NASA SP-7011 (443)
July 14, 1997

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

National Aeronautics and
Space Administration
Langley Research Center
**Scientific and Technical
Information Program Office**

The NASA STI Program Office . . . in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) Program Office plays a key part in helping NASA maintain this important role.

The NASA STI Program Office is operated by Langley Research Center, the lead center for NASA's scientific and technical information. The NASA STI Program Office provides access to the NASA STI Database, the largest collection of aeronautical and space science STI in the world. The Program Office is also NASA's institutional mechanism for disseminating the results of its research and development activities. These results are published by NASA in the NASA STI Report Series, which includes the following report types:

- TECHNICAL PUBLICATION. Reports of completed research or a major significant phase of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA's counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.

- TECHNICAL MEMORANDUM. Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.

- CONTRACTOR REPORT. Scientific and technical findings by NASA-sponsored contractors and grantees.

- CONFERENCE PUBLICATION. Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or cosponsored by NASA.

- SPECIAL PUBLICATION. Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.

- TECHNICAL TRANSLATION. English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services that complement the STI Program Office's diverse offerings include creating custom thesauri, building customized databases, organizing and publishing research results . . . even providing videos.

For more information about the NASA STI Program Office, see the following:

- Access the NASA STI Program Home Page at ***http://www.sti.nasa.gov***

- E-mail your question via the Internet to help@sti.nasa.gov

- Fax your question to the NASA Access Help Desk at (301) 621-0134

- Telephone the NASA Access Help Desk at (301) 621-0390

- Write to:
  NASA Access Help Desk
  NASA Center for AeroSpace Information
  800 Elkridge Landing Road
  Linthicum Heights, MD 21090-2934

Introduction

This issue of *Aerospace Medicine and Biology, A Continuing Bibliography with Indexes* (NASA SP-7011) lists reports, articles, and other documents recently announced in the NASA STI Database. In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which humans are subjected during and following simulated or actual flight in the Earth's atmosphere or in interplanetary space. References describing similar effects on biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. Applied research receives the most emphasis, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the publication consists of a standard bibliographic citation accompanied, in most cases, by an abstract.

The NASA CASI price code table, addresses of organizations, and document availability information are included before the abstract section.

Two indexes—subject and author are included after the abstract section.

SCAN Goes Electronic!

If you have electronic mail or if you can access the Internet, you can view biweekly issues of *SCAN* from your desktop absolutely free!

Electronic SCAN takes advantage of computer technology to inform you of the latest worldwide, aerospace-related, scientific and technical information that has been published.

No more waiting while the paper copy is printed and mailed to you. You can view *Electronic SCAN* the same day it is released—up to 191 topics to browse at your leisure. When you locate a publication of interest, you can print the announcement. You can also go back to the *Electronic SCAN* home page and follow the ordering instructions to quickly receive the full document.

Start your access to *Electronic SCAN* today. Over 1,000 announcements of new reports, books, conference proceedings, journal articles...and more—available to your computer every two weeks.

Timely Flexible Complete FREE!

For Internet access to *E-SCAN*, use any of the following addresses:

http://www.sti.nasa.gov
ftp.sti.nasa.gov
gopher.sti.nasa.gov

To receive a free subscription, send e-mail for complete information about the service first. Enter **scan@sti.nasa.gov** on the address line. Leave the subject and message areas blank and send. You will receive a reply in minutes.

Then simply determine the SCAN topics you wish to receive and send a second e-mail to **listserve@sti.nasa.gov**. Leave the subject line blank and enter a subscribe command in the message area formatted as follows:

Subscribe <desired list> <Your name>

For additional information, e-mail a message to **help@sti.nasa.gov**.

Phone: (301) 621-0390

Fax: (301) 621-0134

Write: NASA Access Help Desk
NASA Center for AeroSpace Information
800 Elkridge Landing Road
Linthicum Heights, MD 21090-2934

Looking just for *Aerospace Medicine and Biology* reports?

Although hard copy distribution has been discontinued, you can still receive these vital announcements through your *E-SCAN* subscription. Just **subscribe SCAN-AEROMED** in the message area of your e-mail to **listserve@sti.nasa.gov**.

Table of Contents

Records are arranged in categories 51 through 55, the Life Sciences division of *STAR*. Selecting a category will link you to the collection of records cited in this issue pertaining to that category.

51 Life Sciences (General) **1**

52 Aerospace Medicine **5**

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

53 Behavioral Sciences **9**

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

54 Man/System Technology and Life Support **11**

Includes human engineering; biotechnology; and space suits and protective clothing.

55 Space Biology **N.A.**

Includes exobiology; planetary biology; and extraterrestrial life.

Indexes

Two indexes are available. You may use the find command under the tools menu while viewing the PDF file for direct match searching on any text string. You may also view the indexes provided, for searching on *NASA Thesaurus* subject terms and author names.

Subject Term Index **ST-1**

Author Index **PA-1**

Selecting an index above will link you to that comprehensive listing.

Document Availability

Select **Availability Info** for important information about NASA Scientific and Technical Information (STI) Program Office products and services, including registration with the NASA Center for AeroSpace Information (CASI) for access to the NASA CASI TRS (Technical Report Server), and availability and pricing information for cited documents.

The New NASA Video Catalog is Here

Free!

To order your copy,
call the NASA Access Help Desk at
(301) 621-0390,
fax to
(301) 621-0134,
e-mail to
help@sti.nasa.gov,
or visit the NASA STI Program
homepage at
http://www.sti.nasa.gov/STI-homepage.html

(Select STI Program Bibliographic Announcements)

Explore the Universe!

Document Availability Information

The mission of the NASA Scientific and Technical (STI) Program Office is to quickly, efficiently, and cost-effectively provide the NASA community with desktop access to STI produced by NASA and the world's aerospace industry and academia. In addition, we will provide the aerospace industry, academia, and the taxpayer access to the intellectual scientific and technical output and achievements of NASA.

Eligibility and Registration for NASA STI Products and Services

The NASA STI Program offers a wide variety of products and services to achieve its mission. Your affiliation with NASA determines the level and type of services provided by the NASA STI Program. To assure that appropriate level of services are provided, NASA STI users are requested to register at the NASA Center for AeroSpace Information (CASI). Please contact NASA CASI in one of the following ways:

E-mail:	help@sti.nasa.gov
Fax:	301-621-0134
Phone:	301-621-0390
Mail:	ATTN: Registration Services NASA Center for AeroSpace Information 800 Elkridge Landing Road Linthicum Heights, MD 21090-2934

Limited Reproducibility

In the database citations, a note of limited reproducibility appears if there are factors affecting the reproducibility of more than 20 percent of the document. These factors include faint or broken type, color photographs, black and white photographs, foldouts, dot matrix print, or some other factor that limits the reproducibility of the document. This notation also appears on the microfiche header.

NASA Patents and Patent Applications

Patents and patent applications owned by NASA are announced in the STI Database. Printed copies of patents (which are not microfiched) are available for purchase from the U.S. Patent and Trademark Office.

When ordering patents, the U.S. Patent Number should be used, and payment must be remitted in advance, by money order or check payable to the Commissioner of Patents and Trademarks. Prepaid purchase coupons for ordering are also available from the U.S. Patent and Trademark Office.

NASA patent application specifications are sold in both paper copy and microfiche by the NASA Center for AeroSpace Information (CASI). The document ID number should be used in ordering either paper copy or microfiche from CASI.

The patents and patent applications announced in the STI Database are owned by NASA and are available for royalty-free licensing. Requests for licensing terms and further information should be addressed to:

National Aeronautics and Space Administration
Associate General Counsel for Intellectual Property
Code GP
Washington, DC 20546-0001

Sources for Documents

One or more sources from which a document announced in the STI Database is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below, with an Addresses of Organizations list near the back of this section. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source.

Avail: NASA CASI. Sold by the NASA Center for AeroSpace Information. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code following the letters HC or MF in the citation. Current values are given in the NASA CASI Price Code Table near the end of this section.

Note on Ordering Documents: When ordering publications from NASA CASI, use the document ID number or other report number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in Energy Research Abstracts. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center—Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: ESDU. Pricing information on specific data, computer programs, and details on ESDU International topic categories can be obtained from ESDU International.

Avail: Fachinformationszentrum Karlsruhe. Gesellschaft für wissenschaftlich-technische Information mbH 76344 Eggenstein-Leopoldshafen, Germany.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, CA. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration (JBD-4), Public Documents Room (Room 1H23), Washington, DC 20546-0001, or public document rooms located at NASA installations, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: NTIS. Sold by the National Technical Information Service. Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) are available. For information concerning this service, consult the NTIS Subscription Section, Springfield, VA 22161.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from Dissertation Abstracts and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: US Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of $1.50 each, postage free.

Avail: (US Sales Only). These foreign documents are available to users within the United States from the National Technical Information Service (NTIS). They are available to users outside the United States through the International Nuclear Information Service (INlS) representative in their country, or by applying directly to the issuing organization.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed on the Addresses of Organizations page. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Addresses of Organizations

British Library Lending Division
Boston Spa, Wetherby, Yorkshire
England

Commissioner of Patents and Trademarks
U.S. Patent and Trademark Office
Washington, DC 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, TN 37830

European Space Agency–
Information Retrieval Service ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

ESDU International
27 Corsham Street
London
N1 6UA
England

Fachinformationszentrum Karlsruhe
Gesellschaft für wissenschaftlich–technische
Information mbH
76344 Eggenstein–Leopoldshafen, Germany

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Center for AeroSpace Information
800 Elkridge Landing Road
Linthicum Heights, MD 21090–2934

(NASA STI Lead Center)
National Aeronautics and Space Administration
Scientific and Technical Information Program Office
Langley Research Center – MS157
Hampton, VA 23681

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, CA 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, MI 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey Library National Center
MS 950
12201 Sunrise Valley Drive
Reston, VA 22092

U.S. Geological Survey Library
2255 North Gemini Drive
Flagstaff, AZ 86001

U.S. Geological Survey
345 Middlefield Road
Menlo Park, CA 94025

U.S. Geological Survey Library
Box 25046
Denver Federal Center, MS914
Denver, CO 80225

NASA CASI Price Code Table

(Effective July 1, 1996)

CASI PRICE CODE	NORTH AMERICAN PRICE	FOREIGN PRICE
A01	$ 6.50	$ 13.00
A02	10.00	20.00
A03	19.50	39.00
A04-A05	21.50	43.00
A06	25.00	50.00
A07	28.00	56.00
A08	31.00	62.00
A09	35.00	70.00
A10	38.00	76.00
A11	41.00	82.00
A12	44.00	88.00
A13	47.00	94.00
A14-A17	49.00	98.00
A18-A21	57.00	114.00
A22-A25	67.00	134.00
A99	Call For Price	Call For Price

Important Notice

The $1.50 domestic and $9.00 foreign shipping and handling fee currently being charged will remain the same. Foreign airmail is $27.00 for the first 1-3 items, $9.00 for each additional item. Additionally, a new processing fee of $2.00 per each video ordered will be assessed.

