

Entry Checklist

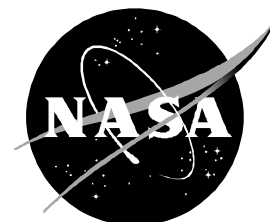
Mission Operations Directorate Operations Division

Generic, Rev F
April 24, 2002

NOTE
For STS-107 and subsequent flights

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



Verify this is the correct version for the pending operation (training, simulation or flight).
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MISSION OPERATIONS DIRECTORATE

ENTRY CHECKLIST

GENERIC, REVISION F

April 24, 2002

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ENT/ALL/GEN F

Incorporates the following:
482#: ENT-794A ENT-796

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DM43/ G. Jordan-Moore	483-1261
Deorbit Burn to Entry Interface	DM43/J. Patterson	483-1987
Entry Interface thru Rollout Post Landing	DM43/J. Patterson	483-1987



Replace this page with page(s) from Flight Supplement



Replace this page with page(s) from Flight Supplement

NOTES

1. The Wheels Stop/Egress Switch List, section 7, gives the vehicle configuration at these discrete times. If switch position difference exists between wheels stop and crew egress, egress position will be boxed beside wheels stop position. Section 7 contains switch configuration only for panels that are reconfigured during crew execution of procedures in sections 3, 4, and 5. Refer to DEORBIT PREP, section 3, for egress configuration for remaining panels.
2. This checklist is an all-vehicle book and is not complete for a specified flight without a Flight Supplement. To obtain complete checklist, incorporate Flight Supplement for specific flight of interest using instructions in Flight Supplement List of Effective Pages.
3. Entry related cue cards are contained in this document. Cue cards are listed in Entry Cue Card Config section. Some cue cards are printed in the body of checklist for MS use and also in the Entry Cue Card Config section for reference of crop marks and fabrication instructions.
4. Velcro placement, size, and shape of cue cards are controlled by Cue Card Book Manager.
5. Vehicle configuration or procedural steps that are applicable to a specific vehicle are indicated by xxx.

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ENTRY CHECKLIST

LIST OF EFFECTIVE PAGES

GENERIC 02/01/88

REV F 04/24/02

PCN-1 10/25/02

Sign Off *	ALL/GEN F	3-9	ALL/GEN F
ii *	ALL/GEN F	3-10	ALL/GEN F
iii *Δ	ALL/GEN F	3-11	ALL/GEN F
iv *Δ	ALL/GEN F	3-12	ALL/GEN F
v *	ALL/GEN F	A3-13	MEDS/GEN F
vi *	ALL/GEN F	A3-14	MEDS/GEN F
vii *	ALL/GEN F,1	B3-13	NOM/GEN F
viii *	ALL/GEN F,1	B3-14	NOM/GEN F
ix *	ALL/GEN F,1	3-15	ALL/GEN F
x *	ALL/GEN F,1	3-16	ALL/GEN F
xi *Δ	ALL/GEN F	3-17	ALL/GEN F
xii *Δ	ALL/GEN F	3-18	ALL/GEN F
FS xiii *	flt suppl	3-19	ALL/GEN F
FS xiv *	flt suppl	3-20	ALL/GEN F
xv	ALL/GEN F	3-21	ALL/GEN F
xvi	ALL/GEN F	3-22	ALL/GEN F
1-1 (3 pgs) . †	ALL/GEN F	3-23	ALL/GEN F
1-2 (3 pgs) . †	ALL/GEN F	3-24	ALL/GEN F
2-1	ALL/GEN F	3-25	ALL/GEN F
2-2 (6 pgs) . †	ALL/GEN F	3-26	ALL/GEN F
2-3 (6 pgs) . †	ALL/GEN F,1	3-27	ALL/GEN F
2-4	ALL/GEN F	3-28	ALL/GEN F
2-5 Δ	ALL/GEN F	3-29 Δ	ALL/GEN F
2-6 Δ	ALL/GEN F	3-30 Δ	ALL/GEN F
3-1 Δ	ALL/GEN F	A3-31	MEDS/GEN F
3-2 Δ	ALL/GEN F	A3-32	MEDS/GEN F
FS 3-3	flt suppl	B3-31	NOM/GEN F
FS 3-4	flt suppl	B3-32	NOM/GEN F
3-5	ALL/GEN F	3-33 Δ	ALL/GEN F
3-6	ALL/GEN F	3-34 Δ	ALL/GEN F
3-7	ALL/GEN F	A3-35	MEDS/GEN F
3-8	ALL/GEN F	A3-36	ALL/GEN F

* - Omit from flight book

Δ - Replace with page from Flight Supplement

† - Extra pages in crew copy only

B3-35	.....	NOM/GEN F	5-10	.....	ALL/GEN F
B3-36	.....	ALL/GEN F	5-11	.....	ALL/GEN F
3-37	.....	ALL/GEN F	5-12	.....	ALL/GEN F
3-38	.....	ALL/GEN F	A5-13	.....	ALL/GEN F
A3-39	.....	MEDS/GEN F	A5-14	.....	MEDS/GEN F
A3-40	.....	MEDS/GEN F	A5-15	.....	MEDS/GEN F
B3-39	.....	NOM/GEN F	A5-16	.....	MEDS/GEN F
B3-40	.....	NOM/GEN F	B5-13	.....	ALL/GEN F
3-41	.....	ALL/GEN F	B5-14	.....	NOM/GEN F
3-42	.....	ALL/GEN F	B5-15	.....	NOM/GEN F
A3-43	.....	MEDS/GEN F	B5-16	.....	NOM/GEN F
A3-44	.....	MEDS/GEN F	5-17	.....	ALL/GEN F
B3-43	.....	NOM/GEN F	5-18	.....	ALL/GEN F
B3-44	.....	NOM/GEN F	5-19	.....	Δ ALL/GEN F
4-1	.....	ALL/GEN F	5-20	.....	Δ ALL/GEN F
4-2	.....	ALL/GEN F	5-21	.....	ALL/GEN F
4-3	.....	ALL/GEN F	5-22	.....	ALL/GEN F
4-4	.....	ALL/GEN F	5-23	.....	ALL/GEN F
4-5	.....	ALL/GEN F	5-24	.....	ALL/GEN F
4-6	.....	ALL/GEN F	6-1	.....	ALL/GEN F
4-7	.....	Δ ALL/GEN F	6-2	.....	ALL/GEN F
4-8	.....	Δ ALL/GEN F	6-3	.....	ALL/GEN F
4-9	.....	ALL/GEN F	6-4	.....	ALL/GEN F
4-10	.....	ALL/GEN F	7-1	.....	* ALL/GEN F
4-11	.....	Δ ALL/GEN F	7-2	.....	* ALL/GEN F
4-12	.....	Δ ALL/GEN F	7-3	.....	* ALL/GEN F,1
4-13	.....	ALL/GEN F	7-4	.....	* ALL/GEN F,1
4-14	.....	ALL/GEN F	7-5	.....	* ALL/GEN F
4-15	.....	ALL/GEN F	7-6	.....	* ALL/GEN F
4-16	.....	ALL/GEN F	7-7	.....	* ALL/GEN F
5-1	.....	ALL/GEN F	7-8	.....	* ALL/GEN F,1
5-2	.....	ALL/GEN F,1	7-9	.....	* ALL/GEN F
A5-3	.....	MEDS/GEN F	7-10	.....	* ALL/GEN F
A5-4	.....	ALL/GEN F	8-1	.....	* ALL/GEN F
B5-3	.....	NOM/GEN F	CC 8-2	.....	* ALL/GEN F
B5-4	.....	ALL/GEN F	CC 8-3	.....	* ALL/GEN F
5-5	.....	ALL/GEN F	CC 8-4	.....	* ALL/GEN F
5-6	.....	ALL/GEN F	CC 8-5	.....	* ALL/GEN F
5-7	.....	ALL/GEN F	CC 8-6	.....	* ALL/GEN F
5-8	.....	ALL/GEN F	CC 8-7	.....	* ALL/GEN F
5-9	.....	ALL/GEN F	CC 8-8	.....	* ALL/GEN F

Δ – Replace with page from Flight Supplement

* – Omit from flight book

CC 8-9 * ALL/GEN F
CC 8-10 ... * ALL/GEN F
CC 8-11 * ALL/GEN F
CC 8-12 ... * ALL/GEN F
CC 8-13 ... * ALL/GEN F
CC 8-14 ... * ALL/GEN F
CC 8-15 ... * ALL/GEN F
CC 8-16 ... * ALL/GEN F
CC 8-17 ... * ALL/GEN F
CC 8-18 ... * ALL/GEN F
CC 8-19 ... * ALL/GEN F,1
CC 8-20 ... * ALL/GEN F
CC 8-21 ... * ALL/GEN F
CC 8-22 ... * ALL/GEN F
8-23 *Δ ALL/GEN F
8-24 *Δ ALL/GEN F

* - Omit from flight book

Δ - Replace with page from Flight Supplement

ENTRY CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
Deorbit Burn Flight Rules		
(Front)	CC 8-2	ENT-1a/D/I
(Back)	CC 8-3	ENT-1b/D/I
Deorbit Burn (RCS)		
(Front) (Top)	CC 8-4	ENT-3a/D/K
(Front) (Bottom)	CC 8-5	ENT-3aa/D/K
(Back) (Top)	CC 8-6	ENT-3b/D/D
(Back) (Bottom)	CC 8-7	ENT-3bb/D/D
Deorbit Burn (2 Eng)		
(Front) (Top)	CC 8-8	ENT-4a/D/K
(Front) (Bottom)	CC 8-9	ENT-4aa/D/I
Deorbit Burn (1 Eng)		
(Back) (Top)	CC 8-10	ENT-4b/D/I
(Back) (Bottom)	CC 8-11	ENT-4bb/D/J
Unbalanced Prplt Deorbit Burn		
(Front) (Top)	CC 8-12	ENT-5a/D/L
(Front) (Bottom)	CC 8-13	ENT-5aa/D/M
Deorbit Burn (Mixed Xfeed)		
(Back) (Top)	CC 8-14	ENT-5b/D/I
(Back) (Bottom)	CC 8-15	ENT-5bb/D/I
Entry Maneuvers		
(Front)	CC 8-16	ENT-6a/E/L
(Back)	CC 8-17	ENT-6b/E/Q
Entry NO-GO Checklist		
(Front)	CC 8-18	ENT-7a/E/I
ADTA Mgmt (Back)	CC 8-19	ENT-7b/E/N
Mach		
(Front)	CC 8-20	ENT-8a/A,E/C
(Back)	CC 8-20	ENT-8b/A,E/B
Deorbit Burn Monitor		
(Front)	see flt suppl	flt suppl
OMS Failures (Back)	see flt suppl	flt suppl
Entry Control (Front)	CC 8-21	ENT-10a/A,E/A
(Back)	CC 8-22	ENT-10b/A,E/A

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Replace this page with page(s) from Flight Supplement

(Replace with pages FS xii thru FS xiv)

xii

ENT/ALL/GEN F

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DEORBIT MNVR PADS	1-1
OMS PRPLT AND DEL PADS	2-1
DEORBIT BURN	3-1
OMS BURN PREP (CIL)	3-9
OMS/RCS POST BURN RECONFIG (CIL)	3-32
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h = 10K LES VISORS (HC)	4-5
POST LANDING PROCEDURES	5-1
1-ORBIT LATE DEORBIT PROCEDURES	6-1
SWITCH LIST AT WHEELS STOP EGRESS	7-1
ENTRY CUE CARD CONFIG	8-1

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DEORBIT MNVR PAD

OMS BOTH 1

L 2

R 3

RCS SEL 4

TV ROLL 5

TRIM LOAD

P 6 () .

LY 7 () .

RY 8 () .

WT 9

TIG 10 / : : .

TGT PEG 4

C1 14

C2 15 () .

HT 16 .

⊖T 17 .

PRPLT 18 ()

BURN ATT

R 24

P 25

Y 26

REI

TXX :

ΔVTOT .

