
3440.80		Ne II	45
3440.989		Fe I	6
3440.999		Eu II	13
3441.115		Cr I	52
3441.14	P	Cr II	8
3441.210		Ce II	45
3441.40		Pd I	10
3441.439		Cr I	52
3441.505		Tm II	
3441.790		Gd II	39
3441.983		Mn II	3
3442.044		Ni I	104
3442.12		Ne II	36
3442.239		Fe II	89
3442.364		Fe I	134
3442.380		Ce II	196
3442.559		Ni I	124
3442.58		Cr I	158
3442.672		Fe I	26
3442.79	P	Fe II	76
3442.918		Co I	6
3442.979		Fe I	499,776
3442.98	P	Co I	42
3443	P	N IV	7
3443.203		Co I	
3443.387		Ti II	99
3443.57		Zr II	73
3443.609		Ce III	1
3443.644		Co I	22
3443.644		Ti I	120
3443.651		Al I	2
3443.70		Ne II	42
3443.790		Cr I	110
3443.83	P	Fe II	16
3443.878		Fe I	6
3443.989		Sc I	21
3444.10		O III	15
3444.251		Ni I	122
3444.306		Ti II	6
3444.34		Cr II	111
3444.403		Ti I	120
3444.76	P	Fe II	145
3444.871		Al I	2
3444.899		Ti I	46
3445	P	N IV	7
3445.04		Cr II	110
3445.10		Cr I	51
3445.151		Fe I	81
3445.20	P	Cr II	148
3445.566		Ti I	46
3445.58	P	Fe II	76
3445.618		Cr I	51
3446.0	P	Mn II	9
3446.085		Mo II	1
3446.088		Co I	182
3446.263		Ni I	20
3446.38		K I	4
3446.40		Co II	2
3446.603		Ti I	168
3446.721		Ce II	56
3446.73		O III	25
3446.77		Fe III	88
3446.791		Fe I	244
3446.947		Fe I	26
3447.015		Cr I	52
3447.22		O III	25
3447.278		Fe I	82
3447.281		Co I	161
3447.36		Zr I	16
3447.41		K I	4

FINDING LIST

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.430		Cr I	52	3457.047		Gd II		3465.25		V II	160
.594		He I	7	3457.088		Y II	77	3465.562		Ti II	99
.760		Cr I	52	3457.090		Fe I	374,835	3465.57		Cr I	51
.98		O II	27	3457.153		V II	147	3465.62		Ni II	4
.05	P	O III	25	3457.16	P	Ne II	51	3465.63		Zr I	17
.19	P	Fe I	186	3457.298		Ti I	46	3465.792		Co I	5
.255		Ti I	46	3457.494		Ti I	46	3465.80		A II	96
.358		Co I	163	3457.512		Fe I	187	3465.863		Fe I	6
.433		Fe II	90	3457.56		Zr II	20	3466.15		O III	25
.478		Fe I	444	3457.62		Cr II	135	3466.25		Cr II	77,148
.503		Sc I	21	3457.809		Mn II	9	3466.279		Fe I	185
.542		Mo II	1	3457.99		O II	81	3466.336		Mn II	12
.63	P	Fe III	27	3458.020		Ti I	46	3466.34		A II	44,56
.69		V II	118	3458.028		Co I	101	3466.498		Gd II	53
.786		Fe I	372	3458.090		Cr I	253	3466.501		Fe I	24
.82		Y II	17	3458.13	P	Fe II	10	3466.59		V II	58
.869		Fe I	242	3458.18		Fe III	100	3466.85	P	Fe II	156
.967		Ir I	1	3458.230		Al I	2	3466.90		O III	25
.06	P	Fe I	442	3458.304		Fe I	139	3466.952		Gd II	23
.170		Co I	22	3458.474		Ni I	19	3467.022		Cr I	141,253
.28		Cr II	111	3458.91		Fe III	27	3467.09	P	Cr II	2
.441		Co I	22	3458.93		Zr II	58	3467.12		Ni I	123
.5	P	Mn II	9	3459.08		Ti II	125	3467.260		Ti I	64
.616		Gd II	7	3459.07		O II	81	3467.267		Gd II	22
.874		Ti I	46	3459.29		Cr II	136	3467.33		V II	58
.00	P	Cr I	90	3459.29	P	Fe I	576	3467.502		Ni I	3
.14	P	Fe I	242	3459.374		Ce III	3	3467.715		Cr I	110
.328		Fe I	82	3459.38		Ne II	51	3467.732		Ni I	123
.376		Gd II	22	3459.429		Fe I	297	3467.874		Sm II	54
.735		Ti I	46	3459.431		Ti I		3467.88		Y II	17
.84		Cr II	60	3459.52		O III	25	3468.083		Gd II	21
.94		O III	25	3459.61	P	Fe I	577	3468.113		Ce II	178
.046		V II	118	3459.911		Fe I	501	3468.32		K II	1
.228		Fe II	208	3459.95	P	Fe I	133	3468.476		Ca I	10
.233		Gd II	22	3459.95		Zr II	90	3468.680		Fe II	114
.318		Fe II		3459.98		O II	25	3468.849		Fe I	242
.33		O III	25	3460.03		Cr II	60	3468.973		Co I	159
.41		B II	1	3460.039		Mn II	1	3468.989		Gd II	40
.614		Fe II	207	3460.31		La II	119	3469.012		Fe I	614
.628		Fe I	139	3460.312		Mn II	3	3469.307		Gd II	39
.66	P	Fe I	241	3460.430		Cr I	141	3469.390		Fe I	375
.88		Re I	2	3460.47		Re I	2	3469.486		Ni I	8
.914		Gd II	70	3460.719		Co I	35	3469.528		V II	58
.915		Fe I	81	3460.76		Pd I	2	3469.590		Cr I	141
.18		Co I	160	3460.776		Gd II	73	3469.683		Co I	137
.18		La II	30	3461.0		Y II	40	3469.834		Fe I	242
.273		Fe I	25	3461.173		Co I	162	3469.94		Zr II	59
.31	P	Fe III	49	3461.28		Cr II	148	3470.18		Y II	40
.33	P	Fe II	89	3461.34		N IV	7	3470.242		Fe II	89
.470		Ti II	99	3461.38		Eu II	13	3470.263		V II	58
.55		Fe III	88	3461.496		Ti II	6	3470.27		A II	
.670		Al I	2	3461.580		V II	6	3470.401		Cr I	77
.890		Ni I	17	3461.652		Ni I	17	3470.42		O II	27
.022		Fe I	301	3461.952		Gd II	23	3470.529		Cr I	77
.087		V II	132	3462.040		Rh I	3	3470.657		Rh I	3
.10		Ne II	21	3462.198		Tm II		3470.72		Cr I	77
.17		La II	46	3462.353		Fe I	79	3470.81		O II	27
.23		Cr I	253	3462.494		Na II	4	3470.83		P II	12
.31		O II	71	3462.65		Hf II	6	3470.866		Nd II	70
.328		Cr I	52	3462.73		Cr II	2	3470.894		Ce III	1
.514		Co I	22	3462.748		Mn I	41	3471.14		Zr II	114
.595		Fe II		3462.804		Co I	23	3471.18		Zr I	15
.654		Ti I	46	3462.808		Fe I	373	3471.27		Fe I	82
.665		Tm II	7	3462.878		Mn II	12	3471.35		Ni II	4
.743		Cr I	52	3462.997		Gd II	8	3471.350		Fe I	130
.78		V II	132	3463.02		Zr II	90	3471.382		Co I	161
.84	P	Cr I	90	3463.079		V II	104	3471.49		Cr I	77
	P	N IV	7	3463.205		Ti I	85	3471.59		A II	57
.10		A II	44	3463.305		Fe I	48	3471.63	P	Ni I	124
.145		Gd II	7	3463.330		Mn II	12	3471.80		He I	44
.16		Ni II	1	3463.36		N IV	7	3472.07		Cr II	135
.165		Ti I	168	3463.499		Co I	42	3472.196		Co I	161
.35		Fe III	86	3463.52		W II	7	3472.38		Hf I	1
.368		Ce III	2	3463.63		Al II	55	3472.48		Lu II	4
.57		Zr II	59	3463.831		V II	168	3472.545		Ni I	20
.90		O III	25	3463.974		Fe II	4	3472.5711		Ne I	2
.904		Gd II	7	3463.984		Gd II	40	3472.707		Co I	160
.98		Cr II	136	3464.02		Cr II	2	3472.764		Cr I	77
.04		Mn I	41	3464.043		Mn II	12	3472.793		Ti I	271
.12		O III	25	3464.132		Gd II	90	3472.88		P II	2
.237		Co I	6	3464.14		A II	70	3472.886		Fe II	156
.281		Cr I	51	3464.17		V II	104	3472.906		Cr I	111
.602		Cr I	51	3464.27		Fe III	16	3473.01	P	Fe I	576
.755		Ti I	46	3464.457		Sr II	4	3473.219		Gd II	7
.00	P	Fe II	4	3464.497		Fe II	114	3473.23	P	Fe I	576
.390		Ti II	99	3464.72		Re I	2	3473.497		Fe I	26
.661		Ti I	134	3464.82		Cr I	51	3473.612		Cr I	77
.68		Ne II	28	3464.914		Fe I	241	3473.82		Fe III	27
.924		Co I	5	3465.037		Mn II	12	3473.825		Fe II	
.928		Fe II	76	3465.245		Cr I	51	3474.018		Co I	4,23

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A	Type	Element	Multiplet No.
.037		Mn II	3
.124		Mn II	3
.379		Cr I	
.41	P	Fe III	27
.530		Co I	24
.56		N IV	7
.763		Ca I	10
.780		Rh I	2
.84		La II	143
.87		Cr I	141
.887		Sr II	4
.94		Fe III	90
.94		O II	8
.13		Cr II	2
.25	P	Fe II	4
.25		Ne II	35
.36	P	Cr I	141
.450		Fe I	6
.651		Fe I	78
.74	P	Fe II	4
.867		Fe I	186,373
.252		V II	58
.336		Fe I	133,835
.360		Co I	161
.452		Ti I	85
.63		Ni I	123
.704		Fe I	6
.74		A II	44
.842		Ce II	132
.853		Fe I	242
.982		Ti II	6
.007		Fe I	139
.161		Cr I	141
.181		Ti II	6
.514		V II	58
.69		Ne II	21
.828		Rh II	4
.836		Co I	161
.850		Fe I	82
.864		Ni I	124
.98	P	Fe I	836
.17		Cr II	109
.24		A II	45
.29		Zr II	2
.292		Ni I	173
.382		Fe I	185
.50		Zr II	84
.55	P	Fe II	16
.555		Co I	120
.69		N IV	1
.74		P II	2,18
.744		Co I	67
.77		Cr I	141
.788		Fe I	137
.79		Cb II	7
.906		Rh I	6
.918		Ti I	84
.961		V II	182
.97		He I	43
.98		Hf II	61
.02		Zr II	20
.14		Cr I	141
.264		Ni I	105
.27		Al I	17
.29		Hf II	2
.39		Zr II	46
.53		Ne II	49
.567		Cb II	6
.683		Fe I	443,812
.78		Al I	17
.82		Cl II	
.837		V II	6
.914		Fe II	4
.012		Co I	67
.183		Ni I	123,124
.28		Cr I	141
.40		Zr II	58
.52		A II	57
.525		Ti I	84
.547		Gd II	23
.55		A III	2
.75		Ne II	49
.897		Ti II	22
.11		K III	3
.126		Ti I	271
.14		Zr II	46
.17		Pd I	2
.275		Gd II	22
.303		Cr I	77
.44		Zr II	59

I A	Type	Element	Multiplet No.
3481.536		Cr I	110
3481.558		Fe I	132
3481.675		Ti I	271
3481.750		Tm II	10
3481.797		Gd II	22
3481.92	P	Fe II	102
3481.96		Ne II	6
3482.05	P	Fe II	10
3482.06		Mn II	9
3482.36		Fe III	103
3482.39	P	Fe II	133
3482.426		Fe II	
3482.56	P	Cr II	148
3482.58		Al I	17
3482.58		Cr II	67
3482.602		Gd II	40
3482.70		Si III	
3482.73		Ni I	120
3482.905		Mn II	3
3482.98		N IV	1
3483.006		Fe I	24
3483.010		Ti I	22
3483.410		Co I	23
3483.54		Zr II	33
3483.59	P	Zr II	103
3483.62	P	Ni I	120
3483.774		Ni I	6
3483.80		Co I	5
3483.80		Ti II	125
3484.15		Cr II	2
3484.16	P	Cr II	185
3484.18		Fe III	100
3484.32		V II	168
3484.348		Fe II	115
3484.39		La II	113
3484.65		V II	6
3484.84		Fe I	185
3484.90		N IV	1
3484.97		Fe I	138
3485.054		Ce II	44
3485.110		Ni I	118
3485.16		Hf II	43
3485.31		Zr II	57
3485.342		Fe I	78
3485.368		Co I	162
3485.689		Ti I	84
3485.700		Co I	68
3485.728		Fe II	133
3485.82	P	V II	131
3485.867		V I	81
3485.888		Ni I	17
3485.916		V II	6
3486.08	P	Fe II	102
3486.14		W II	11
3486.556		Fe I	79
3486.93		Si III	
3487.008		V I	81
3487.11		Fe III	90
3487.33		A II	56
3487.57		Hf II	55
3487.598		Ca I	10
3487.712		Co I	65
3487.721		He I	42
3487.80	P	Ti I	119
3487.990		Fe II	4
3488.18		O II	7
3488.293		Ni I	121
3488.453		Cr I	109
3488.553		Ce II	187
3488.676		Mn II	3
3488.92		Fe III	60
3489.07		Cr II	135
3489.07	P	Fe III	26
3489.17	P	Fe II	102
3489.281		Gd II	106
3489.399		Co I	36
3489.45		Cr II	109,185
3489.48	P	Fe III	27
3489.670		Fe I	442
3489.739		Ti II	6
3489.79		Pd I	8
3489.84		O IV	14
3489.947		V II	131
3490.04	P	Fe I	331
3490.45		P II	19
3490.47	P	Fe I	835
3490.575		Fe I	6
3490.62		He I	41
3490.736		Co I	20
3490.74	P	Fe I	133

I A	Type	Element	Multiplet No.
3490.765		Ti I	22
3490.89		A II	30
3491.053		Ti II	6
3491.16		Fe III	103
3491.19	P	Ti II	118
3491.24		A II	44
3491.316		Co I	6
3491.54		A II	44
3491.954		Gd II	6
3491.987		Co I	159
3492.24		O IV	14
3492.39		Ti II	125
3492.956		Ni I	18
3493.163		V II	6
3493.280		Ti I	22
3493.29		Fe I	48
3493.34	P	Fe II	102
3493.468		Fe II	114
3493.57	P	Fe I	327
3493.69		Fe I	297
3494.15		Fe I	137
3494.25	P	Fe I	185
3494.404		Gd II	7
3494.52		Cr II	2
3494.66		O II	70
3494.672		Fe II	16
3494.703		Ni I	154
3494.967		Cr I	109
3495.16	P	Fe I	102
3495.285		Fe I	238
3495.37		Cr II	2
3495.44		O II	70
3495.56		Cr II	
3495.6	P	Ni II	4
3495.616		Fe II	115
3495.682		Co I	22
3495.75		Hf II	10
3495.754		Ti I	84
3495.831		Mn II	3
3495.94		Hf II	30
3495.960		Ti I	22
3496.070		Co I	136
3496.08		Y II	3
3496.18		Zr II	1
3496.19		Fe I	186
3496.27		O II	7
3496.27	P	V II	131
3496.29		Fe III	103
3496.29	P	Ti II	118
3496.350		Ni I	118
3496.60	P	Fe I	572
3496.67	P	Fe II	88
3496.681		Co I	19
3496.794		Co I	161
3496.814		Mn II	3
3497.00	P	V II	131
3497.00		Zr II	10
3497.031		V II	146
3497.115	P	Fe I	78
3497.137		Fe I	78
3497.340		S III	
3497.39		V II	131
3497.49		Hf I	1
3497.536		Mn II	3
3497.73	P	Fe II	114
3497.81	P	Fe II	133
3497.843		Fe I	6
3497.89	P	Fe I	499
3497.90		Zr II	58,84
3498.12	P	V II	131
3498.18	P	Fe I	326
3498.19	P	Ni I	2
3498.641		He I	40
3498.83	P	V II	117
3498.942		Ru I	4
3499.099		Ti I	84
3499.49		A II	5
3499.57		Fe III	26
3499.58		Zr II	9
3499.67		A III	2
3499.823		V II	5
3499.877		Fe II	115
3500.15		Zr II	123
3500.29		Fe III	48
3500.340		Ti II	6
3500.5		O II	60
3500.564		Fe I	238
3500.852		Ni I	6
3501.107		Ba I	3
3501.32	P	Fe III	48

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	Type	Element	Multiplet No.
33		Zr I	14
416		F II	3
453		Ce II	67
67		O II	70
73		Co II	2
75		Fe III	26,48
2	P	O IV	13
278		Co I	21
381		He I	39
46	P	Fe I	576
524		Rh I	2
595		Ni I	3
63		Co I	6
85	P	Fe I	577
954		F II	3
998		Co I	135
00		P II	2
095		F II	3
206		Gd II	90
36		Cr II	157
38		Cr I	109
474		Fe II	4
58		A III	2
61		Ne II	28
717		Co I	88
760		Ti I	22
96	P	Fe III	48
40		Fe III	48
432		V II	6
455		Fe I	371
48		Sb I	2
596		Ce III	6
728		Co I	135
773		Ti I	167
966		Fe I	131
890		Ti II	88
065		Fe I	498
133		Co I	160
22		Hf II	7
44		Cl II	64
45	P	Ti II	6
47		Zr II	90
512		Gd II	22
614		F II	3
67		Zr II	1
690		V I	81
901		Ti II	88
.02		O II	70
04		Zr II	84
.23		Fe I	327
.310		Co I	21
.40		Fe I	
.48		Zr II	84
.498		Fe I	130
.57		V II	193
.58	P	Fe I	327
.61		Cr II	108,157
.643		Ti I	22
.843		V I	81
.93		Fe III	48
.14	P	Fe I	835
.316		Rh I	2
.37		P II	18
.387		Fe II	16
.39		Fe I	500
.39		Lu II	1
.426		Ti I	
.534		V II	159
.66		Zr II	58
.694		Ni I	3
.945		Ce II	51
.964		Y II	47
.09		Cr I	
.213		Fe II	4
.470		Ce II	114
.494		Fe I	442
.52		Fe I	239
.67	P	Cr II	77
.731		Eu II	13
.31		Cr I	
.352		Eu II	13
.94		Cl II	64
	P	O VI	5
.024		V II	117
.12		Fe I	326
.20	P	V II	117
.32		Zr I	15
.39		Cl II	64
.73	P	Fe I	327
.78		A II	44

I A	Type	Element	Multiplet No.
3509.843		Co I	22
3509.844		Ti II	88
3509.870		Fe I	78
3509.971		Mn II	9
3510.00		La II	15
3510.133		Gd II	21
3510.18	P	Fe I	836
3510.262		Cb II	
3510.338		Ni I	18
3510.40		Cr I	263
3510.426		Co I	6
3510.443		Fe I	139
3510.46		Zr II	20
3510.538		Cr I	109
3510.840		Ti II	88
3511.227		Sm II	12
3511.25	P	Fe II	102
3511.42		V II	57
3511.55		Zr II	124
3511.613		Ni I	152
3511.626		Ti I	22
3511.748		Fe I	238
3511.84		Cr II	2
3511.93		Fe III	26
3511.94		Ni I	124
3512.08		Fe I	327
3512.13		V II	193
3512.219		Gd II	38
3512.239		Fe I	326
3512.34	P	Fe III	26
3512.496		Gd II	89
3512.511		He I	38
3512.640		Co I	21
3512.67		Zr II	57
3512.68	P	Fe I	327
3512.70		Cr I	109
3512.74	P	Fe I	613
3512.80	P	Fe I	330
3512.93		La II	44
3512.95		Fe I	501
3513.03		Cr II	107
3513.065		Fe I	48
3513.09		Ti II	6
3513.22		Cl II	64
3513.478		Co I	5
3513.59	P	Fe I	327
3513.638		Ir I	2
3513.69		Cl II	64
3513.820		Fe I	24
3513.877		V II	117
3513.88		K III	1
3513.933		Ni I	17
3513.933		Ni II	1
3514.21		Co II	1
3514.29	P	Fe III	27
3514.89		A II	44
3514.422		V II	57
3514.48	P	Fe I	47
3514.62		Fe I	183
3514.64		Zr II	114
3514.87		Fe III	26
3515.054		Ni I	19
3515.41	P	Fe I	243
3515.421		Cb II	6
3515.538		Be I	7
3515.57		Fe III	54
3515.818		Fe II	208
3516.00		V II	6
3516.05		Al II	54
3516.234		Ni I	123
3516.403		Fe I	442
3516.55		Fe I	326
3516.58	P	Fe III	54
3516.675		Co I	65
3516.838		Ti I	167
3516.92		O II	69
3516.95		Pd I	1
3517.03	P	Ni I	123
3517.14		La III	1
3517.298		V II	6
3517.327		He I	37
3517.380		Ce II	230
3517.48		Co II	1
3517.53	P	V II	57
3517.890		Gd II	88
3517.90		A II	5
3518.23	P	Fe I	575
3518.340		Co I	36
3518.61		P II	2
3518.62		Cr II	107

I A	Type	Element	Multiplet No.
3518.632		Gd II	7
3518.634		Ni I	124
3518.68		Fe I	327
3518.75		Hf II	43
3518.86		Fe I	78
3519.077		Ce II	92
3519.24		Tl I	2
3519.25		Fe III	54
3519.60		Zr I	13
3519.67	P	Ti II	118
3519.72	P	Fe II	88
3519.766		Ni I	5
3519.85		Fe III	59
3519.939		Ti I	22
3520.00		A II	56
3520.022		V II	5
3520.075		Co I	4
3520.253		Ti II	98
3520.4717		Ne I	7
3520.522		Ce II	55
3520.547		V II	57
3520.55		Cr I	235
3520.72		La II	127
3520.85		Fe I	238
3520.87		Zr II	19
3520.9	P	O IV	13
3520.91	P	Zr II	59
3521.09		Eu II	24
3521.264		Fe I	24
3521.27		A II	56
3521.28	P	Zr II	84
3521.53		Cr I	263
3521.567		Co I	20
3521.64	P	Fe II	10
3521.791		Co I	24,100
3521.833		Fe I	78
3521.836		V II	57
3521.880		Ce II	211
3521.98		A II	45
3522.044		Nd II	71
3522.05	P	Fe II	10
3522.063		Mo II	1
3522.13		Cr II	184
3522.14		Cl II	64
3522.268		Fe I	326
3522.72		Ne II	35
3522.73	P	Fe I	538
3522.856		Co I	159
3522.896		Fe I	330
3523.02		Hf I	3
3523.074		Ni I	34
3523.18	P	Fe I	673
3523.30		Fe I	326
3523.423		Co I	21
3523.444		Ni I	16
3523.47	P	Ni I	154
3523.701		Co I	66
3524.04	P	Fe I	238
3524.075		Fe I	239
3524.196		Gd II	6
3524.236		Fe I	130
3524.54	P	Cr II	107
3524.541		Ni I	18
3524.646		Mo II	1
3524.713		V II	5
3524.87		Ti II	118
3525.161		Ti I	167
3525.17		Fe III	60
3525.44		Cr I	
3525.81		Zr II	9
3525.856		Fe I	320
3525.872		Co I	63
3526.016		Fe I	240
3526.039		Fe I	6
3526.13		Cl II	64
3526.167		Fe I	24
3526.23		Fe I	327
3526.377		Fe I	326
3526.465		Fe I	131
3526.540		Ni I	155
3526.673		Fe I	326
3526.69	P	Fe I	497
3526.78	P	Fe I	321
3526.847		Co I	4
3526.96	P	Fe I	835
3527.08		Cr I	274
3527.11		P II	21
3527.42		Zr II	103
3527.792		Fe I	326
3527.867		V II	117

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A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
7.90	P	Fe I	296	3538.142		Rh I	8	3550.82		La II	15
7.982		Ni I	6	3538.238		V II	4	3551.11	P	Fe I	321
8.024		Rh I	3	3538.31		Fe I	775	3551.16		P II	12,21
8.23		Cr II	109	3538.55		Fe I	137	3551.52		Ne II	25
8.24	P	Fe I	182	3538.77		Fe I	811	3551.534		Ni I	5
8.545		Gd II	23	3538.86		Mg II	12	3551.666		Co I	67
8.602		Os I	1	3539.00		Cr II	157	3551.94		Zr II	1
8.891		Ni I	154	3539.05		Zr II	102	3552.00		Al II	53
8.94	P	Fe I	23	3539.086		Ce II	118	3552.112		Fe I	499
9.032		Co I	5	3539.589		Th II	1	3552.42	P	Fe I	182
9.38		Tl I	2	3539.94		Ne II	50	3552.50	P	Cr II	89
9.531		Fe I	537	3540.121		Fe I	329	3552.516		Eu II	19
9.57		W II	12	3540.28	P	Cr II	89	3552.70		Hf II	7
9.625		Ni I	76	3540.530		V I	45	3552.70		Y I	8
9.73		Cr II	89	3540.709		Fe I	23	3552.720		Co I	6
9.735		V I	53	3540.961		Cb II	4	3552.828		Fe I	321
9.816		Co I	22	3541.083		Fe I	326	3552.85	P	Ti II	15
9.818		Fe I	326	3541.22	P	Fe I	47	3552.953		Cr I	
9.99		Zr II	84	3541.341		V II	145	3552.989		Co I	67
0.03		Cl III	10	3541.44		Ti IV		3553.10		Pd I	9
0.22		Zr I	52	3541.765		F II	6	3553.161		Co I	137
0.25		P II	21	3542.00		Ni I	119	3553.271		V I	53
0.385		Fe I	326	3542.076		Fe I	326	3553.483		Ni I	16
0.45		V II	57	3542.152		Eu II	17	3553.51		Mg II	11
0.487		He I	36	3542.243		Fe I	128	3553.716		Gd II	89
0.580		Ti I	22	3542.28		Ne II	50	3553.741		Fe I	810
0.595		Ni I	121	3542.480		V II	145	3553.968		Cr I	157
0.600		Sm II	20	3542.56	P	Fe I	321	3554.09		Zr II	83
0.67		La II	12	3542.65		Zr II	113	3554.122		Fe I	23
0.75		K II	7	3542.657		V I	45	3554.39		Ne II	18
0.765		V II	5	3542.768		Gd II	51	3554.394		He I	34
0.85		Zr II	114	3542.90		Ne II	34	3554.43		Lu II	7
1.151		Eu II	24	3542.976		Co I	19	3554.44	P	Fe I	395
1.22		A II	5	3543.09	P	Fe I	182	3554.50		Fe I	325
1.43		Fe I	182	3543.16		A II		3554.50	P	Fe II	176
1.44		Cr I	203	3543.256		Co I	64	3554.524		He I	34
1.48		V II	4	3543.352		Nd II		3554.65	P	Fe I	154
1.848		Mn I	18	3543.39		Fe I	183	3554.802		Gd II	52
1.998		Mn I	18	3543.500		V I	53	3554.922		Fe I	326
2.121		Mn I	18	3543.669		Fe I	734	3554.993		Ce II	117
2.19		A II	57	3543.948		Rh I	6	3555.08	P	Fe II	113
2.285		V II	192	3544.001		Y II	56	3555.142		V I	53
2.647		Fe II	132	3544.631		Fe I	239	3555.18		W II	11
2.65		N I		3544.88	P	Fe I	154	3555.93		Co II	1
2.69	P	Fe II	75	3544.985		Gd II	51	3556.083		Y II	46
2.888		Cr I		3545.03		Co II	1	3556.120		Co I	117
3.008		Fe I	326	3545.16		Ni I	76	3556.130		Cr II	7
3.043		Na II	1	3545.190		V II	5	3556.184		Ti I	
3.19	P	Fe II	75	3545.339		V I	53	3556.49		P II	21
3.201		Fe I	326	3545.58		A II	70	3556.54	P	Zr II	19
3.22		Zr I	14	3545.603		Ce II	44	3556.61		Zr II	9
3.356		Co I	5	3545.639		Fe I	321	3556.68		Fe I	325
3.67		P II	21	3545.797		Gd II	2	3556.800		V II	5
3.676		V I	53	3545.832		Fe I	536	3556.877		Fe I	327
3.757		V I	53	3545.84		A II	106	3556.91		A II	29
3.868		Ti II	98	3546.15	P	Cr II	134	3556.92		O III	24
3.97		O II	69	3546.190		Ce II	131	3557.053		Gd II	22
4.051		Ce II	44	3546.21		Fe I	183	3557.26		La II	29
4.14		V II	12	3546.22		Ne II	27	3557.548		Fe II	176
4.52		Fe I	811	3546.707		Co I	41	3557.796		Tm II	10
4.698		Mo II	1	3547.020		Ti I	133	3557.84		Ne II	6
4.769		Co I	118	3547.07		V II	69	3557.85	P	Cr II	76
4.914		Fe I	48	3547.10		Cr II	134	3558.08	P	Fe I	572
5.04		Mg II	12	3547.203		Fe I	321,613	3558.189		Gd II	69
5.16		Zr I	59	3547.69		Zr I	13	3558.21	P	Fe I	239
5.18	P	V II	4	3547.802		Mn I	18	3558.22	P	Cr II	89
5.304		Cb I	4	3547.98		Cr I		3558.468		Gd II	51
5.33		A II	44	3548.029		Mn I	18	3558.518		Fe I	24
5.408		Ti II	98	3548.037		Fe I	496	3558.538		Sc II	3
5.522		Tm II		3548.185		Ni I	3,20	3558.60		Cr I	
5.54		Hf II	9	3548.202		Mn I	18	3558.772		Co I	20
5.628		Fe II	75	3548.438		Co I	41	3559.101		Sm II	
5.653		Sm II	44	3548.51		A II	56	3559.21		Cr I	
5.729		Sc II	11	3548.55	P	Fe II	132	3559.328		Ce II	243
6.30		P II	20	3548.731		Cr I	76	3559.45	P	Fe I	321
6.556		Fe I	326	3549.02		Y II	9	3559.506		Fe I	498
6.576		Tm II	3	3549.030		V II	103	3559.53		A II	70
6.820		He I	35	3549.08		W II	13	3559.597		Co I	97
6.838		F II	6	3549.27	P	Ti II	117	3559.781		Cr I	89
6.89		Cr I	50	3549.365		Gd II	7	3559.93		P II	21
6.94		Zr II	10	3549.51		Zr II	84	3559.930		Ni I	118
7.243		Ni I	153	3549.61		Mg II	11	3560.07	P	Fe I	321
7.25		Cr I	50	3549.72		S III		3560.306		Co I	64
7.491		Fe I	239	3549.868		Fe I	48	3560.42		O IV	12
7.634		Ni I	120	3550.03		A II	68	3560.594		V II	4
7.707		Co I	68	3550.11	P	Zr II	124	3560.68		Cl III	10
7.729		Fe I	239	3550.19	P	Ti II	117	3560.705		Fe I	675
7.75		Ca III	2	3550.46		Zr I	12	3560.798		Ce II	51
7.896		Fe I	327	3550.592		Co I	4	3560.855		Os I	6
7.99		Ne II	50	3550.635		Cr I		3560.891		Co I	21

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	Type	Element	Multiplet No.
4		A II	106
11		Zr II	82
23		Ne II	31
575		Ti II	15
55		Hf II	1
751		Ni I	2
910		Ti II	42
91		Ce II	36
97		Co I	115
19		A II	106
29		Cr I	308
48		Cr I	281
48		P II	22
60	P	Fe I	237
912		Co I	64
950		He I	33
36		O IV	12
61	P	Fe I	325
71		V II	4
92		Cr II	134
046		Gd II	52
11		Fe I	48
115		Co I	159
30		Cr I	281
34		A II	43
51	P	Fe I	183
54	P	Fe II	113
56	P	Fe I	183
67	P	Ni I	73
947		Co I	19
953		Cr I	308
02		A II	57
15		Cr I	50
31		Cr II	107
326		Ti II	76
381		Fe I	24
41		Zr II	102
55		Cr I	50,281
583		Fe I	321,328
83	P	Fe I	571
84		Ne II	34
00		Ti II	42
052		Fe II	155
10		Cr I	284
10		Zr I	15
148		Fe II	132
177		V I	45
177		V II	4
31	P	Fe I	127
37		Cr II	76
372		Ni I	36
43		P II	22
472		Tm II	6
59		Fe I	181
836		Sm II	
045		Fe I	325
116		Gd II	89
171		S II	56
36		Fe I	183
654		Gd II	51
701		Sc II	3
84		Lu I	3
04		Cl II	78
14		Zr II	46
271		Sm II	47
36		Cr I	284
423		Fe I	321
426		Co I	61
53		Ne II	9
828		Fe I	673
040		V I	122
97	P	Fe II	113
977		Fe I	294
03		Hf II	7
083		V I	53
14		Cr I	281
370		Co I	35
493		Mn I	18
566		Gd II	51
804		Mn I	18
94		A II	57
99		Fe I	135
041		Mn I	18
10		La II	142
100		Fe I	24
243		Fe I	326
94		P II	18
57	P	Cr II	89
60	P	Fe I	154
662		W I	3,5

I A	Type	Element	Multiplet No.
3570.77		A II	69
3571.037		V I	122
3571.16		*Pd I*	*1*
3571.228		Fe I	46
3571.26		Ne II	31
3571.37		Cr II	107
3571.64	P	Cr II	89
3571.653		V I	122
3571.869		Ni I	5
3571.933		Cd II	4
3571.97	P	Cr I	157
3571.995		Fe I	321
3572.32	P	Fe I	182
3572.46		Fe III	105
3572.47		Zr II	1
3572.48		W II	3
3572.523		Sc II	3
3572.60		Fe I	325
3572.734		Pb I	3
3572.748		Cr I	75
3573.09		Zr II	9
3573.27	P	Ni I	123
3573.403		Fe I	673
3573.516		V I	122
3573.557		V II	78
3573.643		Cr I	75
3573.737		Ti II	15
3573.842		Fe I	181
3573.896		Fe I	611
3574.039		Cr I	74,308
3574.23		Ne II	9
3574.245		Ti I	247
3574.340		V II	78
3574.37	P	Fe I	181
3574.38		Cr I	
3574.64		Ne II	9
3574.805		Cr I	75
3574.935		Cr I	74
3574.967		Co I	21
3575.11		Fe I	321
3575.249		Fe I	322
3575.361		Co I	4
3575.374		Fe I	496
3575.69	P	Cr II	107
3575.79		Zr I	12
3575.850		Cb I	4
3575.952		Ni I	120
3575.976		Fe I	321,328
3576.00		Cl II	78
3576.23	P	Cr II	171
3576.340		Sc II	3
3576.38		Ti II	76
3576.44		Ti IV	
3576.62		A II	56
3576.760		Fe I	613a
3576.762		Ni II	4
3576.772		Gd II	51
3576.88		Zr II	9
3577.220		V II	78
3577.240		Ni I	3
3577.260		Co I	41
3577.458		Ce II	51
3577.644		V II	69
3577.857		V II	78
3577.880		Mn I	8
3578.03		Co II	1
3578.076		Co I	117
3578.22		Zr II	83
3578.380		Fe I	321
3578.596		Gd II	21
3578.636		V II	78
3578.67	P	Fe I	127
3578.687		Cr I	4
3578.687		Ti II	117
3578.89		La II	155
3578.903		Co I	41
3579.029		Co I	41
3579.549		Gd II	89
3579.83	P	Fe I	573
3580.10		La II	155
3580.277		Cb I	4
3580.618		Gd II	89
3580.71	P	Sc II	40
3580.927		*Sc II*	*3*
3580.941		Sm II	
3581.195		Fe I	23
3581.62		A II	56
3581.645		Fe I	295
3581.68		La II	136
3581.80		C II	23

I A	Type	Element	Multiplet No.
3581.91		Gd II	69
3581.916		Fe I	497
3582.08		*Zr II*	*101*
3582.201		Fe I	612
3582.34	P	Fe I	568
3582.35		A II	56
3582.56		Fe I	181
3582.69		Fe I	328
3583.098		Rh I	3
3583.337		Fe I	574
3583.394		Sm II	20
3583.54	P	Fe II	101
3583.676		Mn I	25
3583.704		V I	45
3584.01	P	Cr II	107
3584.259		Sm II	12
3584.366		Cr I	
3584.53		Y II	9
3584.663		Fe I	294
3584.790		Fe I	322
3584.801		Co I	6
3584.960		Fe I	395,611
3584.962		Gd II	7
3584.98		C II	23
3585.154		Co I	21
3585.193		Fe I	438
3585.31		Cr II	13
3585.320		Fe I	23
3585.54		Cr II	13
3585.708		Fe I	23
3585.808		Co I	100
3585.83		C II	23
3585.852		Ti I	
3585.91		Mo II	1
3586.082		Co I	87
3586.10	P	Fe I	497
3586.114		Fe I	611
3586.12		Fe III	36
3586.23		Cr I	157
3586.28		Zr I	12
3586.543		Mn I	8
3586.557		Al II	7
3586.708	Forb	Al II	7
3586.75	P	Fe I	325
3586.811	Forb	Al II	7
3586.83	P	Sc II	40
3586.912		Al II	7
3586.936		Al II	7
3586.985		Fe I	23
3587.068		Al II	7
3587.130		Ti II	15
3587.16	P Forb	He I	32
3587.165		Al II	7
3587.186		Co I	35
3587.186		Gd II	1
3587.195	Forb	Al II	7
3587.252		He I	31
3587.253		Fe I	325
3587.309		Al II	7
3587.342		Al II	7
3587.396		He I	31
3587.424		Fe I	134
3587.450		Al II	7
3587.504		Nd II	
3587.53		Fe III	36
3587.68		C II	23
3587.69	P	Fe I	322
3587.75		Y I	
3587.752		Fe I	
3587.78		Cl II	78
3587.931		Ni I	18
3587.95	P	Fe II	10
3587.98		Zr II	10
3588.13		V II	78
3588.23	P	Fe I	47
3588.30		Cr II	107
3588.32		Zr II	10
3588.44		A II	56
3588.52	P	Fe I	394
3588.615		Fe I	325
3588.80		Zr II	57
3588.918		Fe I	322
3588.92		C II	23
3589.107		*Fe I*	*23*
3589.215		Ru I	4
3589.456		Fe I	295
3589.635		Sc II	3
3589.67		C II	23
3589.745		V II	4
3589.77		Fe III	

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A	Type	Element	Multiplet No.
9.973		Mn I	25
0.08		Fe I	440
0.29	P	Fe I	497
0.46		Si III	7
0.468		Gd II	22
0.47		Ne II	32
0.475		Sc II	3
0.598		Ce II	232
0.66		Fe I	953
0.87		C II	23
0.99		Fe I	573
1.345		Fe I	321
1.485		Fe I	568
1.746		Co I	134
1.912		Gd II	51
2.012		V II	4
2.486		Fe I	237
2.595		Nd II	
2.603		Sm II	39
2.68		Fe I	569
2.709		Gd II	69,89
2.881		Fe I	77
2.92		Y I	8
3.02	P	Cr II	13
3.022		Ru I	4
3.093		Ti II	76
3.15		Fe III	30
3.323		V II	4
3.33		Fe I	571
3.445		Gd II	52
3.488		Cr I	4
3.5259		Ne I	7
3.60		N II	26
3.76		A II	117
3.80	P	Fe I	182
4.10	P	Fe I	154
4.13	P	Sc II	40
4.18		Ne II	34
4.41		A II	23
4.462		S II	16
4.632		Fe I	322
4.87	P	Co I	135
4.870		Co I	4
4.89	P	Sc II	40
5.119		Mn I	8
5.294		Fe I	322
5.66		Fe I	322
5.87		Fe I	181
5.991		S II	4
6.048		Ti II	15
6.179		Ru I	4
6.194		Rh I	1
6.20		Fe I	181
6.351		Mo II	1
6.510		Co I	118
6.55		Ti II	76
7.05		Fe I	569
7.147		Rh I	5
7.24	P	Fe I	856
7.39	P	Sc II	40
7.42		Hf II	54
7.50		Al II	52
7.705		Ni I	18
8.196		Ce II	116
8.22		Fe III	105
8.71		Fe I	674
8.714		Ti I	59
8.93		Fe I	568
8.98		Fe I	322
9.304		He I	30
9.395		Cr I	89
9.442		He I	30
9.49		Fe III	30
9.530		Ni I	121
9.624		Fe I	809
9.91		Zr II	123
9.974		Ce II	219
0.22		A II	115
0.48	P	Fe I	498
0.583		Ce II	236
0.74		Y II	9
0.803		Co I	63
0.93		Fe III	36
0.963		Gd II	69
1.07		La II	44
1.16		Ti I	172
1.18		Zr I	13
1.42	P	Fe I	127
1.51		A II	4
1.623		Al III	1

I A	Type	Element	Multiplet No.
3601.666		Cr I	74
3601.692		Sm II	20
3601.782		Mn I	25
3601.916		Al III	1
3601.93		Y II	9
3602.079		Co I	4
3602.10		Cl III	1
3602.10		Fe I	322
3602.281		Ni I	3
3602.46		Fe I	322
3602.534		Fe I	324,391
3602.574		Cr I	74
3602.60	P	Fe II	101
3602.61	P	Cr I	140
3602.70	P	Fe I	390
3602.77	P	Fe I	370
3603.20		Eu II	16
3603.205		Fe I	295
3603.46		A II	57
3603.572		Fe I	181
3603.61		Cr II	13
3603.72		Cl II	78
3603.745		Cr I	74
3603.80		Cr II	13
3603.828		Fe I	496
3603.845		Ti I	20
3603.86		Cr II	13
3603.88		Fe III	36
3603.91		A II	43,68
3604.21	P	Fe II	175
3604.284		Ti I	21
3604.285		Sm II	47
3604.375		V II	130
3604.383		Fe I	323
3604.469		Co I	136
3604.51		Cl II	78
3604.54		Cr I	40,89
3604.95	P	Cr I	74
3604.96	P	Fe I	77
3605.015		Co I	97
3605.05	P	Cr I	49
3605.333		Cr I	4
3605.370		Co I	20
3605.41	P	Cr I	49
3605.450		Fe I	294
3605.46		Y II	46
3605.50	P	Fe I	322
3605.50	P	Sc II	40
3605.52	P	Cr I	252
3605.665		Gd II	4
3605.691		Mn I	25
3605.89		A II	30
3606.062		Ti I	303
3606.18	P	Fe II	175
3606.38	P	Fe I	233
3606.5224		A I	5
3606.53	P	Fe I	133
3606.679		Fe I	294
3606.786		Ti I	20
3606.852		Ni I	120,173
3607.04		Co I	67
3607.05	P	Fe II	101
3607.25	P	Cr I	140
3607.30		V II	77
3607.39		Zr II	83
3607.537		Mn I	8
3607.625		Ce II	178
3607.92	P	Cr I	140
3608.146		Fe I	325,438
3608.307		Co I	20
3608.32		V II	242
3608.401		Cr I	252
3608.49	P	Fe II	175
3608.494		Mn I	8
3608.58	P	Cr I	140
3608.66		Cr II	133
3608.7	P	Ni II	4
3608.753		Gd II	69
3608.766		Tm II	3
3608.861		Fe I	23
3608.89	P	Ti II	76
3608.96		C III	10
3609.04		Cr I	49
3609.09		N II	26
3609.314		Ni I	16
3609.46	P	Fe I	322
3609.479		Cr I	49
3609.491		Sm II	30
3609.56		Pd I	2
3609.61		C III	10

I A	Type	Element	Multiplet No.
3609.687		Ce II	179
3609.752		Co I	147
3609.788		Nd II	
3610.052		Cr I	49
3610.07		Cl II	
3610.154		Ti I	58
3610.159		Fe I	321
3610.25		La II	
3610.299		Mn I	8
3610.33	P	Fe II	112
3610.38	P	Fe II	175
3610.462		Ni I	18
3610.703		Fe I	323
3610.76		Gd II	89
3610.794		Th II	3
3610.85	P	Cr II	171
3611.06		Y II	9
3611.418		Ni I	119
3611.54	P	Ni I	2
3611.57		Eu II	15
3611.58		V II	
3611.701		Co I	115
3611.72		Fe III	36
3611.84		A II	30
3611.90		Zr II	113
3612.068		Fe I	325
3612.34		La II	125
3612.34		Zr II	146
3612.35		Ne II	26
3612.352		Al III	1
3612.470		Rh I	1
3612.51	P	Fe I	613a
3612.609		Cr I	252
3612.741		Hf I	6
3612.85		Cl III	1
3612.940		Fe I	46,77
3613.03		S II	4
3613.08	P	Fe I	322
3613.08		Zr II	1
3613.15		Fe I	324
3613.21		Cr II	13
3613.26		Cr II	13
3613.30	P	Ti II	76
3613.392		Gd II	69
3613.43		Zr II	8,45
3613.45	P	Fe I	672
3613.490		Gd II	87
3613.641		He I	6
3613.669		Cr I	89
3613.70		Zr I	33
3613.701		Ce II	110
3613.80		Mg II	2
3613.836		Sc II	2
3613.95	P	Fe I	612
3614.10		Co I	64
3614.21		Gd II	51
3614.26		Cr II	132
3614.34		Co I	134
3614.550		Fe I	
3614.673		Nd II	38
3614.77	P	Fe I	395
3614.79		Zr II	9
3614.873		Fe II	112
3615.01	P	Fe I	154
3615.09		Cl II	70
3615.19		Fe I	569
3615.387		Co I	66
3615.45	P	Cr II	147
3615.64		Mg II	2
3615.645		Cr I	3
3615.66		Fe I	46
3615.817		Nd II	69
3615.86		N II	26
3616.15	P	Fe I	569
3616.152		Eu II	28
3616.29	P	Cr II	147
3616.326		Fe I	132
3616.572		Fe I	
3616.916		S II	56
3617.09		Fe I	535
3617.164		Gd II	39
3617.317		Fe I	
3617.32		Cr II	147
3617.522		W I	8
3617.53	P	Fe I	323
3617.788		Fe I	496
3617.97	P	Fe I	181
3618.010		Co I	36
3618.30	P	Fe I	324
3618.392		Fe I	295,571

I A	Type	Element	Multiplet No.
9		K II	1
2	P	Fe I	569
69		Fe I	23
8		Cl II	77
1	P	Fe I	130
24		V II	158
6	P	Fe I	77
84		Mn I	8
92		Ni I	35
60		Cr I	48
14		Cb II	4
6	P	Fe I	130
6		Fe I	180
0	P	Fe I	324
23		Fe I	324
27		Fe III	25
22		Co I	116
96		V II	181
2		A II	67
7	P	Fe I	611
8	P	Fe I	323
95		Y I	8
6		A II	4
19	P	Fe I	574
203		V II	76
22		Co II	1
229		Sm II	12
273		Fe II	144
463		Fe I	294
51		Cr II	98
718		Fe I	808
	P	O VI	3
00	P	Fe I	233
001		Fe I	295
145		Ce II	71
15		A II	42
289		V II	144
45		Cr II	171
504		Sm II	6
54		Eu II	18
69		Cl III	1
81	P	Fe II	175
850		Mo II	1
03		V II	77
187		Fe I	180
316		Sm II	12
440		Fe I	233,438
51	P	Fe I	393
772		Fe I	323
792		Mn I	8
837		Ce II	235
.837		Ce II	
.87		Zr I	12
.98		Lu II	6
.00		Hf II	18
.06	P	Fe I	570
.111		Ca I	9
.25		Fe III	93
.30		Fe I	133
.337		Co I	41
.688		Fe II	
.72	P	Ni I	121
.733		Ni I	2
.826		Ti II	52
.890		Fe II	144
.955		Co I	21
.140		Fe I	323
.26		Gd II	69
.30	P	Cr II	98
.608		V II	76
.92	P	Cr II	147
.020		Co I	41
.085		Ti I	20
.32		Gd II	69
.53		S III	
.014		Sm II	30
.05		Fe I	808
.168		Fe II	193
.35	P	Fe I	395
.63		Mg I	45
.71		Ti II	62
.713		V II	76
.806		Co I	19
.971		Sm II	12
.06		Ne II	41
.094		Fe I	77
.247		Ce II	113
.71		Y II	9
.82	P	Fe I	438
.83		La II	13
3629.10	P	Sc II	18
3629.12		Zr II	113
3629.51		Gd II	69
3629.741		Mn I	8
3629.906		Ni I	182
3629.99	P	Fe II	111
3630.03		Zr II	10
3630.26	P	Ni I	180
3630.353		Fe I	323
3630.67	P	Fe I	126
3630.740		Sc II	2
3630.748		Ca I	9
3630.874		Ca I	9
3631.103		Fe I	322
3631.126		Sm II	
3631.194		Ce II	88
3631.266		Na II	2
3631.390		Co I	4
3631.41		P II	22
3631.464		Fe I	23
3631.48	P	Cr II	170
3631.482		V II	76
3631.49		Cr II	12
3631.72		Cr II	12
3631.948		Co I	133
3631.959		W I	3
3631.999		Ti I	
3632.022		S III	1
3632.042		Fe I	490
3632.106		Ce II	114
3632.126		V II	76
3632.292		Fe II	112
3632.46		Cr I	49
3632.558		Fe I	437
3632.75		Ne II	33
3632.839		Co I	147
3632.839		Cr I	49
3632.979		Fe I	135
3633.07	P	Fe I	390
3633.13		Y II	2
3633.16	P	Cr II	147
3633.340		Co I	116
3633.458		Ti I	
3633.49		Zr II	102
3633.64	P	Fe I	395
3633.837		Fe I	440
3633.99	P	Ti II	116
3634.04		Cr II	147
3634.10	P Forb	He I	29
3634.13		V II	160
3634.235		He I	28
3634.290		Sm II	19
3634.326		Fe I	389
3634.373		He I	28
3634.52	P	Fe I	323
3634.698		Fe I	
3634.71		Pd I	1
3634.713		Co I	146
3634.757		Gd II	69
3634.83		A II	29
3634.928		Sm II	6
3634.941		Ni I	33
3635.08	P	Fe I	919
3635.13		A II	4
3635.144		Mo II	5
3635.19		Fe I	490
3635.202		Ti I	20
3635.28	P	Fe I	324
3635.281		Cr I	3
3635.334		Y II	46
3635.36	P	Ti II	62
3635.43	P	Cr II	98
3635.462		Ti I	19
3635.64	P	Ti II	116
3635.67		A II	68
3635.82	P	Fe I	321
3636.186		Fe I	77,568
3636.21		Cr I	47
3636.23		Fe I	774
3636.46		Zr II	9
3636.49	P	Fe I	568
3636.50	P	Fe I	47
3636.590		Cr I	47
3636.61	P	Fe II	111
3636.650		Fe I	493
3636.713		Co I	64
3636.90	P	Fe II	112
3636.995		Fe I	233
3637.05		A II	
3637.05	P	Fe I	438
3637.15		La II	55
3637.251		Fe I	180
3637.319		Co I	117
3637.73		Fe I	229
3637.83		Sb I	1
3637.862		Fe I	385
3637.89		A II	
3637.966		Ti I	18
3638.15		S III	
3638.16	P	Fe I	324
3638.296		Fe I	294
3638.49	P	Ti I	118
3638.70		O III	35
3638.767		Sm II	
3638.80		Pt I	6
3639.024		V I	83
3639.14	P	Mn I	7
3639.19		Cl II	77
3639.443		Co I	64
3639.568		Pb I	1
3639.76	P	Sc II	18
3639.802		Cr I	47
3639.85		A II	116
3640.18		Gd II	23
3640.388		Fe I	295
3640.39		Cr I	47
3640.891		F II	11
3641.01		Cr I	47
3641.090		V I	115
3641.22	P	Fe II	111
3641.330		Ti II	52
3641.39		Gd II	86
3641.42		W II	1
3641.45	P	Fe I	323
3641.470		Cr I	47
3641.641		Ni I	6
3641.66		La II	136
3641.784		Co I	99
3641.830		Cr I	47
3641.985		F II	11
3642.387		Ni I	75
3642.675		Ti I	19
3642.785		Sc II	2
3642.798		F II	11
3643.181		Co I	99
3643.22		Cr II	1
3643.4		Y II	55
3643.47		Mo II	1
3643.627		Fe I	385
3643.716		Fe I	233
3643.80	P	Fe I	670
3643.82	P	Fe I	46
3643.864		V I	83
3643.89		Ne II	5
3643.941		Ni I	174
3644.12	P	Cr II	98
3644.19	P	Fe II	131
3644.35		Hf II	6
3644.410		Ca I	9
3644.47		He II	5
3644.58	P	Fe I	235
3644.699		Ti I	
3644.70		Cr II	1
3644.765		Ca I	9
3644.798		Fe I	570
3644.86		Ne II	41
3644.87	P	Ti II	116
3644.990		Ca I	9
3645.090		Fe I	323,495
3645.190		Co I	61
3645.20		O III	35
3645.290		Sm II	19
3645.311		Sc II	2
3645.387		Sm II	35
3645.43		La II	14
3645.440		Co I	97
3645.494		Fe I	323,391,441
3645.59		Cr I	48
3645.596		V I	137
3645.62		Gd II	17
3645.78	P	Fe II	112
3645.822		Fe I	496
3645.905		V II	76
3645.981		H	7
3646.10	P	Fe I	324
3646.161		Cr I	48
3646.19		Gd II	2
3646.198		Ti I	18
3646.75		Eu II	13
3646.84		O III	35

I A	Type	Element	Multiplet No.
46.848		V II	180
46.965		Ce II	66
47.081		Co I	118
47.40		Cr II	1
47.427		Fe I	46
47.43	P	Fe I	497
47.56	P	Fe I	574
47.658		Co I	4
47.71		Ni I	
47.77		Lu I	
47.84	P	Fe I	569
47.844		Fe I	23
48.07		Cl II	77
48.22	P	Fe I	978
48.35		Hf II	39
48.534		Cr I	47
48.80	P	Ti II	74
48.86		Ti II	83
48.066		V I	115
48.997		Cr I	47
9.01	P	Ti II	14
9.184	Forb	Al II	12
9.20		O III	35
9.232	Forb	Al II	12
9.304		Fe I	5
9.329		Co I	146
9.44		Gd II	69
9.508		Fe I	291
9.527		Sm II	47
9.70	P	Fe I	391
0.031		Fe I	394
0.13		Cl II	7
0.144		Hg I	3
0.188		Sm II	25
0.19		La II	12
0.19		N I	
0.280		Fe I	180
0.37		Cr II	156
0.45		Y II	75
0.70		O III	35
0.73		Zr II	146
0.90		A II	43
0.95		Gd II	69
0.998		Sm II	51
1.03	P	Fe I	571
1.065	Forb	Al II	12
1.096		Al II	12
1.10		Fe I	322,674
1.182		Cb II	4
1.254		Co I	85
1.469		Fe I	295
1.50		Zr II	122
1.67	P	Ni I	153
1.68		Cr II	1
1.798		Sc II	2
1.90	P	Ti I	118
1.971		He I	27
2.119		He I	27
2.26	P	Fe'I	494
2.541		Co I	4
2.65		Fe III	
2.748		Fe II	
2.81	P	Ti II	116
3.00		O III	35
3.108		Ce II	38
3.35	P	Fe I	229,324
3.497		Ti I	19
3.614		Tm II	10
3.62	P	Sc II	18
3.670		Ce II	50
3.763		Fe I	180
3.85	P	Cr II	156
3.912		Cr I	47
4.441		Co I	63
4.51		S II	4
4.592		Ti I	18
4.62		Gd II	4
4.66		Fe I	77
4.995		Al II	12
5.29		A II	82
5.35	P	Fe I	131
5.465		Fe I	369
5.56		Zr II	71
5.851		Ce II	51
5.92	P	Cr I	46
6.05		A II	67
6.135		H	7
6.152		Gd II	1
6.221		Sm II	
6.227		Fe I	

I A	Type	Element	Multiplet No.
3656.261		Cr I	46
3656.319		Al II	51
3656.35	P	Fe I	323
3656.50	P	Fe II	111
3656.61		S III	6
3656.666		H	7
3656.706		V I	115
3656.73	P	Ti I	118
3656.77	P	Fe II	131
3656.95		Cl III	1
3656.962		Co I	21
3657.143		Fe I	130
3657.269		H	7
3657.574		Ru II	1
3657.59		W II	2
3657.698		Ni I	183
3657.89		Fe I	395
3657.926		H	7
3657.94		Cr II	170
3657.987		Rh I	1
3658.02	P	Fe I	438
3658.097		Ti I	19
3658.19		Cr II	98,146
3658.266		V II	116
3658.3		Al III	20
3658.38		Cl II	7
3658.55		Fe I	231
3658.641		H	7
3659.02		Hf II	44
3659.227		Ce II	54
3659.423		H	6
3659.516		Fe I	180
3659.602		Cb II	
3659.765		Ti II	75
3659.84		Cl II	7
3659.93		Ne II	33
3660.279		H	6
3660.33		Fe I	323
3660.404		Mn I	
3660.41	P	Fe I	229
3660.44		A II	116
3660.631		Ti I	18
3660.641		Ce II	42
3660.85		Fe III	93
3660.92		Zr II	32
3661.05		Hf II	26
3661.17	P	Fe II	111
3661.20		Zr I	12
3661.221		H	6
3661.25	P	Fe I	952
3661.33		Zr II	102
3661.353		Ru I	2
3661.36		Fe I	179
3661.365		Sm II	6
3661.383		V II	191
3661.44		Cr II	156
3661.73		Hf II	62
3661.951		Ni I	16
3662.005		S III	6
3662.08		La II	12
3662.14		Zr II	101
3662.158		Co I	115
3662.237		Ti II	75
3662.258		H	6
3662.26		Gd II	4
3662.39		Cr I	46
3662.62	P	Cr II	1
3662.693		Sm II	
3662.73	P	Fe I	490
3662.840		Cr I	46
3662.90	P	Fe I	436
3662.905		Sm II	39
3663.206		Cr I	46
3663.25		Fe I	439
3663.274		Hg I	2
3663.406		H	6
3663.458		Fe I	229,231
3663.47		S II	16
3663.594		V I	114
3663.64		Zr I	12
3663.95		Fe I	435
3663.98		Fe III	24
3664.09		Ne II	1
3664.095		Ni I	4
3664.20		P II	18
3664.254		Sc II	10
3664.537		Fe I	391
3664.60		Gd II	
3664.62		Y II	9
3664.679		H	6

I A	Type	Element	Multiplet No.
3664.69		Fe I	390
3664.86	P	Ti II	116
3664.95		Cr II	156
3664.98		Fe III	24
3665.142		V I	115
3665.180		Nd II	
3665.22		La II	
3665.35		Hf II	18
3665.43		Cr I	48
3665.48	P	Cr II	1
3665.812		Tm II	10
3665.924		Ni I	
3665.980		Cr I	48
3666.02	P	Cr II	145
3666.097		H	5
3666.11	P	Ti II	74
3666.19		Cr I	46
3666.215		Rh I	3
3666.24		Fe I	179,389
3666.29	P	Fe I	672
3666.537		Sc II	2
3666.592		Ti II	116
3666.642		Cr I	46
3666.85	P	Fe I	393
3666.944		Fe I	46
3667.06		Zr II	8
3667.252		Fe I	570
3667.40		Zr II	32
3667.684		H	5
3667.741		V I	114
3667.932		Sm II	30
3667.981		Ce II	40
3667.999		Fe I	438,569
3668.029		Cr I	46
3668.03		Cl II	7
3668.088		Tm II	2
3668.214		Fe I	568
3668.216		Ni I	182
3668.46		Zr II	9
3668.489		Y II	46
3668.58	P	Fe I	231
3668.719		Ce II	38
3668.830		Pr II	
3668.893		Fe I	229
3668.965		Ti I	18
3669.049		S II	16
3669.151		Fe I	437
3669.241		Ni I	2
3669.399		Mn I	7
3669.410		V II	116
3669.466		H	5
3669.523		Fe I	291
3669.62		A II	42
3669.68	P	Fe I	436
3669.69	P	Cr II	1
3669.838		Mn I	7
3670.035		Fe I	369
3670.041		Co I	64
3670.071		Fe I	435
3670.16	P	Cr II	6
3670.23	P	Fe I	47
3670.28		Cl III	1
3670.427		Ni I	4
3670.517		Mn I	7
3670.668		Mo II	1
3670.677		Sm II	
3670.810		Fe I	133
3670.840		Sm II	11
3671.01		A II	115
3671.12	P	Cr II	6
3671.20		Gd II	2
3671.205		V I	70
3671.28		Zr II	45
3671.478		H	5
3671.51		Fe I	570
3671.672		Ti I	19
3671.94		Cr I	217
3672.14		S II	4
3672.166		Ce II	49
3672.363		Nd II	
3672.403		V I	115
3672.65		Zr II	1
3672.69		Fe I	180
3672.789		Ce II	233
3673.19		Eu II	28
3673.26		A II	117
3673.35	P	Fe II	174
3673.404		V I	114
3673.448		Ca I	28
3673.542		Nd II	

	Type	Element	Multiplet No.
		Cr I	217
	P	Fe I	978
1		H	5
	P	Fe II	131
		Cl II	7
	P	Ni I	15
	P	Ni I	32
4		Eu II	11
1		V II	93
		Zr II	9
6		Fe I	369
	P	Ti I	177
	P	Cr II	1
5		Sc II	10
7		Ca I	28
	P	Fe I	229
7		V I	114
		Y II	84
0		V I	29
	P	Fe I	996
		P II	19
4		Fe I	228
		Cr I	89
5		H	4
	P	Cr II	1
2		Co I	145
4		V I	115
9		Fe I	389
9		Mn I	
9		Fe I	773
7		Fe I	125
0		Fe I	291
		Cr II	12
3		Sm II	
5		Co I	116
		Cr II	12
		Cr II	12
0		Co I	20
		S II	
0		Ca I	28
9		Eu II	29
		A II	42
2		Sc II	45
	P	Mn I	7
2		Tm II	12
3		Fe I	131
		Zr II	101
		Fe I	124
0		Cr I	45
	P	Ti I	177
		Fe I	228
	P	Cr II	118
5		H	4
4		Ce II	257
0		Eu II	
		Fe I	393,490
		Zr II	122
3		Ti II	75
		Ne II	41
.9		Cr I	48
.5		Fe I	5
		A II	115
3		V I	114
		Cr I	48
5		Fe I	568
1		Fe I	
	P	Fe II	111
2		Ti I	177
		K II	1
		Fe I	390
1		Cr I	89
4		Fe I	
		Fe I	951
		Cl III	1
1		W I	4
	P	Fe I	386
	P	Fe I	385
6		Fe I	772
		Hf I	1
		A II	29
	P	Fe II	131
		Zr II	44
10		H	4
7		Co I	99
4		Fe I	5
6		V I	29
7		Eu II	11
		Cl III	12
9		Pb I	1
6		Fe I	130,671

I A	Type	Element	Multiplet No.
3683.67		Cr I	216
3683.71		Ca II	18
3683.77	P	Fe I	996
3684.1		Li II	2
3684.108		Fe I	292
3684.25		Cr II	145
3684.332		V I	114
3684.479		Co I	99
3684.903		Y II	62
3684.960		Co I	116
3685.049		Mn II	8
3685.192		Ti II	14
3685.212		Mn I	7
3685.47	P	Ti I	177
3685.548		Cr I	44
3685.66	P	Fe I	231
3685.804		Nd II	
3685.964		Ti I	117
3685.998		Fe I	385
3686.18		Cr I	44
3686.20		Mn II	8
3686.260		Fe I	131
3686.262		V I	70
3686.477		Co I	134
3686.555		Cu II	2
3686.67		Cr II	118
3686.71		Ti I	222
3686.803		Cr I	44
3686.833		H	4
3687.039		Pr II	
3687.100		Fe I	75
3687.252		Cr I	44
3687.354		Ti I	19
3687.458		Fe I	21
3687.473		V I	114
3687.545		Cr I	45
3687.656		Fe I	291
3687.74		Gd II	20
3687.78		Eu II	
3687.802		Ce II	143
3688.01	P	Cr II	1
3688.069		V I	29
3688.11		Cr I	45
3688.27	P	Ti I	177
3688.307		Mo II	5
3688.415		Ni I	5
3688.418		Sm II	11
3688.42		Eu II	2
3688.44		Cl II	56
3688.457		Cr I	48
3688.476		Fe I	669
3688.71		Fe III	93
3688.877		Fe I	179
3689	P	N IV	12
3689.02	P	Fe I	178
3689.2		Y II	75
3689.302		Cr I	48
3689.305		Ni I	173
3689.37	P	Fe I	391
3689.457		Fe I	369,386
3689.63		Cr I	216
3689.671		Ti I	222
3689.897		Fe I	533
3689.916		Ti I	18
3690.032		Ru II	1
3690.095		Fe I	231
3690.281		V I	29
3690.35		Pd I	7
3690.450		Fe I	497,570
3690.60		Fe III	85
3690.70		V II	190
3690.715		Co I	86
3690.730		Fe I	807
3690.98	P	Zr II	82
3691.18	P	Fe I	229
3691.53	P	Fe I	707
3691.557		H	4
3692	P	O V	8
3692.17		A II	68
3692.221		Sm II	29
3692.225		V I	29
3692.33		A II	4
3692.357		Rh I	1
3692.44		O I	6
3692.60		Zr II	56
3692.645		Mo II	5
3692.812		Mn I	7
3693.008		Fe I	439
3693.09		Cr I	216
3693.106		Co I	97

I A	Type	Element	Multiplet No.
3693.364		Co I	64
3693.476		Co I	95
3693.56		Cr I	45
3693.667		Mn I	
3693.78	P	Fe I	46
3693.79	P	Fe I	490
3693.932		Ni I	15
3693.989		Sm II	2
3694.005		Fe I	394
3694.10	P	Ti I	177
3694.11		Ca II	18
3694.115		Mn I	24
3694.12		Cr I	45
3694.19		Yb II	1
3694.22		Ne II	1
3694.27		La II	124
3694.31		Ca II	18
3694.445		Ti I	117
3694.622		V I	114
3694.911		Ce II	63
3694.98		Cr II	169
3695.054		Fe I	229,534a
3695.158		V II	116,179
3695.335		V I	114
3695.37		O III	21
3695.507		Fe I	225,707
3695.86		Cr I	217
3695.865		V I	29
3696	P	*N IV*	*12*
3696.03		Fe I	128
3696.29	P	Ni I	74
3696.39		Ti II	73
3696.568		Mn I	24
3696.6		Y II	74
3696.65	P	Ni I	74
3696.78		Cr II	131
3696.81	P	Fe I	434
3696.885		Ti I	177
3696.913		Ni I	172
3697.09		Ne II	41
3697.154		H	3
3697.426		Fe I	389
3697.45		Fe III	35
3697.49		Zr II	7
3697.510		Fe I	670
3697.72		V II	204
3697.73		Gd II	4
3697.850		Cb I	3
3697.88		S III	
3698.00		Cr II	118
3698.03	P	Fe I	75
3698.17		Zr II	71
3698.183		Ti I	222
3698.39		Hf II	42
3698.611		Fe I	491
3698.650		Ce II	51
3698.70		O III	21
3699.017		Co I	145
3699.147		Fe I	490
3699.37		S III	
3699.41	P	Fe I	996
3699.476		V I	70
3699.55	P	Fe I	436
3699.72		Hf II	18
3699.73		Gd II	20
3699.90	P	Fe II	131
3699.920		Ce II	223
3699.952		Pr II	11
3700.055		Ti I	
3700.126		V II	102
3700.14		Fe III	84
3700.256		Tm II	6
3700.337		V II	116
3700.42	P	Cr II	1
3700.61	P	Fe I	569
3700.909		Rh I	2
3700.922		Sm II	
3700.96		V II	102
3701	P	O V	8
3701.086		Fe I	385
3701.15		Hf II	61
3701.364		Tm II	2
3701.63	P	Ni I	138
3701.730		Mn I	7
3701.81		La II	136
3701.81		Ne II	40
3701.90		Cr II	168
3702	P	O V	16
3702.033		Fe I	369
3702.086		Al III	4

FINDING LIST

I A	Type	Element	Multiplet No.
02.237		Co I	145
02.291		Ti I	83
02.500		Fe I	46,75
02.553		Mo II	5
02.75		O III	14
02.942		Ti I	132
03	P	O V	8
03.217		Al II	18
03.323		Y II	62
03.37		O III	21
03.43	P	Fe I	704
03.52		C III	12
03.556		Fe I	291,292
03.584		V I	29
03.697		Fe I	389
03.824		Fe I	369
03.832		V II	15
03.855		H	3
04.010		Fe I	495
04.060		Co I	35
04.295		Ti I	117
04.336		Fe I	609
04.463		Fe I	290
04.699		V I	29
04.73		O III	21
04.79	P Forb	He I	26
04.80	P	Fe I	950
04.848		Tm II	9
05.003		He I	25
05.035		V I	29
05.12	P	Ni I	30
05.140		He I	25
05.26	P	Fe I	704
05.40	P	Cr II	118
05.40		Hf II	62
05.45		Cl III	1
05.53		Ti I	222
05.567		Fe I	5
05.70	P	Fe I	610
05.71	P	Fe I	293
05.81		La II	55
05.83		V I	114
06.026		Ca II	3
06.035		V I	104
06.06		P II	20
06.219		Ti II	73
06.752		Sm II	47
06.91		Mn II	8
06.94		A II	4
06.979		Sm II	
07.01		Co I	85
07.048		Fe I	385,392
07.13		Cr II	169
07.167		Sm II	35
07.24		O III	14
07.34		Cl III	9
07.465		Co I	96
07.549		Ti I	177
07.828		Fe I	5
07.918		Fe I	76
08.06		Mn II	8
08.18	P	Fe I	228
08.410		Sm II	5
08.45	P	Fe I	436
08.602		Fe I	178,225
08.625		Ti I	268
08.654		Sm II	19
08.721		V I	104
08.823		Co I	98
09.03	P	Fe I	390
09.13		Gd II	51
09.246		Fe I	21
09.25	P	Cr II	6
09.27		Zr II	45
09.286		Ce II	40
09.335		V II	102
09.371		S III	1
09.52		O III	21
09.535		Fe I	435
09.64		Ne II	1
09.665		Fe I	225
09.88		Mn II	8
09.90		A II	67
09.933		Ce II	40
09.963		Ti I	83
10.01	P	Cr II	6
10.186		Ti I	222
10.22	P	Cr II	6
10.30		Y II	7
10.42		S III	1
3710.46		P II	37
3710.47		Zr II	122
3710.60		Cr I	88
3710.869		Sm II	19
3710.870		Eu II	14
3711.074		Na II	3
3711.099		Pr II	18
3711.118		V II	102
3711.225		Fe I	228
3711.29		Cr II	
3711.30	P	Fe I	75
3711.32		Fe III	99
3711.411		Fe I	494
3711.543		Sm II	25
3711.646		Co I	63
3711.751		V II	116
3711.92	P	Fe I	178
3711.95		Zr II	8
3711.973		H	3
3711.974		Fe II	192
3712.109		Sm II	
3712.177		Co I	84
3712.39	P	Fe II	15
3712.48		O III	21
3712.50		Cr I	269
3712.533		V II	157
3712.70		Gd II	20
3712.75		O II	3
3712.764		Sm II	25
3712.97		Cr II	12
3713.018		Cb I	3
3713.03		A II	114
3713.04		Cr II	12
3713.09		Ne II	5
3713.103		Al III	4
3713.336		Ni I	74
3713.45		Eu II	12
3713.54		La II	26
3713.56		V I	98
3713.696		Ni I	74
3713.734		Ti I	116
3713.957		V I	11
3714	P	N IV	12
3714.03		O III	14
3714.13		Zr I	12
3714.3		Y II	61
3714.39		Cr I	269
3714.74		A II	3
3714.77		Zr II	18
3714.808		Nd II	35
3714.87		La II	55
3714.904		Eu II	11
3715.08		O III	14
3715.19		Cr II	20
3715.371		Ti I	
3715.45		Cr II	145
3715.476		V II	15
3715.499		Ni I	183
3715.53		La II	43
3715.795		Ti I	116
3715.86		P II	1
3715.911		Fe I	124
3716.36		Gd II	2
3716.365		Ce II	40
3716.442		Fe I	388,705
3716.531		Cr I	269
3716.60		K II	2
3716.71	P	Fe I	434
3716.91		Y II	76
3716.930		Ce II	242
3717	P	O V	8
3717.02		Zr II	82
3717.03		P IV	3
3717.06		Cb II	
3717.17		A II	67
3717.19	P	Fe I	704
3717.259		Ti I	116
3717.393		Ti I	17
3717.53		Mn II	8
3717.55		V I	114
3717.63		P III	10
3717.63		P IV	3
3717.69		Eu II	
3717.73	P	Fe I	997
3717.775		S III	6
3717.84	P	Fe I	706
3717.915		Tm I	
3717.94		Cl II	63
3718.159		V II	21
3718.190		Ce II	53
3718.21		A II	131
3718.380		Ce II	37
3718.407		Fe I	292
3718.86		Zr II	9
3718.877		Sm II	38
3718.92		Pd I	3
3718.930		Mn I	
3719.27		Hf II	7
3719.45		Gd II	
3719.53		Gd II	17
3719.74		Mo II	5
3719.797		Ce II	52
3719.935		Fe I	5
3720.17	P	Fe II	23
3720.29	P	Zr II	32
3720.384		Ti I	177
3720.43		A II	42
3720.45		Cl III	5
3720.69	P	Rh II	7
3720.86		O III	21
3720.93		V I	98
3721.03	P	Ni I	181
3721.189		Fe I	491
3721.278		Fe I	75,705
3721.358		V I	11
3721.396		Fe I	131
3721.398		Y II	75
3721.512		Fe I	389
3721.606		Fe I	437
3721.632		Ti II	13
3721.69		Zr II	44
3721.847		Sm II	
3721.86		Ne II	37
3721.940		H	3
3721.95		O III	21
3721.998		V I	91
3722.028		Fe I	291
3722.068		Gd II	119
3722.16		V II	15
3722.23	P	Fe I	490
3722.24	P	Fe I	127
3722.484		Ni I	18
3722.564		Fe I	5
3722.568		Ti I	17
3722.601		V I	91
3722.750		Co II	90
3722.77	P	Fe I	707
3722.79		Sb I	1
3723.324		V I	98
3723.38	P	Ni I	183
3723.40		Cr II	144
3723.506		Nd II	
3723.63		P II	22
3723.631		Ti II	72
3723.92	P	Fe II	14
3724.106		Ti II	73
3724.26	P	Ni I	183
3724.380		Fe I	124
3724.51		A II	131
3724.570		Ti I	131
3724.81		Mn II	8
3724.827		Ni I	182
3724.902		Sm II	5
3724.94		Eu II	2
3724.984		V II	102
3725.05		La II	13
3725.061		Tm II	
3725.155		Ti I	83
3725.29		Mn II	8
3725.30		O III	14
3725.304		Fe II	130
3725.498		Fe I	534
3725.65	P	Fe I	75
3725.675		Ce II	231
3725.81		O IV	6
3725.901		Fe II	
3726	P	O V	8
3726.06	P	Fe I	433
3726.235		Cb I	3
3726.653		Co I	40
3726.805		Sm II	19
3726.85		Cr I	73
3726.89	P	Fe I	75
3726.926		Ru I	2
3726.927		Fe I	385
3726.931		Mn I	24
3727.03	P	Fe I	668
3727.04	P	Fe II	192
3727.08		Ne II	5
3727.09		Y II	74