For users registered at the NASA CASI, document orders may be invoiced at the end of the month, charged against a deposit account, or paid by check or credit card. NASA CASI accepts American Express, Diners' Club, MasterCard, and VISA credit cards. There are no shipping and handling charges. To register at the NASA CASI, please request a registration form through the NASA Access Help Desk at the numbers or addresses below.

Return Policy

The NASA Center for AeroSpace Information will gladly replace or make full refund on items you have requested if we have made an error in your order, if the item is defective, or if it was received in damaged condition and you contact us within 30 days of your original request. Just contact our NASA Access Help Desk at the numbers or addresses listed below.

NASA Center for AeroSpace Information
800 Elkridge Landing Road
Linthicum Heights, MD 21090-2934

E-mail: help@sti.nasa.gov
Fax: (301) 621-0134
Phone: (301) 621-0390

Rev. 6/96

Federal Depository Library Program

In order to provide the general public with greater access to U.S. Government publications, Congress established the Federal Depository Library Program under the Government Printing Office (GPO), with 53 regional depositories responsible for permanent retention of material, inter-library loan, and reference services. At least one copy of nearly every NASA and NASA-sponsored publication, either in printed or microfiche format, is received and retained by the 53 regional depositories. A list of the Federal Regional Depository Libraries, arranged alphabetically by state, appears at the very end of this section. These libraries are not sales outlets. A local library can contact a regional depository to help locate specific reports, or direct contact may be made by an individual.

Public Collection of NASA Documents

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England for public access. The British Library Lending Division also has available many of the non-NASA publications cited in the STI Database. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents FIZ–Fachinformation Karlsruhe–Bibliographic Service, D-76344 Eggenstein-Leopoldshafen, Germany and TIB–Technische Informationsbibliothek, P.O. Box 60 80, D-30080 Hannover, Germany.

Submitting Documents

All users of this abstract service are urged to forward reports to be considered for announcement in the STI Database. This will aid NASA in its efforts to provide the fullest possible coverage of all scientific and technical publications that might support aeronautics and space research and development. If you have prepared relevant reports (other than those you will transmit to NASA, DOD, or DOE through the usual contract- or grant-reporting channels), please send them for consideration to:

ATTN: Acquisitions Specialist
NASA Center for AeroSpace Information
800 Elkridge Landing Road
Linthicum Heights, MD 21090-2934.

Reprints of journal articles, book chapters, and conference papers are also welcome.

You may specify a particular source to be included in a report announcement if you wish; otherwise the report will be placed on a public sale at the NASA Center for AeroSpace Information. Copyrighted publications will be announced but not distributed or sold.

Federal Regional Depository Libraries

ALABAMA

AUBURN UNIV. AT MONTGOMERY LIBRARY
Documents Dept.
7300 University Dr.
Montgomery, AL 36117–3596
(205) 244–3650 Fax: (205) 244–0678

UNIV. OF ALABAMA
Amelia Gayle Gorgas Library
Govt. Documents
P.O. Box 870266
Tuscaloosa, AL 35487–0266
(205) 348–6046 Fax: (205) 348–0760

ARIZONA

DEPT. OF LIBRARY, ARCHIVES, AND PUBLIC RECORDS
Research Division
Third Floor, State Capitol
1700 West Washington
Phoenix, AZ 85007
(602) 542–3701 Fax: (602) 542–4400

ARKANSAS

ARKANSAS STATE LIBRARY
State Library Service Section
Documents Service Section
One Capitol Mall
Little Rock, AR 72201–1014
(501) 682–2053 Fax: (501) 682–1529

CALIFORNIA

CALIFORNIA STATE LIBRARY
Govt. Publications Section
P.O. Box 942837 – 914 Capitol Mall
Sacramento, CA 94337–0091
(916) 654–0069 Fax: (916) 654–0241

COLORADO

UNIV. OF COLORADO – BOULDER
Libraries – Govt. Publications
Campus Box 184
Boulder, CO 80309–0184
(303) 492–8834 Fax: (303) 492–1881

DENVER PUBLIC LIBRARY
Govt. Publications Dept. BSG
1357 Broadway
Denver, CO 80203–2165
(303) 640–8846 Fax: (303) 640–8817

CONNECTICUT

CONNECTICUT STATE LIBRARY
231 Capitol Avenue
Hartford, CT 06106
(203) 566–4971 Fax: (203) 566–3322

FLORIDA

UNIV. OF FLORIDA LIBRARIES
Documents Dept.
240 Library West
Gainesville, FL 32611–2048
(904) 392–0366 Fax: (904) 392–7251

GEORGIA

UNIV. OF GEORGIA LIBRARIES
Govt. Documents Dept.
Jackson Street
Athens, GA 30602–1645
(706) 542–8949 Fax: (706) 542–4144

HAWAII

UNIV. OF HAWAII
Hamilton Library
Govt. Documents Collection
2550 The Mall
Honolulu, HI 96822
(808) 948–8230 Fax: (808) 956–5968

IDAHO

UNIV. OF IDAHO LIBRARY
Documents Section
Rayburn Street
Moscow, ID 83844–2353
(208) 885–6344 Fax: (208) 885–6817

ILLINOIS

ILLINOIS STATE LIBRARY
Federal Documents Dept.
300 South Second Street
Springfield, IL 62701–1796
(217) 782–7596 Fax: (217) 782–6437

INDIANA

INDIANA STATE LIBRARY
Serials/Documents Section
140 North Senate Avenue
Indianapolis, IN 46204–2296
(317) 232–3679 Fax: (317) 232–3728

IOWA

UNIV. OF IOWA LIBRARIES
Govt. Publications
Washington & Madison Streets
Iowa City, IA 52242–1166
(319) 335–5926 Fax: (319) 335–5900

KANSAS

UNIV. OF KANSAS
Govt. Documents & Maps Library
6001 Malott Hall
Lawrence, KS 66045–2800
(913) 864–4660 Fax: (913) 864–3855

KENTUCKY

UNIV. OF KENTUCKY
King Library South
Govt. Publications/Maps Dept.
Patterson Drive
Lexington, KY 40506–0039
(606) 257–3139 Fax: (606) 257–3139

LOUISIANA

LOUISIANA STATE UNIV.
Middleton Library
Govt. Documents Dept.
Baton Rouge, LA 70803–3312
(504) 388–2570 Fax: (504) 388–6992

LOUISIANA TECHNICAL UNIV.
Prescott Memorial Library
Govt. Documents Dept.
Ruston, LA 71272–0046
(318) 257–4962 Fax: (318) 257–2447

MAINE

UNIV. OF MAINE
Raymond H. Fogler Library
Govt. Documents Dept.
Orono, ME 04469–5729
(207) 581–1673 Fax: (207) 581–1653

MARYLAND

UNIV. OF MARYLAND – COLLEGE PARK
McKeldin Library
Govt. Documents/Maps Unit
College Park, MD 20742
(301) 405–9165 Fax: (301) 314–9416

MASSACHUSETTS

BOSTON PUBLIC LIBRARY
Govt. Documents
666 Boylston Street
Boston, MA 02117–0286
(617) 536–5400, ext. 226
Fax: (617) 536–7758

MICHIGAN

DETROIT PUBLIC LIBRARY
5201 Woodward Avenue
Detroit, MI 48202–4093
(313) 833–1025 Fax: (313) 833–0156

LIBRARY OF MICHIGAN
Govt. Documents Unit
P.O. Box 30007
717 West Allegan Street
Lansing, MI 48909
(517) 373–1300 Fax: (517) 373–3381

MINNESOTA

UNIV. OF MINNESOTA
Govt. Publications
409 Wilson Library
309 19th Avenue South
Minneapolis, MN 55455
(612) 624–5073 Fax: (612) 626–9353

MISSISSIPPI

UNIV. OF MISSISSIPPI
J.D. Williams Library
106 Old Gym Bldg.
University, MS 38677
(601) 232–5857 Fax: (601) 232–7465

MISSOURI

UNIV. OF MISSOURI – COLUMBIA
106B Ellis Library
Govt. Documents Sect.
Columbia, MO 65201–5149
(314) 882–6733 Fax: (314) 882–8044

MONTANA

UNIV. OF MONTANA
Mansfield Library
Documents Division
Missoula, MT 59812–1195
(406) 243–6700 Fax: (406) 243–2060

NEBRASKA

UNIV. OF NEBRASKA – LINCOLN
D.L. Love Memorial Library
Lincoln, NE 68588–0410
(402) 472–2562 Fax: (402) 472–5131

NEVADA

THE UNIV. OF NEVADA LIBRARIES
Business and Govt. Information Center
Reno, NV 89557–0044
(702) 784–6579 Fax: (702) 784–1751

NEW JERSEY

NEWARK PUBLIC LIBRARY
Science Div. – Public Access
P.O. Box 630
Five Washington Street
Newark, NJ 07101–7812
(201) 733–7782 Fax: (201) 733–5648