TGO :

VGO X () .

VGO Y () .

VGO Z () .

HA HP

TGT ()

1-1

ENT/ALL/GEN F

NOTES

RCS I'CNCT:

- L OMS → RCS
- R OMS → RCS
- NONE

**MNVR
PADS**

**MNVR
PADS**

DEORBIT MNVR PAD

OMS BOTH 1

L 2

R 3

RCS SEL 4

TV ROLL 5

TRIM LOAD

P 6 () .

LY 7 () .

RY 8 () .

WT 9

TIG 10 / : : .

TGT PEG 4

C1 14

C2 15 () .

HT 16 .

⊖T 17 .

PRPLT 18 ()

BURN ATT

R 24

P 25

Y 26

REI

TXX :

ΔVTOT .

TGO :

VGO X () .

VGO Y () .

VGO Z () .

HA

HP ()

TGT

1-2

ENT/ALL/GEN F

NOTES

RCS I'CNCT:

- L OMS → RCS
- R OMS → RCS
- NONE

PRPLT/
DEL PADS

OMS PRPLT AND DEL PADS

2-1

ENT/ALL/GEN F

PRPLT/
DEL PADS

BURN CARD

OMS PRPLT PAD

<p>DEORBIT BURN (1 ENG)</p>	<p>OMS XFEED RETURN at $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> %</p>
<p>DEORBIT BURN (RCS)</p>	<p>RCS I'CNCT TK SW at $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> OMS PRPLT LOW: $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/></p>
<p>UNBALANCED PRPLT DEORBIT BURN</p>	<p>INITIAL CONFIG: <input type="checkbox"/> TK ISOLs - CL While feeding 2 OMS from 1 POD: OMS PRPLT FAIL: Secure <input type="checkbox"/> OMS Secure <input type="checkbox"/> OMS Interconnect <input type="checkbox"/> OMS to RCS THC + X for <input type="text"/> : <input type="text"/><input type="text"/> If <input type="checkbox"/> (XFEED) ENG '↓' When <input type="checkbox"/> OMS QTY: 5%: <input type="checkbox"/> OMS TK ISOL (two) - OP 4%: <input type="checkbox"/> OMS TK ISOL (two) - CL If <input type="checkbox"/> (STRAIGHT FEED) ENG '↓' OMS ENG FAIL: At $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> % <input type="checkbox"/> TK ISOL (two) - OP <input type="checkbox"/> TK ISOL (two) - CL Return to 2 ENG, 2 POD FLOW: At $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> <input type="checkbox"/> TK ISOLs - OP OMS ENG FAIL: (XFEED CUE) OMS QTY <input type="text"/><input type="text"/> %L or <input type="text"/><input type="text"/> %R</p>
<p>DEORBIT BURN (MIXED XFEED)</p>	<p>FEED FROM GOOD POD: At $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> % <input type="checkbox"/> OMS He PRESS (two) - OP TK ISOL (two) - OP XFEED (two) - OP Secure <input type="checkbox"/> OMS OMS PRPLT LOW: AFT RCS RECONFIG at $\Delta VTOT$ = <input type="text"/><input type="text"/><input type="text"/> OMS ENG FAIL: <input type="checkbox"/> OMS He PRESS (two) - OP TK ISOL (two) - OP <input type="checkbox"/> OMS XFEED (two) - CL</p>

DEL PAD

<u>PRE-DEORBIT</u>			
APU START: SINGLE APU START, ATTEMPT		<input type="checkbox"/>	APU(s)
APU START SEQUENCE		<input type="checkbox"/>	THEN <input type="checkbox"/>
<u>DEORBIT</u>			
BURN CUE CARD:			
OMS TIG SLIP – NO EXEC > TIG +		<input type="checkbox"/>	:
RCS DOWNMODING		<input type="checkbox"/>	:
STOP/CONTINUE CUES: L OMS FAIL HP		<input type="checkbox"/>	
R OMS FAIL HP		<input type="checkbox"/>	
OMS ENG FAIL XFEED QTY CUE		%L <input type="checkbox"/>	%R <input type="checkbox"/>
ENGINE FAIL HP		<input type="checkbox"/>	
SAFE HP		<input type="checkbox"/>	
TOT AFT QTY 1 (%)		<input type="checkbox"/>	
TOT AFT QTY 2 (%)		<input type="checkbox"/>	
PREBANK/FLIP HP		<input type="checkbox"/>	
AFT HP		<input type="checkbox"/>	
B/U SITE		<input type="checkbox"/>	
FRCS: DUMP TO % (USE TIME AS CUE)		<input type="checkbox"/>	OX <input type="checkbox"/>
		<input type="checkbox"/>	FU <input type="checkbox"/>
<u>ENTRY/LANDING</u>			
EI-5 MM303 INRTL ATT		R <input type="checkbox"/>	P <input type="checkbox"/>
MM304 PREBANK (ENT MNVR Cue Card)		<input type="checkbox"/>	L <input type="checkbox"/>
		<input type="checkbox"/>	R <input type="checkbox"/>
ALTM SET		<input type="checkbox"/>	
CLG INIT		<input type="checkbox"/>	:
EXPECTED AIL TRIM		<input type="checkbox"/>	L <input type="checkbox"/>
		<input type="checkbox"/>	R <input type="checkbox"/>
VREL 1ST REVERSAL		<input type="checkbox"/>	
XCG AT TD		<input type="checkbox"/>	
LAND SITE		<input type="checkbox"/>	
RWY		<input type="checkbox"/>	
		50K	/
		38K	/
<input type="checkbox"/> L <input type="checkbox"/> OVHD		deg <input type="checkbox"/>	MLS 28K
			/
<input type="checkbox"/> R <input type="checkbox"/> STRT		<input type="checkbox"/>	TAC 20K
			/
ΔT MACH .9 TO HAC		MAX Nz <input type="checkbox"/>	Nz LIMIT 12K
			/
		<input type="checkbox"/>	7K
			/
AIMPOINT		SPEEDBRAKE	3K
<input type="checkbox"/> NOM		<input type="checkbox"/> NOM <input type="checkbox"/>	% @ 3K 1K
			/
<input type="checkbox"/> CLOSE-IN		<input type="checkbox"/> S.F.	SURFACE
			/
<u>REMARKS:</u>			

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2–5

ENT/ALL/GEN F

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Replace this page with page(s) from Flight Supplement

(Replace with pages FS 3-2 thru FS 3-4)

3-2

ENT/ALL/GEN F

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST	

TIG-46

B FINAL DEORB UPDATE/UPLINK

MCC UPDATE:
 DEL PAD
 OMS PRPLT PAD
 MCC UPLINK:
 PASS SV
 BFS SV
 PASS TGT
 BFS TGT
 BFS IMU GYRO/ACCEL

C **G50** ✓LAND SITE per DEL PAD
 SET TACAN tw

C CRT1 On MCC GO:
 LOAD – ITEM 22 EXEC
 TIMER – ITEM 23 EXEC

CRT1,3 ✓PASS & BFS TGTs per MNVR PAD:
 BURN ATT
 ΔVTOT
 TGO
 HA HP

G51 SEL ATMOSPHERE:
 incl ≤ 50° ITEM 22 EXEC
 incl > 50° SEL ITEM NR (table)

Hemi	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
N Desc	23	23	23	23	22	24	24	24	22	23	23	23
S Asc	24	24	22	23	23	23	23	23	23	23	22	24
N Asc	22											
S Desc												

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST	

C OMS TVC GMBL CHECK

(Perform during S-band AOS)

CRT1 SECONDARY CHECK

Perform SEC L,R then PRI L,R GMBL CK

- * If down arrow(s) or Ms: *
- * Select good GMBL *

MS LES Pressure Integrity Check

P APU PRE-START

(Perform during S-band AOS)

R4 ✓HYD BRAKE ISOL VLV (three) tb – CL
 ✓LG EXTEND ISOL VLV tb – CL

- * If tb not CL: *
- * R2 (Aff) HYD CIRC PUMP – ON *
- * R4 (Aff) ISOL VLV – CL *
- * Hold 5 sec, ✓tb – CL *
- * R2 HYD CIRC PUMP – OFF *

R2 BLR N2 SPLY (three) – ON
 ✓PWR (three) – ON
 ✓CNTLR/HTR (three) – B
 ✓APU AUTO SHUTDN (three) – ENA
 CNTLR PWR (three) – ON
 HYD MN PUMP PRESS (three) – LO
 ✓APU SPEED SEL (three) – NORM
 ✓OPER (three) – OFF
 ✓FUEL TK VLV (three) – CL
 ✓cb FUEL TK VLV ENABLE (six) – CL

3: BFS, SM SYS SUMM 2

P R2 APU FUEL TK VLV (three) – OP
 ✓APU/HYD RDY tb (three) – gray
 APU FUEL TK VLV (three) – CL

2: GNC 50 HORIZ SIT

3: BFS, GNC 50 HORIZ SIT

1: GNC DEORB MNVR COAST	2: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT	

HORIZ SIT CONFIG

ALTM – ITEM 9 +

		.		
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	<u>PASS ITEM</u>		<u>BFS ITEM</u>	
PTI	INH	✓1		
LAND SITE (DEL PAD)		✓41		✓41
RWY (DEL PAD)		✓3		✓3
		✓4		✓4
TACAN (DEL PAD)		✓5		✓5
RA	blank	✓46		
TAEM TGT				
G&N	OVHD	✓6	blank	
HSI	blank		blank	
XEP	NEP	✓7	NEP	✓7
AIM (DEL PAD)	NOM (or CLSE)	✓8	NOM (or CLSE)	✓8
SPDBK	NOM	✓39		
TAC	INH	✓20	INH	✓20
GPS	INH	✓43	INH	✓43
DRAG H	AUT	✓22	AUT	✓22
ADTA H	INH	✓26	INH	✓26
ADTA TO G&C	INH	✓29	AUT	✓28
DES any failed TACANs		✓		✓
TAC	DELTA	✓35		
AIF_G	INH	✓48		

* If BFS engaged: *

* Set BFS HSD ITEMS to PASS config *

1: GNC DEORB MNVR COAST 2: GNC 50 HORIZ SIT

3: GNC 51 OVERRIDE

- ✓ELEVON AUTO – ITEM 17 (*)
- ✓SSME REPOS – ITEM 19 (ENA)
- ✓WRAP MODE – ITEM 45 (ENA)
- If PLB holding > 10K lb:
 - FILTER ALT – ITEM 21 EXEC (*)

3: BFS, GNC 51 OVERRIDE

- ✓ELEVON AUTO – ITEM 17 (*)
- ✓SSME REPOS – ITEM 19 (ENA)
- ✓WRAP MODE – ITEM 45 (ENA)
- If PLB holding > 10K lb:
 - ✓FILTER ALT – ITEM 21 (*)

- * DES any failed/comm faulted *
- * IMU, RGA, AA, or SURF feedback *

2: GNC DEORB MNVR COAST

3: BFS, GNC DEORB MNVR COAST

- ✓BFS GMBL sel config same as PASS GMBL sel config

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST	

P OMS BURN PREP

CRT2 OMS ENG TRIMS
 2 ENG BURN:
 ✓TRIM LOAD per MNVR PAD or:
 L,R – ITEM 6 +0.0 –5.7 +5.7 EXEC

```

. . . . .
. 1 ENG BURN:
. ✓TRIM LOAD per MNVR PAD or:
.   P – ITEM 6 +0.0 EXEC
.   Good eng Y:
.     LY – ITEM 7 +5.2 EXEC
.     RY – ITEM 8 –5.2 EXEC
.   XFEED: Failed engine prop to
.     good engine
. . . . .
  
```

```

. . . . .
. RCS DEORBIT OR RCS
. He/PRPLT TK FAIL
. Do not terminate OMS/RCS
. Interconnect
. . . . .
  