FINDING LIST

I A	Type	Element	Multiplet No.
96		Fe I	387
3		O II	3
51		V II	21
7		Cr II	117
3	P	Fe I	705
21		Fe I	21
7	P	Fe I	225
2		Zr II	112
09		Fe I	386
30		Ru I	2
30		Nd II	
35		V II	116
23		Ce II	47
69		Sm II	54
9		O III	30
68		Fe I	227
7		P II	22
7		P IV	3
76		Ti I	116
2		O III	30
40		Co I	133
89		Mn I	24
33		Ni I	181
3		O IV	6
35		V I	91
9		A II	10
4	P	Fe I	530
4		O II	62
9		Mn II	8
0		O III	30
4		Zr II	8
06		Ti I	17
86		Fe I	533
33		Ru I	2
6	P	Fe I	389
76		Co I	62
4		S II	
51		Ni I	2
07		Cr I	2
10		Tm II	11
4		Gd II	20
45		Fe I	228
5	P	Fe I	950
58		Sm II	11
6		Zr II	112
68		Co I	96
74		Fe I	225
2		La II	137
4		V II	101
32		Mn I	
50		Al II	11
83		V II	92
32		Cr I	2
3	P	Fe I	532
3		O III	14
90		Co I	62
99		Fe I	76
5		Gd II	5
60		V II	15
61		He I	24
92		Re I	24
8		Gd II	
0	P	Fe I	225
19		Fe I	5
6		A II	68
83		Co I	98
07		V II	116
3		Cl II	63
67		Ti I	166
10		Al II	11
24		Tm II	6
.39		Co I	96
70		H	3
28		V I	97
54		Ru II	1
67		Al II	50
15		Al II	50
0		O III	21
05		Al II	50
67		Fe I	21
4		Ne II	1
.58		V II	102
25		Fe I	388
9		A II	3
60		Ti I	
1	P	Fe I	127
5		La II	29
28		Co I	95
4		O II	62
80		Sm II	29
3736.017		V II	102
3736.280		Be I	6
3736.41		La II	142
3736.45		Cr I	215
3736.56		Cr II	20
3736.78		O IV	6
3736.813		Ni I	30
3736.901		Ca II	3
3737.133		Fe I	5
3737.141		Sm II	
3737.55		Cr II	117
3737.88		Hf II	75
3737.89		A II	131
3737.992		V I	91
3738.003		Al II	11
3738.08		Eu II	
3738.13		Zr II	17
3738.308		Fe I	609
3738.38		Cr II	20
3738.51	P	Fe I	918
3738.757		V I	97
3738.901		Ti I	166
3739.117		Sm II	
3739.120		Fe I	75
3739.13		K II	1
3739.193		Pr II	
3739.197		Sm II	5
3739.229		Ni I	2
3739.317		Fe I	74
3739.527		Fe I	
3739.6		Ti II	107
3739.782		Ni I	180
3739.80		Cb I	3
3739.92		O II	31
3739.940		Pb I	2
3740.061		Fe I	532a, 707
3740.241		V I	98
3740.247		Fe I	667
3741.059		Ti I	17
3741.288		Sm II	
3741.31		Eu II	11
3741.427		Nd II	
3741.504		V I	124
3741.56	P	Fe II	15
3741.633		Ti II	72
3741.69		O II	36
3741.727		Ce II	241
3742.07		Fe I	225
3742.14	P	Fe I	978
3742.20	P	Cr II	6
3742.280		Ru I	2
3742.34		Mo II	5
3742.393		Cb I	3
3742.56	P	Fe I	389
3742.621		Fe I	387
3742.937		Fe I	704
3742.968		Cr I	43
3742.99	P	Cr II	6
3743.20	P	Cr II	6
3743.364		Fe I	21
3743.40		Fe III	
3743.468		Fe I	806
3743.47		Gd II	2
3743.556		Eu II	11
3743.578		Cr I	43
3743.610		V II	21
3743.78	P	Fe I	290
3743.868		Sm II	18,34
3743.884		Cr I	43
3744.066		Tm I	
3744.105		Fe I	385
3744.22		P III	10
3744.42		K II	3
3744.490		Cr I	43
3744.562		Ni I	180
3744.66		Ne II	40
3744.73		O IV	6
3744.98		Hf II	76
3745.36	P	Fe II	131
3745.491		Co I	34
3745.561		Fe I	5
3745.605		Sm II	2
3745.806		V II	15
3745.83		N III	4
3745.901		Fe I	5
3745.97		Zr II	112
3746.46		A II	130
3746.486		Fe I	73
3746.56	P	Fe II	14
3746.92		A II	67
3746.931		Fe I	386
3747	P	O V	8
3747.00	*P*	*Fe I*	*388*
3747.264		Cr I	289
3747.40	P	Fe III	71
3747.48		Hf II	27
3747.55		Y II	8
3747.66		N IV	8
3747.90		S III	1
3747.96		La II	
3747.982		V I	97,98
3748.010		Ti II	107
3748.056		Ce II	160
3748.101		Ti I	166
3748.18		Cr I	88
3748.264		Fe I	5
3748.374		Ca I	27
3748.46		Cl II	6
3748.489		Fe II	154
3748.492		Fe I	805
3748.614		Cr I	43
3748.68		Cr II	11
3748.73		S III	
3748.81		Cl III	5
3748.88		Gd II	105
3748.91	P	Fe I	289
3748.969		Fe I	386
3748.998		Cr I	43
3749.045		Ni I	1
3749.487		Fe I	21
3749.49		O II	3
3749.55	P	Zr II	112
3749.930		Co I	95
3750.00		Cl II	6
3750.154		H	2
3750.349		Ca I	27
3750.50		A II	3
3750.56		Cr II	
3750.65		Zr II	18
3750.677		Fe I	225
3750.74		S III	1
3750.763		Mn I	24
3750.88		V II	21
3751.059		Fe I	667
3751.06		A II	81
3751.09	P	Fe I	74
3751.222		V II	100
3751.26		Ne II	1
3751.60		Cr II	117
3751.60		Zr II	71
3751.625		Co I	98
3751.812		Tm I	
3751.820		Fe I	287
3752.420		Fe I	385,392
3752.524		Os I	2
3752.65	P	N III	11
3752.679		Nd II	33
3752.860		Ti I	17
3753.10		Al II	39
3753.154		Fe I	177
3753.18		Fe III	83
3753.26	P	Cr II	20
3753.367		Ca I	27
3753.53		A II	80,128
3753.610		Fe I	73
3753.623		Ti I	17
3753.83		Ne II	38
3754.06		A II	115
3754.12	P	Rh II	7
3754.346		Co I	132
3754.506		Fe I	386
3754.59		Cr II	20
3754.62		N III	4
3754.67		O III	2
3754.89	P	Fe I	949
3755.13		Cr II	20
3755.276		Sm II	34
3755.425		Ce II	128
3755.447		Co I	96
3755.54		Mo II	5
3755.56		Gd II	85
3755.563		Fe II	154
3755.61		Ca II	8
3755.701		V I	124
3755.81		Cr I	72
3755.82	P	O IV	6
3756.069		Fe I	74
3756.10		He I	66
3756.411		Sm I	2
3756.411		Sm II	44

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I A	Type	Element	Multiplet No.
56.55		Cr II	144
56.83		Cr I	72
56.860		Tm II	9
56.939		Fe I	805
56.96		Zr II	8
57.093		W I	3
57.174		Cr I	43
57.21		O III	2
57.459		Fe I	668
57.529		Sm II	
57.60	P	N III	11
57.66	P	N III	11
57.662		Cr I	43
57.684		Ti II	72
57.80		Zr II	120
57.862		Ce II	48
57.929		W I	4
58.044		Cr I	43
58.11	P	Fe I	704
58.22		V II	100
58.235		Fe I	21
58.31		Gd II	20
58.36		Ca II	8
58.45		O IV	6
58.72		Cr I	12
58.9		Y II	74
58.944		Nd II	
58.968		Sm II	
59.00		Gd II	2
59.08		La II	13
59.155		Fe I	855
59.291		Ti II	13
59.460		Fe II	154
59.556		Cb I	3
59.684		Co I	131
59.87		O III	2
60.031		Ru I	2
60.052		Fe I	177
60.133		W I	3
60.24		V II	21
60.401		Co I	40
60.404		Ce II	109
60.534		Fe I	76
60.694		Ce II	92
60.694		Sm II	18,51
60.71		Gd II	37
60.92		Gd II	20
61.06	P	Fe I	706
61.12		Eu II	11
61.20		V II	129
61.320		Ti II	13
61.331		Tm II	2
61.416		Fe I	227
61.442		V I	97
61.62		Ca III	3
61.69		Cr II	11
61.72		Ca I	8
61.82		P II	1
61.866		Ti II	107
61.867		Pr II	
61.90		Cr II	11
61.913		Tm II	2
62	P	O V	8
62.205		Fe I	705
62.41		Si IV	3
62.51		Hf II	101
62.588		Sm II	25
62.618		Ni I	
62.62	P	N III	11
62.63		O II	31
62.894		Fe II	192
63.00		Gd II	1
63.13		Cb II	10
63.141		V I	98
63.33		Gd II	37
63.356		Mo I	8
63.377		Mn I	24
63.475		Nd II	
63.52		A II	54
63.57	P	Fe I	128
63.790		Fe I	21
64.09		Fe II	29
64.117		Ce II	41
64.21	P	Fe I	74
64.370		Sm II	34
4.38		Zr I	10
64.60		Gd II	85
4.811		Pr II	
65.044		Ce II	208
5.27		A II	42
3765.542		Fe I	608
3765.62		Cr II	20
3765.70		Fe I	608
3765.93		Eu II	11
3766.092		Fe I	226
3766.13		A II	29
3766.29		Ne II	1
3766.445		Ti I	82
3766.514		Ce II	124
3766.65		Cr II	20
3766.665		Fe I	386
3766.71		Zr I	10
3766.83		Zr II	7
3766.92		Hf II	75
3767.04		Gd II	20
3767.05		La II	151
3767.18	P	Cr II	20
3767.194		Fe I	21
3767.358		Sm II	46
3767.36		K II	2
3767.431		Cr I	42
3767.57		Cl II	6
3767.720		V II	100
3767.73	P	Fe I	918
3767.755		Sm II	
3767.89		Zr II	31
3768.030		Fe I	73
3768.08		Cr I	42
3768.13		Cl II	6
3768.23		Fe I	368
3768.240		Cr I	43
3768.39		Gd II	2
3768.57	P	Cr II	6
3768.62		Cr I	42
3768.71		P II	1
3768.734		Cr I	43
3768.81		He I	65
3769.00		Cr I	42
3769.046		Ce II	50
3769.13		Cl II	6
3769.37	P	Cr II	6
3769.45		Gd II	37
3769.455		Ni II	4
3769.644		Nd II	67
3769.695		Pr II	16
3769.995		Fe I	387
3770.305		Fe I	287
3770.37	P	N III	11
3770.405		Fe I	177
3770.412		Ti II	107
3770.517		Mo I	8
3770.54		A II	42
3770.632		H	2
3770.69		Gd II	
3770.974		V II	21
3771.08		N III	4
3771.36		Hf II	29
3771.45	P	N III	11
3771.50	P	Fe I	607
3771.652		Ti I	17
3771.98		Zr II	44
3772.06		Zr II	31
3772.530		Ni I	15
3772.854		Pr II	
3772.962		V II	100
3773.12		La II	141
3773.13		Si IV	3
3773.364		Fe I	531
3773.68		Cl II	6
3773.699		Fe I	386
3773.80		Fe III	34
3773.80		V II	129
3774.00		O III	2
3774.25		Cl II	6
3774.294		Sm II	43
3774.3		Al II	33
3774.33		Y II	7
3774.331		Ti I	16
3774.38	P	O IV	6
3774.52		S III	10
3774.54		A II	
3774.599		Co I	96
3774.645		Mn I	45
3774.650		Ti II	12
3774.678		V II	129
3774.823		Fe I	73
3775.03		P II	19
3775.187		V I	97
3775.572		Ni I	33
3775.724		Tl I	1
3775.860		Fe I	287
3776.062		Ti II	72
3776.454		Fe I	74
3776.527		Mn I	6
3776.56		Y II	8
3776.80		S II	51
3777.061		Fe I	432
3777.16		Ne II	1
3777.32		Cr I	41
3777.43		Fe III	95
3777.448		Fe I	223
3777.543		Co I	96
3777.55		A II	81
3777.60		O II	31
3777.64		Hf I	1
3777.919		Ru II	1
3777.93		Cr I	41
3778.063		Ni I	15
3778.136		Sm II	
3778.320		Fe I	367
3778.357		V II	21
3778.37	P	Fe II	192
3778.509		Fe I	664
3778.684		V I	28
3778.69		Cr II	
3778.697		Fe I	73
3778.90		S III	5
3779.213		Fe I	290
3779.23	P	N III	11
3779.35		Cl III	8
3779.424		Fe I	222
3779.444		Fe I	605
3779.486		Fe I	74
3779.58	P	Fe II	23
3779.648		V I	69
3780.09		Hf II	18
3780.391		Nd II	19
3780.53		La II	141
3780.53		Zr I	8
3780.67		La II	55
3780.763		Sm II	
3780.770		W I	8
3780.84		A II	54
3780.927		Sm II	38
3781.188		Fe I	74
3781.23		Cl II	72
3781.379		Cb II	9
3781.393		V I	10,97
3781.510		Fe II	130
3781.597		Mo I	8
3781.620		Ce II	163
3781.68		He II	5
3781.938		Fe I	917
3782.139		Ti I	82
3782.195		Os I	3
3782.24		Zr II	44
3782.302		Y II	61
3782.34		Gd II	
3782.450		Fe I	388
3782.524		Ce II	142
3782.6		S II	23
3782.608		Fe I	491
3782.72		Zr II	120
3782.78		Hf II	26
3783.16		S II	41
3783.19		K II	2
3783.347		Fe II	14
3783.530		Ni I	30
3783.561		Tm II	11
3784.250		Nd II	
3784.27	P	Fe I	607
3784.81		La II	13
3784.886		He I	64
3785.01		O II	95
3785.421		Mn I	45
3785.706		Fe I	608
3785.78	P	Fe I	704
3785.950		Fe I	177
3786.043		Ti I	57
3786.176		Fe I	367
3786.22		Cr I	71
3786.253		Ti I	165
3786.33	P	Ti II	12
3786.37	P	Fe II	15
3786.40		A II	3
3786.632		Ce II	51
3786.678		Fe I	22
3786.70		P II	1
3786.94		Fe III	71
3787.064		Cb I	3

I A	Type	Element	Multiplet No.
4		Fe I	916
3		Sm II	5
5		V II	100
		Gd II	20
3		Fe I	21
	P	Cr II	6
5		Sm II	25
4		Rh I	6
		Y II	7
3		Ce II	47
4		Ti I	16
4		Cr I	139
		Fe III	102
8		Fe I	289
3		Ti I	115
		Cr I	41
0		Fe I	226
3		Cr I	24
	P	Fe I	702
5		Fe I	22
8		Cb I	3
.5		Mn I	6
8		Cr I	139
	P	Fe I	224
4		V I	28
4		Cr I	139
9		V I	69
6		Fe I	387
6		Fe I	73,127
		La II	12
		Ne II	30
		Gd II	85
9		Cb I	2
		O III	2
6		V I	10
6		Cr I	139
		Zr I	8
		Si III	5
4		Fe I	223
		Gd II	46
		Fe I	703
5		Sm II	5
7		Cr I	139
.6		Fe I	287
		Zr II	81
.6		Ce II	129
7		Ni I	2
		Cr I	71
		S II	50
4		Pr II	
		Y II	61
4		Fe I	74
		N III	11
7		Rh I	9
	P	Fe I	386
9		Cr I	139
.4		Fe I	388
		Hf II	1
8		Fe I	387
		Fe III	71
8		Ni I	4
		P II	1
4		V I	9
		Cl II	
2		Fe I	367
9		Cr I	139
1		Sm II	11
.0		Fe I	177
6		V II	100
		O II	34
8		Cr I	139
		S III	10
		La II	12
4		V I	9,28
4		Fe I	21
		P II	1
9		Tm II	6
6		Ce II	50
		A III	5
9		Tm II	6
3		Ti I	115
		Fe I	176
		Si III	5
		He II	5
		Gd II	2
		Zr II	71
		V II	167
	P	Fe II	143
		A II	129
9		Ti II	12
3796.90		Fe I	667
3796.99		Cr I	41
3797.126		Cr I	139
3797.283		Sm II	11
3797.517		Fe I	607
3797.716		Cr I	139
3797.730		Sm II	
3797.900		H	2
3797.948		Fe I	222
3797.95		Hf II	29
3798.127		Cb I	3
3798.259		Mo I	1
3798.276		Ti I	115
3798.36	P	Fe II	14
3798.513		Fe I	21
3798.60	P	Fe II	23
3798.661		V I	80
3798.752		Tm II	11
3798.80		Cl II	62
3798.901		Ru I	1
3799.009		Eu II	11
3799.038		Ce II	136
3799.17		Pd I	1
3799.259		Mn I	6
3799.311		Rh I	8
3799.347		Ru I	1
3799.39		A II	54
3799.542		Sm II	22
3799.549		Fe I	21
3799.81		Ti II	13
3799.912		V I	28
3800.02		Ne II	39
3800.122		Ir I	1
3800.240		Mn II	14
3800.303		Pr II	
3800.370		Sm II	43
3800.39		Hf II	18
3800.43		Fe III	47
3800.552		Mn I	45
3800.73		Zr II	17
3800.883		Y II	61
3800.887		Sm II	29
3801.022		Sn I	2
3801.093		Ti I	165
3801.21		Cr II	
3801.29		Gd II	
3801.529		Ce II	172
3801.633		Mn II	14
3801.681		Fe I	367
3801.804		Fe I	367
3801.907		Mn I	
3801.975		Fe I	704
3802.08		P III	10
3802.283		Fe I	666
3802.65		S II	50
3802.883		V I	67
3802.928		Cb I	3
3802.958		Mn II	14
3803.097		Ce II	37
3803.14		O II	34
3803.19		A II	129
3803.24	P	Fe I	122
3803.474		Nd II	
3803.474		V I	28
3803.784		V I	68
3803.881		Mn II	14
3803.902		V I	10
3804.013		Fe I	702
3804.476		Mn II	14
3804.569		V I	97
3804.798		Cr I	139
3805.24		Cl II	62
3805.345		Fe I	608
3805.359		Nd II	19
3805.626		Sm II	10
3805.765		He I	63
3806.07		Hf II	75
3806.203		Fe I	731
3806.30		Ne II	30
3806.55		Cr I	24
3806.56		Si III	5
3806.697		Fe I	607
3806.719		Mn I	6
3806.76	P	Fe I	224
3806.796		V I	68
3806.82	P	Fe II	153
3806.829		Cr I	214
3807.144		Ni I	33
3807.227		Nd II	19
3807.41		Zr II	31
3807.505		V I	28
3807.534		Fe I	73
3807.65		Gd II	85
3807.926		Cr I	139
3808.102		Co I	17
3808.124		Ce II	59
3808.286		Fe I	489
3808.521		V I	9
3808.61		A II	3
3808.7		Y II	73
3808.731		Fe I	222
3808.772		Nd II	
3808.79		La II	43
3809.043		Fe I	367
3809.224		Ce II	204
3809.49		A II	42
3809.51		Cl II	62
3809.592		Mn I	6
3809.597		V I	28
3809.67		S II	50
3810.10		Cl II	62
3810.21	P	Fe II	143
3810.59		Hf II	96
3810.724		Tm II	9
3810.759		Fe I	665
3810.90	P	Fe I	224
3810.96		O III	2
3811.05		Fe I	223,287
3811.065		Co I	31
3811.073		Nd II	69
3811.22		A II	81
3811.32		Ni I	15
3811.35		O VI	1
3811.385		Ti I	165
3811.774		Nd II	31
3811.80	P	Fe I	701
3811.80		S II	
3811.892		Fe I	287
3812.067		Sm II	10
3812.18		Y II	61
3812.250		Cr I	214
3812.470		Co I	40
3812.964		Fe I	22
3813.059		Fe I	222
3813.07	P	Fe I	176
3813.12		V II	128
3813.261		Ti I	189
3813.390		Ti II	12
3813.402		Be I	5
3813.45	P	V I	28
3813.492		V I	9
3813.50		He II	4
3813.638		Fe I	283
3813.8		Y II	72
3813.891		Fe I	854
3813.94	P	Fe I	176
3813.97		Gd II	2
3813.98		Zr II	100
3814.00		Cr II	
3814.121		Fe II	153
3814.42		Ra II	1
3814.457		Co I	62
3814.526		Fe I	22
3814.580		Ti II	12
3814.622		Cr I	214
3814.725		Nd II	
3814.855		Ti I	189
3814.97		Zr II	8
3815.012		Rh II	7
3815.36		V II	100
3815.433		Cr I	71
3815.495		Eu II	
3815.514		V I	28
3815.831		Ce II	37
3815.842		Fe I	45
3816.166		Pr II	
3816.173		Cr I	40
3816.25		La II	134
3816.318		Co I	62
3816.340		Fe I	73
3816.458		Co I	62
3816.64		Gd II	1
3816.75		O III	18
3816.753		Mn I	6
3816.876		Co I	86
3816.92	P	Fe I	387
3817.20		Hf II	62
3817.24		La II	168
3817.395		Tm II	
3817.455		Ce II	222

I A	Type	Element	Multiplet No.
17.59		Zr II	18
17.639		Ti I	189
17.64		Fe I	701
17.844		Cr I	40
17.844		V I	10
17.940		Co I	131
18.244		V I	9
18.27		N I	11
18.281		Pr II	
18.34		Y II	7
18.40		Cl II	62
18.44		Ne II	39
18.481		Cr I	40
18.78		Zr II	111
18.862		Cb II	10
19.04		A II	129
19.25	P Forb	He I	23
19.50	P	Fe I	703
19.564		Cr I	70
19.57	P	Cr I	88
19.606		He I	22
19.62	P	Fe I	122
19.67		Eu II	1
19.761		He I	22
19.84		Zr II	81
19.908		Co I	130
19.963		V I	28
19.97		Cr I	40
20.25		Cl II	69
20.299		V I	44
20.428		Fe I	20
20.74		Hf I	5
20.871		Ce II	208
20.874		Cr I	40
21.181		Fe I	608
21.487		V I	28
21.582		Cr I	40
21.68		O II	34
21.834		Fe I	222
21.92	P	Fe II	14
22.009		V I	9
22.026		Ti I	189
22.07		N I	11
22.10		Cr I	40
22.17		Gd II	19
22.262		Rh I	8
22.41		Zr I	10
22.63	P	O I	36
22.737		Fe II	
22.888		V I	28
22.987		Mo I	8
23.213		V I	28
23.41		Zr II	44
23.469		O I	36
23.513		Mn I	6
23.522		Cr I	24
23.571		Pr II	14
23.72		Zr II	31
23.893		Mn I	6
23.903		Ce II	115
23.990		V I	44
24	P	N IV	10
24.074		Fe I	224
24.175		Sm II	18
24.306		Fe I	607
24.425		O I	36
24.444		Fe I	4
24.47		Cl III	9
24.73	P	Fe I	221
24.78		Y II	72
24.882		Cb I	2
24.913		Fe II	29
25.090		O I	36
25.249		O I	36
25.390		Cr I	70
25.404		Fe I	123
25.530		O I	36
25.70		A II	129
25.884		Fe I	20
26.05		Gd II	19
26.202		Sm II	51
26.292		Pr II	
26.416		Nd II	33
26.425		Cr I	70
26.63	P	Fe I	176
26.701		Mo I	8
26.774		V I	44
26.83		A II	54
26.836		Fe I	283
26.968		V II	128
3827.079		Fe II	153
3827.27		Zr II	
3827.46		P II	26
3827.51		Zr II	121
3827.572		Fe I	284
3827.62		Cl II	69
3827.67	P	Fe II	128
3827.825		Fe I	45
3828.180		Ti I	189
3828.44		Fe III	70,95
3828.510		Fe I	287
3828.559		V I	9
3828.836		V I	67
3828.883		Mo I	8
3829.125		Fe I	948
3829.133		W I	3
3829.27		Cl II	9
3829.3549		Mg I	3
3829.458		Fe I	366,663
3829.47	P Forb	He I	21
3829.53		V II	3
3829.655		V II	3
3829.680		Mn I	6
3829.77		Ne II	39
3829.771		Fe I	221
3829.80		N II	30
3830.032		Cr I	
3830.293		Sm II	10
3830.39		N I	11
3830.43		A II	3,128
3830.45		O II	34
3830.719		Pr II	
3830.757		Fe I	224
3830.80		Cl II	69
3830.850		Fe I	284
3831.017		V II	3
3831.032		Cr I	24
3831.41		S II	
3831.501		Sm II	43
3831.690		Ni I	31
3831.75		Fe III	109
3831.80		Gd II	3
3831.840		Cb II	10
3831.85		S III	5
3832.12		C II	13
3832.2996		Mg I	3
3832.3037		Mg I	3
3832.31		Pd I	1
3832.32		Cr I	24
3832.745		Ce II	115
3832.835		V I	80
3832.873		Ni I	1
3832.89		Y II	7
3832.94		Zr II	7
3833.02	P	Fe II	23
3833.059		Sc II	1
3833.10		O II	13
3833.186		Ti I	
3833.226		V I	67
3833.311		Fe I	221
3833.40		Cl II	69
3833.49		Cr I	11
3833.574		He I	62
3833.674		Ti I	
3833.71		Cr I	70
3833.757		Mo I	8
3833.80		He II	4
3833.828		Sm II	29
3833.862		Mn I	6
3833.87		Zr II	100
3833.889		Rh I	9
3834.22	P	V I	80
3834.225		Fe I	20
3834.24		N I	11
3834.24		O VI	1
3834.364		Mn I	6
3834.46	P	Fe I	663
3834.556		Ce II	49
3834.735		Cr I	70
3834.81	P	Fe II	129
3835.059		W I	2
3835.09		La II	55
3835.386		H	2
3835.497		Co I	114
3835.560		V I	44
3835.725		Sm II	18
3835.96		Zr I	8
3836.054		V I	44
3836.070		Cr I	70
3836.085		Ti II	12
3836.10		C II	13
3836.112		Ce II	60
3836.332		Fe I	664
3836.541		Nd II	
3836.76		Zr II	16
3836.763		Ti I	
3836.91		Gd II	20
3837.132		Fe I	222
3837.210		Ce II	112
3837.80		S III	5
3838.094		He I	61
3838.198		Tm II	11
3838.28		Zr II	17
3838.2918		Mg I	3
3838.2943		Mg I	3
3838.316		S III	5
3838.37		Cl II	69
3838.39		N II	30
3838.542		Ce II	114
3838.941		Sm II	34
3838.981		Nd II	28
3839.002		V I	44
3839.259		Fe I	529
3839.614		Fe I	995
3839.64		Gd II	20
3839.777		Mn I	6
3840.140		V I	66
3840.20	P	Fe I	120
3840.439		Fe I	20
3840.44	P	V I	44
3840.70		Cr I	70
3840.72		La II	28
3840.752		V I	9
3841.051		Fe I	45
3841.062		Mn I	6
3841.17		Lu I	3
3841.277		Cr I	69
3841.35	P	Fe II	128
3841.458		Co I	32
3841.54		A II	54
3841.890		V I	8
3842.03		Cr I	70
3842.037		Al II	49
3842.047		Co I	33
3842.20		Gd II	
3842.20		N II	30
3842.213		Al II	49
3842.317		Al II	49
3842.82		O II	12
3842.90	P	Fe I	222
3842.975		Fe I	221
3843.000		Sc II	1
3843.03		Zr II	7
3843.16	P	Sc II	17
3843.259		Fe I	528
3843.26		Cl II	49
3843.500		Sm II	43
3843.58		O II	13
3843.64		Cr I	87
3843.692		Co I	84
3843.72	P	Fe I	703
3843.80		Gd II	17
3843.983		Mn I	6
3844.276		Ni I	137
3844.438		V I	7
3844.48	P	V II	20
3844.579		Gd II	2
3844.58		Ni I	181
3844.75		A II	54
3844.892		V I	44
3845.170		Fe I	124
3845.18	P	Fe II	127
3845.21	P	Fe I	701
3845.21		S II	22
3845.42		A II	9
3845.42		Cl II	25
3845.468		Co I	34
3845.68		Fe III	35
3845.69		Cl II	25
3845.692		Fe I	771
3845.84		Cl II	25
3845.974		V I	
3846.00		La II	26
3846.001		Fe I	703
3846.29	P	Fe I	947
3846.31	P	Fe II	128
3846.412		Fe I	804
3846.438		Ti I	
3846.516		Y II	83
3846.605		Pr II	

Type	Element	Multiplet No.
	Fe I	664
	Fe I	176
	Zr I	10
	F II	1
	Mo I	8
	V I	7
	V II	156
	N II	30
	W I	4
	Sm II	34
	O II	12
	Tm II	2
	Y II	72
	Nd II	19
	Mg II	5
P	Fe I	224
	Nd II	
	Ce II	36
	Sm II	
	Cr I	69
	La II	12
	Zr I	6
	V I	
	Cr I	138
	Hf II	61
	Cr I	24
	Ni II	11
	V II	33
	Fe I	20
	F II	1
	Cr I	69
	Mg II	5
	V II	11
	A II	10
	Gd II	2
	O II	12
	Fe I	22
	Pr II	
	S II	50
	Co I	17
	Cl II	25
	Gd II	2
	O II	12
	V I	44
	Cl II	25
	O II	13
	Fe I	
	Pr II	
	F II	1
	Cl II	25
	Nd II	35
	Co I	128
	Sm II	29
	V II	3
	Cr I	24
	Gd II	2
	Fe I	73
	Cr I	11
	Pr II	
	Ti I	176
	Zr II	81
	S II	30
	Ce II	39
	Cr I	69
	Fe I	429
	Si II	1
	Ti I	176
	Gd II	50
	Ce II	62
	Sm II	
	Cr I	69
	Ce II	61
	Fe I	567
	Cl II	84
	Pr II	
	La II	55
	N II	30
	A II	81
	Cr I	69
	Fe I	283
	V I	7
	Zr II	18
	Gd II	2
	Cr I	69
P	Cr I	138
	V I	9
	Fe I	567
	Si II	1
	N II	30
	A II	55

I A	Type	Element	Multiplet No.
3856.16		O II	12
3856.281		Cr I	69
3856.373		Fe I	4
3856.515		Rh I	7
3856.796		Co I	60
3857.032		Ce II	158
3857.18		O II	13
3857.240		Ce II	127
3857.26	P	Y II	16
3857.631		Cr I	69
3857.912		Sm II	28
3858.07		He II	4
3858.133		Ti I	176
3858.301		Ni I	32
3858.32		A III	5
3858.48	P	Fe I	565
3858.90		Cr I	138
3859.21		Fe I	175
3859.24		Mg I	21
3859.26		S II	30
3859.33		Al II	38
3859.341		V I	44
3859.36	P	Sc II	1
3859.913		Fe I	4
3860.12	P	Fe II	128
3860.13		Cr I	39
3860.15		S II	41
3860.46		Fe III	109
3860.64		S II	50
3860.64		S III	5
3860.74	P	Fe I	701
3860.80		Cl II	25
3860.915		Fe II	
3860.98		Cl II	25
3861.079		Ti I	
3861.164		Co I	33
3861.18		Eu II	
3861.341		Fe I	283,663
3861.40		Cl II	25
3861.60		Fe I	663
3861.95		Cl II	84
3862.054		Sm II	10
3862.17	P	Cr II	129
3862.220		V I	6
3862.592		Si II	1
3862.823		Ti I	175
3863.056		Cb II	9
3863.072		Ni I	181
3863.327		Nd II	27
3863.409		Nd II	26
3863.413		Fe II	152
3863.50		O II	12
3863.607		Co I	131
3863.70	P	Fe I	565
3863.745		Fe I	280
3863.81		V II	33
3863.866		V I	66
3863.88		Zr I	8
3863.953		Fe II	127,152
3864.115		Mo I	1
3864.13		O II	11
3864.30	P	Fe I	565
3864.300		V I	64
3864.31	P	Fe I	221
3864.33		Zr I	10
3864.335		W I	3
3864.45		O II	12
3864.49		La II	141
3864.60		Cl II	84
3864.68		O II	12
3864.75		Hf II	98
3864.862		V I	7
3865.458		Pr II	
3865.526		Fe I	20
3865.59		Cr II	167
3865.72		V II	20
3866.01		Cr II	130
3866.160		Al II	17
3866.446		Ti I	176
3866.54		Cr II	130
3866.744		V II	11
3867.219		Fe I	488
3867.26		Gd II	50
3867.32		Hf II	53
3867.45	P	Fe I	221
3867.477		He I	20
3867.56		S I	
3867.602		V I	7
3867.631		He I	20
3867.739		Ti I	176
3867.839		Ru I	9
3867.925		Fe I	221
3867.986		W I	7
3868.243		Fe I	430
3868.397		Ti I	175
3868.53		A II	90
3868.62		Cl II	84
3868.84		C II	18
3869.045		Nd II	34
3869.085		Mo I	8
3869.10		N I	
3869.275		Ti I	175
3869.562		Fe I	284
3869.590		Fe I	284
3869.61		A II	80
3870.057		Al II	74
3870.267		Cr I	11
3870.506		Ca I	26
3870.534		Co I	129
3871.078		V I	66
3871.54		Gd II	1
3871.60		Ni I	181
3871.62		C II	18
3871.64		La II	13
3871.750		Fe I	429
3871.778		Sm II	18
3871.819		He I	60
3872.15		A II	54
3872.308		Y II	61
3872.45		O II	11
3872.504		Fe I	20
3872.55		Hf II	27
3872.552		Ca I	26
3872.62		Gd II	19
3872.748		V I	43
3872.76	P	Fe II	29
3872.835		W I	4
3872.923		Fe I	284
3872.98	P	Fe II	128
3873.120		Co I	18
3873.203		Ti I	176
3873.74		K II	3
3873.763		Fe I	175
3873.959		Co I	18
3874.053		Fe I	120
3874.10		O II	11
3874.37		Zr II	89
3874.41	P	Cr II	143
3874.570		Cr I	138
3874.76	P	Cr II	143
3875.036		Ce II	162
3875.075		V I	7
3875.14		Cr I	138
3875.193		Sm II	
3875.26		A II	2
3875.262		Ti I	15,175
3875.426		V I	43
3875.46		Gd II	50
3875.545		Sm II	17
3875.67		V II	20
3875.807		Ca I	26
3875.82		O II	13
3875.902		V I	7
3876.043		Fe I	22
3876.051		C II	33
3876.086		V I	8
3876.188		C II	33
3876.409		C II	33
3876.65		Lu II	3
3876.670		C II	33
3876.671		Fe I	121
3876.831		Co I	17,62
3876.974		Ce II	82
3877.11		Hf II	75
3877.225		Pr II	
3877.591		Ti I	175
3877.60		Zr I	58
3878.021		Fe I	20
3878.180		He I	59
3878.19	P	Fe I	565
3878.22		C II	33
3878.28		Y II	7
3878.372		Ce II	43
3878.575		Fe I	4
3878.58		Mg I	20
3878.582		Nd II	
3878.61	P	Ti I	164
3878.663		Fe I	175
3878.715		V II	33
3878.726		Fe I	664

I A	Type	Element	Multiplet No.
878.750		Co I	62
879.04		Zr I	6
879.222		Cr I	138
879.60		C II	33
880.34		A II	54
880.466		Pr II	
880.59		C II	33
880.766		Sm II	10
880.779		Nd II	32
880.82		Hf II	6
881.04		V II	143
881.214		Cr I	138
881.383		Sm II	33
881.399		Ti I	15
881.402		W I	2
881.84		Gd II	36
881.856		Cr I	138
881.869		Co I	18
881.92		Ni II	13
881.94		Gd II	50
881.97		Zr II	134
882.147		Ti I	175
882.197		O II	12
882.28	P	Ti II	34
882.319		Ti I	176
882.446		Ce II	87
882.45		O II	11
882.892		Ti I	176
883.132		Tm I	
883.15		O II	12
883.208		V II	11
883.282		Fe I	663
883.292		Cr I	23
883.43		V II	20
883.437		Tm II	5
883.660		Cr I	138
883.77		Hf II	18
883.80		C III	15
883.80		Cl II	55
884.090		Ti I	175
884.359		Fe I	282
884.465		V I	65
884.601		Co I	32
884.66		Fe I	565
884.847		V II	33
885.07	P	Fe I	732
885.084		Cr I	138
885.09		La II	151
885.154		Fe I	430
885.190		Pr II	18
885.218		Cr I	23
885.275		Co I	31
885.286		Sm II	46
885.41		Zr I	7
885.512		Fe I	124
885.76	P	Fe I	567
885.770		V I	65
885.87	P	Ni I	1
885.93	P	Fe I	946
885.95	P	Ti I	164
885.99		C III	15
886.284		Fe I	4
886.37		La II	40
886.587		V I	64
886.789		Cr I	23
886.825		Mo I	8
886.94	P	Cr I	86
887.051		Fe I	20
887.157		Gd II	3
887.347		Tm I	1
887.365		Ti I	176
887.44		He II	4
887.866		Nd II	31
887.993		D	1
888.020		Ti I	175
888.42		Fe I	565
888.517		Fe I	45
888.646		He I	2
888.825		Fe I	488
889.051		H	2
889.141		Ca I	42
889.18		C III	15
889.33	P	Fe I	562
889.330		Pr II	14
889.38	P	Fe I	660
889.65	P	Ni I	180
889.671		Ni I	15
889.90	P	Cr II	129
889.92	P	Fe I	564
889.929		Nd II	
3889.948		Ti I	15
3889.990		Ce II	50
3890.080		*Sm II*	*17*
3890.184		V I	8
3890.241		Mg I	47
3890.32		Zr I	8
3890.39		Fe I	567
3890.528		Tm II	1
3890.580		Nd II	
3890.82		Cr I	262
3890.844		Fe I	280
3890.940		Nd II	
3891.119		V I	
3891.210		Sm II	22
3891.227		V I	43
3891.25		V II	20
3891.39		Zr I	11
3891.40		A II	2
3891.781		Ba II	4
3891.928		Fe I	733
3891.97		A II	2
3891.976		Mg I	47
3891.98	P	V II	11
3892.118		Co I	136
3892.14		Cr II	107
3892.321		S II	50
3892.859		V I	7
3892.898		Fe I	283
3892.98		Fe I	567
3893.067		Co I	114
3893.14		A II	91
3893.316		Fe I	364
3893.376		Mg I	47
3893.391		Fe I	430
3893.53		O II	11
3893.924		Fe I	175
3894.005		Fe I	663
3894.035		Cr I	23
3894.073		Co I	34
3894.19		Pd I	8
3894.49		Fe I	566
3894.627		Nd II	29
3894.696		Gd II	1
3894.976		Co I	18
3895.03		P III	9
3895.114		Ce II	210
3895.12		Cr II	143
3895.16		Cr II	106
3895.230		Gd II	50
3895.243		Ti I	176
3895.26		A II	55
3895.44	P	Fe I	565
3895.59	P	Ti I	164
3895.658		Fe I	4
3895.662		Mg I	47
3895.791		Gd II	
3896.11	P	Fe II	23
3896.155		V I	43
3896.155		V II	10
3896.30		O II	11
3896.53		Zr I	9
3896.63	P	Fe I	834
3896.804		Ce II	188
3896.804		Y II	86
3896.977		Sm II	5
3897.075		V I	126
3897.290		Ti I	175
3897.449		Fe I	429
3897.581		Ti I	176
3897.896		Fe I	280
3897.92		K II	1
3898.012		Fe I	20
3898.019		V I	126
3898.120		Mg I	47
3898.143		V I	63
3898.273		Ce II	52
3898.278		V I	
3898.292		Cb II	9
3898.485		Co I	58
3898.487		Ti I	13
3899.037		Fe I	175
3899.09	P	S III	5
3899.140		V II	33
3899.27		S III	12
3899.668		Ti I	15,175
3899.709		Fe I	4
3900.175		V I	126
3900.226		Nd II	
3900.51		Zr I	6
3900.519		Fe I	565
3900.546		Ti II	34
3900.63		A II	54
3900.64		*Hf II*	*103*
3900.680		Al II	1
3900.790		Tm II	9
3900.958		Ti I	15
3901.03	P	Fe I	834
3901.152		V I	126
3901.33	P	V II	20
3901.775		Mo I	8
3901.850		Nd II	
3902.09	P	Sc II	9
3902.108		Cr I	238
3902.250		V I	7
3902.398		Gd II	19
3902.558		V I	43
3902.915		Cr I	23
3902.948		Fe I	45
3902.968		Mo I	1
3903.164		Cr I	23
3903.27		V II	11
3903.417		Sm II	
3903.77		Zr II	7
3903.902		Fe I	429
3904.02		Mg I	19
3904.340		Ce II	91
3904.64	P	Ni I	29
3904.785		Ti I	56
3904.79		P III	9
3904.790		Co I	171
3905.01	P	Fe I	703
3905.18	P	Fe I	564
3905.527		Si I	3
3905.64		Cr II	167
3905.66	P	Fe I	153
3905.88	P	Cr II	128
3905.886		Nd II	
3906.037		Fe II	173
3906.287		Co I	17
3906.482		Fe I	4
3906.748		Fe I	664
3906.748		V I	42,43
3906.95		S II	3
3906.97	P	Fe I	567
3907.10		Eu II	5
3907.289		Ce II	253
3907.45		O II	11
3907.464		Fe I	284
3907.476		Sc I	8
3907.52		V II	178
3907.65	P	Ti II	97
3907.778		Cr I	262
3907.937		Fe I	280
3908.033		Pr II	11
3908.408		Ce II	65
3908.431		Pr II	11
3908.54	P	Fe II	29
3908.543		Ce II	127
3908.68	P	Fe I	153
3908.755		Cr I	23
3908.90	P	Fe I	153
3908.931		Ni I	117
3909.25	P	Cr II	129
3909.313		Ce II	133
3909.664		Fe I	565
3909.830		Fe I	364
3909.894		V I	7,63
3909.910		Ba I	8
3909.933		Co I	3
3910.52	P	Fe I	562
3910.790		V I	42
3910.81		La II	43
3910.845		Fe I	284
3911.00	P	Fe I	562
3911.169		Nd II	
3911.18	P	Fe I	564
3911.185		Ti I	175
3911.32		Cr II	129
3911.32		S II	
3911.362		Ti I	176
3911.58		A II	54
3911.699		Fe I	664
3911.810		Sc I	8
3911.95		Cr I	
3911.960		O II	17
3912.088		O II	17
3912.191		Ce II	192
3912.207		V I	42,43
3912.310		Ni I	151
3912.32	P	Ti II	97

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
24		Ce II	60	3923.03	P	Fe I	661	3934.14		Zr II	7
89		Ti I	175	3923.109		Ce II	191	3934.228		Ti I	15
86		V I	42	3923.246		Gd II	50	3934.41		N III	8
98		Pr II	17	3923.39	P	Ti II	97	3934.46	P	Ce II	3
79		Ni I	15	3923.48		He II	4	3934.80		Zr II	43
64		Ti II	34	3923.483		S II	55	3934.823		Nd II	
35		Fe I	120	3923.50		Ca I	7	3934.824		Gd II	1
2		Cl II	68	3923.503		Sc II	9	3935.141		V I	90
73		Fe I	567	3923.91		Hf II	18	3935.18	P	Cr II	10
33		V II	33	3923.92		Zr II	100	3935.31		Fe I	362
34		Ti I	15	3924.05		S II	3	3935.64		Hf II	43
6		Zr II	134	3924.075		Mn I		3935.717		Ba I	8
2	P	Fe I	652	3924.18	P	Ni I	240	3935.764		Sm II	28
80		Fe II	3	3924.44		Si III		3935.77		Al I	18
0	P	Fe I	660	3924.527		Ti I	13	3935.815		Fe I	362
3		Fe I	662	3924.644		Ce II	190	3935.86	P	Fe I	564
51		Ti I	14	3924.65	P	Cr II	129	3935.914		He I	57
6		A II	2	3924.658		V I	90	3935.942		Fe II	173
49		Ce II	78	3925.09		La II	135	3935.964		Co I	32
6		Cr I	137	3925.151		Co I	131	3936	P	C IV	2
0	P	Cr II	128	3925.201		Fe I	567	3936.07		Zr II	42
84		Ir I	6	3925.216		Sm I	2	3936.22		La II	13
03		Co I	113	3925.240		V I	8	3936.282		V I	42
43		Cr I	136	3925.456		Pr II	11	3936.79	P	Fe I	564
79		Ti I	15	3925.55	P	Fe I	660	3936.95		Cr II	128
4		Zr II	17	3925.646		Fe I	364	3937.329		Fe I	278
5		La II	42	3925.71		A II	105	3937.575		Nd II	19
43		Cr I	23	3925.87		Cl III	4	3937.870		Ba I	8
19		V II	10	3925.946		Fe I	364	3938.005		Ti I	246
76		Tm I	2	3926.001		Fe I	562	3938.086		Ce II	205
08		Gd II	20	3926.319		Ti I	292	3938.289		Fe II	3
1	P	Gd II	50	3926.32		V II	165	3938.400		Mg I	18
4		Zr I	6	3926.467		Mn I	44	3938.52		N III	8
		Cl II	66	3926.497		V II	11	3938.621		Al II	73
33		Fe I	506	3926.530		He I	58	3938.76	P	Ni I	240
30		Cr I	137	3926.58	P	O II	11	3938.856		Co I	171
15		Co I	113	3926.649		Cr I	313	3938.969		Fe II	190
35		Fe I	20	3927.383		Ce II	43	3939.066		Al II	73
		Eu II	10	3927.61	P	Fe I	282	3939.49		S II	45
12		Sm II	9	3927.922		Fe I	4	3939.51	P	Sc II	9
7		Hf II	76	3927.926		V I	90	3939.85		La II	134
7		Cl II	68	3927.93	P	Fe I	361	3940.044		Fe I	731
96		Cr I	137	3928.085		Fe I	565	3940.32	P	Ti II	97
		Hf II	7	3928.279		Sm II	17	3940.338		Ce II	50
		S II	29	3928.615		S III	8	3940.882		Fe I	20
36		Gd II	50	3928.62		A II	10	3940.887		Co I	18
76		Ce II	12,248	3928.636		Cr I	23	3941.15		Cr I	213
19		Fe I	124	3928.87		Eu II	10	3941.283		Fe I	562
18		Fe I	364	3928.97	P	Ti I	175	3941.478		Mo II	4
	P	Fe II	191	3929.114		Fe I	280	3941.490		Cr I	23
	P	Cr I	136	3929.15	P	Ti II	97	3941.512		Nd II	27
	P	Fe I	362	3929.208		Fe I	659	3941.728		Co I	17
14		Fe I	430	3929.22		La II	27	3941.86		Ni I	171
56		Pr II	11	3929.53		Zr I	7	3941.874		Sm II	1
77		C II	4	3929.54		Zr II	142	3941.92		Zr II	55
5		N II	17	3929.583		Tm II	11	3942.006		V I	63
9		Fe I	430	3929.734		V II	10	3942.14		O IV	10
	P	Cr I	136	3929.875		Ti I	13	3942.151		Ce II	37
59		Cr I	23	3030.023		V I	63	3942.443		Fe I	364
7		O II	17	3930.076		Co I	59	3942.746		Ce II	57
13		Ce II	60	3930.299		Fe I	4	3942.78		N III	8
22		Ti I	130	3930.31	P	Fe II	3	3943.08		Eu II	22
0		Fe I	4	3930.50		Eu II	5	3943.141		Ce II	113
		S III	8	3930.63	P	O IV	10	3943.21		Cr I	135
7		V I	42	3930.66		Y II	16	3943.299		Sm II	9
4		Pr II	12	3930.88	P	Cr II	129	3943.339		Fe I	72
5		Fe I	153	3931.088		Ce II	49	3943.48	P	V II	11
7		C II	4	3931.122		Fe I	565	3943.664		V I	42
9		Fe I	567	3931.24		A II	2	3943.888		Ce II	234
5		Nd II		3931.340		V I	90	3944.009		Al I	1
	P	Zr II	42	3931.369		Ce II	61	3944.126		Ni I	151
2		Cr I	23	3931.938		S II	29	3944.25		Cr I	135
		Fe I	220	3931.97		Al I	18	3944.27		A II	2
3		Ti I	14	3932.007		Ti II	34	3944.748		Fe I	361
		La II	40	3932.30		S II	30	3944.890		Fe I	430
1		Ce II	195	3932.40		Hf II	28	3945.048		O II	6
		Zr I	8	3932.53		La II	123	3945.06		S II	33
5		V I	42	3932.55		A II	90	3945.08		Fe III	69
5		Ce II	50	3932.59	P	Fe I	153	3945.10		C II	32
	P	Fe I	153	3932.629		Fe I	280,652	3945.11		Cr II	142
	P	Fe I	564	3933.19		A II	53	3945.119		Fe I	280
		Zr II	143	3933.294		S II	55	3945.21	P	Fe II	3
7		Sm II	38	3933.38		P III	9	3945.27	P	V II	165
1		V I	42	3933.38		Sc I	8	3945.29	P	O IV	10
		A II	11,53	3933.606		Fe I	488,562	3945.326		Co I	29
		S II	60	3933.65		Hf II	6	3945.36		Hf II	109
	P	Fe I	429	3933.664		Ca II	1	3945.495		Cr I	135
		P III	9	3933.731		Ce II	81	3945.968		Cr I	134
5		Co I	32	3933.918		Co I	17	3946.00		Hf II	115
4		Fe I	4	3934.013		V I	42	3946.10		A II	105

FINDING LIST

I A	Type	Element	Multiplet No.
946.18	P	Ni I	1
946.21		Y II	24
946.35		C II	31,32
946.406		Al II	63
946.511		Sm II	17
946.633		Co I	60
946.681		Ce II	255
946.98		S II	45
947.002		Fe I	561
947.10		Fe III	23,69
947.125		Co I	58
947.301		O I	3
947.393		Fe I	153
947.489		O I	3
947.5043		A I	2
947.533		Fe I	361,426
947.594		O I	3
947.60		C II	31
947.633		Pr II	11
947.770		Ti I	14
947.838		Sm II	33
948.00	P	Fe I	652
948.105		Fe I	562
948.113		Sm II	9
948.15		C II	32
948.28	P	Fe I	561
948.48	P	Fe I	560
948.670		Ti I	13
948.779		Fe I	694
948.901		Ca I	6
948.9788		A I	2
949.10		La II	41
949.14		Fe I	730
949.23	P	Fe I	153
949.275		Tm I	2
949.438		Pr II	16
949.45		C II	31
949.64		Cr I	136
949.954		Fe I	72
949.96		Cl II	36
950.35		Y II	6
950.42		S II	45
950.78	P	Fe I	153
951.097		Cr I	136
951.154		Nd II	19
951.164		Fe I	661
951.51		P III	9
951.59		Y II	16
951.717		Co I	171
951.765		Cr I	136
951.968		V II	10
951.987		O I	30
952.00		Gd II	1
952.08		C II	32
952.195		Nd II	23
952.326		Co I	16
952.367		Cb II	10
952.399		Cr I	136
952.573		Ce II	113,177
952.606		Fe I	278
952.704		Fe I	362
952.74		A II	89
3952.917		Co I	28
3952.982		O I	30
3953.056		O I	30
3953.156		Fe I	430
3953.163		Cr I	136
3953.50	P	Fe I	770
3953.516		Pr II	9
3953.525		Nd II	
3953.660		Ce II	141
3953.76	P	Fe III	69
3953.863		Fe I	362
3954.21		Cl II	82
3954.372		O II	6
3954.38		Fe III	120
3954.590		O I	30
3954.667		O I	30
3954.715		Fe I	606
3955.22	P	Fe I	527
3955.352		Fe I	562
3955.77	P	Fe I	219
3955.82	P	Zr II	17
3955.851		N II	6
3955.956		Fe I	488
3956.270		Co I	2
3956.284		Ce II	202
3956.336		Ti I	13
3956.459		Fe I	604
3956.681		Fe I	278
3956.82	P	O IV	10
3956.901		Ce II	176
3957.027		Fe I	562
3957.053		Ca I	6
3957.62		Fe I	564
3957.64		P III	9
3957.66	P	Fe II	13
3957.672		Gd II	19
3957.926		Co I	18
3958.001		Nd II	25
3958.08		Cr I	307
3958.101		Tm II	1
3958.206		Ti I	13
3958.24		Zr II	16
3958.266		Ce II	160
3958.39		A II	65
3958.60	P	Ni I	150
3958.66		Pd I	8
3958.865		Rh I	7
3959.01	P	Sc II	49
3959.436		Gd II	49
3959.46	P	Fe I	556
3959.523		Gd II	44
3959.527		Sm II	
3960.284		Fe I	913
3960.37		V II	189
3960.763		Cr I	68
3960.895		Fe II	212
3960.914		Ce II	84
3960.997		Co I	128
3961.147		Fe I	361
3961.503		Mo II	4
3961.523		Al I	1
3961.55		S III	8
3961.59		O III	17
3962.03		La II	
3962.12		Ni I	199
3962.19		Cr I	68
3962.353		Fe I	566
3962.42	P	Fe I	560
3962.445		Pr II	28
3962.65	P	Fe I	913
3962.851		Ti I	12
3962.995		Sm II	
3963.04		La II	
3963.108		Fe I	562
3963.114		Nd II	39
3963.13		O II	43
3963.13		S II	45
3963.354		Ti I	81
3963.43	P	Fe I	654
3963.626		V I	
3963.628		Os I	3
3963.690		Cr I	38
3964.09	P	Fe II	29
3964.11		Fe III	
3964.261		Pr II	33
3964.269		Ti I	12
3964.35	P	Cr II	10
3964.522		Fe I	361
3964.57	P	Fe II	29
3964.64	P	Cr II	10
3964.727		He I	5
3964.825		Pr II	8
3964.90		Eu II	10
3964.96		Hf II	54
3965.011		Co I	31
3965.236		Co I	30
3965.263		Pr II	8
3965.446		Fe I	658
3965.511		Fe I	565
3965.83	P	Fe I	122
3966.045		Sm II	24
3966.066		Fe I	45
3966.37		Pt I	4
3966.43	P	Fe II	3
3966.598		Fe I	562,652,766
3966.573		Pr II	8
3966.630		Fe I	282,562
3966.65		Zr I	8
3966.72		K II	5
3966.824		Fe I	659
3967.048		Ce II	84
3967.423		Fe I	604
3967.441		O II	22
3967.69		Y II	82
3967.964		Fe I	561
3968.11		V II	9
3968.25		Zr I	7
3968.261		Gd II	3
3968.36		A II	2
3968.38	P	Fe I	219
3968.43		He II	3
3968.470		Ca II	1
3968.63		C II	37
3968.78		Fe III	120
3968.995		D	1
3969.061		Cr I	38
3969.116		Co I	128
3969.261		Fe I	43
3969.293		Gd II	20
3969.38		C II	37
3969.38	P	Fe II	3
3969.40	P	Fe II	3
3969.43	P	Fe III	120
3969.628		Fe I	657
3969.748		Cr I	38
3970.07		Cr I	213
3970.074		H	1
3970.10		Ta I	1
3970.15		V II	203
3970.20		C II	38
3970.391		Fe I	488
3970.503		Ni I	151
3970.528		Sm II	1
3970.69		S II	45,54
3970.99	P	Fe I	1074
3971.062		Gd II	50
3971.164		Pr II	27
3971.255		Cr I	67
3971.325		Fe I	277
3971.397		Sm II	43
3971.684		Ce II	133
3971.754		Gd II	49
3971.82		Fe I	281
3971.98		Eu II	5
3972.130		Ti I	81
3972.164		Pr II	13
3972.171		Ni I	29
3972.44		C II	37
3972.506		Co I	171
3972.53	P	Co I	173
3972.570		Ca I	41
3972.58		K II	4
3972.686		Cr I	67
3972.920		Fe I	803
3973.144		Co I	58
3973.263		O II	6
3973.269		Nd II	19
3973.562		Ni I	31
3973.642		V II	9
3973.650		Nd II	37
3973.655		Fe I	769
3973.707		Ca I	6
3973.84		C II	37
3973.981		Gd II	50
3974.160		Fe II	29
3974.397		Fe I	564
3974.48		A II	9
3974.65	P	Fe I	526
3974.650		Ni I	198
3974.66	P	O IV	10
3974.726		Co I	18
3974.76		A II	8
3974.766		Fe I	72
3975.029		Fe II	191
3975.21		Fe I	153
3975.69	P	Ti I	186
3975.85		Fe I	977
3976.01		Cr I	38
3976.270		Sm II	9
3976.30		Cr I	280
3976.392		Fe I	487
3976.430		Sm II	33
3976.564		Fe I	655
3976.615		Fe I	729
3976.665		Cr I	38
3976.836		Nd II	21
3976.865		Fe I	431,662
3976.88		Fe III	69
3977.10		O IV	10
3977.184		Co I	113
3977.231		Os I	4
3977.30		C II	38
3977.32		Zr I	46
3977.732		V II	10
3977.743		Fe I	72
3978.28		P III	8
3978.43		Fe III	120
3978.466		Fe I	361

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
50		Ce II	175	3987.98		Yb I	2	3996.607		Sc I	7
50		Co I	17	3988.18		A II	65	3996.79	P	Fe I	1074
77		Cr I	67	3988.51		La II	40	3996.968		Fe I	945
34		Co I	173	3988.68		Zr I	46	3997.054		Pr II	9
7		C II	37	3988.833		V I	89	3997.126		V II	9
3		La II	140	3989.06		Sc II	8	3997.17		P III	9
2	P	Fe I	426	3989.24	P	Fe I	561	3997.394		Fe I	278
0		Sm II	51	3989.29		Zr I	6	3997.43		Y II	24
2		Cr I	307	3989.444		Ce II	240	3997.48	P	Fe I	563
24		Cr I	280	3989.581		Ti I	81	3997.49	P	Fe I	556
		A II	90	3989.60	P	Fe I	605	3997.764		Gd II	67
		Hf II	97	3989.718		Pr II	12	3997.901		Co I	32
2		Fe III	120	3989.758		Ti I	12	3997.97		S III	
9		Nd II	57	3989.803		V II	32	3998.00		Si II	
		Cr II	183	3989.859		Fe I	768	3998.054		Fe I	276
8		Co I	3	3989.958		Mn I	33	3998.46	P	Fe I	606
		Fe I	561	3989.986		Cr I	268	3998.51		Hf II	59
8		Cr I	67	3990.103		Nd II	19	3998.554		Co I	33
		S II	59	3990.16		Cr I	280	3998.635		Ti I	12
		Fe III	120	3990.184		Ti I	185	3998.69		N III	16
		C II	37	3990.19		Cl II	76	3998.730		V I	89
		Al III	12	3990.299		Co I	58	3998.79		S II	59
		Fe I	153	3990.379		Fe I	527	3998.85		Cr I	307
1		Ti I	186	3990.55	P	Fe I	556	3998.98		Zr II	16
5		Ce II	194	3990.566		V I	89	3999.00	P	Cr II	10
6		Fe I	22	3990.81		Fe III	46	3999.07	P	Cr II	10
3		Cr I	67	3990.94		S II	45	3999.195		V II	202
		La II	139	3991.123		Cr I	38	3999.242		Ce II	57
6		Ti I	188	3991.14		Zr II	30	3999.336		Ti I	188
	P	Fe II	3	3991.47		V II	10	3999.679		Cr I	
	P	Fe I	428	3991.50		Cl III	7	3999.92		C III	
1		Ti I	12	3991.528		Co I	173	3999.98		N I	
5		Fe I	278	3991.673		Cr I	38	4000.02		Fe I	360
		Cl II		3991.684		Co I	17	4000.266		Fe I	556
8		Ti II	11	3991.743		Nd II	19	4000.466		Fe I	426
		Zr II	142	3991.77		Si II		4000.493		Nd II	64
3		Pr II	28	3991.831		Co I	129	4000.59		Cr I	295
5		Nd II	67	3991.965		V II	202,227	4001.049		Ce II	193
8		Ti I	11	3992.014		Co I	3	4001.17		V II	202
3		Mn I	33	3992.06		A II	2	4001.24		K II	6
		Y II	6	3992.11		Cr I	38	4001.257		Gd II	49
9		O II	6	3992.114		Ir I	5	4001.444		Cr I	268
1		Ce II	172	3992.386		Ce II	134	4001.56		C III	
8		Gd II	49	3992.395		Fe I	604	4001.666		Fe I	72
8		Sm II	38	3992.64	P	Fe I	219	4002.073		Fe II	29
7		Cr I	213	3992.801		V I	89	4002.466		Ti I	188
		Fe I	485	3992.845		Cr I	67	4002.48		Cr II	166
		Al II	32,48	3992.913		Ce II	226	4002.549		Fe II	190
		S III	8	3993.213		Gd II	1	4002.55		Zr I	46
	P	Fe I	426	3993.308		Sm II	4	4002.665		Fe I	320,655
7		Cr I	38	3993.401		Ba I	8	4002.940		V II	9
0		Fe I	277	3993.526		S II	29	4002.95		Zr II	142
		Hf II	19	3993.796		Ti I	186	4003.33		Cr II	194
0		Ni I	171	3993.822		Ce II	12	4003.41		Fe III	15
7		Mn I	33	3993.952		Ni I	170	4003.596		Co I	130
3		Ti I	185	3993.968		Cr I	67	4003.64		N III	16
5		V I	89	3994.00	P	Fe I	560	4003.764		Fe I	728
3		Cr I	38	3994.117		Fe I	526	4003.771		Ce II	188
	P	Fe I	219	3994.165		Gd II	49	4003.789		Ti I	188
0		V I	89	3994.27	P	Fe I	320	4003.850		Gd II	104
5		Ce II	252	3994.50		La II	78	4003.89		S II	45
		Zr II	7	3994.542		Co I	17	4003.921		Cr I	268
3		Ru I	9	3994.56	P	Ti I	186	4004.010		Nd II	
	P	Fe I	561	3994.683		Ti I	188	4004.15	P	Fe II	127
1		Mn I	33	3994.684		Nd II		4004.832		Fe I	601
6		Ti I		3994.81		A II	89,101	4004.976		Fe I	486,557
	P	Fe I	219	3994.834		Pr II	11	4005.04	P	Fe III	45
3		Fe I	661	3994.996		N II	12	4005.246		Fe I	43
		O II	22	3995.10		K II	1	4005.38	P	Fe I	123
		Ti I	188	3995.17		O IV	10	4005.49	P	Fe I	219
	P	Cr II	10	3995.199		Fe I	604	4005.64	P	Fe III	45
3		V II	202	3995.306		Co I	31	4005.7		Al II	89
	P	Cr II	10	3995.48	P	Sc II	49	4005.712		V II	32
		S III	8	3995.49	P	Sc II	18	4005.952		Ti I	187
	P	Cr II	10	3995.586		Tm II	5	4006.136		Ni I	
3		Fe I	655	3995.656		Ba I	8	4006.16	P	Fe I	564
	P	Fe I	560	3995.74		La II	27	4006.314		Fe I	603
1		Mo II	4	3995.83	P	Ni I	238	4006.631		Fe I	488
	P	Fe I	560	3995.860		Al II	47	4006.768		Fe I	320
5		Mn I	33	3995.996		Fe I	279	4007.04	P	Cr II	194
2		Sm II	17	3996.075		Al II	47	4007.195		Ti I	187
33		Mg I	17	3996.159		Al II	47	4007.233		Fe I	119
3		Mn I	33	3996.182	Forb	Al II	47	4007.277		Fe I	277
		Ni I	137	3996.26	P	Fe I	561	4007.36		Hf II	88
3		Mn I	33	3996.28	P	Fe I	427	4007.435		Nd II	
7		Co I	16	3996.320		Gd II		4007.589		Ce II	221
		Gd II	19	3996.323		Al II	47	4007.64		La II	
3		Sm II	28	3996.36	P	Fe II	190	4007.66		A II	65
		Mn I	33	3996.381		Al II	47	4007.72	P	Fe II	189
	P	Ti II	11	3996.518		Tm II		4007.78		S II	29

I A	Type	Element	Multiplet No.
007.81	P Forb	He I	56
008.046		Ti I	187
008.17		V II	32
008.41	P	Sc II	16
008.46		Hf II	54
008.60	P	Sc II	16
008.714		Pr II	28
008.769		W I	6
008.81		Fe III	
008.913		Gd II	
008.926		Ti I	12
009.270		He I	55
009.39		S II	55
009.54	P	Fe I	556
009.58		Al II	37
009.653		Ti I	11
009.714		Fe I	72
009.90		C II	27
009.984		Ni I	150
010.18		Fe I	915
010.77		Fe I	219,320
011.089		Co I	2
011.23		A II	53
011.416		Fe I	218
011.534		Ti I	10
011.69		Eu II	22
011.71		Fe I	153
011.89	P	Fe I	424
012.10		K II	2
012.16		Fe I	601
012.250		Nd II	10
012.372		Ti II	11
012.389		Ce II	206
012.467		Fe II	126
012.49		Cr I	268
012.50		Cr II	183
012.51		Mo I	12
012.704		Nd II	
012.786		Ti I	186
013.24	P	Ti I	186
013.587		Ti I	187
013.641		Fe I	557
013.798		Fe I	485
013.798		Gd II	
013.80		Mg II	22
013.822		Fe I	486
013.87		A II	2
013.89	P	Fe I	120
013.942		Co I	58
013.953		Gd II	17
014.28		Fe I	426,427
014.489		Sc II	8
014.534		Fe I	802
014.668		Cr I	268
014.899		Ce II	157
015.20	P	Fe II	142
015.377		Ti I	185
015.389		Pr II	32
015.50		Ni II	12
015.877		Ce II	256
016.264		Ti I	186
016.432		Fe I	560
016.54		Fe I	277
016.81	P	Fe I	428
016.82		V II	202
016.943		Ti I	208
017.096		Fe I	279
017.156		Fe I	527
017.27		C II	27
017.29		V II	216
017.56		Ni I	171
017.58		Eu II	10
017.596		Ce II	163
017.771		Ti I	185
017.96		Cr II	166
018.102		Mn I	5
018.282		Fe I	560
018.38		Zr II	54
018.49	P	Fe II	13
018.50		Cl III	7
018.826		Nd II	10
019.05		Fe I	219
019.05		V II	201
019.055		Ni I	72
019.137		Th II	3
019.288		Co I	16
019.30	P	Co I	18
019.45		P II	30
019.982		Sm II	16
020.05	P	Fe I	556
4020.06		Cl II	76
4020.25		Hf II	40
4020.399		Sc I	7
4020.490		Fe I	913
4020.872		Nd II	19
4020.898		Co I	16
4021.13		C II	27
4021.330		Nd II	36
4021.622		Fe I	120,557
4021.75	P	Fe III	45
4021.812		Ti I	185
4021.869		Fe I	278
4021.925		V I	96
4022.052		Ni I	238,241
4022.263		Cr I	268
4022.333		Gd II	
4022.36		Cr II	183
4022.36		Fe III	45
4022.45		Fe I	173
4022.744		Fe I	556.654
4023.002		Nd II	
4023.231		Sm II	4
4023.388		V II	32
4023.399		Co I	59
4023.58		La II	79
4023.688		Sc I	7
4023.739		Cr I	268
4023.986		He I	54
4023.99		Ni I	170
4023.99		Zr I	46
4024.04		O II	99
4024.109		Fe I	277
4024.45		Zr II	54
4024.491		Ce II	49
4024.552		Fe II	127
4024.573		Ti I	12
4024.727		F II	2
4024.735		Fe I	560
4024.785		Nd II	24
4024.92		Zr I	46
4025.010		F II	2
4025.012		Cr I	37
4025.07		Fe III	53
4025.07	P	Ti I	208
4025.114		Ni I	240
4025.136		Ti II	11
4025.44		Cr I	37
4025.44		Ni I	117
4025.49	P Forb	He I	19
4025.495		F II	2
4025.60		He II	3
4025.67	P	Fe III	45
4025.87		La II	42
4026.080		N II	40
4026.166		Cr I	37
4026.189		He I	18
4026.362		He I	18
4026.40		O II	51
4026.435		Mn I	
4026.5		Al II	24
4026.539		Ti I	185
4027.032		Co I	3
4027.103		Cr I	37
4027.20		Zr I	46
4027.30		V II	201
4027.420		Ti I	
4028.332		Ti II	87
4028.411		Ce II	47
4028.791		S II	45
4029.16		Hf II	23
4029.32	P	Ni I	170
4029.64	P	Ti II	87
4029.640		Fe I	556,563
4029.68		Zr II	41
4030.03		Zr I	46
4030.194		Fe I	72
4030.28	P	Cr II	19
4030.470		Nd II	32
4030.499		Fe I	560
4030.512		Ti I	185
4030.755		Mn I	2
4030.867		Al II	72
4030.90	P	Fe I	943
4031.130		Cr I	268
4031.135		Al II	72
4031.210		Al II	72
4031.243		Fe I	486
4031.339		Ce II	108
4031.35		Zr II	42
4031.41		A II	65
4031.456		Fe II	151
4031.633		Al II	72
4031.68		La II	40
4031.73	P	Fe I	427
4031.753		Ti I	185
4031.807		Nd II	
4031.968		Fe I	655
4032.46		Fe I	320
4032.628		Ti I	297
4032.636		Fe I	44
4032.812		S II	59
4032.946		Fe II	126
4032.975		Ga I	1
4033.073		Mn I	2
4033.18		O II	50
4033.19	P	Fe I	218
4033.263		Cr I	36
4033.55		Sb I	1
4033.68		P II	17
4033.83		A II	52
4033.857		Pr II	19
4033.883		Ti I	208
4033.95		Cr I	36
4034.012		Nd II	23
4034.10		Zr II	42
4034.490		Mn I	2
4034.84		Zr II	70
4034.884		Ti I	208
4035.087		N II	39
4035.09		O II	51
4035.110		Sm II	33
4035.25	P	Fe I	831
4035.47		A II	33
4035.54	P	Fe II	22
4035.54		Fe III	119
4035.542		Co I	173
4035.631		V II	32
4035.728		Mn I	5
4035.82	P	Fe III	45
4035.828		Ti I	208
4035.96	P	Ni I	150
4035.98	P	Fe I	426
4036.23		P II	16
4036.37	P	Fe I	279
4036.53		Cl II	76
4036.59		La II	59
4036.779		V II	9
4036.80		Cr I	36
4037.294		Cr I	36
4037.332		Gd II	49
4037.665		Ce II	218
4037.725		Fe I	118
4037.897		Gd II	49
4038.03		Cr II	194
4038.124		Nd II	31
4038.27	P	Ni I	150
4038.545		V II	155
4038.622		Fe I	600,728
4038.82		A II	2
4039.100		Cr I	251
4039.12		Fe III	45
4039.30		Cr I	251
4039.302		Al II	62
4039.357		Pr II	15
4039.397		Al II	62
4039.574		V II	32
4039.83		Y I	5
4039.94		Fe I	276
4040.24		Zr II	54
4040.310		Ti I	185
4040.650		Fe I	655
4040.762		Ce II	138
4040.796		Nd II	30
4041.288		Fe I	603,654
4041.31		O II	50
4041.321		N II	39
4041.361		Mn I	5
4041.64	P	Fe II	172
4041.675		Sm II	22
4041.79		Cr I	36
4041.84	P	Fe II	13
4041.911		Fe I	602
4042.135		Ce II	252
4042.20		A II	28
4042.246		Cr I	36
4042.584		Ce II	140
4042.635		V I	96
4042.723		Sm II	4
4042.75	P	Fe I	556
4042.905		Sm II	9