NEW MEXICO

UNIV. OF NEW MEXICO
General Library
Govt. Information Dept.
Albuquerque, NM 87131–1466
(505) 277–5441 Fax: (505) 277–6019

NEW MEXICO STATE LIBRARY
325 Don Gaspar Avenue
Santa Fe, NM 87503
(505) 827–3824 Fax: (505) 827–3888

NEW YORK

NEW YORK STATE LIBRARY
Cultural Education Center
Documents/Gift & Exchange Section
Empire State Plaza
Albany, NY 12230–0001
(518) 474–5355 Fax: (518) 474–5786

NORTH CAROLINA

UNIV. OF NORTH CAROLINA – CHAPEL HILL
Walter Royal Davis Library
CB 3912, Reference Dept.
Chapel Hill, NC 27514–8890
(919) 962–1151 Fax: (919) 962–4451

NORTH DAKOTA

NORTH DAKOTA STATE UNIV. LIB.
Documents
P.O. Box 5599
Fargo, ND 58105–5599
(701) 237–8886 Fax: (701) 237–7138

UNIV. OF NORTH DAKOTA
Chester Fritz Library
University Station
P.O. Box 9000 – Centennial and University Avenue
Grand Forks, ND 58202–9000
(701) 777–4632 Fax: (701) 777–3319

OHIO

STATE LIBRARY OF OHIO
Documents Dept.
65 South Front Street
Columbus, OH 43215–4163
(614) 644–7051 Fax: (614) 752–9178

OKLAHOMA

OKLAHOMA DEPT. OF LIBRARIES
U.S. Govt. Information Division
200 Northeast 18th Street
Oklahoma City, OK 73105–3298
(405) 521–2502, ext. 253
Fax: (405) 525–7804

OKLAHOMA STATE UNIV.
Edmon Low Library
Stillwater, OK 74078–0375
(405) 744–6546 Fax: (405) 744–5183

OREGON

PORTLAND STATE UNIV.
Branford P. Millar Library
934 Southwest Harrison
Portland, OR 97207–1151
(503) 725–4123 Fax: (503) 725–4524

PENNSYLVANIA

STATE LIBRARY OF PENN.
Govt. Publications Section
116 Walnut & Commonwealth Ave.
Harrisburg, PA 17105–1601
(717) 787–3752 Fax: (717) 783–2070

SOUTH CAROLINA

CLEMSON UNIV.
Robert Muldrow Cooper Library
Public Documents Unit
P.O. Box 343001
Clemson, SC 29634–3001
(803) 656–5174 Fax: (803) 656–3025

UNIV. OF SOUTH CAROLINA
Thomas Cooper Library
Green and Sumter Streets
Columbia, SC 29208
(803) 777–4841 Fax: (803) 777–9503

TENNESSEE

UNIV. OF MEMPHIS LIBRARIES
Govt. Publications Dept.
Memphis, TN 38152–0001
(901) 678–2206 Fax: (901) 678–2511

TEXAS

TEXAS STATE LIBRARY
United States Documents
P.O. Box 12927 – 1201 Brazos
Austin, TX 78701–0001
(512) 463–5455 Fax: (512) 463–5436

TEXAS TECH. UNIV. LIBRARIES
Documents Dept.
Lubbock, TX 79409–0002
(806) 742–2282 Fax: (806) 742–1920

UTAH

UTAH STATE UNIV.
Merrill Library Documents Dept.
Logan, UT 84322–3000
(801) 797–2678 Fax: (801) 797–2677

VIRGINIA

UNIV. OF VIRGINIA
Alderman Library
Govt. Documents
University Ave. & McCormick Rd.
Charlottesville, VA 22903–2498
(804) 824–3133 Fax: (804) 924–4337

WASHINGTON

WASHINGTON STATE LIBRARY
Govt. Publications
P.O. Box 42478
16th and Water Streets
Olympia, WA 98504–2478
(206) 753–4027 Fax: (206) 586–7575

WEST VIRGINIA

WEST VIRGINIA UNIV. LIBRARY
Govt. Documents Section
P.O. Box 6069 – 1549 University Ave.
Morgantown, WV 26506–6069
(304) 293–3051 Fax: (304) 293–6638

WISCONSIN

ST. HIST. SOC. OF WISCONSIN LIBRARY
Govt. Publication Section
816 State Street
Madison, WI 53706
(608) 264–6525 Fax: (608) 264–6520

MILWAUKEE PUBLIC LIBRARY
Documents Division
814 West Wisconsin Avenue
Milwaukee, WI 53233
(414) 286–3073 Fax: (414) 286–8074

Typical Report Citation and Abstract

❶ **19970001126** NASA Langley Research Center, Hampton, VA USA
❷ **Water Tunnel Flow Visualization Study Through Poststall of 12 Novel Planform Shapes**
❸ Gatlin, Gregory M., NASA Langley Research Center, USA Neuhart, Dan H., Lockheed Engineering and Sciences Co., USA;
❹ Mar. 1996; 130p; In English
❺ Contract(s)/Grant(s): RTOP 505-68-70-04
❻ Report No(s): NASA-TM-4663; NAS 1.15:4663; L-17418; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche
❼ To determine the flow field characteristics of 12 planform geometries, a flow visualization investigation was conducted in the Langley 16- by 24-Inch Water Tunnel. Concepts studied included flat plate representations of diamond wings, twin bodies, double wings, cutout wing configurations, and serrated forebodies. The off-surface flow patterns were identified by injecting colored dyes from the model surface into the free-stream flow. These dyes generally were injected so that the localized vortical flow patterns were visualized. Photographs were obtained for angles of attack ranging from 10’ to 50’, and all investigations were conducted at a test section speed of 0.25 ft per sec. Results from the investigation indicate that the formation of strong vortices on highly swept forebodies can improve poststall lift characteristics; however, the asymmetric bursting of these vortices could produce substantial control problems. A wing cutout was found to significantly alter the position of the forebody vortex on the wing by shifting the vortex inboard. Serrated forebodies were found to effectively generate multiple vortices over the configuration. Vortices from 65’ swept forebody serrations tended to roll together, while vortices from 40’ swept serrations were more effective in generating additional lift caused by their more independent nature.
❽ Author
❾ *Water Tunnel Tests; Flow Visualization; Flow Distribution; Free Flow; Planforms; Wing Profiles; Aerodynamic Configurations*

Key

1. Document ID Number; Corporate Source
2. Title
3. Author(s) and Affiliation(s)
4. Publication Date
5. Contract/Grant Number(s)
6. Report Number(s); Availability and Price Codes
7. Abstract
8. Abstract Author
9. Subject Terms

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 443)

JULY 14, 1997

51
LIFE SCIENCES (GENERAL)

19970017967 Battelle Memorial Inst., Columbus, OH USA

Characterization of the Anticyanide Effect of Methemoglobinemia Induced by Candidate Pretreatment Drugs in an Anesthetized Animal Model ***Final Report***

Olson, Carl T., Battelle Memorial Inst., USA; Reid, Frances M., Battelle Memorial Inst., USA; Menton, Ronald G., Battelle Memorial Inst., USA; Audet, Kandy K., Battelle Memorial Inst., USA; Hayes, Timothy L., Battelle Memorial Inst., USA; Sep. 1996; 276p; In English

Contract(s)/Grant(s): DAMD17-89-C-9050

Report No.(s): AD-A317930; No Copyright; Avail: CASI; A13, Hardcopy; A03, Microfiche

Task 92-28 was conducted to determine the protective efficacy provided by low methemoglobin (MHb) levels against a continuous sodium cyanide (NaCN) infusion, and to compare and quantitate the efficacy of long-acting and short-acting MHb-forming compounds in anesthetized canines. The time to respiratory arrest (TRA) was measured, after which the animals were revived with 10 mg/kg of hydroxylamine iv. The average estimated protective percent MHb was 5.4 percent with a 95 percent upper tolerance bound of 6.4 percent. Three compounds that induce the formation of MHb, P-AminoPropioPhenone (PAPP), p-aminoheptanophenone (PAHP), and an 8-aminoquinoline (WR242511), were effective in mitigating the effects of NaCN poisoning when compared to the controls. No statistically significant differences in efficacy were observed among the three compounds. Doses of two times the average concentration required to induce respiratory arrest (2xAvTRA) were tested in animals pretreated with PAPP. All of the PAPP pretreated anesthetized animals achieved approximately 6.5 percent MHb, did not cease breathing, and did not require any other medical intervention to recover from the NaCN challenge.

DTIC

Cyanides; Drugs; Animals; Medical Services

19970017970 Tracor Sciences and Systems, San Diego, CA USA

Biomass of Zooplankton Estimated by Acoustical Sensors in the Arabian Sea ***Final Report***

Holliday, D. V., Tracor Sciences and Systems, USA; Nov. 22, 1996; 15p; In English

Contract(s)/Grant(s): N00014-94-C-0101

Report No.(s): AD-A318601; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The long term goal of our overall research program is the development of data-based models to predict ecological relationships of zooplankton, phytoplankton and the physical environment in the sea. The overall objective of the work carried out within the scope of this particular contract was to acoustically measure the dynamics of zooplankton and micronekton in the northern Arabian Sea during several seasons. The scientific focus was to examine the impact, if any, of the two annual monsoons that are thought to drive the ecosystem response in the area. This particular project involved the design and construction of two sensors which were then deployed in the Arabian Sea by several of our co-PIVs in the ONR ARI on Forced Upper Ocean Dynamics during the time period in which the JGOFS program also focused their efforts on the northern Arabian Sea. This contract involved only the development, calibration and maintenance of the instrumentation. The data processing, other than that which has been necessary for the purposes of quality assurance, was not included in our original proposal.