```

O7 AFT L,R RCS
 He PRESS (four) – OP (tb–OP)
 TK ISOL (six) – GPC (tb–OP)
 XFEED (four) – GPC (tb–CL)
 ✓MSTR RCS XFEED – OFF

O8 L,R OMS
 ✓He PRESS/VAP ISOL (four) – CL
 ✓TK ISOL (four) – OP (tb–OP)
 ✓XFEED (four) – CL (tb–CL)
 FWD RCS
 He PRESS (two) – OP (tb–OP)

1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST

3: BFS, GNC DEORB MNVR COAST

· · · · ·
· **RCS BURN PREP** ·
· P O8 L,R OMS ·
· ✓He PRESS/VAP ISOL (four) – CL ·
· ✓TK ISOL (four) – OP (tb-OP) ·
· L OMS XFEED (two) – OP (tb-OP) ·
· ✓R OMS XFEED (two) – CL (tb-CL) ·
· O7 AFT L,R RCS ·
· XFEED (four) – OP (tb-OP) ·
· TK ISOL (six) – CL (tb-CL) ·
· · · · ·

MS3 Remove and stow Side Hatch UV Filter
 and Locking Device, and Pyro Box
 Safing Pin

TIG-25 **VENT DOOR CLOSE**

NOTE

VENT DOOR CLOSE must be
performed prior to MM302 transition

2: GNC 51 OVERRIDE

CRT2 VENT DOOR CNTL CLOSE – ITEM 44
 EXEC

1: GNC DEORB MNVR COAST | 2: GNC 51 OVERRIDE

3: BFS, GNC DEORB MNVR COAST

2: GNC DEORB MNVR COAST

B DEORB UPDATE/UPLINK (if reqd)

MCC UPDATE:
DEL PAD
OMS PRPLT PAD

MCC UPLINK:
PASS,BFS SV
PASS,BFS TGT

C **G50** ✓LAND SITE per DEL PAD

SET TACAN tw

MS1/MS2 SEAT INGRESS

On MCC GO:

CRT1 LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC

CRT1,3 ✓PASS & BFS TGTs per MNVR PAD:

BURN ATT
ΔVTOT
TGO
HA HP

C CRT1 GNC, OPS 302 PRO

1: GNC DEORB MNVR COAST | 2: GNC 51 OVERRIDE

3: BFS, GNC DEORB MNVR COAST

**MCC/CREW GO/NO-GO FOR DEORBIT
BURN**

*		IF NO-GO FOR DEORBIT	*
*		BURN:	*
*	P R2	HYD MN PUMP PRESS (three) –	*
*		NORM	*
*	C CRT1	GNC, OPS 301 PRO	*

.....
IF 1 ORBIT DELAY:
Go to section 6, 1-ORB LATE
.....

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC DEORB MNVR EXEC	

```

. . . . .
: IF 24-HR EXTENSION :
: P O7 AFT L,R RCS :
: He PRESS A (two) - GPC (tb-OP) :
: B (two) - CL (tb-CL) :
: TK ISOL (six) - OP (tb-OP) :
: XFEED (four) - CL (tb-CL) :
: O8 FWD RCS :
: He PRESS A - GPC (tb-OP) :
: B - CL (tb-CL) :
: C6 Unstow ORB PKT C/L :
: Terminate Deorbit Procedures, :
: go to DEORB PREP, D/O PREP :
: BACKOUT :
. . . . .

```

TIG-20> **MNVR TO DEORBIT BURN ATT**

```

C C3 ✓DAP: AUTO
B F6/F8 ✓ADI ATT (two) - INRTL
      ✓ERR (two) - MED
      ✓RATE (two) - MED
C MNVR to BURN ATT
  (✓ADI ATT with CRT BURN ATT)
B Copy last DEL PAD and OMS PRPLT PAD
  data on DEORBIT BURN Cue Cards
F6/F8 ✓DEORBIT BURN and DEORBIT BURN
      MONITOR Cue Cards installed
A14 RCS/OMS HTR
     FWD RCS - OFF
     L POD (two) - A OFF,B OFF
     R POD (two) - A OFF,B OFF
     OMS CRSFD LINES (two) -
     A AUTO,B AUTO
     FWD RCS JET 5 (one) - OFF
     AFT RCS JET 5 (one) - OFF

```

1: GNC DEORB MNVR EXEC | 2: GNC DEORB MNVR EXEC
3: BFS, SM SYS SUMM 2

TIG-5> P **SINGLE APU START** (Attempt one APU)

R2 APU FUEL TK VLV – OP
OPER – START/RUN

MDU ✓HYD PRESS ind – LO green

- * If no start, shut down APU *
- * (ENT PKT, APU/HYD) *
- * Do not execute Deorbit Burn *

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT $\pm 5^\circ$

B Go to DEORBIT BURN (Cue Card)

MEDS

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, SM SYS SUMM 2	

TIG-5> P **SINGLE APU START** (Attempt two APUs)

R2 APU FUEL TK VLV – OP
OPER – START/RUN

MDU ✓HYD PRESS ind – LO green

* If no start:	*
* APU OPER – OFF	*
* Start another APU	*
* If second APU starts,	*
* shut down unstarted APU	*
* (ENT PKT, <u>APU/HYD</u>) >>	*
* If neither starts,	*
* • Do not start third APU	*
* • Do not execute Deorbit Burn	*
* • Shut down unstarted APUs	*
* (ENT PKT, <u>APU/HYD</u>) >>	*

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT ± 5°

B Go to DEORBIT BURN (Cue Card)

MEDS

1: GNC DEORB MNVR EXEC 2: GNC DEORB MNVR EXEC
3: BFS, SM SYS SUMM 2

TIG-5> P **SINGLE APU START** (Attempt one APU)

R2 APU FUEL TK VLV – OP
OPER – START/RUN

F8 ✓HYD PRESS ind – LO green

* If no start, shut down APU *
* (ENT PKT, APU/HYD) *
* Do not execute Deorbit Burn *

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT $\pm 5^\circ$

B Go to DEORBIT BURN (Cue Card)

NOM

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, SM SYS SUMM 2	

TIG-5> P **SINGLE APU START** (Attempt two APUs)

R2 APU FUEL TK VLV – OP
OPER – START/RUN

F8 ✓HYD PRESS ind – LO green

* If no start: *

* APU OPER – OFF *

* Start another APU *

* *

* If second APU starts, *

* shut down unstarted APU *

* (ENT PKT, APU/HYD) >> *

* If neither starts, *

* • Do not start third APU *

* • Do not execute Deorbit Burn *

* • Shut down unstarted APUs *

* (ENT PKT, APU/HYD) >> *

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT ± 5°

B Go to DEORBIT BURN (Cue Card)

NOM

B3-14

ENT/NOM/GEN F



DEORBIT BURN CARDS

**BURN
CARDS**



MS ONLY

3-15

ENT/ALL/GEN F



**DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE**

ENT-1a/D/I

**BURN
CARDS**

	FAILURE	PRE TIG		POST TIG
		Delay (max)		Stop Burn, > Safe HP
		One Orbit	One Day	
	APU/HYD			
1	No APU operating	X		
	LDG/DECEL			
2	NWS (KSC)	X		
	DPS			
3	RDNT fail, Split		X	X
4	1 GPC	X		
5	BFS		X	
6	GPC BITE (Multiple GPCs)		X	
	ECLS			
7	2 Av Bay Fans in Bay 3	X		
8	2 Av Bay Fans in Bay 1 or 2		X	
	ELEC			
9	H2 Manf or TK leak (not in depleted tk(s) _____)	X		
10	2 MN Buses		X	X
11	CNTL CA1 (No BFS Engage in GPC 3/5)		X	
12	Multi Φ AC BUS (unshorted)	X		
	GNC			
13	1 MLS (if reqd), IMU, or TACAN (C-band not avail)	X		
14	IMU Dilemma		X	X
15	RHC Dilemma	X		
16	2 IMUs		X	
17	3 ADTAs	X		
	HOOK VELCRO			
18	2 ADTAs, AAs, RGAs, FCS (LKBD not avail)	X		
	OMS			
19	Prplt Tank	X		X ①
20	Ignition (neither eng ignites)	X		
21	Both OMS Eng fail			X ②
22	Prplt Lk after LAST LOS		perigee adjust	
	AFT RCS			
23	2 jets, same direction, same pod ..	X		
24	Prplt Lk after LAST LOS	X		
25	1 AFT RCS PROP TK fail	X		
	COMM			
26	MCC GO for DEORBIT not rcvd ..		X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)

② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE NOT AVAILABLE ENT-1b/D/I

	FAILURE	PRE TIG	POST TIG
		Delay (max)	Stop Burn, > Safe HP
		One Day	
	APU/HYD		
1	No APU operating	X	
	LDG/DECEL		
2	NWS (KSC)	X	
	DPS		
3	RDNT fail, Split	X	X
4	1 GPC		
5	BFS	X	
6	GPC BITE (Multiple GPCs)	X	
	ECLS		
7	2 Av Bay Fans in Bay 3		
8	2 Av Bay Fans in Bay 1 or 2	X	
	ELEC		
9	H2 Manf or TK leak (not in depleted tk(s) _____)	X	
10	2 MN Buses	X	X
11	CNTL CA1 (No BFS Engage in GPC 3/5)	X	
12	Multi ΦAC BUS (unshorted)		
	GNC		
13	1 MLS (if reqd), IMU, or TACAN (C-band not avail)	X	
14	IMU Dilemma	X	X
15	RHC Dilemma	X	
16	2 IMUs	X	
17	3 ADTAs		
	HOOK VELCRO		HOOK VELCRO
18	2 ADTAs, AAs, RGAs, FCS (LKBD not avail)	X	
	OMS		
19	Prplt Tank	X	X ①
20	Ignition (neither eng ignites)	X	
21	Both OMS Eng fail		X ②
22	Prplt Lk after LAST LOS	perigee adjust	
	AFT RCS		
23	2 jets, same direction, same pod	X	
24	Prplt Lk after LAST LOS	X	
25	1 AFT RCS PROP TK FAIL	X	
	COMM		
26	MCC GO for DEORBIT not rcvd	X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)

② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

DEORBIT BURN (2 ENG)

✓MM302 ✓OMS BOTH
Enter TGO + 5 sec
✓TRIM per MNVR PAD or P +0.0, LY -5.7, RY +5.7
L,R OMS He PRESS/VAP ISOL A (two) - GPC
B (two) - OP
✓DAP - AUTO(PASS)/DISC
ADI - LVLH(REF)/HI/MED
FLT CNTLR PWR (two) - ON

TIG-2 OMS ENG (two) - ARM/PRESS
- :15 EXEC (NO EXEC > TIG + :)
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
:00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)
If no OMS ignition: APUs - SHUT DN

* **OMS PRPLT FAIL:** *
* Failed OMS ENG - OFF *
* STOP BURN: *
* Good OMS ENG - OFF *
* APUs - SHUT DN *
* Secure aff OMS *
* ----- *
* CONTINUE BURN: *
* ITEM 18 +Q EXEC *
* When good OMS QTY: *
* 5%: L,R OMS XFEED (four) - OP *
* 4%: Good OMS TK ISOL (two) - CL *
* If OMS Pc < 80 or OMS TEMP, *
* OMS ENG - OFF *
* ✓ADI - LVLH, center needles *
* RCS COMPLETION *
* **OMS ENG FAIL:** *
* Failed OMS ENG - OFF *
* OMS XFEED at 1/2 ΔVTOT at fail *
* or OMS QTY %L or %R *
* **2nd OMS FAIL (ENG or PRPLT):** *
* Failed OMS ENG - OFF *
* If PRPLT FAIL: *
* Secure aff OMS *
* ITEM 18 +Q EXEC *
* Both Either *
* ENG FAIL PRPLT FAIL *
* HP (SAFE) HP STOP BURN: *
* APUs - SHUT DN *
* ----- *
* CONTINUE BURN: *
* ✓ADI - LVLH, center needles *
* Interconnect good OMS to RCS *
* THC +X (✓OMS% vs RCS Burn Time) *
* RCS I'CNCT TK SW (N/A PRPLT FAIL) *
* THC +X (✓OMS% vs RCS Burn Time) *
* AFT RCS RECONFIG *
* RCS COMPLETION *
* ENT-4a/D/K *
* |