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
1		A II	33	4053.28		Fe III	119	4062.90		O II	50
1		La II	66	4053.294		Gd II		4063.174		Co I	18
2		Cu II	3	4053.45		Cr II	19	4063.286		Fe I	698
37		N II	39	4053.506		Ce II	36	4063.390		Gd II	
7		Zr I	32	4053.56		A II	53	4063.528		Mn I	5
6		Nd II	34	4053.59		Fe III	98	4063.59		Gd II	48
	P	Fe I	122	4053.59		V II	215	4063.597		Fe I	43
6		Cr I	306	4053.642		Gd I	5	4063.931		V I	121
75		Ti I	208	4053.814		Ti II	87	4063.94	P	Cr II	19
1		Fe I	276,557	4053.82		Fe I	485	4064.07	P	Fe I	423
	P	Fe I	559	4054.10		O II	50,98	4064.16		Zr I	46
	P	Fe II	172	4054.11		Cr II	19	4064.2		C I	7
5		K I	3	4054.18		Fe I	557	4064.209		Ti I	80
182		A I	4	4054.55		O II	98	4064.22	P	Ti I	254
	P	Fe I	1073	4054.555		Sc I	6	4064.350		Ti II	106
		P II	30	4054.618		Co I	2	4064.374		Ni I	179
		Zr I	46	4054.833		Fe I	698	4064.45		S III	
14		Fe I	359	4054.845		Pr II	30	4064.46		Fe I	44
	P	Fe I	484	4054.883		Fe I	698	4064.576		Sm II	24,33
		N II	39	4054.991		Ce II	82	4064.64		P II	16
18		Pr II	8	4055.011		Ti I	80	4064.75	P	Fe II	39
		O II	51	4055.03		Zr I	46	4064.99		Y II	24
33		Mn I	48	4055.046		Fe I	218	4065.070		V II	215
39		Fe I	125	4055.214		Mn I	48	4065.09		Au I	3
48		Gd II	49	4055.543		Mn I	5	4065.094		Ti I	80
	P Forb	He I	17	4055.98		Fe I	914	4065.1		C I	7
6		Mn I		4056.027		Mo I	12	4065.14		A II	65
36		Co I	31	4056.06		C III	24	4065.402		Fe I	698
	P	Fe I	559	4056.07		Cr II	182	4065.595		Ti I	207
		Zr II	30	4056.212		Ti II	11	4065.716		Cr I	279
15		Fe I	43	4056.270		V II	14	4066.02	P	Fe I	695
	P	Fe I	557	4056.53		Fe I	320	4066.16	P	Cr II	182
		O II	50	4056.543		Pr II	26	4066.328		Fe II	214
		Cr I	36	4056.793		Cr I	306	4066.365		Co I	30
9		V II	177	4056.8		Al II	88	4066.597		Fe I	424
1		Ce II	81	4057.00		N II	39	4066.737		Sm II	28
	P	Fe I	1075	4057.074		V I	121	4066.938		Cr I	66
7		Hg I	1	4057.19		Cr I	156	4066.979		Fe I	358
9		Fe I	487	4057.195		Co I	3	4067.03		V II	9
0		Cr I	36	4057.347		Ni I	89	4067.05	P	Cr II	193
	P	Fe II	126	4057.356		Fe I	277	4067.051		Ni II	11
0		Sm II	16	4057.39		P III	1	4067.275		Fe I	217
4		K I	3	4057.457		Fe II	212	4067.279		Ce II	22
5		Fe I	117,853	4057.5052		Mg I	16	4067.39		La II	26
		A II	66	4057.51		Fe III	33	4067.49	P	Fe I	422
		Y I	6	4057.612		Ti I	254	4067.60	P	Fe I	655
2		Sc I	7	4057.66	P	Fe I	729	4067.85	P	Fe I	1103
	P	Y II	6	4057.72		A II	9	4067.87		C III	16
8		W I	4	4057.80		N IV	3	4067.984		Fe I	559
		Hf II	104	4057.81		Cr I	251	4068.003		Mn I	5
	P	Cr II	182	4057.812		Pb I	1	4068.144		Ti I	207
		O II	50	4057.950		Mn I	29	4068.334		Sm II	42
	P	Cr I	251	4058.08		La II	54	4068.541		Co I	58
		Zr II	43	4058.139		Ti I	254	4068.661		Ti I	254
5		Mn I	5	4058.183		Co I	16	4068.7		Sc III	
0		Cr I	251	4058.219		Gd I	5	4068.836		Ce II	82
1		Fe II	172	4058.227		Fe I	558	4068.97		C III	16
9		Mn I	48	4058.46	P	Fe I	914	4068.981		Ti I	299
		V II	215	4058.600		Co I	58	4069.08		Fe I	557
		Cr II	193	4058.7		S II	54	4069.267		Nd II	20
6		Fe I	218	4058.766		Fe I	120	4069.636		O II	10
9		Ti I	185	4058.77		S II	52	4069.883		Fe II	188
9		Gd II	50	4058.772		Cr I	251	4069.897		O II	10
		Hf II	53	4058.912		Ca I	40	4070.03	P	Fe II	22
	P	Ni I	169	4058.930		Mn I	5	4070.094		Ce II	
3		Cr I	251	4058.933		Cb I	1	4070.279		Mn I	5
8		Gd II		4059.07		Cl III	7	4070.288		Gd II	49
		Cr I	36	4059.27		P III	1	4070.30		C III	16
		La II	85	4059.321		Co I	2	4070.390		Gd II	17
		S II	45	4059.370		Gd II	118	4070.45	P	Fe I	525
		Zr II	43	4059.392		Mn I	29	4070.766		Fe I	558
		Hf II	59	4059.726		Fe I	767	4070.90		Cr II	193
3		V I	121	4059.961		Nd II	63	4071.0	P	Ni II	11
		V II	32	4060.09	P	Ti I	254	4071.000		Cr I	306
		Fe II	98	4060.263		Ti I	80	4071.09		Zr II	54
5		Nd II	66	4060.58		O II	97	4071.20		O II	49
	P	Ni I	239	4060.62		Cr I	156	4071.211		Ti I	254
	P	Fe II	172	4060.98		O II	97	4071.22		Hf II	74
		V II	215	4061.085		Nd II	10	4071.469		Ti I	254
2		V I	121	4061.3		Sc III		4071.52		Fe I	218
3		Fe I	700	4061.742		Mn I	29	4071.541		V I	96
		Cr II	19	4061.77	P	Cr II	19	4071.740		Fe I	43
		Cl II	61	4061.787		Fe II	189	4071.814		Ce II	81
2		Fe I	700,852	4062.08		P II	17	4072.01		A II	33
6		Fe I	563	4062.09		Mo I	12	4072.13		P II	16
2		Mn I	48	4062.223		Ce II	34	4072.164		O II	10
4		Fe I	524	4062.446		Fe I	359	4072.40		A II	41,52
	P	Fe I	557	4062.590		Gd II		4072.518		Fe I	698
0		Ti I	208	4062.817		Pr II	26	4072.56		Cr II	26
		A II	101	4062.90		Ne II	53	4072.71		Zr I	46

FINDING LIST

I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
072.913		Ni I	197	4082.40		A II	8	4095.975		Fe I	217
072.917		Ce II	109	4082.44		Fe I	906	4096.118		Fe I	911
073.195		Gd II	34	4082.456		Ti I	80	4096.18		O II	48
073.055		N II	38	4082.593		Co I	16	4096.21	P	Fe I	18
073.477		Ce II	4	4082.600		Sm II	54	4096.47		A II	65
073.759		Gd II	44	4082.85		N II	38	4096.543		O II	21
073.760		Fe I	558	4082.944		Mn I	5	4096.63		Zr II	15
073.90		O III	23	4083.233		Ce II	60	4096.822		Pr II	29
074.356		Ti I	254	4083.554		Fe I	117	4096.96	P	Fe I	173
074.374		W I	6	4083.584		Sm II	24	4097.02	P	Fe I	700
074.53		C II	36	4083.628		Mn I	5	4097.099		Fe I	558
074.70	P	Fe I	912	4083.67	P	Mn II	2	4097.12		Ca II	17
074.794		Fe I	524	4083.71	P	Fe I	1103	4097.15		A II	100
074.89		C II	36	4083.71		Y I	6	4097.21		Hf II	17
074.897		Ni I	28	4083.780		Fe I	697	4097.260		O II	20,48
075.116		Nd II	62	4083.907		O II	49	4097.31		N III	1
075.272		Nd II	19	4084.17	P	Fe I	557	4097.65		Cr I	97
075.45		Si II		4084.391		Mo I	12	4097.791		Ru I	9
075.63	P	Cr II	19	4084.498		Fe I	698	4097.96		Cr I	97
075.66		V II	14	4084.58	P	Fe II	151	4098.18		Cr I	97
075.714		Ce II	57	4084.66		O II	21	4098.183		Fe I	558
075.845		Sm II	51	4085.011		Fe I	358	4098.27		O II	46
075.853		Ce II	206	4085.124		O II	10	4098.44		Cr II	165
075.868		O II	10	4085.232		Ce II	172	4098.533		Ca I	25
075.92		Cr I	66	4085.26	P	Fe I	276	4098.54		Fe III	101
075.95	P	Fe II	21	4085.312		Fe I	559	4098.606		Gd II	49
076.00		C II	36	4085.38		Eu II	10	4098.75		La II	138
076.061		Cr I	279	4085.38	P	Fe I	486	4098.77		Ne II	53
076.124		Co I	16	4085.564		Gd II	50	4098.900		Gd II	49
076.232		Fe I	486	4085.67		V II	214	4098.981		Ce II	91
076.370		Ti I	9	4085.68		Zr II	54	4099.016		Cr I	108
076.498		Fe I	218	4085.815		Nd II	16	4099.08		Fe I	600,651
076.636		Fe I	558	4085.98		Fe I	1073	4099.166		Ti I	207
076.64		A II	52	4086.14		Cr II	26	4099.25		S III	11
076.71		La II	11	4086.300		Co I	58	4099.44		S III	
076.78		Si II		4086.69		Ne II	54	4099.47		A II	79
076.810		Fe I	557	4086.72		La II	10	4099.54		La II	78
076.83		N II	38	4087.099		Fe I	694	4099.77		Mg I	46
076.87		Cr II	19	4087.16		O II	48	4099.796		V I	27
076.89	P	Fe I	559	4087.27	P	Fe II	28	4099.94		N I	10
076.96		A II	64	4087.297		Ce II	59	4099.99	P	Fe I	698
077.05		Zr II	54	4087.35		N II	37	4100.04		He II	3
077.089		Cr I	66	4087.60		Na II	4	4100.17		Fe I	
077.148		Ti I	207	4087.63		Cr II	19	4100.240		Nd II	57
077.35		La II	41	4087.79	P	Fe I	832	4100.30		Ne II	54
077.38		Y I	7	4088.291		Co I	2	4100.35		Fe I	320
077.470		Ce II	60	4088.567		Fe I	906	4100.35	P	Fe I	1103
077.50		Cr II	19	4088.75	P	Fe II	39	4100.52		Fe III	107
077.677		Cr I	279	4088.863		Si IV	1	4100.621		D	1
077.714		Sr II	1	4088.90		Cr II	19	4100.745		Fe I	18
078.321		Ce II	19	4089.225		Fe I	422	4100.746		Pr II	4
078.365		Fe I	217	4089.295		O II	48	4100.91	P	Fe I	173
078.444		Gd II	15	4089.49		Cr II	164	4100.918		Cb I	1
078.471		Ti I	80	4089.63		Cr I	260	4101.00		V II	176
078.700		Gd I	5	4090.085		Fe I	700	4101.163		Cr I	108
078.862		O II	10	4090.305		Cr I	66	4101.272		Fe I	698
079.18	P	Fe I	700	4090.34	P	Fe I	44	4101.684		Fe I	120
079.241		Mn I	5	4090.52		Zr II	29	4101.737		H	1
079.422		Mn I	5	4090.579		V I	41	4101.764		In I	1
079.60		A II	33	4090.75	P	Fe I	943	4101.772		Ce II	5
079.708		Ti I	207	4090.947		Ce II	174	4102.158		Mo I	12
079.726		Cb I	1	4090.984		Fe I	695	4102.159		V I	41
079.848		Fe I	359	4091.53		P II	17	4102.38		Y I	7
079.88		Cl II	61	4091.561		Fe I	357	4102.713		W I	2
080.04		P III	1	4091.945		V I	52	4102.74	P	Ni I	255
080.06	P	Fe I	944	4092.174		Cr I	180	4102.926		Si I	2
080.221		Cr I	66	4092.266		Sm II	1	4103.017		O II	20
080.226		Fe I	558	4092.386		Co I	29	4103.085		F II	4
080.227		Nd II	18	4092.407		V I	52	4103.37		N III	1
080.435		Ce II	36	4092.512		Fe I	18	4103.525		F II	4
080.44		Hf II	6	4092.633		Ca I	25	4103.61	P	Fe I	831
080.44		V II	214	4092.694		V I	27	4103.62	P	Fe I	650
080.48		Ne II	53	4092.848		Co I	59	4103.724		F II	4
080.56		Cr I	156	4092.940		O II	10	4103.85		Cr I	180
080.600		Ru I	7	4093.06		Cr I	260	4103.871		F II	4
080.67		A II		4093.16		Hf II	6	4103.91		A II	52,64
080.886		Fe I	557	4093.497		V I	52	4104.132		Fe I	356,558
081.018		Pr II	14	4093.62	P	Ni I	1	4104.18	P	Fe II	39
081.10		O III	23	4093.90		Mg II	29	4104.23		Cl III	7
081.19		Fe III	119	4093.955		Ce II	160	4104.46	P	Fe I	422
081.21		Cr II	105	4094.18		O II	10	4104.743		O II	20
081.22		Zr I	46	4094.188		Tm I		4104.77	P	Fe I	320
081.222		Ce II	4	4094.478		Gd II	48	4104.778		V I	112
081.42	P	Fe II	188	4094.930		Ca I	25	4104.867		Cr I	108
081.737		Cr I	66	4095.17		S III		4104.97		Fe I	694
081.74		Ca III	4	4095.27	P	Fe I	1075	4104.996		Ce II	156
082.125		Fe I	698	4095.486		V I	41	4105.000		O II	20
082.280		N II	38	4095.63	P	Fe I	851	4105.06	P	Fe I	700
082.30		Cr II	165	4095.63		O II	48	4105.167		V I	27
082.396		Sc I	6	4095.92	P	N II	38	4105.365		Mn I	47

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
43		Tm I		4115.376		Gd II	117	4124.072		V I	52
3		O II	10	4115.89	P	Fe I	910	4124.081		N II	65
5		Cr I	180	4115.982		Ni I	255	4124.09		A II	41
34		Ce II	160	4116.104		Si IV	1	4124.73		Lu I	3
66		Fe I	217	4116.39		A II	124	4124.793		Fe II	22
37		Fe I	697	4116.470		V I	27	4124.91		Y II	14
82		Nd II	57	4116.547		F II	5	4125.10		Hf II	94
1		Cr I	260	4116.60	P	V I	27	4125.23	P	Fe I	173
3		Cl III	7	4116.66		Cr II	181	4125.4		S III	11
81		Ce II	139	4116.703		V I	27	4125.622		Fe I	1103
7		O II	47	4116.97		Fe I	558	4125.776		Ce II	126
87		Sm II	50	4117.013		Ce II	35	4125.884		Fe I	354
26		Ce II	138	4117.09		P II	17	4126.099		Cr I	65
77		Mo I	12	4117.288		Ce II	77	4126.192		Fe I	695
87		V I	52	4117.32		Fe I	484	4126.521		Cr I	35
92		Fe I	354	4117.71		Fe I	833	4126.88		Fe I	354
5	P	Fe I	831	4117.872		Fe I	700,1103	4126.925		Cr I	
3	P	Fe I	559	4118.10		Ne II	54	4127.08		Cr II	181
1	P	Fe I	833	4118.144		Ce II	11	4127.09		A II	41
9		Zr I	32	4118.182		V I	112	4127.09	P	Ti I	114
00		Cr I	65	4118.45	P	Cr I	85	4127.302		Cr I	35
01		Gd II	117	4118.481		Pr II	8	4127.367		Ce II	4
88		Co I	2	4118.549		Fe I	801	4127.49		P II	16
54		Ca I	39	4118.551		Sm II	54	4127.531		Ti I	296
5		O II	48	4118.643		V I	41	4127.54		S III	
70		Fe I	558	4118.774		Co I	28	4127.57		Y II	15
73		Nd II	17	4118.904		Fe I	559	4127.612		Fe I	357
73		F II	5	4119.015		Ce II	89	4127.643		Cr I	65
9		P II	30	4119.219		F II	5	4127.721		Gd II	117
05		Sm II	28	4119.221		O II	20	4127.80		Hf II	41
55		Nd II	10	4119.44		Cr I	65	4127.807		Fe I	558,727
4		Mg II	21	4119.457		V I	41	4128.053		Si II	3
84		Cr I	65	4119.53	P	Fe II	21	4128.067		Ce II	136
06		Co I	1	4119.66	P	Fe I	920	4128.071		V I	27
86		V I	27	4119.784		Ce II	22	4128.14		Mn II	2
08		Fe I	357	4119.877		Ce II	83	4128.31		Y I	5
1	P	V I	41	4120	P	O V	4	4128.65		A II	
3		Ca II	17	4120.037		Ti I	253	4128.735		Fe II	27
5		Fe III		4120.211		Fe I	423	4128.858		V I	112
8		Cr I	260	4120.279		O II	20	4128.87	P	Mn II	2
8		N I	10	4120.538		V I	41	4128.870		Rh I	8
0		N II	44	4120.554		O II	20	4129.166		Ti I	
5		Zr II	30	4120.613		Cr I	65	4129.176		Ce II	227
0		O II	37	4120.654		Nd II	57	4129.21		Cr I	97
3		Ca II	17	4120.78		P II	17	4129.22		Fe I	698
81		Ce II	28	4120.812		He I	16	4129.231		Sm II	24
72		Nd II	15	4120.829		Ce II	112	4129.34		O II	19
32		Co I	29	4120.97		Fe III	118	4129.46	P	Fe I	695
95		O II	20	4120.993		He I	16	4129.70		A II	77
7		Cr I	97	4121.0		S II	2	4129.73		Eu II	1
03		Mn I	37,47	4121.31		Fe III		4129.96	P	Cr I	97
1		Cr II	18,26	4121.318		Co I	28	4130.035		Fe I	44,486
6	P	Fe I	689	4121.45		Zr I	32	4130.372		Gd II	19,49
6		Cr I	97	4121.48		O II	19	4130.47	P	Cr I	97
94		Ce II		4121.637		Ti I		4130.538		Co I	16
38		Gd II		4121.682		Rh I	9	4130.648		Ba II	4
6		S III		4121.7	P	O V	11	4130.706		Ce II	209
7		Cr I	97	4121.806		Fe I	356	4130.77		P II	17
85		V I	27	4121.817		Cr I	108	4130.86		Cl II	60
02		Fe II	188	4121.95		B II	2	4130.884		Si II	3
18		Os I	5	4122.00	P	Fe I	765	4131.099		Ce II	112
29		O II	21	4122.05		C III	17	4131.17	P	Fe II	188
4		Eu II	10	4122.06		Fe III	118	4131.244		Ti I	253
9	P	Fe I	766	4122.143		Ti I	296	4131.31		Zr II	54
7	P	Fe I	275	4122.162		Cr I	65	4131.360		Cr I	261
5		Fe I	695	4122.522		Fe I	356	4131.430		Mn I	37
9		Cr II	18	4122.638		Fe II	28	4131.73		A II	32
08		Ti I	9	4122.757		Mn I	47	4131.74		La II	167
3		A II	8	4122.98		Fe III	118	4131.75	P	Fe I	1075
72		Fe I	1103	4123	P	O V	4	4131.94	P	Fe I	695
10		Zn I	9	4123.069		Na II	19	4131.97	P	Fe I	558
3		Fe III		4123.188		V I	112	4132.017		V I	27
4		Cr II	18	4123.23		La II	41	4132.060		Fe I	43
8		La II	166	4123.230		Ce II	162	4132.155		Co I	30
5		Fe III		4123.279		Mn I	47	4132.275		Gd II	49
18		V I	52	4123.287		Ti I	302	4132.41		Cr II	26
8		Hf II	24	4123.38		Zr II	54	4132.48		Cl II	29
26		Ce II	137	4123.387		Cr I	108	4132.50		La II	150
2		O II	37	4123.488		Ce II	22	4132.54	P	Fe I	1103
26		Nd II	25	4123.54		Hf II	95	4132.806		O II	19
76		Mn I	47	4123.543		Mn I	37	4132.903		Fe I	357
02		Sm II	16	4123.559		Ti I	296	4132.94	P	Fe I	44
0		N I	10	4123.566		V I	27	4133.006		Sc I	20
49		Fe I	357	4123.748		Fe I	217,422	4133.33		La II	
2		A II	124	4123.812		Cb I	1	4133.361		Nd II	19
5		Na II	20	4123.872		Ce II	60	4133.65		Ne II	53
57		Fe I	695	4123.881		Nd II	65	4133.66		Cl II	60
9		K II	2	4123.90		O V	4	4133.669		N II	65
35		V I	27	4123.956		Sm II	46	4133.800		Ce II	4
74		Ce II	22	4124.00		Cl II	60	4133.869		Fe I	698

FINDING LIST

I A	Type	Element	Multiplet No.
134.19	P	Fe I	217
134.343		Fe I	3
134.433		Fe I	482.697
134.488		V I	27
134.681		Fe I	357
134.72		K II	1
135.325		Nd II	
135.443		Ce II	188
135.68		Zr I	50
135.77	P	Cr II	163
135.77		Fe I	1073
135.784		Os I	3
135.9	P	O V	11
136.386		V I	26
136.512		Fe I	694
136.894		Ti I	221
137.002		Fe I	726
137.090		Cb I	1
137.104		Gd II	
137.257		Mn I	37
137.284		Ti I	253
137.42	P	Fe I	1103
137.63		N I	6
137.646		Ce II	2
137.93		Fe III	118
137.97	P	Fe I	320
138.21	P	Fe II	150
138.40	P	Fe II	39
138.52		Ni I	237
138.84		Fe I	117
139.37		Fe III	118
139.452		Co I	94
139.48		Ti I	221
139.702		Cb I	1
139.933		Fe I	18
140.24	P	Fe I	418
4140.304		Sc I	20
4140.42	P	Ti I	221
4140.441		Fe I	694,695
4140.450		Gd II	48
4140.51		Fe III	118
4140.74		O II	19
4141.017		Gd II	117
4141.25	Forb	Al III	17
4141.257		Pr II	10
4141.352		Fe I	480
4141.73		La II	40
4141.84		Hf II	87
4141.862		Fe I	422
4141.96		O II	106
4142.08		O II	106
4142.15		Al III	16
4142.184		Ni I	212
4142.193		Cr I	305
4142.24		O II	106
4142.291		S II	44
4142.320		Ni I	
4142.398		Ce II	10
4142.47		Cr I	179
4142.480		Ti I	296
4142.628		Fe I	1103
4142.66		V I	26
4142.86		Y I	5
4142.90		V II	226
4143.048		Ti I	253
4143.07	P	Fe II	188
4143.136		Pr II	4
4143.280		Ti I	253
4143.418		Fe I	523
4143.42	P	N I	6
4143.50	P	Fe I	697
4143.52		O II	106
4143.759		He I	53
4143.77		La II	54
4143.77		O II	106
4143.83	P	Fe I	354
4143.87		Fe III	
4143.871		Fe I	43
4144.164		Ru I	7
4144.492		Ce II	3
4144.553		Nd II	61
4144.995		Ce II	9
4145.100		S II	44
4145.209		Fe I	274
4145.74		Fe III	
4145.764		N II	65
4145.77		Cr II	162
4145.90		O II	106
4146.071		Fe I	422
4146.09		O II	106

I A	Type	Element	Multiplet No.
4146.20		Cr I	260
4146.234		Ce II	203
4146.47		Cr I	108
4146.695		Cr I	107
4146.94		S II	65
4147.09		Cl II	60
4147.26	P	Fe II	141
4147.34	P	Fe I	693
4147.43		A II	9
4147.49	P	Fe I	832
4147.532		Mn I	37
4147.673		Fe I	42
4148.27	P	Fe I	832
4148.52		Cr I	241
4148.75	P	Ni I	89
4148.859		V I	26
4148.901		Ce II	28
4148.91		S III	
4149.19		K II	6
4149.22		Zr II	41
4149.372		Fe I	694
4149.445		Ti I	296
4149.45		Cr I	261
4149.49	P	Fe I	942
4149.76	P	Fe I	3
4149.831		Sm II	8
4149.897		Al III	5
4149.917		Al III	5
4149.936		Ce II	158,189
4150.08	P	V II	37
4150.138		Al III	5
4150.258		Fe I	695
4150.366		Ni I	178
4150.429		Co I	16
4150.557		Ti I	253
4150.67		Ne II	53
4150.809		Ti I	221
4150.963		Ti I	206
4150.97		Zr II	42
4151	P	O V	4
4151.00		Cr II	163
4151.46		N I	6
4151.52		Eu II	10
4151.60	P	Fe II	149
4151.79	P	Fe II	12
4151.957		Fe I	764
4151.970		Ce II	2
4151.98		La II	40
4152.07	P	Fe I	1049
4152.172		Fe I	18
4152.209		Sm II	16
4152.355		Sc I	20
4152.43		C III	21
4152.575		Cb I	1
4152.775		Cr I	261
4152.78		La II	78
4152.98	P	Fe II	45
4153.067		Cr I	35
4153.098		S II	44
4153.302		O II	19
4153.328		V I	26
4153.332		Sm II	54
4153.510		Gd II	117
4153.67	P	Ce II	159
4153.816		Cr I	35
4153.906		Fe I	695
4154.109		Fe I	694
4154.502		Fe I	355
4154.812		Fe I	694
4154.862		Gd II	67
4154.865		Ti I	221
4154.98		Fe III	
4155.217		Sm II	8,50
4155.525		Mn I	37
4155.532		Ce II	29
4156.088		Nd II	10
4156.11		A II	52
4156.24		Zr II	29
4156.265		Nd II	14
4156.3		Li II	3
4156.460		Fe I	693
4156.50		C III	21
4156.54		O II	19
4156.670		Fe I	419
4156.8		N II	50,51
4156.803		Fe I	354
4157.788		Fe I	695
4157.82		Cl II	
4158.420		Co I	144
4158.45	P	Fe II	12

I A	Type	Element	Multiplet No.
4158.5906		A I	2
4158.76		O V	11
4158.798		Fe I	695
4158.90		Hf II	41
4159.033		Ce II	246
4159.407		Al II	71
4159.450		Al II	71
4159.634		Ti I	206
4159.686		V I	25
4159.725		Al II	71
4159.809		Al II	71
4160.239		Al II	71
4160.263		Al II	71
4160.28	P	Fe II	149
4160.56		P II	31
4160.561		Fe I	419
4160.62	P	Fe II	39
4160.78	P	Fe I	1116
4160.8		N II	50,51
4161.05		Cr II	162
4161.080		Fe I	689
4161.175		Ce II	22
4161.20		Zr II	42
4161.27	P	Cr II	127
4161.34	P	Ni I	86
4161.415		Cr I	305
4161.488		Fe I	422
4161.524		Ti II	21
4161.56	P	Cr II	127
4161.796		Sr II	3
4161.94		La II	
4162.072		V II	175
4162.39		S II	65
4162.40		Hf II	60
4162.698		S II	44,65
4162.732		Gd II	17
4162.80		C III	21
4162.93	P	Fe I	476a
4163.092		Gd II	44
4163.16	P	Cr I	35
4163.35	P	Fe I	1073
4163.516		Ce II	35
4163.625		Cr I	35
4163.644		Ti II	105
4163.655		V II	175
4163.658		Cb I	1
4163.676		Fe I	274,699
4163.94		Cr I	241
4164.015		V II	37
4164.134		Ti I	163
4164.1800		A I	2
4164.192		Pr II	8
4164.24	P	Fe I	694
4164.54		Pt I	6
4164.636		Ni I	28
4164.661		Cb I	1
4164.79		Fe III	118
4164.80		Fe I	418
4164.96		S III	
4165.11		S II	64
4165.184		Sc I	20
4165.519		Cr I	305
4165.606		Ce II	10
4166.003		Ba II	4
4166.311		Ti I	163
4166.37		Zr I	45
4166.73		P II	16
4166.86		Fe III	118
4167.159		Gd II	18
4167.2604		Mg I	15
4167.2712		Mg I	15
4167.52		Y I	7
4167.67	P	Ti II	21
4167.69	P	Fe II	149
4167.80		Cr I	107
4167.804		Ce II	29
4167.862		Fe I	599
4168.122		Cb I	1
4168.31		Cr I	261
4168.409		S II	44
4168.41		Fe III	118
4168.424		Al II	61
4168.511		Al II	61
4168.625		Fe I	689
4168.66	P	Fe II	22
4168.942		Fe I	694
4168.971		He I	52
4168.98		A II	
4169.09	P	Fe I	18
4169.230		O II	19

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.330		Ti I	163	4179.419		V I	25	4190.738		Si II	
.478		Sm II	24	4179.422		Pr II	4	4190.89		V II	37
.773		Ce II	161	4179.43		Cr II	26	4191.0296		A I	7
.777		Fe I	693	4179.55		Hf II	114	4191.067		Gd II	34
.838		Cr I	278	4179.585		Nd II	19	4191.271		Cr I	35
.878		Ce II	173	4179.667		N II	50	4191.436		Fe I	152
.98	P	Fe II	12	4179.81		Zr II	99	4191.50		Zr I	108
.108		Gd II	35	4179.960		Ti I	206	4191.558		V I	24
.202		Cr I	278	4179.90	P	Co I	1	4191.59		Cl II	43
.58	P	Cr II	18	4179.92	P	Cr II	127	4191.615		Pr II	12
.86		Cr II	181	4180.41	P	Fe I	274	4191.685		Fe I	355
.906		Fe I	482	4180.498		Ti I	206	4191.750		Cr I	35
.018		Ti I	206	4180.68		Pr II	23	4192.07		Ni II	10
.608		N II	43	4180.7		S II	64	4192.103		Cr I	273
.675		Cr I	261	4180.86		V II	19	4192.35		La II	78
.696		Fe I	941	4180.97	P	Fe II	148	4192.50		O II	42
.824		Pr II	16	4180.97		La II	133	4192.856		Co I	94
.897		Ti II	105	4181.17		N II	49	4193.094		Ce II	79
.904		Fe I	650	4181.17	P	Ti II	96	4193.34		La II	
.92		Cr II	18	4181.20	P	Fe I	908	4193.37	P	La II	133
.048		Ga I	1	4181.50		Cr II	181	4193.44		Mg II	28
.126		Fe I	649	4181.55	P	Fe I	763	4193.51		S II	10
.20	P	Fe II	148	4181.758		Fe I	354	4193.662		Cr I	248
.273		Pr II	13	4181.8838		A I	7	4193.874		Ce II	85
.60		Cr II	18	4182.384		Fe I	476a	4193.89		Cr I	248
.609		Ti I	163	4182.591		V I	24	4194.36		La II	160
.641		Fe I	689	4182.69	P	Fe II	149	4194.50	P	Fe I	274
.749		Fe I	19	4182.790		Fe I	694	4194.951		Cr I	248
.97	P	Fe I	909,1073	4182.98		A II	36	4195.11		Cl II	43
.05	P	Ti II	96	4183	P	N IV	14	4195.337		Fe I	693
.18	P	Fe I	698	4183.025		Fe I	697	4195.41		Cr II	161
.234		Os I	4	4183.20	P	Fe II	21	4195.531		Ni I	239
.322		Fe I	355	4183.294		Ti I	220	4195.615		Fe I	478
.379		Nd II	16	4183.31		Zr I	51	4195.70		N III	6
.450		Fe II	27	4183.435		V II	37	4195.83		V II	19
.51		N II	50	4183.764		Sm II	4	4196.218		Fe I	693
.537		Ti II	21	4184.09		Fe III	22	4196.26		O II	42
.556		Gd II	117	4184.22		Fe I	274	4196.335		Ce II	123
.75		N II	50	4184.252		Gd II	15	4196.533		Fe I	418
.76		Y II	23	4184.26		Lu II	6	4196.55		La II	41
.77		A II	78	4184.329		Ti II	21	4196.64	P	Ti II	21
.926		Fe I	19	4184.475		Ni I	89	4196.69		Fe III	22
	P	N IV	14	4184.895		Cr I	155	4196.72		O II	42
.042		S II	64	4184.895		Fe I	355	4197.069		Gd II	117
.088		Ti I	55	4185.334		Ce II	124	4197.10	P	Fe I	18
.088		Ti II	105	4185.345		Cr I	106	4197.234		Cr I	249
.14		Y I	6	4185.456		O II	36	4197.38	P	Fe I	976
.15		Cr I	305	4185.50	P	Cr II	163	4197.47		Cr I	249
.27		Fe III		4185.61		Cl II	43	4197.668		Ce II	136
.300		S II		4185.66	P	Fe I	1104	4197.681		Gd II	
.31	P	Mn II	2	4185.95		S II		4197.95	P	Ti II	96
.33		Hf I	3	4186.01	P	Ti I	220	4197.998		Ce II	209
.419		Fe I	799	4186.033		Nd II	24	4198.174		Si II	
.472		Ti I	220	4186.08	P	Cr II	127	4198.268		Fe I	693
.795		Cr I	241	4186.119		Ti I	129	4198.310		Fe I	152
.917		Fe I	19	4186.24		K II	1	4198.3170		A I	4
.941		Cr I	278	4186.359		Cr I	249	4198.425		Co I	2
.227		Cr I	261	4186.599		Ce II	1	4198.431		Ce II	207
.538		Gd I	5	4186.70		Zr II	97	4198.525		Cr I	249
.606		Nd II	89	4187.044		Fe I	152	4198.611		V I	24
.640		Fe I	354	4187.05		C III	18	4198.645		Fe I	693
.89	P	Fe I	694	4187.246		Co I	93	4198.669		Ce II	7
.945		Cr I	106	4187.31		La I	5	4198.724		Ce II	3
.080		Ce II	135	4187.323		Ce II	86	4199.02	P	Cr II	180
.164		N II	42	4187.56		Zr I	45	4199.09	P	Fe II	141
.44	P	Fe II	149	4187.59		Fe I	694	4199.098		Fe I	522
.57	P	Fe I	689	4187.616		Tm I		4199.099		Nd II	15
.571		Fe I	695	4187.68		Hf II	73	4199.27		Y II	5
.793		V I	6	4187.802		Fe I	152	4199.37	P	Fe I	416
.07	P	Fe I	690	4188.099		Gd II	17	4199.83		He II	3
.17		Cr I	133	4188.128		Sm II	50	4199.902		Ru I	8
.321		Nd II	10	4188.694		Ti I	220	4199.918		Tm II	1
.357		Ti I	163	4188.82		Cl II	43	4199.93		A II	124
.50		Hf II	51	4188.88		Al III	15	4199.97		Fe I	3
.52	P	Fe I	172	4189.10		Fe III		4200.02		N III	6
.54		Y II	14	4189.50		Co I	2	4200.06		Fe III	
.59		Co I	2	4189.518		Pr II	8	4200.09	P	Fe I	993
.597		Fe I	18	4189.564		Fe I	940	4200.103		Cr I	
.70	P	Fe II	21	4189.67		A II		4200.38		Fe III	
.019		Sm II	16,50	4189.71		S II	44,64	4200.40	P	Ti II	96
.39		A II	7	4189.788		O II	36	4200.464		Ni I	89
.390		V II	25	4189.841		V I	24	4200.6751		A I	2
.855		Fe II	28	4189.96		Cr I	106	4200.752		Ti I	220
	P	O V	4	4190.16		Cr I	84	4200.78	P	Fe I	44
.05		Cr I	250	4190.29		Ti II	21	4200.89		V I	6
.062		V II	19	4190.40		V II	25	4200.930		Fe I	689
.226		Co I	144	4190.626		Ce II	169	4201.45		Zr I	45
.25		Fe III		4190.66		Cr I	35	4201.50		La II	
.257		Cr I	179,250	4190.712		Co I	1	4201.58		A II	52
.31		A II	52	4190.7127		A I	2	4201.723		Ni I	238

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A	Type	Element	Multiplet No.
1.73		Fe I	799
1.851		Rb I	2
1.99		A II	8,124
2.031		Fe I	42
2.154		Ni I	179
2.350		V II	25
2.4		Al II	87
2.755		Fe I	476a,521
2.944		Ce II	186
3.051		Sm II	42
3.30		Fe I	418
3.43		A II	
3.465		Ti I	220
3.570		Fe I	19
3.590		Cr I	35
3.67	P	Fe I	1245
3.730		Tm I	
3.953		Fe I	850
3.987		Fe I	355
4.03		La II	53
4.19		Cr I	35
4.20		V II	25
4.471		Cr I	272
4.54		Cl II	43
4.66	P	Cr II	127
4.69		Y II	1
4.83	P	Cr II	180
4.857		Gd II	46
5.05		Eu II	1
5.05	P	V II	25
5.07		Cl II	67
5.080		V II	37
5.19		A II	111
5.37	P	Mn II	2
5.48	P	Fe II	22
5.546		Fe I	689
5.595		Nd II	19
5.91		Zr II	133
5.92		Fe III	22
5.92	P	Ti II	33
6.128		Sm II	38
6.21		Ca II	16
6.375		Mn II	7
6.43		Ne II	53
6.59		Hf II	74
6.702		Fe I	3
6.739		Pr II	8
6.899		Cr I	
7.130		Fe I	352
7.23	P	Mn II	2
7.35		Cr II	26
7.51		Cr I	133
7.61		La II	133
8.03		Cl II	43
8.357		Cr I	249
8.610		Fe I	689,696
8.99		Zr II	41
9.02		Cr II	162
9.368		Cr I	248
9.409		Ce II	3
9.648		Mo II	3
9.74		V II	25
9.756		Cr I	155
9.84	P	Cr II	180
9.857		V I	24
10.00		A II	78
10.22		La II	
10.352		Fe I	152
10.352		Sm II	8
10.39	P	Fe I	482
10.62		Zr II	97
10.77		Cr I	106
10.87		Fe III	
11	P	O V	4
11.286		Nd II	57
11.349		Cr I	133
11.51		Fe III	104
11.729		Ti I	279
11.80	P	Fe II	21
11.88		Zr II	15
12.001		Gd II	15
12.06	P	Fe I	697
12.063		Ru I	6
12.44		Si IV	5
12.95		Pd I	7
13.036		Ce II	169
13.170		Cr I	155
13.42	P	Fe I	274
13.5		S II	44
13.650		Fe I	355

I A	Type	Element	Multiplet No.
4213.86		Zr I	45
4214.041		Ce II	203
4214.73		N I	5
4215.023		Gd II	32
4215.430		Fe I	274,419
4215.524		Sr II	1
4215.556		Rb I	2
4215.69		N III	6
4215.76		Zr II	68
4215.77		Cr II	18
4215.92		N I	5
4215.975		Fe I	273
4216.04		Ba II	17
4216.186		Fe I	3
4216.365		Cr I	132
4217	P	C IV	11
4217.07		Cr II	18
4217.09		O I	33
4217.15		Ne II	52
4217.195		Gd II	49
4217.23		S II	44
4217.282		Nd II	57
4217.34	P	Ti II	96
4217.45		A II	
4217.551		Fe I	693
4217.56		La II	78
4217.591		Ce II	19
4217.626		Cr I	132
4218.12	P	Fe I	19
4218.18	P	Ti II	33
4218.21	P	Fe I	172
4218.69		A II	64
4218.710		V I	24
4219.364		Fe I	800
4219.383		W I	3
4219.41	P	Fe I	419
4219.51		V I	24
4219.59	P	Fe I	763
4219.74	P	Fe I	832
4219.76		Ne II	52
4220.047		V II	25
4220.05	P	Fe I	994
4220.13		Ca II	16
4220.258		Nd II	32
4220.32		Fe III	
4220.347		Fe I	482
4220.45		Cr I	106
4220.659		Sm II	15,50
4220.92		Ne II	52
4221.572		Cr I	155,248
4221.696		Ni I	86
4222.00		Cr II	180
4222.15		P III	3
4222.219		Fe I	152
4222.39		Fe III	
4222.41		Zr II	80
4222.599		Ce II	36
4222.67		A II	77
4222.732		Cr I	132
4222.78		O I	33
4222.97		K II	7
4222.98		Pr II	4
4223.020		Gd II	141
4223.04		N I	5
4223.47		Cr I	132
4223.73	P	Fe I	417
4224.09	P	Cr II	31
4224.176		Fe I	689
4224.27		Zr II	29
4224.30	P	Fe I	1104
4224.43		P II	16
4224.509		Fe I	689
4224.51		V II	25
4224.514		Cr I	155
4224.57		Ne II	52
4224.63	P	Fe I	274
4224.74		N I	5
4224.795		Ti I	301
4224.85		Cr II	162
4224.92		Cl II	83
4225.02	P	Ni I	169
4225.148		Gd II	14
4225.228		V II	37
4225.327		Pr II	8
4225.328		Sm II	22
4225.460		Fe I	693
4225.67		K II	4
4225.71	P	Fe I	1102
4225.79	P	Fe I	118
4225.850		Gd I	4

I A	Type	Element	Multiplet No.
4225.956		Fe I	521
4226.14		Fe III	44
4226.426		Fe I	352
4226.44		Cl I	9
4226.570		Ge I	4
4226.65		A II	113
4226.728		Ca I	2
4226.76	P	Cr I	105
4226.827		Al II	46
4226.918	Forb	Al II	46
4227.02		A II	113
4227.14	P	Fe II	45
4227.140		Gd II	43
4227.34	P	Ti II	33
4227.42	P	Fe I	689
4227.420		Al II	46
4227.434		Fe I	693
4227.509		Al II	46
4227.545	Forb	Al II	46
4227.654		Ti I	278
4227.719		Nd II	19
4227.73		Cr II	155
4227.746		Ce II	8
4227.749		N II	33
4227.76		Zr I	45
4227.875		Al II	46
4227.945		Al II	46
4227.999		Al II	46
4228.18		A II	8
4228.200		Nd II	36
4228.71	P	Fe I	690
4229.516		Fe I	416,649
4229.704		Sm II	4
4229.760		Fe I	41
4229.803		Gd II	117
4229.81		Cr II	26
4229.89		A II	
4229.955		Co I	1
4230.29		Cr I	106
4230.35		N I	5
4230.39	P	Ni I	150
4230.481		Cr I	132
4230.584		Fe I	478
4230.95		La II	83
4230.98		S II	67
4231.040		Ni I	136
4231.165		V II	25
4231.35		C I	17
4231.525		Fe I	647
4231.60		Ne II	52
4231.64		Zr II	99
4231.745		Ce II	
4232.065		V II	225
4232.222		Cr I	294
4232.378		Nd II	8
4232.43		Hf II	72
4232.460		V I	111
4232.724		Fe I	3
4232.866		Cr I	132
4232.952		V I	111
4232.96	P	Cr II	180
4233.167		Fe II	27
4233.25		Cr II	31
4233.32		O I	33
4233.608		Fe I	152
4233.996		Co I	1
4234.000		V I	6,111
4234.09		Cl II	24
4234.196		Nd II	20
4234.251		V II	24
4234.518		Cr I	178
4234.524		V I	6
4234.55		V II	200
4234.573		Sm II	42
4234.727		Ce II	170
4235.140		Mn I	23
4235.290		Mn I	23
4235.49		Cl II	71,83
4235.54		Fe III	
4235.54	P	Ni I	256
4235.65	P	Fe I	215
4235.73		Y II	5
4235.756		V I	111
4235.84	P	Fe I	172
4235.94		Y I	5
4235.942		Fe I	152
4235.96	P	Fe I	692
4235.98		Cr I	132
4236.33	P	Cr II	17
4236.372		Ni I	237

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.56		Zr II	110	4247.31	P	Fe I	172	4259.988		Fe I	689
.66	P	Fe I	907	4247.367		Nd II	8	4260.135		Fe I	476a
.745		Sm II	53	4247.43	P	Fe II	125	4260.19		Cr I	240
.76		Fe I	906	4247.432		Fe I	693	4260.47	P	Mn II	2
.82		V II	18	4247.56		C III	11	4260.479		Fe I	152
.930		N II	48	4248.228		Fe I	482	4260.73	P	Fe I	351
.049		N II	48	4248.344		Cr I	131	4260.738		Ti I	251
.085		Fe I	19	4248.40	P	Fe I	19	4260.75		V II	18,24
.162		Fe I		4248.676		Ce II	1	4260.854		Os I	1
.21		Fe III	104	4248.72	P	Fe I	939	4261.164		Ce II	19
.23		A II	32	4248.73		Cr I	105	4261.22		Cl II	66
.27		Cr I	106	4248.820		V II	24	4261.354		Cr I	96
.57	P	Al II	23	4249.114		Ti I	252	4261.609		Ti I	252
.663		Sm II	8	4249.32	P	Fe I	117	4261.615		Cr I	
.67	P	Fe I	418	4249.33		Hf II	39	4261.796		Pr II	23
.710		Cr I	132	4249.57		P IV	2	4261.80	P	Cr II	17
.786		Ti I	252	4249.81	P	Cr I	155	4261.92		Cr II	31
.889		Ti I	284	4249.92		S II	66	4262.092		Gd II	44
.027		Fe I	689,696	4249.95		Fe III		4262.133		Cr I	84,178
.38		La II	41	4249.99		La II	79	4262.38		Cr I	154
.61	P	Fe I	849	4250.125		Fe I	152	4262.677		Sm II	37
.69	P	Cr II	17	4250.68		Ne II	52	4262.72		Hf II	15
.78		Fe III	104	4250.689		Mo II	3	4263.134		Ti I	162
.782		Gd II		4250.790		Fe I	42	4263.141		Cr I	247
.79	P	Mn II	2	4250.90	P	Fe I	478	4263.40		K II	2
.816		Fe I	693	4251.1852		A I	2	4263.427		Ce II	254
.957		Cr I	131	4251.49	P	Fe II	12	4263.49	P	Cr II	17
.01	P	Fe I	274	4251.618		Ti I	162	4263.59		La II	84
.31		Zr I	45	4251.733		Gd II	15	4263.836		V II	24
.36	P	Fe I	907	4251.769		Ti I	251	4263.895		Fe II	
.5		O III	1	4251.88	P	Fe I	216	4264.19	P	Cr II	17
.725		Mn I	23	4252.05	P	Ti II	95	4264.209		Fe I	692
.735		Fe I	410	4252.107		Ni I	130	4264.370		Ce II	239
.847		Fe I	18,273	4252.243		Cr I	131	4264.50		V II	24
.912		Ce II	2	4252.302		Co I	1	4264.743		Fe I	993
.95	P	Fe I	476a	4252.62		Cr II	31	4264.88		Y II	71
.95		Ne II	52	4253.02		Mn II	7	4264.91		Zr II	98
.35		Zr I	45	4253.28		N I	4	4265.075		Sm II	15
.372		Fe I	764	4253.356		Ce II	77	4265.170		V I	
.456		Ca I	38	4253.366		Gd II	46	4265.260		Fe I	993,994
.705		Cr I	105,178	4253.51		Cl II	24	4265.273		Ti I	252
.75		Al II	36	4253.52	P	Fe I	690	4265.723		Ti I	162
.019		Pr II	9	4253.55	P	Fe I	1245	4265.924		Mn I	23
.112		Fe I	351	4253.593		S III	4	4266.227		Ti I	252
.20		La II	163	4253.612		Gd II		4266.23	P	Cr II	37
.20		Zr I	45	4253.74		O II	101	4266.2867		A I	4
.276		Gd II	117	4253.93	P	Fe I	905	4266.44		Cr I	199
38		Cl II	24	4253.98		O II	101	4266.53		A II	7
.68		Zr I	45	4254.346		Cr I	1	4266.716		Nd II	58
787		N II	47,48	4254.41		V II	18	4266.72		Zr II	80
93		Hf II	108	4254.420		Pr II	27	4266.82		Cr I	105
153		Tm II	5	4254.7		N I	4	4266.88		Fe III	
20		Ne II	52	4254.938		Fe I	419,477	4266.968		Fe I	273
38		Cr II	31	4255.01		S II	44	4267.02		C II	6
47		Mg II	20	4255.20		Fe III		4267.27		C II	6
588		Fe I	273	4255.499		Fe I	416	4267.30	P	Zr II	132
723		Ce II	58	4255.502		Cr I	105	4267.47		A II	52
730		Fe I	649	4255.62		A II	63	4267.802		S II	49
82		Cr I	131	4255.784		Ce II	81	4267.830		Fe I	482
894		V II	200	4256.025		Ti I	252	4267.95		Ba II	11
368		Fe I	906	4256.156		Ce II	172	4268.01		Zr I	45
528		Pr II	33	4256.16		Cr II	192	4268.032		Co I	1
60		B III	1	4256.212		Fe I	690	4268.096		Ir I	4
71		A II	63,78	4256.239		Nd II	59	4268.10		Hf II	96
786		Fe I	994	4256.32	P	Fe I	172	4268.446		Co I	127
85		Fe III		4256.393		Sm II	37	4268.643		V I	88
17		Ne II	62	4256.620		Cr I	131	4268.731		Gd II	68
26		Mn II	7	4256.79		Fe I	1102	4268.744		Fe I	649
33		Cr I	240	4257.02		V II	200	4268.788		Cr I	271
374		W I	1	4257.121		Ce II	123	4268.928		Ti I	252
53	P	Fe II	12	4257.368		Cr I	131	4268.93		Cr II	192
55		P II	30	4257.42		S II	66	4268.99		C I	16
702		Sm II	27	4257.659		Mn I	23	4269.02		Cr I	240
80		Ni II	9	4257.82		Ne II	52	4269.28		Cr II	31
258		Fe I	352	4258.05		Zr II	15	4269.50		La II	76
358		Fe I	691	4258.155		Fe II	28	4269.67		Hf II	26
84		Hf II	72	4258.320		Fe I	3	4269.76		S II	49
976		Ce II	158	4258.35	P	Fe II	21	4269.87	P	Fe I	690
02	P	Fe I	649	4258.523		Ti I	252	4269.951		Cr I	154
090		Fe I	906	4258.619		Fe I	351	4270.139		Ti I	251
16		F II	9	4258.956		Fe I	419	4270.189		Ce II	204
41		Cr II	31	4259.15		Cr I	131	4270.31	P	Fe I	215
568		Gd II	67	4259.18		S II	66	4270.39	P	Fe II	125
59	P	Fe I	689	4259.203		Mn II	7	4270.427		Co I	29
68		P III	3	4259.312		V I	6	4270.565		Nd II	12
711		Ce II	77	4259.34	P	Fe I	416	4270.61		Cl II	66
79	P	Fe I	216	4259.3618		A I	9	4270.64		V II	23
829		Sc II	7	4259.52		Cl II	42,52	4270.716		Ce II	21
879		Nd II	14	4259.748		Ce II	176	4271.061		Cr I	154
29	P	Fe I	905	4259.95	P	Fe I	70	4271.159		Fe I	152

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ı	Type	Element	Multiplet No.
.47		Fe III	
.554		V I	88
.65	P	Fe I	70
.764		Fe I	42
.94	P	Ti II	95
.95	P	Fe I	171
.1690		A I	4
.271		Pr II	15
.440		Ti I	44
.789		Nd II	11
.85		Hf II	14
.910		Cr I	96
.17		O II	68
.312		Ti I	251
.317		Fe II	27
.42		Fe III	121
.52		Zr II	28
.87		Fe I	478
.13		O II	68
.408		Ti I	252
.584		Ti I	44,162
.803		Cr I	1
.19		A II	77
.52		O II	67
.561		Ce II	206
.57		Cr II	31
.64		La II	40
.72		Fe I	215
.90		O II	66
.973		Cr I	240
.21		O II	68
.441		Ti I	148
.51		Cl II	66
.657		Ti I	252
.684		Fe I	976
.71		O II	54,67
.958		V I	88
.246		Mo I	7
.279		Nd II	17
.322		Th II	2
.37		Zr II	40
.40		O II	67,68
.41	P	Fe I	214
.55		A II	32
.68		Fe I	172
.90		O II	67
.01	P	Fe I	1102
.10		Cr II	161
.128		Fe II	32
.231		Ti I	291
.234		Fe I	691
.38	P	Fe I	351
.54		S II	49
.829		Ti I	252
.866		Ce II	111
.893		V II	225
.94	P	Cr II	17
.023		Mo II	3
.3		Y II	70
.480		Fe I	993
.678		Sm II	27
.864		Fe I	351
.927		Sc II	15
.069		Ti I	252
.141		Ce II	225
.27		La I	5
.33	P	Cr II	17
.405		Cr I	247
.490		Gd II	15
.53		Fe I	598
.63	P	Fe I	416
.789		Sm II	46
.009		Sm II	
.03	P	Cr II	17
.099		Mn I	23
.371		Ti I	44
.40		O II	54
.60	P	Fe I	171
.20		Zr I	45
.21		Zr II	132
.406		Fe I	71
.440		Pr II	19
.443		Nd II	
.570		Nd II	13
.63		S II	49
.702		Ti I	162
.82		O II	54
.90		A II	7
.96		O II	67
.97		Al II	86

I A	Type	Element	Multiplet No.
4283.010		Ca I	5
4283.13		O II	67
4283.40	P	Fe I	215
4283.70		S III	
4283.75		O II	67
4283.772		Mn II	6
4283.87	P	Fe I	19
4284.055		V I	88
4284.084		Mn I	23
4284.21		Cr II	31
4284.415		Fe I	417
4284.425		Mn II	6
4284.51		N III	
4284.518		Nd II	10
4284.683		Ni I	86
4284.725		Cr I	96
4284.988		Ti I	148
4284.991		S III	4
4285.19	P	Ni I	86
4285.366		Ce II	11
4285.445		Fe I	597
4285.496		Sm II	27
4285.70		O II	78
4285.782		Co I	1
4285.832		Fe I	904
4285.96		C II	42
4286.006		Ti I	44
4286.13		Fe III	121
4286.13		V II	23
4286.311		Fe II	
4286.440		Fe I	414
4286.51		Zr II	69
4286.640		Sm II	42
4286.97		La II	75
4286.976		Fe I	976
4287.405		Ti I	44
4287.71	P	Ti I	45
4287.80		Ba II	16
4287.893		Ti II	20
4288.005		Ni I	178
4288.148		Fe I	273
4288.161		Ti I	43,79
4288.21		N III	
4288.53		P II	33
4288.65		Mo I	7
4288.72		N III	
4288.78	P	Ti I	45
4288.78		V II	17
4288.83		O II	54
4288.962		Fe I	214
4289.068		Ti I	44
4289.18		Zr II	117
4289.29	P	Fe I	117
4289.364		Ca I	5
4289.454		Ce II	135
4289.721		Cr I	1
4289.919		Ti I	205
4289.938		Ce II	111
4290.222		Ti II	41
4290.382		Fe I	416
4290.40		Ne II	57
4290.55		N III	
4290.80		N III	
4290.870		Fe I	351
4290.933		Ti I	44
4291.214		Ti I	45,147
4291.25		O II	55
4291.44	P	Fe I	273
4291.45		S II	49
4291.466		Fe I	3,41
4291.76		Cl II	19
4291.816		V I	120
4291.88		Ti I	251
4291.964		Cr I	240
4292.00		C II	41
4292.13	P	Fe I	70
4292.182		Sm II	32
4292.23		O II	78
4292.246		Mn II	6
4292.293		Fe I	70
4292.676		Ti I	79
4292.747		Gd II	128
4292.767		Ce II	205
4292.885		Zn I	3
4293.14		Zr II	110
4293.228		Mo I	7
4293.565		Cr I	96
4294.04	P	Fe I	214
4294.101		Ti II	20
4294.128		Fe I	41

I A	Type	Element	Multiplet No.
4294.432		S II	49
4294.623		W I	6
4294.76		N III	
4294.767		Sc II	15
4294.78		Zr I	45
4294.82		O II	54
4294.939		Fe I	598
4295.37	P	Cr II	37
4295.751		Ti I	44
4295.757		Cr I	64
4295.888		Ni I	178
4296.05		La II	53
4296.069		Ce II	172
4296.076		Gd II	46
4296.107		V I	120
4296.11		C II	42
4296.30		Cr I	176
4296.30		Gd II	117
4296.567		Fe II	28
4296.680		Ce II	2
4296.74		Zr II	98
4296.743		Sm I	3
4296.786		Ce II	57
4296.86		Fe III	121
4297.050		Cr I	64
4297.173		Gd II	
4297.60		Ba II	7
4297.681		V I	120
4297.711		Ru I	5
4297.738		Cr I	247
4297.764		Pr II	7
4297.99		A II	
4298.029		V I	120
4298.040		Fe I	520
4298.21	P	Fe I	476a
4298.515		Ni I	178
4298.664		Ti I	44
4298.767		Ni I	28
4298.986		Ca I	5
4299.17	P	Ti I	45
4299.177		F II	7
4299.229		Ti I	148
4299.242		Fe I	152
4299.25	P	Fe I	597
4299.362		Ce II	47
4299.49	P	Fe I	648
4299.636		Ti I	43
4299.65		Fe I	416
4299.718		Cr I	96
4300.052		Ti II	41
4300.1011		A I	4
4300.197		Mn II	6
4300.21	P	Fe I	975
4300.331		Ce II	134
4300.44		La II	9
4300.52	P	Ti I	205
4300.566		Ti I	44
4300.66		A II	36,76
4300.828		Fe I	976
4301.089		Ti I	44
4301.130		V II	225
4301.178		Cr I	
4301.81		Zr II	109
4301.928		Ti II	41
4302.100		Pr II	32
4302.12	P	Ni I	102
4302.123		W I	7
4302.191		Fe I	520
4302.527		Ca I	5
4302.81		O II	100
4302.88		Zr I	45
4302.979		Ti I	79
4303.06		O II	100
4303.166		Fe II	27
4303.235		Co I	1
4303.573		Nd II	10
4303.82		O II	54
4304.07		Cl II	19
4304.087		Gd II	128
4304.11		La II	165
4304.15	P	Fe I	647
4304.15		V II	213
4304.552		Fe I	414
4304.81		Fe III	121
4304.87	P	Fe I	598,756
4304.895		Gd II	
4305.00		K II	5
4305.13	P	Fe I	272
4305.20		Fe I	760
4305.447		Sr II	3

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I A	Type	Element	Multiplet No.
5.453		Cr I	96
5.455		Fe I	476
5.46		N I	
5.474		Ti I	147
5.53		O II	55
5.715		Sc II	15
5.763		Pr II	8
5.910		Ti I	44
6.214		V I	5
6.340		Gd I	4
6.58	P	Fe I	691
6.724		Ce II	1
6.945		Ti I	43
7.08	P	Fe I	690
7.184		V I	5
7.20		Al II	85
7.31		O II	53
7.42		Cl II	19
7.741		Ca I	5
7.778		Nd II	63
7.900		Ti II	41
7.906		Fe I	42
8.233		Gd II	47
8.514		Ti I	79
8.54	P	Fe I	70
8.94		Zr II	88
8.96		O II	64
9.012		Sm II	15
9.036		Fe I	849
9.06		Cl II	52
9.071		Ti I	235
9.10		K II	7
9.11		A II	36
9.25		A II	99
9.32		Ba II	11
9.382		Fe I	414
9.46	P	Fe I	478
9.62		Y II	5
9.739		Ce II	126
9.795		V I	5
0.37	P	Fe I	994
0.37		Fe III	121
0.373		Ti I	79
0.699		Ce II	133
0.72	P	V II	36
0.981		Gd II	15
1.654		Ti I	205
2.10		O II	79
2.23		Zr II	99
2.469		Cr I	177
2.550		Mn I	23
2.861		Ti I	41
3.034		Fe II	220
3.04	P	Fe I	273
3.11		N I	
3.30		V II	23
3.43		O II	78
3.50		C II	28
3.845		Gd I	4
4.084		Sc II	15
4.18		Si IV	4
4.289		Fe II	32
4.356		Ti I	45
4.511		Nd II	9
4.74	P	Ti I	43
4.801		Ti I	43
4.979		Ti II	41
5.087		Fe I	71
5.35		O II	64,79
5.80		O II	78
5.90		La II	41
5.95	P	Fe I	171
6.052		Gd II	43
6.258		V II	23
6.266		Gd II	67,68
6.807		Ti II	94
7.04	P	Fe I	762
7.139		O II	2
7.32		Zr II	40
7.42		C II	28
7.65		O II	53
7.70		N I	
8.216		Fe II	220
8.631		Ti I	235
8.652		Ca I	5
8.68		S II	49
8.77	P	Cr II	37
8.81	P	Fe I	215
8.92		C II	28
8.936		Sm II	27
4319.45	P	Fe I	214
4319.51		Hf II	52
4319.631		O II	2
4319.641		Cr I	96
4319.69		A II	87
4319.717		Fe II	220
4319.93		O II	61
4320.13	P	Fe I	1170
4320.36	P	Fe I	691
4320.52		Fe I	691
4320.592		Cr I	96
4320.69		Hf II	40
4320.723		Ce II	125
4320.745		Sc II	15
4320.965		Ti II	41
4321.110		Gd II	46
4321.238		Cr I	83
4321.341		Fe II	220
4321.36		Hf II	86
4321.37		N III	10
4321.617		Cr I	177
4321.655		Ti I	235
4321.95		C II	28
4322.02		V II	17
4322.195		Gd II	15
4322.51		La II	25
4322.66		Ne II	63
4322.70	P	Fe I	215
4323.284		Sm II	8
4323.35		Cl I	9
4323.37	P	Fe I	171
4323.440		Ti I	79
4323.523		Cr I	
4323.551		Pr II	23
4323.62		Zr II	141
4323.81		Fe III	32
4323.93		N III	10
4324.064		Gd II	68
4324.36	P	Fe II	147
4324.961		Fe I	70
4325.010		Sc II	15
4325.075		Cr I	104
4325.1	P	Mn II	6
4325.134		Ti I	235
4325.22		V II	233
4325.361		Ni I	116
4325.566		Gd II	103
4325.607		Ni I	86
4325.64		Zr II	108
4325.65		Cr I	176
4325.7		Li II	5
4325.70		C III	7
4325.73		Ba II	17
4325.74	P	Fe I	2
4325.765		Fe I	42
4325.766		Nd II	10
4325.77		O II	2
4325.88		C II	28
4325.95	P	Fe I	598
4326.359		Ti I	43
4326.445		Sr I	6
4326.74		Ba II	7
4326.756		Mn II	6
4326.762		Fe I	413
4326.826		Ce II	224
4326.986		Ti I	43
4327.04	P	Fe II	20
4327.100		Fe I	761
4327.125		Gd II	15
4327.48		O II	41
4327.89		O II	41
4327.92		Fe I	597
4328.15		N III	10
4328.22		Si IV	4
4328.62		O II	61
4328.91	P	Cr II	37
4329.016		Sm II	15
4329.415		Pr II	27
4329.54	P	Fe I	70
4329.62		Ba II	17
4330.024		V I	5
4330.14		N III	10
4330.264		Ti II	94
4330.44		N III	10
4330.445		Ce II	82
4330.606		Gd II	46
4330.708		Ti II	41
4330.720		Ni I	149
4330.81	P	Fe I	475
4330.962		Fe I	597
4331.13		O II	66,75
4331.231		Co I	168
4331.25		A II	7
4331.47		O II	41
4331.529		Fe II	
4331.55		V II	36
4331.645		Ni I	52
4331.79		V II	23
4331.89		O II	41
4331.93		Mg II	27
4332.0		Al II	31
4332.06		A II	1
4332.569		Cr I	176
4332.71		S III	4
4332.76		O II	65
4332.823		V I	5
4332.88	P	Fe II	33
4333.06	P	Fe I	1135
4333.28		Zr II	132
4333.5612		A I	9
4333.76		La II	24
4333.84		S II	49
4333.913		Pr II	8
4334.153		Sm II	27
4334.29		O II	63,64
4334.65		Hf II	69
4334.77	P	V II	36
4334.840		Ti I	43
4334.96		La II	77
4335	P	N V	3
4335.15		Hf II	6
4335.290		Gd II	128
4335.3380		A I	9
4335.46	P	Fe I	477
4335.53		N III	10
4335.89		Fe I	991
4336.255		Ce II	89
4336.26		Cl II	19
4336.36		Zr II	119
4336.48		N I	
4336.51		A II	
4336.60	P	Fe I	990
4336.66		Hf II	74
4336.86	P	Fe I	692
4336.865		O II	2
4337.049		Fe I	41
4337.10		A II	113
4337.33		Ti II	94
4337.510		Gd II	128
4337.52	P	Fe I	214
4337.566		Cr I	22
4337.63		Zr II	119
4337.777		Ce II	82
4337.78		La II	138
4337.916		Ti II	20
4338.24		A II	88
4338.260		Fe I	70
4338.476		Ti I	204
4338.52		Si III	3
4338.67		He II	3
4338.694		Pr II	31
4338.697		Nd II	68
4338.70	P	Fe II	32
4338.799		Cr I	198
4338.84	P	Fe I	117
4339.13	P	Co I	1
4339.287		D	1
4339.317		Ce II	34
4339.450		Cr I	22
4339.52		N III	10
4339.56		Zr II	41
4339.718		Cr I	22
4339.78		Ne II	62
4340.018		Ti I	174
4340.03		K II	4
4340.130		Cr I	64
4340.30		S III	4
4340.36		O II	77
4340.468		H	1
4340.49	P	Fe I	272
4340.51	P	Fe I	691
4341.013		V I	5
4341.09		Cr II	179
4341.13		Zr I	61
4341.23	P	Fe I	691
4341.282		Gd II	14
4341.369		Ti II	32
4341.42		Ne II	59
4341.48		Cr I	64
4341.57	P	Fe I	644

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A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.00		O II	77	4355.308		Ti I	174	4368.14		C II	45
.071		Nd II	8	4355.911		Ni I	149	4368.14		C III	
.179		Gd II	15	4355.943		V I	5	4368.20	P	Cr II	37
.23		Zr II	98	4356.711		Al II	60	4368.234		Ce II	227
.83		O II	103	4356.760		Cr I	130	4368.252		Cr I	130
.832		V I	103	4356.807		Al II	60	4368.262		Fe II	
.84		S II	43	4357.24	P	Al III	9	4368.30		O I	5
.163		Cr I	64	4357.25		O II	18,63,64	4368.312		Ni I	102
.22	P	Fe I	644	4357.50	P	Fe I	1170	4368.327		Pr II	5
.257		Fe I	645	4357.525		Cr I	198	4368.632		Nd II	11
.36		O II	75,103	4357.53	P	Fe I	994	4368.66	P	Fe I	644
.62		Cl II	19	4357.574		Fe II		4368.67	P	V II	186
.699		Fe I	517	4357.85	P	Ni I	256	4368.89		Cr I	198
.798		Ti I	204	4358.169		Nd II	10	4368.941		Ti I	245
.86	P	Fe I	756	4358.27		N I		4369.28		O II	26
.987		Mn II	6	4358.343		Hg I	1	4369.29	P	Fe I	1244
.291		Ti II	20	4358.40		O II	64	4369.404		Fe II	28
.300		Gd II	44	4358.505		Fe I	412	4369.52		Cl I	8
.42		O II	65	4358.53		A II	87	4369.61	P	Fe II	148
.487		Gd II	31	4358.66		Cr I	176	4369.682		Ti I	290
.507		Cr I	22	4358.699		Nd II	57	4369.73	P	Fe I	976
.085		Cr I	198	4358.73		Y II	5	4369.77		Ne II	56
.1682		A I	9	4358.95	P	Fe I	987	4369.771		Gd II	15
.562		O II	2	4359.12	P	Fe II	202	4369.774		Fe I	518
.6	P	Mn II	6	4359.152		Gd II	47,68	4370.041		Ni I	149
.858		Sm II	7	4359.38		O II	26	4370.27		V II	31
.963		Ce II	251	4359.585		Ni I	86	4370.76		A II	39
.104		Ti I	234	4359.631		Cr I	22	4370.875		Mn I	17
.458		Gd I	4	4359.636		Gd II	67	4370.95		Hf II	26
.50	P	Fe II	202	4359.74		Zr II	79	4370.96		Zr II	79
.558		Fe I	598	4359.795		Pr II	26	4371.00	P	Fe I	69
.610		Ti I	204	4359.929		Tm I	1	4371.069		Nd II	57
.833		Cr I	104	4359.992		Cr I	198	4371.10		Fe III	4
.866		Al II	70	4360.03	P	Fe II	148	4371.130		Co I	93
.89		V II	17	4360.16		Ce II	245	4371.17	P	V II	36
.918		Al II	70	4360.487		Ti I	204	4371.279		Cr I	22
.223		Al II	70	4360.49		S II		4371.28	P	Cr I	304
.239		Fe I	2	4360.690		Be II	4	4371.33		C I	14
.310		Gd II	103	4360.720		Sm II	23	4371.36		A II	1
.316		Al II	70	4360.80		Zr I	31	4371.59		C II	45
.425		O II	16	4360.813		Fe I	903	4371.65		O II	76
.490		Pr II	30	4360.917		Gd II	16	4372.09		A II	86
.785		Al II	70	4361.025		Be II	4	4372.208		Ru I	13
.801		Sm II	37	4361.031		Co I	1	4372.22	P	Fe II	33
.802		Al II	70	4361.249		Fe II		4372.383		Ti I	277
.854		Fe I	828	4361.53		S III	4	4372.4		Fe III	122
.11		A II	7	4361.661		Ce II	157	4372.401		Ce II	169
.36		N III	10	4361.710		Sr I	6	4372.49		C II	45
.64	P	Zr II	132	4361.85		C III		4372.50		A II	63
.939		Fe I	414	4361.913		Co I	1	4372.88	P	V II	13
.28	P	Fe II	202	4362.040		Sm II	45	4372.91		Cl II	52
.426		O II	2	4362.07		A II	39	4372.994		Fe I	473
.789		Ce II	59	4362.10		Ni II	9	4373.230		V I	140
.97		V II	36	4362.93		Cr II	179	4373.254		Cr I	22
.465		Sm II	46	4362.95		Cr I	82	4373.462		Sm II	42
.52		Hf II	72	4363.05		La II	133	4373.563		Fe I	214,413
.834		Ti II	94	4363.134		Cr I	103	4373.656		Cr I	304
.051		Cr I	22	4363.30		Cl I	8	4373.818		Ce II	202
.269		O II	16	4363.525		V I	23	4373.90	P	Fe I	904
.295		Nd II	10	4363.644		Mo II	3	4374.158		Cr I	104
.37	P	Fe I	691	4364.01		Y II	70	4374.243		Gd II	83
.549		Fe I	413	4364.14		Cr I	130	4374.28		C II	45
.764		Fe II	27	4364.140		Gd II	93	4374.455		Sc II	14
.770		Cr I	22	4364.17		Y II	70	4374.495		Fe I	648
.849		Pr II	23	4364.59		Al III	9	4374.61	P	Cr II	179
.8941		Mg I	14	4364.658		Ce II	135	4374.825		Ti II	93
.9056		Mg I	14	4364.66		La II	53	4374.87		A II	77
.1		C I	15	4364.73		S III	7	4374.918		Co I	150
.101		Sm II		4364.87		Cr I	153	4374.923		Nd II	15
.23		A II	1	4364.89	P	Fe II	202	4374.94		Y II	13
.25		As II	7	4365.56		Fe III	4	4375.00		N II	16
.68	P	Cr II	37	4365.72		Ne II	57	4375.039		Nd II	8
.70		Fe III	4	4365.745		V I	79	4375.304		V I	140
.733		Ce II	220	4365.902		Fe I	415	4375.333		Cr I	103
.737		Fe I	71	4366.165		Fe II	216	4375.35	P	Ti II	104
.872		V I	5	4366.315		Nd II	12	4375.425		Ti I	219
.60		O II	76	4366.33		Cr I	153	4375.48	P	Fe I	797
.66		N III	10	4366.45		Zr I	61	4375.540		Co I	143
.983		Cr I	198	4366.896		O II	2	4375.918		Ce II	134
.064		Ti I	204	4366.91		V II	36	4375.932		Fe I	2
.28	P	Fe I	975	4367.07	P	Fe I	1170	4375.96		A II	17
.358		Fe II	213	4367.36	P	Ni I	88	4376.78		C II	46
.40		La II	58	4367.581		Fe I	414	4376.782		Fe I	471,904
.540		Mg I	13	4367.657		Ti II	104	4376.796		Cr I	304
.56		S III	7	4367.87		A II	98	4377.330		Fe I	990
.609		Sc II	14	4367.90		Hf II	15	4377.549		Cr I	83
.979		V I	103	4367.906		Fe I	41	4377.765		Mo II	3
.03	P	Fe II	202	4367.966		Cb II	8	4377.796		Fe I	645
.09		Eu II	22	4368.031		Sm II	37	4377.95		Ne II	65
.096		Ca I	37	4368.042		V I	5	4378.01		O II	102