DTIC

Biomass; Zooplankton; Arabian Sea; Acoustics; Signal Detectors; Ecosystems

19970017973 Mayo Foundation, Rochester, MN USA

Progression and Metastasis of Mammary Carcinomas: Potential Role of the Muc1 Glycoprotein ***Annual Report***

Rowse, Gerald J., Mayo Foundation, USA; Aug. 1996; 23p; In English

Contract(s)/Grant(s): DAMD17-94-J-4217

Report No.(s): AD-A318027; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Our goal is to understand the function of the tumor-associated mucin, MUC 1, in the progression of cancer in the mammary gland. MUC1 is highly expressed by the majority of cancers and, in particular, by greater than 92% of primary and metastatic breast cancers. The MUC1 protein is a large, rod-like molecule that projects far from the cell surface as a long filament. The protein core is extensively glycosylated through 0-glycosidic linkage to serine and threonine, with as much as 50 to 90% of its molecular mass made up of oligosaccharide side chains. This contributes significantly to the rigidity of the molecule. MUC1 is expressed on normal epithelial tissues at low levels. Appearance of MUC1 correlates closely with epithelial differentiation in various organs and is detected well before the organs are functional. The presence of the large, highly extended molecule of MUC1 on the surface of epithelia suggests that it may act as a physical barrier protecting the cells. MUC1 may be involved in epithelial morphogenesis, perhaps acting to mask adhesive molecules present on the cell surface and aiding in the formation of a lumen. When epithelial tissues become cancerous, MUC1 expression is increased formation of a lumen. When epithelial tissues become cancerous, MUC1 expression is increased at least ten fold, and the glycosylation and spatial distribution of the protein at the cell surface are altered. MUC1 in normal polarized epithelia is expressed only at the apical side of lumens and ducts. However, in many adenocarcinomas polarization is lost, and the protein is found over the entire surface of the cells.

DTIC

Epithelium; Cancer; Mammary Glands; Proteins; Cells (Biology)

19970017974 Illinois Univ., Urbana, IL USA

Engineering Bispecific Antibodies that Target ErbB-2 on Breast Cancer Cells ***Annual Report, 1 Sep. 1995 - 31 Aug. 1996***

Krantz, David M., Illinois Univ., USA; Sep. 1996; 109p; In English

Contract(s)/Grant(s): DAMD17-94-J-4347

Report No.(s): AD-A318023; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

The goals of this project are to construct single-chain bispecific antibodies (scFv2) that target erbB-2 on breast cancer cells, to evaluate the susceptibility of the tumor cells to lysis mediated by bispecific antibodies, and to develop an animal model that can evaluate the in vivo effectiveness of these agents. The following aims were accomplished during the past year: (1) Two different scFv2 were constructed, purified, and tested in vitro. Both antibodies contained the anti-erbB-2 scFv, 800E6. One of the antibodies contained the anti-T cell receptor scFv 1B2 and the other contained the anti-V% scFv KJl6. Although both scFv2 bound to the appropriate antigens, current efforts are devoted to increasing the fraction of the scFv2 that have activity. 2) Transgenic mice (called TCR/RAG-1-) that contain a single population of cytotoxic T cells were fully characterized. The mice expressed greater than 90% CD8+ peripheral T cells, which could be activated in vitro to lyse the appropriate target cells. The TCR/RAG-%- mice also accepted xenografts of two erbB-2+ human tumor cell lines, BT474 and SKOV3. Future work will involve strategies to activate T cells in vivo, so that the optimal conditions for tumor targeting can be explored.

DTIC

Tumors; Cancer; Mammary Glands; Cells (Biology); Antibodies

19970017975 Woods Hole Oceanographic Inst., MA USA

Development and Testing of Tagging and Attachment Equipment for Harbour Porpoises in the Southwestern Bay of Fundy ***Final Report***

Read, Andrew J., Duke Univ., USA; Watkins, William A., Woods Hole Oceanographic Inst., USA; Westgate, Andrew J., Duke Univ., USA; Oct. 31, 1996; 25p; In English

Contract(s)/Grant(s): N00014-94-I-1189

Report No.(s): AD-A318012; WHOI-9081; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The objectives were to: (1) test long-term tag attachment systems for harbour porpoises, (2) monitor the movements of harbour porpoises using satellite telemetry and (3) collect data on the postmortem cooling rates of harbour porpoises. We deployed satellite-linked transmitters (PTTs) on two adult female and seven adult male harbour porpoises Phocoena phocoena released from herring weirs in the Bay of Fundy during the summers of W94 and 1995. Our objectives were to evaluate the potential for monitoring long-term movements of these animals with satellite telemetry and to collect information on movements and patterns of habitat use of these animals. We used Telonics ST- 10 transmitters in two configurations, a front mounted cylinder type and a side mounted box type. We received uplinks from each of the nine porpoises, allowing us to estimate reliable positions and monitor time spent at the surface. Transmissions were received for between 2 and 212 days. The side mounted design provided a more suitable long-

term tag for harbour porpoises. Four male porpoises travelled into the Gulf of Maine, and one porpoise moved as far south as northern Georges Bank. Generally, porpoises exhibited a high degree of individual variability in both habitat utilisation and movement patterns. Movements of porpoises between the Bay of Fundy and Gulf of Maine are consistent with the hypothesis that this represents a single sub-population.
DTIC
Acceptability; Monitors; Data Acquisition; Artificial Satellites; Product Development; Marking; Handling Equipment

19970017976 Missouri Univ., Dept. of Civil Engineering, Kansas City, MO USA
Augmentation Award for Monoclonal Antibody Detection of Chlorinated Benzenes on Contaminated Sediments ***Final Report, 1 Sep. 1993 - 31 Aug. 1996***
OBannon, Deborah J. Mossman, Missouri Univ., USA; Oct. 31, 1996; 4p; In English
Contract(s)/Grant(s): F49620-93-I-0523; AF Proj. 3484
Report No.(s): AD-A318009; AFOSR-TR-96-0554; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche
The nonextractive immunoassay techniques developed with enzyme immunoassay procedures were extended to include fluorescent immunoassay of sorbed contaminants. The variety of substrates to which the contaminant was sorbed was increased to include: St. Peters sandstone, montmorillonite, and black shale. Auto-fluorescence of the substrates was addressed, and 2,4-dinitro-benzene was found not to migrate into the montmorillonite crystal layers. Additional sample preparation was needed for the clay samples: significantly more blocking solution was needed to reduce background nonspecific binding of the immunochemicals. Two contaminants were used throughout the grant period-2-4-dinitrobenzene, and pyrene.
DTIC
Augmentation; Fluorescence; Detection; Antibodies; Chlorination; Benzene; Contaminants; Sediments

19970018026 Pittsburgh Univ., Pittsburgh, PA USA
The Expression and Regulation of the Cell Adhesion Molecule CD44 in Human Breast Cancer ***Annual Report, 1 Aug. 1995 - 31 Jul. 1996***
Resnick, Nicole M., Pittsburgh Univ., USA; Aug. 1996; 20p; In English
Contract(s)/Grant(s): DAMD17-94-J-4042
Report No.(s): AD-A317925; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche
The cell adhesion molecule CD44 is encoded by a complex gene and undergoes extensive alternative splicing. Differential regulation of CD44 splicing has been implicated in human tumorigenesis, and differences in variant isoform expression in normal versus cancerous breast tissue suggest a role for CD44 in the progression of breast cancer. Our preliminary analysis of CD44 expression in human breast samples by RT-PCR and Southern blot hybridization revealed no significant correlation between breast tumor type and CD44 variants. The retention of CD44 intron 9 was however demonstrated in 50% of breast tumors examined, supporting the hypothesis that dysregulation of CD44 splicing accompanies tumorigenesis. Novel CD44 isoforms containing single variant exons were identified in a related study of primary and metastatic tumors of the central nervous system. Analysis of similar variant isoforms in breast tumors may offer some insight into breast cancer metastasis. Examination of CD44 splicing in the human breast cancer cell lines BT-20, MDA-MB-435s and ZR-75-1 resulted in the cloning of a novel CD44 variant isoform generated by multiple splicing events. Differential usage of splicing signals associated with CD44 variant exons v2 and v3 was demonstrated in these cell lines and should allow for further delineation of exon sequences that regulate CD44 splicing in breast cancer.
DTIC
Cancer; Central Nervous System

19970018048 NASA Johnson Space Center, Houston, TX USA
Microcapsules and Methods for Making
Morrison, Dennis R., Inventor, NASA Johnson Space Center, USA; Mosier, Benjamin, Inventor, NASA Johnson Space Center, USA; Dec. 02, 1994; 93p; In English
Patent Info.: NASA-Case-MSC-22489-1; US-Patent-Appl-SN-349169
Report No.(s): NAS 1.71:MSC-22489-1; No Copyright; Avail: CASI; A05, Hardcopy; A01, Microfiche
This invention relates to methods for forming multi-lamellar microcapsules of both hydrophilic and hydrophobic immiscible liquid phases using several polymer/solvent systems. Liquid-Liquid diffusion and spontaneous emulsification are controlled by properly timed sequence exposures of immiscible phases in aqueous vehicles dispersed in hydrocarbon solvents containing small quantities of oil, co-surfactants, and glycerides. Water-in-oil and oil-in-water microcapsules are formed containing selected combinations of several types of drugs, co-encapsulated within fluid compartments inside the microcapsule. Commercial applications

of the process and the resultant product relate to drug therapy for treating medical conditions such as cancer, circulatory conditions, and other conditions in which pharmaceuticals are advantageously targeted to specific organs, or delivered in combination with other pharmaceuticals. Small microcapsules may be delivered intravenously to diseased organs or clotted vessels. The use of multiple drugs within the same microcapsule structure provides advantages for applications such as chemoembolization treatments and may be used to deliver both chemotherapeutic drugs, against tumor cells, and an immuno-adjuvant or immunological stimulant to enhance the patient's immune response. Active forms of urokinase and other enzymes may be delivered without dilution to the local site of an embolism for dissolving the embolism. Thus, the invention has several potentially valuable commercial applications related to pharmaceutical and medical applications.
Author
Capsules; Liquid Phases; Pharmacology; Drugs