* **RCS COMPLETION:**

* THC +X to TGT HP or TOT AFT QTY 1 %

* At AFT QTY 1 if CUR HP: THC +X to PREBANK/FLIP HP or
 * TOT AFT QTY 2 % then
 * PREBANK/FRCS COMPLETION

* PREBANK/FLIP HP -----
 * PREBANK/FRCS COMPLETION

* AFT HP -----
 * THC +X to TGT HP

* TGT HP -----

* **FRCS COMPLETION (if applicable):**

* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
 * THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)

CUTOFF

+ :02 OMS ENG(s) – OFF (If < 3 IMU, at :)
 * AFT RCS RECONFIG if INTERCONNECT *
 Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

ENT-4aa/D/I

DEORBIT BURN (1 ENG)

- ✓MM302 ✓OMS L or R
- ✓OMS BURN CONFIG (L or R XFEED)
Enter TGO + 10 sec
- ✓TRIM per MNVR PAD or P +0.0, LY +5.2, RY -5.2
- L,R OMS He PRESS/VAP ISOL A (two) - OP
..... Wait 2 sec B (two) - OP
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON
- TIG-2 Good OMS ENG - ARM/PRESS [] : [] [])
- :15 EXEC (NO EXEC > TIG + [] : [] [])
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)
- * If no OMS ignition: APUs - SHUT DN *

OMS XFEED RETURN at ΔVTOT = [] [] []
or [] [] [] at [] [] [] %

L,R OMS TK ISOL (four) - OP
XFEED (four) - CL

```

* OMS PRPLT FAIL: *
* OMS ENG - OFF *
* * * * *
* STOP BURN: *
* APUs - SHUT DN *
* Secure aff OMS *
SAFE [ ] [ ] ----- *
HP [ ] [ ] *
* CONTINUE BURN: *
* Secure aff OMS *
* ITEM 18 +Q EXEC *
* ✓ADI - LVLH, center needles *
* Interconnect good OMS to RCS *
* THC +X(✓OMS% vs RCS Burn Time) *
* AFT RCS RECONFIG *
* RCS COMPLETION *
* OMS ENG FAIL: *
* OMS ENG - OFF *
* * * * *
* STOP BURN: *
* APUs - SHUT DN *
ENG [ ] [ ] [ ] ----- *
FAIL [ ] [ ] [ ] *
HP [ ] [ ] [ ] *
* CONTINUE BURN: *
* ✓ADI - LVLH, center needles *
* Interconnect OMS to RCS *
* THC +X(✓OMS% vs RCS Burn Time) *
* RCS ICNCT TK SW *
* THC +X (✓OMS% vs RCS Burn Time) *
* AFT RCS RECONFIG *
* RCS COMPLETION *
* RCS +X JET FAIL OFF: *
* STOP BURN: *
SAFE [ ] [ ] ----- *
HP [ ] [ ] *
* CONTINUE BURN: *
* ITEM 18 +Q EXEC *
* [G23] Resel jets *
  
```

ENT-4b/D/I

* **RCS COMPLETION:** *
 * THC +X to TGT HP or TOT AFT QTY 1 % *
 * *
 * At AFT QTY 1 THC +X to PREBANK/FLIP HP or *
 * if CUR HP: TOT AFT QTY 2 % then *
 * PREBANK/FRCS COMPLETION *
 * PREBANK/FLIP ----- *
 * HP PREBANK/FRCS COMPLETION *
 * *
 * AFT ----- *
 * HP THC +X to TGT HP *
 * *
 * TGT ----- *
 * HP *
 * *
 * **FRCS COMPLETION (if applicable):** *
 * MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
 * THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *

CUTOFF
 + :02 OMS ENG – OFF (If < 3 IMU, at :)
 * AFT RCS RECONFIG if INTERCONNECT *
 Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

ENT-4bb/D/J

DEORBIT BURN (RCS)

- ✓MM302 ✓RCS SEL
- ✓RCS BURN CONFIG (L OMS I'CNCT)
 - L,R OMS He PRESS/VAP ISOL A (two) - OP
 - Wait 2 sec B (two) - OP
- ✓DAP - INRTL/DISC
- ADI - LVLH(REF)/MED/MED
- FLT CNTLR PWR (two) - ON

TIG THC +X (No deorbit > TIG + :)
 Maintain PITCH ATT ERR ± 3°
 Monitor ΔVTOT:
 RCS I'CNCT TK SW at ΔVTOT =
 R OMS XFEED (two) - OP
 L OMS XFEED (two) - CL

OMS PRPLT LOW

AFT RCS RECONFIG AT ΔVTOT =
 RCS COMPLETION

*** OMS PRPLT FAIL (MULTIPLE JETS FAIL OFF):**

```

*   Secure aff OMS
*
*   STOP BURN:
*   SAFE  ..... APUs - SHUT DN
*   HP
*
*   CONTINUE BURN:
*   ITEM 18 +0 EXEC
*   G23 Resel jets
*   Interconnect good OMS to RCS
*   THC +X (✓OMS% vs RCS Burn Time)
*   AFT RCS RECONFIG
*   RCS COMPLETION
  
```

*** RCS +X JET FAIL OFF:**

```

*   STOP BURN:
*   SAFE  ..... APUs - SHUT DN
*   HP
*
*   CONTINUE BURN:
*   ITEM 18 +0 EXEC
*   G23 Resel jets
  
```

ENT-3a/D/K

* **RCS COMPLETION:**

* THC +X to TGT HP or TOT AFT QTY 1 %

* At AFT QTY 1 if CUR HP: THC +X to PREBANK/FLIP HP or
 * TOT AFT QTY 2 % then
 * PREBANK/FRCS COMPLETION

* PREBANK/FLIP -----
 * HP PREBANK/FRCS COMPLETION

* AFT -----
 * HP THC +X to TGT HP

* TGT -----
 * HP

* **FRCS COMPLETION (if applicable):**

* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
 * THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)

CUTOFF VGOx = 0, release THC
 AFT RCS RECONFIG
 Trim Inplane X,Z residuals < 2 fps (< 0.5 if shallow)

ENT-3aa/D/K


```

* OMS PRPLT FAIL:
* Failed OMS ENG - OFF
*
* L OMS R OMS STOP BURN:
* FAIL HP FAIL HP Good OMS ENG - OFF
*
* [ ] [ ] [ ] [ ] [ ] [ ] APU's - SHUT DN
* [ ] [ ] [ ] [ ] [ ] [ ] Secure aff OMS
* -----
* CONTINUE BURN:
* ITEM 18 +Q EXEC
* When good OMS QTY:
* 5%: L,R OMS XFEED (four) - OP
* 4%: Good OMS TK ISOL (two) - CL
* If OMS Pc < 80 or OMS TEMP,
* OMS ENG - OFF
* ✓ADI - LVLH, center needles
* RCS COMPLETION
*
* OMS ENG FAIL:
* Failed OMS ENG - OFF
* OMS XFEED at 1/2 ΔVTOT at fail [ ] [ ] [ ]
* or OMS QTY [ ] [ ] %L or [ ] [ ] %R
*
* 2nd OMS FAIL (ENG or PRPLT):
* Failed OMS ENG - OFF
* If PRPLT FAIL:
* Secure aff OMS
* ITEM 18 +Q EXEC
*
* Both Either
* ENG FAIL PRPLT FAIL
* HP (SAFE) HP STOP BURN:
*
* [ ] [ ] [ ] [ ] [ ] [ ] APU's - SHUT DN
* -----
* CONTINUE BURN:
* ✓ADI - LVLH, center needles
* Interconnect Good OMS to RCS
* THC +X (✓OMS% vs RCS Burn Time)
* RCS I'CNCT TK SW (N/A PRPLT FAIL)
* THC +X (✓OMS% vs RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1 [ ] [ ] [ ] %
*
* At AFT QTY 1 THC +X to PREBANK/FLIP HP or
* if CUR HP: TOT AFT QTY 2 [ ] [ ] [ ] % then
* PREBANK/FRCS COMPLETION
*
* PREBANK/FLIP [ ] [ ] -----
* HP PREBANK/FRCS COMPLETION
* -----
* AFT [ ] [ ] -----
* HP THC +X to TGT HP
* -----
* TGT [ ] [ ] -----
* HP
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
* CUTOFF
* + :02 OMS ENG(s) - OFF (If < 3 IMU, at [ ] : [ ] [ ] )
* * AFT RCS RECONFIG if INTERCONNECT *
* Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5aa/D/M

MS ONLY

3-25

ENT/ALL/GEN F

DEORBIT BURN (MIXED XFEED)

- ✓MM302 ✓OMS L(R) or RCS
Enter TGO + 10 sec
- ✓L,R OMS TK ISOL (four) – GPC
 ✓XFEED (four) – GPC
- ✓tb config from table (OMS SSR-1)
- ✓DAP – AUTO(PASS)/DISC
 ADI – LVLH(REF)/HI/MED
 FLT CNTLR PWR (two) – ON
- Man repress to maintain good OMS Tk Ps > 234 psi (simo)
- If OMS BURN INITIATION:
 - ✓TRIM per MNVR PAD or: P +0.0, LY +5.2, RY -5.2
 - Good OMS ENG – ARM/PRESS
- TIG-2:
 - :15 EXEC (No EXEC > TIG + :)
 - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
 - :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)
 * If no OMS ignition, APUs – SHUT DN *
- If RCS BURN INITIATION:
 - Man repress L,R OMS > L,R RCS TK Ps
 - L,R RCS XFEED (four) – OP
 TK ISOL (six) – CL
- :00 THC +X (No Deorbit > TIG + :)
 Maintain PITCH ATT ERR ± 3°

FEED FROM GOOD POD:

at ΔVTOT =

or at %

- OMS He PRESS/VAP ISOL (two) – OP
- TK ISOL (two) – OP (tb-OP)
- XFEED (two) – OP (tb-OP)
- SECURE OMS

```

• OMS PRPLT LOW
• AFT RCS RECONFIG at ΔVTOT =   
• RCS COMPLETION
  
```

ENT-5b/D/I

```

* OMS PRPLT FAIL: *
* OMS ENG - OFF *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
* Secure L,R OMS *
SAFE   ----- *
HP *
* CONTINUE BURN: *
* Secure L,R OMS *
* ITEM 18 +0 EXEC *
* ✓ADI - LVLH, center needles *
* RCS COMPLETION *
* OMS ENG FAIL: *
* OMS ENG - OFF *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
ENG    ----- *
FAIL *
HP *
* CONTINUE BURN: *
* Man repress L,R OMS > L,R RCS TK Ps *
* FEED FROM GOOD POD: *
*  OMS HE PRESS/VAP ISOL *
* (two) - OP *
* TK ISOL (two) - OP *
*  OMS XFEED (two) - CL *
* L,R RCS XFEED (four) - OP *
* TK ISOL (six) - CL *
* ✓ADI - LVLH, center needles *
* THC +X (✓Lowest OMS % vs *
* RCS Burn Time) *
* AFT RCS RECONFIG *
* RCS COMPLETION *
* RCS +X JET FAIL OFF: *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
SAFE    ----- *
HP *
* CONTINUE BURN: *
* ITEM 18 +0 EXEC *
* G23 Resel jet *
* RCS COMPLETION: *
* *
* THC +X to TGT HP or TOT AFT QTY 1    % *
* *
* At AFT QTY 1 THC +X to PREBANK/FLIP HP or *
* if CUR HP: TOT AFT QTY 2   % then *
* PREBANK/FRCS COMPLETION *
* PREBANK/FLIP   ----- *
* HP PREBANK/FRCS COMPLETION *
* *
* AFT   ----- *
* HP THC +X to TGT HP *
* *
* TGT   ----- *
* HP *
* FRCS COMPLETION (if applicable): *
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *
* *
CUTOFF VGOx = 0, Release THC
+ :02 OMS ENG(s) - OFF (If < 3 IMU, at  :   )
* AFT RCS RECONFIG if INTERCONNECT *
Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5bb/D/I