A	Type	Element	Multiplet No.
8.10		La II	77
8.236		Sm II	53
8.41		O II	102
8.73	P	Fe I	759
9.09		N III	17
9.238		V I	22
9.25		A II	63
9.50		Ne II	56
9.74		A II	7
9.78		Zr II	88
9.782		Cr I	130
9.90		Cl I	7
9.97		C III	14
0.060		Ce II	155
0.38		Mg I	12
0.55		Cr I	130
0.642		Gd II	68
1.04		V I	23
1.112		Cr I	64
1.290		Nd II	56
1.79	P	Fe II	9
2.02	P	Fe I	938
2.061		Gd II	46
2.167		Ce II	2
2.31		Fe III	4
2.33	P	V II	36
2.777		Fe I	799a
2.853		Cr I	64
2.95		Zr II	109
3.10		Zr II	97
3.119		Gd II	67
3.17		Eu II	27
3.24		C III	14
3.44		La II	76
3.547		Fe I	41
3.79		A II	16
4.08		Ne II	60
4.13	P	Fe I	1101
4.33	P	Fe II	32
4.543		Ni I	86
4.6	P	Ni II	10
4.643		Mg II	10
4.682		Fe I	474
4.722		V I	5,22
4.813		Sc II	14
4.977		Cr I	22
5.00		Ne II	56
5.08		A II	98
5.20		La II	75
5.260		Fe I	415
5.381		Fe II	27
5.45	P	V II	30
5.663		Nd II	50
6.434		Tm I	1
6.461		Ni I	169
6.57	P	Fe II	26
6.6		Fe I	899
6.835		Ce II	57
6.858		Ti II	104
7.213		V I	40
7.380		Cr I	84
7.496		Cr I	103
7.674		Gd II	15
7.897		Fe I	476
7.928		He I	51
8.007		Ce II	5
8.077		Ti I	219
8.16		K II	7
8.24		C III	14
8.412		Fe I	830
8.50		Zr II	140
9.12	P	V II	13
9.244		Fe I	2
9.76		Cl I	7
9.870		Ni I	87
9.974		V I	22
0.14		Na I	17
0.322		Ni I	136
0.460		Fe I	413
0.585		Mg II	10
0.858		Sm II	15
0.953		Gd II	32
0.954		Fe I	414
0.977		Ti II	61
1.110		Nd II	24
1.114		Th II	6
1.26		Fe III	42
1.568		Co I	150
1.661		Ce II	81
1.753		Cr I	22
4391.84		S II	43
4391.87	P	Fe I	992
4391.94		Ne II	57
4392.074		V I	23
4392.26		Cr I	130
4392.31	P	Fe I	757
4392.58		Fe I	973
4393.03	P	Fe I	473
4393.45		Na I	17
4393.534		Cr I	102
4393.70	P	Fe I	899
4393.835		V I	40
4393.925		Ti I	244
4394.057		Ti II	51
4394.31	P	Fe I	975
4394.65		A II	87
4394.719		Gd II	44
4394.779		Ce II	259
4394.83		Cr I	130
4394.855		Ti I	78
4394.94		Zr I	61
4395.031		Ti II	19
4395.228		V I	22
4395.288		Fe I	828
4395.417		Cr I	129
4395.514		Fe I	991,992
4395.78		Fe III	4
4395.788		Pr II	29
4395.848		Ti II	61
4395.95		O II	26
4397.251		Cr I	129
4397.27	P	Fe II	33
4397.37		Ti IV	
4397.51		Gd II	
4397.94		Ne II	56
4398.02		Y II	5
4398.314		Ti II	61
4398.52		V II	187
4398.625		Ni I	102
4398.787		Ce II	81
4399.14		Cl II	46
4399.203		Ce II	81
4399.44		Zr II	67
4399.607		Ni I	196
4399.767		Ti II	51
4399.823		Cr I	129
4399.86	P	Fe II	20
4400.09		A II	1
4400.18		Gd II	67
4400.26		Ni I	146
4400.355		Sc II	14
4400.575		V I	22
4400.63	P	Ti II	93
4400.828		Nd II	10
4400.870		Ni I	148
4401.02		A II	1
4401.293		Fe I	828
4401.35		Zr II	68
4401.447		Fe I	350
4401.547		Ni I	86
4401.74		A II	76
4401.97		P II	24
4402.86		S II	43
4402.875		Fe II	
4403.03		Cl I	6
4403.35		Zr II	79
4403.360		Sm II	22
4403.372		Cr I	128
4403.498		Cr I	
4403.54		Ti IV	
4403.605		Pr II	34
4404.10	P	Fe I	987
4404.276		Ti I	218,219
4404.397		Ti I	78
4404.68		V II	30
4404.752		Fe I	41
4404.81		Zr II	118
4404.911		Ti I	161
4404.932		Co I	127
4405.011		V I	23
4405.02	P	Fe I	2
4405.23		Ba II	16
4405.40	P	Fe I	991
4405.694		Ti I	78
4405.849		Pr II	4
4406.02		O II	26
4406.147		V I	40
4406.22	P	V II	30
4406.26		Cr I	152
4406.641		V I	22
4406.67		Gd II	103
4407.278		Ce II	64
4407.637		V I	22
4407.678		Ti II	51
4407.714		Fe I	68
4407.72		Cr I	129
4407.911		Be I	4
4408.204		V I	22
4408.248		Gd II	44
4408.419		Fe I	68
4408.511		V I	22
4408.844		Pr II	4
4408.92		V II	224
4409.123		Fe I	645
4409.22		Ti II	61
4409.30		Ne II	57
4409.519		Ti II	61
4409.84		Mg I	48
4410.026		Ru I	5
4410.06		C II	40
4410.304		Cr I	129
4410.516		Ni I	88
4410.641		Ce II	33
4410.967		Cr I	102
4411.052		Nd II	8
4411.080		Ti II	115
4411.093		Cr I	129
4411.20		C II	39
4411.21		La II	138
4411.34		S I	5
4411.52		C II	39
4411.786		Co I	27
4411.878		Mn I	
4411.936		Ti II	61
4412.155		Pr II	8
4412.250		Cr I	22
4412.265		Nd II	9
4412.43	P	Fe I	69
4412.436		Ti I	54
4412.54		Ne II	55
4413.04		Zr I	61
4413.20		Ne II	57,65
4413.40	P	Fe I	1046
4413.600		Fe II	32
4413.765		Pr II	26
4413.784		Nd II	22
4413.866		Cr I	234
4414.03	P	Fe I	825
4414.17	P	V II	13
4414.20	P	Ni I	88
4414.23	P	Fe I	475
4414.29		P II	25
4414.37		O II	60
4414.432		Nd II	3
4414.47	P	Fe I	643
4414.54		Zr II	79
4414.879		Mn I	22
4414.909		O II	5
4415.125		Fe I	41
4415.37		S II	53
4415.559		Sc II	14
4416.474		V I	22
4416.535		Ti I	161
4416.77		Ne II	61
4416.817		Fe II	27
4416.975		O II	5
4417.274		Ti I	161
4417.31		P II	24
4417.37		Hf II	51
4417.398		Co I	150
4417.718		Ti II	40
4418.340		Ti II	51
4418.432		Fe I	412
4418.60	P	Fe I	899
4418.784		Ce II	2
4418.84		S III	4
4419.032		Gd II	15
4419.10		Cr I	128
4419.16		La II	89
4419.30	P	Fe I	893
4419.59		Fe III	4
4419.78	P	Fe I	644
4419.935		V I	21
4419.94		Na I	16
4420.45		Zr I	61
4420.468		Os I	1
4420.526		Sm II	32
4420.665		Sc II	14
4420.75	P	Fe II	9
4420.90		A II	1

FINDING LIST

A	Type	Element	Multiplet No.
.138		Sm II	37
.231		Pr II	13
.24		Gd II	103
.337		Co I	150
.38		Ne II	66
.573		V I	22
.754		Ti I	218
.949		Ti II	93
.477		V I	79
.570		Fe I	350
.59		Y II	5
.697		Cr I	234
.76		Hf II	103
.823		Ti I	78
.882		Fe I	646
.000		Ni I	168
.145		Fe I	412
.212		V I	40
.22	P	Ti II	61
.31		Na I	16
.318		Cr I	128
.678		Ce II	21
.73		K II	5
.858		Fe I	830
.9		P II	31
.075		Cr I	82
.102		Gd II	67
.194		Fe I	757
.281		Cr I	129
.339		Sm II	45
.401		Ti I	243
.62	P	V II	30
.84		Ni I	262
.129		Cr I	152
.441		Ca I	4
.662		Fe I	798
.75	P	Fe I	555
.79	P	Fe I	899
.840		Ti I	78
.95		P II	24
.005		V I	22
.01		A II	7
.054		Ti I	161
.151		Gd II	14
.18		Hf II	87
.098		Ti I	128
.12	P	Ti I	78
.21		N II	56
.30	P	Fe I	828
.312		Fe I	2
.52		La II	76
.606		Gd II	66
.71		Cr I	129
.90	P	Ti II	61
.917		Ce II	171
.97		N II	55
.995		Mg II	9
.501		Cr I	129
.515		V I	21
.54		Ne II	57,61
.57	P	Fe I	973
.74	P	Fe I	899
.11	P	V II	13
20	P	Fe I	987
.238		Pr II	2,4
270		Ce II	19
.92		Fe I	972
34		Zr II	118
60		Ne II	74
796		V I	22
90		La II	38
938		Cr I	234
023		Ti I	267
18		A II	7
197		Fe I	472
366		Ti I	113
486		Cr I	234
51	P	Cr I	128
618		Fe I	68
90		Ne II	56
95		Fe III	4
02		A II	1
02		S II	32
284		Ti I	218
369		Sc II	14
48		Zr I	61
608		Co I	143
626		Fe II	222
67		Ne II	74
82		N II	55

I A	Type	Element	Multiplet No.
4431.922		Mn I	40
4432.089		Ti II	51
4432.175		Cr I	81
4432.26		Ne II	74
4432.41		S II	43
4432.572		Fe I	797
4432.739		N II	55
4432.80	P	Fe I	471
4432.82		Al II	84
4432.90	P	Fe I	271
4432.95		La II	11
4433.223		Fe I	830
4433.39	P	Fe I	412
4433.48		N II	55
4433.501		Mo II	3
4433.578		Ti I	267
4433.635		Gd II	82
4433.793		Fe I	825
4433.83		A II	123
4433.885		Sm II	41
4433.968		Cr I	128
4433.991		Mg II	9
4434.003		Ti I	113,161
4434.323		Sm II	36
4434.75		Cr I	128
4434.960		Ca I	4
4435.151		Fe I	2
4435.58		Eu II	4
4435.688		Ca I	4
4435.84		La II	8
4436.025		Mn I	40
4436.138		V I	21
4436.225		Gd II	117
4436.352		Mn I	22
4436.48		Mg II	19
4436.586		Ti I	160
4436.64		Ti I	267
4436.931		Fe I	516
4436.981		Ni I	86
4437.549		He I	50
4437.570		Ni I	168
4437.612		Ce II	169
4437.837		V I	21
4438.044		Sr I	6
4438.12		A II	123
4438.13		Gd II	67
4438.232		Ti I	218
4438.266		Gd II	44
4438.353		Fe I	828
4438.48		Cl I	6
4438.53	P	Fe I	969
4439.13	P	Fe II	32
4439.30		Ne II	65
4439.42		V II	46
4439.45		A II	127
4439.643		Fe I	515
4439.87		S III	7
4439.883		Fe I	116
4439.95		Ne II	61
4440.09		A II	76,127
4440.1		O III	33
4440.345		Ti I	159
4440.41		V II	224
4440.45		Zr II	79
4440.479		Fe I	829
4440.840		Fe I	992
4440.863		Ce II	236
4440.972		Fe I	645
4441.272		Ti I	160
4441.56	P	Fe I	987
4441.683		V I	21
4441.73	P	Ti II	40
4441.81		C IV	4
4441.99		N II	55
4442.268		Cr I	102
4442.343		Fe I	68
4442.441		Ni I	87
4442.50		Zr II	53
4442.67		Ne II	56
4442.72	P	Ce II	19
4442.835		Fe I	69
4442.99		Zr II	88
4443.05		O II	35
4443.07		Hf II	
4443.197		Fe I	350
4443.707		Cr I	234
4443.743		Ce II	171
4443.802		Ti II	19
4443.94		La II	133
4444.20	P	V II	30

I A	Type	Element	Multiplet No.
4444.207		V I	21
4444.259		Sm II	
4444.267		Ti I	218
4444.393		Ce II	19
4444.559		Ti II	31
4444.563		Fe II	201
4444.704		Ce II	
4445.26	P	Fe II	9
4445.48		Fe I	2
4445.711		Co I	150
4445.77	P	V II	13
4445.88		Zr II	96
4446.248		Fe II	187
4446.387		Nd II	49
4446.46		Ne II	56
4446.487		Gd II	14
4446.71		F II	10
4446.842		Fe I	828
4446.90	P	Fe I	596
4447.033		N II	15
4447.134		Fe I	69
4447.18		F II	10
4447.722		Fe I	68
4447.8		Al II	83
4447.82	P	O III	33
4448.21		O II	35
4448.47		A II	127
4448.88		A II	127
4448.97	P	Fe I	891
4449.143		Ti I	160
4449.336		Ce II	202
4449.573		V I	62
4449.663		Fe II	222
4449.867		Pr II	4
4449.985		Ti I	159
4450.13		Ni I	178
4450.301		Ni I	236
4450.320		Fe I	476
4450.487		Ti II	19
4450.732		Ce II	3
4450.77	P	Fe I	972
4450.896		Ti I	160
4451.545		Fe II	
4451.566		Nd II	50
4451.586		Mn I	22
4451.61	P	V II	30
4451.978		Nd II	6
4452.008		V I	87
4452.32	P	Fe I	898
4452.377		O II	5
4452.45		P II	31
4452.62	P	Fe I	969
4452.70		Hf II	94
4452.727		Sm II	26
4453.005		Mn I	22
4453.312		Ti I	113
4453.35		V II	199
4453.708		Ti I	160
4453.931		Gd II	64
4454.382		Pr II	5
4454.383		Fe I	350
4454.629		Sm II	49
4454.655		Fe I	902
4454.781		Ca I	4
4454.80		Zr II	40
4455.012		Mn I	28
4455.032		Fe I	974
4455.258		Fe II	
4455.318		Mn I	28
4455.321		Ti I	113
4455.45		Cr I	127
4455.79		La II	53
4455.821		Mn I	28
4455.85	P	Fe II	140
4455.887		Ca I	4
4456.331		Fe I	516
4456.394		Nd II	50
4456.43		S II	43
4456.53		V II	199
4456.612		Ca I	4
4456.63	P	Fe I	973
4456.650		Ti II	115
4456.84	P	Cr II	16
4456.95		Ne II	61
4457.045		Mn I	28
4457.179		Nd II	18
4457.42		Zr II	79
4457.428		Ti I	113
4457.479		V I	21
4457.549		Mn I	28

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
759		V I	101	4467.98		P II	25	4481.056		Gd II	44
101		Fe I	992	4468.010		V I	87	4481.129		Mg II	4
262		Mn I	28	4468.38		Cr I	127	4481.21		La II	146
336		Pr II	8	4468.493		Ti II	31	4481.23		Ni I	168
517		Sm II	7	4468.712		Pr II	20	4481.261		Ti I	146
538		Cr I	127	4468.759		V I	102	4481.273		Tm II	1
37		Ni I	86	4468.91		Ne II	61	4481.327		Mg II	4
121		Fe I	68	4469.160		Ti II	18	4481.44		Cr I	270
34		Cr I	63	4469.32		O II	59,94	4481.621		Fe I	827
738		Cr I	127	4469.37		Cl I	15	4481.83		A II	39
760		V I	21	4469.381		Fe I	830	4482.02		Cl II	85
96		N II	21	4469.547		Co I	150	4482.04		Zr II	131
12	P	Fe I	271	4469.710		V I	87	4482.171		Fe I	2
16	P	V I	62	4469.850		Ce II	230	4482.257		Fe I	68
213		Ce II	2	4469.92	P Forb	He I	15	4482.40	P	Ti II	30
292		V I	21	4470.138		Mn I	22	4482.688		Ti I	113
377		Mn I	28	4470.39	P	V II	30	4482.750		Fe I	828
55	P	Fe I	1100	4470.483		Ni I	86	4482.878		Cr I	197
56		A II	1	4470.864		Ti II	40	4483.328		Gd II	62
769		Cr I	63	4471.238		Ti I	146	4483.424		S II	43
85		Mn I	28	4471.240		Ce II	8	4483.50		V II	224
138		Ce II	10	4471.29		Gd II	82	4483.67		P II	25
205		Fe I	471	4471.477		He I	14	4483.78	P	Fe I	898
22		Zr II	67	4471.52		Ne II	65	4483.900		Ce II	3
37		Fe I	725	4471.550		Co I	150	4483.918		Co I	150
43	P	Fe II	26	4471.68	P	Fe I	2	4484.227		Fe I	828
56		O III	33	4471.688		He I	14	4484.513		Co I	27
554		Fe I	2	4471.81	P	Fe I	972	4484.54		Ni I	102
30	P	Fe I	412	4472.09		Ca II	6	4484.68		Cr I	151
989		Fe I	471,825,902	4472.52	P	Fe I	39	4484.93	P	Fe II	9
22		Mn I	28	4472.57	P	Fe I	411	4485.013		Ti I	184
99		Ti I	8	4472.721		Fe I	595,900	4485.15		Eu II	26
20	P	Fe I	824	4472.792		Mn I	22	4485.44		Zr II	79
363		V I	87	4472.921		Fe II	37	4485.679		Fe I	830
407		Nd II	54	4473.015		Sm II	26	4485.97	P	Fe I	825
460		Ni I	86	4473.782		Cr I	63	4486.14		Hf II	23
76	P	V II	13	4474.03		La II	133	4486.352		Gd II	135
774		Cr I	127	4474.045		V I	110	4486.65		Hf II	107
30		Fe III	106	4474.194		Fe II	171	4486.66		S II	43
95		P II	25	4474.714		V I	101	4486.909		Ce II	57
985		Nd II	50	4474.77		A II	38	4487.01	P	Fe I	988
14	P	Fe I	471	4474.852		Ti I	113,184	4487.28		Y I	14
16	P	Fe I	901	4474.95		O III	37	4487.36	P	Fe I	824
247		Gd II	83	4475.19	P	Ti I	184	4487.46		B III	2
391		Ti I	160	4475.20	P	Cr I	63	4487.46		Cr I	63
410		Ce II	20	4475.22		Ne II	65	4487.47		Y I	14
427		Ni I	102	4475.24		V II	198	4487.72		O II	104
539		Ti I	160	4475.27		P II	24	4487.74	P	Fe I	594
582		S II	43	4475.28		Cl II	41,85	4487.821		Pr II	3
32		V II	199	4475.31		Cl I	7	4488.051		Cr I	299
425		S II		4475.345		Cr I	95	4488.09		O II	104
458		Ti II	40	4475.518		Ti I	184	4488.140		Fe I	819
669		Cr I	127	4475.70		V II	199	4488.15		N II	21
677		Mn I	22	4475.72		Y I	14	4488.27	P	Ti I	184
69	P	Fe I	555	4475.99	P	Fe I	899	4488.319		Ti II	115
747		V I	110	4476.021		Fe I	350	4488.401		Gd II	82
773		Fe I	472	4476.08		O II	87	4488.898		V I	86,110
907		Cr I	127	4476.082		Fe I	830	4488.917		Fe I	213,827
97		Eu II	27	4476.61	P	Ti I	184	4489.089		Ti I	146
075		Nd II	5	4477.02		Cr I	63	4489.185		Fe II	37
15		Cr I	267	4477.45		Y I	14	4489.471		Cr I	
33	P	Fe I	1099	4477.74		N II	21	4489.48		O II	86
357		Cr I	127	4477.88		O II	88	4489.741		Fe I	2
4		Y II	81	4478.03	P	V II	13	4489.87		Al II	107
40		O II	94	4478.040		Fe I	60	4490.00		Cl II	41
54		N II	21	4478.319		Co I	150	4490.081		Mn I	22
601		Nd II	13	4478.48		S III	7	4490.084		Fe I	469
78		Cr II	191	4478.657		Sm II		4490.24	P	Fe I	319
807		Ti I	146	4478.795		Gd II	15	4490.541		Ni I	134,235
11		P II	24	4479	P	N IV	6	4490.56		Cr I	267
13	P	Cr I	34	4479.00	P	Fe I	987	4490.60		Hf II	74
465		Cr I	127	4479.01	P	Fe I	899	4490.63	P	Fe I	891
183		Fe I	901	4479.29		Ca II	6	4490.773		Fe I	974,974
32		O II	87	4479.359		Ce II	203	4490.815		V I	86
394		Ni I	168	4479.432		Ce II	124	4490.90	Forb	Al III	7
41		Hf II	72	4479.612		Fe I	828,848	4490.99		A II	39
547		Gd II	44	4479.724		Ti I	146	4491.10	P	Ce II	19
554		Fe I	350	4479.891		Al III	8	4491.164		V I	62
57	P	Fe I	2	4479.968		Al III	8	4491.25		O II	86
65		K II	6	4479.97	P	Fe I	974	4491.401		Fe II	37
881		Co I	150	4480.142		Fe I	515	4491.678		Cr I	95
939		Fe I	992	4480.263		Cr I	197	4491.858		Cr I	83
227		Gd II	82	4480.27	P	Fe I	823	4492.312		Cr I	197
.342		Sm II	53	4480.350		Cu I	8	4492.3		S II	58
.36		Fe III	106	4480.46	P	Fe II	20	4492.40		N I	
.446		Fe I	1048	4480.570		Ni I	211	4492.427		Pr II	23
.537		Ce II	17	4480.600		Ti I	146	4492.540		Ti I	184
.561		Cr I	127	4480.687		Fe II		4492.693		Fe I	969
.83		S III	7	4480.85		A II	104	4492.98	P	Fe I	639
.88		O II	94	4481.04	P	Fe I	893	4493.37	P	Fe I	796

FINDING LIST

I A	Type	Element	Multiplet No.
93.53		Ti II	18
93.579		Fe II	222
94.05	P	Fe I	973
94.180		Na I	15
94.41		Zr II	130
94.47	P	Fe I	411
94.568		Fe I	68
94.67		N I	
94.71		La I	11
94.746		Co I	168
94.853		Gd II	14
95	P	N IV	6
95.006		Ti I	
95.04		Cr I	101
95.275		Cr I	275
95.386		Fe I	319,970
95.389		Ce II	154
95.44		Zr II	79
95.46	P	Ti II	40
95.52	P	Fe II	147
95.566		Fe I	827
95.9		S II	48
95.986		Fe I	825
96.062		V I	110
96.146		Ti I	146
96.245		Ti I	8
96.429		Pr II	4,25
96.75	P	Ti I	184
96.862		Cr I	10
96.864		V I	86
96.96		Zr II	40
96.989		Mn II	17
97.30		Cl II	41,85
97.58		B III	3
97.657		Na I	15
97.709		Ti I	184
97.849		Ce II	19
97.88		S II	53
98.276		Gd II	31
98.54	P	Fe I	988
98.55		A II	136
98.730		Cr I	81
98.76		La II	94
98.897		Mn I	22
98.94		Ne II	64
99.18		P II	11
99.29		S III	7
99.475		Sm II	23
00.295		Cr I	150
00.32	P	Ti II	18
0.86	P	V II	30
1.112		Cr I	81
1.256		V I	86
1.270		Ti II	31
1.692		Ni I	115
1.788		Cr I	81
1.808		Nd II	53
1.972		V I	62
2.16		La II	154
2.220		Mn I	22
2.52		Ne II	56
2.592		Fe I	796
2.95		A II	63
3.05		Cr I	310
3.13	P	V II	13
3.762		Ti I	184
4.23	P	Fe I	988
4.27		Cl II	41
4.52	P	Cr II	16
4.838		Fe I	555
5.00		Ca I	24
5.22		Cr I	151
5.33		K II	4
5.715		Ti I	184
5.75		Nd II	3
5.95		Y I	14
5.997		Cu II	1
6.302		Ni I	133
6.333		Gd II	44
6.50		O II	
6.582		Nd II	7
6.624		Ca I	24
6.74	P	Ti II	30
6.850		Cr I	266
6.931		Gd II	13
7.11		Zr I	31
7.19	P	Cr II	16
7.195		Fe II	213
7.417		Ca I	24
7.559		N II	21
4507.854		Ca I	24
4507.95		Cr I	267
4508.083		Ce II	153
4508.21		Ne II	68
4508.26	P	Fe II	222
4508.283		Fe II	38
4508.48		La II	52
4509.0		S II	48
4509.082		Gd II	84
4509.13	P	Fe I	213
4509.287		V I	110
4509.306		Fe I	514,937
4509.440		Ca I	24
4510.160		Pr II	20
4510.210		Mn II	17
4510.380		Gd II	30
4510.7333		A I	9
4510.82	P	Fe I	823
4510.92		N III	3
4511.04	P	Fe I	970
4511.176		Ti I	
4511.29		Ne II	70
4511.310		In I	1
4511.37		Ne II	70
4511.82	P	Cr II	191
4511.829		Sm II	14
4511.903		Cr I	150
4512.282		Ca I	24
4512.535		Al III	3
4512.72		V II	212
4512.734		Ti I	42
4512.995		Ni I	163
4513.21		Cr I	150
4513.58		Y I	15
4513.715		Ti I	112
4513.72	P	Fe I	213
4513.89		Cr I	175
4513.90	P	Ni I	131
4514.189		Fe I	514
4514.191		V I	110
4514.373		Cr I	287
4514.505		Gd II	103
4514.531		Cr I	95
4514.80		Ne II	55
4514.89		N III	3
4515.094		Sm II	
4515.17	P	Fe I	319
4515.19	P	Fe II	20
4515.337		Fe II	37
4515.440		Cr I	126
4515.559		V I	100
4515.610		Ti I	184
4516.02		C III	9
4516.08	P	Fe I	639
4516.27	P	Fe I	819
4516.38		La II	
4516.45	P	Fe I	825
4516.56	P	Cr II	191
4516.93		C III	9
4517.094		Co I	150
4517.10		Gd II	135
4517.35		V II	211
4517.43	P Forb	He I	13
4517.530		Fe I	472
4517.595		Pr II	2
4517.60	P	Fe I	992
4517.79		Ne II	55
4517.81		Ni I	103
4518.022		Ti I	42
4518.18		N III	3
4518.30	P	Ti II	18
4518.38		V II	212
4518.46		Fe I	593
4518.58	P	Fe I	69
4518.58		Lu I	
4518.63		Cr I	34,100
4518.700		Ti I	112
4518.9		S II	47
4519.02		Hf II	
4519.19		Cl II	41
4519.633		Sm II	49
4519.83		Cr I	126
4519.986		Ni I	51
4520.070		Gd II	89
4520.225		Fe II	37
4520.24	P	Fe I	471
4520.37	P	Ti II	30
4521.141		Cr I	277,287
4521.296		Gd II	44
4521.65	P	Fe I	641
4521.924		Ni I	116
4521.94		Gd II	106
4522	P	O V	15
4522.00		Cr I	173
4522.3238		A I	7
4522.37		La II	8,74
4522.59		Eu II	4
4522.634		Fe II	38
4522.66		Ne II	68
4522.798		Ti I	42
4522.82		Gd II	103
4523.037		Sm II	3
4523.077		Ce II	2
4523.403		Fe I	829
4523.60		N III	3
4523.74	P	Ni I	99
4523.912		Sm II	41
4524.218		V I	99
4524.344		Mo I	6
4524.68		S II	40
4524.732		Ti II	60
4524.74		Hf II	104
4524.744		Sn I	5
4524.81	P	V II	212
4524.841		Cr I	276
4524.928		Ba II	3
4524.946		S II	40
4525.142		Fe I	826
4525.15	P	Fe I	819
4525.168		V I	110
4525.21	P	Ti II	18
4525.31		La II	76
4525.75	P	Fe II	9
4525.875		Fe I	319
4526.106		Cr I	190
4526.12		La II	50
4526.20		Cl I	15
4526.374		Ti I	127,184
4526.40	P	Fe I	969
4526.466		Cr I	33
4526.563		Fe I	471
4526.565		Tm II	1
4526.58	P	Fe II	171
4526.794		Co I	177
4526.935		Ca I	36
4527.25		Y I	14
4527.305		Ti I	42
4527.339		Cr I	33,82
4527.348		Ce II	108
4527.455		Ti I	7
4527.471		Cr I	174
4527.648		Cb II	8
4527.796		Fe I	641
4527.80		Y I	14
4527.86		N III	13
4527.90	P	Fe I	897
4527.919		Co I	156
4527.96		S III	7
4527.990		V I	
4528	P	N IV	6
4528.472		Ce II	1
4528.51		V II	56
4528.619		Fe I	68
4528.76	P	Fe I	595
4528.82	P	Fe I	468
4528.911		Al III	3
4529.08		V II	198
4529.176		Al III	3
4529.301		V I	95
4529.376		Tm II	5
4529.465		Ti II	82
4529.56	P	Fe II	171
4529.562		Fe I	987
4529.589		V I	99
4529.7		O III	32
4529.851		Cr I	33
4530.034		Mn II	17
4530.12	P	Cr I	126
4530.403		N II	59
4530.54		La II	73
4530.57		A II	35
4530.688		Cr I	33
4530.755		Cr I	33
4530.76		P II	25,35
4530.785		Cu I	8
4530.84		N III	3
4530.949		Co I	150
4531.152		Fe I	39
4531.60	P	Ti I	112
4531.633		Fe I	555,847,992

	Type	Element	Multiplet No.
82		Cr I	275
188		V II	212
75		Cr I	212
143		Fe I	641
18		Hf II	25
238		Ti I	42
3		S II	47
81		P II	25
900		Ti II	50
985		Co I	150
154		Pr II	20
166		Fe II	37
26		Mg II	26
57		N III	3
62	P	Fe I	1169
66		Ne II	58
782		Ti I	42
11		N III	13
146		Cr I	33
215		V II	210
38		Hf II	72
47		Ne II	55
50		Fe III	
51		A II	86
574		Ti I	42
721		Cr I	33,276
75		Zr I	30
87	P	Ti I	112
920		Ti I	42
921		Pr II	1
051		Ti I	42
509		Fe I	896
55		Cr I	190
78		Cl II	41
663		V I	82
67		A II	123
677		Fe I	594
751		Ne I	11
952		Sm II	45
20	P	Fe I	1071
58	P	Fe I	972
64		V II	212
73		A II	104
764		Fe I	115
84		Fe I	969
87		La II	149
95	P	Fe I	1048
096		Ti I	
62		Cr II	39
755		Ce II	108
788		Cr I	33
014		V I	100
016		Gd II	135
376		Ne I	17
483		Ti I	8
502		Cr I	33
71		La II	81
719		Cr I	150
873		Ti I	112
071		Cr I	33
269		Nd II	58
31		Hf II	36
513		Cr I	149
523		Fe II	38
59		He II	2
671		Na I	14
953		Fe I	593
22		Zr I	48
422		Fe I	894
603		Nd II	
621		Cr I	149,275
.720		Fe I	827
77	P	Cr II	16
.22	P	Fe I	893
.74		Cr I	100
.810		Co I	142
.91		A II	95
.948		Sm II	32
.009		Ti II	60
.11		Ne II	64
.48		Cl II	48
.50	P	Fe I	970
.619		Cr I	33
.688		Ti I	42
.70	P	Cr II	16
.80		N III	12
.961		Ce II	123
.08		A II	15
.144		Ti II	30
.218		Na I	14

I A	Type	Element	Multiplet No.
4545.335		Cr I	33
4545.394		V I	109
4545.49	P	Cr II	16
4545.54	P	Fe I	894
4545.956		Cr I	10
4545.985		Co I	142
4546.36		N III	13
4546.47	P	Fe I	1047
4546.68	P	Fe I	989
4546.930		Ni I	261
4547.022		Fe I	39
4547.234		Ni I	146
4547.34		N III	3
4547.78		A II	76
4547.850		Ti I	270
4547.851		Fe I	755
4548.094		Ti I	270
4548.764		Ti I	42
4549.214		Fe II	186
4549.467		Fe II	38
4549.50		La I	11
4549.547		S II	
4549.622		Ti II	82
4549.644		V I	
4549.658		Co I	150
4549.82	P	Ti II	39
4550.954		Gd II	44
4551.236		Ni I	236
4551.297		Ce II	229
4551.455		Gd II	62
4551.667		Fe I	972
4551.860		V I	82
4552.25	P	Ti II	30
4552.37		As II	4
4552.378		S II	40,48
4552.453		Ti I	42
4552.536		N II	58
4552.544		Fe I	
4552.654		S III	2
4552.659		Sm II	23
4553.01		Zr I	31
4553.056		V I	133
4553.16		Ne II	55
4553.175		Ni I	135
4553.48	P	Fe I	472
4553.949		Cr I	276
4553.96		Zr II	130
4554.033		Ba II	1
4554.28		O V	7
4554.467		Fe I	319
4554.509		Ru I	5
4554.81		P II	28
4554.830		Cr I	173
4554.989		Gd II	82
4555.02		Cr II	44
4555.069		Ti I	266
4555.09		Cr I	149
4555.30		Cr I	212
4555.30		O III	34
4555.421		Cs I	2
4555.486		Ti I	42
4555.75	P	Fe I	640
4555.890		Fe II	37
4555.922		Cu II	1
4556.129		Fe I	410,820,974
4556.136		Nd II	6
4556.169		Cr I	173
4556.735		Nd II	12
4556.765		V II	198
4556.939		Fe I	638
4557.237		Sc I	
4557.857		Ti I	270
4558.04		P II	29
4558.080		Gd II	44
4558.092		Ti I	262,263
4558.108		Fe I	894,974
4558.46		La II	39
4558.46		V II	212
4558.58	P	Fe II	20
4558.659		Cr II	44
4558.83		Cr II	44
4559.09		Fe III	
4559.28		La II	53
4559.920		Ti I	112
4559.945		Ni I	115
4560.096		Fe I	823
4560.26		Cr I	211
4560.280		Ce II	8
4560.710		V I	109
4560.959		Ce II	2

I A	Type	Element	Multiplet No.
4561.03		A II	51
4561.20		Cr I	34
4561.461		Pr II	23
4561.54		Cr I	277
4561.88		S II	
4562.05		Ne II	64
4562.360		Ce II	1
4562.5		La II	161
4562.637		Ti I	7
4563.245		Cr I	246
4563.427		Ti I	266
4563.657		Cr I	172
4563.761		Ti II	50
4563.78		A II	
4564.166		Cr I	312
4564.216		Ti I	112
4564.43		A II	85
4564.592		V II	56
4564.715		Fe I	823
4564.78		N II	14
4564.832		Fe I	472
4565.13	P	Ni I	88
4565.22		P II	36
4565.324		Fe I	641
4565.43		Zr II	116
4565.45	P	Ni I	99
4565.49		Ne II	55
4565.512		Cr I	21
4565.578		Co I	150
4565.684		Fe I	554
4565.73		Mn I	52
4565.78		Cr II	39
4565.842		Ce II	21
4566.03	P	Fe I	1169
4566.206		Sm II	32
4566.520		Fe I	641
4566.602		Cr I	125
4566.68	P	Fe I	212
4566.990		Fe I	723
4567.415		Ni I	102
4567.606		Nd II	49
4567.872		Si III	2
4567.90		La I	11
4568	P	O IV	15
4568.312		Ti II	60
4568.545		Pr II	33
4568.62	P	Fe I	989
4568.789		Fe I	554
4568.842		Fe I	894
4569.01		Ne II	69
4569.06	P	Fe I	593
4569.42		Cl II	35
4569.50		O III	36
4569.530		Cr I	173
4569.644		Cr I	173
4569.82		Fe III	82
4569.849		Nd II	5
4570.02		La I	11
4570.024		Co I	178
4570.30		Cr I	125,190
4570.34		Fe III	66
4570.425		V I	109
4570.70		Hf II	86
4570.906		Ti I	266
4570.97		La II	38
4570.977		Gd II	84
4570.98		Cr I	173
4571.0950		Mg I	1
4571.105		Cr I	125
4571.24	P	Cr II	16
4571.44	P	Fe I	319
4571.676		Cr I	32
4571.783		V I	109
4571.83		Cr I	246
4571.971		Ti II	82
4572.13		Cl II	35
4572.16		Cr I	190,246
4572.277		Ce II	1
4572.671		Be I	3
4572.83	P	Cr II	16
4572.86	P	Fe I	819
4572.92		A II	94
4573.14		Fe III	
4573.38		Cr I	246
4573.63	P	Cr II	16
4573.81		Hf II	40
4573.993		Sc I	
4574.03		Ni I	87
4574.240		Fe I	554
4574.32		Ta I	1

FINDING LIST

I A	Type	Element	Multiplet No.
574.45		Cr I	148
574.49		Ne II	64
574.49		Zr II	139
574.724		Fe I	115
574.777		Si III	2
574.87		La II	23
575.121		Cr I	196
575.52		Zr I	5
575.80		Fe I	593,970
576.331		Fe II	38
576.500		Mo I	6
576.551		Ti I	262
576.76		Cr I	148
577.13	P	V II	56
577.173		V I	4
577.690		Sm II	23
577.78	P	Fe II	54
578.139		Pr II	10
578.334		Cr I	246
578.558		Ca I	23
578.728		V I	109
579.05	P	Fe I	988
579.07	P	Fe I	640
579.198		V I	109
579.344		Fe I	319,936
579.39		A II	17
579.446		Cb II	8
579.523		Fe II	
579.59		Cr I	246
579.68	P	Fe I	894
579.825		Fe I	409
580.05		La II	53
580.055		Fe II	26
580.056		Cr I	10
580.139		Co I	27
580.35		Ne II	72
80.394		V I	4
80.458		Ti II	60
80.46	P	Fe I	348
80.600		Fe I	827
80.619		Ni I	146
81.063		Cr I	148
81.086		Gd II	44
81.32		Y I	15
81.380		Co I	156
81.402		Ca I	23
81.517		Fe I	555
81.596		Co I	150
81.77		P II	9
82.12	P	Fe II	19
82.38		Gd II	82
82.502		Ce II	7
82.53		Gd II	65
82.835		Fe II	37
82.941		Fe I	348
83.443		Ti II	39
83.72	P	Fe I	472
83.783		V I	109
83.829		Fe II	38
83.89		Cr I	125
83.99	P	Fe II	26
84.095		Cr I	172
84.28		Cl II	
84.445		Ru I	6
84.732		Fe I	820
84.75		Cr I	125
84.824		Fe I	822
84.934		Cr I	196
85.03		Cl II	34
85.088		Cr I	212
85.59	P	Fe I	468
85.72		Cr I	211
85.820		Al II	45
85.871		Ca I	23
85.923		Ca I	23
85.94		V I	61
86.138		Cr I	172
86.25		Hf II	23
86.364		V I	4
86.95	P	Ti I	266
86.99		Cr I	
87.132		Fe I	795
87.72	P	Fe I	971
87.86		Cr I	125
87.90		A II	16
87.91		P II	15,35
87.91		P III	7
88.082		Al II	45
88.13		Ne II	68
88.194		Al II	45
4588.217		Cr II	44
4588.40	P	Cr II	16
4588.730		Co I	15
4589.689		Al II	45
4589.750		Al II	45
4589.76		Pr II	23
4589.79		P II	24,36
4589.89		Cr II	44
4589.93		A II	31
4589.961		Ti II	50
4590.00	P	Cr II	16
4590.505		V II	210
4590.68		Fe III	52
4590.69		Cr I	125
4590.8		S II	47
4590.971		O II	15
4591.05		S II	
4591.220		V I	133
4591.26	P	Fe II	17
4591.394		Cr I	21
4591.818		Sm II	14
4591.991		V I	95
4592.09		Cr II	44
4592.529		Ni I	98
4592.54		Cr I	303
4592.655		Fe I	39
4593.195		Cs I	2
4593.44		A II	51
4593.47		C III	
4593.544		Fe I	971
4593.544		Sm II	36
4593.84		Cr I	190
4593.932		Ce II	6
4594.03		Eu I	1
4594.103		V I	4
4594.403		Cr I	
4594.447		Nd II	52
4594.51	P	Ti I	262
4594.633		Co I	176
4594.908		Ni I	
4594.959		Fe I	638
4595.05		Cr I	190,211
4595.160		Mo I	6
4595.21	P	Fe I	846
4595.291		Sm II	45
4595.363		Fe I	594
4595.590		Cr I	286
4595.68	P	Fe II	38
4595.951		Ni I	101
4596.059		Fe I	820
4596.09		Fe III	
4596.0970		A I	9
4596.174		O II	15
4596.37		V II	210
4596.38		Cr I	210
4596.433		Fe I	823
4596.90		Cr I	171
4596.903		Co I	177
4596.978		Gd II	44
4597.013		Nd II	51
4597.06	P	Fe I	17
4597.91		Gd II	44
4598.122		Fe I	554
4598.33	P	Fe I	17
4598.37	P	Fe I	970
4598.441		Cr I	172
4598.528		Fe II	219
4598.74	P	Fe I	819
4598.77		A II	38
4598.99	P	Ti I	262
4599.00		Cr I	171
4599.226		Ti I	
4599.25		Cr I	171
4599.46		Hf II	92
4600.104		Cr I	32
4600.11		Ne II	64
4600.19		V II	56
4600.28	P	Ti II	60
4600.372		Ni I	98
4600.59		La II	148
4600.752		Cr I	21
4600.937		Fe I	591
4601.00		Cl I	15
4601.021		Cr I	32
4601.05		Gd II	44
4601.15		Cr I	172
4601.34	P	Fe II	43
4601.478		N II	5
4601.97		P II	15
4601.97		Zr II	138
4602.005		Fe I	39
4602.11		O II	93
4602.51		Cr I	210
4602.75	P	Fe II	19
4602.944		Fe I	39
4602.99		Li I	6
4603.2	P	N V	1
4603.34	P	Fe I	348
4603.956		Fe I	410
4604.23	P	Fe I	348
4604.42		Zr I	29
4604.58		Cr I	190
4604.85	P	Fe I	846
4604.994		Ni I	98
4605.10	P	Fe I	348
4605.352		V II	56
4605.363		Mn I	
4605.78		La II	52
4605.79		Hf II	22
4605.99	P	Fe I	893
4606.146		V I	4
4606.231		Ni I	100
4606.375		Cr I	303
4606.402		Ce II	6
4606.514		Sm II	1
4606.50	P	V II	45
4607.08	P	Fe I	724
4607.153		N II	5
4607.331		Sr I	2
4607.655		Fe I	554,969
4607.94		Y II	80
4608.030		Gd II	144
4608.21		Cl III	13
4608.45		K II	7
4608.908		Co I	57
4609.148		Nd II	3
4609.26	P	Ti II	39
4609.42		O II	93
4609.60		A II	31
4609.646		V I	61
4609.7		Al II	44
4609.894		Cr I	303
4610.14		O II	92
4610.59	P	Fe II	170
4610.925		V I	39
4611.05	P	Fe I	641
4611.19	P	Fe I	319
4611.25		A II	
4611.285		Fe I	826
4611.29	P	Fe I	819
4611.35	P	Fe I	17
4611.968		Cr I	
4612.473		Nd II	3
4612.64		Fe I	349
4612.84		P II	9
4612.89		Ne II	64
4613.11		O II	93
4613.210		Fe I	554
4613.373		Cr I	21
4613.38		La II	50
4613.47		S III	10
4613.67		O II	92
4613.74		Hf II	103
4613.868		N II	5
4613.95		Zr II	67
4614.15		Cr I	148
4614.216		Fe I	638
4614.523		Cr I	245
4614.58		Ni I	99
4614.73		Cr I	
4615.441		Sm II	49
4615.690		Sm II	22
4615.98		Ne II	64,67
4616.137		Cr I	21
4616.64		Cr II	44
4616.95		Fe III	108
4617.269		Ti I	145
4617.94		Ni I	115
4618.12	P	V II	56
4618.52		V II	252
4618.568		Fe I	1151
4618.765		Fe I	409
4618.800		V I	39
4618.83		Cr II	44
4618.85		C II	50
4619.294		Fe I	821
4619.329		Co I	27
4619.4	P	N V	1
4619.525		Ti I	261
4619.551		Cr I	81

FINDING LIST

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.648		V I		4634.16		N III	2	4649.54	P	Cr I	233
.771		V I	4	4634.21		V II	210	4649.828		Fe I	592
.87		La II	76	4634.59		Cr I	171	4650.016		Ti I	145
.13	P	Fe I	468	4634.60	P	Fe II	25	4650.04	P	Fe II	146
.38		Ni I	163	4634.73		Ne II	67	4650.16		C III	1
.513		Fe II	38	4634.95		La II	133	4650.544		Al II	59
.00		Cr I	32	4635.176		V I	4	4650.646		Al II	59
.28		O II	92	4635.328		Fe II	186	4650.841		O II	1
.39		Fe III	108	4635.539		Ti I	261	4651.285		Cr I	21
.392		N II	5	4635.62	P	Fe I	319	4651.35		C III	1
.41	P	Cr II	25	4635.7		Al II	97	4651.42	P	V II	45
.63	P	Fe I	989	4635.846		Fe I	349	4651.517		Pr II	6
.893		Cr I	32	4636.345		Ti II	38	4652.158		Cr I	21
.963		Cr I	32,244	4636.42		La II	101	4652.280		Fe II	219
.40	P	Fe II	17	4636.66	P	Fe I	513	4652.816		Mn II	18
.491		Cr I	233	4637.182		Cr I	32	4653.0		Al II	81
.71		Hf II	70	4637.209		Ti I	261	4653.49	P	Fe I	17
.71		P II	36	4637.25		A II	31	4654.14		Si IV	7
.761		Cr I	81	4637.512		Fe I	554	4654.23		O I	18
.020		Co I	156	4637.772		Cr I	32	4654.286		Ce II	154
.098		Ti I	145	4637.887		Ti I	261	4654.501		Fe I	38
.11		S II		4638.016		Fe I	822	4654.56		O I	18
.404		V I	39	4638.12		Si III	13	4654.57		N II	11
.42		Fe III	108	4638.854		O II	1	4654.628		Fe I	554,821
.561		Co I	141	4639.001		Gd II	64,102	4654.736		Cr I	186
.657		V I	94	4639.150		Mn II	18	4654.986		Gd II	65
.86		Zr II	116	4639.326		Al II	69	4655.05		Al II	106
.899		Ce II	27	4639.369		Ti I	145	4655.36		O I	18
.052		Fe I	554	4639.384		Al II	69	4655.49		La II	75
.30		Cr I	171	4639.538		Cr I	186	4655.661		Ni I	115
.44	P	Fe I	974	4639.669		Ti I	145	4655.712		Ti I	261
.549		Fe II	219	4639.725		Al II	69	4655.75	P	Ti II	38
.65		Cr I	244	4639.833		Al II	69	4656.048		Ti I	145
.71		C II	49	4639.944		Ti I	145	4656.189		Cr I	147
.767		Co I	176	4640.062		V I	39	4656.468		Ti I	6
.911		Fe II	186	4640.14		Hf II	74	4656.74		S II	9
.925		Cr I	244	4640.309		V I	94	4656.80		Si II	
.188		Cr I	21	4640.362		Al II	69	4656.837		Cr I	311
.36	P	Fe I	636	4640.384		Al II	69	4656.974		Fe II	43
.467		Mo I	6	4640.431		Ti I	261	4657.210		Ti II	59
.480		V I	39	4640.55		Cr I	171	4657.38		Ni I	254
.53		Fe III	108	4640.64		N III	2	4657.390		Co I	156
.544		Mn I		4640.67		Cr I	244	4657.598		Fe I	346
.565		Tm II		4640.735		V I	39	4657.64		Zr I	64
.61		P II	15	4641.22	P	Fe I	347	4657.94		A II	15
.758		Fe I	410	4641.77	Forb	K I	2	4658.03	P	Fe II	170
.78	P	Fe II	170	4641.811		O II	1	4658.03		Lu I	2
.81		Cr I	209	4641.90		N III	2	4658.12		P II	15
.02	P	Fe I	637	4642.011		Cr I	244	4658.29		Fe I	591
.22		Eu I	1	4642.235		Sm II	36	4658.64		C IV	8
.48		V II	210	4642.27	Forb	K I	2	4659.38		K II	5
.66		Gd II	43	4642.58	P	Fe I	688	4660	P	C IV	9
.85		Ne II	73	4643.086		N II	5	4660.93	P	Fe II	146
.86	P	Fe II	54	4643.20	P	Fe I	38	4661.19	P	Fe II	170
.160		Ce II	1	4643.468		Fe I	820	4661.22		Cl I	15
.4410		A I	9	4643.69		Y I	4	4661.33	P	Fe I	347
.473		Cr I	186	4644.09	P	Fe II	31	4661.536		Fe I	1207
.69	P	Fe I	819	4644.82		Zr I	64	4661.635		O II	1
.71		P II	28	4645.193		Ti I	145	4661.78		Zr II	129
.751		Pr II	1	4645.28		La II	8	4661.88		Eu I	1
.821		Fe II	219	4645.971		V I	4	4661.933		Mo I	6
.908		Co I	15	4646.059		Pr II	22	4661.975		Fe I	409
.07		Zr II	139	4646.174		Cr I	21	4662.0	P Forb	Na I	13
.29	P	Ti II	38	4646.326		Gd II	82	4662.51		La II	8
.336		Fe II	37	4646.396		V I	39	4662.71	P	Ti II	38
.336		Ti I	145	4646.495		Cr I	147	4662.74	P	Ti II	38
.359		Co I	156	4646.684		Sm II	26	4662.767		Mo I	6
.7		Al II	35	4646.808		Cr I	186	4663.054		Al II	2
.814		Zn I	8	4646.94	P	Ni I	145	4663.183		Fe I	754
.90	P	Fe II	170	4647	P	C IV	6	4663.328		Cr I	186
.98	P	Ni I	223	4647.34		Ne II	72	4663.403		Co I	156
.125		Fe I	115	4647.40		C III	1	4663.53		C III	5
.52		C II	49	4647.40		Ti IV		4663.700		Fe II	44
.537		N II	5	4647.42	P	Ni I	148	4663.76		La II	82
.785		Fe I	969	4647.437		Fe I	409	4663.78		Fe III	52
.03	P	Fe I	1071	4647.50		La II	77	4663.832		Cr I	186
.38		Si IV	6	4647.585		Mn II	18	4664.14		Hf II	14
.49		Fe I	1152	4647.72	P	Fe I	722	4664.272		Gd II	127
.5		Al II	97	4647.759		Nd II	46	4664.32	P	Ni I	147
.895		Fe II	219	4648.126		Cr I	32	4664.647		Pr II	27
.14	P	Fe I	754	4648.160		Sm II	1	4664.71	P	Fe I	347
.180		Cr I	171	4648.17		S II	36	4664.79	P	Fe II	17
.83	P	Fe I	820	4648.23	P	Fe II	38	4664.798		Cr I	186
.915		Fe I	39	4648.62		Al II	82	4664.811		Na I	12
.05	P	Fe I	17	4648.659		Ni I	98	4665	P	C IV	7
.2		Al II	97	4648.868		Cr I	32	4665.24	P	Fe I	1115
.286		Cr I	186	4648.933		Fe II	25	4665.56	P	Fe I	1044
.704		Fe I	410	4649.06		A II	51	4665.8	P Forb	Na I	13
.99		Zr I	5	4649.139		O II	1	4665.80	P	Fe II	26
.11		Cr II	44	4649.461		Cr I	32	4665.87		Si III	13

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I A	Type	Element	Multiplet No.
65.90		C III	5
65.902		Cr I	233
66.149		V I	94
66.215		Cr I	99
66.28		A II	51
66.448		Gd II	101
66.512		Cr I	186
66.750		Fe II	37
66.8		Al II	105
66.994		Ni I	146
67.181		Cr I	99
67.28		N II	11
67.459		Fe I	822
67.53	P	Ti I	77
67.585		Ti I	6
67.766		Ni I	163
68.07	P	Fe I	826
68.142		Fe I	554
68.357		Ti I	77
68.560		Na I	12
68.58		S II	36
68.91		La II	76
69.174		Fe I	821
69.273		V I	4
69.33		O II	90
69.336		Cr I	186
69.396		Sm II	7
69.502		Ce II	
69.53		O II	89
69.650		Sm II	26
69.67		Cr I	170
69.977		Ru I	11
0.170		Fe II	25
0.404		Sc II	24
0.483		V I	39
1.25		Fe III	58
1.86	P	Cr II	176
1.686		Cu II	4
1.688		Mn I	21
1.82		La II	80
1.94	P	Sc II	48
2.02	P	Fe I	1045
2.081		Pr II	21
2.75		O I	17
2.83	P	Fe I	40
3.169		Fe I	820
3.28	P	Fe I	822
3.462		Be II	6
3.555		Cu II	4
3.70		O I	17
3.75		O II	1
3.91		C III	5
4.41		Zr II	139
4.599		Sm II	14
4.65	P	Fe I	40
4.84		Y I	4
4.98		N II	11
5.118		Ti I	77
5.45		Hf II	92
5.639		Ni I	115
6.234		O II	1
6.911		Sm II	3
7.00		O II	91
7.528		Co I	15
7.59	P	Fe I	1072
7.67		S III	10
7.858		Tm II	5
7.93		N II	62
8.160		Cd I	2
8.41	P	Fe I	688
8.852		Fe I	821
8.94	P	Ce II	153
8.95		P II	28
9.229		Fe I	688
9.73	P	Ti I	77
9.87	P	Cr II	25
9.96	P	Fe I	1071
0.127		Ce II	18
0.138		Zn I	2
0.297		Fe I	39
0.458		Ce II	2
0.475		Fe I	346
0.49		Cr I	186
0.539		W I	1
0.734		Nd II	4
0.870		Cr I	170
1.05	P	Ni I	143
1.32		S II	8
1.52		A II	76
1.786		Ru I	6

I A	Type	Element	Multiplet No.
4681.908		Ti I	6
4681.990		Cu II	4
4682.12		La II	37
4682.28		Ra II	1
4682.29		A II	
4682.32		Y II	12
4682.361		Co I	156
4682.58		Fe I	384
4682.68		Hf II	102
4683.018		Si III	13
4683.43		Zr I	63
4683.565		Fe I	346
4683.774		Si III	13
4684.457		V I	94
4684.484		Ti I	203
4684.605		Ce II	228
4684.605		Cr I	146
4684.77		Cr II	178
4685.03	P	Fe I	347
4685.19		Zr II	129
4685.265		Ca I	51
4685.682		He II	1
4685.837		Ge I	3
4685.95	P	Fe II	50
4686.218		Ni I	98
4686.921		Ti I	203
4686.926		V I	93
4687.183		Sm II	3
4687.30	P	Fe I	17
4687.387		Fe I	347
4687.67	P	Fe I	347
4687.80		Zr I	43
4687.82	P	Ti I	111
4688.38	P	Fe I	1071
4688.392		Ti I	306
4688.45	P	V II	45
4688.45		Zr I	5
4688.65		La II	92
4689.374		Cr I	186
4689.46	P	Ti II	38
4690.146		Fe I	820
4690.38	P	Fe I	17
4690.827		Ti I	76
4690.97		O II	58
4691.17		La II	23
4691.336		Ti I	75
4691.414		Fe I	409
4691.47		O II	58
4691.55	P	Fe II	17
4692.45	P	Ti I	77
4692.50		La II	75
4692.97		Cr I	99
4693.190		Co I	156
4693.628		Sm II	14
4693.670		Ti I	6
4693.949		Cr I	99
4694.13		S I	2
4694.55		N II	61
4695.153		Cr I	99
4695.45		S I	2
4695.91		N II	68
4696.12	P	Ce II	153
4696.25		S I	2
4696.36		O II	1
4696.71	P	Sc II	48
4696.923		Ti I	203
4697.062		Cr I	62
4697.395		Cr I	195
4697.62		Cr II	177
4698.276		Sc II	13
4698.389		Co I	156
4698.408		Ni I	235
4698.456		Cr I	186
4698.48		O II	40
4698.615		Cr I	62,146
4698.62		N II	68
4698.64	P	Cr II	25
4698.67	P	Ti II	59
4698.766		Ti I	75
4698.86	P	Ti I	203
4698.947		Cr I	146
4699.180		Co I	27
4699.21		O II	25,40
4699.589		Cr I	292
4699.62		La II	39
4699.72		Hf II	71
4700.1		Ne II	67
4700.12		N II	68
4700.171		Fe I	935
4700.21		S II	52

I A	Type	Element	Multiplet No.
4700.42	P	Fe I	67
4700.608		Cr I	62
4700.80		P II	14
4701.052		Fe I	820
4701.159		Mn I	21
4701.23		O II	58
4701.336		Ni I	101
4701.536		Ni I	235
4701.65		Al III	6
4701.76		O II	58
4701.90	P	Fe I	688
4701.92		Cr I	170
4702.3164		A I	9
4702.57		N II	68
4702.9758		Mg I	11
4702.9831		Mg I	11
4702.9909		Mg I	11
4703.03		Zr II	138
4703.18		O II	40
4703.27		La II	76
4703.36		A II	
4703.576		Nd II	55
4703.62		Hf II	72
4703.808		Ni I	133
4704.33		N II	68
4704.386		Co I	178
4704.395		Ne I	11
4704.397		Sm II	1
4704.958		Fe I	821
4705.099		V I	136
4705.355		O II	25
4705.464		Fe I	752
4705.50		Ni I	101
4705.93		Ni I	128
4706.102		Cr I	170
4706.178		V I	94
4706.31	P	Fe I	890
4706.41		N II	68
4706.542		Nd II	3
4706.574		V I	119
4706.967		Sc I	22
4707.281		Fe I	554
4707.487		Fe I	346
4707.541		Pr II	5
4707.754		Cr I	195
4707.78		Zr I	63
4707.80		O II	89
4708.040		Cr I	186
4708.663		Ti II	49
4708.854		Ne I	11
4708.94		Ba II	15
4708.972		Fe I	889
4708.976		Ti I	203
4709.092		Fe I	821
4709.336		Sc I	22
4709.45		N II	25,68
4709.484		Ru I	14
4709.714		Nd II	7
4709.715		Mn I	21
4710.04		Ne II	73
4710.04		O II	24
4710.058		Ne I	11
4710.08		Zr I	43
4710.186		Ti I	75,203
4710.24		Cr I	145
4710.286		Fe I	409
4710.566		V I	119
4711.68	P	Ti I	111
4711.732		Sc I	22
4711.91		Zr I	64
4711.975		Gd II	64
4712.060		Ne I	16
4712.069		Ni I	131
4712.104		Fe I	467
4712.13		N II	68
4712.92		La II	38
4713.057		Sm II	49
4713.143		He I	12
4713.18	P	Fe II	26
4713.26		Y II	22
4713.373		He I	12
4713.84	P	Ni I	128
4713.996		Ce II	250
4714.074		Fe I	1206
4714.113		V I	119
4714.182		Fe I	591
4714.421		Ni I	98
4714.53		Fe III	57
4714.83		Ce II	17
4715.12		Cr II	178

	Type	Element	Multiplet No.
295		Ti I	6
344		Ne I	16
589		Nd II	49
778		Ni I	98
900		V I	136
13	P	Sc II	13
226		S II	9
44		La II	52
576		Gd II	102
644		V I	51
658		Si III	
85	P	Fe I	634
031		Sc I	14
58		La II	87
688		Cr I	170
692		V I	119
718		Sm II	41
16		Ca II	7
329		Sm II	53
429		Cr I	186
43		N II	68
040		Gd II	43
10		Hf II	15
12		Zr I	66
37		Ne II	67
515		Ti II	59
80		Zr II	116
838		Sm II	3
93		La II	81
15	P	Fe II	54
26		P II	8
56	P	Fe I	1114
830		Sc I	14
997		Fe I	1071,409
14		Cr I	232
273		Gd II	83
43		Cl II	75
524		V I	108
59		N II	68
62		A II	85
159		Zn I	2
278		Sr I	5
333		Bi I	2
58		Ca II	7
603		Ti I	75
.652		Bi I	2
741		Cr I	195
.877		V I	108
	P	N IV	11
06		Cr I	145
.171		Ti I	75
.18		Cr I	292
.37	P	Ni I	162
.88	P	Ni I	167
.07	P	Fe II	17
.416		Cr I	145
.42		La II	50
.679		Ti I	203
.090		Ce II	153
.67		Cr I	195
.94		Fe I	1134
.95		Cr I	99
.165		Fe I	384
.725		Gd II	148
.91		A II	14
.01	P	Fe I	635
.153		Cr I	99
.21		C II	48
.405		Fe I	821
.476		Mn I	21
.851		Ni I	146
.9	P	Mn II	5
.936		Co I	15
.41		La II	22
.42		Ni I	115
.468		Gd II	65
.555		Fe I	822
.769		Sc I	14
.028		Fe I	1043a
.226		Sc I	14
.291		Ni I	235
.45		S II	46
.544		V I	93
.699		Fe I	688
.723		Cr I	169
.0285		Mg I	10
.24		Ne II	72
.361		Mn II	5
.394		V I	108
.69		A II	94

I A	Type	Element	Multiplet No.
4730.711		Cr I	145
4730.92		As II	3
4731.172		Ti I	202
4731.36		Hf II	38
4731.439		Fe II	43
4731.77	P	Fe I	67
4731.809		Ni I	163
4732.051		Co I	15
4732.08		A II	38
4732.34		Zr I	48
4732.465		Ni I	235
4732.53		Ne II	67
4732.00		Gd II	65
4732.96	P	Ti II	29
4733	P	N IV	11
4733.426		Ti I	202
4733.596		Fe I	38
4734.094		Sc I	14
4734.100		Fe I	1133
4734.177		Pr II	4
4734.427		Gd II	43
4734.52		Y II	
4734.682		Ti I	233
4734.75		C II	48
4734.828		Co I	156
4734.94		Zr II	138
4735.67		Hf II	25
4735.75		Hf II	59
4735.846		Fe I	1042
4735.93		A II	6
4736.13		Cr I	195
4736.50		Ni I	99
4736.780		Fe I	554
4737	P	C IV	12
4737.282		Ce II	
4737.350		Cr I	145
4737.59		V II	16
4737.633		Fe I	590
4737.642		Sc I	14
4737.769		Co I	57
4738.11		C II	1
4738.29		Mn II	5
4738.41		Cl II	75
4738.52	P	Fe II	170
4739.108		Mn I	21
4739.42		Cl II	13
4739.48		Zr I	43
4739.49		Ce II	157
4739.49		P II	14
4739.59		Mg II	18
4739.80		La II	64
4740	P	N IV	11
4740.165		Ni I	99
4740.27		La II	8
4740.343		Fe I	409
4740.40		Cl II	51
4741.018		Sc I	14
4741.081		Fe I	688
4741.089		Cr I	292
4741.34	P	Ni I	166
4741.533		Fe I	346
4741.71		O II	25
4741.922		Sr I	5
4742.00		Ge II	2
4742.129		Ti I	202
4742.32	P	Ti I	111
4742.4		S II	8
4742.631		V I	128
4742.791		Ti I	233
4742.93	P	Fe I	1072
4743.08		La II	75
4743.112		Cr I	290
4743.28	P	Fe II	31
4743.814		Sc I	14
4744.13	P	Fe I	1168
4744.64	P	Fe I	17
4744.90		C II	1
4744.925		Pr II	3
4745.129		Fe I	67
4745.308		Cr I	61
4745.680		Sm II	7
4745.806		Fe I	821,1068
4746.115		Co I	182
4746.638		V I	113
4747.00		Cr I	168
4747.143		Ce II	
4747.256		Ti I	75
4747.680		Ti I	233
4747.941		Na I	11
4748.12	P	Sc II	48

I A	Type	Element	Multiplet No.
4748.525		V I	113
4748.67		Cl II	75
4748.73		La II	65
4749.25		Cr I	195
4749.25	P	Fe I	1098
4749.68		Co I	156
4749.93		Fe I	1206
4750.49	P	Fe II	206
4750.990		V I	113
4751	P	N V	5
4751	P	O VI	10
4751.04		Cr I	290
4751.34		O II	24
4751.574		V I	94
4751.822		Na I	11
4752	P	N IV	11
4752.084		Cr I	
4752.124		Ni I	165
4752.426		Ni I	132
4752.70		O II	24
4752.7313		Ne I	21
4752.87		Cr I	194
4753.06		Zr I	66
4753.152		Sc I	5
4753.957		V I	113
4754.042		Mn I	16
4754.358		Co I	156
4754.38		Ti I	202
4754.635		Pr II	4
4754.743		Cr I	168
4754.768		Ni I	141
4755.12		S II	35
4755.137		Cr I	124
4755.347		Gd II	134
4755.64		Cl II	13
4755.728		Mn II	5
4756.113		Cr I	145
4756.519		Ni I	98
4756.722		Co I	180
4757.326		Cr I	290
4757.37		V I	113
4757.50		V I	113
4757.565		W I	7
4757.582		Fe I	634,1115
4757.591		Cr I	231
4757.791		Gd II	45
4757.841		Ru I	12
4757.842		Ce II	
4758.120		Ti I	233
4758.42		Ni I	193
4758.421		Cu II	1
4758.742		V I	51
4758.913		Ti I	41
4759.272		Ti I	233
4759.74		Cr I	124
4759.74		Ti I	202
4759.907		Cr I	169
4760.07	P	Fe I	384
4760.15	P	Fe II	169
4760.23	P	Ni I	114
4760.59		Hf II	85
4760.98		Y I	4
4761.242		Cr I	169
4761.42		Cr II	176
4761.526		Mn I	21
4761.67		Zr II	107
4761.73		Cr I	194
4762	P	N IV	11
4762.376		Mn I	21
4762.41		C I	6
4762.627		Ni I	71
4762.727		Pr II	26
4762.77		Ti II	17
4762.78		Zr I	66
4763.38		S II	35
4763.624		Nd II	54
4763.79	P	Fe II	50
4763.84	P	Ti II	48
4763.865		Nd II	6
4763.950		Ni I	146
4764.294		Cr I	231
4764.535		Ti II	48
4764.643		Cr I	124
4764.7	P	Mn II	5
4764.89		A II	15
4765.30		Cl II	13
4765.485		Fe I	40
4765.78		Hf II	84
4765.859		Mn I	21
4766.330		Ti I	233

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A	Type	Element	Multiplet No.
6.430		Mn I	21
6.62		C I	6
6.63		Cr I	231
6.635		V I	113
6.66	P	Cr I	124
6.87	P	Fe I	688
7.142		Co I	182
7.280		Cr I	231
7.30	P	Ti II	29
7.860		Cr I	231
8.072		Co I	156
8.334		Fe I	821
8.397		Fe I	384
8.68		Cl II	40
9.775		Ti I	233
9.80		Cr I	283
0.00		C I	6
0.670		Cr I	124
1.09		Cl II	40
1.103		Ti I	41
1.108		Co I	156
1.57		Cr I	124
1.66		Cl II	45
1.702		Fe I	67
1.72		C I	6
2.32		Zr I	43
2.54		O I	16
2.57		O IV	9
2.728		Gd II	133
2.77	P	Fe II	31
2.817		Fe I	38,467
2.89		Ni I	162
2.89		O I	16
3.412		Ni I	167
3.52	P	Fe I	408
3.76		O I	16
3.942		Ce II	17
.222		N II	20
.557		Cr I	124
.141		Cr I	230
.53		Cr I	283
.87		C I	6
.87	P	Fe I	1115
.075		Fe I	635
.311		Co I	158
.34		Fe I	1206
.364		V I	113
.519		V I	128
.57		Cr I	124
.78	P	Cr II	25
.846		Sm II	3
.233		Co I	186
.259		Ti I	232
.50		Cr I	124
.93		Cl II	40
.09		O IV	9
.11		S II	8
.347		Sc I	5
.444		Fe I	720
.710		N II	20
.87		Cr I	124
.979		Co I	158
.986		Ti II	92
.60	P	Fe II	50
.81	P	Fe I	633
.04		Y I	13
.168		N II	20
.32		Cl II	40
.432		Co I	57
.718		Ti I	41
.82		Cl II	13
.95		Ne II	71
.79	P	Fe I	588
.06		Cr I	283
.306		Ti I	41
.420		Mn I	16
.43		O IV	9
.320		Sr I	5
.480		V I	3
.70	P	Cr I	168
.94		Zr I	44
.070		Co I	186
.42		Lu II	5
.44		Cl II	40
.963		Fe I	1044
.293		Ni I	50
.515		V I	113
.541		Ni I	98
.58		Y II	22
.810		Fe I	467

I A	Type	Element	Multiplet No.
4786.908		Gd II	65
4787.50	P	Fe I	408
4787.64	P	Ti I	40
4787.74		Cr I	168
4787.84		Fe I	384
4788.126		N II	20
4788.69		Zr I	43
4788.757		Fe I	588
4788.9258		Ne I	15
4789	P	C IV	5
4789.354		Cr I	31
4789.654		Fe I	753
4789.68	P	Ce II	228
4789.803		Ti I	41
4790.218		Ne I	32
4790.337		Cr I	31
4790.56	P	Fe I	1068
4790.72		Hf II	60
4790.75	P	Fe I	632
4791.00		Ni I	71
4791.150		Gd II	65
4791.250		Fe I	633
4791.500		Sc I	5
4791.584		Sm II	7
4792.02		S II	46
4792.04		Cl II	18
4792.06		P II	36
4792.12		A II	62
4792.24	P	Ti I	40
4792.39	P	Ti II	48
4792.482		Ti I	260
4792.513		Cr I	168
4792.63		Au I	3
4792.855		Co I	158
4793.47		Ni I	158
4793.656		N II	20
4793.96	P	Fe I	512
4794.22		O IV	9
4794.36	P	Fe I	115
4794.54		Cl II	1
4794.84	P	Ti II	29
4795.62		Ne II	71
4795.84		Ni I	128
4795.853		Co I	185
4796.169		Cr I	283
4796.210		Ti I	260
4796.378		Co I	14
4796.67		La II	63
4796.84		Cr I	283
4796.930		V I	113
4797.157		Nd II	60
4797.69		Cr I	230
4797.973		V I	93
4797.983		Ti I	260
4798.25		O IV	9
4798.269		Fe I	1042
4798.40		Cl II	13
4798.535		Ti II	17
4798.736		Fe I	38
4799.06	P	Fe I	1098
4799.30		Y I	13
4799.412		Fe I	888
4799.423		Nd II	2
4799.786		V I	3
4799.797		Ti I	242
4799.83		Ni I	161
4799.859		Gd II	126
4799.918		Cd I	2
4799.94	P	V II	29
4800.100		Gd II	133
4800.14		Fe I	384
4800.55	P	Fe I	590
4800.652		Fe I	1042
4800.77	P	O IV	9
4801.030		Cr I	168
4801.05		Gd II	65
4801.150		Pr II	36
4801.63	P	Fe I	1115
4801.80		O I	15
4801.90	P	Ti I	40
4801.93	P	Ti I	40
4802.20		O I	15
4802.53	P	Fe I	1206
4802.575		Gd II	43
4802.81		S III	
4802.883		Fe I	888,934
4803.00		O I	15
4803.272		N II	20
4803.536		Gd II	102
4804.04		La II	37