19970018066 Brandeis Univ., Waltham, MA USA
Proceedings of the Fourth International Conference on Simulation of Adaptive Behavior: From Amimals to Animals 4 ***Final Report, 1 Feb. - 31 Dec. 1996***
Maes, Pattie, Editor, Brandeis Univ., USA; Mataric, Maja J., Editor, Brandeis Univ., USA; Merer, Jean-Arcady, Editor, Brandeis Univ., USA; Pollack, Jordan, Editor, Brandeis Univ., USA; Wilson, Stewart W., Editor, Brandeis Univ., USA; Dec. 1996; ISSN 1089-4365; 645p; In English; 4th; Simulation of Adaptive Behavior, 9-13 Sep. 1996, Cape Cod, MA, USA
Contract(s)/Grant(s): N00014-96-I-075
Report No.(s): AD-A316547; ISBN-0-262-63178-1; No Copyright; Avail: CASI; A99, Hardcopy; A06, Microfiche
Collection of papers refereed and presented at the 'SAB96' Conference.
DTIC
Conferences; Artificial Intelligence

19970018152 Scripps Institution of Oceanography, Marine Biology Research Div., La Jolla, CA USA
Bioluminescence Source Emission Characterization ***Final Report, 1 Apr. 1992 - 30 Sep. 1995***
Latz, Michael I., Scripps Institution of Oceanography, USA; Sep. 30, 1995; 7p; In English
Contract(s)/Grant(s): N00014-92-J-1475
Report No.(s): AD-A318378; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche
A study of the hydrodynamics characterization of the excitation of bioluminescence was performed in collaboration with NRaD. Present research using fully developed pipe flow confirmed previous work using Couette flow that the excitation threshold for dinoflagellate bioluminescence occurred in laminar flow at a shear stress level greater than typical levels in the mixed layer. Maximum response was achieved at high laminar flow values, with no further increase for turbulent flows. A study of the spontaneous bioluminescence of the dinoflagellate Ceratocorys horrida revealed that this species exhibited circadian rhythms in both spontaneous flashing and glowing. Spontaneous light emission in dinoflagellates may be an important source of natural bioluminescence in the ocean. Several approaches tested the hypothesis that spontaneous flashing by dinoflagellates is caused by cell collisions. The results from experiments involving impaired swimming, direct observations of colliding cells, and surface to volume manipulations were not able to confirm the hypothesis. Unialgal red tide dinoflagellate diet significantly affected the total bioluminescence potential and flash intensity of two local species of heterotrophic dinoflagellates. Cannibalism was an important source of nutrition during periods of prey scarcity. Bioluminescence appears to be a sensitive indicator of energetic state in heterotrophic dinoflagellates.
DTIC
Laminar Flow; Circadian Rhythms; Couette Flow; Bioluminescence; Hydrodynamics; Light Emission; Pipe Flow; Spontaneous Emission

19970018507 Gordon Research Conferences, Inc., Kingston, RI USA
The 1996 Gordon Research Conference on Microbial Toxins and Pathogenesis ***Final Report***
OBrien, Allison D., Gordon Research Conferences, Inc., USA; Dec. 1996; 34p; In English, 14-19 Jul. 1996, Andover, NH, USA
Contract(s)/Grant(s): DAMD17-96-I-6002
Report No.(s): AD-A318112; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche
The Gordon Research Conference (GRC) on MICROBIAL TOXINS AND PATHOGENICITY was held in Andover, NH at Proctor Academy July 14 to July 19, 1996. The Conference was well-attended with 133 participants. The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively

discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could coinmunicate their most recent results, poster presentation time was scheduled. Attached is a copy of the formal schedule and speaker program and the poster program. In addition to these formal interactions, 'free time' was scheduled to allow informal discussions. Such discussion are fostering new collaborations and joint efforts in the field.
DTIC
Conferences; Pathogenesis; Microbiology; Toxicity

19970018601 South Carolina Univ., Columbia, SC USA
Identification of Chemical Markers for Microorganisms by Pyrolysis GC-MS ***Final Report, 1 May 1988 - 31 Jul. 1992***
Morgan, Stephen L., South Carolina Univ., USA; Sep. 1996; 14p; In English
Contract(s)/Grant(s): DAAL03-88-K-0075
Report No.(s): AD-A316442; ARO-25663.4-LS; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The objective of this work has been the characterization of chemical markers that are useful for identification of B. anthracis using pyrolysis-based methods. The strategy is to select groups of organisms that differ in particular chemotaxonomic features, identify any pyrolysis products that differentiates groups from one another, hypothesize the origin of these chemical markers in the cell, and correlate information from pyrolysis of appropriate model compounds as well as information from independent analytical methods.
DTIC
Gas Chromatography; Markers; Microorganisms; Organisms

52
AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

19970018018 Creighton Univ., School of Medicine, Omaha, NE USA
Genetic Counseling Using BRCAl-Linked Markers ***Annual Report, 1 Sep. 1995 - 31 Aug. 1996***
Lynch, Henry T., Creighton Univ., USA; Sep. 1996; 33p; In English
Contract(s)/Grant(s): DAMD17-94-J-4340
Report No.(s): AD-A318215; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Since the initiation of this study, we have provided 14 BRCA1 and 2 BRCA2 families with information sessions held at various geographic areas of the USA. These sessions included intensive education about the natural history, genetics, surveillance and management of the hereditary breast/ovarian cancer syndrome. The limitations and advantages of DNA testing were discussed stressing potential liabilities such as fear, anxiety, and insurance and employer discrimination. Genetic counseling was provided again prior to releasing DNA test results to 181 individuals who wanted to know their mutation status. Reasons given by them for being tested were concern about their siblings and children, and about screening and/or prophylactic surgery. Seventy-six percent who were BRCA1 mutation positive would give prophylactic cophorectomy serious consideration; 35% would consider prophylactic masectomy. No significant increase in depression was noted. Eighty-one percent who were negative for BRCA1 were extremely happy and relieved. A small subset (4%) experienced survivor guilt. We continue to learn about genetic counseling as a result of this experience and to accumulate information relevant to its psychological components through collaboration with Caryn Lerman, Ph.D. BRCAl and BRCA2 mutations have been identified in an additional 27 families and will be available for future study.
DTIC
Deoxyribonucleic Acid; Genetics; Mammary Glands; Ovaries; Cancer; Psychological Effects; Genes; Mutations

19970018178 Kansas Mental Retardation Research Center, Kansas City, KS USA
Mechanisms of Chemically Induced Brain Damage: Are Free Radicals a Common Effector Linkage? ***Interim Report, 25 Jul. 1994 - 25 Jan. 1996***
Pazdernik, Thomas L., Kansas Mental Retardation Research Center, USA; Feb. 1996; 45p; In English
Contract(s)/Grant(s): DAMD17-94-C-4045
Report No.(s): AD-A309586; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The problem under investigation is testing the hypothesis that neurotoxins initiate a cascade of events that converge on the redox mechanisms common to brain injury. Neurotoxins (e.g., soman, kainic acid, cyanide, etc.) initiate biochemical changes in brain that lead either to marked hyperactivity (i.e., soman- or kainic acid-induced seizures) or hypoactivity (i.e., cyanide-induced

comatose) of brain regions. In both situations, protective mechanisms are activated to conserve energy, but eventually excitotoxic driven events ensue leading to an influx of calcium (i.e., calcium stress) and water movements (i.e., osmotic stress). These stresses converge on the brain redox systems. Task 1 deals with detection of biomarkers for free radicals in cerebral extracellular fluid via micro dialysis. Both cyanide and soman cause marked changes in ascorbate and urate. Kainic acid-induced seizures increase nitric oxide formation. Task 2 deals with detection of tissue biomarkers of free radical responses by gene expression studies. Kainic acid, a surrogate seizuregenic compound, changes metaliothionein-I, heme oxygenase-1, c-fos, heat shock protein-70 and interleukin-1B gene expression in brain. Clearly, the redox state is important in neurotoxin- induced brain damage.
DTIC
Oxidation-Reduction Reactions; Immune Systems; Injuries; Gene Expression; Free Radicals; Cyanides; Brain Damage; Biochemistry

19970018312 Hughes Training, Training Operations Div., Inc. Mesa, AZ USA
Smooth Eye Movement Response to Complex Motion Sequences, *Jun. 1991 - Jun 1995*
Lindholm, Julie Mapes, Hughes Training, USA; Wetzel, Paul A., Hughes Training, USA; Askins, Timothy M., Hughes Training, USA; Sep. 1996; 39p
Contract(s)/Grant(s): F41624-95-C-5011; AF Proj. 1123
Report No.(s): AD-A319033; AL/HR-TR-1996-0040; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

To examine the spatiotemporal properties of the motion sensors for the smooth pursuit system, we presented horizontal motion sequences in which successive target displacements were in accord with a composite waveform representing the sum of a constant velocity ramp and a sawtooth. The sequences differed in global velocity (GV = ramp velocity = 0 or 4 deg/sec), local velocity (LV = ramp velocity + sawtooth velocity = -8 or -4 deg/sec, for GV =0, and -8, -4,0, 8, 12 deg/sec, for GV = 4), and local-segment duration (12 values between 67 and 700 msec). When the duration of a local-velocity segment was relatively short C less than or equal to 133 msec, for GV =4 deg/sec; less than or equal to 200 msec, For GY =0 deg/sec), mean pursuit velocity matched the GV. As the segment duration increased, mean pursuit velocity shifted gradually toward the LV. Changes in cumulative saccadic amplitude mirrored the changes in smooth pursuit velocity. The spatiotemporal-frequency spectra of the motion sequences suggested that the pursuit system responded in accord with the drift velocities of very low spatial frequencies. The spectra of the space-time retinal images suggested that pursuit w as maintained not by the absence of retinal image motion but by the presence of appreciable spectral energy for components with a drift velocity of approximately zero.
DTIC
Optical Tracking; Image Motion Compensation; Saccadic Eye Movements