— | |

| | —

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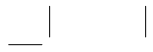
MS ONLY

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ENT/ALL/GEN F

— | |

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Replace this page with page(s) from Flight Supplement



Replace this page with page(s) from Flight Supplement

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

```

*           If no OMS IGNITION at TIG:           *
*           OMS ENG (two) – OFF                       *
*           ✓APU – SHUT DN                             *
* C3        MSTR MADS PWR – OFF                       *
* O8        L,R OMS                                   *
*           He PRESS/VAP ISOL (four) – CL            *
*           ✓XFEED (four) – CL                       *
*           GNC, OPS 301 PRO                          *
* F6,F8     FLT CNTLR PWR (two) – OFF                 *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS                          *
*
*           If burn terminated with HP > SAFE HP: *
*           ✓OMS ENG (two) – OFF                       *
*           ✓APU – SHUT DN                             *
* C3        MSTR MADS PWR – OFF                       *
*           OPS 301 PRO                               *
*           If I'CNCT:                                *
*           DAP: INRTL/PULSE                          *
* O8        L, R OMS                                   *
*           He PRESS/VAP ISOL (four) – CL            *
*           ✓XFEED (four) – CL                       *
* O7        AFT L,R RCS                               *
*           He PRESS A (two) – GPC (tb-OP)           *
*           B (two) – CL (tb-CL)                     *
*           TK ISOL (six) – OP (tb-OP)               *
*           XFEED (four) – CL (tb-CL)                *
* O8        FWD RCS                                   *
*           He PRESS A – GPC (tb-OP)                 *
*           B – CL (tb-CL)                           *
* F6,F8     FLT CNTLR PWR (two) – OFF                 *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS on DEORBIT DELAY        *
*           of 24 hr                                  *

```

**POST
BURN**

MEDS

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

MS Stow Flight Deck SpOC

B F6,F8 FLT CNTLR PWR (two) – OFF
C3 ✓DAP: AUTO

OMS/RCS POST BURN RECONFIG

P O7 AFT L,R RCS
✓He PRESS (four) – OP (tb–OP)
✓TK ISOL (six) – GPC (tb–OP)
✓XFEED (four) – GPC (tb–CL)

O8 L,R OMS
He PRESS/VAP ISOL (four) – CL
✓TK ISOL (four) – OP (tb–OP)

* If OMS PRPLT FAIL, *
* ✓Aff TK ISOL (two) – CL *

XFEED (four) – CL (tb–CL)

O3 RCS/OMS PRESS sel – RCS as reqd
PRPLT QTY sel – RCS as reqd

POST
BURN

MEDS

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

```

*           If no OMS IGNITION at TIG:           *
*           OMS ENG (two) – OFF                       *
*           ✓APU – SHUT DN                             *
* C3        MSTR MADS PWR – OFF                       *
* O8        L,R OMS                                   *
*           He PRESS/VAP ISOL (four) – CL            *
*           ✓XFEED (four) – CL                       *
*           GNC, OPS 301 PRO                          *
* F7,F8    FLT CNTLR PWR (two) – OFF                 *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS                          *
*
*           If burn terminated with HP > SAFE HP: *
*           ✓OMS ENG (two) – OFF                       *
*           ✓APU – SHUT DN                             *
* C3        MSTR MADS PWR – OFF                       *
*           OPS 301 PRO                               *
*           If I'CNCT:                                *
*           DAP: INRTL/PULSE                          *
* O8        L, R OMS                                   *
*           He PRESS/VAP ISOL (four) – CL            *
*           ✓XFEED (four) – CL                       *
* O7        AFT L,R RCS                               *
*           He PRESS A (two) – GPC (tb-OP)           *
*           B (two) – CL (tb-CL)                     *
*           TK ISOL (six) – OP (tb-OP)               *
*           XFEED (four) – CL (tb-CL)                 *
* O8        FWD RCS                                   *
*           He PRESS A – GPC (tb-OP)                 *
*           B – CL (tb-CL)                           *
* F7,F8    FLT CNTLR PWR (two) – OFF                 *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS on DEORBIT DELAY       *
*           of 24 hr                                  *

```

**POST
BURN**

NOM

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

MS Stow Flight Deck SpOC

B F7,F8 FLT CNTLR PWR (two) – OFF
 C3 ✓DAP: AUTO

OMS/RCS POST BURN RECONFIG

P O7 AFT L,R RCS
 ✓He PRESS (four) – OP (tb–OP)
 ✓TK ISOL (six) – GPC (tb–OP)
 ✓XFEED (four) – GPC (tb–CL)

O8 L,R OMS
 He PRESS/VAP ISOL (four) – CL
 ✓TK ISOL (four) – OP (tb–OP)

* If OMS PRPLT FAIL, *
 * ✓Aff TK ISOL (two) – CL *

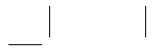
XFEED (four) – CL (tb–CL)

O3 RCS/OMS PRESS sel – RCS as reqd
 PRPLT QTY sel – RCS as reqd

POST
 BURN

NOM

Replace this page with page(s) from Flight Supplement



Replace this page with page(s) from Flight Supplement



1: GNC 53 ENTRY CONTROLS	2: BFS, GNC SYS SUMM 2
3: GNC DEORB MNVR COAST	

EI-20 C **SECONDARY ACTUATOR CHECK**
(if not previously performed and time permits)

NOTE

If port does not bypass during check, bypass affected port after check:

SEC ACT BYPASS – ITEM 8 +X X EXEC

If affected port still does not bypass:

SEC ACT RESET – ITEM 9 +X X EXEC

- R2 1. HYD MN PUMP PRESS (one) – NORM
- CRT3 2. SURF DRIVE ON, ITEM 39 EXEC (*)
Wait at least 5 sec
- MDU ✓SPI: Stop drive test when elevon posns
within +12° to -27°
SURF DRIVE OFF, ITEM 40 EXEC (*)
- CRT1 3. ✓POS STIM ENA, ITEM 7 – (no *)
- C3 4. ✓FCS CH 1,2,3,4 – AUTO
- CRT1 5. SEC ACT CK, CH 1 – ITEM 1 EXEC (*)
START – ITEM 5 EXEC (*)
- 6. ✓All CH 1 PORTS BYPASS, '↓'
STOP – ITEM 6 EXEC (*)
- C3 7. FCS CH 1 – ORIDE
- CRT1 ✓All CH 1 PORTS RESET, no '↓'
FCS CH 1 – AUTO
- 8. Repeat steps 5 thru 7 for CH 2,3,4

MEDS

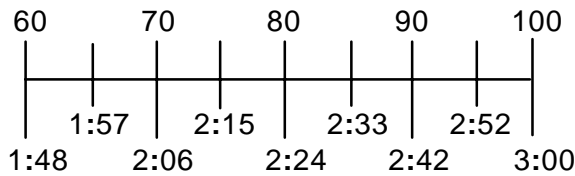
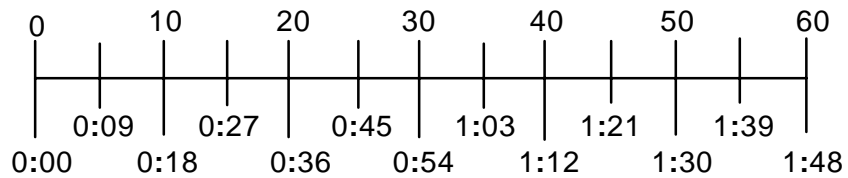
1: GNC 23 RCS	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

EI-18 P **FORWARD RCS DUMP**
 (Use for off-nominal X cg entry)

Determine FWD RCS 'DUMP TO %' using lowest of Ox or Fu qty (calculator or DEL PAD)

FOUR JET DUMP:

F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

NOTE
 During dump disregard FRCS qty

1: GNC 53 ENTRY CONTROLS	2: BFS, GNC SYS SUMM 2
3: GNC DEORB MNVR COAST	

EI-20 C **SECONDARY ACTUATOR CHECK**
(if not previously performed and time permits)

NOTE

If port does not bypass during check, bypass affected port after check:

SEC ACT BYPASS – ITEM 8 +X X EXEC

If affected port still does not bypass:

SEC ACT RESET – ITEM 9 +X X EXEC

- R2 1. HYD MN PUMP PRESS (one) – NORM
- CRT3 2. SURF DRIVE ON, ITEM 39 EXEC (*)
Wait at least 5 sec
- F7 ✓SPI: Stop drive test when elevon posns
within +12° to -27°
SURF DRIVE OFF, ITEM 40 EXEC (*)
- CRT1 3. ✓POS STIM ENA, ITEM 7 – (no *)
- C3 4. ✓FCS CH 1,2,3,4 – AUTO
- CRT1 5. SEC ACT CK, CH 1 – ITEM 1 EXEC (*)
START – ITEM 5 EXEC (*)
- 6. ✓All CH 1 PORTS BYPASS, '↓'
STOP – ITEM 6 EXEC (*)
- C3 7. FCS CH 1 – ORIDE
- CRT1 ✓All CH 1 PORTS RESET, no '↓'
FCS CH 1 – AUTO
- 8. Repeat steps 5 thru 7 for CH 2,3,4

NOM

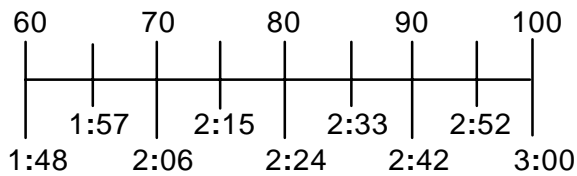
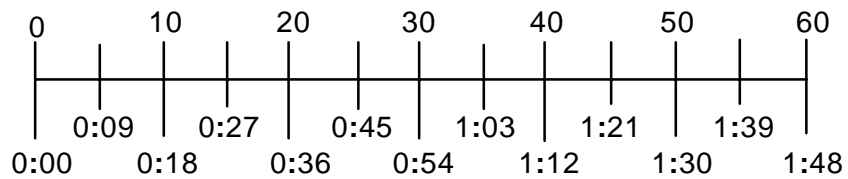
1: GNC 23 RCS	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

EI-18 P **FORWARD RCS DUMP**
 (Use for off-nominal X cg entry)

Determine FWD RCS 'DUMP TO %' using lowest of Ox or Fu qty (calculator or DEL PAD)

FOUR JET DUMP:

F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

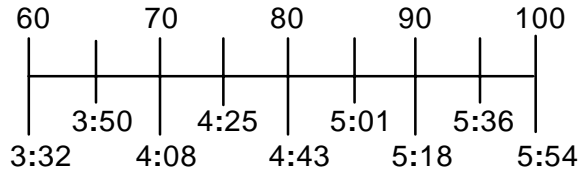
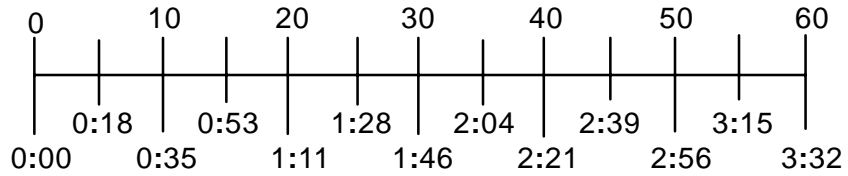
NOTE
 During dump disregard FRCS qty

NOM

1: GNC 23 RCS	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

TWO JET DUMP:

F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

NOTE

During dump disregard FRCS qty

CRT2 FWD RCS ARM – ITEM 36 EXEC
DUMP – ITEM 37 EXEC
(Start watch)