I A	Type	Element	Multiplet No.
4804.12		S II	8
4804.529		Fe I	794
4804.59	P	Fe I	721
4804.64		Cr I	61
4805.105		Ti II	92
4805.18	P	Cr II	25
4805.24		Cr I	283
4805.416		Ti I	260
4805.817		Gd II	60
4805.88		Zr I	43
4806.07		A II	6
4806.165		Gd II	116
4806.255		Cr I	61
4806.33	P	Ti II	17
4806.75	P	Ti I	40
4806.996		Ni I	163
4807.14		Hf II	57
4807.243		Fe I	634,1098
4807.537		V I	113
4807.725		Fe I	688
4808.155		Fe I	633
4808.52		Ni I	114
4808.531		Ti I	305
4808.864		Ni I	160
4809.00		La II	37
4809.14		Fe I	933
4809.18		Hf II	59
4809.26	P	Fe I	1039
4809.32		Cr I	230
4809.94		Fe I	793
4810.06		Cl II	1
4810.17		V II	35
4810.286		N II	20
4810.534		Zn I	2
4810.733		Cr I	144
4810.760		Fe II	169
4811.04		Fe I	467
4811.074		Ti I	158
4811.14		V II	197
4811.343		Nd II	3
4811.57		Cl II	74
4811.61		Au I	3
4811.881		Sr I	5
4811.999		Ni I	130
4812.240		Ti I	260
4812.35		Cr II	30
4812.84		C I	5
4812.906		Ti I	41
4812.940		Cu II	8
4813.00		V II	248
4813.07		O IV	9
4813.11		Fe I	630
4813.290		Si III	9
4813.45	P	Co I	142
4813.476		Co I	158
4813.72	P	Fe I	1243
4813.952		V II	197
4813.966		Co I	158
4814.265		Cr I	144
4814.617		Ni I	98
4814.80		Ge II	2
4815.05		Zr I	44
4815.22	P	Fe I	720
4815.515		S II	9
4815.62		Zr I	43
4815.808		Sm II	14
4815.900		Co I	142
4815.92		Ni I	131
4816.012		Sm II	41
4816.41		Cr I	283
4816.47	P	Ti I	40
4816.47		Zr II	66
4816.67	P	Fe I	588
4817.22		Hf II	69
4817.33		C I	5
4817.773		Fe I	67
4817.847		Ni I	254
4818.26	P	Fe II	11
4818.66	P	Fe I	719
4819.46		Cl II	1
4819.60		S II	46,52
4819.64		Y I	13
4819.740		Si III	9
4819.79		Cl II	13
4820.336		Nd II	47
4820.410		Ti I	126
4821.01	P	Ti II	29
4821.143		Ni I	254
4821.29		Ti I	201
4821.955		Gd II	133

	Type	Element	Multiplet No.
		Cr I	144
	P	Ti II	110
	P	Fe I	633
		Y II	22
6		V II	223
6		Mn I	16
		P II	13
	P	O IV	9
		La II	50
		S II	52
		Cr II	30
2		Fe I	888
		Ge II	2
		Zr I	43
	P	Cr II	25
5		Ti I	250
2		Nd II	3
		Cr I	144
3		Mn I	43
	P	Fe II	30
		Ra I	1
9		Pr II	20
		C I	5
		La II	22
6		Mn I	43
8		Ne I	10
8		V I	3
7		Ti I	250
		Zr I	44
		Cr I	31
3		Si III	9
8		Ni I	131
		K II	1
6		Cr I	31
8		Sm II	36
	P	Fe I	1038
	P	Fe II	206
		La II	51
	P	Fe II	54
	P	Ni I	100
3		Ni I	111
7		Cr I	208
2		V I	3
5		Ti I	250
5		Sr I	4,5
6		Cu II	1
6		Nd II	
7		V I	3
	P	Cr I	266
4		Ni I	146
4		Fe I	888,1098
	P	Cr II	176
7		V I	78
	P	Fe II	30
2		Gd II	65
9		Co I	57
1		Fe I	115
8		Sm II	45
	P	Ni I	158
		Cr I	229
		S II	46
2		Fe I	1068
2		Nd II	1
25		Ti I	241
	P	Cr I	266
		Cr II	30
		Ni I	114
		Cl II	13
57		Cr I	144
2	P	Ti I	250
	P	Fe I	1243
	P	Ni I	85
8		Co I	15
	P	Fe I	630
4		Mn I	43
9		Fe I	687
51		Ni I	260
	P	Fe I	1167
		V II	223
51		Ti I	217
51		Ti II	110
49		Fe I	588
16		Gd II	126
2		Lu II	2
7	P	Fe I	1206
		Y I	13
	P	Fe II	30
2		La II	37
2		Cr I	266
53		Co I	158

I A	Type	Element	Multiplet No.
4840.329		Fe I	1068
4840.874		Ti I	53
4840.89	P	Fe I	1070
4841.52	P	Cr I	266
4841.65	P	Fe I	633
4841.67	P	Ni I	164
4841.701		Sm I	2
4841.73		Cr I	266
4841.80		Fe I	1070
4841.98		Zr II	138
4842.01		Ni I	260
4842.19	P	Fe I	511
4842.50		V II	248
4842.71	P	Fe I	1098
4842.78		Fe I	1069
4843.155		Fe I	687
4843.165		Ni I	50
4843.19		Mn I	43
4843.26		O II	105
4843.29		La II	98
4843.39	P	Fe I	794
4843.454		Co I	158
4843.46		Ba II	15
4843.53	P	Ni I	235
4843.829		W I	1
4843.989		Ti I	217
4844.00		Hf II	16
4844.016		Fe I	750
4844.208		Sm II	26
4844.31	P	V II	29
4844.315		Mn I	43
4844.87	P	Ce II	8
4845.01		O II	30
4845.17		Ni I	115
4845.656		Fe I	588,888
4845.67		Y I	13
4846.29		Cr I	208
4846.47	P	Fe II	25
4846.574		Ce II	17
4847.09	P	Fe I	67
4847.14		Ba II	14
4847.177		Cr I	144
4847.296		Ca I	50
4847.61	P	Fe II	30
4847.760		Sm II	53
4847.90		A II	6
4848.24		Cr II	30
4848.41	P	Ti I	217
4848.46		Hf II	83
4848.487		Ti I	201
4848.821		V I	78
4848.898		Fe I	114
4849.12	P	Ni I	112
4849.18	P	Ti II	29
4849.4		Ne II	71
4849.67	P	Fe I	793
4850.58		La II	51,88
4850.84		Ba II	15
4851.10		Mg II	25
4851.36		Zr I	43
4851.465		Cr I	208
4851.483		V I	3
4852.560		Ni I	130
4852.69		Y I	13
4853.30	P	Ni I	207
4853.52	P	Cr I	61
4853.74		Ni I	99
4854.18	P	Fe I	1243
4854.365		Sm II	36
4854.604		Mn I	43
4854.65		Zr II	78
4854.727		Ti I	217
4854.87		Y II	22
4854.89		Fe I	1043
4855.045		Sr I	10
4855.146		Cr I	61
4855.235		Co I	14
4855.414		Ni I	130
4855.54	P	Fe II	25
4855.683		Fe I	687
4855.95	P	Ti II	114
4856.012		Ti I	231
4856.19		Cr II	30
4856.49		O II	29
4856.76		O II	29
4857.04		Cl II	74
4857.34		Cr I	61
4857.382		Ni I	111
4857.60		Cr II	200
4857.938		Co I	15

I A	Type	Element	Multiplet No.
4858.24	P	Fe I	1069
4858.27	P	Fe I	1098
4858.74		N III	9
4858.88		N III	9
4859.030		Nd II	3
4859.038		Pr II	25
4859.12		Fe I	1068
4859.18		La II	86
4859.28		Si II	
4859.31	P	Fe I	632
4859.323		He II	2
4859.748		Fe I	318
4859.84		Y I	13
4860.029		D	1
4860.20		Cr II	30
4860.35		N II	67
4860.37		Cr I	31
4860.90		La II	8
4860.98	P	Fe I	686
4861.03		O II	57
4861.205		Cr I	31
4861.33		N III	9
4861.332		H	1
4861.842		Cr I	31
4862.054		Mn I	43
4862.54	P	Fe I	1070
4862.60	P	Fe I	1069
4863.653		Fe I	687
4863.75	P	Ti I	217
4863.78	P	Fe I	384
4863.931		Ni I	113
4864.187		Ti I	201
4864.282		Ni I	128
4864.32		Cr II	30
4864.38		P II	13
4864.741		V I	3
4864.83	P	V I	50
4864.95		O II	29
4865.02		Gd II	65
4865.43		Hf II	93
4865.620		Ti II	29
4865.96		A II	85
4866.07		Zr I	44
4866.267		Ni I	111
4866.77	P	Fe I	1093
4867.18		N III	9
4867.53	P	Fe I	38
4867.59		A II	62
4867.64	P	Fe I	587
4867.73	P	Fe II	30
4867.79	P	V II	29
4867.839		Nd II	46
4867.870		Co I	158
4868.264		Ti I	231
4868.38	P	Fe I	38
4868.700		Sr I	10
4868.82	P	Fe II	30
4869.153		Ru I	11
4869.45	P	Fe I	751
4869.8		Ne II	71
4870.05	P	Fe I	985
4870.129		Ti I	231
4870.71	P	Fe II	30
4870.796		Cr I	143
4870.845		Ni I	131
4871.27	P	Fe II	25
4871.323		Fe I	318
4871.58		O II	57
4871.94	P	Fe I	630
4872.02		Cr I	30
4872.144		Fe I	318
4872.493		Sr I	4
4872.69	P	Fe I	1115
4872.91	P	Fe I	1097
4873.27	P	Ni I	112
4873.339		Gd II	65
4873.437		Ni I	111
4873.58		N III	9
4873.74	P	Fe I	633
4874.025		Ti II	114
4874.35	P	Fe I	467
4874.651		Cr I	167
4874.805		V II	197
4874.809		Ni I	98
4875.32	P	Fe I	1038
4875.462		V I	3
4875.49.	P	V II	248
4875.72	P	Fe I	1243
4875.89		Fe I	687
4875.966		Gd II	126

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I A	Type	Element	Multiplet No.
4876.06		Sr I	4
4876.19	P	Fe I	631
4876.325		Sr I	5
4876.41		Cr II	30
4876.48	P	Cr II	30
4877.08		A II	112
4877.61	P	Fe I	384
4878.049		Gd II	64
4878.132		Ca I	35
4878.218		Fe I	318
4879.121		Pr II	20
4879.90		A II	14
4880.06		Cr I	167
4880.20		La II	153
4880.25		Co I	15
4880.30	P	V II	29
4880.560		V I	50
4880.922		Ti I	201
4881.25		Zr I	44
4881.3		Li II	4
4881.44		Y II	12
4881.554		V I	3
4881.726		Fe I	588,1041
4881.81		N III	9
4881.925		Gd II	113,133
4882.151		Fe I	687
4882.183		V I	50
4882.25		A II	
4882.326		Ti I	231
4882.462		Ce II	
4882.704		Co I	158
4883.415		V II	209
4883.61		Zr I	44
4883.69		Y II	22
4883.73		S II	46
4884.06		V II	197
4884.14		N III	9
4884.57		Cr II	30
4884.915		Ne I	20,35
4884.949		Cr I	
4885.082		Ti I	157
4885.435		Fe I	966
4885.63		S II	15
4885.776		Cr I	30
4885.957		Cr I	143
4886.17	P	Fe I	467
4886.335		Fe I	1066
4886.725		Ni I	158
4886.821		V I	50
4886.92	P	Fe II	54
4886.992		Ni I	141
4887.013		Cr I	143
4887.189		Fe I	1065
4887.37	P	Fe I	1037
4887.72		Zr I	43
4887.73		Cr I	31
4888.29		A II	135
4888.530		Cr I	31
4888.542		Gd II	126
4888.651		Fe I	1066
4889.009		Fe I	67,749
889.06		A II	15
889.113		Fe I	985
889.15		Re I	1
889.690		Cu II	1
889.73		Cr I	61
890.45	P	Ni I	114
890.762		Fe I	318
890.93		O II	28
891.43		La II	95
891.496		Fe I	318
891.55	P	Cr II	36
891.828		Ti I	201
891.97		Cr I	61
891.980		Sr I	10
892.11		Gd II	116
892.86		Fe I	1070
893.065		Ti I	231
893.12		Zr I	43
893.44		Y I	13
893.59	P	Fe I	1096
893.70	P	Fe I	1113
893.780		Fe II	36
893.90		Ti I	201
893.968		Ce II	31
894.218		V I	118
894.30		Gd II	65
894.43		Zr II	107
895.20		N II	1
896.437		Fe I	984
4896.71		N III	9
4896.77		Cl II	17
4898.52		Al II	96
4898.76		Al II	104
4899.520		Co I	92
4899.64		Al II	96
4899.90	P	Fe II	30
4899.910		Ti I	157
4899.92		La II	7
4899.934		Ba II	3
4900.03	P	Ti I	295
4900.13		Y II	22
4900.47		S II	46
4900.50	P	Cr I	202
4900.624		V I	118
4900.625		Ti I	295
4900.83	P	Cr I	202
4900.97		Ni I	98
4901.30		S II	46
4901.65		Cr II	190
4902.77		Al II	96
4902.89	P	V II	29
4903.10	P	Fe I	589
4903.239		Cr I	31
4903.317		Fe I	318
4903.71		Al III	11
4903.85	P	Fe II	30
4904.172		Co I	141
4904.285		V I	50
4904.350		V I	118
4904.413		Ni I	129
4904.447		V I	118
4904.51		Hf II	83
4904.75		A II	34
4904.76		Cl II	17
4905.09		Zr I	43
4905.15		Fe I	986
4906.11		Y I	13
4906.80	P	Fe I	1096
4906.88		O II	28
4906.88		Si II	
4907.125		Co I	14
4907.17		Cl II	39
4907.743		Fe I	687
4907.888		Ru I	11
4908.46		Ti I	295
4908.61	P	Fe I	115
4908.67		Zr II	145
4908.74		Fe III	111
4909.105		Ti I	39
4909.387		Fe I	985
4909.726		Cu II	5
4909.87		Cr I	61
4910.027		Fe I	687
4910.328		Fe I	1068
4910.570		Fe I	1068
4910.838		Gd II	64
4911.205		Ti II	114
4911.34		La II	87
4911.52	P	Fe I	1098
4911.590		Ru I	11
4911.664		Zn II	3
4911.786		Fe I	984
4912.030		Ni I	111
4912.38		V II	222
4912.399		Co I	14
4912.49		Cr II	190
4912.52	P	Fe I	1040
4913.248		Sm II	53
4913.366		Fe II	218
4913.616		Ti I	157
4913.970		Ni I	132
4914.32		A II	112
4914.32		Cl II	17
4914.385		Nd II	52
4914.90		N I	9
4915.236		Ti I	157
4916.67	P	Fe I	986
4916.78		Gd II	125
4917.15		S II	15
4917.25		Fe I	1066
4917.72		Cl II	17
4918.03		Fe I	1070
4918.363		Ni I	177
4918.373		Cu II	5
4918.712		Ni I	113
4918.98		Al II	103
4918.999		Fe I	318
4919.73	P	Fe I	631
4919.814		Th II	7
4919.867		Ti I	200
4920.272		Co I	57
4920.28	P	Cr II	36
4920.35	P Forb	He I	49
4920.509		Fe I	318
4920.692		Nd II	2
4920.945		Cr I	143
4920.98		La II	7
4921.074		Ru I	11
4921.18	P	Ni I	100
4921.29		Ta I	5
4921.69		Si II	
4921.768		Ti I	200
4921.80		La II	7
4921.929		He I	48
4922.14		Cl II	17
4922.18	P	Fe I	1110
4922.267		Cr I	143
4922.3		Ne II	71
4923.578		Gd II	126
4923.921		Fe II	42
4924.043		Zn II	3
4924.08		S II	7
4924.28		Cl II	12
4924.60		O II	28
4924.776		Fe I	114
4924.83		Cl II	39
4925	P	O V	10
4925.17		Cl II	12
4925.28		Fe I	1065
4925.32		S II	7
4925.396		Ti I	157
4925.578		Ni I	141
4925.657		V I	50
4925.90		Zr II	107
4926.02		Ta I	6
4926.148		Ti I	39
4926.82	P	Fe I	844
4926.94	P	V II	29
4926.99		Hf II	13
4927.17		P II	13
4927.42		Fe I	792
4927.56		Fe III	43
4928.290		Co I	158
4928.342		Ti I	200
4928.62	P	V II	29
4928.895		Ti I	39
4930.04	P	Fe I	631
4930.183		Cr I	259
4930.331		Fe I	985
4930.821		Ni I	193
4931.653		Cu II	5
4932.00		C I	13
4932.029		V I	50
4933	P	N V	7
4933.19	P	Fe I	1070
4933.24		A II	6
4933.348		Fe I	1065
4933.878		Fe I	968
4934.023		Fe I	1068
4934.086		Ba II	1
4934.46		Hf II	16
4934.83		La II	72
4934.89		Cr I	259
4935.03		N I	9
4935.42	P	Fe I	886
4935.61		La II	30
4935.830		Ni I	177
4936.13		A II	34
4936.155		Gd II	116
4936.334		Cr I	166
4936.41		Ta I	11
4936.99		Cl II	12
4937.196		Cu II	6
4937.337		Ni I	114
4937.719		Ti I	39
4938.04		Ti I	173
4938.100		Sm II	23
4938.183		Fe I	966
4938.283		Ti I	289
4938.820		Fe I	318
4939.244		Fe I	1065,1070
4939.46	P	Fe I	1043
4939.690		Fe I	16
4940	P	O V	10
4941.015		Ti I	173
4941.03	P	Cr II	36
4941.12		O II	33
4941.322		Ti I	39
4941.562		Ti I	200

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	Type	Element	Multiplet No.
0		Ni I	114
8		Mn I	20
		S II	7
5		Cr I	9
	P	Fe I	1097
		A II	75
	P	N V	9
		O II	33
4		Ti I	52
		Cl II	47
		K II	7
		P II	13
8		Ti I	173
		Cr I	259
	P	N V	10
	P	Fe I	466
		Hf II	15
8		Ni I	145
		Fe I	1113
7		Ni I	148
4		Fe I	687
		La II	36
		V II	197
	P	Cr I	202
4		Ti I	39
3		Ti I	200
		Fe III	
27		Sm II	49
	P	Cr I	202
		Zr I	28
8		Fe II	
5		A II	62
3		Cr I	259
		La I	4
12		Fe I	687
	P	V II	29
	P	N V	8
		La II	92
34		Ni I	113
71		Sm II	32
6		Fe I	1068,1111
3		Cr II	
79		Co I	14
4		Ni I	111
7	P	Ti I	39
14		Cr I	166
33		Cu II	9
79		Fe II	168
25		Gd II	114
5		C II	25
	P	Fe I	1093
3		P II	13
11		Cr I	166
8		O II	33
334		Ne I	25
5		Ba II	10
02		Fe I	318
03		Fe I	318
8	P	Fe I	1066
6	P	Ti I	52
88		Gd II	64
30		Nd II	1
2		C II	25
82		Co I	14
96		Nd II	22
08		Fe I	845
36		Sm II	41
0		Al II	80
63		Sr I	4
64		Fe I	1097
5		V II	221
4	P	Cr II	36
13		Ti I	173
0		C II	25
28		Cr I	9
47		Gd II	143
2		A II	14
4		Ni I	147
0		V II	209
81		Mn I	20
8	P	V II	29
96		Fe I	687
0	P	Fe I	986
81		Co I	14
0		Cr I	259
0		Ti I	5
0		O I	14
51		Ni I	141
6		O I	14
99		Fe I	1067

I A	Type	Element	Multiplet No.
4967.944		Sr I	4
4968.50		V II	68
4968.566		Ti I	173
4968.575		Gd II	124
4968.709		Fe I	887
4968.76		O I	14
4969.65		P II	13
4969.927		Fe I	1066
4970.12		Cl II	12
4970.39		La II	37
4970.496		Fe I	883
4970.66	P	Fe I	985
4971.354		Ni I	274
4971.475		Ce II	
4971.668		Sr I	4
4971.92		Li I	5
4971.935		Co I	158
4972.16		A II	6
4972.39	P	Fe I	1096
4972.90	P	Fe I	631
4973.051		Ti I	173
4973.108		Fe I	984
4973.16		V II	209
4973.4	P Forb	Na I	10
4973.896		Gd II	64
4974.47		Co I	92
4975.344		Ti I	283
4975.415		Fe I	586
4976.155		Ni I	112
4976.345		Ni I	49
4976.71	P	Ni I	254
4977.6	P Forb	Na I	10
4977.653		Fe I	985
4977.731		Ti I	173
4978.11	P	Fe I	986
4978.191		Ti I	173
4978.541		Na I	9
4978.606		Fe I	966
4978.70	P	Fe I	1035
4979.58		Fe I	883
4979.84	P	Fe I	465
4980.161		Ni I	112
4980.30	P	Cr I	123
4981.30	P	Cr I	123
4981.38	P	Ti II	71
4981.732		Ti I	38
4982.13		Y II	20
4982.507		Fe I	1067
4982.813		Na I	9
4983.258		Fe I	1067
4983.69	P	Cr I	202
4983.855		Fe I	1066
4984.126		Ni I	143
4984.905		Gd II	64
4985.261		Fe I	984
4985.46	P	Cr II	36
4985.503		Cu II	6
4985.553		Fe I	318
4985.60		As II	3
4985.98	P	Fe I	1094
4986.24		Fe I	1070
4986.82		La II	22
4986.90	P	Fe I	1092
4987.377		N II	24
4987.62	P	Fe I	1094
4987.83	P	Fe I	966
4987.853		Co I	14
4988.963		Fe I	1066
4989.140		Ti I	173
4991.067		Ti I	38
4991.11	P	Fe II	25
4991.22		N II	64
4991.27		La II	57
4991.277		Fe I	1065
4991.86	P	Fe I	1094
4991.94		S II	7
4992.80	P	Fe I	1110
4993.355		Fe II	36
4993.51		S I	
4993.687		Fe I	1111
4994.133		Fe I	16
4994.14		Lu II	2
4994.358		N II	24,64
4995.062		Ti I	216
4995.41	P	Fe I	1113
4995.52		Cl II	12
4995.65	P	Ni I	145
4995.89	P	Ti II	71
4996.82		La II	93
4996.850		Ni I	144

I A	Type	Element	Multiplet No.
4997.099		Ti I	5
4997.23		N II	64
4997.81		Ba II	14
4998.233		Ni I	111
4998.373		Gd II	133
4998.43	P	Al II	30
4998.55		Cr I	123
4999.114		Fe I	1040
4999.46		La II	37
4999.504		Ti I	38
4999.69		Hf II	35
5000.335		Ni I	145
5000.73	P	Fe II	25
5000.91		Zr II	95
5000.97		Al II	79
5000.991		Ti I	173
5001.128		N II	19
5001.15		Lu I	
5001.469		N II	19
5001.489		Ca II	15
5001.871		Fe I	965
5002.02		Fe III	
5002.12		La II	92
5002.320		V I	132
5002.692		N II	4
5002.800		Fe I	687
5003.751		Ni I	50
5003.85	P	Fe I	211
5004.034		Fe I	1112
5004.187		Co I	141
5004.264		Fe II	
5004.38		Cr I	122
5004.907		Mn I	20
5005.140		N II	19,6
5005.160		Ne I	29
5005.18	P	Ti II	71
5005.60		K II	2
5005.720		Fe I	984
5006.126		Fe I	318
5006.169		W I	1
5006.71		S II	57
5006.72	P	Fe I	211
5006.787		Cu II	10
5007.209		Ti I	38
5007.286		Co I	14
5007.289		Fe I	966,1065
5007.316		N II	24
5009.35		A II	6
5009.54		S II	7
5009.652		Ti I	5
5010.045		Ni I	111
5010.202		Ti II	113
5010.30	P	Fe I	211
5010.620		N II	4
5010.821		Gd II	59
5010.961		Ni I	144
5011.24	P	Fe I	1066
5011.24		N II	64
5012.026		N II	64
5012.071		Fe I	16
5012.16	P	Fe I	1070
5012.464		Ni I	111
5012.611		Cu II	7
5012.68	P	Fe I	1093
5013.00		Ba II	10
5013.284		Ti I	173
5013.316		Cr I	00
5013.38	P	Ti II	113
5013.712		Ti II	71
5014.03		S II	15
5014.185		Ti I	5
5014.277		Ti I	38
5014.45		La II	159
5014.620		V I	132
5014.950		Fe I	965
5015.04		Gd I	6
5015.30	P	Fe I	968
5015.675		He I	4
5016.162		Ti I	38
5016.387		N II	19
5016.48	P	Fe I	1089
5016.60		V II	251
5017.16		A II	37
5017.591		Ni I	111
5017.63		A II	13
5018.02	P	Fe I	884
5018.294		Ni I	162
5018.43	P	Fe I	585
5018.434		Fe II	42
5018.78		O I	13

I A	Type	Element	Multiplet No.
5019.18	P	Fe I	1242
5019.20		Cr I	20
5019.34		O I	13
5019.361		Gd II	81
5019.478		Fe II	168
5019.74	P	Fe I	966
5019.855		V II	232
5019.979		Ca II	15
5020.028		Ti I	38
5020.13		O I	13
5020.368		Gd II	64
5020.67	P	Fe I	629
5020.819		Fe I	748
5021	P	C IV	3
5021.141		Ca II	15
5021.60	P	Fe I	1093
5021.68	P	Fe I	1067
5021.894		Fe I	629
5021.903		Cr I	8
5022.244		Fe I	965
5022.82	P	Ti II	71
5022.871		Ce II	16
5022.871		Ti I	38
5022.874		Fe II	
5023	P	C IV	3
5023.11		N II	64
5023.133		Gd II	64
5023.226		Fe I	1095
5023.39		Ti I	199
5023.476		Fe I	1150
5024.842		Ti I	38
5025.08	P	Fe I	1110
5025.54		Cr I	20
5025.570		Ti I	173
5025.665		N II	19
5025.73	P	Fe I	466
5026.50		Ni I	158
5027.196		Fe I	1065
5027.19		S II	1
5027.212		Fe I	883
5027.34	P	Fe I	968
5027.51	P	Fe I	960
5027.66	P	Cr I	202
5027.785		Fe I	1110
5028.00		Cr I	122
5028.129		Fe I	791
5029.623		Fe I	718
5029.812		Mn I	20
5030.740		Fe II	
5030.75		Fe III	
5030.784		Fe I	585
5031.019		Sc II	23
5031.030		Fe I	746,883
5031.290		Gd II	114
5031.562		Gd II	64
5031.901		Fe I	1150
5032.41		S II	7
5032.748		Ni I	207
5032.794		Fe II	
5033.2		C II	17
034.06		Co I	91
034.33		Hf II	26
034.415		Pr II	37
035.025		Fe I	885
035.374		Ni I	143
035.773		Fe II	
035.908		Ti I	110
035.961		Ni I	145
036.294		Fe I	
036.468		Ti I	110
036.92		Fe II	36
036.931		Fe I	465
037.0		C II	17
037.33		Ta I	12
037.65		Ta I	2
037.7505		Ne I	14
037.81	P	Ti II	71
038.400		Ti I	110
038.599		Ni I	166
038.81	P	Fe I	510
038.87	P	Cr I	20
039.05		C I	4
039.259		Ni I	142
039.266		Fe I	687
039.959		Ti I	5
040.25	P	Fe I	1093
040.642		Ti I	38
040.744		Ru I	11
040.76		N II	19
040.82		Hf II	14

I A	Type	Element	Multiplet No.
5040.902		Fe I	1092,1094
5041.063		Si II	5
5041.074		Fe I	16
5041.077		Ni I	158
5041.32	P	Fe I	1328
5041.33	P	Fe I	1110
5041.620		Ca I	34
5041.66		C I	4
5041.759		Fe I	36
5042.195		Ni I	131
5042.589		Mn I	20
5043.578		Ti I	38
5044.008		Ce II	16
5044.221		Fe I	318
5044.8		C II	35
5045.098		N II	4
5045.400		Ti I	38
5046.61		Zr I	62
5047.14	P	Fe I	1242
5047.2		C II	35
5047.28		S II	15
5047.308		V II	127
5047.736		He I	47
5048.04		La II	90
5048.082		Ni I	161
5048.208		Ti I	199
5048.454		Fe I	984
5048.752		Cr I	20
5048.851		Ni I	195
5048.91		V II	209
5049.825		Fe I	114
5050.13	P	Fe I	963
5050.878		Gd II	114
5051.29	P	Fe I	1089
5051.527		Ni I	144
5051.636		Fe I	16
5051.778		Cu II	7
5051.900		Cr I	8
5052.122		C I	12
5052.879		Ti I	199
5052.97	P	Fe I	585
5053.300		W I	1
5054.070		Ti I	171,294
5054.647		Fe I	884
5056.00		Fe I	1149
5056.020		Si II	5
5056.27		K II	3
5056.353		Si II	5
5056.856		Fe I	1111
5057.03		Hf II	71
5057.49		Fe I	1067,1150
5057.83	P	Fe I	1185
5058.00		Fe I	967
5058.03		Ni I	141
5058.18		Hf II	37
5058.50		Fe I	884
5060.079		Fe I	1,1095
5060.635		Cu II	1
5061.794		Fe II	
5062.07		A II	6
5062.112		Ti I	199
5062.862		Gd II	64
5062.91		La II	50
5063.296		Fe I	1066
5063.30		Fe III	5
5064.068		Ti I	294
5064.321		Sc I	13
5064.654		Ti I	5
5064.69		Au I	1
5064.92		Zr I	62
5064.95	P	Fe I	1095
5065.020		Fe I	1094
5065.201		Fe I	883
5065.448		Cu II	11
5065.910		Cr I	60
5065.985		Ti I	110
5066.28	P	Fe I	882
5066.99		La II	162
5067	P	N V	6
5067.082		Cu II	7
5067.162		Fe I	1092
5067.714		Cr I	60
5067.82		Ni I	141
5068.10		Cl II	16
5068.290		Cr I	20
5068.332		Ti I	294
5068.774		Fe I	383
5069.12		Ti II	113
5069.351		Ti I	199
5069.60	P	Fe I	211

I A	Type	Element	Multiplet No.
5070.249		Sc I	13
5070.957		Fe II	
5071.023		Gd II	114
5071.23		Hf II	23
5071.40	P	Co I	14
5071.475		Ti I	110
5072.077		Fe I	1089
5072.30		Ti II	113
5072.690		Fe I	1095
5072.920		Cr I	8
5073	P	N IV	17
5073.60		N II	10
5073.78		Fe III	5
5074.063		Fe II	205
5074.757		Fe I	1094
5075.17	P	Fe I	1089
5075.304		Ce II	14
5075.814		Sc I	13
5075.829		Fe II	
5075.92		Hf II	16
5076.15		Cr II	201
5076.288		Fe I	1089
5076.321		Ni I	143
5077.410		Co I	184
5078.25		Cl II	16
5078.28		Zr I	62
5078.53	P	Fe I	744
5078.711		Cr I	
5079.002		Fe I	1092
5079.226		Fe I	66
5079.65		Hf II	71
5079.681		Ce II	15
5079.742		Fe I	16
5079.961		Ni I	60
5080.21		La II	80
5080.44		Hf II	83
5080.523		Ni I	143
5080.95	P	Fe I	565
5081.111		Ni I	194
5081.39	P	Ti I	109
5081.554		Sc I	13
5081.86	P	Fe I	962
5081.920		Fe II	221
5082.354		Ni I	130
5082.68	P	Fe I	466
5083.342		Fe I	16
5083.713		Sc I	13
5084.081		Ni I	162
5084.55	P	Fe I	932
5085.02		Al II	43
5085.333		Ti I	109
5085.479		Ni I	130
5085.547		Sc I	13
5085.68	P	Fe I	1093
5085.695		Co I	14
5085.824		Cd I	2
5085.93	P	Fe I	963
5086.69		Fe III	5
5086.77	P	Fe I	1067
5086.951		Sc I	13
5087.055		Ti I	109
5087.25		Fe II	
5087.42		Y II	20
5088.16	P	Fe I	1066
5088.260		Cu II	6
5088.534		Ni I	190
5088.956		Ni I	162
5089.278		Fe II	
5089.637		Nd II	40
5090.55		A II	122
5090.56		La II	100
5090.787		Fe I	1090
5091.14		Cr II	201
5091.282		Co I	14
5091.72	P	Fe I	745
5091.73	P	Fe I	717
5091.890		Cr I	20
5092.251		Gd II	114
5092.797		Nd II	48
5093.41		Cr I	20
5093.470		Fe II	205
5093.646		Fe II	
5093.65		Al II	43
5094.416		Ni I	164
5094.955		Co I	92
5096.063		Gd II	59
5096.17	P	Fe I	1242
5096.716		Sc I	13
5096.874		Ni I	111
5096.998		Fe I	1092

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
		Cr II	24	5123.723		Fe I	16	5146.06		O I	28,39
5		Fe II		5124.05	P	Fe II	167	5146.12	P	Fe II	35
		Cl II	16	5124.17	P	Fe I	1035	5146.30	P	Fe I	1150
		Gd II	114	5124.60	P	Fe I	585	5146.478		Ni I	162
4		Fe I	984	5124.718		Co I	197	5146.753		Co I	170
3		Fe I	66	5124.98		Zr II	87	5147.09		Fe II	
1		Fe I	965	5125.130		Fe I	1090	5147.483		Ti I	4
3		Sc I	13	5125.211		Ni I	160	5148.061		Fe I	1090
		Cl II	16	5125.56		Gd II	99	5148.19	P	Fe II	52
2		Ni I	141	5125.715		Co I	181	5148.234		Fe I	1095
6		Ni I	161	5125.84		A II	122	5148.65		Ni I	158
		Al II	43	5126.13		S II	57	5148.724		V I	123
	P	Fe II	35	5126.19	P	Fe II	53	5148.838		Na I	8
4		Fe II		5126.201		Co I	170	5149.13		Mn I	32
5		Fe III		5126.218		Fe I	1089	5149.33		Fe III	
0		Fe II	185	5126.598		Fe I	961	5149.538		Fe II	
7		Gd II	114	5127.32		Fe III	5	5149.796		Co I	39
		Fe II		5127.363		Fe I	16	5149.841		Gd II	115
1		Sc I	13	5127.367		Ti I	230	5150.19	P	Fe I	789
		Fe II		5127.68	P	Fe I	1	5150.843		Fe I	16
	P	Fe I	65	5127.866		Fe II	167	5150.86		Al III	14
1		Ni I	49	5128.03		Ni I	113	5150.890		Mn I	32
		Cl II	16	5128.53		Hf II	58	5150.93	P	Fe II	35
		S II	7	5128.530		V I	123	5151.08		C II	16
		Gd I	6	5129.143		Ti II	86	5151.83		Cr I	19
	P	Cr II	38	5129.383		Ni I	159	5151.87		V II	196
8		Fe I	465	5129.520		Pr II	38	5151.915		Fe I	16
		Cl II	16	5129.658		Fe I	965	5152.185		Ti I	4
		Fe I	1092	5130.28		Gd II	115	5152.20		P II	7
		N II	34	5130.389		Ni I	177	5153.235		Cu I	7
	P	Fe I	1090	5130.53		O I	29,39	5153.402		Na I	8
1		Cu I	2	5130.596		Nd II	75	5153.49		Cr II	24
		As II	4	5130.91	P	Fe I	1149	5154.061		Ti II	70
		La I	9	5131.28	P	Ti II	86	5154.40	P	Fe II	35
3		V II	127	5131.475		Fe I	66	5155.136		Ru I	10
6		Gd II	81	5131.770		Ni I	114	5155.140		Ni I	206
2		Fe I	16	5132.19		V II	127	5155.764		Ni I	210
		La II	164	5132.67	P	Fe II	35	5155.845		Gd I	6
5		Fe I	36	5132.931		Ti I	230	5156.0		Fe III	5
		Cr I	19	5132.96		C II	16	5156.040		Sr I	11
		As II	6	5133.22	P	Fe I	818	5156.06		Hf II	83
3		Co I	181	5133.29		C II	16	5156.10		Fe II	
		Gd II	114	5133.42		Zr I	27	5156.366		Co I	180
		Cr I	60	5133.467		Co I	180	5156.74		La II	7
7		Ti I	109	5133.692		Fe I	1092	5156.76		Gd II	114
2		Fe I	1089	5135.10		Lu I	2	5157.28		V II	127
	P	Fe I	790	5135.125		Pr II	37	5157.43		La II	97
2		Pr II	38	5136.09		Fe I	1036	5157.993		Ni I	111
4		Fe I	1	5136.47		Ta I	5	5158.167		Al II	58
		Cr II	199	5136.788		Fe II	35	5158.854		Co I	188
		Hf II	106	5137.075		Ni I	48	5159.066		Fe I	1091
1		Cr I	60	5137.09		Cr II	201	5159.350		V I	123
8		Pr II	35	5137.26		C II	16	5159.93		Fe II	
0		Gd II	114	5137.388		Fe I	1090	5159.95	P	Fe I	1095
	P	O VI	12	5137.94		Cr I	207	5160.02		O II	32
		Zr II	95	5138.431		V I	123	5160.105		Gd II	115
0		Cr I	19	5138.71		Cr I	19	5160.824		Fe II	167
0		Cr I	60	5139.21		C II	16	5160.896		Gd II	115
2		Co I	91	5139.255		Ni I	129	5161.18	P	Fe II	35
		Cl II	16	5139.260		Fe I	383	5161.765		Cr I	60
8		Ti I	109	5139.468		Fe I	383	5162.288		Fe I	1089
	P	O V	1	5139.654		Cr I	207	5162.34		Cl II	33
		C II	51	5140.839		Gd II	115	5162.38	P	Fe I	210
		Fe III	5	5141.55	P	Fe I	990	5162.47		Gd II	140
	P	Fe I	1242	5141.63		Ta I	6	5162.80		A II	126
		La II	36	5141.750		Fe I	114	5162.93	P	Ni I	159
7		Ni I	177	5141.84		A II	37	5163.61		La II	7
8		Fe I	789	5142.263		Cr I	60	5163.74		Fe III	2
		Cr II	24	5142.33		S II	1	5163.90		Al III	19
0		Sm II	56	5142.541		Fe I	1090,1092	5164.542		Gd II	97
7		Fe II		5142.763		Ru I	11	5164.56		Fe I	1166
5		Ce II	23	5142.771		Ni I	161	5164.56		Hf II	83
7		Mn I	32	5142.932		Fe I	16	5164.69	P	Fe II	167
		Y II	20	5142.98	P	Ni I	113	5164.70	P	Fe I	210
		C II	51	5143.49		C II	16	5164.922		Fe I	1033
	P	Fe I	960	5143.73	P	Fe I	65	5165.140		Nd II	77
	P	Fe II	35	5144.413		Al II	68	5165.156		Co I	39
0		Ti I	288	5144.47	P	Cr II	38	5165.422		Fe I	1089
	P	Fe I	1150	5144.672		Cr I	60	5165.82		A II	75
0		Ni I	177	5144.875		Al II	68	5166.227		Cr I	207
6		Fe I	1095	5144.9376		Ne I	34	5166.286		Fe I	1
		C II	12	5144.998		Al II	68	5167.28		La II	95
	P	Fe I	745	5145.011		Ne I	34	5167.3216		Mg I	2
2		Ti I	230	5145.105		Fe I	66	5167.491		Fe I	37
1		Cr I	19	5145.16		C II	16	5167.70	P	Fe I	717
7		Co I	170	5145.36		A II	13	5167.96		Cr I	207
		La II	36	5145.42		La I	9	5168.18	P	Fe I	964
		Y II	21	5145.465		Ti I	109	5168.19	P	Fe I	960
	P	Fe I	1150	5145.654		Al II	68	5168.24		N II	70
5		Cr I	20	5145.73	P	Fe I	931	5168.63		Cr I	19

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I A	Type	Element	Multiplet No.
5168.660		Ni I	112
5168.901		Fe I	1
5169.030		Fe II	42
5169.30	P	Fe I	1032
5169.733		Fe II	
5170.08	P	Fe I	1241
5170.08		N II	70
5171.028		Ru I	11
5171.13	P	V II	115
5171.46		N II	70
5171.599		Fe I	36
5171.62	P	Fe II	35
5172.21	P	Fe I	210
5172.32		N II	66
5172.6		Al III	18
5172.6843		Mg I	2
5172.89		La II	100
5173.002		Fe II	185
5173.15		Cl II	33
5173.37		N II	66
5173.742		Ti I	4
5173.83		La II	158
5173.898		Pr II	35
5174.46		N II	70
5175.71	P	Fe I	1
5175.78	P	Ni I	188
5175.899		Gd II	114
5175.85		Cl II	50,81
5175.89		N II	66
5176.00		O II	32
5176.085		Co I	92
5176.26	P	Cr II	38
5176.28		A II	37
5176.285		Gd II	60
5176.565		Ni I	209
5177.230		Fe I	930
5177.30		La I	9
5177.430		Cr I	201
5177.73		Fe III	
5177.83		Cr I	206
5178.104		Gd II	114
5178.71	P	Fe II	35
5178.798		Fe I	1166
5178.843		Gd II	147
5178.95	P	Fe II	35
5179.136		Ni I	202
5179.50		N II	66,70
5179.919		Gd II	100
5180.065		Fe I	1166
5180.34		N II	66
5180.53	P	Fe II	35
5181.77		Si II	
5181.86		Hf I	1
5181.97	P	Fe II	53
5181.995		Zn I	7
5183.21		N II	70
5183.41		Cr I	19
5183.42		La II	36
5183.6042		Mg I	2
5183.72		Ti II	86
5184.17	P	Fe I	1147
5184.292		Fe I	1089
5184.585		Ni I	159
5184.590		Cr I	201
5184.97		N II	66
5185.09		Si II	
5185.90		Ti II	86
5186.17		N II	70
5186.329		Ti I	183
5186.592		Ni I	205
5186.915		Gd II	114
5187.237		Gd II	114
5187.452		Ce II	15
5187.75		Hf II	23
5187.86		Ni I	159
5187.922		Fe I	1032
5188.21		La II	95
5188.700		Ti II	70
5188.848		Ca I	49
5189.61	P	Ti I	215
5189.70		Cl II	33
5190.42		N II	66
5190.56		O II	32
5191.081		Gd II	115
5191.41		P II	7
5191.446		Nd II	46
5191.46		Cr II	24
5191.460		Fe I	383
5191.58	P	Fe II	52
5191.59		V II	208

I A	Type	Element	Multiplet No.
5191.60		Zr II	95
5192.000		Cr I	201
5192.350		Fe I	383
5192.524		Ni I	111
5192.621		Nd II	75
5192.75		Si II	
5192.971		Ti I	4
5193.004		V I	125
5193.03		Cl II	33
5193.43	P	V II	115
5193.488		Cr I	206
5193.89		Fe III	5
5194.043		Ti I	183
5194.43		Fe III	5
5194.57		Hf II	69
5194.824		V I	125
5194.943		Fe I	36
5195.110		Pr II	38
5195.307		Pr II	38
5195.394		V I	125
5195.471		Fe I	1092
5196.100		Fe I	1091
5196.24	P	Fe I	406
5196.43		Y II	28
5196.443		Cr I	207
5196.57		Cr I	207
5196.591		Mn I	32
5197.165		Ni I	204
5197.216		Mn I	32
5197.569		Fe II	49
5197.768		Gd I	6
5197.93	P	Fe I	1091
5198.714		Fe I	66
5198.843		Fe I	743
5198.89		S II	57
5199.211		Gd II	115
5199.50		N II	66
5199.68		V II	55
5200.188		Cr I	201
5200.42		Y II	20
5200.549		Gd II	147
5201.00		S II	39
5201.096		Ti I	183
5201.32		S II	39
5202.27		Fe I	1090
5202.339		Fe I	66
5202.51		Si II	
5202.94		V II	142
5203.86		P III	5
5204.14		La II	96
5204.46		A II	126
5204.518		Cr I	7
5204.582		Fe I	1
5204.95	P	Fe I	407
5205.31	P	Fe I	1112
5205.73		Y II	20
5206.039		Cr I	7
5206.059		Ti I	276
5206.15	P	Cr I	59
5206.52	P	Cr I	206
5206.562		Pr II	38
5206.73		O II	32
5206.80	P	Fe I	1095
5207.852		Ti I	183
5207.95	P	Fe I	880
5208.07	P	Cr I	59
5208.436		Cr I	7
5208.601		Fe I	553
5209.90	P	Fe I	584
5210.042		Co I	167
5210.386		Ti I	4
5210.488		Gd II	115
5210.834		Co I	187
5210.87		Cr II	24
5210.88	P	Cr II	38
5211.22	P	Ti I	37
5211.544		Ti II	103
5211.832		Co I	184
5211.85		La I	9
5212.27		Cr I	189
5212.271		Ti I	215
5212.365		Nd II	44
5212.61		S *II*	*39*
5212.699		Co I	170
5212.75		Ta I	1
5213.007		Ti I	215
5213.08	P	V II	55
5213.35	P	Fe I	1165
5213.80	P	Fe I	962
5214.127		Cr I	193

I A	Type	Element	Multiplet No.
5214.64		Cr I	189
5215.185		Fe I	553
5215.29		Cr I	206
5215.928		V II	55
5216.17		Cr I	189
5216.278		Fe I	36
5216.512		Ni I	113
5216.84		A II	126
5216.99		Fe III	
5217.36	P	V II	115
5217.395		Fe I	553
5217.69	P	Fe I	965
5217.83		La II	
5217.927		Fe I	880
5217.93		Cl II	3
5218.202		Cu I	7
5218.51	P	Fe I	1240
5219.008		Co I	170
5219.053		Pr II	37
5219.40		Gd I	6
5219.697		Ti I	4
5220.070		Cu I	7
5220.113		Pr II	35
5220.297		Gd II	80
5220.307		Ni I	114
5220.912		Cr I	201
5221.34		Cl II	3
5221.43	P	Fe I	1
5221.75	P	Fe I	628
5221.753		*Cr I*	196
5222.39		Cr I	206
5222.40	P	Fe I	112
5222.676		Cr I	59
5222.685		Ti I	183
5223.191		Fe I	880
5223.623		Ti I	183
5224.082		Cr I	201
5224.14	P	Ti I	37
5224.30	P	Fe I	65
5224.301		Ti I	183
5224.541		Cr I	59,193
5224.558		Ti I	183
5224.680		W I	1
5224.928		Ti I	183
5224.94		Zr I	27
5224.941		Cr I	201
5225.032		Cr I	201
5225.533		Fe I	1
5225.821		Cr I	58
5226.06		Fe I	716
5226.20		La II	96
5226.42	P	Fe I	406
5226.534		Ti II	70
5226.868		Fe I	383
5226.891		Cr I	193
5227.10		Cr I	59
5227.15	P	Fe I	114
5227.192		Fe I	37
5227.53		Fe III	
5227.70		V II	115
5227.75		Cr I	58
5227.87	P	Ti II	103
5228.082		Cr I	193
5228.408		Fe I	1091
5228.427		Nd II	46
5229.57		Fe III	113
5229.857		Fe I	553,1090
5230.210		Co I	39
5230.228		Cr I	58
5230.363		Co I	187
5230.967		Ti I	215
5231.41		Fe I	787
5232.50		Cr II	43
5232.946		Fe I	383
5233.817		Ti I	37
5234.088		V I	131
5234.195		Nd II	74
5234.27		La I	10
5234.28	P	V II	55
5234.620		Fe II	49
5235.188		Co I	83
5235.3		Fe III	113
5235.392		*Fe I*	*210,1031*
5235.45		Ni I	208
5236	P	N IV	5
5236.180		Fe I	1034
5236.38	P	Fe I	1146
5236.63		Cr I	205
5237.34		Cr II	43
5237.35		Cr I	206

	Type	Element	Multiplet No.
	P	Fe I	962
0		Ti I	37,183
	P	Fe II	41
1		Cr I	59
3		Sc II	26
2		Ti I	37
	P	Fe I	584
8		Cr I	237
8		V I	131
		Cr I	193
	P	V II	55
		V II	241
6		Cr I	50
	P	Fe I	1150
5		Fe I	843
		Fe III	113
5		Cr I	201
	P	Cr II	38
8		Fe I	1089
		C III	4
	P	N IV	5
		A II	40
	P	Fe I	1149
	P	Fe I	715
	P	Fe I	628
3		Ti I	282
4		Ti I	37
		Cr II	23
2		Fe I	1
		Hf II	92
3		Ti I	183
4		Cr I	18
1		Co I	39
8		Fe II	
2		Ti I	37,156
9		Fe I	1166
		V II	220
		Cr II	23
		C II	30
5		Nd II	75
		C III	23
3		Co I	190
2		Fe I	1
0		Fe I	66
6		Nd II	80
		Ti I	37
0		Gd I	6
		Ti I	37
8		Pr II	20
	P	Ti II	103
5		Ti I	4
		Gd II	99
	P	Fe I	113
	P	Fe I	875
9		Fe I	553
		P II	10
		C II	30
		C III	4
2		Co I	187
8		Cr I	201
	P	Fe II	49
6		Fe I	1
2		Cr I	225
5		Mn I	32
0		Nd II	43
	P	Fe I	1089
	P	Fe I	1091
5		Gd I	6
1		Ti I	183
0		Gd II	114
	P	Fe II	41
		Cr I	205
		C II	30
	P	V II	55
21		Co I	188
	P	Fe I	788
33		Sc I	23
	P	Fe I	1149
		La II	21
		C II	30
43		Pr II	35
76		Ti I	298
5		Fe III	
75		Ca I	22
		Hf II	36
71		Mn I	32
1		Al III	13
1		N III	15
	P	Fe I	406
06		Ca I	22

I A	Type	Element	Multiplet No.
5261.754		Cr I	237
5262.104		Ti II	70
5262.244		Ca I	22
5262.48	P	Fe II	52
5262.61	P	Fe I	1149
5262.89	P	Fe I	628
5263.314		Fe I	553
5263.483		Ti I	183
5263.750		Cr I	309
5263.874		Fe I	788
5263.99		V II	115
5264.14		Mg II	17
5264.152		Cr I	18
5264.239		Ca I	22
5264.49	P	V II	55
5264.801		Fe II	48
5264.95		Hf II	70
5265.160		Cr I	201
5265.25	P	Fe I	407
5265.42	P	Fe I	1145
5265.523		Co I	38
5265.557		Ca I	22
5265.710		Ce II	23
5265.722		Cr I	18
5265.748		Ni I	141
5265.786		Co I	170
5265.94	P	Fe I	210
5265.967		Ti I	156
5266.118		V I	139
5266.302		Co I	172
5266.49	P	Ti I	36
5266.506		Co I	83
5266.562		Fe I	383
5267.10		Cr II	38
5267.28	P	Fe I	1146
5267.322		Gd II	60
5268.06		O III	19
5268.348		Ni I	273
5268.498		Co I	172
5268.62		Ti II	103
5269.15		Fe III	112
5269.541		Fe I	15
5269.93		Ti I	156
5270.06	P	Fe I	877
5270.270		Ca I	22
5270.322		Be II	3
5270.360		Fe I	37
5270.59		N III	15
5270.843		Be II	3
5271.18		La I	4
5271.26	P	V II	55
5272.0		Fe III	113
5272.010		Cr I	225
5272.413		Fe II	185
5272.56		C III	4
5272.60		N III	15
5272.86		Fe III	
5273	P	N V	4
5273.176		Fe I	553
5273.379		Fe I	114
5273.431		Nd II	75
5273.439		Cr I	201
5273.62	P	Fe I	1147
5274.244		Ce II	15
5274.99		Cr II	43
5275.00		Fe I	1029
5275.08		O I	27
5275.11	P	Cr I	192
5275.171		Cr I	94
5275.30	P	Fe I	742
5275.54		Re I	1
5275.65		V II	195
5275.689		Cr I	94
5275.994		Fe II	49
5276.03		Cr I	94
5276.183		Co I	190
5276.2		Fe III	113
5276.42		Al II	67
5276.81		Al II	67
5276.879		Nd II	81
5277.31	P	Fe I	1149
5277.32	P	Fe I	584
5277.40		Zr I	27
5277.59	P	Fe I	983
5277.68		Al II	67
5278.10		S I	4
5278.262		Cr I	309
5278.265		Fe II	225
5278.62		Al II	95
5278.70		S I	4

I A	Type	Element	Multiplet No.
5278.955		Fe II	184
5278.99		S I	4
5279	P	O VI	14
5279.11		La II	90
5279.65	P	Fe I	584
5279.92		Cr II	43
5280.00		V II	195
5280.08		Cr II	43
5280.21		Al II	95
5280.289		Cr I	192
5280.364		Fe I	880
5280.62	P	V II	55
5280.631		Co I	172
5280.91	P	Fe I	210
5281	P	N IV	5
5281.18	P	Fe I	1240
5281.18		N I	14
5281.692		Ni I	231
5281.796		Fe I	383
5282.1		Fe III	113
5282.378		Ti I	74
5282.52		N III	15
5283.076		Gd I	6
5283.441		Ti I	156
5283.628		Fe I	553
5283.77		Al II	95
5284.092		Fe II	41
5284.27	P	Fe I	875
5284.380		Ti I	74
5284.416		Fe I	842
5284.62	P	Fe I	1032
5284.85		Fe III	
5285.12	P	Fe I	1166
5285.34		Ca II	14
5285.38		Cr I	285
5285.48		Cl II	32
5285.60	P	Fe I	961
5285.63		Cr I	192
5285.752		Sc I	23
5285.85		Al II	102
5286.42	P	V II	54
5286.74		Fe III	110
5286.92		A II	13
5287.188		Cr I	225
5287.574		Co I	175
5287.62		Cr I	309
5287.785		Co I	187
5288.21	P	Ni I	202
5288.24	P	Fe I	818
5288.31		V II	195
5288.38	P	Fe I	406
5288.533		Fe I	929
5289	P	O VI	16
5289.27		Cr I	192
5289.28		Ti I	36
5289.82		Y II	20
5289.98		Hf II	100
5290.74		V II	207
5290.79	P	Fe I	1147
5290.83		La II	6
5291	P	O VI	18
5291.78		Fe III	
5292	P	O VI	17
5292.10		Pr II	24
5292.630		Pr II	37
5292.861		Mn I	36
5292.865		Cr I	205
5293.03	P	Fe I	1165
5293.168		Nd II	75
5293.383		Cr I	192
5293.973		Fe I	1031
5294.216		Mn II	11
5294.555		Fe I	875
5294.97		Si II	
5295.292		Mn II	11
5295.30	P	Sc II	22
5295.316		Fe I	1146
5295.781		Ti I	74
5296.09		P II	7
5296.48		A II	110
5296.686		Cr I	18
5296.968		Mn II	11
5297.236		Ti I	156
5297.360		Cr I	94
5297.86		N III	15
5297.976		Cr I	94
5298	P	O VI	15
5298.06		Hf II	49
5298.269		Cr I	18
5298.429		Ti I	281

I A	Type	Element	Multiplet No.
5298.44	P	Cr I	94
5298.789		Fe I	875
5298.93		N III	15
5299.00		O I	26
5299.278		Mn II	11
5299.85		Hf II	14
5299.9		Fe III	113
5300.012		Ti I	74
5300.41	P	Fe I	1240
5300.749		Cr I	18
5301.042		Co I	39
5301.33	P	Fe I	1162
5301.67		Gd I	6
5301.936		Sc I	4
5301.97		La II	36
5302.279		Nd II	80
5302.307		Fe I	553
5302.320		Mn II	11
5302.5		Fe III	113
5302.62		La II	86
5302.76		Gd I	6
5303.26		V II	54
5303.419		Fe II	225
5303.43		Gd II	80
5303.54		La II	36
5304.11	P	Fe I	983
5304.211		Cr I	225
5304.26	P	Fe II	184
5304.923		Gd II	62
5305.3	P	O IV	11
5305.41	P	Fe I	877
5305.77		A II	93
5305.85		Cr II	24
5306.6		Fe III	113
5307.121		Tm I	
5307.281		Cr I	237
5307.30		Ca II	14
5307.30		Gd I	6
5307.365		Fe I	36
5307.53	P	Mn I	36
5308.44		Cr II	43
5308.71	P	Fe I	1091
5309.267		Ru I	10
5309.47		Cr I	285
5310.219		Co I	196
5310.70		Cr II	43
5310.76		Al II	94
5311.42		Zr I	27
5311.461		Nd II	80
5311.60		Hf II	37
5311.78		Zr II	95
5312.32		Al II	94
5312.650		Co I	197
5312.878		Cr I	225
5313.239		Ti I	74
5313.41		Fe I	1239
5313.43		N II	69
5313.59		Cr II	43
5313.76	P	Ti II	81
5313.839		Fe I	1238
5314.45		N III	15
5315.07		Fe I	1147
5315.618		Fe II	225
5315.78	P	Fe I	877
5316.07		Al II	94
5316.07		P II	6
5316.609		Fe II	49
5316.772		Co I	192
5316.777		Fe II	48
5317.095		Mn I	36
5317.394		Fe I	584
5317.53	P	Fe I	1032
5318.025		Fe II	
5318.04	P	Fe I	406
5318.267		Fe II	
5318.337		Sc II	22
5318.41		Cr II	23
5318.61	P	V II	53
5318.775		Cr I	225
5319.22	P	Fe I	1029
5319.818		Nd II	75
5320.046		Fe I	877
5320.70		S II	38
5320.78		Y II	20
5320.96		N II	69
5321.106		Fe I	1165
5321.496		Gd I	6
5321.777		Gd I	6
5322.049		Fe I	112
5322.778		Pr II	35
5322.78	P	Cr II	24
5322.81		V II	240
5323.51	P	Fe I	113
5323.958		Ti I	36
5324.185		Fe I	553
5324.26		Hf II	36
5324.61		Al II	101
5325.276		Co I	192
5325.559		Fe II	49
5325.71	P	V II	54
5325.949		Co I	194
5326.154		Fe I	407,785
5326.247		Co I	175
5326.793		Fe I	1147
5327.25	P	Fe I	875
5327.45	P	N II	69
5327.86	P	Fe I	1145
5328.042		Fe I	15
5328.339		Cr I	94
5328.38		Ta I	2
5328.534		Fe I	37
5328.70		N I	13
5328.70	P	Ni I	129
5328.98		O I	12
5329.12		Cr I	94
5329.59		O I	12
5329.719		Cr I	94
5329.994		Fe I	1028
5330.582		Ce II	13
5330.66		O I	12
5330.779		Ne I	9
5331.20	P	Fe I	817
5331.456		Co I	39
5331.48	P	Fe I	210
5331.54		As II	3
5332.65		V II	54
5332.652		Co I	170
5332.673		Fe I	1031
5332.903		Fe I	36
5333.15	P	Fe I	1023
5333.30		Gd I	7
5333.647		Co I	190
5333.70		Cl II	15
5333.77	P	Fe I	464
5334.228		Sc II	30
5334.32	P	Fe I	1064
5334.804		Mn I	36
5334.821		Co I	191
5334.88		Cr II	43
5336.163		Co I	191
5336.7		C II	11
5336.809		Ti II	69
5337.713		Fe II	48
5337.79		Cr II	43
5338.326		Ti I	35
5338.66		N II	69
5339.29		Ca II	20
5339.40	P	Fe I	1162
5339.528		Co I	199
5339.92		Fe III	
5339.935		Fe I	553
5340.20		N II	69
5340.437		Cr I	225
5340.66		La II	91
5340.68		Ti I	36
5340.92		Fe III	
5341.026		Fe I	37
5341.040		Sc I	19
5341.065		Mn I	4
5341.096		Ne I	9
5341.22		V II	239
5341.328		Co I	199
5341.492		Ti I	316
5342.05	P	Sc II	30
5342.703		Co I	190
5342.961		Sc I	4
5343	P	O V	13
5343.00		Gd I	7
5343.284		Ne I	9
5343.383		Co I	190
5344.570		Co I	191
5344.73		P II	0
5344.761		Cr I	225
5345.61	P	Cr I	225
5345.67		S II	38
5345.807		Cr I	18
5346.12	P	Cr II	24
5346.30		Hf II	92
5346.34	P	Fe I	817
5346.54		Cr II	23
5346.56	P	Fe II	49
5347.499		Co I	196
5347.71	P	Ni I	145
5347.806		Ce II	227
5348.069		Mn I	36
5348.319		Cr I	18
5348.40		Hf II	22
5348.67		Gd I	6
5349.08		Ta I	5
5349.294		Sc I	17
5349.472		Ca I	33
5349.702		Sc I	4
5349.742		Fe I	1163
5349.75		V II	54
5350.10		Zr II	115
5350.36		Zr II	115
5350.37		V II	54
5350.38		Gd I	7
5350.527		Tl I	1
5351.072		Ti I	300
5351.21		N II	69
5351.85	P	Ni I	177
5352	P	O V	13
5352.046		Co I	172
5353.26		Gd I	7
5353.386		Fe I	1062
5353.415		Ni I	70
5353.500		Co I	198
5353.534		Ce II	15
5353.78		Fe III	
5354.01	P	Co I	91
5354.66	P	Cr II	29
5354.67		Ta I	6
5355.752		Sc I	19
5356.100		Sc I	17
5356.14		Cl II	
5356.77		N I	13
5356.976		Nd II	80
5357.195		Sc II	30
5357.35		V II	54
5357.790		Gd II	62
5358.10	P	Fe I	628
5359.200		Co I	194
5361.174		Nd II	46
5361.35		Ba II	6
5361.474		Nd II	74
5361.637		Fe I	1143
5361.724		Ti I	35
5362.4	P	O IV	11
5362.56		Zr I	27
5362.69		S II	61
5362.781		Co I	198
5362.864		Fe II	48
5362.98		Cr I	258
5363.80		Fe III	
5364.874		Fe I	1146
5365.403		Fe I	786
5366.651		Ti I	35
5367.470		Fe I	1146
5367.53	P	V II	53
5367.78		Cr I	258
5367.95	P	Ti II	80
5368.10	P	Cr II	29
5368.546		Cr I	258
5368.904		Co I	167
5368.97		Pt I	6
5369.25	P	Cr II	29
5369.591		Co I	39
5369.635		Ti I	
5369.965		Fe I	1146
5370.356		Cr I	
5371.43	P	Fe I	1163
5371.48		Cr I	258
5371.493		Fe I	15
5371.621		Gd II	60
5371.84		Al II	42
5371.935		Nd II	79
5372.216		Gd II	99
5372.66		N I	13
5373.704		Fe I	1166
5373.715		Cr I	258,302
5374.78	P	Fe I	785
5375.346		Sc I	19
5375.393		Gd II	99
5375.68		Fe III	
5376	P	O V	13
5376.59	P	Ti I	3
5376.849		Fe I	1132
5377.08		La II	95
5377.628		Mn I	42

	Type	Element	Multiplet No.
7	P	Cr II	29
.2		P II	23
9	P	Ti II	102
80		Fe I	928
42		C I	11
7		La II	56
20		Ti II	69
.05		Co I	56
62		Pr II	37
7		La II	91
76		Co I	196
1		La II	91
2	P	Fe II	184
50		Fe I	741
6	P	Ti I	155
74		Fe I	1146
2		N II	23
2	P	Fe I	817
34		Ti I	35
9		V II	53
4		Zr I	26
8		Cr I	
8	P	Fe I	927
41		Fe I	1004
7		P II	6
58		Fe I	875
78		Cr I	191
.36		Fe II	
5		Fe III	
1		Fe I	1031
73		Cr I	191
50		Ni I	70
8		Al II	34
21		Mn I	36
80		Ti I	35
61		Fe I	1145
96		Ti I	155
94		Cr I	191
6	P	Ti I	155
50		Cr I	191,302
6		Hf II	48
93		Fe I	1062
0		Ba II	6
8	P	Fe I	270
75		Sc I	19
2		Cl II	28
71		Ni I	250
5	P	Cr II	29
74		Fe I	553
91		Ce II	24
59		Gd II	100
21		Gd II	63
74		Mn I	1
82		Fe I	1031
5		Fe I	1143
1	P	Cr II	29
		Ti II	80
9	P	Ti II	102
00		Ti I	3
0	P	Fe I	464
93		Ti I	155
31		Fe I	15
0		A II	
0		Fe I	841
85		Fe I	1145
2		Ti IV	
89		Mn I	42
09		Fe I	1145
620		Ne I	3
08		Cr I	191
7		S II	61
5		Mg II	24
7	P	Fe I	1146
2		Ti I	35
45		V I	130,139
00		Co I	195
13		Fe II	
7		Fe III	
1		Ta I	1
7		Lu I	2
9		A II	
8		Y II	35
23		Fe I	1029
23		Ti I	259
2	P	Fe I	1145
44		Fe I	1165
7		O I	53
5		Ta I	13
04		Cr I	191
5	P	Fe I	1162

I A	Type	Element	Multiplet No.
5405.778		Fe I	15
5406.36	P	Fe I	1026
5406.77	P	Fe I	1148
5407.424		Mn I	4
5407.44		A II	
5407.520		Co I	192
5407.62		Cr II	23
5408.119		Co I	112
5408.59		O I	53
5408.842		Fe II	184
5408.940		Ti I	3
5409.125		Fe I	1147
5409.224		Ce II	23
5409.28	P	Cr II	29
5409.609		Ti I	155
5409.66		P II	6
5409.791		Cr I	18
5410	P	O VI	13
5410.39	P	Cr II	29
5410.76		O I	51,52
5410.913		Fe I	1165
5411.227		Ni I	222
5411.39	P	Fe I	870
5411.524		He II	2
5412.56	P	Fe I	1237
5412.80	P	Fe I	1162
5413.47		Ta I	5
5413.687		Mn I	42
5414.089		Fe II	48
5414.91	P	Fe I	874
5415.201		Fe I	1165
5415.277		V I	130
5416.381		Nd II	80
5417	P	O V	13
5417.03		Fe I	1148
5418.01		Zr II	94
5418.802		Ti II	69
5419.189		Ti I	258
5419.19		Ta I	6
5419.36		Cr II	22,29
5419.876		Gd II	99
5420.362		Mn I	4
5420.90		Cr II	23
5421.05		Ba II	6
5421.40	P	Fe I	874
5421.559		Nd II	79
5421.85	P	Fe I	1183
5422.15	P	Fe I	1145
5422.47		Ti II	80
5423.25		Cl II	2
5423.52		Cl II	2
5423.73	P	Fe I	927
5423.82		La II	7
5424.072		Fe I	1146
5424.15	P	Fe I	1026
5424.36		Cl II	2
5424.551		Ba I	9
5424.56	P	Ni I	231
5424.654		Ni I	70
5425.269		Fe II	49
5425.29	P	Cr II	29
5425.621		Co I	196
5425.93		P II	6
5426.256		Ti I	3
5427.832		Fe II	
5428.64		S II	6
5428.71	P	Fe I	1032
5428.79		Ba II	9
5428.85		Ni I	161
5429.139		Ti I	259
5429.43	P	Fe I	1029
5429.52	P	Fe I	1062
5429.699		Fe I	15
5429.83	P	Fe I	1162
5430.14		Fe III	
5430.41	P	Cr II	29
5431.526		Nd II	80
5432	P	O V	13
5432.09		V II	53
5432.318		Ti I	265
5432.347		Cr I	204
5432.548		Mn I	1
5432.77		S II	6
5432.950		Fe I	1143
5432.98	P	Fe II	55
5434.527		Fe I	15
5435.16		O I	11
5435.17	P	Fe I	1161
5435.27		Ta I	9
5435.76		O I	11

I A	Type	Element	Multiplet No.
5435.79	P	Fe II	48
5435.871		Ni I	70
5436.299		Fe I	1161
5436.594		Fe I	113
5436.703		Ti I	51
5436.80		Fe III	110
5436.83		O I	11
5437.19	P	Fe I	1145
5438.04	P	Fe I	1237
5438.310		Ti I	108
5438.41		Si II	
5439.30		V II	53
5440.53	P	Ti I	107
5441.17		Gd II	146
5441.321		Fe I	1144
5442.274		Nd II	76
5442.413		Cr I	204
5443.41	P	Fe I	1059
5443.42		Cl II	2
5443.88		Fe III	110
5444.07		Hf II	69
5444.096		Mn I	31
5444.25		Cl II	2
5444.585		Co I	196
5444.99		Cl II	2
5445.045		Fe I	1163
5445.97	P	Fe II	53
5446.46	P	Ti II	68
5446.57	P	Cr II	35
5446.58	P	Fe I	1144
5446.593		Ti I	3,259
5446.76		Cr I	204
5446.87	P	Fe I	37
5446.920		Fe I	15
5447.59		La II	112
5448.882		Ti I	259
5449.155		Ti I	107
5450.66		P II	23
5450.836		Sr I	9
5451.115		Nd II	
5451.60	P	Fe II	184
5451.965		Ti I	265
5452.03		Ti II	109
5452.119		Fe I	870
5452.12		N II	29
5452.305		Co I	175
5453.255		Ni I	231
5453.338		Co I	194
5453.646		Ti I	108
5453.81		S II	6
5453.98	P	Fe I	1064
5454.05	P	Ti II	68
5454.26		N II	29
5454.41		A II	
5454.573		Co I	195
5455.09	P	Fe I	627
5455.11		La I	3
5455.433		Fe I	1145
5455.613		Fe I	15
5455.80		Cr II	50
5455.815		Nd II	83
5456.11		Si II	
5456.27		Cl II	2
5456.48		Fe I	817
5457.02		Cl II	2
5457.10		V II	53
5457.47		Cl II	2
5457.471		Mn I	4
5458.68		La II	99
5460.502		Ti I	3
5460.644		Mn I	31
5460.742		Hg I	1
5460.8		Fe III	68
5460.909		Fe I	464
5461.31		Ta I	4
5461.54		Fe I	1145
5461.80	P	Fe I	817
5462.487		Ni I	192
5462.62		N II	29
5462.970		Fe I	1163
5463.282		Fe I	1163
5463.38		Hf II	14
5463.974		Cr I	204
5464.286		Fe I	1030
5464.36	P	Cr II	35
5464.37		La II	49
5465.04	P	Fe I	840
5466.021		Fe II	
5466.404		Fe I	1144
5466.46		Fe III	

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I A	Type	Element	Multiplet No.
466.46		Y I	12
466.55		S II	11
466.94		Fe II	
466.993		Fe I	784,817
467.76	P	Fe I	741
468.101		Ni I	192
468.37	P	Ce II	24
468.44	P	Ti II	102
468.92		Si II	
469.09	P	Fe I	1131
469.29	P	Fe I	1143
469.305		Co I	56
469.72		Gd II	60
470.17		Fe I	1144
470.460		Co I	175
470.50		Ti I	108
470.53		Gd II	63
470.638		Mn I	4
470.81	P	Fe II	52
471.198		Ti I	106
472.297		Ce II	24
472.63		Cr II	50
472.696		Ti I	107
472.720		Fe I	1108
473	P	O V	13
473.18	P	Fe I	1064
473.40		Y II	27
473.517		Ti I	259
473.517		Ti II	109
473.59		S II	6
473.908		Fe I	1062
474.09	P	Fe I	1314
474.228		Ti I	108
474.449		Ti I	259
474.734		Nd II	82
475.57		Ni I	159
476.298		Fe I	1029
476.571		Fe I	1062
476.69		Lu II	2
476.906		Ni I	59
477.089		Co I	175
477.45	P	Cr II	50
477.67	P	Fe II	49
477.695		Ti I	265
477.82		Zr II	115
478.13		N II	29
478.35		Cr II	50
478.48		Fe I	1062
478.6		C II	34
479.95	P	Fe I	1282
480.10		N II	29
480.30		Ba II	9
480.502		Cr I	204
480.72		La II	90
480.75		Y II	27
480.865		Sr I	9
480.872		Fe I	1062
480.893		Ni I	191
481.252		Fe I	1058
481.396		Mn I	4,31
481.426		Ti I	265
481.451		Fe I	1061
481.862		Ti I	106
481.989		Sc I	16
482.26	P	Fe I	873
482.27		La II	4
482.471		V I	2
483.111		Fe I	1061
483.354		Co I	39
483.55		Li II	1
483.56		P II	23
483.902		Co I	175
484.618		Sc I	16
485.6		Fe III	68
485.65		Li II	1
485.699		Nd II	79
486.136		Sr I	9
486.6		O I	63
486.86		La II	68
487.00		V II	53
487.16		Fe I	1143
487.49	P	Fe I	870
487.52	P	Fe I	1064
487.747		Fe I	1025
487.915		V I	129
488.14	P	Fe I	1183
488.210		Ti I	265
488.97	P	Cr II	35
489.85	P	Fe I	1148
490.151		Ti I	107

I A	Type	Element	Multiplet No.
5490.65	P	Ti II	68
5490.840		Ti I	3
5491.84		Fe I	1031
5492.43		Ti IV	
5492.8		O I	62
5492.82	P	Ti II	68
5493.22		Hf II	113
5493.33	P	Fe I	873
5493.45		La II	4
5493.508		Fe I	1061
5493.850		Fe I	464,1062
5494.35	P	V II	53
5494.468		Fe I	1024
5494.726		Ti I	108
5494.890		Ni I	231
5495.682		Co I	166
5495.70		N II	29
5495.8720		A I	14
5496.020		V I	2
5496.24		Si II	
5496.57	P	Fe I	1281
5497.42		Y II	27
5497.519		Fe I	15
5497.70	P	Fe II	204
5497.86	P	Cr II	22
5497.92	P	Ti I	51
5498.18		S I	12
5498.19	P	Fe II	24
5499.39	P	Ni I	176
5499.60	P	Fe I	1159
5499.72		P II	6
5500.43		Gd II	99
5500.61	P	Cr II	35
5501.34		La I	3
5501.469		Fe I	15
5501.54		S I	12
5502.05		Cr II	50
5502.88		Al II	78
5503.18		Cr II	50
5503.397		Fe II	
5503.897		Ti I	287
5504.120		Ni I	175
5504.184		Sr I	9
5504.21		Mn I	31
5505.75	P	Fe I	1162
5505.869		Mn I	4
5505.893		Fe I	1145
5506.268		Fe II	
5506.51		Mo I	4
5506.782		Fe I	15
5507.01		S I	12
5507.15		P II	23
5507.753		V I	129
5508.11		O III	16
5508.60		Cr II	50
5508.88	P	Cr I	224
5509.67		S II	6
5509.91		Y II	19
5510.001		Ni I	190
5510.174		Mn I	31
5510.23	P	Fe I	1023
5510.58		Gd II	132
5510.68		Cr II	23
5511.795		Ti I	108,275
5512.085		Ce II	24
5512.277		Fe I	1143
5512.40	P	Fe I	1148
5512.529		Ti I	106
5512.69		Cr I	121
5512.71		O I	25
5512.979		Ca I	48
5513.86	P	Fe I	925
5514.215		Sc I	15
5514.350		Ti I	106
5514.536		Ti I	106
5514.712		W I	1
5514.80		Ni I	189
5515.083		V I	2
5515.371		V I	1
5515.990		Co I	195
5516.09		Sm I	2
5516.29	P	Fe I	1057
5516.771		Mn I	4
5517.08		Fe I	1109
5518.11	P	Ti I	265
5518.491		Ce II	26
5518.57	P	Fe I	1314
5518.74		S II	61
5519.047		Ba I	9
5519.72	P	Fe II	204