19970018509 Los Alamos National Lab., NM USA
Radiation and Risk: A Look at the Data
Schillaci, Mario E., Los Alamos National Lab., USA; 1996; 6p; In English; Winter Meeting of the American Nuclear Society (ANS) and the European Nuclear Society (ENS), 10-14 Nov. 1996, Washington, DC, USA; Sponsored by American Nuclear Society, USA; 'Sponsored in part by European Nuclear Society.'
Contract(s)/Grant(s): W-7405-eng-36
Report No.(s): LA-UR-96-2243; CONF-961103-12; DE96-014041; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

This paper is a review of current data on the risks associated with human exposure to ionizing radiation. We examine these risks for dose levels ranging from very high (atomic bomb survivors) to very low (background). The principal end point considered is cancer mortality. Cancer is the only observed clinical manifestation of radiation-induced stochastic effects. Stochastic effects are caused by subtle radiation-induced cellular changes (DNA mutations) that are random in nature and have no threshold dose (assuming less than perfect repair). The probability of such effects increases with dose, but the severity does not. The time required for cancer to develop ranges from several years for leukemia to decades for solid tumors. In addition to somatic cells, radiation can also damage germ cells (ova and sperm) to produce hereditary effects, which are also classified as stochastic. However, clinical manifestations of such effects have not been observed in humans at a statistically significant level.
DOE
Radiation Effects; Risk; Ionizing Radiation; Cancer; Cells (Biology); Biological Effects; Genetics

19970018567 Sandia National Labs., Albuquerque, NM USA
Modeling Acute Health Risks Associated with Accidental Releases of Toxic Gases
Haskin, F. Eric, New Mexico Univ., USA; Ding, Chuanyl, New Mexico Univ., USA; Summa, Kenneth J., New Mexico Univ., USA; Young, Mary, Sandia National Labs., USA; Sep. 1996; 224p; In English

Contract(s)/Grant(s): DE-AC04-94AL-85000
Report No.(s): SAND-96-1491; DE97-000041; No Copyright; Avail: CASI; A10, Hardcopy; A03, Microfiche

CHEM MACCS has been developed from the radiological accident consequence code, MACCS, to perform probabilistic calculations of potential off-site consequences of the accidental atmospheric release of hazardous chemicals. The principal phenomena considered in CHEM MACCS are atmospheric transport, mitigative actions based on dose projection, dose accumulation by a number of pathways, and early and latent health effects. CHEM MACCS provides the following capabilities: (1) statistical weather sampling data (8,760 hourly data points per year), (2) population dose and health effect risk calculations based on site-specific population data, (3) health effects calculations including the consideration of potential site specific mitigative actions (evacuation and shielding), and (4) modeling of multiple release segments. Three different sample problems are contained in this report to show how to use CHEM MACCS. Three test problems are run to compare CHEM MACCS and D2PC. The doses versus the downwind centerline distances from the source for the given doses are in very close agreement.
DOE
Health; Risk; Air Pollution; Toxic Hazards; Accidents; Applications Programs (Computers); Models

19970018588 Bionetics Corp., Hampton, VA USA
WRAIR GOCO Blood Research Detachment's Red Blood Cell Storage Laboratory ***Annual Report, 21 Sep. 1995 - 20 Sep 1996***
Lippert, Lloyd E., Bionetics Corp., USA; Oct. 1996; 71p; In English
Contract(s)/Grant(s): DAMD17-94-C-4154
Report No.(s): AD-A318218; No Copyright; Avail: CASI; A04, Hardcopy; A01, Microfiche

Two clinical trials evaluating candidate red cell preservation systems for eight week red cell storage were initiated. The data collection was completed on the first study; the second is ongoing. A facility to manufacture a cellular hemoglobin solutions and a quality control laboratory to support the in-process and product release testing requirements of the production facility were staffed and maintained until 20 September. Six additional hemoglobin production process improvement were instituted which, when combined with previous fiscal year process improvements, increased the purity by 30%, increased yield by 25% and reduced production time. Prior to the production facility closure, 106.041 of hemoglobin solution containing 11.32 kg hemoglobin was manufactured which met or exceeded contract specifications, two specialty hemoglobin products were produced, lipisome encapsulated hemoglobin was prepared, and facility was prepared for indefinite shut-down. The Blood Research Detachment's mission was supported.
DTIC
Blood; Erythrocytes; Hemoglobin; Data Acquisition

19970018592 Armstrong Lab., Aerospace Medicine Directorate, Brooks AFB, TX USA
Clinical Aspects of the Control of Plasma Volume at Microgravity and During Return to One Gravity
Convertino, Victor A., Armstrong Lab., USA; Dec. 1995; 9p; In English
Contract(s)/Grant(s): NAS9-611; NAS10-10285; AF Proj. 7755
Report No.(s): AD-A318434; AL/AO-JA-1995-0119; NASA-CR-204565; NAS 1.26:204565; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

Plasma volume is reduced by 10%-20% within 24 to 48 h of exposure to simulated or actual microgravity. The clinical importance of microgravity-induced hypovolemia is manifested by its relationship with orthostatic intolerance and reduced VO2max after return to one gravity (1G). Since there is no evidence to suggest plasma volume reduction during microgravity is associated with thirst or renal dysfunctions, a diuresis induced by an immediate blood volume shift to the central circulation appears responsible for microgravity-induced hypovolemia. Since most astronauts choose to restrict their fluid intake before a space mission, absence of increased urine output during actual spaceflight may be explained by low central venous pressure (CVP) which accompanies dehydration. Compelling evidence suggests that prolonged reduction in CVP during exposure to microgravity reflects a 'resetting' to a lower operating point which acts to limit plasma volume expansion during attempts to increase fluid intake. In groudbase and spaceflight experiments, successful restoration and maintenance of plasma volume prior to returning to an upright posture may depend upon development of treatments that can return CVP to its baseline 10 operating point. Fluid-loading and LBNP have not proved completely effective in restoring plasma volume, suggesting that they may not provide the stimulus to elevate the CVP operating point. On the other, exercise, which can chronically increase CVP, has been effective in expanding plasma volume when combined with adequate dietary intake of fluid and electrolytes. The success of designing experiments to understand the physiological mechanisms of and development of effective countermeasures for the control of plasma volume in

microgravity and during return to one gravity will depend upon testing that can be conducted under standardized controlled baseline condi
DTIC
Spaceborne Experiments; Lower Body Negative Pressure; Electrolytes; Hypovolemia; Microgravity; Physical Exercise

19970018600 Army Aeromedical Research Lab., Fort Rucker, AL USA
Visual Vestibular Interaction in the Dynamic Visual Acuity Test during Voluntary Head Rotation ***Final Report***
Lee, Moo Hoon, Army Aeromedical Research Lab., USA; Durnford, Simon, Army Aeromedical Research Lab., USA; Crowley, John, Army Aeromedical Research Lab., USA; Rupert, Angus, NASA Washington, USA; Aug. 1996; 34p; In English
Contract(s)/Grant(s): DA Proj. 3A1-61101-A-91C
Report No.(s): AD-A316577; USAARL-96-33; NASA-TM-112642; NAS 1.15:112642; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Although intact vestibular function is essential in maintaining spatial orientation, no good screening tests of vestibular function are available to the aviation community. High frequency voluntary head rotation was selected as a vestibular stimulus to isolate the vestibulo-ocular reflex (VOR) from visual influence. A dynamic visual acuity test that incorporates voluntary head rotation was evaluated as a potential vestibular function screening tool. Twenty-seven normal subjects performed voluntary sinusoidal head rotation at frequencies from 0.7-4.0 Hz under three different visual conditions: visually-enhanced VOR, normal VOR, and visually suppressed VOR. Standardized Baily-Lovie chart letters were presented on a computer monitor in front of the subject, who then was asked to read the letters while rotating his head horizontally. The electro-oculogram and dynamic visual acuity score were recorded and analyzed. There were no significant differences in gain or phase shift among three visual conditions in the frequency range of 2.8 to 4.0 Hz. The dynamic visual acuity score shifted less than 0.3 logMAR at frequencies under 2.0 Hz. The dynamic visual acuity test at frequencies a round 2.0 Hz can be recommended for evaluating vestibular function.
DTIC
VHF Omnirange Navigation; Vestibules; Rotation; Reflexes

19970018813 Texas Woman's Univ., Denton, TX USA
The Effects of an Acute Bout of Strenuous Aerobic Exercise on Plasma, Erythrocyte, Urinary, and Dietary Values for Selected Trace Minerals
Edgren, Kimberly K., Texas Woman's Univ., USA; Dec. 09, 1996; 118p; In English
Report No.(s): AD-A318699; AFIT-96-092; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

Nineteen competitive cyclists participated in a week-long study to determine if prolonged, intense aerobic exercise produced a significant change in plasma, erythrocyte, and/or urine values for zinc(Zn) and copper(Cu). Subjects pedaled a cycle ergometer for 1 hour at 80% anaerobic threshold, after which, resistance was incrementally increased by 20 watts/minute until voluntary exhaustion. Six blood collections were drawn: pre-exercise, post-exercise and 2-, 24-, 72-, and 120-hours post-exercise, respectively. Five 24-hour urine collections were taken: one day pre-exercise, the exercise day, and 1-, 2-, and 4-days post-exercise, respectively. Results were significant (p less than 0.05) for: plasma-Zn, erythrocyte-Zn, plasma-Cu, and erythrocyte-Cu changes, respectively, over the study period; post-exercise plasma-Zn increased over all other blood draws; pre-exercise erythrocyte-Zn and erythrocyte-Cu higher than each subsequent blood draw; and post-exercise plasma-Cu higher than prior or subsequent blood draws, respectively. Results suggest that Zn and Cu status cannot be maintained in plasma and erythrocytes when athletes consume self-selected unsupplemented diets.
DTIC
Physical Exercise; Blood Plasma; Copper; Zinc; Erythrocytes; Urine; Physiology