When dump time achieved:
FWD RCS OFF – ITEM 38 EXEC

1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST

3: BFS, GNC SYS SUMM 2

ENTRY SW CHECK

- C L2 ✓CAB RELIEF A,B – ENA (tb–ENA)
- ✓ANTISKID – ON
- ✓NWS – 1
- ✓ENTRY MODE – AUTO

3: GNC 51 OVERRIDE

✓ROLL MODE – AUTO

- B L2/C3 ✓SPD BK – Full Fwd

- P C3 ✓SRB SEP – AUTO
- ✓ET SEP – AUTO

- B F6/F8 ✓AIR DATA – NAV
- ADI ERR – MED
- RATE – MED

✓HSI SEL MODE – ENTRY

- C F6 ✓SOURCE (two) – NAV, 1
- P F8 ✓SOURCE (two) – NAV, 2

- B F3 ✓TRIM RHC/PNL (two) – INH
- ✓PNL (two) – ON

Exercise BRAKE PEDALS

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

NOTE

If NAVAIDS OFF due to PKT C/L
PWRDN, switch ON per PWRDN
procedure

- | | | |
|----|----|---|
| C | F6 | ✓RADAR ALTM – 1 |
| P | F8 | – 2 |
| O8 | | ✓RADAR ALTM (two) – ON
✓MLS (three) – ON (PASS)
✓MLS CH (three), FS 3–2 |
| O7 | | ✓TACAN MODE (three) – GPC
✓ANT SEL (three) – AUTO |
| | | ✓TACAN CH (three), FS 3–2 |

MEDS

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

EI-13 **REMAINING APUs START**

- * If an APU failed to start at TIG-5, *
- * start remaining good APU only *

R2 APU FUEL TK VLV (two) – OP
 ✓APU/HYD RDY tb (two) – gray

- * If tb – bp, attempt normal start *

MDU APU OPER (two) – START/RUN
 ✓HYD PRESS ind (two) – LO green

R2 ✓RDY tb (two) – bp

- * If OIL OUT P < 25 and OIL OUT *
- * TEMP not increasing after APU *
- * start or no start: *
- * Shut down APU (ENT PKT, *
- * APU/HYD) *

MEDS

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

NOTE

If NAVAIDS OFF due to PKT C/L
PWRDN, switch ON per PWRDN
procedure

- | | | |
|----|----|---|
| C | F7 | ✓RADAR ALTM – 1 |
| P | F8 | – 2 |
| O8 | | ✓RADAR ALTM (two) – ON
✓MLS (three) – ON (PASS)
✓MLS CH (three), FS 3–2 |
| O7 | | ✓TACAN MODE (three) – GPC
✓ANT SEL (three) – AUTO |
| | | ✓TACAN CH (three), FS 3–2 |

NOM

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC SYS SUMM 2	

EI-13 **REMAINING APUs START**

- * If an APU failed to start at TIG-5, *
- * start remaining good APU only *

R2 APU FUEL TK VLV (two) – OP
 ✓APU/HYD RDY tb (two) – gray

- * If tb – bp, attempt normal start *

F8 APU OPER (two) – START/RUN
 ✓HYD PRESS ind (two) – LO green
 R2 ✓RDY tb (two) – bp

- * If OIL OUT P < 25 and OIL OUT *
- * TEMP not increasing after APU *
- * start or no start: *
- * Shut down APU (ENT PKT, *
- * APU/HYD) *

NOM

B3-40

ENT/NOM/GEN F

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, SM SYS SUMM 2	

- * If two APUs operating: *
- * ✓ Good HYD MN PUMP PRESS *
- * (two) – LO until EI-6, then *
- * perform SSME HYD REPRESS at *
- * EI-6, and delete HYD FLUID *
- * THERMAL CONDITIONING *
- * If only one APU operating: *
- * (Good) APU AUTO SHUTDN *
- * (one) – INH *
- * ✓ APU HYD MN PUMP PRESS *
- * (one) – LO *
- * Delete SSME HYD REPRESS and *
- * HYD FLUID THERMAL *
- * CONDITIONING *
- * Delay MM304 trans until EI-2 *
- * Immediately prior to MM304 trans: *
- * (Good) HYD MN PUMP PRESS *
- * (one) – NORM *
- * APU SPEED SEL (one) – HI *

HYD MN PUMP PRESS (three) – NORM
PRESS ind (three) – HI green

P SSME HYD REPRESS

R2 ✓HYD MN PUMP PRESS (three) – NORM

- * If HYD SYS 2 or SYS 1 failed, *
- * cycle SYS 3 *

R4 HYD MPS/TVC ISOL VLV SYS 2 – OP
(MA possible)

- Hold 5 sec, ✓tb – OP
- Wait 10 sec – CL
- Hold 5 sec, ✓tb – CL

HYD MPS/TVC ISOL VLV SYS 1 – OP
(MA possible)

- Hold 5 sec, ✓tb – OP
- Wait 10 sec – CL
- Hold 5 sec, ✓tb – CL

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, SM 0 THERMAL	

```

* EI-11>P  HYD FLUID THERMAL CONDITIONING  *
*          (MCC CALL)                       *
*          CRT2  SURF DRIVE ON – ITEM 39 EXEC  *
*          Start TIMER                          *
*          SPI   Observe AEROSURFACES CYCLING *
*          ELEV   U33 to D18 deg                *
*          RUD    R5 to L5 deg                  *
*          SPDBK  15 to 10%                     *
*          BDY FLP 93.6 to 3.5%                 *
*          When SURF DRIVE ON (5 min),          *
*          CRT2  SURF DRIVE OFF – ITEM 40 EXEC *

```

BURN REPORT (from FS 3–33)

B Stow DEORBIT BURN and DEORBIT
 BURN MONITOR Cue Cards
 ✓ENTRY Cue Cards installed

```

*          If 8 psi cabin entry,                *
* ALL      ✓Tabs/Visor – CL/LES O2 – ON *

```

1: GNC DEORB MNVR COAST	2: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT	

G SUIT INFLATION

ALL Load – 1.5 (three turns cw if reqd)

* **FCS CH CONFIG** *

* *

* If less than four PASS GPCs, config FCS *

* CHs so that each GPC cmds equal *

* number of CHs (see table) *

* *

GNC 53 CONTROLS

Config SURF FBK (see table)

AVAILABLE		FCH CH CONFIG			SURF FDBK	
GPCs	FCS CHs	AUTO	ORIDE	OFF	SEL	DESEL
3	4	3		1	3	1 *
	3	3		1	3	1 *
	2		2	2	2	2
2	4		4		4	
	3		2	2	2	2
	2		2	2	2	2

* * If CH 4 – OFF, do not desel PASS SURF FDBK *

MEDS

1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST

B F6,F8 FLT CNTLR PWR (two) – ON

EI-7 MS2 O19 If Mini-Cam Entry video reqd:
V10 TV PWR – ON
PWR – ON
DISPLAY pb – Toggle to display tape
count
REC pb (two) – Press to begin
recording
✓LCD displays RED DOT

EI-6 Go to ENTRY MANEUVERS (Cue Card)

MEDS

1: GNC DEORB MNVR COAST	2: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT	

G SUIT INFLATION

ALL Load – 1.5 (three turns cw if reqd)

* **FCS CH CONFIG** *

*
 * If less than four PASS GPCs, config FCS *
 * CHs so that each GPC cmds equal *
 * number of CHs (see table) *
 *

GNC 53 CONTROLS

Config SURF FBK (see table)

AVAILABLE GPCs	FCS CHs	FCH CH CONFIG			SURF FDBK	
		AUTO	ORIDE	OFF	SEL	DESEL
3	4	3		1	3	1 *
	3	3		1	3	1 *
	2		2	2	2	2
2	4		4		4	
	3		2	2	2	2
	2		2	2	2	2

* * If CH 4 – OFF, do not desel PASS SURF FDBK *

NOM

1: GNC DEORB MNVR COAST 2: GNC DEORB MNVR COAST

3: BFS, GNC DEORB MNVR COAST

B F7,F8 FLT CNTLR PWR (two) – ON

EI-7 MS2 O19 If Mini-Cam Entry video reqd:
V10 TV PWR – ON
PWR – ON
DISPLAY pb – Toggle to display tape
count
REC pb (two) – Press to begin
recording
✓LCD displays RED DOT

EI-6 Go to ENTRY MANEUVERS (Cue Card)

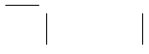
NOM

B3-44

ENT/NOM/GEN F



ENTRY CUE CARDS



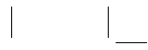
MS ONLY

4-1

ENT/ALL/GEN F



**ENT CUE
CARDS**



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**ENT CUE
CARDS**

MS ONLY

4-2

ENT/ALL/GEN F



ENTRY NO-GO CHECKLIST

FAILURE OF:	AERO PTI DTO	AUTO FCS MODE	XWIND DTO ①
APU/HYD: 1 APU			X
2 APUs	X		X
DISPLAYS: 2 ADIs	X		
CDR HUD			X ②
CONTROLLERS:			
RHC: 1L			X
2L & 2R	X		X
RPTA: 2L or 2R			X
GNC: 2 AAs (LAT)	X		X
2 AAs (NORM)	X(M < 2.5)	X ③	
2 RGAs	X		X
2 R DDU PWR SPLY			X
2 IMU (or 1 IMU + BITE)	X		X
2 ADTAs			X
ADTA NOT INCORP			
OR DLMA		X (M < 2)	
MLS NOT INCORP		X(< 6K ft)	
2 FCS CH (same surface)	X		X
DPS: 1 GPC (not restrung)			X ④
2 GPC (restrung)	X		
2 GPC (not restrung)	X	X ③	X
1 FF			X ④
2 FF	X	X ③	X
2 FA	X		X
RCS: LEAK (AFT - during ENT)	X		
2 YAW JETs (same side)	X		
MIN RCS QTY	X		
TRIM: Ail > ± 2.0 deg	X		
DOWNMODE:			
FCS problem	X	X	X
AOA	X		X
PLB: PLBD Latch Gang	X		
LDG/DECEL:			
Tire Leak			X
HYD BRAKE ISOL VLV			X
< 100% Brakes			X
NWS			X
ENERGY - OFF NOMINAL:			
Roll Ref Alert	X		
Above Upper Traj Line	X		
MCC GCA, or VEL & PSN update	X	X	
No A/L by 6K ft		X	
DATA: OPS RECORDERS	X(LOS)		
XWIND:			
< 10 Knots Peak			X
> 15 Knots Peak			X
> 10 Knots Gust			X
GROUND SYSTEMS:			
No Runway Aim Point			X

NOTES

- ① Consider runway redesignation (M > 6) to avoid Xwind landing
- ② GO if PAPI and BALL BAR available
- ③ Pitch AUTO mode NO-GO for M < 2.5
- ④ GO if only string 4 affected

ENT-7a/E/I

MS ONLY

4-3

ENT/ALL/GEN F

ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	✓LVLH ATT GNC, OPS 304 PRO * If PREBANK, R/Y – CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° * If previous OMS OX TK or He TK or RCS OX TK leak: <input type="text"/> G51 VENT DOORS – OP PTI – ENA at EI-5 when applicable
$\bar{q} = 1$	(AOA) HYD MN PUMP PRESS (three) – NORM
'Guidance Box' @ $\bar{q} \sim 8$ or D ~ 3	CLOSED LOOP GUIDANCE ____:____:____ * If PREBANK: P,R/Y – AUTO * Begin AIL trim monitoring
D = 11	✓DRAG H (FORCE if editing)
V = 19K	✓MPS/TVC ISOL VLV – CL
V = 15K	✓NAVAIDS (I/O RESET if reqd) * If ELS: UHF MODE – G T/R *
V = 12K	RAD BYP VLV MODE (two) – AUTO CNTLR LOOP (two) – AUTO B(A)
V = 10K	✓SPDBK to 81%
$\Delta Az = 10.5^\circ$	FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