I A	Type	Element	Multiplet No.
5519.83	P	Fe II	52
5520.19	P	Fe I	1144
5520.496		Sc I	15
5521.14	P	Fe I	839
5521.28	P	Fe I	1162
5521.44		Ni I	175
5521.56	P	Y II	27
5521.765		Sr I	9
5522.46		Fe I	1108
5523.310		Co I	112
5524.25	P	Fe I	1059
5524.35		Hf II	25
5524.990		Co I	192
5525.14	P	Fe II	56
5525.48	P	Fe I	1107
5525.552		Fe I	1062
5525.90	P	Cr II	22
5526.06		Sc I	18
5526.22		S II	11
5526.26		N II	63
5526.809		Sc II	31
5527.07	P	Fe I	464
5527.54		Y I	12
5527.606		Ti I	265
5527.72		V I	1
5528.3876		Mg I	9
5528.3986		Mg I	9
5528.4094		Mg I	9
5528.89	P	Fe I	1161
5529.15		Fe I	872
5529.80	P	Fe I	344
5529.94	P	Ti II	68
5529.940		Fe II	224
5530.10		V II	247
5530.27		N II	63
5530.780		Co I	38
5531.949		Fe I	1281
5532.13	P	Fe I	344
5532.17		La II	106
5532.65		Fe III	56
5532.752		Fe I	783
5533.01		Mo I	4
5534.68		Fe I	871,1063
5534.794		Sr I	9
5534.860		Fe II	55
5535.382		V I	1
5535.39		N II	63
5535.419		Fe I	626,1029
5535.484		Ba I	2
5535.66		La II	71
5536.0		C II	10
5536.01		K II	6
5536.59	P	Fe I	345
5536.77		S II	11
5537.11		Ni I	188
5537.756		Mn I	4
5538.32		Gd II	
5538.54		Fe I	839,1064
5539.28		Fe I	871
5539.831		Fe I	1130
5540.051		Sr I	9
5540.16		N II	63
5540.74		Si II	9
5541.030		Sc I	18
5541.19		P II	23
5541.58	P	Fe I	627
5543.03	P	Fe I	1064
5543.04	P	Fe I	926
5543.184		Fe I	926
5543.49		N II	63
5543.86	P	Cr II	35
5543.930		Fe I	1062
5544.61		Y II	27
5544.76	P	Fe II	166
5544.865		V I	38
5545.01		Gd II	98
5545.11		N I	26
5545.26	P	Fe II	24
5545.933		V I	38
5545.937		Co I	191
5546.02		Y II	27
5546.519		Fe I	1145
5547.00		Fe I	1061
5547.080		V I	38
5548.474		Nd II	73
5549.55	P	Fe I	1159
5549.66	P	Fe I	1314
5549.68		Sc I	15
5549.94		Fe I	926
5550.60		Hf I	1

	Type	Element	Multiplet No.
9	P	Fe I	714
7	P	Fe I	1059
5		N II	63
85		Mn I	
.2		Hf I	7
5		Sc II	25
4		N II	63
0	P	Fe I	1281
5	P	Fe I	344
2	P	Fe I	1064
86		Fe I	1161
93		Ni I	69
1	P	Cr II	34
95		Fe I	1183
4		O I	24
.7	P	Fe I	740
1		S II	6
.9		Cr I	120,121
.8		Yb I	1
8		Al I	6
.53		V I	1
0	P	Fe I	464,1164
5		Al I	6
54		Fe I	1163
1		As II	2
52		V I	77
25		Co I	166
6		S II	61
4	P	Fe I	282
30		Fe I	1164
7		N I	25
48		V I	1
9		Gd II	99
	P	N IV	13
70		V I	77
2		V II	247
2	P	Fe I	1162
12		Fe I	626,1163
69		Ne I	19
04		Fe I	1062
9	P	Fe I	112,1023
7		N I	25
61		Sc I	18
4		S II	6
0		N II	63
76		Ti I	229
6		Hf II	100
08		Fe I	1183
6	P	Cr II	35
2	P	Fe I	625
2		La II	90
01		Fe I	209
15		Fe II	
7	P	Fe I	1059
4	P	Fe I	1058
1	P	Fe I	1026
1		Cl II	80
1		Fe I	869
25		Fe I	686
6	P	Fe I	345
6		Mo I	4
	P	N IV	13
49		Fe I	686
	P	O V	3
0		Fe I	1061
		Fe III	68
1		Cr I	120
97		Fe I	686
1		Si II	9
3	P	Fe I	1314
0		A II	134
34		Ni I	47
5		S II	11
4	P	Fe I	1061
1		Cr I	223
7		Y I	12
71		Ca I	21
	P	O V	3
3		P II	23
8		Gd II	59
7	P	Fe I	1059
	P	O V	3
90		V I	37
38		V I	85
68		Fe I	782
07		V I	85
6		Gd II	78
63		Fe I	386
6	P	Fe I	583
32		Fe I	1026

I A	Type	Element	Multiplet No.
5587.865		Ni I	70
5587.9		Fe III	
5588.07	P	Fe I	1109
5588.25		P II	27
5588.757		Ca I	21
5589.00	P	Fe I	1160
5589.384		Ni I	205
5590.120		Ca I	21
5590.73		Hf II	48
5590.744		Co I	90
5591.322		Sc I	18
5591.38	P	Fe II	55
5592.146		Ni I	250
5592.283		Ni I	69
5592.37		O III	5
5592.409		V I	37
5592.962		V I	1
5593.23		Al II	16
5593.735		Ni I	206
5594.425		Nd II	79
5594.468		Ca I	21
5594.661		Fe I	1182
5595.06	P	Fe I	1314
5597.21		Gd II	95
5597.87		Cr I	239
5597.92		Ti I	229
5598.303		Fe I	1183
5598.47	P	Fe I	113
5598.487		Ca I	21
5600	P	O V	3
5600.038		Ni I	219
5600.242		Fe I	866,1108
5601.285		Ca I	21
5602	P	O VI	11
5602.54	P	Fe I	1281
5602.788		Fe I	1062
5602.846		Ca I	21
5602.955		Fe I	686
5603.651		Nd I	45
5604.205		V I	85
5604.943		V I	37
5605.91	P	Fe II	51
5606	P	O V	3
5606.11		S II	11
5607.05		Ni I	205
5607.12	P	Fe II	24
5607.66	P	Fe I	1058
5608	P	O V	3
5608.98	P	Fe I	1108
5609.19		Cr I	223
5609.97	P	Fe I	866
5610.01	P	Cr II	34
5610.257		Ce II	26
5610.36		Y II	19
5610.53		La II	106
5611.35	P	Fe I	869
5613.19		Al II	77
5613.698		Ce II	32
5613.70	P	Fe I	1282
5614.29	P	Fe I	1314
5614.303		Nd II	87
5614.58	P	Fe I	739
5614.790		Ni I	250
5615.18	P	Fe I	1143
5615.308		Fe I	209
5615.54	P	Cr I	239
5615.652		Fe I	686
5616.21		Gd II	61
5616.54		N I	24
5616.63		S II	11
5617.14	P	Fe I	1085
5617.22		Fe I	626
5617.91		Gd I	3
5618.646		Fe I	1107
5619.23	P	Fe I	923
5619.60		Fe I	1161
5620.04		Fe I	1026,1205
5620.16		Zr I	25
5620.527		Fe I	1061
5620.62	P	Nd II	86
5620.63		Cr II	189
5621.43		Gd II	132
5622.075		V I	85
5622.23		Si I	11
5623.20		N I	24
5623.64	P	Fe I	625
5624.056		Fe I	1160
5624.223		V I	127
5624.549		Fe I	686

I A	Type	Element	Multiplet No.
5624.605		V I	37
5624.895		V I	37
5625.326		Ni I	221
5625.43		N I	24
5625.74		A II	121
5626.014		V I	37
5626.60	P	Cr II	22
5627.08	P	Fe I	1084
5627.49	P	Fe II	57
5627.628		V I	37
5628.347		Ni I	215
5628.645		Cr I	203
5630.14		Y I	12
5631.404		Tm I	
5631.707		Sn I	4
5631.72		Fe I	1159
5632.25		Gd I	3
5632.469		V I	1
5633.970		Fe I	1314
5634.53	P	Fe I	1281
5634.84		Cl II	23
5635.85		Fe I	1088
5636.00	P	Fe I	1058
5636.235		Ru I	10
5636.708		Fe I	868
5637.121		Ni I	218
5637.734		Co I	195
5638.266		Fe I	1087
5638.82		Ni I	203
5639.492		Si II	9
5639.96		S II	14
5640.32		S II	11
5640.40		Fe I	1202
5640.50		C II	15
5640.971		Sc II	29
5641.112		Ni I	230
5641.464		Fe I	1087
5641.880		Ni I	234
5642.01		V II	238
5642.362		Cr I	239
5642.660		Ni I	203
5642.75	P	Fe I	1184
5643.099		Ni I	259
5643.24		Gd I	3
5643.94	P	Fe I	1021
5644.137		Ti I	240
5644.35	P	Fe I	1057
5644.84		Gd II	60
5645.62		S II	6
5645.665		Si I	10
5646.112		V I	37
5646.70	P	Fe I	1109
5646.98		S II	14
5647.234		Co I	112
5648.08		C II	15
5648.18		Cr I	239
5648.570		Ti I	269
5648.90	P	Fe I	625
5649.371		Cr I	239
5649.66		Fe I	838
5649.697		Ni I	231
5650.01		Fe I	1314
5650.31	P	Fe I	1180
5650.7034		A I	12
5650.71		Fe I	1314
5651.47	P	Fe I	1161
5651.53		As II	2
5651.734		Co I	56
5652.01	P	Fe I	1059
5652.3		La II	103
5652.32		Fe I	1108
5653.389		Fe I	1159
5655.179		Fe I	1314
5655.506		Fe I	1107,1314
5656.6585		Ne I	24
5656.395		V I	127
5657.449		V I	37
5657.870		Sc II	29
5657.92	P	Fe II	57
5658.334		Sc II	29
5658.542		Fe I	686
5658.67	P	Fe I	1087
5658.826		Fe I	686
5659.104		Ti I	50
5659.121		Co I	82
5659.86		Sm I	2
5659.95		S II	11
5660.79		Fe I	869
5661.03	P	Fe I	1234
5661.36		Fe I	1108

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A	Type	Element	Multiplet No.
61.97	P	Fe I	1109
62.154		Ti I	249
62.51		C II	15
62.525		Fe I	1087
62.58	P	Cr II	34
62.891		Ti I	269
62.94		Fe I	924
62.95		Y II	38
64.017		Ni I	272
64.040		Cr I	203
64.55		Zr I	47
64.73		S II	11
65.601		Si I	10
66.64		N II	3
66.78	P	Ni I	233
66.837		Fe I	1053,1060
67.164		Sc II	29
67.67	P	Fe I	209
68.369		V I	37
68.868		Nd II	84
68.901		Ce II	23
69.030		Sc II	29
69.590		Si II	
69.8	P Forb	Na I	7
69.945		Ni I	250
70.827		V I	36
71.54		La II	95
71.62	P	Cr II	22
71.805		Sc I	12
72.28	P	Fe I	1234
73.58		Hf II	112
75.08	P	Fe I	583
75.3	P Forb	Na I	7
75.413		Ti I	249
75.853		Tm I	
76.02		N II	3
77.68	P	Fe I	1057
78.04	P	Fe I	1290
78.38	P	Fe I	982
78.42		Cr II	189
78.60	P	Fe I	113
79.023		Fe I	1183
79.56		N II	3
79.908		Ti I	269
80.26		Fe I	1026
80.93		Zr I	25
81.198		Cr I	
82.204		Ni I	232
82.483		Cr I	239
82.633		Na I	6
82.88		Ca I	
84.190		Sc II	29
84.523		Si I	11
85.86	P	Fe I	1281
86.21		N II	3
86.532		Fe I	1182
86.826		Sc I	12
88.193		Na I	6
88.205		Na I	6
88.47		Ca I	
88.525		Nd II	79
88.593		Co I	90
88.856		Si II	
89.22		Mo I	5
89.465		Ti I	249
90.07	P	Fe I	1281
90.470		Si I	10
91.38	P	Fe II	47
91.509		Fe I	1087
91.52		Ni I	228
91.60	P	Fe I	1084
91.71		A II	134
91.99	P	Ti II	79
94.46		He II	8
94.730		Cr I	239
94.998		Ni I	220
96.0		C III	2
96.10	P	Fe I	1179
96.11	P	Fe II	18
96.22		Gd I	3
96.47		Al III	2
96.63		S I	11
98.05		Fe I	867
98.330		Cr I	239
98.37		Fe I	1130
98.509		V I	35
00.14		Sc I	12
00.24		S I	11
00.240		Cu I	2
00.514		Cr I	203,228

I A	Type	Element	Multiplet No.
5701.138		Si I	10
5701.35		Gd I	3
5701.375		Si II	
5701.46	P	Cr II	22
5701.553		Fe I	209
5702.244		Nd II	78
5702.307		Cr I	203
5702.434		Fe I	866
5702.666		Ti I	249
5703.09	P	Fe I	1053
5703.32		La II	48
5703.562		V I	35
5705.32	P	Fe I	1058
5705.48		Fe I	1087
5705.988		Fe I	1183
5706.11	P	Fe I	1088
5706.11		S I	11
5706.206		Nd II	86
5706.375		Si II	
5706.973		V I	35
5707.03		Ca I	54
5707.068		Fe I	868
5707.25	P	Fe I	866
5707.70	P	Fe I	1056
5708.109		Fe I	1101
5708.199		Ti I	249
5708.280		Nd II	79
5708.437		Si I	10
5708.600		Sc I	12
5709.378		Fe I	686
5709.559		Ni I	46
5709.93	P	Fe I	1088
5709.976		Tm II	
5710.76		N II	3
5711.0735		Mg I	8
5711.0831		Mg I	8
5711.0912		Mg I	8
5711.754		Sc I	12
5711.852		Ti I	249
5711.867		Fe I	1087
5711.905		Ni I	69
5712.150		Fe I	686
5712.39		La II	20
5712.635		Cr I	
5712.778		Cr I	119
5713.895		Ti I	249
5714.88	P	Fe I	552
5715.086		Ni I	231
5715.107		Fe I	1061,1086
5715.123		Ti I	228
5715.47	P	Fe I	1054
5715.80	P	Fe I	1198
5716.450		Ti I	249
5717.30		Sc I	12
5717.845		Fe I	1107
5717.99		Ca I	54
5718.120		Nd II	86
5719.18		Hf I	6
5719.2254		Ne I	28
5719.821		Cr I	119
5720.445		Ti I	249
5720.613		O I	40
5720.79	P	Fe I	1291
5720.89	P	Fe I	1178
5721.02	P	Cr II	34
5721.70	P	Fe I	1057
5721.71	P	Fe I	1088
5721.99		Gd II	110
5722.56	P	Fe II	58
5722.65		Al III	2
5723.66	P	Fe I	1160
5723.87	P	Ti II	79
5724.073		Sc I	12
5724.37		A II	12
5724.445		Fe I	1109
5725.633		V I	135
5725.95	P	Fe II	57
5727.024		V I	35
5727.29		La II	48
5727.662		V I	35
5727.69		P II	27
5727.75		Fe I	1204
5728.32		Gd II	60
5728.74	P	Fe II	51
5728.91		Y II	34
5729.203		Cr I	257
5730.67		N II	3
5731.103		O I	40
5731.257		V I	36
5731.70		Ca I	54

I A	Type	Element	Multiplet No.
5731.771		Fe I	1087
5732.29	P	Fe I	1313
5732.72	P	Fe II	57
5732.86	P	Fe I	1055
5733.86		Gd II	94
5734	P	N IV	9
5734.004		V I	135
5735.70		Zr I	4
5735.74		Ca I	54
5736.55		Lu I	1
5736.632		Cr I	228
5737.040		V I	35
5737.68	P	Fe II	58
5737.71		Fe I	1053
5738.22	P	Fe I	1084
5738.286		Mn I	
5738.554		Cr I	227
5739.08	P	Ti I	249
5739.30		Sc I	12
5739.464		Ti I	228
5739.762		Si III	4
5739.78	P	Fe I	1057
5739.975		Ti I	228
5740.65		La I	8
5740.862		Nd II	60
5741.192		Ti I	280
5741.36		Sc I	12
5741.861		Fe I	1086
5742.95	P	Fe I	1084
5743.28		Ca I	
5743.438		V I	35
5746.32	P	Cr I	228
5746.432		Cr I	243
5746.81		Ca I	54
5747.29		N II	9
5747.36		N I	35
5747.85	P	Fe I	343
5747.88	P	Fe II	164
5747.95		Fe I	1182
5748.15	P	Fe I	1290
5748.299		Ne I	13
5748.343		Ni I	45
5748.412		V I	127
5748.860		V I	92
5749.28		Ni I	176
5749.41		Gd II	97
5749.65	P	Fe I	1160
5750.424		O I	40
5751.41		Mo I	5
5752.043		Fe I	1180
5752.64		N I	33
5752.711		V I	92
5752.89		Ti I	214
5753.136		Fe I	1107
5753.38	P	Fe I	1084
5753.692		Cr I	
5753.97	P	Fe I	170
5754.17		Gd II	
5754.258		Si I	10
5754.41		Fe I	866
5754.675		Ni I	68
5754.89	P	Fe I	113
5756.45	P	Ti I	228
5757.69		Ca I	54
5759.270		Fe I	1184
5759.56	P	Fe I	1087
5759.57	P	Fe I	1204
5760.351		Fe I	867
5760.53	P	Fe I	1054
5760.71	P	Fe I	1056
5760.847		Ni I	231
5761.08	P	Fe I	1057
5761.27		Fe I	867
5761.411		V I	35
5761.88		Ca I	54
5762.295		Ti I	309
5762.434		Fe I	866
5762.84	P	Fe I	1086
5762.992		Fe I	1107
5764.300		Tm I	
5764.32		Ca I	
5764.419		Ne I	13
5766.330		Ti I	309
5767.18		Hf II	22
5767.43		N II	9
5768.895		Ce II	32
5769.06		La II	70
5769.31	P	Fe I	1179
5769.32		La I	8
5769.598		Hg I	5

	Type	Element	Multiplet No.
7	P	Fe I	1236a
58		Si I	17
02		V I	92
76		Cr I	227
5	P	Fe II	165
37		Ti I	309
90		Fe I	1087
70		V I	36
6		Ta I	5
22		Ba I	9
7		Cr I	257
7		Fe I	209
1	P	Fe I	1203
5	P	Fe II	24
39		Mn I	
52		Si I	9
21		Fe I	552
7		Ni I	217
78		Ti I	214
3		Fe I	552,922,1159
7		Cr I	188
95		Cr I	119,188
9		Y II	34
3	P	Ti II	79
06		Cr I	188
32		Cu I	2
56		Tm II	
01		V I	35,127
12		Cr I	188
5	P	Cr I	227
09		V I	141
34		Cr I	188
3		Ba II	13
30		V I	141
9		Fe I	686
		Fe II	215
02		Cr I	188
3		Mg I	24
4		Si II	
7		Ti I	309
20		Cr I	188
5		Cr I	17
79		Ti I	309
53		V I	141
9	P	Fe I	1084
36		Cr I	119
7	P	Fe I	625
9		Cr I	188
39		Cr I	119
49		V I	92
2		La I	8
0		Cl II	27
9	P	Cr I	17
59		Hg I	4
05		Cr I	188
14		Fe I	552
2		La I	8
3		Gd I	3
7		V II	
3	P	Fe I	1234
31		Cr I	243
5		Mo I	5
28		Si I	9
5	P	Fe II	47
1		C I	18
0	P	Fe I	1236a
32		Fe I	1086
	P	N IV	15
7		Fe II	211
78		Ni I	68
7	P	Fe I	1054
57		Cr I	
52		V I	142
45		Ti I	309
3	P	Cr I	185
7		La II	4
5		Zr I	4
1	P	Fe II	165
12		Si I	9
0	P	Cr I	185
94		Fe I	982
5		Cr I	17
05		V I	142
2	P	Fe II	165
29		Ba I	9
3		Si II	8
4		Cr I	243
7		C I	18
0		Gd II	112
1		C IV	1

I A	Type	Element	Multiplet No.
5801.71		Hf II	59
5804.020		Nd II	79
5804.06		Fe I	959
5804.265		Ti I	309
5804.4488		Ne I	19
5804.478		Fe I	1087
5804.91	P	Fe II	165
5805.233		Ni I	234
5805.76		C I	18
5805.76	P	Fe I	1313
5805.77		La II	1
5806.31	P	Cr II	34
5806.56		La II	90
5806.727		Fe I	1180
5806.75		Si II	8
5806.77	P	Sc II	21
5807.05		Gd II	112
5807.14		V I	142
5807.22	P	Fe I	581
5807.79	P	Fe I	552
5807.97	P	Fe I	1178
5808.31		La II	4
5808.63		La II	118
5809.249		Fe I	982
5809.50		Hf II	14
5809.75		Ti I	73
5809.88	P	Fe I	1084
5811.10		Ta I	3
5811.572		Nd II	78
5811.93		Fe I	1022
5811.93	P	Fe II	24
5812	P	N IV	15
5812.14		C IV	1
5812.81		A II	125
5812.827		Ti I	309
5813.33	P	Fe I	1054
5813.67		Fe II	163
5814.00		Ti I	73
5814.62	P	Ti II	79
5814.80		Fe I	1086
5815.16		Fe I	1055
5815.23	P	Fe I	1234
5815.42	P	Fe I	1053
5815.85		Gd II	112
5816.07	P	Fe I	1127
5816.36		Fe I	1179
5816.48		N I	32
5816.844		Mn I	
5817.063		V I	92
5817.532		V I	142
5817.87		C II	22
5818.74		Eu II	9
5819.22		S II	14
5819.93		V II	99
5820.155		Ne I	19
5820.99		Gd II	112
5823.13		C II	22
5823.17		Fe II	164
5823.679		Ti I	239
5824.40	P	Fe II	58
5826.12	P	Fe II	182
5826.299		Co I	169
5826.64	P	Fe I	1084
5827.1		C III	22
5827.24		Cr II	198
5827.80		C II	22
5827.80		Si II	8
5827.89	P	Fe I	552
5828	P	N IV	15
5829.12	P	Fe II	165
5829.53		N I	32
5830.719		V I	142
5831.624		Ni I	233,250
5832.47		Ti I	309
5833.65		Fe III	114
5833.93	P	Fe I	209
5834.06	P	Fe II	165
5834.93	P	Fe II	57
5835.10	P	Fe I	1084
5835.41	P	Fe I	1313
5835.43	P	Fe II	58
5835.50	P	Fe II	182
5835.58	P	Fe I	343
5835.61		Fe II	
5836.31		C II	22
5837.29		Au I	2
5837.709		Fe I	1129
5838.418		Fe I	959
5838.66		Cr I	119
5839.78	P	Ti I	105

I A	Type	Element	Multiplet No.
5840.47		Gd II	112
5841.01		N I	32
5841.86		Cr II	198
5842.23		Hf II	50
5842.391		Nd II	86
5843.24		Cr I	119
5843.77		C II	22
5843.80		A II	12
5844.606		Cr I	119
5844.879		Fe I	1056
5845.27	P	Fe I	1313
5845.71		Gd II	112
5846	P	N IV	15
5846.12		Si II	8
5846.306		V I	142
5846.575		Co I	169
5847.010		Ni I	44
5848.09		Fe I	552,1175
5848.95		La II	111
5849.67	P	Fe I	922
5850.286		V I	92
5851.63		Gd I	3
5852.19		Fe I	1178
5852.4878		Ne I	6
5853.18		Fe I	35
5853.48	P	Fe I	1340
5853.62		Al II	41
5853.675		Ba II	2
5854.1		Fe III	
5854.16		N I	32
5854.27		Cr I	
5854.31	P	Sc II	21
5855.126		Fe I	1179
5855.24		Gd II	112
5856.084		Fe I	1128
5856.09		C II	22
5856.22		Gd I	3
5856.45	P	Fe II	183
5856.96		Gd II	60
5857.454		Ca I	47
5857.755		Ni I	228
5857.9	P	C III	20
5858.27	P	Fe I	170
5858.28		Mo I	5
5858.77	P	Fe I	1084
5859.20		Fe I	1084
5859.23	P	Si I	9
5859.608		Fe I	1181
5859.96	P	Fe I	1054
5860.73		Gd II	58
5860.92	P	Ti II	79
5861.11	P	Fe I	1084
5861.53		Al II	41
5862.357		Fe I	1180
5862.80		V II	91
5863.70		La II	62
5863.96		Cr I	185
5863.97		Ni I	253
5864.24	P	Fe I	1086
5864.54	P	Fe II	24
5866.453		Ti I	72
5867.01	P	Fe I	1203
5867.497		Si II	8
5867.572		Ca I	46
5867.81		Al II	41
5868.404		Si II	8
5870.65	P	Fe I	1235
5871.04		Fe I	150
5871.289		Fe I	1055
5871.6	P	C III	20
5871.81		Gd II	79
5872.73	P	Fe I	552
5872.828		Ne I	31
5872.98		Eu II	9
5873.211		Fe I	1087
5874.00		La II	48
5875.6		Fe III	
5875.618		He I	11
5875.650		He I	11
5875.989		He I	11
5876.27	P	Fe I	1084
5876.55		Cr I	119
5877.26		Gd II	94
5877.770		Fe I	1083
5879.49	P	Fe I	1201
5879.79		Zr I	4
5880.00		Fe I	1201
5880.306		Ti I	71
5880.63		La II	35
5881.28	P	Fe I	1178

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I A	Type	Element	Multiplet No.
881.76	P	Fe I	63
881.8950		Ne I	1
883.06	P	Fe I	1124
883.421		Co I	90
883.838		Fe I	982
884.452		Cr I	119
884.59		Gd II	112
885.61		Zr I	2
887.46	P	Fe I	1203
888.32		Mo I	5
889.953		Na I	1
889.97		C II	5
890.02	P	Sc II	21
890.48	P	Fe I	1313
890.487		Co I	82
891.12		Fe I	581
891.16	P	Fe I	1179
891.36		Fe II	211
891.528		Nd II	86
891.5		Fe III	114
891.65		C II	5
891.89	P	Fe I	1236
891.9		Fe II	
892.46	P	Fe I	1201
892.66		La II	48
892.71		Fe I	1086
892.76	P	Ni I	250
892.80	P	Fe I	63
892.878		Ni I	68
893.24	P	Fe I	1055
893.42		Ge II	1
894.1	P	C III	20
894.351		Zn II	1
895.007		Fe I	1235
895.646		Tm I	
895.89		S II	20
895.90		Cr II	198
895.923		Na I	1
897.54		V II	98
897.62		Gd II	112
898.212		Fe I	1259
899.295		Ti I	72
901.0		Fe III	115
901.53	P	Fe I	1083
901.95		La II	107
902.183		Cr I	110
902.52		Fe I	1234
903.317		Ti I	71
903.6		Fe II	
904.07		Gd II	112
905.673		Fe I	1181
906.50	P	Ti I	105
907.36		C II	44
908.24		Fe I	150
908.25		S II	13
909.38	P	Fe II	57
909.99		Fe I	552
911.45		Gd II	
913.35	P	Fe I	781
913.55		Gd II	
913.730		Ti I	2
913.87		Cr II	
914.16		Fe I	1180,1181
914.28		V II	126
914.92		C II	44
915.123		Ti I	228
915.266		Si II	8
915.551		Co I	82
915.93		Cr I	185
916.250		Fe I	170
916.364		V II	126
916.73		Cr I	185
918.548		Ti I	71
918.93	P	Fe I	1083
919.60		C II	44
920.0		Fe III	115
920.520		Fe I	581
922.112		Ti I	72
922.365		Co I	55
923.930		Ni I	259
925.81	P	Ni I	42
926.83	P	Fe I	1231
927.15		S II	21
927.71		La II	111
927.798		Fe I	1175
927.82		N II	28
928.50	P	Fe I	1055
928.86		V II	98
929.35		Hf II	69
929.5		Fe III	114

I A	Type	Element	Multiplet No.
5929.700		Fe I	1176
5930.173		Fe I	1180
5930.61		La I	2
5930.68		La I	2
5931.79		N II	28
5931.89	P	Fe I	1017
5932.05	P	Fe II	47
5932.95		S II	13
5933.80	P	Fe I	1198
5934.658		Fe I	982
5934.747		Nd II	78
5935.23		Zr I	2
5935.391		Co I	55
5936.22		La II	19
5937.806		Ti I	72
5939.75		Ta I	7
5940.25		N II	28
5940.68		Ti I	2
5940.69		S II	21
5940.972		Fe I	1083
5941.36	P	Fe II	58
5941.67		N II	28
5941.755		Ti I	72
5942.71	P	Fe I	1233
5943.11	P	Fe I	1021
5943.58	P	Fe I	63
5943.62	P	Fe I	1085
5944.01		Ta I	8
5944.65	P	Ti I	2
5944.8342		Ne I	1
5946.484		Co I	169
5947.30	P	Fe I	1056
5947.50	P	Fe I	1199
5948.30		La II	105
5948.584		Si I	16
5949.35		Fe I	14,1176
5950.13	P	Fe I	1200
5950.91		A II	12
5951.30		S II	21
5951.45		V II	98
5951.60		Gd II	95
5952.19	P	Fe I	1313
5952.39		N II	28
5952.55	P	Fe II	182
5952.749		Fe I	959
5953.162		Ti I	154
5953.65		Fe III	115
5955.12	P	Fe I	1233
5955.37		Zr I	3
5955.682		Fe I	1106
5956.48		Gd II	59
5956.5		Fe II	
5956.702		Fe I	14
5957.612		Si II	4
5958.22	P	Fe I	1199
5958.23	P	Fe I	14
5958.34	P	Fe I	63
5958.46		O I	23
5958.63		O I	23
5959.878		Fe I	1020
5960.93		N II	28
5961.91	P	Fe I	1080
5962.4		Fe II	
5963.25		Fe I	63
5965.040		Co I	169
5965.474		Ne I	39
5965.828		Ti I	154
5966.07		Eu II	9
5967.77		V II	126
5969.38		Hf II	66
5969.554		Fe I	1086
5969.64		K II	7
5971.07		Ti I	264
5971.09		La II	69
5971.28		Tm I	
5971.699		Ba I	7
5971.94		Al II	100
5973.37	P	Fe I	1175
5973.52		La II	103
5973.66		Ni I	226
5974.62	P	Fe I	1055
5974.628		Ne I	28
5975.355		Fe I	1017,1260
5975.5340		Ne I	1
5975.830		Ce II	30
5976.18	P	Fe I	1125
5976.799		Fe I	959
5978.17	P	Fe I	1199
5978.543		Ti I	154
5978.90		Fe III	117

I A	Type	Element	Multiplet No.
5978.970		Si II	4
5980.748		V I	49
5980.89		Ti I	72
5981.25		Ba II	13
5981.38	P	Fe I	837
5981.96		Cr I	185
5982.52		Ti I	264
5982.84		Cr I	185
5983.704		Fe I	175
5983.90		Lu II	2
5984.092		Co I	37
5984.253		Co I	201
5984.586		Ti I	2
5984.602		V I	49
5984.805		Fe I	1260
5986.54	P	Fe II	24
5987.057		Fe I	1260
5987.11		Gd II	97
5988.560		Ti I	154
5990.59	P	Fe II	51
5991.34		O I	44
5991.383		Fe II	46
5991.58	I	Fe I	1232
5991.890		Co I	90
5991.93		O I	44
5992.65	P	Fe I	1080
5993.18		O I	44
5995.28		O I	44
5995.685		Ti I	311
5995.93	P	Fe I	1198
5996.007		Ti I	154
5996.16		S II	13
5996.22	P	Fe I	624
5996.49	P	Fe I	1083
5996.74		Ni I	249
5997.088		Ba I	7
5997.24		Ta I	12
5997.610		Ni I	252
5997.808		Fe I	1175
5998.86		Ni I	226
5999.003		Ti I	198
5999.30		Fe III	117
5999.47		N I	16
5999.668		Ti I	227
5999.70		Al II	93
5999.83		Al II	93
5999.85		Ba II	13
6000.668		Co I	169
6001.18		Al II	109
6001.53	P	Sc II	20
6001.81		Al II	93
6002.273		V I	49
6002.601		V I	34
6002.640		Ti I	198
6003.033		Fe I	959
6004.53		Lu I	1
6004.57		Gd II	112
6005.030		Co I	37
6005.53		Fe I	207,1079
6006.42		Al II	93
6007.313		Ni I	42
6007.75	P	Fe I	581
6007.961		Fe I	1178
6008.295		Mn II	16
6008.35	P	Fe I	1079
6008.48		N I	16
6008.577		Fe I	982
6008.648		V I	49
6009.298		Mn II	16
6009.45	P	Fe I	64
6009.83	P	Fe I	624
6009.962		Mn II	16
6011.12		Gd II	60
6012.21	P	Fe I	64
6012.251		Ni I	
6012.53		Ti I	264
6012.75	P	Fe I	1198
6013.498		Mn I	27
6015.25	P	Fe I	63
6016.637		Mn I	27
6016.66		Fe I	738
6016.85	P	Fe I	1232
6017.52	P	Ti I	257
6017.90		V I	49
6018.34	P	Fe I	176
6018.423		Ti I	198
6018.62		Ti I	70
6019.36	P	Fe I	780
6019.470		Ba I	7
6020.173		Fe I	1178

	Type	Element	Multiplet No.
9		Ge II	1
8	P	Fe II	24
02		Mn I	27
2		Fe I	63,1079,1085
1		As II	1
1		Y I	3
66		Fe I	1178
5		P II	5
23		Pr II	39
3		Ni I	251
1		V II	125
57		Fe I	1018
3		V II	90
7		Hf II	91
6	P	Fe I	1312
6		V II	97
4		Zr II	136
8		V II	125
8		Cr I	242
971		Ne I	3
6		Ko I	5
7		V II	97
8		Ti I	2
24		A I	13
0		Fe III	117
7		Fe I	1082
1		P II	5
4	P	Fe I	1142
04		Ce II	30
4	P	Fe I	1125
87		Ce II	30
7		Sc I	
		He II	8
12		Ni I	248
90		V I	34
4		Hf II	65
3		S I	10
92		Fe I	
0		P II	5
86		Ce II	30
38		Fe I	864
3	P	Fe II	46
8		Ta I	10
97		Fe II	200
4		S I	10
6		O I	22
6		O I	22
65		Cr I	242
36		V I	49
10		Co I	201
0		Gd II	59
1		Eu II	9
46		Mn II	16
0	P	Fe I	207
60		Mn II	16
6		S I	10
92		Mn II	16
8		Cr II	105
80		Ni I	247
00		Fe I	1142
97		Fe I	1259
13		V I	34
6	P	Ti I	70
5	P	Sc I	20
1	P	Fe I	1081
4		Fe I	217
1		Al I	99
5		Cr I	185
8		Zr I	3
9		Fe I	63
17		Ba I	7
31		Ti I	69
87		Fe I	207
		N II	27
1	P	Fe I	581
2		Al II	92
4		Al II	92
3		La II	48
2	P	Si I	15
0		Cr II	197
6		Al II	92
9		Cr II	197
8		Cr II	105
3		Al II	92
		He II	8
377		Ne I	3
3		A II	12
96		Fe I	1259
2		Fe I	1176
1		V II	206

I A	Type	Element	Multiplet No.
6080.65		Gd II	112
6080.85		S II	20
6081.421		V I	34
6081.51		Cr II	188
6081.72	P	Fe I	1142
6081.85	P	Fe I	1018
6082.431		Co I	169
6082.718		Fe I	64
6083.67	P	Fe I	981
6083.82		V II	125
6084.11		Fe II	46
6085.228		Ti I	69
6085.267		Fe I	269
6085.43		La II	111
6086.290		Ni I	249
6086.55		V I	49
6086.663		Co I	165
6086.93		V II	125
6087.485		V I	33
6087.76		P II	5
6089.473		V I	33
6089.566		Fe I	1327
6089.69		Cr II	187
6090.184		V I	34
6090.54	P	V I	33
6091.175		Ti I	238
6091.74	P	Fe I	1200
6092.13		S II	20
6092.814		Ti I	153
6093.144		Co I	37
6093.66		Fe I	1177
6094.419		Fe I	1177
6094.65		Cl II	26
6095.37		C II	24
6095.93		V II	97
6096.689		Fe I	959
6097.08	P	Fe I	64
6097.12		S II	13
6097.42		V I	33
6098.28	P	Fe I	1200
6098.62		C II	24
6098.655		Ti I	304
6100.04		Zr II	93
6100.23	P	Fe I	1199
6100.29	P	Fe I	1199
6100.37		La II	47
6102.178		Fe I	1259
6102.26		S II	26
6102.59		C II	24
6102.59	P	Fe III	3
6102.722		Ca I	3
6103.190		Fe I	1260
6103.54		Fe II	200
6103.56		A II	27
6103.642		Li I	4
6105.15	P	Fe I	1175
6105.381		Mn II	16
6106.19		Gd II	95
6106.25		O I	43
6106.47		Zr II	106,137
6106.84	P	Fe I	208
6106.967		V I	60
6107.09	P	Fe I	1081
6107.293		Mn II	16
6107.32	P	Fe I	1015
6108.121		Ni I	45
6108.6	P	Mn II	16
6109.318		Fe I	581
6110.30		As II	5
6110.784		Ba I	7
6111.06		Ni I	230
6111.622		V I	34
6112.26		Cr II	105
6113.33		Fe II	46
6114.07		Gd I	3
6114.41	P	Fe I	981
6114.6		N II	36
6114.7[illegible]		Zr II	93
6114.92		A II	102
6115.21		C II	19
6116.04	P	Fe II	46
6116.181		Ni I	218,251
6116.994		Co I	37
6118.06		Ni I	230
6118.2		He II	8
6119.505		V I	34
6119.780		Ni I	244
6120.12		A II	22
6120.25	P	Fe I	14
6120.86		Zr I	24

I A	Type	Element	Multiplet No.
6120.98		V II	97
6121.008		Ti I	153
6122.219		Ca I	3
6122.438		Mn II	13
6122.640		Co I	169
6122.799		Mn II	13
6123.164		Mn II	13
6123.38		A II	102
6123.41		S II	13
6124.08	P	Fe I	1326
6124.85		Si I	30
6124.86		Zr I	24
6125	P	N IV	16
6125.03		Si I	30
6125.855		Mn II	13
6126.09		La II	69
6126.210		Mn II	13
6126.217		Ti I	69
6126.516		Mn II	13
6127.49		Zr I	2
6127.913		Fe I	1017,1082
6128.21		S II	28
6128.30		V I	33
6128.725		Mn II	13
6128.990		Ni I	42
6129.022		Mn II	13
6129.23		Cr II	105
6129.255		Mn II	13
6129.57		La II	47
6129.71	P	Fe II	46
6130.174		Ni I	248
6130.37	P	Fe I	624
6130.794		Mn II	13
6131.005		Mn II	13
6131.30	P	Si I	30
6131.54		Si I	30
6131.86		Si I	30
6131.917		Mn II	13
6133.948		Ni I	229
6134.58		Zr I	2
6135.07		V I	60
6135.10		Hf II	90
6135.36		V I	34
6135.759		Cr I	314
6135.83		Ba II	12
6136.620		Fe I	169
6136.9		N II	36
6136.999		Fe I	62
6137.51	P	Fe I	685
6137.696		Fe I	207
6138.38		Ti I	197
6138.44		Y I	3
6138.67		A II	21,103
6138.77		Cr II	188
6138.98		S II	63
6139.65	P	Fe I	208
6140.50		Zr I	24
6141.01	P	Fe II	46
6141.718		Ba II	2
6141.734		Fe I	816
6142.047		Ni I	244
6142.21	P	Si I	30
6142.53		Si I	30
6143.0623		Ne I	1
6143.23		Zr I	2
6145.06		Si I	29
6145.42	P	Fe I	685
6146.225		Ti I	153
6146.38		Co I	80
6146.53		La II	4
6147.15		Cr II	105
6147.735		Fe II	74
6147.85		Fe I	1016
6148.65	P	Fe I	1141
6149.238		Fe II	74
6149.743		Ti I	197
6150.10	P	Fe II	46
6150.132		V I	20
6150.9		N II	36
6151.509		V I	33
6151.624		Fe I	62
6152.82	P	Fe I	1312
6154.225		Na I	5
6154.4	P	C III	13
6155.22		Si I	29
6155.24	P	Fe II	161
6155.4	P	C III	13
6155.73		Si I	29
6155.99		O I	10
6156.10		Ca I	20

I A	Type	Element	Multiplet No.
156.25		Hf II	67
156.6	P	C III	13
156.78		O I	10
157.41	P	Fe I	624
157.734		Fe I	1015
158.19		O I	10
159.409		Fe I	1175
160.747		Na I	5
160.75	P	Fe II	161
161.194		Pr II	39
161.289		Ca I	20
161.84		S II	27
162.172		Ca I	3
163.42		Ni I	230
163.560		Fe I	64
163.5939		Ne I	5
163.758		Ca I	20
165.18	P	Ni I	229
165.366		Fe I	1018
165.56		P II	5
165.945		Pr II	39
166.443		Ca I	20
167.82		N II	36,60
168.46		Cr II	196
168.86		Co I	82
169.055		Ca I	20
169.559		Ca I	20
170.16		N II	36
170.340		V I	20
170.47		As II	1
170.492		Fe I	1260
170.568		Ni I	228,230
170.6		He II	8
171.01	P	Fe I	1256
172.28		A II	102
172.72		La II	4
173.05		Eu II	9
173.343		Fe I	62
173.40		N II	36
174.15		La II	47
175.158		Fe II	200
175.424		Ni I	217
176.813		Ni I	228
176.95		Cr II	105
177.258		Ni I	58
177.49		Ni I	244
178.13	P	Fe II	46
179.17		Cr II	187
179.378		Fe II	163
180.093		Ni I	65,217
180.216		Fe I	269
180.42		Gd II	111
181.57		Al II	66
181.68		Al II	66
182.28		Al II	66
182.45		Al II	66
183.42		Al II	66
183.892		Ni I	226
184.94	P	Fe II	163
185.1		Fe III	
185.34	P	Fe II	46
186.14		Ti I	197
186.740		Ni I	229
187.41	P	Fe I	342
188.00	P	Cr II	187
188.037		Fe I	959
188.09		La II	117
189.005		Co I	37
189.350		V I	20
191.186		Ni I	45
191.562		Fe I	169
191.73		Y I	2
192.96		Zr I	24
193.672		Sc I	3
195.18		Cr II	105
196.71	P	Fe II	46
199.16		Fe II	162
199.202		V I	19
199.475		Fe I	208
200.323		Fe I	207
201.52		Al II	57
201.70		Al II	57
202.31	P	Fe I	208
203.51		La II	111
204.640		Ni I	226
207.251		V I	20
208.18		Cr II	105
209.73	P	Fe I	981
210.676		Sc I	2

I A	Type	Element	Multiplet No.
6212.04		Fe I	1142
6212.30		Ti II	108
6213.06		Zr I	24
6213.438		Fe I	62
6213.874		V I	20
6214.58		Zn II	1
6215.152		Fe I	1018
6215.212		Ti I	293
6216.368		V I	19
6217.2813		Ne I	1
6217.288		Fe I	1335
6217.95	P	Fe II	34
6219.290		Fe I	62
6219.35	P	Fe II	161
6219.54	P	Fe I	685
6219.54	P	Fe II	34
6220.460		Ti I	293
6220.78		Fe I	958
6221.40		Fe I	981
6221.41		Ti I	293
6221.661		Fe I	13
6221.88		Lu II	2
6222.59		Y I	2
6222.81		Hf II	57
6223.994		Ni I	228
6224.23	P	Fe I	1257
6224.26	P	V I	20
6224.507		V I	20
6226.18		Al II	10
6226.29		V II	124
6226.66		Cr II	105
6226.77		Fe I	981
6229.234		Fe I	342
6229.34	P	Fe II	34
6230.115		Ni I	227
6230.728		Fe I	207
6230.736		V I	19
6230.84		Hf II	69
6230.968		Co I	37
6231.76		Sc I	3
6231.78		Al II	10
6232.661		Fe I	816
6232.735		Fe I	685
6233.187		V I	20
6233.52		Fe II	
6233.8		He II	7
6237.34		Si I	28
6237.62		Si I	27
6238.375		Fe II	74
6239.36	P	Fe II	34
6239.410		Sc I	2
6239.64		F I	3
6239.73		A II	21
6239.77		Cr II	105
6239.778		Sc I	3
6239.95	P	Fe II	74
6240.137		V I	20
6240.266		Fe I	1015
6240.656		Fe I	64
6242.52		N II	57
6242.80		V I	19
6243.11		V I	19
6243.13		A II	21
6243.36		Al II	10
6243.86		Si I	28
6244.13	P	Si I	28
6244.344		Pr II	39
6244.51		Sc I	3
6244.56		Si I	27
6245.214		V I	20
6245.629		Sc II	28
6245.84		Fe I	1289
6246.334		Fe I	816
6247.562		Fe II	74
6248.916		Fe II	
6248.95		Hf II	22
6249.65	P	Fe I	685
6249.92		La I	7
6251.26	P	Fe I	1176
6251.83		V I	19
6252.561		Fe I	169
6253.82	P	Fe I	1256
6254.25		Si I	28
6254.262		Fe I	111
6254.96		Si I	28
6256.365		Ni I	43
6256.370		Fe I	169
6256.84		O I	50
6256.906		V I	19
6257.72		Ti I	1

I A	Type	Element	Multiplet No.
6257.834		Nd II	72
6258.103		Ti I	104
6258.591		Ni I	226
6258.595		V I	19
6258.706		Ti I	104
6258.962		Sc I	3
6259.615		Ni I	216
6260.31		Gd II	111
6261.101		Ti I	104
6261.236		V I	20
6261.55		O I	50
6262.30		La II	33
6264.55		O I	19
6264.825		Ti I	144
6265.140		Fe I	62
6266.021		Ti I	144
6266.32		V I	20
6266.4950		Ne I	5
6266.89		O I	48
6267.64	P	Fe I	110
6267.845		Fe I	1123
6268.50		Ti I	103
6268.841		V I	20
6270.238		Fe I	342
6271.289		Fe I	685
6271.52	P	Fe I	1231
6271.83		Cr II	196
6272.650		Ni I	244
6273.389		Ti I	1
6273.76		La II	131
6274.34		S II	19
6274.670		V I	19
6274.94		Cr II	196
6276.310		Sc I	2
6277.525		Ti I	144
6278.30		Au I	1
6279.757		Sc II	28
6279.84		Hf II	13
6280.625		Fe I	13
6282.636		Co I	37
6282.92		Cr II	196
6284.00	P	Fe I	624
6284.30		N II	32
6285.185		V I	19
6286.35		S II	19
6287.06		S II	26
6290.55	P	Fe I	208
6290.968		Fe I	1258
6292.858		V I	19
6293.00	P	Ti I	103
6293.92	P	Fe I	1260
6295.251		Ti I	1.144
6295.949		Ti I	144
6296.08		La II	47,68
6296.518		V I	19
6296.646		Ti I	1
6297.800		Fe I	62
6298.075		Ti I	144
6299.07		Gd II	123
6299.74	P	Fe III	3
6300.363		Ni I	246
6300.697		Sc II	28
6301.515		Fe I	816
6301.86	P	Fe I	863
6302.507		Fe I	816
6303.41		Eu II	8
6303.46		Fe I	1140
6303.754		Ti I	104
6304.35		Zr I	24
6305.15		Gd II	94
6305.262		Pr II	39
6305.318		Fe II	200
6305.46		La II	5
6305.51		S II	19
6305.60		Cr II	
6305.671		Sc I	2
6306.047		Sc I	3
6306.17		Hf II	81
6306.19	P	Fe I	1230
6307.25		La II	117
6307.85	P	Fe I	863
6309.902		Sc II	28
6310.543		Fe I	405
6310.8		He II	7
6310.91		La II	103
6311.289		Ti I	103
6311.506		Fe I	342
6312.240		Ti I	104
6312.68		S II	26
6313.05		Zr I	65

I A	Type	Element	Multiplet No.
.57		Zr II	136
.22		Gd II	121
.29		S II	28
.666		Ni I	67
.67	P	Ni I	249
.316		Fe I	1015
.42	P	Fe I	1016
.79		La II	117
.814		Fe I	1014
.61		Ni I	248
.022		Fe I	168
.027		Ti I	103
.11		Ca I	53
.23		Mg I	23
.75		Mg I	23
.39		La II	19
.854		Sc II	28
.165		Ni I	249
.693		Fe I	207
.98	P	Fe III	3
.39		O I	31
.45		A II	
.84		O I	31
.22		Ti I	1
.90		La I	2
.43		S II	63
.845		V I	84
.603		Ni I	44
.6		N II	46
	P	O V	14
.101		Cr I	6
.856		Fe I	1254
.969		Fe II	199
.4279		Ne I	1
.335		Fe I	62
.74		Al II	22
.104		Ti I	103
.835		Fe I	816
.896		Fe I	1258
.090		V I	84
.148		Ni I	248
.96	P	Fe I	685
.67		N II	46
.682		Ba I	6
.682		Sc II	28
.29		Ca I	53
.963		Ce II	
.154		Fe I	169
.831		Sc I	1
.54		Zr II	128
.65		Gd II	96
.67		Mg II	16
.091		Si II	2
.1		N II	46
.843		Co I	200
.50		F I	3
.477		V I	84
.748		Mn I	39
.17		O I	61
.29	P	Fe I	1140
.448		Co I	200
.84	P	Fe I	13
.038		Fe I	342
.057		Mn I	39
.293		Fe I	208
.0		N II	46
.10	P	Zr I	2
.297		V I	84
.12		La II	47
.692		Fe I	13
.895		Ti I	1
.798		Ni I	229
.41		Ti I	196
.79		Ca I	53
.286		Sc I	1
.347		Zn I	6
.414		Ni I	
.874		Cr I	6
.889		Fe I	1019
.384		Fe I	1253
.597		Ni I	67
.717		Fe I	1229
.92		Ti I	1
.7		N II	2
.33		O I	60
.354		Ti I	103
.483		Ni I	230
.34		S II	19
.45		Fe II	40
.383		Ni I	127
6371.359		Si II	2
6374.08		La II	111
6374.31		O I	59
6375.96		Fe II	
6376.00		A II	61
6376.22	P	Fe I	1140
6378.263		Ni I	247
6378.824		Sc I	1
6378.91		Ba II	12
6379.63		N II	2
6380.11		V II	231
6380.748		Fe I	1015
6380.95		Gd II	111
6381.416		Ti I	196
6382.169		Mn I	39
6382.9914		Ne I	3
6383	P	N IV	2
6383.753		Fe II	
6384.669		Mn I	39
6384.697		Ni I	246
6384.89		S II	19
6385.196		Nd II	85
6385.473		Fe II	
6385.74	P	Fe I	1253
6386.48		S II	5
6386.75		Fe II	203
6388.41	P	Fe I	685
6390.48		La II	33
6391.214		Mn I	39
6392.534		Fe I	109
6393.605		Fe I	168
6394.23		La I	7
6395.158		Co I	174
6395.16		Ca I	
6395.27		S II	
6396.39	P	Fe I	921
6397.30		S II	19
6398.05		S II	19
6399.04		La II	104
6399.23		A II	21
6399.41		Cl II	58
6400.010		Fe I	816
6400.335		Fe I	13
6402.005		Y I	2
6402.2455		Ne I	1
6402.43	P	Fe I	1344
6403.58		S I	9
6405.89		Ca I	
6406.3		He II	7
6406.42		Fe I	1334
6407.03		Zr I	2
6407.30		Fe II	74
6408.031		Fe I	816
6408.13		S I	9
6408.463		Sr I	8
6410.96		La I	7
6411.10	P	Fe I	1256
6411.658		Fe I	816
6412.20	P	Fe I	169
6413.13	P	Ti I	1
6413.353		Sc I	1
6413.66		F I	3
6413.71		S II	19
6413.92		Mn I	39
6414.603		Ni I	244
6415.24		Si I	
6415.50		S I	9
6415.59		Cr II	196
6416.905		Fe II	74
6416.94	P	Fe I	1253
6417.624		Co I	111
6418.87		Cr II	196
6419.15		Ti I	196
6419.65	P	Fe I	958
6419.982		Fe I	1258
6420.47		N I	23
6421.355		Fe I	111
6421.507		Ni I	258
6424.905		Ni I	227
6428.80		Fe I	1138
6429.913		Co I	81
6430.471		V I	107
6430.78		Ta I	11
6430.851		Fe I	62
6431.620		V I	107
6432.06		Ni I	126
6432.654		Fe II	40
6433.17		V I	107
6433.85		Fe II	199
6434.44	P	Fe III	3
6435.02		Y I	2
6435.148		V I	107
6436.43		Fe I	1016
6437.01		N I	23
6437.63		A II	25
6437.64		Eu II	8
6438.4696		Cd I	3
6438.775		Fe I	1158
6439.073		Ca I	18
6440.974		Mn I	39
6441.70		N I	23
6441.95		A II	
6442.97		Fe II	
6443.05		La II	117
6443.492		Mn I	39
6445.05		N III	14
6445.76		Zr I	57
6446.281		Mn II	19
6446.43		Fe II	19
6446.62		La II	10
6448.10		Sc I	
6449.810		Ca I	18
6450.09	P	Co I	80
6450.230		Co I	37
6450.78		N III	14
6450.854		Ba I	6
6450.99		Fe I	1344
6451.58		Fe I	921
6451.580		Ni I	257
6452.354		V I	48
6452.77		Ni I	226
6453.50		Sn II	1
6453.64		O I	9
6453.95		N III	14
6454.48		O I	9
6454.998		Co I	174
6455.600		Ca I	19
6455.85		Hf II	82
6455.99		La I	1
6456.01		O I	9
6456.376		Fe II	74
6456.87	P	Fe I	1256
6456.907		Ca II	19
6457.93		N I	22
6458.68	P	Fe III	3
6460.1		P II	32
6462.210		Mn II	20
6462.454		Mn II	20
6462.566		Ca I	18
6462.72	P	Fe I	13
6462.731		Fe I	168
6462.799		Mn II	20
6463.03		N III	14
6463.11		Lu II	2
6463.195		Mn II	20
6463.637		Mn II	20
6464.67	P	Fe I	13
6464.70		Ca I	19
6466.86		N III	14
6466.97		V I	32
6468.32		N I	22
6468.77		N III	14
6468.86	P	Fe I	1254
6469.12	P	Fe I	168
6469.214		Fe I	1258
6470.25		Zr I	65
6471.660		Ca I	18
6472.15	P	Fe I	1140
6472.34		Sm II	60
6473.89		Hf II	91
6474.556		Co I	105
6474.61		Fe I	861
6475.632		Fe I	206
6477.861		Co I	174
6478.69		N III	14
6480.11		Gd II	109
6481.73		N I	21
6481.878		Fe I	109
6482.07		N II	8
6482.205		Fe II	199
6482.74		N I	21
6482.811		Ni I	66
6483.10		A II	27
6483.75		N I	21
6483.95	P	Fe I	34
6484.88		N I	21
6485.30		Ta I	19
6487.43		Fe II	203
6487.48	P	Fe III	3
6487.55		N III	14

FINDING LIST

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
9.10		Yb I	3	6560.099		He II	2	6634.10	P	Fe I	1258
9.68		Zr I	65	6560.68		Si I	62	6634.36		Gd II	94
0.344		Co I	81	6561.032		D	1	6635.15		Ni I	264
1.28		Fe II		6562.817		H	1	6635.68	P	Fe I	1155
1.28		N I	21	6563.403		Co I	80	6636.53		La II	61
1.61	P	Ti II	91	6563.86		Hf II	81	6637.01		N I	20
1.712		Mn I	39	6565.62		Ti I		6638.24		A II	20
2.0		N II	45	6565.88		V I	48	6639.35	P	Fe I	1279
3.05		Fe II		6567.22	P	Fe I	168	6639.71	P	Fe I	1195
3.780		Ca I	18	6567.39		Hf II	90	6639.72		A II	20
4.11		Gd I	123	6568.00		Gd II	121	6639.90	P	Fe I	1007
4.52	P	Fe I	1255	6569.281		Fe I	1253	6640.90		O II	4
4.985		Fe I	168	6569.31		Sm II	62	6641.06		S II	25
5.45		Al II	65	6570.0		He II	7	6642.79		La II	103
5.779		Fe I	1253	6570.834		Mn I	51	6643.023		Cr I	256
6.456		Fe I	1258	6570.96		La II	47	6643.536		Sr I	8
6.896		Ba II	2	6571.22		Fe I	1121	6643.641		Ni I	43
7.689		Ti I	102	6572.781		Ca I	1	6643.79		A II	20
8.19		La II	104	6572.900		Cr I	16	6644.60		Hf II	34
8.759		Ba I	6	6574.238		Fe I	13	6644.96		N I	20
8.950		Fe I	13	6575.022		Fe I	206	6645.11		Eu II	8
9.52		N I	21	6575.180		Ti I	286	6646.52		N I	20
9.649		Ca I	18	6576.95	P	Ni I	283	6646.90	P	Fe I	1156
0.25		A II	26	6578.03		C II	2	6646.98		Fe I	206
1.212		Cr I	16	6578.51		La I	1	6647.06		Hf II	65
1.681		Fe I		6578.96		V I	32	6647.90	P	Fe I	551
3.989		Sr I	8	6580.22		Ni I	265	6648.08	P	Fe I	13
4.164		V I	48	6580.96		Cr I	16	6653.41		N I	20
4.9		N II	45	6581.22		Fe I	34	6653.75		Cl II	38
6.33		Fe II		6582.85		C II	2	6653.78		O I	65
6.45		N I	21	6584.53		Hf II	99	6653.88		Fe I	1052
6.5279		Ne I	3	6584.89		Y I	1	6656.61		N I	20
8.135		Ti I	102	6586.328		Ni I	4	6657.54		Cr I	282
8.742		Ca I	18	6586.343		Mn I	51	6660.49		Si II	
9.16		A II	21	6586.69		Fe II		6661.076		Cr I	282
9.56		Fe I	1012	6587.75		C I	22	6661.39		Ni I	246
1.62		Hf II	69	6588.01		Sm I	1	6661.68		Cl II	38
2.61		Hf II	49	6591.32		Fe I	1229	6663.26		Fe I	1195
6.026		Cr I	265	6591.834		Co I	202	6663.446		Fe I	111
6.053		Fe II	40	6592	P	C IV	10	6665.42	P	Fe I	1156
7.01		Fe II		6592.472		Ni I	248	6665.43	P	Fe I	34
7.27		V II	230	6592.91	P	Ti I	102	6666.36		A II	25
8.376		Fe I	342	6592.919		Fe I	268	6666.548		Ti I	101
9.371		Mn I	39	6593.878		Fe I	168	6666.94		O II	85
1.39		S II	25	6595.326		Ba I	6	6667.17	P	Fe I	110
2.3		N II	45	6595.869		Co I	174	6667.42	P	Fe I	168
2.38		Cl II	59	6597.556		Cr I	282	6667.73		Fe I	1228
4.76	P	Fe I	1280	6597.607		Fe I	1253	6669.257		Cr I	282
6.99		La II	33	6598.594		Ni I	249	6671.36		Fe I	1343
7.20	P	Si I	52	6598.9529		Ne I	6	6671.41		La II	33
7.312		Ba I	6	6599.112		Ti I	49	6671.43	P	Fe I	1255
7.49		Si I	62	6601.13	P	Fe I	1280	6671.51		Sm I	1
8.53		Fe I		6603.20	P	Fe I	862	6671.88		Si II	
9.197		Cr I	265	6603.67	P	Fe I	860	6672.84		V II	229
1.44		V I	48	6604.60		Sc II	19	6672.88	P	Fe I	205
1.66		Hf II	48	6604.67		Fe I	1254	6673.84	P	Fe I	1254
2.891		Ni I	64	6605.546		Mn I	51	6675.271		Ba I	6
3.0		N II	45	6605.98		V I	48	6676.86	P	Fe I	1194
3.97		Fe I	1197	6607.02	P	Ti II	91	6677.24		Cr I	256
7.921		Cr I	16	6607.82		V I	59	6677.25		Ti I	274
9.72		Fe I	405	6608.03		Fe I	109	6677.33		Fe II	210
1.49	P	Fe I	1195	6609.116		Fe I	206	6677.49	P	Fe I	1280
2.80		Hf II	100	6609.20		Hf II	105	6677.54	P	Fe I	551
3.17		La I	7	6609.56		Fe I		6677.96	P	Fe I	205
3.51		V I	48	6609.64		Al II	76	6677.993		Fe I	268
3.98		Fe I	1139	6609.68	P	Fe I	13	6678.03		Zr II	128
5.2		N II	45	6610.04		Gd II	108	6678.149		He I	46
5.80		Mg II	23	6610.58		N II	31	6678.19		O II	85
6.245		Fe I	268	6612.17		Cr I	282	6678.2764		Ne I	6
6.276		Ti I	102	6613.74		Y II	26	6678.60	P	Ti I	213
6.791		Sr I	8	6613.83	P	Fe I	13	6678.818		Co I	54
7.58	P	Fe I	13	6615.03	P	Fe I	1155	6680.19		Cr I	282
8.72		Hf II		6617.126		Co I	202	6680.20		Ti II	112
0.01		Hf II	111	6617.14	P	Ni I	248	6681.03		Cl II	38
0.244		Sr I	12	6617.266		Sr I	8	6681.23		Gd II	94
1.466		Co I	54	6621.24		Ni I	97	6681.34	P	Fe I	1155
1.68	P	Fe I	13	6622.28		Gd II	110	6682.23	P	Fe I	1008
2.77		Fe I	1325	6622.41	P	Fe I	1157	6683.2		He II	7
4.18		La II	109	6622.53		N I	20	6684.36		A II	20
4.226		Ti I	102	6623.78	P	Fe I	1010	6686.04		Cl II	38
5.20		Si I	62	6624.86		V I	48	6687.57		Y I	1
5.87	P	Fe I	1007	6625.04		Fe I	13	6690.80		Ni I	140
6.066		Ti I	102	6627.28		Fe II	210	6692.47	P	Fe I	1192
6.79		Fe I	1255	6627.558		Fe I	1174	6693.842		Ba I	6
7.40		Y I	1	6627.62		O II	85	6695.97		Al I	5
7.87		Sc I	24	6630.015		Cr I	16	6696.30	P	Fe I	1255
7.91		Hf II	66	6630.5		N II	41	6696.39		Al II	29
8.02		V I	59	6632.438		Co I	111	6698.63		Al I	5
8.05		Sc I	24	6633.44		Fe I	1258	6699.14		Fe I	1228
9.580		Ti II	91	6633.764		Fe I	1197	6699.46		Al II	29

A	Type	Element	Multiplet No.
.89	P	Fe I	1156
.90	P	Fe I	1333
.90	P	Ni I	248
.64		Cr I	256
.12		Gd II	130
.573		Fe I	268
.18		Gd II	110
.48	P	Fe I	1052
.117		Fe I	1197
.13	P	Fe I	1280
.20		N I	31
.74		Li I	1
.89		Li I	1
.27		F I	2
.81		N I	
.49		La I	6
.88		Ca I	45
.31		Fe I	34
.24	P	Fe I	1220
.44	P	Fe I	1279
.68	P	Fe I	206
.14		Fe I	1013,1195
.43		Cl II	38
.76		Fe I	1255
.08		La II	103
.38		Cr I	282
.410		Fe I	1174
.24		Fe I	1225
.679		Ti I	273
.556		Fe I	1194
.685		Ca I	32
.911		Ti II	112
.14		Gd II	130
.66		La II	128
	P	N V	11
.40		Hf II	110
.35		O II	4
.97		Si I	
.67		Si I	38
.12		N I	31
.39		Fe I	1052
.25		O I	2
.50		O I	2
.668		Fe I	1197
.78		Fe I	
.84		C II	21
.1	P	C III	3
.83		Gd II	96
.72		Cr I	301
.80	P	Si I	61
.38	P	Si I	61
.7	P	C III	3
.73		Gd I	2
.79		C II	21
.84		Sm II	59
.06		Fe I	1225
.80		La II	109
.88		S II	25
.164		Fe I	1195
.48		N I	31
.56		C II	21
.16		Cr I	282
.00	P	Fe I	1157
.56	P	Fe I	1122
.29	P	Fe I	551
.87		Sc I	
.36		C II	21
.81		Cr I	315
.54		Fe I	34
.29		N I	31
.05		C II	21
.124		Ti I	48
.58		S I	8
.2	P	C III	3
.66		Cr I	315
.11		Fe I	1227
.56	P	Ti I	226
.96	P	Fe I	1005
.433		Ti I	152
.96	P	Fe I	205
.43		Ti I	152
.79		S I	8
.52	P	Fe I	860
.152		Fe I	111
.22		C II	21
.28		Cr I	315
.94		Ti I	152
.40		N I	30
.67		Gd II	130
.724		Fe I	1195

I A	Type	Element	Multiplet No.
6752.832		A I	11
6753.00		V I	31
6753.45	P	Fe I	1196
6754.61		Hf II	35
6754.75		C II	21
6755.609		Fe I	
6756.56	P	Fe I	1120
6756.61		A II	20
6757.16		S I	8
6757.78		Cr I	315
6758.60		N I	30
6759.41		Ni I	245
6759.42		Cl II	54
6761.07	P	Fe I	1227
6762.38		Zr I	1
6762.41		Cr I	315
6764.13	P	Fe I	1225
6766.49		V I	31
6767	P	O V	12
6767.778		Ni I	57
6769.62		Ba II	8
6769.66	P	Fe I	1226
6771.040		Co I	54
6772.36		Ni I	127
6773.97		F I	2
6774.28		La II	2
6775.97		Al II	111
6777.44		Fe I	1010,1013
6779.74		C II	14
6780.27		C II	14
6783.27	P	Fe I	206
6783.71		Fe I	205
6783.75		C II	14
6784.98		V I	31
6785.25	P	Ti II	112
6785.76	P	Fe I	1226
6785.88	P	Fe I	1007
6786.41	P	Fe I	551
6786.88		Fe I	1052
6787.09		C II	14
6787.15		Zr II	135
6787.61	P	Fe I	1156
6789.17		Cr I	
6790	P	O V	12
6790.00		Sm II	56
6791.022		Sr I	3
6791.30		C II	14
6793.26		Fe I	1005
6793.62		Fe I	
6793.71		Y I	1
6794.60	P	Fe I	1279
6795.41		Y II	26
6795.52		F I	2
6796.11		Fe I	1007
6798.04		C II	14
6798.51		Ca I	31
6799.32		A II	74
6799.61		Yb I	3
6800.50		C II	14
6801.16		V II	219
6801.31	P	Fe I	551
6801.38		La II	130
6801.87	P	Fe I	34
6803.30	P	Fe I	1192
6803.84	P	Fe I	1191
6804.020		Fe I	1174
6804.27		Fe I	1225
6805.72	P	Fe I	1220
6806.851		Fe I	268
6808.55		A II	24
6808.80	P	Fe I	340
6808.88		La II	1
6810.28		Fe I	1197
6812.19		C II	14
6812.26		N II	54
6812.40		V I	31
6813.55	P	Fe I	1288
6813.598		Ni I	288
6813.68		La II	110
6813.85	P	Si I	61
6814.950		Co I	54
6816.60		Al II	9
6817.08		Sc I	
6818.39		A II	50
6819	P	O V	12
6819.42	P	Fe I	463
6819.60	P	Fe I	1051
6820.43		Fe I	1197
6822.00	P	Fe I	1220
6822.05	P	Fe I	110

I A	Type	Element	Multiplet No.
6823.48		Al II	9
6824.82	P	Fe I	1280
6828.25		Gd I	2
6828.5		C I	21
6828.610		Fe I	1195
6829.92		Co I	81
6829.94		V I	31
6830	P	O V	12
6830.83		La II	108
6831.44	P	Fe I	550
6831.62		Cl II	44
6832.44		V I	31
6832.49		Y II	26
6832.93		Zr I	1
6833.24		Fe I	1194
6834.07		La II	3
6834.26		F I	2
6835.03		Sc I	
6835.29		Hf II	13
6836.2		N II	54
6837.00		Fe I	1225
6837.14		Al II	9
6837.91		La II	33
6838.08		Fe I	1192
6838.86		Fe I	
6839.828		Fe I	205
6841.349		Fe I	1195
6841.65	P	Fe I	1333
6841.86		Cl II	54
6841.89		V I	31
6842.07		Ni I	126
6842.35	P	Si I	61
6842.668		Fe I	1197
6843.071		Fe I	1173
6844.05		Sn II	1
6844.67	P	Fe I	34
6845.24		Y I	16
6845.93	P	Fe I	1190
6846.60		Gd II	94
6846.97		O II	45
6847.60	P	Fe I	1078
6848.65		Si I	37
6848.86	P	Fe I	1192
6850.07		Hf II	
6850.21		Cl II	54
6850.48		Ni I	157
6851.64	P	Fe I	34
6854.82		Fe I	1224a
6855.176		Fe I	1195
6855.74		Fe I	1194
6856.02		F I	2
6856.03		Sm II	58
6857.13		Gd II	122
6857.25		Fe I	1006
6857.3	P	C III	19
6857.6		N II	71
6858.164		Fe I	1173
6858.25		Y II	26
6859.03		La II	34
6859.49	P	Fe I	340
6860.13	P	Fe I	1255
6860.29		Fe I	205
6860.96	P	Fe I	341
6861.24		Ni I	293
6861.30		A II	25
6861.47		Ti I	237
6861.93		Fe I	109
6862.481		Fe I	1191
6862.82		Sm II	55
6862.9	P	C III	19
6863.52		A II	20
6864.31	P	Fe I	1186
6869.74		O II	45
6870.22		F I	2
6870.8		N II	71
6871.7	P	C III	19
6872.32		Co I	54
6874.09		Ba II	8
6875.45		Fe I	167
6875.98		Fe I	1013
6876.71		Ni I	97
6878	P	O V	12
6878.313		Sr I	3
6879.51	P	Fe I	1157
6879.59	P	Fe I	551
6880.65		Fe I	1051
6881.07	P	Fe I	1174
6881.46		Fe I	
6881.64		Cr I	222
6881.74		Fe I	1194

FINDING LIST

A	Type	Element	Multiplet No.
.48		Cr I	222
.04		Cr I	222
.07		O II	45
.772		Fe I	1173
.57		A II	20
.63		Gd II	
.7		N II	71
.88		He II	7
.585		Sr I	1
.92	P	Mg I	34
.29		O II	45
.00		Y II	26
.31		Fe I	1078
.73		Gd II	122
.52		Co I	164
.46		F I	2
.80		Fe I	
.54		O II	45
.08		Co I	164
.11		O II	45
	P	O V	12
.82		F I	2
.75		O II	45
.84		Co I	80
.52		Fe I	109
.43	P	Fe I	341
.562		Ni I	62
.57		Gd I	2
.702		Fe I	1052
.52	P	Fe I	1190
.93		Al II	75
.96		Al II	15
.16	P	Fe I	1192
.62		Gd II	122
.13		Cr I	222
.24		Cr I	222
.04		Cr I	222
.40	P	Fe I	1222
.90		N I	29
.25		Ni I	110
.319		Zn I	10
.52	P	Ni I	61
.4678		Ne I	6
.96	P	Fe I	34
.35	P	Fe I	1186
.64		Fe I	1221
.49	P	Fe I	1220
.04		Fe I	1051
.55		Y I	1
.628		Fe I	167,1005
.16		Hf II	35
.27		K I	7
.48	P	Fe I	1196
.81		Co I	139
.472		Zn I	10
.82	P	Fe I	1008
.9		N II	53
.202		Zn I	10
.67	P	Fe I	1349
.208		Fe I	111
.22		N I	29
.98		Gd II	122
.31		Co I	110
.501		Fe I	1221,1224
.37	P	Fe I	1220
.32		Y I	16
.82	P	Fe I	205
.261		Fe I	1186,1193
.62	P	Fe I	1078
.68		Y II	33
.13		Cl II	54
.52		La II	18
.01	P	Fe I	815
.54		La II	1
.06		Ni I	157
.95		S II	18
.11		La II	67
.24		Gd II	130
.334		Fe I	1222
.02	P	Fe I	1007
.18		K I	7
.69		K I	7
.42	P	Mg I	33
.4302		A I	1
.35		F I	6
.9		Fe II	198
.6		N II	53
.78		La II	109
.48	P	Fe I	463
.66		Gd II	130