19970018825 Massachusetts Inst. of Tech., Artificial Intelligence Lab., Cambridge, MA USA
The Role of Attention in Binocular Rivalry as Revealed through Optokinetic Nystagmus
Leopold, D. A.; Fitzgibbons, J. C.; Logothetis, N. K.; Nov. 1995; 15p; In English; Sponsored in part by McKnight Endowment Fund for Neuroscience and Augmentation Award for Science and Engineering Research Training
Contract(s)/Grant(s): N00014-95-I-0600; N00014-93-I-0290; AASERT-95459-0487; NIH-EY-10089-01
Report No.(s): AD-A318647; AIM-1554; CBCL-126; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

When stimuli presented to the two eyes differ considerably, stable binocular fusion fails, and the subjective percept alternates between the two monocular images, a phenomenon known as binocular rivalry. The influence of attention over this perceptual switching has long been studied, and although there is evidence that attention can affect the alternation rate, its role in the overall dynamics of the rivalry process remains unclear. The present study investigated the relationship between the attention paid to the rivalry stimulus, and the dynamics of the perceptual alternations. Specifically, the temporal course of binocular rivalry was studied

as the subjects performed difficult nonvisual and visual concurrent tasks, directing their attention away from the rivalry stimulus. Periods of complete perceptual dominance were compared for the attended condition, where the subjects reported perceptual changes, and the unattended condition, where one of the simultaneous tasks was performed. During both the attended and unattended conditions, phases of rivalry dominance were obtained by analyzing the subject's optokinetic nystagmus recorded by an electrooculogram, where the polarity of the nystagmus served as an objective indicator of the perceived direction of motion. In all cases, the presence of a difficult concurrent task had little or no effect on the statistics of the alternations, as judged by two classic tests of rivalry, although the overall alternation rate showed a small but significant increase with the concurrent task. It is concluded that the statistical patterns of rivalry alternations are not governed by attentional shifts or decision-making on the part of the subject.
DTIC
Binocular Vision; Nystagmus; Visual Perception; Visual Acuity; Neurophysiology; Information Processing (Biology)

53
BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

19970018081 Army War Coll., Carlisle Barracks, PA USA
Communicative Arts: A Selected Bibliography. Reading, Writing, Listening, Speaking
Shope, Virginia C., Army War Coll., USA; Jun. 1996; 21p; In English
Report No.(s): AD-A310670; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche
Included in the paper are: a selected bibliography, reading, writing, listening, and speaking.
DTIC
Social Factors; Speech Recognition

19970018172 Minnesota Univ., Dept. of Psychology, Minneapolis, MN USA
Cognitive/Self-Regulatory Aptitudes and Instructional Methods for Complex Skill Learning ***Final Report, 1 Mar. 1993 - 31 Aug. 1996***
Ackerman, Phillip L., Minnesota Univ., USA; Kanfer, Ruth, Minnesota Univ., USA; Oct. 25, 1996; 45p; In English
Contract(s)/Grant(s): F49620-93-I-0206
Report No.(s): AD-A318122; AFOSR-TR-96-0557; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche
Research conducted in this project covered four related topics: A theoretical and empirical examination of the taxonomic structure of perceptual speed abilities, both in general, and in the context of predictive validity for task performance; Extension of previous work by Ackerman and Kanfer on the determinants of individual differences in skill acquisition by examining performance after extended practice, and by examining performance after a non-practice retention period; Integration of ability and non-ability predictors of individual differences in skill acquisition; Using theory and empirical data obtained in previous Air Force sponsored research and the current program, interactions between aptitudes and instructional treatments were examined.
DTIC
Aptitude; Conditioning (Learning); Human Performance

19970018380 National Aerospace Lab., Tokyo, Japan
In-flight Measurement of Eye Scanning Characteristics of Helicopter Pilots
Kawahara, Hiroyasu, National Aerospace Lab., Japan; Funahiki, Kohei, National Aerospace Lab., Japan; Wakairo, Kaoru, National Aerospace Lab., Japan; Tanaka, Keiji, National Aerospace Lab., Japan; Watanabe, Akira, National Aerospace Lab., Japan; Oct. 1996; ISSN 0389-4010; 15p; In Japanese
Report No.(s): NAL-TR-1310; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche
Attempts to study the control behaviour of helicopter pilots have been conducted with the aim of providing fundamental information for future cockpit design, establishing procedures and training. A series of in-flight measurements of human visual scanning behaviour during the following flight phases were carried out: (1) hovering, (2) level flight, (3) coordinated turning, and (4) approach and landing. A total of 12 pilots participated in the experiment, each of whom performed 16 repetitions. It was concluded from the data that patterns of visual fixation point movement can be classified into the following four categories: (1) front field + right lower field, (2) front + left lower, (3) front + right and left lower; and (4) front only.
Author
In-Flight Monitoring; Eye (Anatomy); Helicopters; Pilot Performance; Data Acquisition; Visual Observation

19970018386 Civil Aeromedical Inst., Oklahoma City, OK USA

Evaluation of a Range of Target Blink Amplitudes for Attention-Getting Value in a Simulated Air Traffic Control Display ***Final Report***

Milburn, Nelda J., Civil Aeromedical Inst., USA; Mertens, Henry W., Civil Aeromedical Inst., USA; Apr. 1997; 12p; In English

Report No.(s): DOT/FAA/AM-97/10; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Several sources suggest that blinking targets are more alerting than steady targets. Those sources recommend target size, color, shape, brightness contrast, frequency of blink, and parameters for the ratio of time the blink should be 'on', relative to the time it is 'off'. However, no guidelines were found for an effective, attention-getting blink amplitude (the percentage of decrease in target brightness from a standard). Ten participants located and selected the blinking information data blocks (targets) from 16 data blocks on a Simulated Air Traffic Control Display. Seven blink amplitudes, ranging from 12.5% to 100%, were evaluated. Error and response time performance were near optimum for conditions involving a 75% to 100% decrease in brightness. For the standard luminance (51.4 Cd/sq m), frequency (2 HZ), and duration (.10 sec) used in this experiment, a decrease in brightness of at least 75% was necessary for maximum attention-getting value of a blinking target.

Derived from text

Air Traffic Control; Targets; Evaluation; Amplitudes; Display Devices

19970018496 California Univ., Los Angeles, CA USA

Mechanisms of the Basal Ganglia for Arm-Hand Coordination ***Final Report, 1 Jun. 1993 - 31 Aug. 1996***

Bischoff, A., California Univ., USA; Arbib, Michael A., California Univ., USA; Winstein, C. J., California Univ., USA; Sep. 30, 1996; 66p; In English

Contract(s)/Grant(s): N00014-93-1-0694

Report No.(s): AD-A315470; No Copyright; Avail: CASI; A04, Hardcopy; A01, Microfiche

The basal ganglia (BG) appears to play a dual role in the performance of voluntary movements: (1) the direct path is primarily involved in providing an estimate of the next sensory state to the cortex, and (2) the indirect path is mainly responsible for the inhibition of movement while the cortex is either involved in choosing the next motor command for execution, or while waiting for a 'go' signal to indicate the end of a delay period. Its strong ties with the supplementary motor area (SMA), a region involved with planning sequential movements, suggest the basal ganglia assists in movement planning and performance by providing the SMA with information regarding the expected state, such that SMA may begin planning the next sequence of the behavior. Disruption of normal motor function, such as that seen in Parkinson's disease, demonstrates a difficulty in performing sequential movements, with some patients exhibiting slower movement or a pause between sequences. This may be attributed to the indirect pathway, which prevents the next sensory state from reaching the cortex, thus inhibiting it from preparing to execute the next movement in a sequence. A computer model of neural networks involved in arm movement was-developed to demonstrate the suggested relationship between the two pathways.

DTIC

Psychomotor Performance; Neural Nets; Ganglia; Computerized Simulation

19970018583 Armstrong Lab., Aircrew Training Research Div., Mesa, AZ USA

Potential Modeling and Simulation Contributions to Air Education and Training Command Flying Training: Specialized Undergraduate Pilot Training ***Final Report, Apr. - Jun. 1995***

Andrews, Dee H., Armstrong Lab., USA; Edwards, Bernell J., Armstrong Lab., USA; Mattoon, Joseph S., Armstrong Lab., USA; Thurman, Richard A., Armstrong Lab., USA; Shinn, David R., Armstrong Lab., USA; Dec. 1995; 84p; In English

Contract(s)/Grant(s): AF Proj. 1123

Report No.(s): AD-A318042; AL/HR-TR-1995-0157; No Copyright; Avail: CASI; A05, Hardcopy; A01, Microfiche

This report describes an investigation of the Specialized Undergraduate Pilot Training (SUPT) regarding application of advanced modeling and simulation technologies. The effort revealed training challenges within the program for which modern technologies offer training improvements and solutions. Potential solutions span the full spectrum of current activities from academics to flightline training. The study describes the methodology used in identifying and analyzing training problems as well as the process for selecting appropriate technologies. It also suggests an investment strategy for acquiring and integrating technologies within SUPT. Finally, a preliminary cost benefits model is described as a tool for assessing cost/training benefits prior to technology investment.

DTIC

Pilot Training; Education

54
MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing. For related information see also 16 Space Transportation.

19970018041 Civil Aeromedical Inst., Oklahoma City, OK USA

The Use of Task-Specific Lenses by Presbyopic Air Traffic Controllers at the En Route Radar Console ***Final Report***

Nakagawara, Van B., Civil Aeromedical Inst., USA; Wood, Kathryn J., Civil Aeromedical Inst., USA; Dec. 1996; 28p; In English Report No.(s): DOT/FAA/AM-96/27; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The configuration of the radar console to control aircraft traffic has similar features to a Visual Display Terminal (VDT) work station. Task-specific lenses have been found in clinical studies to reduce visual symptoms while working at the VDT. The American Optical Corporation TruVision Technica(Trademark), a task-specific lens design, was evaluated to see if visual benefits from such a lens could be transferred from the VDT environment to the radar console work environment. Thirteen (13) subjects (45.6 +/- 5.9 years of age, range 36-55 years) completed the study. Subjects who used larger near viewing area (single vision and executive) lens designs generally preferred their current lens design. The Technica(Trademark) was preferred by mature presbyopes (add power of greater than or equal to 1.25 diopters) and those using smaller near viewing area (FT-25, FT-28 and general progressive addition) lens designs. The primary complaints reported by ATCS's with the Technica(Trademark) were peripheral distortion and limited field of view. Task-specific lens designs are an alternative for presbyopic ATCS who work at a radar console. However, distortion and limited field of view from the lens may require prolonged adaptation times before such designs are acceptable to ATCS on the job, especially for those accustomed to lens designs with larger viewing areas.