ENT-6a/E/L

FLIGHT CONDITIONS	MANEUVER
V = 7K	✓TACAN status
V = 5K	ADTA PROBES – DEPLOY (✓HEAT) Begin AIL and RUD trim monitoring
M = 2.7	✓APUs HUD PWR (two) – ON
* If M < 2.5; P CSS for ADTA to G&C incorp *	
M = 2.0	Ensure ADTA to G&C else ✓Theta limits
M = 0.9	P, R/Y – CSS as reqd ✓SPDBK CMD vs POS ✓R FLT CNTLR – ON ✓NWS – 1 Lock Inertia Reels MAX N _Z <input type="text"/> . <input type="text"/>
M = 0.7	✓LG EXTEND ISOL VLV – OP
h = 15K	✓MLS
h = 10K	✓A/L, TABS/VISORS – CL/LES O2 – ON (KSC)
h = 2K	LANDING GEAR ARM pb – ARM
h = 300	LANDING GEAR DN pb – DN
MAIN GEAR TD	✓SPDBK – 100%
V = 195 KEAS	DRAG CHUTE pb (two) – ARM, DPY (simo)
V = 185 KEAS	DEROTATE
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb ✓Auto Load Relief ✓HYD BRAKE ISOL VLV (three) – OP
MIDFIELD and V < 140 KGS	BRAKE as required (8–10 fps ² , –0.25 to –0.3G)
* If 5K' remaining and V > 140 KGS – MAX BRAKING *	
V = 60 KGS	DRAG CHUTE JETT pb – JETT
V = 40 KGS	BRAKE < 6 fps ² (–0.2G) (Antiskid cutout)
WHEEL STOP	Go to ENT C/L, <u>POST LANDING PROCEDURES</u>

ENT–6b/E/Q
(Partial)

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MS ONLY

4–6

ENT/ALL/GEN F

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4-7

ENT/ALL/GEN F

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Replace this page with page(s) from Flight Supplement

4–8

ENT/ALL/GEN F

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DRAG CHUTE DEPLOY

MCC Call	Flight Condition
Early	Main Gear TD
NOMINAL	195 KEAS If leaking/flat tire delay derot 10 kts
Late	Post-Nose Gear TD Xwind DTO
Emergency Only	No Deploy Except CDR call
NO DEPLOY prior to MGTD > 230 KEAS < 80 KGS Xwind > 15 kts	

50K	/
38K	/
28K	/
20K	/
12K	/
7K	/
3K	/
1K	/
SURF	/

ENT-6b/E/Q
(Partial)

ENTRY
MISC

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MS ONLY

4-10

ENT/ALL/GEN F

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ENTRY CONTROL

ARCS QTY (L + R) < 10%

ARCS QTY = 0 & JETS FAIL OFF	1. ENTRY MODE – NO Y JET (R/Y CSS; expect sluggish control)
$\bar{q} \geq 20$ & $M > 6$	2. G51 ELEVON FIXED – ITEM 18 EXEC (*)
CONTROL PROBLEMS* & ARCS QTY > 0	3. ENTRY MODE – AUTO When control regained: 4. ENTRY MODE – NO Y JET 5. ✓AIL trim
$M < 6$ & ARCS QTY > 0	6. ENTRY MODE – AUTO
$M < 5$	7. TRIM/RHC PNL – ENA 8. TRIM ROLL – away from AIL trim (to < 1)

*Region of least margin: M 12–8

AIL TRIM $\geq 3^\circ$

TAL	1. G51 WRAP MODE – ITEM 45 EXEC (ACT)														
AIL trim = 5	2. BF – MAN 3. BF – UP (to 0%)														
NO Y JET	4. Perform roll reversals at $3^\circ/s$ (expect sluggish control)														
$M < 13$ & AIL trim = 5	5. P – CSS 6. Fly α per schedule: <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border: none; padding: 0 5px;">M</td> <td style="border: 1px solid black; padding: 2px 5px;">12</td> <td style="border: 1px solid black; padding: 2px 5px;">11</td> <td style="border: 1px solid black; padding: 2px 5px;">10</td> <td style="border: 1px solid black; padding: 2px 5px;">9</td> <td style="border: 1px solid black; padding: 2px 5px;">8–6</td> <td style="border: 1px solid black; padding: 2px 5px;">5</td> </tr> <tr> <td style="border: none; padding: 0 5px;">α</td> <td style="border: 1px solid black; padding: 2px 5px;">37</td> <td style="border: 1px solid black; padding: 2px 5px;">36</td> <td style="border: 1px solid black; padding: 2px 5px;">35</td> <td style="border: 1px solid black; padding: 2px 5px;">33</td> <td style="border: 1px solid black; padding: 2px 5px;">30</td> <td style="border: 1px solid black; padding: 2px 5px;">26</td> </tr> </table>	M	12	11	10	9	8–6	5	α	37	36	35	33	30	26
M	12	11	10	9	8–6	5									
α	37	36	35	33	30	26									
$M < 5$	7. TRIM/RHC PNL – ENA 8. TRIM ROLL – away from AIL trim (to < 1) 9. P – AUTO														
$M < 2$	10. BF – AUTO														

ENT–10a/A,E/A

HIGH-FREQ OSC OR SURF/JET CYCLE

Returning PL > 10K lbs	1. G51 ✓FILTER ALT – ITEM 21 (*)
	2. P, R/Y – CSS
Osc/Cycle continues	3. ENTRY MODE – LO GAIN
Osc/Cycle stops	4. ENTRY MODE – AUTO 5. P, R/Y – AUTO

ENT–10b/A,E/A

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MS ONLY

4–14

ENT/ALL/GEN F

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V = 6K **NO COMM TACAN MGMT**

RATIO < 1	RATIO > 1		ONE TACAN LOCKED	NO LOCK
AUTO	TROUBLESHOOT		BELOW V = 5.5K DESELECT MISSING TACANS, then - AUTO	BELOW V = 5.5K TOGGLE TACAN
	IF BAD TACAN	IF BAD NAV STATE		
	AUTO	If 1st acq - FORCE IF NOT - ZERO Δ STATE		

ADTA MGMT

		NAV			G&C
		RATIO < 1	RATIO > 1		Two or more good ADTAs
			IF BAD ADTA	IF BAD NAV STATE	
COMM OK	MCC: AUTO or INH*	MCC: INH	MCC: FORCE	Evaluate h,α,M MCC: AUTO (G&C)	
NO COMM	AUTO	TACAN OK	NO TACAN		Evaluate h,α,M If reasonable: AUTO (G&C)
			ADTA ERRATIC	ADTA STEADY	
		INH	AUTO	FORCE	

*(If ADTA H will degrade NAV state)

NAV DELTA PAD

ΔX 10	()					
ΔY 11	()					
ΔZ 12	()					
ΔX 13		()				
ΔY 14		()				
ΔZ 15		()				

For Δ STATE UPDATES (on MCC call):
 P, R/Y - CSS
 DRAG H, TACAN, ADTA - INH
 On MCC call, back to AUTO

— | |

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MS ONLY

4–16

ENT/ALL/GEN F

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**POST
LDG**

POST LANDING PROCEDURES

5-1

ENT/ALL/GEN F

POST
LDG

- * **LOSS OF COMM** *
- * In event of loss of comm (day or night), the following signals *
- * will be utilized to indicate onboard status to convoy: *
- * NOTE *
- * Before declaring loss of comm, attempt to contact *
- * convoy on 259.7 using PRC-112 radio channel A *
- * Crew should continue signals until acknowledged by convoy *
- * From Crew (with Mini Mag light stowed in ACES or *
- * Spotlight stowed in volume 3b) *
- * Crew OK Circular motion *
- * OMS/RCS & Hatch safed Circular motion *
- * APU shutdn Circular motion *
- * Crew needs assistance; *
- * will open/blow hatch Vertical motion *
- * Crew needs assistance; *
- * will not open/blow hatch Horizontal motion *
- * From Convoy *
- * Convoy will acknowledge crew signals with sequence of *
- * three flashes of headlights on convoy vehicle *
- * Continuous flashing – Emer pwrdsn and egress *
- * ***** *
- * **EXPEDITED PWRDSN** *
- * Accomplish for: *
- * Loss of all comm, including hand signals, with *
- * convoy elements *
- * Loss of telemetry and onboard systems monitoring *
- * visibility *
- * Fuel leak (OMS, RCS, or APU) if: *
- * – Nonisolatable, or *
- * – Leak occurs during RTLS, TAL, AOA, or *
- * POST D/O TIG *
- * Fire Suppression Bottle discharged during entry for *
- * confirmed or suspected fire *
- * If APU, OMS, RCS Fuel Leak: *
- * APUs OFF ASAP *
- * As time permits: *
- * RCS,OMS SAFING (RJDs), 5-4 *
- * GPC DEACT *
- * O6 GPC MODE 1,2,3,4,5 (five) – STBY (tb-bp) *
- * – HALT *
- * ET UMBILICAL DOOR OPENING, 5-5 (RTLS/TAL only) *
- * ‘MODE 5’ POST LANDING EGRESS Cue Card (CDR or *
- * MCC call) then EMER PWRDSN Cue Card *

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

POST LANDING

WARNING
 APUs OFF ASAP for APU
 Hydrazine, OMS, RCS (FWD or
 AFT), or MPS propellant leak

- 00:00
- C After orbiter stops:
 Report, "WHEELS STOP"
 Establish COMM with NCC

 - L2 SPD BK – MAN, full fwd
 NWS – OFF

 - P If RTLS or TAL abort:
 Perform ET UMBILICAL DOOR
 OPENING, 5-5

 - R2 ✓APU AUTO SHUTDN (three) – ENA
 ✓SPEED SEL (three) – NORM

 - R1 ✓AC BUS SNSR (three) – AUTO

 - C F6 FLT CNTLR PWR – OFF

 - B F3 HUD PWR (two) – OFF

 - P C3 If ELS:
 MSTR MADS(OEX) PWR – OFF
 (OEX for OV102)
 DoD ELS, MCC call DoD OSC on
 NCC

NOTE
 MCC will report "GO/NO-GO
 TO DOFF SUITS" (post safety
 assessment)

MEDS

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

CDR

NOTE

CDR activities are now on even numbered pages and PLT activities on odd numbered pages

RCS, OMS SAFING (RJDs)

C3 ✓OMS ENG (two) – OFF
O14:F RJD DRIVER (nine) – OFF
O15:F LOGIC (eight) – OFF
O16:F OMS ENG VLV (two) – OFF

C,P,MS

DRAG CHUTE SAFING

(Not performed if ELS)

O15:E cb MNB DRAG CHUTE SYS 2 – op
O16:E MNC DRAG CHUTE SYS 1 – op
F2,F3, ✓DRAG CHUTE PBI lts (six) – off
F4

DEACT AIR DATA PROBE HTRS

C3 ✓AIR DATA PROBE (two) – DPY

C,P,MS

LANDING GEAR SAFING

(Not performed if ELS)

R14:F cb ESS 1BC LDG GEAR ARM/DN
RESET – cl

NOTE

SM0 TIRE PRESS msgs occur when LG ARM/DN RESET performed

A12 LG ARM/DN RESET – RESET
F6,F8 ✓LDG GEAR pb (four) – lt off
A12 LG ARM/DN RESET – dn
R14:F cb ESS 1BC LDG GEAR ARM/DN
RESET – op

Check with MS3. Report to MCC: “RJDs OFF, SIDE HATCH, DRAG CHUTE, AND LANDING GEAR SAFED” (MCC report to NCC)

MEDS

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

POST LANDING

WARNING
 APUs OFF ASAP for APU
 Hydrazine, OMS, RCS (FWD or
 AFT), or MPS propellant leak

- 00:00
- C After orbiter stops:
 Report, "WHEELS STOP"
 Establish COMM with NCC

 - L2 SPD BK – MAN, full fwd
 NWS – OFF

 - P If RTLS or TAL abort:
 Perform ET UMBILICAL DOOR
 OPENING, 5-5

 - R2 ✓APU AUTO SHUTDN (three) – ENA
 ✓SPEED SEL (three) – NORM

 - R1 ✓AC BUS SNSR (three) – AUTO

 - C F7 FLT CNTLR PWR – OFF

 - B F3 HUD PWR (two) – OFF

 - P C3 If ELS:
 MSTR MADS(OEX) PWR – OFF
 (OEX for OV102)
 DoD ELS, MCC call DoD OSC on
 NCC