I A	Type	Element	Multiplet No.
6971.95		Fe I	404
6975.46		Fe I	
6976.306		Fe I	1194
6976.53		Si I	60
6976.8		N II	53
6976.934		Fe I	1221
6977.445		Fe I	1225
6978.46		Cr I	222
6978.855		Fe I	111
6979.10		N I	29
6979.17	P	Fe I	340
6979.82		Cr I	222
6980.86		Gd II	
6980.91		Cr I	222
6980.91		Hf II	22
6981.40		S II	18
6983.53	P	Fe I	1220
6983.54	P	Fe II	63
6985.74		A II	137
6985.89		Gd II	
6988.530		Fe I	167
6988.75		Gd II	130
6989.64	P	Fe I	1191
6990.16		A II	20
6991.92		Gd I	2
6995.35		Ta I	5
6996.63		Ti I	256
6996.76		Gd II	121
6997.13	P	Fe I	1273
6997.83		Hf II	89
6999.902		Fe I	1051
7000.633		Fe I	1005
7000.75		Gd II	122
7001.57		Ni I	64
7001.93		O I	21
7002.22		O I	21
7003.0		N II	53
7003.58		Si I	60
7004.60		Ti I	256
7004.81		Co I	89
7005.84		Si I	60
7006.16		Gd II	130
7007.81		Ti I	100
7008.014		Fe I	1078
7008.35		Ti I	256
7010.362		Fe I	1221
7010.94		Ti I	256
7011.364		Fe I	1221
7014.99		Fe I	167
7015.3		N II	53
7016.075		Fe I	109
7016.436		Fe I	1051
7016.602		Co I	54
7016.90	P	Si I	51
7016.99		Hf II	99
7017.68		Si I	51
7017.73		Gd II	137
7017.98		Si I	51
7020.44		Sm II	59
7021.23		Hf II	67
7022.39	P	Fe I	1078
7022.976		Fe I	1051
7024.0508		Ne I	6
7024.084		Fe I	1003
7024.649		Fe I	1187
7024.86		Ni I	271
7025.52		O I	32
7027.60		Fe I	1221
7027.797		Co I	179
7028.58	P	Fe I	463
7028.60	P	Ni I	156
7028.95	P	Ni I	61
7030.06		Ni I	126
7030.33		Hf II	66
7031.02	P	Fe I	1173
7031.42	P	Fe I	1278
7032.16		Ni I	279
7032.4127		Ne I	1
7034.06	P	Fe I	1190
7034.08	P	Fe I	1190
7034.42		Ni I	97
7034.96		Si I	50
7035.86		Ti I	307
7037.04	P	Fe I	61
7037.26		Gd II	
7037.37		Ni I	288
7037.45		F I	6
7038.251		Fe I	1051
7038.80		Ti I	256
7038.818		Fe I	1078

I A	Type	Element	Multiplet No.
7039.22		Sm II	57,61
7039.36		Ti I	307
7042.06		Al II	3
7042.24		Sm II	58
7044.60		Fe I	1276
7045.8		C II	26
7045.96		La I	6
7050.65		Ti I	256
7051.00		Gd II	122
7052.872		Co I	54
7052.9		C II	26
7053.48	P	Fe I	1186
7054.042		Co I	140
7054.62		Gd II	130
7055.01		A II	74
7056.60		Al II	3
7057.96	P	Fe I	815
7058.02		Gd II	130
7059.941		Ba I	5
7060.43	P	Mg I	32
7061.90		Hf II	
7062.80	P	Fe I	1273
7062.97		Ni I	64
7063.4		C II	26
7060.57		Ni I	270
7063.64		Al II	3
7065.15		Ti I	100
7065.188		He I	10
7065.719		He I	10
7066.15	P	Fe I	1277
7066.24		La II	1
7067.2170		A I	1
7067.44		Fe II	
7067.50		Ni I	277
7068.02	P	Fe I	1276
7068.37		La I	1
7068.415		Fe I	1004
7068.60	P	Fe I	1276
7069.11		Ti I	307
7069.54	P	Fe I	205
7070.071		Sr I	3
7071.88		Fe I	1194
7072.82	P	Fe I	1003
7074.45	P	Fe I	1173
7077.03		A II	20
7077.10		Eu II	8
7079.32	P	Fe I	1278
7082.22		Ni I	267
7082.37		Sm II	55
7083.396		Fe I	1277
7084.25	P	Ti I	99
7084.33		Si I	60
7084.974		Co I	54
7085.52		Gd II	130
7086.76		Fe I	815,1311
7087.35		Zr I	42
7089.03	P	Si I	70
7089.73	P	Fe I	1220
7090.404		Fe I	1051
7090.55		A II	60
7091.83		Fe I	1278
7091.91	P	Fe I	1277
7093.10	P	Fe I	1189
7094.30	P	Fe I	778
7095.40		Ni I	276
7095.425		Fe I	1105
7097.78		Zr I	42
7100.20	P	Fe I	267
7101.28	P	Fe I	61
7102.95		Zr I	42
7103.15	P	Fe I	167
7103.28		N IV	4
7103.77		Zr I	42
7105.34	P	Si I	70
7105.90	P	Fe I	1008
7107.30	P	Fe I	1324
7107.461		Fe I	1005
7109.48		N IV	4
7109.67	P	Fe I	1190
7110.91		Ni I	64
7111.28		N IV	4
7111.71		Zr I	23
7112.176		Fe I	404
7112.36		C II	20
7114.55	P	Fe I	267
7115.13		C II	20
7115.25	P	Fe I	1186
7116.77		Gd II	130
7118.12	P	Fe I	1278
7118.5		C I	26

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3.86		Gd II	130	7193.74		Y II	33	7284.27		A II	24
9.45		C II	20	7193.89		Si I	25	7284.843		Fe I	1004
0.01	P	Fe I	1187	7194.02	P	Fe I	1307	7285.28		Co I	140
0.56	P	Fe I	1006	7194.81		Eu II	8	7285.286		Fe I	1188
2.24		Ni I	126	7194.92		Fe I	1273	7285.94	P	Si I	58
3.10		N IV	4	7195.235		Ba I	10	7286.56		Ni I	109
4.28		S II	18	7196.37	P	Fe I	1252	7287.36		Fe II	197
4.47		Co I	53	7196.83		Cr I	264	7288.760		Fe I	1077
5.00	P	Fe I	815	7197.07		Ni I	62	7289.05	P	Fe II	72
5.28	P	Fe I	1220	7197.08		Gd II	121	7289.25		Si I	24
5.49		C II	20	7202.194		Ca I	29	7290.21		Si I	24
6.71		Ni I	97	7202.37		F I	6	7290.87		Ni I	287
7.21		N IV	4	7205.51	P	Fe I	1251	7291.03	P	Ti I	143
7.58	P	Fe I	1273	7207.123		Fe I	1001	7291.48		Ni I	63
7.88		F I	6	7207.406		Fe I	1051	7292.856		Fe I	1189
9	P	N IV	4	7207.85		Cr I	264	7293.068		Fe I	1077
9.30	P	Fe I	1219	7208.20		Si I	25	7295.00		Fe I	1187
0.34	P	Ti I	100	7209.44		Ti I	99	7295.27	P	Fe I	1189
0.942		Fe I	1051	7212.47		Fe I	1273	7297.75		Ni I	293
1.29		Al II	114	7213.35		Ti I	143	7299.67		Ti I	97
2.989		Fe I	1002	7213.84	P	Fe I	1105	7300.47		Fe I	1275
3.16		Gd II	137	7214.78	P	Ti II	101	7300.59	P	Fe I	1003
3.52		C II	20	7214.97		Ti I	314	7301.17		Eu II	8
4.290		Co I	179	7216.20		Ti I	98	7301.57	P	Fe II	72
4.66		Al II	114	7216.68	P	Fe I	1273	7302.89		Mn I	50
4.99		Fe II	197	7217.0		N II	52	7305.87		Ti I	143
5.73		Gd II		7217.34		Co I	126	7306.61		Fe I	1077
8.05	P	Ti I	98	7217.55		Eu II	8	7307.938		Fe I	1002
8.81		Al II	114	7218.57		Cr I	264	7307.97		Fe II	73
8.91		Ti I	99	7219.686		Fe I	1001	7310.24		Fe II	73
9.79		S II	18	7220.79		Ni I	294	7311.02		F I	5
9.8		N II	52	7221.22		Fe I	1189	7311.101		Fe I	1077
1.17		Gd II	131	7222.39		Fe II	73	7311.26	P	Fe I	1105
1.62		Ni I	283	7222.88		Fe I	1187,1311	7312.05	P	Fe I	1310
2.522		Fe I	1274	7223.668		Fe I	463	7315.73		Co I	89
5.317		Fe I	1186,1193	7224.51		Fe II	73	7316.77	P	Fe I	267
6.13		Gd II	130	7225.82	P	Fe I	1278	7317.03		S II	18
7.0406		A I	1	7226.20		Si I	26	7317.40	P	Fe I	1278
7.31		Gd II		7228.70		Fe I	267	7318.39		Ti I	212
8.147		Ca I	30	7228.974		Pb I	2	7320.694		Fe I	1188,1276
8.61		Ta I	11	7231.12		C II	3	7320.70		Fe II	73
8.69		Fe I	1078,1339	7233.58		A II		7323.20	P	Ti II	101
1.18	P	Sc II	27	7235.32		Si I	26	7323.38	P	Fe I	859
1.495		Fe I	109	7235.86		Si I	25	7324.89		Gd II	
4.688		Co I	89	7236.19		C II	3	7325.33	P	Fe I	980
5.64		Fe I	1276	7236.91		S II	18	7326.146		Ca I	44
6.80		O I	38	7229.885		Fe I	1105	7326.51		Mn I	50
8.502		Fe I	815	7242.24		Gd II	137	7327.67		Ni I	140
0.33		Ti I	98	7244.77		S I	15	7328.64		Hf II	65
0.85	P	Fe I	1310	7244.86		Fe I	1276	7330	P	N V	12
1.04	P	Fe I	1190	7244.86		Ti I	99	7330.16	P	Fe I	1187
2.37	P	Fe I	1278	7245.1668		Ne I	3	7330.54	P	Mn II	4
4.469		Fe I	1051	7247.82		Mn I		7330.97		Ti I	143
4.63		S II	18	7250.12		Co I	53	7331.95		F I	1
4.75		Si I	49	7250.69		Si I	25	7332.26		Ti I	143
4.90		Gd II	130	7251.74		Ti I	99	7332.97		Y II	25
5.09	P	Si I	49	7252.70		Gd II	109	7333.49		Ni I	263
5.62		Si I	48	7253.76		Ti I	143	7333.62		Fe I	1078
7.01		Ni I	109	7254.19		O I	20	7334.66		Fe II	209
8.37		Gd I	1	7254.47		O I	20	7336.03		Zr I	23
9.14		Zr I	42	7254.649		Fe I		7337.61		S II	18
0.14		Ni I	282	7255.28	P	Si I	59	7337.78	P	Ti I	212
2.26		Gd II	109	7256.13	P	Fe I	1278	7338.92		V I	117
3.73		Ni I	269	7256.63		Cl I	5	7340.78	P	Fe I	684
3.9389		Ne I	6	7256.72		Ni I	97	7341.78	P	Fe I	1307
5.937		Fe I	1188	7256.96		S II	18	7344.18	P	Fe I	266
6.886		Fe I	1276	7259.3		N II	52	7344.72		Ti I	97
7.50		He II	6	7261.00	P	Fe I	267	7346.37		Ta I	12
8.33	P	Sc II	27	7261.29	P	Fe I	1273	7347.16	P	Fe I	266
9.16	P	Fe II	72	7261.54		Fe I	1188	7347.72	P	Mn II	4
0.020		Fe I	33	7261.94		Ni I	62	7348.11		A II	60
1.21	P	Fe II	72	7262.46	P	Fe I	859	7348.51	P	Fe I	1004
1.222		Fe I	1078	7264.19		Y II	33	7350.55	P	Fe I	509
1.93		Fe I	1274	7264.99		Fe II	197	7351.160		Fe I	1273
2.00		Ni I	126	7266.22		Ni I	288	7351.56		Fe I	1275
4.54		Si I	25	7266.29		Ti I	143	7352.16		Ti I	272
4.89		Si I	25	7267.00	P	Fe I	61	7353.52	P	Mn II	4
5.50		Cr I	264	7268.58	P	Fe I	957	7353.528		Fe I	1251
7.341		Fe I	1051	7271.41		Ti I	97	7354.579		Co I	53
8.06		Cr I	264	7273.20		S II	18	7355.46	P	Ti II	101
8.55		Ti I	99	7273.77		Ti I	212	7355.94		Cr I	93
8.7		N II	52	7275.28		Si I	24	7356.51		V I	117
9.17		Fe I	463	7277.67		Hf II	66	7356.81	P	Fe I	1187
9.57		Gd II	138	7278.48	P	Fe I	1274	7357.74		Ti I	97
9.89		Ti I	285	7278.72		Hf II	111	7359.95	P	Fe I	1310
0.12	P	Fe I	463	7280.298		Ba I	5	7361.39		V I	117
1.66		Fe I	1274	7281.949		He I	45	7361.56	P	Ti I	212
3.20	P	Mg I	31	7282.36		La II	1	7361.59		Al I	11
3.23		Fe II	197	7282.39		Fe I	1274	7362.31		Al I	11
3.56		Si I	25	7283.80		Mn I	50	7363.16		V I	117

FINDING LIST

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
3.96		Fe I	1274	7449.34		Fe II	73	7559.62		Ni I	292
4.11		Ti I	97	7449.42		Al II	96	7559.68		Fe I	1308
6.37		Fe I	1188	7450.32		Y II	25	7561.08		Hf II	80
6.60		Ti I	96	7452.08	P	Fe I	1303	7563.03		Fe I	1251
9.73	P	Mn II	4	7454.02		Fe I	1001	7565.53		Cl II	
0.16		Fe I	1250	7455.47	P	Si I	75	7567.35		Ni I	291
0.22		Eu II	8	7458.92		Ni I	291	7568.925		Fe I	1077
3.02		Si I	58	7461.28	P	Fe I	1352	7573.41		F I	1
3.07	P	Fe I	108	7461.534		Fe I	204	7573.53		Fe I	
6.434		Fe I		7462.37		Cr I	93	7573.76	P	Fe I	957
6.46		Fe II		7462.38		Fe II	73	7574.08		Ni I	156
0.45		A II		7463.38	P	Fe I	1307	7578.07		Cl II	79
1.94		Ni I	292	7466.44	P	Ti I	142	7578.96		S I	
2.63	P	Fe I	266	7468.29		N I	3	7580.55		Ti I	211
2.99		Fe I	1188	7468.41		Ca I		7582.15	P	Fe I	1274
4.96	P	Fe I	1308	7471.36		O I	55	7583.796		Fe I	402
5.24		Ni I	84	7471.41		Al II	21	7586.044		Fe I	1137
5.54	P	Fe I	1251	7471.75	P	Fe I	267	7586.72		Co I	139
5.97		Gd II	139	7473.23		O I	55	7588.30	P	Fe I	1306
6.21		Ni I	286	7473.56		Fe I	1188	7588.48		Zn II	2
6.394		Fe I	1275	7474.50	P	Fe I	957	7590.57		Co I	89
7.10	P	Mn II	4	7474.60	P	Fe I	980	7592.74		He II	6
7.70	P	Mg I	30	7474.94		Ti I	142	7605.32		Fe I	1308
8.46		Y II	37	7476.40	P	Fe I	1251	7607.17		F I	4
8.689		Co I	139	7476.45		O I	55	7610.24		Co I	126
9.34	P	Fe I	1274	7476.92	P	Fe I	1004	7614.50		Ti I	211
9.425		Fe I	1077	7477.21		O I	55	7617.00		Ni I	139
2.18	P	Si I	75	7477.52	P	Fe I	957	7617.19	P	Fe I	1304
2.411		Ba I	10	7478.77		Co I	53	7617.86		A II	73
3.63		Ni I	109	7478.79		Zn II	1	7617.97	P	Fe I	1001
4.90		Gd II	109	7478.87	P	Fe I	683	7619.21		Ni I	156
6.50	P	Fe I	1278	7479.06		O I	55	7620.538		Fe I	1250
8.68		F I	1	7479.70	P	Fe II	72	7624.48		Al II	91
8.72		Co I	164	7480.66		O I	55	7624.75		Ni I	292
8.78	P	Fe I	684	7481.49		Ni I	286	7627.85		Al II	91
8.96		Hf II	110	7481.74	P	Fe I	266	7629.82		S I	
8.98	P	Fe I	1306	7481.93	P	Fe I	1250	7634.50		Co I	183
0.23		Cr I	93	7482.20	P	Fe I	1308	7635.1053		A I	1
0.87	P	Fe I	204	7482.72		F I	1	7635.33		Al II	91
1.13		Ni I	291	7483.48		La II	1	7639.99		O I	42
1.17	P	Ni I	283	7484.28	P	Fe I	1306	7647.83	P	Fe I	1137
1.689		Fe I	1004	7486.13	P	Fe I	980	7650.95	P	Fe I	266
5.85		Si I	23	7488.083		Ba I	5	7653.783		Fe I	1250
6.23		Co I	164	7488.73		Ni I	157	7654.44		Ti I	211
6.23		Y II	25	7489.14		F I	5	7655.47		Fe II	73
9.11		Si I	23	7489.61		Ti I	225	7657.30		Ni I	278
9.17	P	Ni I	283	7491.678		Fe I	1077	7657.60		Mg I	22
9.39		Ni I	139	7494.72	P	Fe I	33	7661.223		Fe I	1077
1.178		Fe I	1077	7495.088		Fe I	1077	7661.46	P	Fe I	1309
4.10		Cl I	4	7495.67	P	Fe I	1275	7663.09		Hf II	68
4.51		Ni I	62	7496.12		Ti I	225	7663.45		O I	42
5.19	P	Fe I	1308	7498.56		Fe I	1001	7664.15	P	Fe I	1250
5.37		Si I	23	7501.25	P	Fe I	1002	7664.302		Fe I	402
5.78	P	Mn II	4	7501.81		Ni I	282	7664.907		K I	1
.00		Si I	22	7503.8676		A I	8	7665.02		S II	70
7.38		Co I	89	7505.35		Gd II	109	7665.48		O I	42
3.32	P	Fe I	1002	7505.98	P	Fe I	1306	7672.092		Ba I	5
3.674		Fe I	1001	7507.300		Fe I	1137	7672.44		Cl I	3
9.35		Ni I	287	7508.53	P	Fe I	1274	7677.46		Mn I	54
.20	P	Fe I	1307	7509.03		S II	24	7679.60		S I	7
.60		Fe I	1188	7510.74		Au I	2	7680.22		Mn I	55
2.30		Ni I	139	7511.045		Fe I	1077	7680.35		Si I	36
.17		Ti I	97	7512.12	P	Fe I	108	7686.13		S I	7
.54		Si I	23	7512.17	P	Fe I	1001	7687.779		Ag I	2
.63		N I	3	7514.93		F I	1	7689.10	P	Fe I	1304
.63		Si I	23	7515.88		Fe II	73	7689.36		A II	
5.12	P	Fe II	209	7521.09		Ni I	282	7691.57	P	Mg I	29
.04		F I	1	7522.79		Ni I	126	7696.73		S I	7
.57		Eu II	8	7525.14		Ni I	139	7698.979		K I	1
.58		Fe I	204	7526.2		Al II	119	7699.49		Yb I	3
.73		Fe I	1351	7526.72	P	Fe I	1352	7706.52		Mn I	54
.90		Fe I	1189	7528.15	P	Fe I	1307	7706.77		O I	42
.17	P	Si I	89	7531.171		Fe I	1137	7709.78		Al II	113
.94	P	Fe I	1189	7533.42		Fe II	72	7709.98		Mn I	54
.98	P	Ti I	142	7534.83	P	Fe II	87	7710.390		Fe I	1077
.27	P	Mn II	4	7537.44	P	Fe I	1000	7711.71		Fe II	73
.48		Ni I	280	7537.97	P	Fe I	1352	7712.42		Mn I	55
.16		Co I	53	7540.44	P	Fe I	266	7712.661		Co I	126
	P	O V	17	7541.61		Fe I	957	7714.27		Ni I	62
.89		Zr I	23	7545.69		Ni I	287	7715.63		Ni I	109
.54		A II	60	7546.177		Fe I		7717.57		Cl I	4
.60		Ti I	225	7547.06		Cl I	5	7719.05	P	Fe I	1304
.98		Fe I	1273	7547.89	P	Fe I	1306	7720.68	P	Fe I	1304
.28		N I	3	7551.10	P	Fe I	1303	7722.60	P	Mg I	44
.031		Fe I	1002	7552.24		F I	1	7723.20		Fe I	108
.26	P	Fe I	1309	7552.52	P	Ni I	286	7723.7597		A I	1
.70	P	Fe I	107	7552.79	P	Fe I	1303	7724.2064		A I	6
.776		Fe I	1077	7553.970		Co I	183	7727.66		Ni I	156
.43		Fe I	1273	7554.73		Zr I	23	7732.50		Zn II	2
.00	P	Fe I	1352	7555.60		Ni I	187	7733.24		Mn I	54

A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
.50		Gd I	1	7909.60	P	Fe I	1287	8035.39		Si I	57
.68	P	Fe I	1306	7910.50		Cr I	316	8043.306		Co I	193
.43		Mn I	55	7911.338		Ba I	1	8046.073		Fe I	1136
.99		Ni I	281	7912.55		Si I	68	8046.78	P	Si I	73
.67	P	Fe I	1137	7912.866		Fe I	12	8047.60		Fe I	12
.7		Si I		7913.47		Si I	35	8048.70		Sm II	67
.71		Fe I	1306	7917.48		Ni I	109	8051.91		S II	31
.2		Si I		7917.85		Cr I	316	8055.996		Co I	193
.27		Co I	183	7918.38		Si I	57	8058.14		Zr I	41
.94		Cl I	5	7923.95		S I	22	8061.27		Cr I	300
.05		S II	70	7924.14	P	Fe I	1250	8063.10		Zr I	40
.48	P	Fe I	1305	7924.62		Cl I	4	8065.99		Al I	16
.56	P	Fe I	1309	7926.37		Ti I	308	8066.05	P	Ti I	151
.281		Fe I	402	7928.14		Sm II	65	8066.20		Y II	31
.37		Gd II	142	7928.84		S I	22	8068.24		Ti I	151
.93		Ni I	156	7930.25		Gd II		8068.46		Sm II	68
.18		Fe I	1304	7930.33		S I	22	8070.12		Zr I	40
.70		F I	4	7930.83	P	Mg I	42	8070.64	P	Si I	67
.15		Mn I	55	7931.70		S I	22	8072.16	P	Fe I	108
.89		Hf II	66	7932.20		Si I	57	8075.13		Fe I	12
.72		Mn I	54	7933.130		Cu I	6	8075.37		Al I	16
.72	P	Fe I	957	7937.166		Fe I	1136	8080.55	P	Ti I	195
.74		Cr I		7938.53	P	Ti I	151	8080.668		Fe I	623
.96		O I	1	7939.49		O I	35	8082.4580		Ne I	6
.18		O I	1	7941.09		Fe I	623	8084.98		Cr I	299
.40		O I	1	7941.84	P	Fe I	508	8085.200		Fe I	1136
.479		Ba I	5	7942.02		Cr I	300	8085.29		S II	69
.586		Fe I	1154	7942.91		Mn I		8086.18	P	Si I	67
.95		Ni I	62	7943.15		O I	35	8086.67		S II	31
.62		Ni I	201	7943.1802		Ne I	18	8086.91		Al II	116
.90	P	Fe I	403	7943.93		Ti I	308	8089.86		S II	69
.0		Si I	81	7943.94		Si I	57	8089.96		Gd II	145
.22		F I	4	7944.65		Zr I	40	8092.634		Cu I	6
.227		Rb I	1	7945.878		Fe I	1154	8093.25		S II	68
.49	P	Fe I	1303	7945.98	P	Fe I	107	8093.32		Si I	34
.97	P	Fe I	1303	7947.204		O I	35	8093.48		V I	30
.04		Fe I		7947.56		O I	35	8093.932		Co I	189
.24		Co I	79	7947.60		Rb I	1	8095.93		Ni I	290
.4		Na I	20	7948.1754		A I	6	8096.874		Fe I	999
.81	P	Fe I	1303	7949.17		Ti I	125	8098.50	P	Ti I	195
.14	P	Mg I	43	7950.83		O I	35	8098.72	P	Mg I	41
.31		Al II	90	7952.18		O I	35	8103.6922		A I	3
.62	P	Fe I	1305	7953.11		Ni I	266	8108.33	P	Fe I	265
.83		Al II	90	7954.94	P	Fe I	402	8112.13		Co I	183
.16		He I	69	7955.81		Fe I	1305	8112.17	P	Fe I	265
.80	P	Fe I	1118	7956.69		Zr I	41	8114.93		S II	69
.47		S II	31	7959.21		Fe I	1304	8115.3115		A I	1
.72		Al II	90	7961.58		Ti I	308	8116.80		V I	30
.81		Ni I	109	7963.25		Gd II		8119.13		Cr I	299
.224		Fe I	1154	7964.93	P	Fe I	1303	8119.72		Al II	110
5.08		Sm II	69	7965.52	P	Fe I	1305	8121.89		Al II	110
5.33		Al I	10	7967.03	P	Fe I	1000	8122.08		Al II	110
5.15		Al I	10	7967.43		S II	12	8123.52		Al II	110
7.27		Sm II	64	7970.26		Si I	57	8126.52		Li I	3
3.09	P	Fe II	87	7978.88		Ti I	151,308	8128.28		Cr I	300
1.40	P	Fe II	72	7980.04	P	Fe I	1304	8129.32	P	Fe I	265
4.55	P	Fe I	1250	7980.58		Cl I	2	8133.00		Zr I	40
4.87		Gd II		7981.97		O I	19	8133.02		S II	68
6.35		Gd II		7982.41		O I	19	8133.36	P	Ti I	195
6.47	P	Fe I	1323	7983.66		Hf II	99	8136.4060		Ne I	23
9.38		Zr I	40	7987.00		O I	19	8144.58		V I	30
0		C I	32	7987.34		O I	19	8145.47		Fe I	
0.5		Si I	81	7987.36		Co I	89	8146.67	P	Fe I	623
2.74	P	Ti I	34	7989.36		Cr I	300	8148.50		Fe I	1217,1218
5.12		Ni I	267	7994.473		Fe I		8150.57	P	Si I	20
5.41	P	Fe I	1305	7995.00	P	Si I	21	8151.95		Co I	193
1.10		Ni I	156	7995.12		O I	19	8160.15		Al II	118
1.22		Hf II	66	7996.53		Ti I	308	8161.06		V I	30
3.79		Ni I	268	7996.80		Co I	79	8163.22		Cr I	298
9.65		Fe I	1137	7997.80		Cl I	3	8166.66		Cr I	298,299
9.868		Co I	189	7997.85		S II	69	8167.94		Cr I	291
0.00		Zr I	41	7998.972		Fe I	1136	8169.80		Cr I	300
1.370		Co I	189	8002.55	P	Fe I	1217	8171.30	P	Fe I	1322
7.13		Mg II	8	8005.24		S II	68	8179.03		Fe I	1136
8.22		Cl I	3	8006.1556		A I	3	8179.31		S II	69
9.75	P	Fe I	1306	8009.39	P	Si I	74	8179.43	P	Si I	33
1.90		Y II	32	8014.7856		A I	1	8183.256		Na I	4
5.00	P	Ti I	34	8016.51	P	Fe I	1249	8184.80		N I	2
5.26		S II	68	8018		C I	31	8185.69		Cr I	299
6.31		O I	64	8018.04		Cr I	299	8186.73		V I	30
0.22		Ni I	200,267	8018.70		S II	68	8186.80		Fe I	1272
5.50	P	Ti I	34	8024.50		Fe I		8187.95		N I	2
6.37		Mg II	8	8024.84		Ti I	151	8194.35		Cl I	2
8.38	P	Si I	69	8025.12		Sm II	63	8194.791		Na I	4
4.12	P	Fe I	403	8026.32		Sm II	67	8194.824		Na I	4
5.751		Ba I	10	8027.36		V I	30	8196.52	P	Fe I	1217
8.06		Gd II	120	8027.96	P	Fe I	623	8198.87		V I	30
8.30		Cr I	316	8028.341		Fe I	1154	8198.951		Fe I	1154
8.679		Co I	189	8032.03		Sm II	61	8200.31		N I	2
9.34	P	Ti I	308	8034.56		Ni I	109	8201.73		Zr I	40

FINDING LIST

A	Type	Element	Multiplet No.
.2	P	Ca II	13
.572		H	14
.10	P	Fe I	12
.93	P	Fe I	12
.767		Fe I	1136
.57		Co I	193
.64		N I	2
.48		Si I	19
.00		Cl I	2
.43		Mn I	
.59		Zr I	40
.02	P	Mg I	28
.28		Cr I	299
.28		N I	2
.8	P	Mg II	7
.40		Cl I	3
.406		Fe I	1136
.63		S II	31
.73		Cl I	3
.84		O I	34
.15		S II	68
.07		N I	2
.16		S II	68
.09		Cr I	98
.15		S II	69
.67		Cr I	299
.64		O I	34
.01		O I	34
.67		Si I	19
.347		Fe I	1136
.99		O I	34
.30		S II	68
.31		O I	34
.89		Cr I	298
.13		Hf II	65
.77		He II	6
.29		Cr I	298
.4	P	Mg II	7
.130		Fe I	108
.61		V I	30
.34		N I	2
.151		Fe I	1136
.2	P	Ca II	13
.51		V I	30
.78	P	Fe I	1216
.10		Be I	2
.34	P	Fe I	508
.153		H	14
.90		V I	30
.1	P	Ca II	13
.859		H	14
.27		S II	31
.938		H	14
.95		Cr I	98
.86	P	Fe I	1272
.27		Fe I	1332
.288		H	14
.5209		A I	8
.076		Ne I	27
.941		H	13
.66	P	Fe I	1218
.934		H	13
.46		S II	31
.519		Ag I	2
.28		Fe I	1332
.91		Fe I	1270
.310		H	13
.125		H	13
.434		H	13
.38		Cr I	298
.62		Cr I	298
.309		H	12
.527		Fe I	623
.90		Cr I	57
.58		Cr I	297
.837		H	12
.01	P	Fe I	1331
.3258		Ne I	12
.11	P	Fe I	265
.19		Cr I	57
.62		As I	5
.79		Sm II	69
.94		Zr I	40
.115		H	12
.80		Si I	19
.41		Ti I	33
.61	P	Fe I	12
.98	P	Fe I	12
.262		H	12
.73		S II	12

I A	Type	Element	Multiplet No.
8316.38		Gd II	
8317.45		Si I	19
8322.06		Cr I	298
8323.428		H	12
8323.44		Cr I	298
8327.063		Fe I	60
8331.941		Fe I	1153
8333.29		Cl I	2
8333.785		H	11
8334.37		Ti I	33
8335.19		C I	10
8338.43		Si I	33
8338.83		Cr I	298
8339.431		Fe I	1153
8342.21	P	Fe I	401
8342.95		Fe I	1270
8345.20	P	Fe I	265
8345.553		H	11
8346.13	P	Mg I	40
8348.28		Cr I	56
8348.68		Sm II	64
8349.05	P	Fe I	12
8353.15		Ti I	33
8354.35		Al II	40
8355.16	P	Fe I	1050
8356.07	P	Fe I	1117
8358.53	P	Fe I	401
8359.006		H	11
8359.23		Al II	40
8359.57		Al II	40
8360.63		Cl II	5
8360.822		Fe I	1153
8361.77		He I	68
8361.95		S II	31
8363.30		Al II	40
8363.52		Al II	40
8363.58	P	Ti I	182
8364.24		Ti I	33
8365.642		Fe I	623
8369.87	P	Fe I	1271
8370.21		Zr I	40
8372.79		Co I	193
8374.478		H	11
8375.95		Cl I	2
8376.41		Ne I	12
8377.6068		Ne I	12
8377.79		S II	31
8377.90		Ti I	33
8379.44		Co I	193
8380.77		Mn I	
8382.23	P	Fe I	12
8382.54		Ti I	33
8382.82		Ti I	33
8386.24	P	Ti I	182
8387.781		Fe I	60
8389.42		Zr I	40
8389.48		Ti I	182
8392.400		H	11
8395.87		Mn I	53
8396.93		Ti I	33
8397.04		Cr I	57
8397.96	P	Si I	18
8401.42		Fe I	108
8401.68	P	Fe I	1136
8402.54		Ti I	224
8408.208		A I	8
8409.88		Mn I	53
8412.36		Ti I	33
8413.321		H	10
8414.00		Zr I	40
8414.08	P	Fe I	1154
8416.97		Ti I	224
8417.24		Ni I	156
8417.54		Ti I	182
8417.89	P	Si I	18
8418.4274		Ne I	18
8418.70		Ti I	
8420.968		O I	54
8422.39		S II	37
8422.95		Fe I	999
8423.10		Ti I	150
8424.14		Fe I	1272
8424.41		Ti I	182
8424.647		A I	3
8424.780		O I	54
8425.37		S II	62
8425.89	P	Fe I	12
8426.326		O I	54
8426.50		Ti I	33
8428.25		Cl I	2

I A	Type	Element	Multiplet No.
8428.342		O I	54
8428.94		As I	4
8429.128		O I	54
8429.36		Y II	
8431.20		Mn I	53
8434.51	P	Fe I	1270
8434.98		Ti I	33
8435.28	P	Si I	8
8435.68		Ti I	33
8437.958		H	10
8438.93		Ti I	224
8439.603		Fe I	1172
8442.58		Gd II	
8442.98		Ti I	210
8444.00		Si I	46
8444.48		Si I	46
8446.35		O I	4
8446.42	P	Fe I	1272
8446.56	P	Fe I	1267
8446.76		O I	4
8447.41	P	Fe I	1266
8447.63	P	Fe I	12
8449.54		S I	14
8450.26		Cr I	56
8450.89		Ti I	224
8451.55		S I	14
8452.14		S I	14
8455.24		Cr I	56
8457.10		Ti I	141
8459.01	P	Fe I	1270
8461.41	P	Fe I	814
8464.02	P	Fe I	1330
8464.65		Zr I	40
8465.23	P	Fe I	1270
8466.10	P	Fe I	1269
8466.54	P	Fe I	999
8467.15		Ti I	182
8467.256		H	10
8468.413		Fe I	60
8468.46		Ti I	150
8471.75		Fe I	1270
8480.63	P	Fe I	1272
8481.96	P	Fe I	999
8483.16		Ti I	150
8485.99		Sm II	66
8493.79	P	Fe I	1269
8494.42		Ti I	141
8495.3600		Ne I	18
8495.51		Ti I	210
8496.03		Ti I	209,313
8496.51	P	Fe I	1136
8497.00		Fe I	1172
8498.018		Ca II	2
8498.44		Zr I	40
8501.50		Si I	47
8501.81		Ni I	186
8502.38		Si I	46
8502.487		H	10
8503.17		Si I	
8509.63	P	Fe I	1136
8510.90		Sm II	64
8512.95	P	Fe I	462
8514.075		Fe I	60
8514.64	P	Si I	18
8515.08		Fe I	401
8515.48		S II	37
8518.05		Ti I	182
8518.37		Ti I	150
8519.05	P	Fe I	1267
8520.23		S II	34
8521.10		Cs I	1
8521.4407		A I	8
8522.64		S II	62
8525.04	P	Fe I	1215
8526.685		Fe I	1270
8527.32	P	Si I	18
8527.88	P	Fe I	1270
8531.36		Ti I	141
8523.38		Si I	80
8538.02	P	Fe I	1266
8539.36		Ti I	209
8541.65		As I	3
8542.089		Ca II	2
8543.72		Cr I	56
8545.384		H	10
8548.07		Ti I	150
8548.83		Cr I	56
8550.34	P	Si I	88
8550.46		Cl I	13
8550.54		Ti I	141

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	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
54		Cr I	56	8680.77	P	Fe I	999	8819.42	P	Fe I	1266
64		Si I	45	8681.920		Ne I	23	8819.48	P	Fe I	1269
98		Fe I	1321	8682.99		Ti I	68	8820.45		O I	37
13	P	Fe I	1153	8683.38		N I	1	8821.14		Ti I	139
71		As I	3	8686.13		N I	1	8821.76		As I	3
45		Ti I	141	8686.28		Cl I	14	8824.227		Fe I	60
74		N I	8	8686.77	P	Fe I	1269	8826.06	P	Fe I	1269
78	P	Fe I	1269	8686.79	P	Fe I	956	8828.91		Al I	15
72		Ti I	209	8688.633		Fe I	60	8834.04	P	Fe I	1050
84	P	Fe I	1272	8689.71	P	Fe I	507	8835.67		Cr I	142
25		Cl I	2	8689.83	P	Fe I	1330	8835.85		Y II	30
46	P	Si I	87	8692.34		Ti I	68	8838.433		Fe I	339
50	P	Fe I	1215	8693.24		S I	6	8841.26		Al I	15
40		Ti I	141	8693.98		S I	6	8846.82		Fe I	1267
15		Si I	56	8694.70		S I	6	8848.25	P	Fe I	1153
88		Hf II	66	8698.71	P	Fe I	400	8848.46	P	Fe I	1214
267		Fe I	401	8699.13		Mn I	49	8852.30	P	Fe I	1318
82	P	Fe I	1270	8699.43		Fe I	1267	8853.867		Ne I	27
60		S I		8700.34	P	Fe I	1266	8858.39		Al II	115
96		Cl I	2	8701.05		Mn I	49	8858.77		Al II	115
20	P	Ni I	296	8702.49		Ni I	83	8862.59		Ni I	214
78		Co I	193	8703.24		N I	1	8862.787		H	9
2584		Ne I	30	8703.76		Mn I	49	8863.64		Fe I	1283
10	P	Fe I	1269	8704.15		Ne I	23	8865.759		Ne I	8
97		Fe I	1267	8707.42		Cr I	56	8866.961		Fe I	1172
01		N I	8	8707.95		Cr I	296	8868.42		Fe I	400
02	P	Si I	80	8710.29		Fe I	1267	8869.69		As I	4
00		Si I	80	8710.82		Ba II	5	8874.53		S I	21
18		Ti I	236	8711.69		N I	1	8876.13		Fe I	1267
394		H	9	8713.19		Fe I	400,1267	8877.07		Ni I	285
79		Fe I	1153	8718.70		Cr I	296	8878.26	P	Fe I	401
98		Ti I	141,209	8718.82		N I	1	8878.76	P	Fe I	1050
43		Si I	55	8719.56		Ti I	140	8880.70		S I	21
45		Ni I	275	8725.76		Ti I	139	8882.47		S I	21
08	P	Fe I	1272	8727.10	P	Fe I	999	8883.84		Si I	54
62	P	Fe I	1153	8728.38		Si I	79	8884.23		S I	21
807		Fe I	339	8728.88		N I	1	8887.10	P	Fe I	1265
91		Ti I	141	8729.02		Si I	79	8892.13	P	Fe I	1302
93	P	Fe I	1272	8729.12	P	Fe I	713	8892.97		Si I	54
27	P	Fe I	1266	8732.17		Cr I	296	8896.00	P	Fe I	1153
44		Ti I	209	8734.60		Mn I	49	8898.97		Si I	79,86
612		Fe I	401	8734.70		Ti I	68	8899.50		Si I	79
24		N I	8	8736.0	P	Mg I	39	8901.0		Mn I	56
42	P	Fe I	1050	8737.32		Mn I	49	8902.94	P	Fe I	1266
6480		Ne I	23	8737.74		Ba II	5	8905.99	P	Fe I	1302
26		Cr I	56	8740.93		Mn I	49	8912.88		Al I	14
04		Ni I	186	8742.60		Si I	44	8912.88		Cl I	13
70		Al II	4	8747.32		Fe I	401	8916.26		Fe I	32
47		Ti I		8747.35		N I	1	8918.88		Se I	1
03		Cr I	56	8750.13		Co I	203	8919.50		Ne I	27
29	P	Fe I	1261	8750.475		H	9	8919.95		Fe I	1301
05		Ne I	33	8751.18	P	Si I	44	8920.02	P	Fe I	1261
89		Si I		8752.17		Si I	43	8922.00	P	Fe I	1296
6		Na I	19	8757.192		Fe I	339	8923.56		Al I	14
50	P	Fe I	1050	8761.44		Ti I	139	8923.8		Mg I	25
16		As I	3	8764.000		Fe I	1172	8925.55		Si I	54
3835		Ne I	33	8766.64		Ti I	68	8925.75		Cr I	142
40	P	Fe I	623	8766.68		Si I	54	8926.06		Mn I	56
51		Ne I	33	8767.65	P	Fe I	814	8929.04		Fe I	1301
63		Mn I	59	8770.68		Ni I	82	8929.72		Mn I	56
88		N I	8	8771.70		Ne I	38	8931.78	P	Fe I	507
67	P	Fe I	1269	8772.88		Al I	9	8943.00		Fe I	338
38		Mn I	59	8773.56		Cr I	296	8943.50		Cs I	1
908		Fe I	60	8773.91		Al I	9	8943.6		Na I	26
140		Ca II	2	8778.66		Ti I	140	8945.204		Fe I	1301
73	P	Fe I	1270	8779.12	P	Fe I	1050	8946.25		Fe I	338
021		H	9	8780.6223		Ne I	27	8947.20		Cr I	142
37	P	Fe I	166	8783.755		Ne I	38	8948.01		Cl I	1
40	P	Si I	55	8784.44		Fe I	1270	8949.33		Si I	54
9430		A I	6	8786.28	P	Cr I	142	8950.20	P	Fe I	1050
19		S I	6	8786.96		Cr I	296	8954.65		Ni I	200
65		S I	6	8790.62		Fe I	1267	8956.26	P	Fe I	1266
92		Mn I	49	8790.88		Si I	79	8959.88	P	Fe I	1320
06		Al II	112	8791.28		Si I	79	8965.94		Ni I	225
28		Al II	112	8793.376		Fe I	1172	8967.53	P	Fe I	1286
37		S I	6	8796		Na I	27	8968.20		Ni I	284
86	P	Fe I	1272	8796.42		Fe I	1266	8975.408		Fe I	400
06		Mn I	49	8798.05	P	Fe I	1286	8976.88		Cr I	142
97		Mn I	49	8801.78	P	Fe I	956	8978.04	P	Fe I	1266
751		Fe I	339	8804.624		Fe I	106	8978.17	P	Fe I	713
92		Al II	112	8805.21	P	Fe I	1265	8979.34	P	Ti II	100
28		Al II	112	8806.7032		Mg I	7	8982.35		Ni I	213
38		Ti I	68	8806.7358		Mg I	7	8984.87		Fe I	1301
00		S I	6	8806.7678		Mg I	7	8988.56		Ne I	8
491		Ne I	37	8808.17	P	Fe I	1267	8989.44		Ti I	138
61	P	Fe I	1286	8809.47		Ni I	200	8994.57	P	Fe I	622
70		S I	6	8814.50	P	Fe I	1330	8999.561		Fe I	339
24		N I	1	8816.86	P	Fe I	1271	9002.00		Sc I	1
31		Al II	112	8819.11		Co I	203	9006.72		Fe I	1261
47		S I	6	8819.39		Ti I	68	9008.37		Fe I	1329

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I A	Type	Element	Multiplet No.
09.04		Si I	91
09.95		Cr I	187
10.55		Fe I	202
12.098		Fe I	1301
13.90		Fe I	106
14.911		H	9
15.16		Zr I	39
17.10		Cr I	187
19.84		Fe I	1301
21.69		Cr I	187
24.47		Fe I	1265
24.78	P	Fe I	1297
27.32		Ti I	138
27.90	P	Ti II	100
28.9		N I	15
30.67		Fe I	338
35.86		Cr I	142
35.92		S I	13
36.32		S I	13
36.73		S I	13
36.74	P	Fe I	1269
38.65		Sc I	1
38.72		S I	13
38.84	P	Fe I	400
39.27		S I	13
45.40		Cl I	13
52.56	P	Fe I	1342
59.74		Cr I	165
60.6		N I	15
61.33	P	Fe II	71
61.48		C I	3
62.24		Fe I	1301
62.53		C I	3
63.40		He I	77
64.06		Si I	91
70.42		Fe I	1076,1300
73.15		Cl I	12
78.32		C I	3
79.599		Fe I	1172
80.48		Fe I	1265,1298
84.20	P	Fe I	1076
84.29		Mn I	46
88.326		Fe I	339
88.57		C I	3
89.413		Fe I	400
90.70		Ti I	138
94.89		C I	3
00.50		Fe I	1264
03.37		Si I	66
03.64		Fe I	1076
06.40		Ni I	289
11.85		C I	3
12.25	P	Fe I	1297
12.95	P	Fe II	71
14.02		Mn I	46
16.89	P	Fe I	1265
17.10		Fe I	338
18.888		Fe I	338
21.10		Cl I	1
22.9660		A I	1
24.27		Al II	108
40.15	P	Fe I	622
46.11		Fe I	202
47.800		Fe I	1301
48.45		Cr I	165
48.68		Ne I	30
54.7		Na I	25
55.67	P	Fe I	1301
56.02		O I	41
56.23	P	Fe I	400
57.07	P	Fe I	1268
57.08	P	Fe I	1261
64.51		Fe I	1263
72.09		Mn I	46
73.20	P	Fe I	203
73.63	P	Fe I	1300
73.83		Fe I	622
75.85		P I	3
78.57		Fe I	1262
91.67		Cl I	1
97.49		Cl I	14
99.52		Fe I	1298
01.76		Ne I	30
03.10	P	Fe I	1298
08.29		Cr I	165
08.55		Si I	66
10.030		Fe I	338
10.28		He I	83
12.91		S I	1
14.45		Fe I	1264
9214.85	P	Fe II	71
9217.4	P	Mg II	1
9217.54		Fe I	1298
9220.05		Ne I	33
9221.59		Ne I	33
9224.498		A I	8
9225.55		Fe I	1213
9226.67		Ne I	30
9228.11		S I	1
9229.017		H	8
9233.15	P	Fe I	1342
9237.49		S I	1
9238.60		Si I	66
9242.32		Fe I	1262
9243.29		Mn I	46
9213.4	P	Mg II	1
9246.54		Fe I	203
9248.13	P	Fe I	1338
9248.80	P	Fe I	1285
9249.41		Al II	117
9252.67	P	Ti II	100
9253.72	P	Fe I	1261
9254.59		Si I	
9256.0		Mg I	27
9258.30		Fe I	1172
9259.05		Fe I	1263
9260.88		O I	8
9262.73		O I	8
9263.97		Cr I	165
9265.99		O I	8
9267.29		As I	3
9276.89		Zr I	39
9286.578		Al II	64
9286.794		Al II	64
9288.145		Al II	64
9288.550		Al II	64
9288.82		Cl I	11
9289.39	P	Fe I	1298
9290.44		Cr I	29
9290.649		Al II	64
9290.747		Al II	64
9294.17		Cr I	29
9294.66		Fe I	1301
9297.14	P	Fe I	1247
9298.05	P	Fe I	1262
9300.62		As I	5
9300.85		Ne I	33
9304.88		P I	3
9307.94		Fe I	1297
9313.55		Cr I	80
9313.98		Ne I	33
9318.13		Fe I	1263
9318.24		Si I	66
9324.07		Fe I	1300
9326.52		Ne I	36
9328.64	P	Fe I	1261
9331.546		Al II	56
9331.979		Al II	56
9333.94		Fe I	1297
9335.27	P	Fe I	1338
9336.47		Mn I	58
9343.40		Fe I	1300
9344.93		He II	6
9346.69		La II	152
9350.46		Fe I	1171
9354.218		A I	8
9359.420		Fe I	203
9362.06		Cr I	80
9362.370		Fe I	106
9370.57	P	Fe I	338
9372.900		Fe I	202
9373.28		Ne I	33
9375.14	P	Fe I	400
9382.93	P	Fe I	1284
9383.40	P	Fe I	1285
9385.62		Ni I	225
9386.79		N I	7
9388.28		Fe I	1263
9392.77	P	Fe I	1262
9392.80		N I	7
9393.40		Si I	72
9393.81		Cl I	1
9394.71		Fe I	1264
9396.57		Ni I	
9401.09		Fe I	1297
9403.36	P	Fe II	71
9404.80	P	Fe I	1264
9405.77		C I	9
9409.55	P	Fe I	1296
9410.15	P	Fe I	1298
9413.46		S I	18
9413.59		Si I	14
9414.14		Fe I	1298
9415.04	P	Fe I	1297
9415.5		Mg I	38
9421.82		Si I	72
9421.93		S I	18
9423.07	P	Fe I	1300
9425.38		Ne I	36
9429.58		Mn I	57
9430.08		Fe I	
9433.29	P	Fe I	1292
9437.11		S I	18
9437.91		Fe I	1171
9443.98		Fe I	1298
9444.36		Cr I	29
9447.00		Cr I	29
9452.06		Cl I	13
9452.45		Fe I	1263,1292
9454.24		Fe I	1298
9459.21		Ne I	38
9460.66	P	N I	7
9462.97		Fe I	1263
9463.57		He I	67
9466.0		Na I	24
9476.57		Mn I	57
9482.82	P	Fe I	1319
9485.93	P	Fe I	622
9486.680		Ne I	8
9486.89		Cl I	1
9487.49		O I	47
9498.04		O I	47
9499.39		O I	46
9502.12		Mn I	58
9505.28		Si I	72
9505.67		O I	46
9506.04		Ti I	312
9508.49		Ti I	312
9510.81		Ti I	312
9511.55		Ti I	312
9511.80		Ti I	312
9513.24		Fe I	1298
9516.51		He I	76
9516.66		He I	76
9520.06		Ni I	224
9522.01		O I	45
9525.78		P I	3
9526.17		He I	82
9527.73	P	Fe I	1297
9529.27		He I	86
9529.31		Fe I	
9531.22	P	Fe I	1292
9534.17		Ne I	38
9535.72		Mn I	57
9543.376		D	2
9545.974		H	8
9546.07		Ti I	32
9547.26		Zr I	39
9547.40		Ne I	38
9550.90		Fe I	1263
9556.56		Fe I	622
9563.45		P I	2
9568.58		Cr I	29
9569.960		Fe I	1296
9570.08		Si I	42,65
9571.76		Cr I	29
9573.65	P	Fe I	1297
9574.25		Cr I	29
9582.28		V I	106
9584.77		Cl I	1
9585.72		Si I	7
9592.20		Cl I	11
9593.54		P I	2
9595.60		K I	10
9597.76		K I	10
9597.94		As I	3
9599.53		Ti I	32
9602.07		Fe I	1283
9603.09		C I	2
9603.50		He I	71
9608.56		Mn I	60
9608.89	P	Fe I	1285
9608.97		P I	2
9611.60		V I	106
9614.68		V I	106
9620.86		C I	2
9620.93	P	Fe I	737
9625.72		Ge I	7
9625.80		He I	90
9626.30		Cr I	80

	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.	I A	Type	Element	Multiplet No.
562		Fe I	1296	9790.08		P I	4	10061.29		Ni I	284
37		Cl I	12	9796.79		P I	2	10065.080		Fe I	1247
0	P	Mg II	15	9800.335		Fe I	1296	10066.47		Ti I	193
02		Mn I	58	9800.79	P	Fe I	1292	10067.84		Si I	64
78		S I	17	9811.36		Fe I	1285	10070.58	P	Fe I	1345
22		Fe I	1296	9820.24	P	Fe I	106	10072.10		He I	80
69		Fe I	1212	9821.8		N I	19	10076.29		Al II	6
55		Fe I		9822.30		Zr I	39	10077.32		Al II	6
28		Ti I	32	9826.69		As I	3	10077.53		Al II	6
40	P	Ca I	55	9832.15		Ti I	149	10080.32		Cr I	226
40		Ti I	32	9833.76		As I	2	10080.44	P	Fe I	1293
94		S I	17	9834.04		Fe I	1294	10081.40	P	Fe I	106
143		Fe I	1247	9839.38		Fe I	1211	10084.22		P I	4
00		La II	60	9839.58		Si I	65	10084.42	P	Fe I	1209
30		Fe I	1296	9856.7	P	Ca II	12	10084.70		Zr I	39
7841		A I	3	9861.793		Fe I	1296	10086.27	P	Fe I	399
49		C I	2	9862.5		N I	19	10091.12		Te I	1
94		Fe I	1292	9865.44		V I	76	10091.64		Cl I	10
42		Ti I	194	9868.09		Fe I	1292,1299	10107.19		Al II	6
58	P	Ca I	55	9875.95		Cl I	11	10108.01		Al II	6
29	P	Ca I	55	9878.18	P	Fe I	1293	10108.37		Al II	6
426		Ne I	8	9879.41		Ti I	149	10113.4		N I	18
59		Fe I		9881.51	P	Fe I	1209	10113.86		Fe I	264
20		Cr I	29	9886.92		Si I	85	10117.81	P	Fe I	1295
9		V I	106	9889.082		Fe I	1296	10119.20		Ti I	315
48		Cr I	29	9891.90		Si I	71	10120.90		Ti I	193
34		S I	17	9898.90		Ni I	243	10122.50		Al II	6
16		Fe I	580	9900.87		Cr I	80	10123.61		He II	2
55		Ti I	32	9903.74		P I	4	10137.06	P	Fe I	1294
25	P	Ca I	55	9913.16		Si I	65	10138.50		He I	89
42		Fe I	1345	9913.19	P	Fe I	1292	10142.82		Fe I	1294
50		Mn I	60	9917.93		Fe I	1317	10143.59	P	Fe I	979
41		O I	58	9920.46	P	Fe I	1292	10145.00	P	Fe I	621
80		S I	17	9923.03		As I	2	10145.37		Ni I	243
57		Fe I	1337	9924.35	P	Fe I	737	10145.48		Ti I	
9		Mn I	60	9927.35		Ti I	149	10145.601		Fe I	1247
3		Mn I		9932.26		S I	16	10147.09		Ti I	315
60	P	Ca I	55	9933.3	P	Ca II	12	10147.3		N I	18
86		Ti I	32	9937.10	P	Fe I	1210	10149.09	P	Fe I	1294
35		Ni I	295	9941.33		Ti I	193	10153.13	P	Si I	40
41		Si I	65	9944.13		Fe I	1285	10153.30	P	Fe I	1348
62		Ti I	194	9948.98		Ti I	193	10155.18	P	Fe I	59
58		V I	106	9949.06		Cr I	226	10155.88		Si I	64
68		S I	20	9949.84		S I	16	10156.50	P	Fe I	1209
69		Fe I	1292	9950.5		K I	8	10164.5		N I	18
33		S I	17	9950.70	P	Fe I	1209	10167.4		Fe I	59
70		Fe I	1292,1299	9951.15	P	Fe I	1346	10170.60		Ti I	95
81	P	Ca I	55	9953.45	P	Fe I	1346	10179.92		Ti I	315
35		Cl I	1	9955.2		K I	8	10189.26		Ti I	95
66		He I	75	9955.85	P	Fe I	1211	10191.51	P	Fe I	149
.86		Ti I	248	9958.90		S I		10193.25		Ni I	213
.64		Ti I	32	9959.18	P	Fe I	998	10193.66		V I	76
.21	P	Ni I	285	9961.0		Na I	23	10195.11		Fe I	264
.00		Ti I	248	9967.32	P	Fe I	1293	10197.05		Cr I	80
.96		Ti I	124	9967.46		Si I	64	10203.45		V I	76
.88		Te I	1	9970.26	P	Fe I	461	10204.72		P I	4
.36		Ti I	32	9976.65		P I	2	10216.351		Fe I	1247
.32		Cr I	226	9977.52		Fe I	1293	10218.36		Fe I	461
.52		Cr I	29	9980.55		Fe I	1295	10262.49	P	Si I	63
.74		P I	2	9981.16		Ti I		10265.23	P	Fe I	59
.50		V I	106	9987.0		Mg I	36	10283.87	P	Fe I	1346
.60		Si I		9987.88	P	Fe I	59	10288.83		Si I	6
.624		Fe I	1296	9993.7		Mg I	36	10295.05		Ni I	
.74		S I	20	9997.94		Ti I	149	10302.61		Ni I	242
.49		O I	57	10001.35	P	Si I	64	10307.48	P	Fe I	1208
.03		S I	20	10003.02		Ti I	193	10307.60		Se I	2
.28		Hf II	66	10011.72		Ti I	193	10311.18		He I	74
.60		Ti I	32	10012.15	P	Fe I	1336	10311.37		He I	74
.33		Cl I	10	10015.33		Si I		10311.88	P	Fe I	106
.86		Ti I	248	10016.67	P	Fe I	1293	10321.10		Ni I	289
.24		Fe I	1209	10019.77	P	Fe I	1348	10327.30		Se I	2
.73		P I	2	10020.16		Si I	41	10327.314		Sr II	2
.84		Cr I	80	10022.34	P	Fe I	1345	10330.23		Ni I	224
.129		Fe I	1247	10023.98		As I	2	10332.33	P	Fe I	858
.08		Si I	65	10025.80	P	Si I	64	10333.24	P	Fe I	1208
.65		O I	56	10026.10	P	Fe I	1211	10340.77		Fe I	59
.450		Fe I	1296	10027.73		He I	81	10343.85		Ca I	43
.913		Fe I	1292	10031.16		He I	85	10348.16		Fe I	1347
.40	P	Fe I	1348	10032.84	P	Fe I	1348	10353.85	P	Fe I	1346
.27		Si I	7	10034.45		Ti I	95	10362.73	P	Fe I	1345
.10		Si I		10036.658		Sr II	2	10364.10	P	Fe I	1347
.28		Ti I	32	10046.64		D	2	10371.23		Si I	6
.06	P	Fe I	1211	10048.60		Ni I	242	10378.62		Ni I	224
.30		Ti I	32	10048.78		Ti I	95	10379.01	P	Fe I	59
.59		Ti I	32	10049.38		H	8	10386.45		Se I	2
.96		Fe I	1295	10051.55		Te I	1	10388.73	P	Fe I	1346
.5010		A I	8	10057.64		Fe I	1294	10392.45		Cl I	10
.62		Fe I	1171	10057.69		Ti I	193	10395.75		Fe I	59
.67		Ti I	32	10058.28	P	Fe I	59	10396.85		Ti I	31
.24		Si I	65	10059.87		Ti I	95	10401.72	P	Fe I	461

I A	Type	Element	Multiplet No.
405.05		Ge I	7
422.99		Fe I	264
423.65		Fe I	461
435.38	P	Fe I	1246
452.70		Fe I	955
455.47		S I	3
456.79		S I	3
459.46		S I	3
460.07		Ti I	223
469.59		Fe I	979
470.051		A I	6
486.24		Cr I	118
496.14		Ti I	31
506.5		N I	28
509.96		Cr I	118
511.45		P I	1
529.45		P I	1
530.53		Ni I	224
532.21		Fe I	979
539.0		N I	28
548.0		C I	20
548.0		N I	28
553.02		Ti I	223
555.63	P	Fe I	1345
562.40		Ne I	40
565.97		Ti I	223
577.14	P	Fe I	579
581.52		P I	1
582.66		Si I	84
584.66		Ti I	31
585.12		Si I	6
596.92		P I	1
603.38		Si I	5
607.78		Ti I	31
616.75	P	Fe I	579
627.81		Si I	32
647.66		Cr I	118
653.6		C I	8
660.98		Si I	5
661.61		Ti I	31
667.53		Cr I	118
667.60		He I	73
672.17		Cr I	118
673.55		A I	10
677.04		Ti I	31
681.43		P I	1
683.18		C I	1
685.44		C I	1
689.52		Si I	53
691.36		C I	1
694.14		Si I	53
707.44		C I	1
725.19	P	Fe I	858
726.33		Ti I	31
727.21		Si I	53
729.59		C I	1
732.89		Ti I	31
734.14		Ge I	6
745.9		Na I	18
748.7		Na I	18
749.40		Si I	5
752.99		Fe I	1352
754.09	P	C I	1
762.24		Ni I	242
768.39	P	Al I	13
774.92		Ti I	31
780.71	P	Fe I	579
782.12	P	Al I	13
783.09		Fe I	461
784.33		Si I	53
786.78	P	Al I	13
786.86		Si I	5
792.59	P	Ti I	31
793.65		Ti I	310
796.52		Si I	78
798.12		Ne I	22
301.37		Cr I	118
312.8		Mg I	37
313.03		P I	1
316.91		Cr I	118
318.36		Fe I	979
320.31		Ti I	310
321.62		Cr I	118
327.09		Si I	5
328.04		Ti I	31
329.081		He I	1
330.250		He I	1
330.341		He I	1
333.12		Ca I	56
334.4		Na I	22
10838.77		Ca I	56
10844.02		Si I	31
10844.54		Ne I	26
10847.72		Ti I	31
10849.68		Fe I	1352
10861.51		Ca I	56
10863.60		Fe I	1246
10863.72		Ca I	56
10869.37		Ca I	56
10869.54		Si I	13
10872.47	P	Al I	12
10875.00	P	Fe I	1316
10879.78		Ca I	56
10881.65		Fe I	336
10882.66		Si I	53
10884.30		Fe I	979
10885.16		Si I	77
10890.13	P	Fe I	1341
10891.21	P	Al I	12
10891.25		Ni I	224
10893.72	P	Si I	78
10896.10		Ti I	310
10896.30		Fe I	461
10912.92		He I	79
10914.2	P	Mg II	3
10914.877		Sr II	2
10916.98		He I	84
10925.80		Fe I	1350
10929.90		Cr I	118
10935.11		D	2
10938.09		H	8
10947.51		Ge I	6
10949.4	P	Mg II	3
10957.19		Cr I	118
10961.2	P	Mg I	35
10966.1	P	Mg I	35
10979.27		Si I	5
10979.87		Ni I	242
10982.28		Si I	77
10984.24		Si I	77
10987.22	P	Fe I	337
10996.55		He I	78
11012.97		He I	70
11013.27		Fe I	1246
11015.63		Cr I	221
11018.00		Si I	39
11022.3		K I	9
11044.64		Cr I	118
11044.95		He I	88
11119.80		Fe I	337
11125.28		Ge I	6
11130.37		Si I	77
11149.34		Fe I	336
11157.03		Cr I	221
11187.74		Si I	76
11196.70	P	Ni I	81
11202.02		Si I	76
11225.83		He I	87
11227.5		N I	17
11230.91		Ti I	
11251.09		Fe I	337
11253.81	P	Al I	8
11255.69	P	Al I	8
11290.01		Si I	76
11294.0		N I	17
11294.97		O I	7
11297.54		O I	7
11298.83		Fe I	337
11302.22		O I	7
11308.45		Si I	76
11313.8		N I	17
11329.0		N I	17
11330.36		C I	19
11355.97		Fe I	858
11374.02		Fe I	58
11381.21		Na I	3
11381.53		Ti I	
11403.55		Na I	3
11403.89		Ti I	
11422.30		Fe I	58
11439.06		Fe I	337
11453		S I	19
11464		S I	19
11468.54		Si I	76
11472		S I	19
11479.87	P	Fe I	1315
11485.68		Si I	83
11502.94		Si I	90
11539.50		Ti I	
11542.96	P	Fe I	1341
11564.8		N I	12
11588.73	P	Ni I	242
11591.98		Si I	90
11593.55		Fe I	58
11602.94	P	C I	25
11607.42		Si I	82
11607.57		Fe I	58
11609.41		Ti I	
11609.91	P	C I	25
11611.49		Si I	90
11619.0		C I	25
11626.40		He II	6
11628.0		N I	12
11631.59	P	C I	25
11638.25		Fe I	58
11638.60	P	C I	25
11640.58		Si I	90
11656.0		C I	29
11656.0		N I	12
11667.1		C I	25,29
11676.99	P	C I	25
11689.76		K I	6
11689.98		Fe I	58
11747.5		C I	24
11754.0		C I	24
11769.41		K I	6
11772.66		K I	6
11783.28		Fe I	337
11801.8		C I	24
11828.8		Mg I	6
11836.4	P	Ca II	5
11849.3		C I	23
11863.0		C I	23
11880.4		C I	23
11882.80		Fe I	58
11884.12		Fe I	58
11890.44	P	Si I	12
11894.9		C I	23
11905.83		Cr I	221
11927.89	P	Ni I	242
11947.0	P	Ca II	5
11969.07		He I	72
11973.01		Fe I	58
11984.20		Si I	4
11991.57		Si I	4
11997.9		N I	37
12031.49		Si I	4
12074.1		N I	37
12083.79	P	Mg I	26
12103.46		Si I	4
12107.4		N I	37
12128.6		N I	27
12186.9		N I	27,34
12203.4		N I	27
12232.9		N I	27
12270.50		Si I	4
12288.0		N I	27,34
12327.7		N I	34
12395.97	P	Si I	4
12434.3		K I	5
12461.2		N I	30
12467.8		N I	36
12521.0		C I	28
12523.0		K I	5
12551.0		C I	30
12565.0		C I	30
12582.3		C I	30
12582.3		N I	36
12602.6		C I	30
12614.8		C I	30
12679.0		Na I	21
12814.56		D	2
12816.06	P	Ca I	52
12818.05		H	8
12823.89	P	Ca I	52
12827.09	P	Ca I	52
13123.37	P	Al I	4
13150.68	P	Al I	4
13164.1		C I	27

FINDING LIST

Forbidden Lines

	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
	Ne V	2 F	3298.61	Cr II	5 F	3492.5	Co VII	3 F
3	O I	2 F	3299.6	Ni VII	1 F	3493.55	Fe I	10 F
4	Ni VII	1 F	3299.8	Co VI	1 F	3494.7	Fe VI	4 F
.6	Ni VII	3 F	3300.5	Fe III	6 F	3500.4	Mg VI	1 F
1	A III	2 F	3301.6	Fe III	6 F	3501.62	Fe II	26 F
4	Ti III	5 F	3307.0	Co VI	2 F	3503.0	Mg VI	1 F
.4	Ni VIII	4 F	3316.1	Fe III	7 F	3503.5	Fe V	4 F
.3	Ni VIII	3 F	3318.38	Fe II	27 F	3503.8	Ni VII	1 F
.3	Ni VII	1 F	3319.2	Fe III	6 F	3504.02	Fe II	26 F
.4	Ni VII	3 F	3319.3	Na IV	1 F	3504.51	Fe II	26 F
.44	Mn II	4 F	3322.54	Fe III	5 F	3505.81	Fe II	25 F
.61	Mn II	4 F	3326.9	Co VI	2 F	3509.78	Fe I	10 F
.52	Mn II	4 F	3329.3	Ca XII	1 F	3511.6	Fe VI	4 F
.8	Ni VII	3 F	3333.8	Fe III	6 F	3511.64	Fe I	10 F
.05	Mn II	4 F	3334.9	Fe III	6 F	3512.9	Co VI	1 F
.0	N II	2 F	3336.9	Co VI	2 F	3516.17	Fe I	10 F
.29	Cr II	8 F	3337.7	Ti III	4 F	3522.76	Fe I	10 F
.8	Al VII	1 F	3337.77	Cr II	5 F	3524.38	Fe II	26 F
.8	N II	2 F	3337.82	Mn II	3 F	3527.33	Fe I	10 F
.0	Co VII	4 F	3338.5	Co VII	3 F	3528.28	Fe II	25 F
.0	Al VII	1 F	3339.14	Fe II	27 F	3532.2	F IV	2 F
.11	Ni II	6 F	3340.7	Fe III	6 F	3536.25	Fe II	26 F
.6	Ni VIII	3 F	3341.38	Mn II	3 F	3538.69	Fe II	26 F
.6	Ni VII	3 F	3341.5	Co VI	1 F	3538.8	Co VI	1 F
.76	Cr II	8 F	3342.7	Cl III	2 F	3539.19	Fe II	26 F
.4	Al VII	1 F	3342.9	Ne III	2 F	3543.5	Fe VI	5 F
.6	Co VII	4 F	3344.72	Mn II	3 F	3558.1	Fe VI	4 F
.7	Al VII	1 F	3345.9 N	Ne V	1 F	3559.86	Ni II	5 F
.0	Ni VII	1 F	3353.4	Cl III	2 F	3569.0	Fe VI	5 F
.1	Ni VII	3 F	3355.5	Fe III	6 F	3575.6	Fe VI	4 F
.0	A III	2 F	3356.6	Fe III	6 F	3575.72	Fe II	25 F
.1	Ni VII	3 F	3361.7	Co VII	3 F	3579.81	Fe II	25 F
.3	Cl IV	2 F	3362.5	Fe V	4 F	3583.2	Cl II	2 F
.18	Fe II	12 F	3363.2	Ti III	4 F	3586.8	Co VI	1 F
.5	Co VII	4 F	3366.2	Fe III	6 F	3587.2	Fe VII	3 F
.21	Fe II	12 F	3367.3	Fe III	6 F	3590.8	Sc VI	2 F
.4	Ni VII	3 F	3367.5	Co VI	2 F	3593.3	Ti III	6 F
.2	Co VII	3 F	3368.9	Fe V	4 F	3601.3	Ni XVI	1 F
.55	Cr II	7 F	3371.4	Fe III	5 F	3608.5	Ti III	6 F
.38	Fe II	11 F	3374.6	Fe V	4 F	3615.5	Ti III	9 F
.05	Fe II	12 F	3376.20	Fe II	26 F	3616.00	Fe II	25 F
.01	Fe II	11 F	3378.4	Ti III	4 F	3622.9	Ti III	6 F
.79	Cr II	7 F	3378.55	Ni II	5 F	3627.35	Ni II	5 F
.1	Co VII	3 F	3379.7	Ni VII	1 F	3628.65	Fe II	25 F
.76	Fe II	12 F	3380.95	Fe II	27 F	3630.3	Fe VI	5 F
.2	Ni VII	1 F	3387.10	Fe II	26 F	3631.4	Mn VI	3 F
.3	Ni VII	3 F	3387.7	Fe XIII	2 F	3631.8	Ti III	6 F
.25	Cr II	6 F	3388.2	Co VI	2 F	3638.4	Ti III	6 F
.3	Cl IV	2 F	3396.7	Ni VII	2 F	3640.6	Ti III	6 F
.46	Cr II	6 F	3398.5	Co VI	2 F	3643.3	Ni XIII	2 F
.6	Ti III	7 F	3400.3	Fe V	4 F	3645.7	Fe VI	4 F
.3	Co VII	4 F	3402.50	Fe II	27 F	3646.3	Ca VI	1 F
.94	Fe II	12 F	3403.3	Co VI	1 F	3656.3	Ti III	6 F
.75	Cr II	6 F	3403.65	Fe I	10 F	3658.1	Co VI	1 F
.5	Ni VII	1 F	3405.39	Fe I	10 F	3659.96	Fe II	10 F
.5	Ti III	7 F	3406.2	Fe III	5 F	3661.3	Ti III	11 F
.67	Fe II	11 F	3406.6	Fe V	4 F	3664.1	Fe VI	4 F
.32	Cr II	6 F	3413.3	Ni VII	2 F	3670.62	Fe II	10 F
.54	Fe II	11 F	3425.8 N	Ne V	1 F	3672.37	Cr I	4 F
.7	Ti III	7 F	3428.24	Fe II	27 F	3675.0	Cl II	2 F
.99	Fe II	11 F	3428.8	Fe III	5 F	3675.2	Fe VI	5 F
.2	Ni VIII	3 F	3430.3	Fe V	4 F	3678.71	Cr I	4 F
.17	Fe II	12 F	3439.29	Ni II	5 F	3680.3	Ni IX	2 F
.7	Fe III	7 F	3440.3	Ni VII	1 F	3686	V VIII	1 F
.07	Cr II	5 F	3440.99	Fe II	26 F	3688?	Ca VII	2 F
.7	Fe III	6 F	3444.1	Co VI	2 F	3695.0	Ni VIII	2 F
.8	Co VII	3 F	3445.4	Fe V	4 F	3702.7	Ca VI	1 F
.2	Ni VII	1 F	3445.9	Na IV	1 F	3705.8	Ni VIII	2 F
.18	Fe II	11 F	3450.39	Fe II	27 F	3708.3	Co VI	1 F
.24	Fe II	11 F	3452.30	Fe II	26 F	3709.14	Fe II	10 F
.7	Fe III	6 F	3452.54	Fe I	10 F	3712.26	Fe II	10 F
.31	Fe II	11 F	3454.34	Fe I	10 F	3721.1	S III	2 F
.73	Fe II	11 F	3455.11	Fe II	26 F	3726.16 N	O II	1 F
.7	Co VII	3 F	3457.3	Fe VII	3 F	3728.91 N	O II	1 F
.1	Ti VII	2 F	3458.73	Fe I	10 F	3733.6	Mn VI	3 F
.84	Fe II	11 F	3460.20	Fe II	25 F	3735.2	Fe V	3 F
.9	Co VI	2 F	3461.40	Fe II	27 F	3736.17	Fe II	10 F
.5	Cr IX	1 F	3463.4	Fe V	4 F	3740.2	Fe VI	5 F
.7	Co VII	4 F	3465.7	Co VI	2 F	3744.1	Fe V	3 F
5.02	Fe II	11 F	3466.4	N I	2 F	3751.66	Fe II	10 F
7.12	Fe II	11 F	3470.0	Ni IX	2 F	3754.98	Fe I	9 F
7.3	Co VI	1 F	3476.5	Co VI	2 F	3755.5	Fe V	3 F
7.55	Fe II	11 F	3481.5	Co VI	1 F	3759.9	Fe VII	3 F
3.1	Fe III	7 F	3484.01	Fe II	27 F	3761.0	Co VI	1 F
5.6	Co VI	2 F	3485.5	Mg VI	1 F	3764.8	Fe V	3 F
6.2	Fe III	6 F	3486.6	Ni VII	2 F	3774.9	Fe VI	3 F
7.35	Fe II	11 F	3487.23	Fe I	10 F	3776.1	Fe VI	4 F
9.46	Fe II	11 F	3488.1	Mg VI	1 F	3777.4	Fe V	1 F
9.89	Fe II	11 F	3489.07	Fe I	10 F	3782.9	Fe V	3 F
5.4	Co VI	2 F	3489.98	Fe II	26 F	3794.6	Fe V	3 F