Author (revised)

Lens Design; Air Traffic Controllers (Personnel); Workstations

19970018643 Institute for Human Factors TNO, Soesterberg, Netherlands

An Exploratory Study of the Human-Machine Interface for Controlling Maritime Unmanned Air Vehicles

vanBreda, L., Institute for Human Factors TNO, Netherlands; Nov. 1996; 8p; In English; Also announced as 19970018626; Copyright Waived; Avail: CASI; A02, Hardcopy; A03, Microfiche

Under contract by the Royal Netherlands Navy an exploratory study was conducted on the design of the user interface for Maritime Unmanned Air Vehicles (MUAVs) control. The goal of this study was to gain more insight into the various parameters that may influence system performance, given the present level of technology. Two simulator experiments were conducted. Results of a first experiment made clear that the image transmission rate of the downlink is a critical factor. It appeared that with a single MUAV, only combined sensor and airframe control leads to an acceptable tracking performance, in particular at short observation distances. For low sensor image update frequencies (less than 4 Hz), tracking becomes critical. Results of a second experiment revealed that the tracking performance in a MUAV supervisory control task is identical to the first experiment, even in high auditive/cognitive workload conditions. It is suggested to focus further research on ways to improve operator performance and awareness at low downlink transmission rates. This can be affected by integrating synthetic information on orientation and MUAV status into the sensor image.

Author

Man Machine Systems; Pilotless Aircraft; Human Factors Engineering; Teleoperators

Subject Term Index

A

ACCEPTABILITY, 3
ACCIDENTS, 7
ACOUSTICS, 1
AIR POLLUTION, 7
AIR TRAFFIC CONTROL, 10
AIR TRAFFIC CONTROLLERS (PERSONNEL), 11
AMPLITUDES, 10
ANIMALS, 1
ANTIBODIES, 2, 3
APPLICATIONS PROGRAMS (COMPUTERS), 7
APTITUDE, 9
ARABIAN SEA, 1
ARTIFICIAL INTELLIGENCE, 4
ARTIFICIAL SATELLITES, 3
AUGMENTATION, 3

B

BENZENE, 3
BINOCULAR VISION, 9
BIOCHEMISTRY, 6
BIOLOGICAL EFFECTS, 6
BIOLUMINESCENCE, 4
BIOMASS, 1
BLOOD, 7
BLOOD PLASMA, 8
BRAIN DAMAGE, 6

C

CANCER, 2, 3, 5, 6
CAPSULES, 4
CELLS (BIOLOGY), 2, 6
CENTRAL NERVOUS SYSTEM, 3
CHLORINATION, 3
CIRCADIAN RHYTHMS, 4
COMPUTERIZED SIMULATION, 10
CONDITIONING (LEARNING), 9
CONFERENCES, 4, 5
CONTAMINANTS, 3
COPPER, 8
COUETTE FLOW, 4
CYANIDES, 1, 6

D

DATA ACQUISITION, 3, 7, 9
DEOXYRIBONUCLEIC ACID, 5
DETECTION, 3
DISPLAY DEVICES, 10
DRUGS, 1, 4

E

ECOSYSTEMS, 1
EDUCATION, 10
ELECTROLYTES, 8
EPITHELIUM, 2
ERYTHROCYTES, 7, 8
EVALUATION, 10
EYE (ANATOMY), 9

F

FLUORESCENCE, 3
FREE RADICALS, 6

G

GANGLIA, 10
GAS CHROMATOGRAPHY, 5
GENE EXPRESSION, 6
GENES, 5
GENETICS, 5, 6

H

HANDLING EQUIPMENT, 3
HEALTH, 7
HELICOPTERS, 9
HEMOGLOBIN, 7
HUMAN FACTORS ENGINEERING, 11
HUMAN PERFORMANCE, 9
HYDRODYNAMICS, 4
HYPOVOLEMIA, 8

I

IMAGE MOTION COMPENSATION, 6
IMMUNE SYSTEMS, 6
IN-FLIGHT MONITORING, 9
INFORMATION PROCESSING (BIOLOGY), 9
INJURIES, 6
IONIZING RADIATION, 6

L

LAMINAR FLOW, 4
LENS DESIGN, 11
LIGHT EMISSION, 4
LIQUID PHASES, 4
LOWER BODY NEGATIVE PRESSURE, 8

M

MAMMARY GLANDS, 2, 5
MAN MACHINE SYSTEMS, 11
MARKERS, 5
MARKING, 3
MEDICAL SERVICES, 1
MICROBIOLOGY, 5
MICROGRAVITY, 8
MICROORGANISMS, 5
MODELS, 7
MONITORS, 3
MUTATIONS, 5

N

NEURAL NETS, 10
NEUROPHYSIOLOGY, 9
NYSTAGMUS, 9

O

OPTICAL TRACKING, 6
ORGANISMS, 5
OVARIES, 5
OXIDATION-REDUCTION REACTIONS, 6

P

PATHOGENESIS, 5
PHARMACOLOGY, 4
PHYSICAL EXERCISE, 8
PHYSIOLOGY, 8
PILOT PERFORMANCE, 9
PILOT TRAINING, 10
PILOTLESS AIRCRAFT, 11

PIPE FLOW, 4
PRODUCT DEVELOPMENT, 3
PROTEINS, 2
PSYCHOLOGICAL EFFECTS, 5
PSYCHOMOTOR PERFORMANCE, 10

R

RADIATION EFFECTS, 6
REFLEXES, 8
RISK, 6, 7
ROTATION, 8

S

SACCADIC EYE MOVEMENTS, 6
SEDIMENTS, 3
SIGNAL DETECTORS, 1
SOCIAL FACTORS, 9
SPACEBORNE EXPERIMENTS, 8
SPEECH RECOGNITION, 9
SPONTANEOUS EMISSION, 4

T

TARGETS, 10
TELEOPERATORS, 11
TOXIC HAZARDS, 7
TOXICITY, 5
TUMORS, 2

U

URINE, 8

V

VESTIBULES, 8
VHF OMNIRANGE NAVIGATION, 8
VISUAL ACUITY, 9
VISUAL OBSERVATION, 9
VISUAL PERCEPTION, 9

W

WORKSTATIONS, 11

Z

ZINC, 8
ZOOPLANKTON, 1

Personal Author Index

A

Ackerman, Phillip L., 9
Andrews, Dee H., 10
Arbib, Michael A., 10
Askins, Timothy M., 6
Audet, Kandy K., 1

B

Bischoff, A., 10

C

Convertino, Victor A., 7
Crowley, John, 8

D

Ding, Chuanyl, 6
Durnford, Simon, 8

E

Edgren, Kimberly K., 8
Edwards, Bernell J., 10

F

Fitzgibbons, J. C., 8
Funahiki, Kohei, 9

H

Haskin, F. Eric, 6
Hayes, Timothy L., 1
Holliday, D. V., 1

K

Kanfer, Ruth, 9
Kawahara, Hiroyasu, 9
Krantz, David M., 2

L

Latz, Michael I., 4
Lee, Moo Hoon, 8
Leopold, D. A., 8
Lindholm, Julie Mapes, 6
Lippert, Lloyd E., 7
Logothetis, N. K., 8
Lynch, Henry T., 5

M

Maes, Pattie, 4
Mataric, Maja J., 4
Mattoon, Joseph S., 10
Menton, Ronald G., 1
Merer, Jean-Arcady, 4
Mertens, Henry W., 10
Milburn, Nelda J., 10
Morgan, Stephen L., 5
Morrison, Dennis R., 3
Mosier, Benjamin, 3

N

Nakagawara, Van B., 11

O

OBannon, Deborah J. Mossman, 3
OBrien, Allison D., 4
Olson, Carl T., 1

P

Pazdernik, Thomas L., 5
Pollack, Jordan, 4

R

Read, Andrew J., 2
Reid, Frances M., 1
Resnick, Nicole M., 3
Rowse, Gerald J., 2
Rupert, Angus, 8

S

Schillaci, Mario E., 6
Shinn, David R., 10
Shope, Virginia C., 9
Summa, Kenneth J., 6

T

Tanaka, Keiji, 9
Thurman, Richard A., 10

V

vanBreda, L., 11

W

Wakairo, Kaoru, 9
Watanabe, Akira, 9
Watkins, William A., 2
Westgate, Andrew J., 2
Wetzel, Paul A., 6
Wilson, Stewart W., 4
Winstein, C. J., 10
Wood, Kathryn J., 11

Y

Young, Mary, 6

Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA SP-7011 (443)		

4. Title and Subtitle	5. Report Date
Aerospace Medicine and Biology A Continuing Bibliography (Supplement 443)	July 14, 1997
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
	10. Work Unit No.
9. Performing Organization Name and Address	
NASA Scientific and Technical Information Program Office	11. Contract or Grant No.

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
National Aeronautics and Space Administration Langley Research Center Hampton, VA 23681	Special Publication
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This report lists reports, articles and other documents recently announced in the NASA STI Database.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Aerospace Medicine Bibliographies Biological Effects	Unclassified – Unlimited Subject Category – 52

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	32	A03/HC

For sale by the NASA Center for AeroSpace Information, 800 Elkridge Landing Road, Linthicum Heights, MD 21090-2934