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I A	Element	Multiplet No.
96.7	S III	2 F
98.2	Fe V	1 F
6.34	Cu II	2 F
10.6	Ni IX	2 F
12.07	Fe I	9 F
14.58	Fe I	9 F
15.1	Fe VI	3 F
20.2	Fe V	3 F
4.73	Fe II	9 F
6.89	Fe II	8 F
8.1	Fe V	1 F
8.9	Fe V	3 F
6.46	Fe I	9 F
7.78	Fe II	8 F
9.1	Fe VI	3 F
0.3	Ni VIII	2 F
0.8	Fe V	3 F
1.63	Fe II	9 F
6.98	Fe I	9 F
2.3	Ni VIII	2 F
6.9	Mn VI	3 F
8.74 N	Ne III	1 F
3.51	Fe I	9 F
4.07	Fe II	8 F
2.73	Fe II	24 F
4.57	Fe I	9 F
9.58	Fe I	9 F
0.9	Fe VI	3 F
1.8	Fe V	3 F
4.40	Fe II	8 F
5.7	Fe V	1 F
3.19	Fe I	9 F
5.62	Fe II	8 F
1.1	Fe V	3 F
1.83	Sc III	1 F
7.23	Fe I	9 F
7.64	Fe I	9 F
.5	Fe V	3 F
.35	Fe II	24 F
1.44	Fe II	8 F
.50	Fe I	9 F
.72	Fe II	8 F
.80	Fe II	8 F
.34	Sc III	1 F
.70	Fe I	9 F
.0	Co VIII	2 F
.27	Fe II	8 F
.51 N	Ne III	1 F
.23	Ti II	11 F
.27	Fe II	8 F
.66	Fe II	24 F
.1	Fe V	1 F
.2	Fe III	4 F
.97	Fe II	8 F
.78	Fe II	9 F
.93	Fe II	8 F
.08	Ti II	11 F
.1	Fe XI	2 F
.38	Fe II	8 F
.47	Cr II	4 F
.64	Fe II	6 F
.08	Cr II	4 F
.29	Cr II	4 F
.57	Cr II	4 F
.65	Ni II	4 F
.8	Fe VI	3 F
.3	Ca V	2 F
.3	F IV	1 F
.2	Fe V	1 F
.07	Ti II	11 F
.07	Ti II	11 F
.3	Fe III	4 F
.91	Fe II	9 F
.2	Na V	1 F
.3	Na V	1 F
.38	Fe II	24 F
.5	Na V	1 F
.20	Ti II	11 F
.6	Na V	1 F
.80	Ni II	4 F
.6	Fe V	1 F
.41	Fe II	9 F
.15	Ti II	11 F
.3	Ni VIII	2 F
.56	Ni II	4 F
.98	Fe II	24 F
.57	Ti II	11 F
.4	Ni IX	1 F
.4	Fe III	4 F
.5	Ni VIII	1 F

I A	Element	Multiplet No.
4055.5	Mn V	4 F
4059.3	F IV	1 F
4062.2	Mn V	4 F
4065.7	Ni IX	2 F
4068.62 N	S II	1 F
4070.7	Fe III	4 F
4071.5	Fe V	1 F
4076.22 N	S II	1 F
4077.5	Fe V	2 F
4079.7	Fe III	4 F
4080.00	Fe II	24 F
4083.78	Fe II	23 F
4084.32	Fe II	24 F
4086.5	Ca XIII	1 F
4093.0	Fe V	2 F
4096.6	Fe III	4 F
4097?	K VI	2 F
4099.29	Fe I	8 F
4103.1	Co VII	2 F
4104.59	Fe I	8 F
4106.1	Ni VIII	2 F
4107.51	Fe I	7 F
4108.02	Fe I	8 F
4112.7	Ni IX	2 F
4113.42	Cr I	3 F
4113.7	Mn V	4 F
4114.10	Cr I	3 F
4114.48	Fe II	23 F
4116.36	Cr I	3 F
4116.60	Ti II	20 F
4117.09	Cr I	3 F
4120.7	Mn V	4 F
4122.6	Mn X	2 F
4123.9	Fe V	2 F
4125?	K V	1 F
4129.4	Fe III	4 F
4129.49	Ti II	20 F
4130.47	Fe I	8 F
4130.7	Fe III	4 F
4131.51	Fe II	24 F
4134.01	Fe II	21 F
4136.4	Fe V	1 F
4139.5	Co VII	2 F
4140.4?	Ti III	8 F
4142.5	Fe V	2 F
4143.17	Ni II	10 F
4144.3	Fe III	4 F
4144.8	Ti VII	1 F
4144.97	Fe I	7 F
4146.65	Fe II	21 F
4147.21	Ti II	20 F
4147.30	Ni II	10 F
4149.52	Cr I	2 F
4153.72	Fe I	8 F
4156.25	Ti II	20 F
4157.5	F II	2 F
4157.89	Fe II	37 F
4160.9	Ti III	10 F
4163.6?	Ti III	8 F
4165.79	Cu II	1 F
4166?	K V	1 F
4169.40	Ti II	20 F
4169.41	Ti II	20 F
4175.2	Fe V	2 F
4177.21	Fe II	21 F
4178.93	Fe I	7 F
4178.95	Fe II	23 F
4179.45	Fe I	8 F
4181.3	Fe V	1 F
4185.74	Fe I	8 F
4187.46	Ti II	20 F
4190.53	Fe II	37 F
4190.6	Ni IX	2 F
4196.3	Mn V	4 F
4197.81	Fe II	22 F
4198.0	Co VIII	2 F
4200.6	Ti III	10 F
4201.56	Fe I	8 F
4201.74	Ni II	3 F
4203.39	Fe I	7 F
4203.5	Mn V	4 F
4204.9	Co VIII	2 F
4216.4	Ni VIII	1 F
4217.71	Fe I	7 F
4225.9	Ni VIII	1 F
4226.8	Fe V	2 F
4229.8	Fe V	1 F
4229.86	Fe I	7 F
4230.40	Fe I	8 F
4231.4	Ni XII	1 F

I A	Element	Multiplet No.
4231.56	Fe II	21 F
4234.81	Fe II	37 F
4243.98	Fe II	21 F
4244.81	Fe II	21 F
4249.07	Fe II	36 F
4249.48	Ni II	4 F
4251.99	Cr I	2 F
4262.7	Co VII	2 F
4263?	Ti VIII	1 F
4263.07	Fe I	7 F
4263.62	Fe I	8 F
4266.34	Fe II	36 F
4268.67	Fe II	37 F
4269.60	Fe I	7 F
4270.62	Fe II	36 F
4274.87	Mn II	6 F
4275.21	Mn II	6 F
4276.83	Fe II	21 F
4278.21	Fe I	7 F
4278.97	Mn II	6 F
4280.04	Fe I	8 F
4285.90	Ni II	4 F
4287.40	Fe II	7 F
4294.70	Ni II	4 F
4297.8	Ni VIII	1 F
4298.8	Ni VIII	2 F
4302.3	Cr V	3 F
4305.90	Fe II	21 F
4308.4	Mn V	4 F
4310.46	Ni II	10 F
4314.92	Ni II	10 F
4319.62	Fe II	21 F
4321.92	Fe II	37 F
4326.85	Ni II	3 F
4329.43	Fe II	36 F
4331.7	Ni IX	1 F
4331.9	Mn V	3 F
4346.85	Fe II	21 F
4347.35	Fe II	36 F
4351.05	Fe II	36 F
4351.80	Fe II	36 F
4352.78	Fe II	21 F
4356.14	Fe II	22 F
4358.10	Fe II	6 F
4358.37	Fe II	21 F
4359?	A XIV	1 F
4359.34	Fe II	7 F
4363.21 N	O III	2 F
4365.2	Mn V	3 F
4372.43	Fe II	21 F
4375.71	Cu II	1 F
4377.37	Fe I	6 F
4382.75	Fe II	6 F
4384.21	Fe II	36 F
4387.4	Mn IV	2 F
4391.1	Mn IV	2 F
4396.9	Cr V	3 F
4398.4	Mn V	3 F
4402.60	Fe II	36 F
4404.4	Ni VIII	1 F
4405.2	Mn IV	2 F
4406.39	Fe II	36 F
4407.16	Fe II	36 F
4407.9	Cr IX	1 F
4408.5	Mn IV	2 F
4409.86	Fe II	22 F
4413.78	Fe II	7 F
4414.45	Fe II	6 F
4416.27	Fe II	6 F
4422.4	Co VIII	2 F
4427.7	Mn IV	2 F
4430.79	Ti I	25 F
4432.45	Fe II	6 F
4432.8	Mn V	3 F
4435.08	Fe II	36 F
4435.1	Co VII	2 F
4437.10	Fe I	6 F
4438.92	Fe II	36 F
4439.73	Fe II	36 F
4442.0	Mn IV	2 F
4446.2	Ni VIII	1 F
4452.11	Fe II	7 F
4454.37	Fe I	21 F
4457.95	Fe II	6 F
4458.57	Fe I	6 F
4461.0	Co VIII	1 F
4461.0	Mn IV	2 F
4461.54	Ni II	10 F
4466.33	Ni II	10 F
4468?	Ti VIII	1 F

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	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
29	Fe II	6 F	4658.1	Fe III	3 F	4874.21	V II	8 F
37	Ti I	19 F	4662.7	Mn IV	1 F	4874.49	Fe II	20 F
46	Fe I	6 F	4664.45	Fe II	4 F	4876.0	Cr III	3 F
91	Fe II	7 F	4664.97	Fe II	5 F	4877.01	Ti II	10 F
0	Co VII	2 F	4665.5	Co VII	2 F	4880.00	V II	8 F
91	Ti I	15 F	4665.65	Fe II	4 F	4881.0	Fe III	2 F
8	Mn IV	1 F	4667.0	Fe III	3 F	4881.87	Mn II	5 F
6	Mn IV	2 F	4669.5	P II	2 F	4883.9	Fe III	1 F
84	Ti I	19 F	4672.2	Sc VI	1 F	4886.56	Fe I	4 F
87	Ni II	3 F	4674.64	Fe I	21 F	4887.27	Cr II	15 F
35	Ti I	19 F	4677.94	Fe I	21 F	4889.49	Mn II	5 F
75	Fe II	6 F	4680.05	Fe I	5 F	4889.63	Fe II	4 F
76	Ti I	19 F	4685.99	Fe I	21 F	4889.70	Fe II	3 F
3	Co VIII	2 F	4687.56	Fe II	5 F	4893.9	Fe VII	2 F
64	Fe II	6 F	4692.6	Co VII	1 F	4894.1	Cr III	3 F
23	Fe I	5 F	4693.56	Fe I	5 F	4894.8	Cr IV	4 F
.3	Ni VIII	1 F	4694.59	Fe I	5 F	4896.65	Mn II	5 F
57	Fe I	6 F	4699.0	Fe VII	2 F	4896.87	V II	8 F
.3	Mn IV	2 F	4699.3	Mn IV	1 F	4897.21	V II	8 F
.21	Ti I	19 F	4701.5	Fe III	3 F	4898.49	Ti I	13 F
.23	Ti I	19 F	4711.4	A IV	1 F	4898.64	V II	8 F
.4	Mn IV	1 F	4711.86	Fe I	21 F	4899.4	Cr IV	4 F
.90	Ti I	19 F	4714?	Ne IV	1 F	4901.1	Co VII	1 F
.00	Ti I	19 F	4715.21	Fe I	21 F	4905.35	Fe II	20 F
.36	Ti I	19 F	4716?	Ne IV	1 F	4907.6	Cr IV	5 F
.71	Ti I	19 F	4716.36	Fe II	5 F	4908.8	Mn IV	1 F
.0	Co VII	1 F	4717?	Ne IV	1 F	4911.9	Cr III	3 F
.9	S I	2 F	4719.7	Mn IV	1 F	4912.82	Ca I	1 F
.52	Ti I	19 F	4720?	Ne IV	1 F	4916.18	Ca I	1 F
.61	Fe II	6 F	4723.39	Fe I	21 F	4916.26	Fe I	4 F
.85	Ti I	19 F	4728.07	Fe II	4 F	4916.81	Ti II	23 F
.63	Fe I	6 F	4733.9	Fe III	3 F	4917.22	Fe II	3 F
.0	K IV	2 F	4734	V VIII	1 F	4923.05	V II	7 F
.90	Fe II	6 F	4736.6	P II	2 F	4924.5	Fe III	2 F
.52	Ti I	19 F	4738.9	Co VII	1 F	4924.81	Cr II	15 F
.60	Fe I	6 F	4740.3	A IV	1 F	4925.84	Ti II	23 F
.36	Ti I	19 F	4745.49	Fe II	20 F	4928.68	V II	8 F
.76	Ti I	19 F	4750.57	Fe II	5 F	4928.9	Cr III	3 F
.16	Ni I	3 F	4751.75	Fe I	4 F	4930.5	Fe III	1 F
.6	Cr V	3 F	4754.7	Fe III	3 F	4931.8	O III	1 F
.55	Ti I	19 F	4761.9	Mn IV	1 F	4936.4	Fe III	1 F
.3	Mn IV	2 F	4769.4	Fe III	3 F	4938.6	Ca VII	1 F
.39	Fe II	6 F	4771.54	Ti II	10 F	4940.22	V II	7 F
.7	Mn V	3 F	4772.07	Fe II	4 F	4942.3	Fe VII	2 F
.09	Fe I	6 F	4772.4	Ni VIII	1 F	4942.95	Fe I	4 F
.00	Fe II	6 F	4774.74	Fe II	20 F	4946.76	Ti I	12 F
.7	Mn IV	1 F	4777.7	Fe III	3 F	4947.17	Cr II	15 F
.05	Ti I	19 F	4779?	Ti VIII	1 F	4947.38	Fe II	20 F
.36	Fe I	5 F	4785.21	Ti II	10 F	4950.74	Fe II	20 F
?	Ti VIII	1 F	4785.9	Co VIII	1 F	4956.35	Fe I	4 F
.20	Fe I	21 F	4789.19	Fe I	4 F	4958.23	Fe II	4 F
.3	Be I	1 F	4789.5	F II	1 F	4958.91 N	O III	1 F
.32	Fe I	21 F	4793.03	Ti II	10 F	4961.18	Fe I	4 F
.5	Mn IV	2 F	4798.28	Fe II	4 F	4965.31	V II	7 F
.48	Fe II	6 F	4799.31	Fe II	4 F	4965.6	Cr III	3 F
.64	Fe I	6 F	4799.4	Cr IV	5 F	4965.78	Fe II	3 F
.98	Fe II	6 F	4799.5	Fe III	3 F	4968.65	V II	7 F
.49	Fe I	6 F	4806.83	Ti II	10 F	4968.8	Fe VI	2 F
.01	Fe II	6 F	4807.5	Fe VI	2 F	4969.3	Cr IV	5 F
.7	Mn IV	2 F	4813.27	Ni I	3 F	4971.8	Cr IV	4 F
.7	Co VIII	2 F	4813.9	Fe III	3 F	4973.39	Fe II	20 F
.23	Fe I	6 F	4814.0	Cr IV	5 F	4974.0	Fe VI	2 F
.45	Ni II	10 F	4814.55	Fe II	20 F	4976.33	V II	7 F
.9	Fe III	3 F	4823.3	Mn IV	1 F	4976.5	Cr IV	4 F
.93	Cr I	1 F	4823.44	Ti II	10 F	4982.73	Ti II	23 F
.46	Ca I	2 F	4824?	Sc VII	1 F	4982.92	Ti I	11 F
.84	Cr I	1 F	4824.1	Fe III	3 F	4983.42	Fe I	4 F
.32	Cr I	1 F	4835.4	Cr III	3 F	4985.27	V II	7 F
.83	Fe I	5 F	4837.42	Ti II	10 F	4985.64	Cr II	15 F
.80	Cr II	0 F	4838.7	Cr IV	4 F	4985.9	Fe III	2 F
.88	Cr II	3 F	4842.4	Cr III	3 F	4987?	Sc VII	1 F
.18	Cr II	3 F	4843.1	Cr IV	4 F	4987.2	Fe III	2 F
.0	S I	2 F	4843.34	Fe I	4 F	4987.68	Ti II	19 F
.4	Mn IV	1 F	4843.51	Fe II	3 F	4988.75	Ti I	12 F
3.07	Fe II	4 F	4847.01	Ti I	13 F	4989.4	Fe VII	2 F
.66	Fe I	5 F	4847.58	Fe I	4 F	4992.68	Cr II	2 F
4.48	Fe II	5 F	4850.9	Fe VI	2 F	5002.01	Fe I	4 F
7.0	Fe III	3 F	4851.6	Co VII	1 F	5002.63	Ti II	19 F
?	A V	2 F	4852.73	Fe II	20 F	5002.88	V II	7 F
.97	Fe I	21 F	4857.50	V II	8 F	5005.52	Fe II	20 F
1.5	C I	2 F	4858.4	Co VII	1 F	5006.63	Ti II	19 F
2.19	Fe I	21 F	4859.87	Cr II	15 F	5006.65	Fe II	4 F
7.3	C I	2 F	4861.41	Ti II	23 F	5006.84 N	O III	1 F
.06	Fe I	21 F	4862.80	Ti II	10 F	5011.3	Fe III	1 F
1.93	Fe I	5 F	4863.9	Mn IV	1 F	5014.37	Fe I	4 F
2.27	Fe II	5 F	4869.3	F II	1 F	5020.24	Fe II	20 F
9.68	Fe II	4 F	4870.8	Cr III	3 F	5021.69	Ti II	19 F
0.05	Fe I	5 F	4871.43	V II	8 F	5025.53	Ti I	11 F
4.2	Ni VIII	1 F	4872.80	V II	8 F	5027.34	Ni I	3 F
2.2	Co VII	1 F	4873.4	Cr IV	5 F	5032.69	Ti II	19 F

FINDING LIST

Forbidden Lines

A	Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
2.7	Fe III	2 F	5227.25	V II	6 F	5428.6	Fe VI	1 F
4.05	Cr II	15 F	5228.44	Cr II	13 F	5431.39	Ni II	9 F
5.50	Fe II	4 F	5229.06	Zr II	7 F	5432.1	Cr III	2 F
6.55	Fe II	3 F	5235.07	V II	6 F	5433.15	Fe II	18 F
9.10	Fe II	19 F	5236.6	Fe VI	1 F	5433.69	Zr III	1 F
3.30	Ti I	12 F	5237.7	V IV	3 F	5434.30	Zr II	6 F
3.53	Fe II	20 F	5238.35	Cr II	13 F	5435.6	Cr III	2 F
.5?	Sc VII	1 F	5239.47	Cr I	15 F	5439.72	Fe I	3 F
7.91	Ti II	19 F	5242.00	Cr II	13 F	5439.9	Fe III	1 F
9.29	Fe II	20 F	5245.25	V II	6 F	5440.45	Fe II	16 F
9.73	Cr II	2 F	5247.84	Cr II	13 F	5442.82	Cr II	12 F
6.5	Ni IX	1 F	5248.64	Cr II	14 F	5446.0	V IV	3 F
0.3	Fe III	1 F	5254.49	V II	6 F	5449.43	Cr II	12 F
3.7	Fe III	2 F	5255.97	Cr II	13 F	5453.4	Cr III	2 F
5.43	Ti II	19 F	5261.61	Fe II	19 F	5460.0	Ca VI	2 F
1.6	Cr IV	4 F	5268.4	Co VIII	1 F	5466.67	Ti I	9 F
2.40	Fe II	19 F	5268.82	Fe I	19 F	5470.51	Cr II	12 F
4.90	Fe I	19 F	5268.88	Fe II	18 F	5471.3	Cr III	2 F
6.3	Co VII	1 F	5269.16	Ni II	14 F	5472.09	V II	5 F
6.57	Fe II	20 F	5270.19	Cr II	13 F	5473.37	Mn II	9 F
0.84	Ti II	19 F	5270.4	Fe III	1 F	5473.94	Mn II	9 F
2.54	Cr I	16 F	5273.38	Fe II	18 F	5475.59	V II	5 F
3.72	Fe II	35 F	5274.27	Ni II	9 F	5477.25	Fe II	34 F
.8	Fe III	1 F	5275.83	Ni II	14 F	5477.40	Fe I	20 F
6.52	Fe II	3 F	5276.1	Fe VII	2 F	5478.76	V II	5 F
2.60	Cr II	2 F	5278.39	Fe II	35 F	5481.17	Fe I	20 F
2.97	Cr I	8 F	5279.2	Fe VI	1 F	5482.91	V II	5 F
3.44	Cr I	16 F	5279.80	Cr II	13 F	5483.3	Cr III	2 F
.4	Fe VI	1 F	5280.25	Fe II	16 F	5485.7	Fe VI	1 F
.5	Ti VII	1 F	5281.46	Ni II	9 F	5493.10	V II	20 F
.16	Cr I	8 F	5282.88	V II	6 F	5494.80	Mn II	9 F
.95	Fe II	18 F	5283.11	Fe II	35 F	5495.42	Zr II	7 F
.53	Cr I	8 F	5285.21	Cr II	13 F	5495.82	Fe II	17 F
.57	Cr II	14 F	5285.34	Cr I	15 F	5496.84	V II	5 F
.63	Fe II	19 F	5286.31	Ti I	10 F	5504.22	V II	5 F
.03 C	Ni XIII	1 F	5288.83	Cr II	12 F	5505.1	Cr III	2 F
.3	Ni XIII	1 F	5289.66	Fe I	19 F	5505.25	Cr II	12 F
.07	Zr III	1 F	5290.75	Fe I	20 F	5509.51	Ti I	7 F
.47	Cr II	2 F	5295.70	Fe II	17 F	5509.63	V II	5 F
.88	Zr II	7 F	5296.3	Cr IV	3 F	5517.2	Cl III	1 F
.41	Cr I	16 F	5296.84	Fe II	19 F	5517.24	Zr III	1 F
.25	Cr I	16 F	5299.42	Cr II	13 F	5518.00	Ti I	9 F
.09	Cr II	14 F	5302.86 C	Fe XIV	1 F	5520.18	Zr II	7 F
.16	Cr I	15 F	5303.37	Zr III	1 F	5523.28	Fe II	33 F
.3	Co VII	1 F	5303.6	Fe XIV	1 F	5523.3	Cr III	2 F
.39	Zr II	7 F	5303.99	Fe I	3 F	5527.33	Fe II	17 F
.5	Cr IV	3 F	5304.06	Fe I	20 F	5527.61	Fe II	34 F
.55	Cr I	15 F	5308.68	Cr II	12 F	5527.92	V II	5 F
.8	Fe VI	2 F	5308.9	Ca V	1 F	5528.87	Zr II	6 F
.16	Fe I	19 F	5310.36	Ti I	10 F	5530.11	Mn II	9 F
.07	Cr I	15 F	5312.52	Ti I	10 F	5530.69	Mn II	9 F
.9	Fe III	1 F	5313.88	Cr II	13 F	5532.41	Fe I	20 F
.28	Cr I	16 F	5316.97	Zr III	1 F	5534.6	A X	1 F
.59	Cr II	14 F	5322.2	Cl IV	3 F	5535.09	Ti I	7 F
.00	Fe II	16 F	5323.04	Cr II	13 F	5535.98	Mn II	9 F
.3	Fe VII	2 F	5326.5	V IV	3 F	5537.7	Cl III	1 F
.81	Fe II	19 F	5331.46	Zr II	7 F	5539.6	Sc VI	1 F
.53	Cr I	15 F	5332.4	P I	2 F	5539.74	Zr III	1 F
.94	Fe II	35 F	5333.65	Fe II	19 F	5541.7	Mn VI	2 F
.98	Cr I	15 F	5334.30	Ti I	10 F	5542.54	Ti I	8 F
.84	Fe I	3 F	5336.4	Fe VI	1 F	5543.9	Mn V	2 F
.95	Cr II	14 F	5339.65	Cr II	13 F	5545.88	Fe II	33 F
.0	Fe VI	2 F	5339.7	P I	2 F	5546.59	Fe II	2 F
.78	Fe I	20 F	5341.39	Cr II	12 F	5549.49	V II	5 F
.21	Cr I	15 F	5347.67	Fe II	18 F	5550.25	V II	14 F
.97	Fe II	18 F	5352.29	Fe I	20 F	5550.3	Cr III	2 F
.71	Cr I	16 F	5354.15	Cr II	13 F	5551.31	Fe II	39 F
.80	Fe II	19 F	5354.76	Zr II	7 F	5552.93	Cr II	12 F
	Co XI	1 F	5355.9	Fe III	1 F	5554.68	V II	20 F
.4 N	A III	3 F	5356.32	Fe I	3 F	5555.33	Ti I	7 F
.13	Fe I	19 F	5358.79	Ti I	10 F	5556.31	Fe II	18 F
.82	Cr I	15 F	5362.06	Fe II	17 F	5557.14	Cr II	12 F
.19	Fe I	20 F	5363.91	Fe I	20 F	5561.21	Mn II	9 F
.31	Cr I	15 F	5368.91	Cr II	13 F	5561.66	Ti I	7 F
.5	N I	1 F	5370.5	Fe VI	2 F	5562.94	Ti I	8 F
.18	Fe II	35 F	5374.6	Mn VI	2 F	5565.68	Fe I	3 F
.7	N I	1 F	5376.47	Fe II	19 F	5567.08	Mn II	9 F
.02	Cr II	14 F	5382.26	Fe I	3 F	5572.6	Cr III	2 F
.84	Zr II	7 F	5386.27	Cr II	12 F	5573.84	V II	14 F
.1	Cr IV	3 F	5394.78	Mn II	9 F	5574.04	Mn II	9 F
95	Fe I	19 F	5396.71	Ti I	10 F	5575.69	V II	14 F
07	V II	6 F	5404.80	Fe I	20 F	5577.350 A	O I	3 F
02	Cr II	13 F	5412.0	Fe III	1 F	5579.06	Cr II	12 F
06	Fe II	19 F	5412.64	Fe II	17 F	5579.65	V II	14 F
56	Fe I	3 F	5412.97	Fe I	20 F	5579.73	Mn II	9 F
	Sc VII	1 F	5413.34	Fe II	16 F	5580.82	Fe II	39 F
15	Fe I	3 F	5415.04	Mn II	9 F	5582.01	Fe II	2 F
30	Cr II	13 F	5418.0	Cr III	2 F	5584.81	Ti I	9 F
90	V II	6 F	5425.3	Fe VI	1 F	5587.2	Ca VI	2 F
64	Cr I	15 F	5427.17	Fe I	20 F	5587.73	Ti I	7 F

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Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
Fe II	39 F	5832.40	Eu II	2 F	6100.26	Fe I	30 F
Cr III	2 F	5834.64	Fe I	2 F	6101.1	K IV	1 F
Mn V	2 F	5836.21	Cr I	14 F	6104.67	Cr I	12 F
Ti I	8 F	5843.6	Cr III	1 F	6104.8	V III	3 F
Cr III	1 F	5843.90	Fe II	34 F	6106.17	Cr I	12 F
Fe II	33 F	5846.3	Xe III	2 F	6111.14	Cr I	12 F
Mn VI	2 F	5852.48	Cr I	14 F	6112.75	Cr I	12 F
K VI	1 F	5852.8	Co II	2 F	6113.40	Fe I	17 F
V II	14 F	5855.37	Zr II	6 F	6113.97	Fe I	30 F
Fe I	31 F	5863.1	Mn V	2 F	6114.52	Fe I	18 F
V II	14 F	5867.17	Fe I	2 F	6114.66	Cr I	12 F
V II	14 F	5867.87	Ti I	6 F	6114.85	V II	19 F
Ti I	8 F	5868.3	Mn V	1 F	6117.60	Cr I	11 F
Cr II	12 F	5872.77	Fe I	2 F	6124.57	Ti II	22 F
Ca VII	1 F	5876.23	Cr I	14 F	6140.20	Cr I	11 F
Cr III	1 F	5876.92	Cr I	14 F	6147.13	Ti II	22 F
Mn VI	2 F	5879.32	Eu II	2 F	6151.82	Ti II	26 F
Co II	2 F	5884.9	Cr III	1 F	6152.9	Cl II	3 F
Ti I	7 F	5889.0	Mn V	2 F	6159.3	Mn V	1 F
Ti I	8 F	5893.89	Fe I	17 F	6159.3	V III	3 F
Ca VI	2 F	5898.30	Fe I	2 F	6160.1	V III	3 F
Fe VI	1 F	5900.64	Zr II	12 F	6164.64	Ti II	26 F
V II	20 F	5901.26	Fe II	34 F	6165.35	Zr II	12 F
Fe I	2 F	5902.64	Fe I	18 F	6167.7	Mn V	1 F
Zr III	1 F	5907.1	Mn VI	2 F	6167.84	Cr I	12 F
Fe II	39 F	5913.34	Cr I	13 F	6169.37	Cr I	12 F
Fe II	18 F	5926.18	Cr I	14 F	6172.91	Ti II	26 F
Ca XV	1 F	5929.20	Zr II	12 F	6174.44	Cr I	12 F
Fe II	39 F	5929.31	Eu II	2 F	6176.08	Cr I	12 F
Fe II	2 F	5931.19	Fe I	17 F	6177.21	Fe I	17 F
Fe II	39 F	5932.88	Zr II	6 F	6178.35	Fe I	18 F
Fe II	17 F	5933.4	Mn VI	1 F	6180.9	Co II	2 F
Fe I	3 F	5934.41	Fe I	2 F	6184.51	Cr I	11 F
Fe II	33 F	5934.73	Cr I	14 F	6188.55	Fe II	44 F
V II	14 F	5936.99	Fe I	2 F	6193.7	Zr III	3 F
Ti I	8 F	5943.2	Co II	2 F	6196.53	Zr II	12 F
Zr II	6 F	5945.1	Cr III	1 F	6196.75	Fe I	17 F
Zr II	6 F	5946.87	Fe I	30 F	6215.6	V III	3 F
Fe VI	1 F	5949.99	Cr I	13 F	6220.7	Mn V	1 F
Mn VI	1 F	5951.24	Cr I	14 F	6223.4	K V	2 F
Fe II	33 F	5952.21	Fe I	30 F	6226.64	Fe I	17 F
Cr III	1 F	5955.61	Fe I	18 F	6227.19	Ti II	22 F
Mn V	2 F	5968.87	Fe I	2 F	6229.2	K VI	1 F
Fe I	2 F	5971.33	Fe I	17 F	6230.4	Cr V	2 F
Ti I	6 F	5971.6	Co II	2 F	6231.27	Fe I	29 F
Mn V	2 F	5972.59	Cr I	13 F	6233.9	V III	3 F
Ni II	14 F	5975.39	Cr I	13 F	6249.35	Cr I	11 F
Fe I	2 F	5982.55	Cr I	7 F	6249.75	Cr I	12 F
Ni II	14 F	5983.99	Cr I	7 F	6250.51	Ti II	22 F
Cr III	1 F	5988.76	Cr I	7 F	6251.33	Cr I	12 F
Fe II	2 F	5990.31	Cr I	7 F	6258.22	Cr I	12 F
Fe I	3 F	5991.0	Mn V	1 F	6277.3	Mn VI	1 F
Fe VII	1 F	5992.15	Cr I	7 F	6280.22	Cr I	6 F
F III	1 F	5999.99	Fe I	2 F	6300.23 L	O I	1 F
Fe II	33 F	6007.34	Ni II	8 F	6310.2	S III	3 F
Fe II	39 F	6010.53	Cr I	14 F	6314.58	Zr II	17 F
Fe II	39 F	6013.28	Ti II	9 F	6316.6	K V	2 F
F II	1 F	6015.26	Zr II	12 F	6317.64	Zr II	11 F
Ti I	6 F	6016.15	Fe I	18 F	6328.46	Ti II	31 F
Fe II	33 F	6018.54	Fe I	17 F	6333.46	Cr I	11 F
Fe I	17 F	6019.63	Fe I	18 F	6339.70	Fe II	15 F
Fe I	3 F	6026.18	Cr I	13 F	6342.98	Cr I	11 F
Fe II	17 F	6029.7	Mn V	1 F	6344.56	Zr II	12 F
Fe II	34 F	6040.91	V II	19 F	6346.2	Mn V	1 F
Fe I	30 F	6040.94	Cr I	12 F	6349.5	K V	2 F
Fe II	2 F	6044.94	Zr II	12 F	6360.66	Ti II	18 F
Fe II	33 F	6045.80	Cr I	12 F	6363.88 L	O I	1 F
N II	3 F	6047.46	Ti II	9 F	6365.52	Ni II	8 F
Ti I	6 F	6049.37	Cr I	13 F	6367.28	Cr I	11 F
Ti I	6 F	6053.14	Ti II	9 F	6372.11	V II	13 F
Ca VI	2 F	6059.21	Cr I	6 F	6372.9	Fe X	1 F
Zr III	1 F	6061.50	Cr I	12 F	6374.51 C	Fe X	1 F
Fe I	2 F	6062.98	Cr I	12 F	6376.6	Cr V	2 F
Fe II	33 F	6065.2	V III	4 F	6377.59	Zr II	12 F
Zr II	6 F	6065.34	Ti II	26 F	6377.83	Ti II	31 F
Cr I	14 F	6067.88	Cr I	12 F	6381.13	V II	13 F
Mn VI	2 F	6069.2	Mn V	2 F	6382.03	V II	13 F
Cr III	1 F	6071.35	Cr I	12 F	6391.51	Ti II	18 F
Ti I	6 F	6077.80	Ti II	26 F	6393.72	Fe I	29 F
Cr I	14 F	6083.2	Co II	2 F	6396.2	Mn V	1 F
Eu II	2 F	6085.5	Fe VII	1 F	6396.30	Fe II	44 F
Fe I	31 F	6085.9	Ca V	1 F	6404.46	Ni I	2 F
Fe I	2 F	6087.77	Ti II	9 F	6405.27	Ti II	18 F
Fe II	33 F	6088.5	Mn V	1 F	6405.67	V II	13 F
Ti I	6 F	6093.32	Fe I	17 F	6408.5	Zr VI	1 F
Fe I	17 F	6094.65	Fe I	30 F	6409.46	Ti II	31 F
Cr I	14 F	6095.96	Ti II	9 F	6414.93	Cr I	11 F
Cr I	14 F	6096.3	Fe III	10 F	6415.69	V II	13 F
Cr III	1 F	6098.1	V III	4 F	6418.86	Zr II	17 F
Ti I	6 F	6099.31	Fe I	17 F	6420.88	Cr I	6 F

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Forbidden Lines

I A		Element	Multiplet No.	I A		Element	Multiplet No.	I A		Element	Multiplet No.
6422.66		Ti II	31 F	6729.85		Fe II	31 F	7093.98		Fe II	31 F
6423.45		Mn II	8 F	6730.25		Ni I	5 F	7102.84		Ni II	13 F
6430.7		Cr V	2 F	6730.99		Fe I	16 F	7107.04		Fe I	27 F
6431.11		V II	13 F	6731.2		Cr IV	2 F	7109.01		Fe I	28 F
6434.04		Ti II	18 F	6731.3		S II	2 F	7110.54		Zr II	4 F
6434.9		A V	1 F	6738.40		Sr II	1 F	7111.4		Cr IV	1 F
6436.55		Ti II	18 F	6739.63		Ti I	5 F	7115.47		Ti II	17 F
6437.70		Ni I	5 F	6739.91		Y II	2 F	7117.45		Cr I	10 F
6440.40		Fe II	15 F	6740.2		Cr IV	2 F	7119.56		Ti II	17 F
6446.5		K V	2 F	6758.48		Fe I	16 F	7122.07		Cr I	10 F
6449.21		Zr II	11 F	6760.61		Fe I	15 F	7125.65		Cr I	10 F
6456.04		V II	13 F	6763.56		Mn II	2 F	7126.40		Ti I	4 F
6462.3		Cr V	2 F	6768.65		Ti I	5 F	7130.24		Ni I	5 F
6467.52		Ni II	8 F	6785.44		Zr II	5 F	7131.13		Fe II	43
6473.52		Ti II	31 F	6787.00		Ni I	5 F	7131.55		Y II	1 F
6473.86		Fe II	44 F	6791.02		Ti I	5 F	7131.77		Fe II	30 F
6484.72		Cr I	11 F	6791.61		Ni II	8 F	7134.08		Fe I	15 F
6487.5		Zr III	3 F	6793.01		Zr II	11 F	7135.8		A III	1 F
6489.61		Ni I	5 F	6794.37		Ni II	7 F	7144.60		Y II	4 F
6497.76		V II	13 F	6794.8		K IV	1 F	7147.16		Fe I	15 F
6506.40		Zr II	17 F	6808.42		Fe I	16 F	7149.08		Zr II	5 F
6507.62		Fe II	32 F	6809.21		Fe II	31 F	7150.21		Ti I	4 F
6511.90		Cr I	11 F	6813.73		Ni II	8 F	7152.8		Ti III	3 F
6520.23		Mn II	8 F	6820.42		Fe I	27 F	7155.14		Fe II	14 F
6525.11		Fe I	15 F	6826.9		Kr III	1 F	7156.26		Zr II	5 F
6526.85		Si I	1 F	6829.01		Fe II	31 F	7156.94		Zr II	20 F
6527.4		N II	1 F	6829.24		Zr II	11 F	7168.42		Fe I	14 F
6535.99		Mn II	8 F	6830.06		Fe II	32 F	7169.0		A IV	2 F
6548.1	N	N II	1 F	6836.94		Fe I	15 F	7171.6		Cr IV	1 F
6548.47		Zr II	16 F	6850.42		Mn II	2 F	7171.98		Fe II	14 F
548.87		Ti II	8 F	6864.4		Zr III	4 F	7173.92		Ti I	4 F
550.29		Ti II	37 F	6868.18		Sr II	1 F	7177.04		Cr I	10 F
558.51		Fe II	15 F	6872.17		Fe II	31 F	7180.4		Cr IV	1 F
561.75		Cr I	11 F	6873.87		Fe II	43 F	7181.74		Cr I	10 F
569.73		Ti II	34 F	6884.50		Fe I	15 F	7185.39		Cr I	10 F
583.6	N	N II	1 F	6893.2		Cr IV	2 F	7193.97		Ni I	5 F
583.66		Zr II	16 F	6896.18		Fe II	14 F	7196.91		Zr II	15 F
586.7		Cr V	2 F	6906.1		Cr IV	1 F	7197.88		Zr II	20 F
589.42		Ti II	8 F	6911.05		Ni II	7 F	7204.82		Zr II	4 F
589.74		Si I	1 F	6915.6		Cr IV	2 F	7213.88		Ti I	4 F
590.10		Mn II	8 F	6919		A XI	1 F	7214.69		Fe II	30 F
590.88		Ti II	37 F	6932.4		Cr V	1 F	7219.15		Zr II	3 F
591.0		Cr IV	2 F	6933.53		Zr II	5 F	7220.0		Fe III	15 F
592.93		Ti II	8 F	6933.67		Fe II	31 F	7233.4		Cr IV	1 F
595.88		Ti I	5 F	6941.60		Ni I	2 F	7236.0		A IV	2 F
599.7		Fe VII	1 F	6944.91		Fe II	43 F	7238.29		Ti I	4 F
603.99		Mn II	8 F	6954.69		Fe I	27 F	7243.99		Ni I	2 F
604.30		Ni I	5 F	6956.25		Ni II	8 F	7250.78		Y II	4 F
614.0		Fe III	10 F	6963.02		Ti II	17 F	7252.8		Cr V	1 F
616.12		Ti II	34 F	6963.85		Zr II	20 F	7256.16		Ni II	7 F
616.18		Fe I	16 F	6966.32		Fe II	31 F	7263.3		A IV	2 F
617.06		Mn II	8 F	6972.07		Fe I	15 F	7264.43		Zr II	23 F
617.12		Ti I	5 F	6978.57		Mn II	2 F	7264.51		Cr I	10 F
617.17		Zr II	17 F	6984.07		Zr II	11 F	7269.33		Cr I	10 F
622.05		Zr II	11 F	6989.04		Ni I	5 F	7273.06		Cr I	10 F
625.75		Ti II	37 F	6991.75		Zr II	5 F	7273.33		Zr II	4 F
631.20		Fe II	31 F	6991.8		Ti III	3 F	7274.6		Co II	3 F
633.48		Fe I	15 F	6999.99		Ti II	17 F	7281.67		Fe II	30 F
640.0		Cr IV	2 F	7002.02		Ni I	2 F	7287.25		Ti I	4 F
642.57		Ti I	5 F	7003.95		Ti II	17 F	7290.42		Fe I	14 F
642.66		Mn II	8 F	7005.23		Fe I	15 F	7291.46		Ca II	1 F
646.31		Zr II	11 F	7006.3		A V	1 F	7294.30		V II	4 F
647.05		Ti II	8 F	7008.84		Cr I	5 F	7307.76		Zr II	23 F
650.61		Ti II	8 F	7008.89		Fe I	15 F	7307.82		Ni II	7 F
651.26		Ti II	37 F	7011.24		Fe II	31 F	7309.90		V II	26 F
656.77		Mn II	8 F	7013.33		Cr I	5 F	7316.44		Fe I	28 F
660.68		Zr II	16 F	7016.21		Fe I	28 F	7317.43		Fe I	14 F
661.7		Zr III	3 F	7016.80		Cr I	5 F	7318.6		O II	2 F
668.16		Ni II	2 F	7017.94		Fe II	31 F	7319.4		O II	2 F
668.63		Mn II	8 F	7021.0		Cr IV	1 F	7321.23		Fe I	28 F
670.76		Ti I	5 F	7033.0		Ti III	3 F	7321.87		V II	12 F
671.31		Ti II	34 F	7047.99		Fe II	31 F	7323.88		Ca II	1 F
671.90		Fe II	31 F	7051.04		Ti II	17 F	7328.50		Ti I	4 F
682.18		Fe I	16 F	7051.7		Cr IV	1 F	7329.9		O II	2 F
692.48		Ti I	5 F	7054.37		Ni II	8 F	7330.7		O II	2 F
693.12		Ti II	37 F	7055.06		Ti II	17 F	7332.0		A IV	2 F
697.09		Zr II	16 F	7058.76		Zr II	3 F	7332.06		V II	4 F
698.02		Fe II	32 F	7059.62	C	Fe XV	1 F	7338.0		Cr IV	1 F
700.1		Cr V	1 F	7066.07		Zr II	15 F	7344.03		V II	12 F
700.6		Ni XV	1 F	7075.26		Fe II	31 F	7353.77		V II	4 F
700.61		Ni II	8 F	7078.2		Fe III	9 F	7355.92		La II	1 F
700.68		Fe II	43 F	7078.25		Ni II	8 F	7370.00		V II	12 F
701.83	C	Ni XV	1 F	7080.2		Fe XV	1 F	7370.94		Fe II	30 F
705.5		Cr V	2 F	7086.7		Cr IV	2 F	7373.32		V II	4 F
709.08		Mn II	2 F	7087.10		Cr I	10 F	7379.57		Ni II	2 F
710.88		Fe I	16 F	7087.39		Ti I	4 F	7383.38		Cr I	10 F
717.0		S II	2 F	7088.3		Fe III	15 F	7386.11		Zr II	5 F
721.89		Fe I	15 F	7091.17		Y II	1 F	7387.23		Cr I	10 F
722.02		Ti II	8 F	7091.68		Cr I	10 F	7387.47		V II	4 F
725.67		Ti II	8 F	7092.89		Fe I	15 F	7387.74		V II	12 F

FINDING LIST

Forbidden Lines

Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
Fe II	14 F	7689.65	Cr II	11 F	8039.68	Ti II	39 F
Cr IV	1 F	7692.91	Mn II	7 F	8043.80	Cr I	9 F
Ni I	1 F	7693.38	Mn II	7 F	8045.57	Cr I	9 F
Ni I	2 F	7694.82	Ni II	7 F	8046.1	Cl IV	1 F
V II	4 F	7696.30	Mn II	7 F	8047.93	Cr I	9 F
Zr II	20 F	7706.06	Y II	3 F	8054.83	Fe I	13 F
Fe I	14 F	7706.58	Cr II	20 F	8060.16	Ti II	6 F
V II	4 F	7708.83	Fe I	1 F	8074.29	Ti II	7 F
Ni II	2 F	7710.58	Zr II	23 F	8076.58	V II	31 F
V II	4 F	7710.79	Fe II	30 F	8085.17	Ti II	6 F
Fe II	1 F	7717.29	Ti I	24 F	8086.73	Fe I	24 F
Co II	3 F	7724.7	S I	3 F	8091.87	Ti I	18 F
V II	3 F	7733.12	Fe II	1 F	8098.70	Zr II	25 F
V II	12 F	7740.11	Fe II	29 F	8101.03	V II	18 F
V IV	2 F	7741.96	Fe I	14 F	8106.38	Ti II	39 F
Fe II	47 F	7750.56	Cr II	11 F	8106.88	Cr II	20 F
Fe I	28 F	7751.0	A III	1 F	8111.97	Ni I	8 F
V II	3 F	7752.86	Cr II	11 F	8119.16	Fe II	38 F
Zr II	3 F	7756.59	Fe I	14 F	8119.46	Ti I	18 F
Zr II	4 F	7757.43	Cr II	11 F	8125.50	Cr II	1 F
Fe II	30 F	7758.47	Cr II	11 F	8137.88	Zr II	19 F
Fe II	14 F	7759.25	Fe I	14 F	8138.59	Ti II	7 F
Zr II	5 F	7764.69	Fe II	30 F	8138.62	V II	31 F
V II	4 F	7769.35	Zr II	4 F	8148.37	Ti I	18 F
V II	4 F	7773.91	Fe I	13 F	8151.33	Fe I	1 F
V II	3 F	7786.03	Zr II	3 F	8153.46	Ti I	18 F
Zr II	3 F	7787.00	Y II	3 F	8160.66	Ti I	18 F
Ni I	2 F	7793.9	Co II	3 F	8164.85	Fe I	13 F
Co II	3 F	7797.2	Co II	3 F	8166.83	Ti II	24 F
V II	4 F	7800.90	Fe II	1 F	8170.33	Ti I	18 F
V II	3 F	7805.47	Mn II	7 F	8183.69	Cr I	9 F
Y II	4 F	7805.66	Ti I	23 F	8185.52	Cr I	9 F
V II	12 F	7805.96	Mn II	7 F	8189.44	Ti II	24 F
V II	12 F	7806.22	Fe II	1 F	8192.33	Ti II	39 F
Zr II	15 F	7806.88	Cr II	20 F	8194.57	Ni I	8 F
V II	29 F	7835.98	Ti II	6 F	8201.77	Ni I	1 F
V II	3 F	7845.41	Cr II	11 F	8220.64	Zr II	10 F
Ni I	4 F	7847.76	Cr II	11 F	8225.25	Sc II	3 F
Fe I	14 F	7849.08	Zr II	4 F	8228.16	Fe II	30 F
V II	4 F	7853.3	Zr III	2 F	8229.81	Cr II	1 F
V II	29 F	7853.51	Cr II	11 F	8229.81	Ti II	24 F
Zr II	4 F	7859.60	Fe I	14 F	8231.57	Fe I	1 F
Fe II	1 F	7867.83	Cr I	9 F	8233.22	Fe I	24 F
V II	26 F	7869.5	P II	3 F	8235.69	V II	18 F
V II	3 F	7874.23	Fe II	1 F	8245.12	Fe II	29 F
Cl IV	1 F	7876.34	Fe I	13 F	8249.61	Ti I	3 F
V II	3 F	7879.32	Mn II	7 F	8251.14	Cr I	9 F
S XII	1 F	7888.6	Fe XI	1 F	8252.38	Fe II	38 F
Fe I	14 F	7889.15	Zr II	19 F	8261.21	Sc II	3 F
Mn II	7 F	7891.94 C	Fe XI	1 F	8261.59	Zr II	25 F
Fe II	38 F	7893.57	Zr II	3 F	8268.36	Cr II	25 F
V II	12 F	7894.10	Ti II	6 F	8271.32	Sc II	3 F
Y II	3 F	7899.63	Fe I	14 F	8272.21	Cr II	25 F
Mn II	7 F	7904.04	Y II	3 F	8275.57	Fe I	1 F
Fe I	28 F	7906.95	Zr II	22 F	8279.99	Sc II	3 F
V II	4 F	7908.30	Ni I	4 F	8284.1	Y V	1 F
Fe II	14 F	7916.25	Ti II	6 F	8289.45	Fe I	13 F
Mn II	7 F	7916.98	Fe II	29 F	8303.23	Ni II	2 F
V IV	2 F	7917.03	Ti II	25 F	8307.67	Sc II	3 F
Fe II	1 F	7926.90	Fe II	1 F	8308.68	Cr II	1 F
V II	29 F	7929.70	Ni I	8 F	8315.71	Zr II	25 F
Co II	3 F	7935.32	Fe I	26 F	8321.51	Fe I	26 F
V II	3 F	7938.41	Cr I	9 F	8326.66	Sc II	3 F
Y II	3 F	7940.71	Cr I	9 F	8328.78	Cr II	19 F
Fe I	14 F	7945.02	Ti II	7 F	8337.65	Fe I	1 F
V IV	2 F	7947.28	Cr II	20 F	8339.72	La III	1 F
Co II	3 F	7954.24	Y II	3 F	8342.34	Fe II	30 F
Ni II	7 F	7954.76	Zr II	25 F	8343.02	V II	17 F
Fe II	30 F	7956.90	Ti II	39 F	8347.16	V II	17 F
Zr II	3 F	7958.50	Fe II	29 F	8347.24	Sc II	3 F
Zr II	15 F	7959.00	Fe I	1 F	8347.55	Fe I	1 F
Fe II	1 F	7960.85	Cr II	20 F	8348.93	Ti II	30 F
Cr II	11 F	7964.27	Fe I	1 F	8357.78	Cr II	1 F
Co II	3 F	7965.96	Cr II	11 F	8363.05	Ti II	27 F
Cr II	11 F	7966.36	Ti II	7 F	8367.07	Ti I	3 F
Cr II	11 F	7974.31	Cr II	11 F	8371.34	Ti II	30 F
Fe I	14 F	7975.58	Ti II	6 F	8380.68	Zr II	22 F
Y II	3 F	7976.95	Ti II	6 F	8384.28	Sc II	3 F
Zr II	23 F	7978.7	Mn IX	1 F	8400.89	Cr II	19 F
Y II	3 F	7999.47	Fe II	1 F	8403.62	Sc II	3 F
Fe II	1 F	8000.12	Cr II	1 F	8405.16	Ti II	27 F
Fe II	38 F	8009.53	Fe II	46 F	8408.39	Zr II	19 F
Fe II	46 F	8012.08	Fe II	46 F	8412.97	Fe I	12 F
Cr II	11 F	8022.25	Fe I	13 F	8413.26	Fe II	38 F
Cr II	11 F	8022.63	Fe II	29 F	8413.83	V II	17 F
Fe II	46 F	8024	Ni XV	1 F	8416.96	Zr II	25 F
Fe II	14 F	8024.21 C	Ni XV	1 F	8420.72	V II	2 F
Fe II	1 F	8028.94	Ti II	7 F	8428.62	Zr II	22 F
Fe II	46 F	8033.86	Ni II	7 F	8430.1	Ni VIII	5 F
Cr II	11 F	8037.29	Fe II	30 F	8431.56	Fe I	1 F

Forbidden Lines

I A	Element	Multiplet No.
433.7	Cl III	3 F
436.37	Ti II	15 F
437.9	V III	2 F
441.27	Cr II	25 F
444.83	Zr II	10 F
445.28	Cr II	25 F
446.11	Fe II	29 F
446.39	Cr II	25 F
456.74	Fe I	33 F
457.2	V III	2 F
466.38	Ni I	4 F
466.95	Fe I	24 F
467.54	Fe I	33 F
469.75	Fe I	25 F
471.07	V II	2 F
481.6	Cl III	3 F
485.90	V II	17 F
488.19	Fe I	24 F
488.93	Ti I	2 F
490.18	V II	17 F
490.34	Fe I	25 F
490.44	V II	11 F
490.71	Ti II	15 F
491.16	Ti II	27 F
493.1	V III	1 F
501.8	Cl III	3 F
510.24	V II	11 F
518.20	Sc II	2 F
520.22	Cr II	19 F
521.66	Ti I	3 F
525.41	Zr II	10 F
529.50	Ti II	15 F
530.15	Cr II	19 F
532.12	Ti I	30 F
544.49	V II	28 F
545.12	V II	2 F
549.64	Ti II	16 F
550.5	Cl III	3 F
553.73	Ti II	16 F
553.87	V II	11 F
561.42	Zr II	26 F
564.56	Fe I	1 F
565.94	Ti II	15 F
567.60	Sc II	2 F
75.4	V IV	1 F
76.73	Ti I	22 F
79.15	V II	11 F
79.5	Cl II	1 F
82.52	V II	28 F
85.04	Ti II	15 F
85.14	Fe I	33 F
88.84	Ti I	2 F
96.27	Fe I	33 F
98.3	V III	2 F
98.79	Ti I	29 F
99.1	V III	1 F
12.91	Ti I	30 F
13.35	Ti I	2 F
15.4	V III	2 F
16.96	Fe II	13 F
21.67	Zr II	26 F
23.51	Fe I	33 F
25.25	Zr II	8 F
25.8	V III	1 F
25.93	Ti II	16 F
26.85	Ti I	16 F
27.35	V II	11 F
40.22	Ti I	22 F
40.27	Ti I	29 F
43.14	Fe I	12 F
45.95	Ti I	22 F
47.89	Fe I	1 F
48.72	Ti II	16 F
49.11	Sc II	2 F
49.72	Fe I	24 F
51.14	Ti II	29 F
52.17	Cr II	18 F
53.20	Cr II	19 F
58.20	Ti I	16 F
61.20	Ti II	15 F
61.96	Ti II	15 F
65.66	Y II	6 F
69.28	Ti I	2 F
74.27	V II	17 F
82.13	V II	2 F
83.4	V III	1 F
89.73	Ti I	16 F
91.53	Zr II	19 F
98.18	V II	11 F
98.69	V II	11 F
8702.70	Zr II	9 F
8703.03	Ti II	33 F
8703.79	Cr II	18 F
8704.24	Ni II	12 F
8705.08	Ti I	16 F
8706.79	Fe II	52 F
8708.23	Ti I	17 F
8709.38	V II	2 F
8715.84	Fe II	42 F
8716.24	Ti I	2 F
8719.70	Ti II	36 F
8721.54	Ti I	16 F
8722.54	Ti II	16 F
8723.13	Ti I	29 F
8727.4	C I	3 F
8728.09	Fe III	8 F
8730.02	Cr II	18 F
8731.38	Ti I	17 F
8735.0	V III	1 F
8738.1	Fe VII	4 F
8739.71	Ti I	16 F
8740.05	Ti I	17 F
8743.65	Zr II	10 F
8743.66	Ti II	29 F
8745.0	V III	1 F
8746.99	Fe I	33 F
8761.8	Ni VIII	5 F
8763.28	V II	2 F
8763.95	Ti II	36 F
8766.76	Zr II	10 F
8770.71	Ti I	17 F
8771.24	Fe I	12 F
8774.69	V II	11 F
8775.19	Fe I	33 F
8777.26	Ti I	2 F
8782.6	V III	2 F
8787.6	P I	1 F
8787.81	Ti I	17 F
8789.70	Ti II	29 F
8792.09	Cr II	18 F
8792.49	Fe I	24 F
8794.80	Fe I	25 F
8798.79	Ti II	33 F
8798.82	Zr II	26 F
8799.09	Ti I	2 F
8799.1	P I	1 F
8808.47	Ti I	17 F
8815.9	V IV	1 F
8826.02	Cr II	19 F
8830.3	Co II	1 F
8830.7	Fe III	8 F
8831.94	Cr II	18 F
8832.31	Ni I	7 F
8838.2	Fe III	8 F
8843.42	Ni I	1 F
8848.50	Ti I	17 F
8850.73	Zr II	9 F
8851.13	Fe II	52 F
8851.45	Ti I	17 F
8858.94	Cr II	18 F
8862.47	Zr II	26 F
8868.91	Fe I	1 F
8872.37	Zr II	8 F
8878.98	V II	2 F
8884.12	Ti I	2 F
8885.66	Fe II	42 F
8891.88	Fe II	13 F
8899.71	Cr II	16 F
8909.40	Zr II	2 F
8921.0	Zr III	5 F
8929.91	Cr II	18 F
8930.70	Ti I	17 F
8931.47	Fe II	49 F
8954.34	Zr II	9 F
8969.06	Zr II	22 F
8970.23	Ti I	2 F
8970.56	Cr II	18 F
8983.71	Eu II	1 F
9012.04	Cr II	18 F
9033.45	Fe II	13 F
9033.73	Cr II	16 F
9043.52	V II	10 F
9051.92	Fe II	13 F
9058.16	Zr II	2 F
9069.4	S III	1 F
9071.07	Ti II	35 F
9072.86	Cr II	24 F
9089.24	Zr II	10 F
9093.67	Fe I	36 F
9096.76	V II	10 F
9105.8	Ni VIII	5 F
9106.17	Fe I	36 F
9106.60	V II	25 F
9108.42	Ti II	32 F
9108.53	Zr II	10 F
9116.41	Fe II	51 F
9125.8	Cl II	1 F
9133.63	Fe II	42 F
9134.50	Sc II	1 F
9136.73	Fe I	36 F
9137.01	Ti I	15 F
9144.25	V II	10 F
9149.11	Ti II	35 F
9165.30	V II	10 F
9166.00	V II	10 F
9179.54	Zr II	9 F
9180.13	Ti I	21 F
9183.58	V II	9 F
9189.22	Ti I	15 F
9191.34	Sc II	1 F
9196.26	Fe II	51 F
9199.44	Ti I	15 F
9199.54	Ti II	35 F
9202.81	Zr II	8 F
9208.72	Zr II	8 F
9209.25	V II	9 F
9216.20	Fe II	51 F
9217.51	V II	27 F
9222.25	Cr II	16 F
9223.81	Cr II	24 F
9226.60	Fe II	10 F
9228.60	Cr II	24 F
9235.10	Ti I	15 F
9235.60	V II	10 F
9245.82	Ti I	15 F
9251.37	Ti I	21 F
9253.44	V II	9 F
9255.10	Y II	5 F
9256.51	V II	9 F
9258.83	Ti I	15 F
9267.54	Fe II	13 F
9268.77	V II	10 F
9273.10	Cr II	29 F
9274.58	Cr II	16 F
9274.68	Cr II	29 F
9279.59	V II	10 F
9281.86	Ti I	15 F
9282.92	V II	27 F
9285.20	Sc II	1 F
9288.45	Ti I	15 F
9291.03	Zr II	9 F
9292.19	V II	25 F
9307.5	Zr III	5 F
9308.03	Ti I	21 F
9313.72	V II	9 F
9324.01	Y II	5 F
9324.8	Ti III	2 F
9336.2	Co II	1 F
9337.40	Cr II	23 F
9342.24	Cr II	23 F
9343.61	Cr II	23 F
9349.2	Zr III	5 F
9356.40	V II	27 F
9358.90	V II	9 F
9364.08	Cr II	16 F
9376.93	Zr II	2 F
9377.33	Ni II	1 F
9377.93	Zr II	24 F
9381.78	Cr II	23 F
9386.74	Cr II	23 F
9386.96	Fe I	12 F
9388.12	Cr II	23 F
9392.80	Eu II	1 F
9395.23	V II	9 F
9398.59	Ti II	21 F
9399.02	Fe II	13 F
9405.71	Ti II	21 F
9427.18	Cr II	23 F
9428.3	Ti III	2 F
9432.18	Cr II	23 F
9442.77	Y II	5 F
9444.2	Fe III	12 F
9454.15	V II	9 F
9457.95	Cr II	23 F
9470.93	Fe II	13 F
9487.4	Ti III	2 F
9487.5	Xe II	1 F
9488.3	Ti III	2 F
9490.96	Zr II	8 F
9491.15	Cr II	29 F

FINDING LIST

Forbidden Lines

Element	Multiplet No.	I A	Element	Multiplet No.	I A	Element	Multiplet No.
Zr II	27 F	10021.39	Ti II	4 F	10461.95	Zr II	24 F
Cr II	16 F	10028.62	Fe II	28 F	10464.94	Zr II	1 F
Fe II	41 F	10028.71	Zr II	1 F	10475.96	Ti I	27 F
Fe II	52 F	10034.9	Zr III	5 F	10486.97	Sc II	6 F
V II	32 F	10036.79	Fe II	40 F	10491.99	Cr II	28 F
S III	1 F	10038.79	Fe II	48 F	10494.00	Cr II	28 F
Zr II	14 F	10055.97	Fe I	11 F	10500.65	Cr II	10 F
Zr III	5 F	10066.92	Ti II	5 F	10502.67	Cr II	10 F
Ti I	28 F	10066.98	Ti II	5 F	10503.47	Ti II	3 F
Co VII	5 F	10074.84	Eu II	1 F	10504.3	Fe III	8 F
Ni VIII	5 F	10075.00	Fe I	38 F	10508.07	Fe II	28 F
V II	9 F	10089.97	Zr II	13 F	10510.25	V II	15 F
Zr II	9 F	10098.2	Cr VIII	1 F	10519.77	Ti I	27 F
Cr II	16 F	10116.66	Ti II	4 F	10553.58	Mn II	1 F
Ti III	2 F	10119.57	Cr II	22 F	10561.05	V II	24 F
Ti I	28 F	10120.75	Zr II	24 F	10568.84	Ti I	27 F
V II	32 F	10125.99	Ti II	5 F	10569.44	Sc II	7 F
Zr II	8 F	10128.19	Zr II	27 F	10576.98	V II	15 F
Fe III	12 F	10136.59	Cr II	10 F	10592.32	Fe I	23 F
Fe I	12 F	10137.00	Cr II	10 F	10594.89	Fe II	40 F
Ti I	28 F	10138.47	Cr II	10 F	10601.80	Fe I	37 F
Cr V	4 F	10148.57	Ti II	4 F	10603.65	Zr II	1 F
Co II	1 F	10163.13	Ti II	5 F	10608.1	Fe III	14 F
Ti II	21 F	10178.29	Fe I	11 F	10608.18	Ti II	3 F
V II	25 F	10188.1	Co II	1 F	10627.5	Ni VIII	6 F
Ti II	21 F	10196.82	Fe I	36 F	10640.19	Ti II	3 F
Cr II	17 F	10202.05	Ti II	5 F	10640.4	Fe III	13 F
Fe II	13 F	10206.5	Xe III	1 F	10642.86	Ti I	27 F
Zr II	24 F	10208.43	Zr II	14 F	10660.35	Sc II	7 F
Zr II	27 F	10209.10	Ni II	12 F	10671.7	Co VII	5 F
Zr III	5 F	10209.78	Cr II	10 F	10676.61	Ti II	3 F
Ti I	28 F	10210.20	Cr II	10 F	10696.87	Cr II	27 F
Ti I	28 F	10211.69	Cr II	10 F	10718.16	Ni II	1 F
Fe II	41 F	10215.85	Cr II	22 F	10719.84	Cr II	10 F
Cr II	16 F	10223.27	Cr II	22 F	10746.80 C	Fe XIII	1 F
Eu II	1 F	10223.27	Ti II	5 F	10747.64	Ti II	3 F
Ti I	28 F	10225.3	Ni VIII	6 F	10749.7	Fe XIII	1 F
Fe III	11 F	10229.79	Fe I	11 F	10755.91	Cr II	27 F
Zr II	9 F	10235.17	Fe I	36 F	10758.04	Cr II	27 F
Ti III	2 F	10245.4	Co II	1 F	10758.32	Ti II	3 F
Ti I	20 F	10261.18	Zr II	1 F	10770.38	Fe I	36 F
Fe I	23 F	10262.84	Fe I	11 F	10771.88	Fe I	23 F
V II	16 F	10264.65	Fe I	23 F	10780.17	Sc II	7 F
Co VII	5 F	10280.7	Co II	1 F	10784.80	Ti II	3 F
Fe II	50 F	10284.3	S II	3 F	10796.00	Cr II	27 F
Zr II	14 F	10291.94	V II	15 F	10796.2	Fe XIII	1 F
Fe I	35 F	10297.11	Cr II	28 F	10796.48	Fe II	45 F
Ti I	28 F	10297.14	Ti I	27 F	10797.66	Cr II	27 F
Fe I	12 F	10298.63	Cr II	28 F	10797.95 C	Fe XIII	1 F
Ti I	28 F	10299.05	Cr II	28 F	10798.14	Cr II	27 F
Fe II	28 F	10299.79	Cr II	22 F	10800.75	V II	15 F
Cr II	17 F	10300.86	Ti II	5 F	10807.8	Cr V	5 F
C I	1 F	10305.67	Cr II	22 F	10819.8	S I	1 F
Fe I	39 F	10307.34	Cr II	22 F	10835.22	V II	23 F
C I	1 F	10314.96	Fe I	38 F	10860.44	Zr II	1 F
Fe I	11 F	10317.7	S II	3 F	10867.84	Fe I	37 F
Ti I	20 F	10318.68	Fe I	23 F	10872.05	Sc II	5 F
C I	1 F	10321.34	Fe II	40 F	10882.6	Fe III	14 F
Fe II	40 F	10327.56	Fe II	28 F	10890.02	Zr II	13 F
Cr II	17 F	10331.43	Cr II	10 F	10901.79	Ti II	3 F
Zr II	8 F	10331.86	Cr II	10 F	10908.34	Fe I	34 F
Ti I	20 F	10333.39	Cr II	10 F	10912.8	Co VII	5 F
Ni II	1 F	10336.0	S II	3 F	10916.5	Fe III	13 F
Zr II	27 F	10351.92	Zr II	13 F	10916.64	Fe I	41 F
Ni I	6 F	10355.58	Zr II	1 F	10921.07	Ni II	1 F
Kr III	1 F	10355.93	V II	15 F	10956.10	Ti II	3 F
La II	1 F	10356.68	Ti I	27 F	10965.77	Ti II	14 F
Eu II	1 F	10366.26	Cr II	22 F	10972.9	Co II	1 F
S VIII	1 F	10369.7	S II	3 F	10983.23	V II	23 F
Fe II	51 F	10372.30	Cr II	22 F	10986.0	Co VII	6 F
Zr III	5 F	10373.30	Cr II	21 F	10991.52	Si I	2 F
Zr II	27 F	10373.98	Cr II	22 F	11011.70	La II	1 F
Fe II	51 F	10379.73	Ti II	5 F	11018.07	Fe I	32 F
Fe II	51 F	10380.40	Cr II	21 F	11019.11	V II	24 F
Fe III	11 F	10382.14	V II	15 F	11024.82	Ti II	13 F
Zr II	14 F	10386.86	Ti I	27 F	11044.11	Fe I	35 F
Fe II	48 F	10388.07	Cr II	21 F	11049.28	Ti I	26 F
Co VII	5 F	10394.3	Cr V	5 F	11056.70	Cr II	26 F
Ni II	12 F	10395.4	N I	3 F	11057.76	Ti II	14 F
Fe II	28 F	10399.33	Sc II	6 F	11058.94	Cr II	26 F
Fe III	8 F	10400.53	Fe II	40 F	11069.08	Fe I	37 F
Fe III	8 F	10404.1	N I	3 F	11078.26	Ti II	2 F
Ti II	5 F	10431.10	Fe II	40 F	11080.02	Ti II	14 F
Fe I	23 F	10432.60	Fe II	48 F	11084.87	Ti I	32 F
Ni VIII	5 F	10443.95	Fe I	11 F	11088.0	Fe III	13 F
V II	16 F	10447.44	Ti I	27 F	11096.98	Zr II	18 F
Fe I	39 F	10452.56	Fe I	11 F	11098.96	V II	23 F
Mn X	1 F	10456.86	Sc II	6 F	11107.3	Fe III	13 F
Fe I	11 F	10458.9	Zr III	5 F	11110.92	Ti II	2 F
Fe II	41 F	10459.79	Ni II	11 F	11117.80	Ti II	13 F

FINDING LIST

Forbidden Lines

I A	Element	Multiplet No.
1123.53	Ti I	26 F
1132.24	Zr II	21 F
1151.54	Ti II	14 F
1173.94	Ti II	14 F
1178.94	Ti II	13 F
1185.14	Ti I	26 F
1185.70	Ti II	14 F
1191.43	Ti I	26 F
1193.04	Ti I	26 F
1202.11	Fe I	41 F
1203.92	Zr II	13 F
1228.14	Ti II	2 F
1233.80	Fe I	22 F
1237.04	Fe I	32 F
1242.12	Ti II	2 F
1246.87	V II	1 F
1261.79	Ti I	26 F
1272.6	Fe III	13 F
1280.5	Co II	1 F
1284.9	Fe III	13 F
1305.8	S I	1 F
1315.52	V II	30 F
1324.18	V II	22 F
1332.50	Ti I	26 F
1347.6	Co VII	6 F
1359.87	Ni II	11 F
1368.21	V II	22 F
1390.50	Ti II	2 F
1402.97	Ti I	26 F
1414.22	V II	1 F
1432.93	Ti II	1 F
1444.61	V II	1 F
1444.66	V II	30 F
1450.66	Fe I	40 F
1458.27	Ti II	2 F
1471.69	V II	23 F
1477.29	Ti II	1 F
1478.92	Ti II	38 F
1479.51	V II	23 F
1483.2	P II	1 F
1495.96	Fe I	32 F
1509.6	Ni VIII	6 F
1518.28	Fe I	32 F
1520.46	Ti I	31 F
1521.31	Ti I	33 F
1524.46	Fe I	32 F
1537.68	Fe I	22 F
1557.08	Ti II	1 F
1568.38	V II	22 F
1580.17	V II	1 F
11595.50	Zr II	18 F
11602.41	Ti II	1 F
11606.00	V II	23 F
11611.10	Ti II	12 F
11616.88	Ni II	1 F
11618.68	Ti II	2 F
11619.10	V II	1 F
11621.54	Ti I	1 F
11658.88	V II	22 F
11659.62	Zr II	18 F
11665.66	Ti I	31 F
11679.85	Ti I	14 F
11681.81	Ti I	14 F
11690.94	Ti I	14 F
11698.62	Zr II	21 F
11714.28	Ti II	12 F
11715.20	V II	1 F
11735.52	Ti II	1 F
11748.60	Ti I	14 F
11757.66	V II	1 F
11764.23	Fe I	32 F
11765.16	Fe I	40 F
11767.30	Ti I	14 F
11771.95	Ti I	1 F
11778.39	Ti II	12 F
11782.27	Ti II	1 F
11782.63	Cr II	26 F
11784.62	Cr II	26 F
11785.17	Cr II	26 F
11786.08	Fe I	40 F
11789.27	Cr II	9 F
11790.50	Fe I	32 F
11791.90	Fe I	22 F
11792.55	Ti I	14 F
11799.5	Ti III	1 F
11823.03	Ti II	12 F
11835.06	Ti I	14 F
11849.83	Ti I	1 F
11852.49	V II	22 F
11856.02	Ti I	1 F
11857.28	V II	1 F
11857.96	Ti II	12 F
11881.68	Ti I	14 F
11884.57	Ti II	12 F
11896.48	Sc II	4 F
11898.2	P II	1 F
11918.75	V II	21 F
11933.60	Ti I	14 F
11943.75	Cr II	9 F
11950.77	Ti I	14 F
11951.78	Cr II	9 F
11971.26	Ti II	1 F
11997.42	Fe I	40 F
12012.60	Ti I	1 F
12019.17	Fe I	40 F
12024.89	Ti I	14 F
12025.23	Fe I	22 F
12061.0	Ti III	1 F
12072.48	Fe I	40 F
12094.78	Zr II	21 F
12095.67	Ti I	14 F
12168.18	Cr II	9 F
12168.8	Co II	1 F
12168.80	Ti I	1 F
12170.50	Cr II	9 F
12178.83	Cr II	9 F
12209.6	Co VII	6 F
12211.22	Zr II	18 F
12219.66	V II	22 F
12300.16	Cr II	26 F
12300.77	Cr II	26 F
12323.27	Ni II	11 F
12372.55	Fe I	22 F
12387.48	Fe I	22 F
12417.8	Ti III	1 F
12460.65	Cr II	9 F
12463.08	Cr II	9 F
12471.70	Cr II	9 F
12645.23	Fe I	22 F