NOTE
 MCC will report "GO/NO-GO
 TO DOFF SUITS" (post safety
 assessment)

NOM

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

CDR

NOTE

CDR activities are now on even numbered pages and PLT activities on odd numbered pages

RCS, OMS SAFING (RJDs)

C3 ✓OMS ENG (two) – OFF
O14:F RJD DRIVER (nine) – OFF
O15:F LOGIC (eight) – OFF
O16:F OMS ENG VLV (two) – OFF

C,P,MS

DRAG CHUTE SAFING

(Not performed if ELS)

O15:E cb MNB DRAG CHUTE SYS 2 – op
O16:E MNC DRAG CHUTE SYS 1 – op
F2,F3, ✓DRAG CHUTE PBI lts (six) – off
F4

DEACT AIR DATA PROBE HTRS

C3 ✓AIR DATA PROBE (two) – DPY

C,P,MS

LANDING GEAR SAFING

(Not performed if ELS)

R14:F cb ESS 1BC LDG GEAR ARM/DN
RESET – cl

NOTE

SM0 TIRE PRESS msgs occur when LG ARM/DN RESET performed

A12 LG ARM/DN RESET – RESET
F6,F8 ✓LDG GEAR pb (four) – lt off
A12 LG ARM/DN RESET – dn
R14:F cb ESS 1BC LDG GEAR ARM/DN
RESET – op

Check with MS3. Report to MCC:
“RJDs OFF, SIDE HATCH, DRAG
CHUTE, AND LANDING GEAR
SAFED” (MCC report to NCC)

NOM

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
-------------------	-------------------

3: BFS, GNC VERT SIT 2

PLT ET UMBILICAL DOOR OPENING

Report to MCC, "ET UMBILICAL DOORS ARE COMING OPEN"

- R2 ET UMB DR
 MODE - GPC/MAN
 R LAT - REL (tb-bp, REL ~6 sec)
 - OFF
 DR - OP (tb-bp)
 Wait 12 sec, R DR - OFF (tb-bp)
 L LAT - REL (tb-bp, REL ~6 sec)
 - OFF
 DR - OP (tb-bp)
 Wait 12 sec, L DR - OFF (tb-bp)
 MODE - GPC

HYDRAULIC LOAD TEST (ON MCC CALL)

NOTE

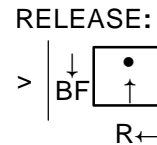
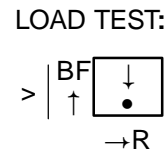
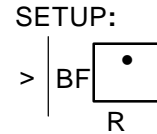
Minimum of two operating hyd systems is reqd for this test

- F4 BDY FLP pb - MAN
 F8 ✓FLT CNTLR PWR - ON

NOTE

If only two systems are operating, do not depressurize either hyd pump

- R2 HYD MN PUMP PRESS 1 - LO (MA)
 C3 Run Full Load Test:
 BDY FLP - TRAIL
 RHC - Forward ctr
 Rudder full left
 When set, do following simo:
 BDY FLP - UP (to ≤ 6%)
 RHC - move to aft ctr
 Rudder full right
 RHC - release
 Rudder - neutral
 BDY FLP - reset to TRAIL
 R2 HYD MN PUMP
 PRESS 1 - NORM
 3 - LO (MA)
 C3 Repeat Load Test
 R2 HYD MN PUMP PRESS 3 - NORM



1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

CDR

MCC Report GO/NO-GO for DPS transition

DPS TRANSITION – GNC 9 (If PASS)

NOTE

Do not perform any keyboard item entries or switch throws 10 sec before and after moding PASS GPCs to RUN or making OPS transition requests.

MCC will call for BFS to be taken from RUN to STBY for OPS Recorder dumping and PL monitoring as reqd

✓BFC CRT DISP – ON

CRT3 BFS, GNC, OPS 000 PRO

3: BFS, GNC BFS MEMORY

1: GNC 0 GPC MEMORY

Verify:

CONFIG GPC	9	12340
STR 1	1	1
2	2	2
3	3	3
4	4	4
PL 1/2	1	1
CRT 1	1	1
2	2	2
3	3	3
4	0	0
L 1	1	1
2	2	2
MM 1	1	1
2	2	2

CRT1 GNC, OPS 901 PRO

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: BFS, GNC VERT SIT 2	

PLT SET BODY FLAP (Prior to OPS 9)

- F4 BODY FLAP pb – MAN
- C3 BODY FLAP – DOWN (100%)

PLT SSME REPOSITIONING (If PASS, OPS 9, and GO from MCC)

2: GNC 105 TCS CONTROL

- R4 HYD MPS/TVC ISOL VLV SYS (three) – OP
Hold 5 sec, ✓tb – OP

- * If less than two HYD MPS/TVC *
- * ISOL VLVs open, ✓MCC *

- CRT2 CLEAR MSG – ITEM 8 EXEC
- SELECT ID – ITEM 1 +0 2 EXEC
- ✓NAME VFB 84 (~60 sec)
- MM READ – ITEM 2 EXEC
- ✓‘AI MODE 1(0,3) COMPLETE’ msg (~2.5 min)
- ✓‘VFB 84 – COMPLETE’ msg

- * If any ‘AI MODE X FAILED RETEST’ msg: *
- * ✓MCC, report ECP ERROR *
- * To terminate: CANCEL – ITEM 5 EXEC *

Go to APU/HYD SHUTDN >>

PLT SPDBK REPOSITIONING (KSC only, ON MCC GO)

- R4 ✓HYD MPS/TVC ISOL VLV SYS (three) – CL

2: GNC 113 ACTUATOR CONTROL

- CRT2 AI MODE 1 MDM – ITEM 23 EXEC (*)
- ✓ACTUATOR GIMBALING STATUS – RUN, CPLT
- SB – ITEM 1 EXEC (*)
- RATE – ITEM 29 +1 EXEC
- FIN POS – ITEM 30 +8 EXEC
- ✓START 31 – → ←
- START – ITEM 31 EXEC (*→ ←)
- ✓STATUS – RUN, CPLT (~30 sec)

- * If STATUS – STOP or BUSY: *
- * ✓MCC, (To terminate: ITEM 32 EXEC) *

Go to APU/HYD SHUTDN >>

1: AS DESIRED	2: AS DESIRED
3: AS DESIRED	

CDR

RAD RECONFIG

(On MCC call, unless no COMM)

- O1 When FREON EVAP OUT TEMP > 40 degF:
- L1 RAD OUT TEMP – HI
- O1 When FREON EVAP OUT TEMP > 55 degF, proceed to NH3 ACT

NH3 ACT

- O1 When FREON EVAP OUT TEMP > 55 degF, select one of the following as specified by MCC:
- L1 NH3 CNTLR A – PRI/GPC ()
 – SEC/ON ()
 B – PRI/GPC ()
 – SEC/ON ()

- * During NH3 ops: *
- * If EVAP OUT TEMP alarm and *
- * O1 FREON EVAP OUT TEMP < 32 degF: *
- * L1 1. FREON PUMP LOOP 1,2 *
- * (two) – OFF (ASAP) *
- * 2. H2O PUMP LOOP 1 – ON *
- * 3. NH3 CNTLR A(B) – OFF *
- * If no PL H2O Loop present: *
- * 4. FLOW PROP VLV LOOP 1,2 *
- * (two) – PL HX (tb–PL) *
- * If PL H2O Loop present: *
- * 5. Activate PL H2O Loop *
- * 6. FREON PUMP LOOP 1 – B *
- * Wait 3 min, then: *
- * 7. FREON PUMP LOOP 2 – B *
- * 8. Go to NH3 RECONFIG, 5–22 >> *
- * If EVAP OUT TEMP alarm and *
- * O1 FREON EVAP OUT TEMP > 65 degF: *
- * 9. Go to NH3 RECONFIG, 5–22 *

1: AS DESIRED	2: AS DESIRED
3: BFS, SM SYS SUM 2	

PLT APU/HYD SHUTDN

✓SSME REPOS complete (if PASS)

- R4 HYD MPS/TVC ISOL VLVS (1,2,3; 5 sec interval) – CL (hold each 5 sec) ✓tb – cl
- R2 BLR PWR (three) – OFF
- N2 SPLY (three) – OFF
- APU OPER
- (1,2,3; 5 sec interval) – OFF (MA)
- APU FUEL TK VLV (three) – CL
- ✓Shutdn (Hyd Press)
- CNTLR PWR (three) – OFF

MCC Report to MCC, “APU/HYD SHUTDOWN”
 Report to Convoy 1, “SSME REPOSITIONING COMPLETE AND APU/HYD SHUTDOWN”
 Report, “GO/NO-GO FOR VENT DOOR PURGE POSITIONING”

**POST LANDING MPS RECONFIG
 (After APU/HYD shutdn + 1 min)**

- R2 MPS He ISOL (six) – CL
- I'CNCT L – OUT OP
- PNEU L ENG He XOVR – CL

NOTE

Expect multiple MAs for MPS
 He P as regs bleed down

1: AS DESIRED	2: AS DESIRED
3: AS DESIRED	

C,MS
C

PCS DEACTIVATION

L2 O2 SYS 1,2 SPLY (two) – CL (tb–CL)
✓EMER tb – bp

MS

GPS PWDN

A13 (A12 for OV102)

- * If landing not at KSC, EDW, or NOR: *
- * GPS ENCRYPT – ZEROIZE *
- * Wait 1 sec *
- * GPS ENCRYPT – NORMAL *

GPS PWR – OFF
PRE AMPL UPPER – OFF
LOWER – OFF

MCC Report, “GO/NO–GO FOR EXTENDED
PWR UP”

NOTE

If GO for EXTENDED PWR UP, go
to SYS DEACT FOR EXTENDED
PWR UP, 5–14.

If NO–GO for EXTENDED PWR UP,
go to GPC DEACT (below)

C

GPC DEACT

(Perform after RCS/OMS VALVE TEST
completed by PLT)

O6 GPC MODE 1,2,3,4,5 (five) – STBY
(tb–bp)
– HALT

Inform MS to proceed with POST
LANDING PAYLOAD ACTIVITIES
(if reqd), FS 5–19

1: AS DESIRED	2: GNC 105 TCS CONTROL
3: AS DESIRED	

PLT VENT DOOR PURGE POSITIONING (PASS)

(on MCC GO, not performed if ELS)

- CRT2 CLEAR MSG – ITEM 8 EXEC
- SELECT ID – ITEM 1 +0 3 EXEC
- ✓NAME 'VFB89' (~60 sec)
- MM READ – ITEM 2 EXEC
- After 'VFB89 – ENTERING 30 MIN DELAY' msg, CANCEL – ITEM 5 EXEC

RCS, OMS VALVE TEST

Pause 1 sec between each line

- O7 ✓MSTR RCS XFEED – OFF
- O8 L,R OMS He PRESS/VAP ISOL (four) – CL, GPC
- L OMS XFEED (two) – OP (tb-OP), then – CL (tb-CL)
- R OMS XFEED (two) – OP (tb-OP), then – CL (tb-CL), GPC
- L,R OMS TK ISOL (four) – CL (tb-CL), then – OP (tb-OP), GPC
- L OMS XFEED (two) – OP (tb-OP), GPC
- FWD RCS
- He PRESS (two) – CL (tb-CL), GPC
- TK ISOL (two) – CL (tb-CL), then – OP (tb-OP), GPC
- MANF ISOL (five) – CL (tb-CL), then – OP (tb-OP), GPC
- O7 L,R RCS
- He PRESS (four) – CL (tb-CL), GPC
- MANF ISOL (ten) – CL (tb-CL), then – OP (tb-OP), GPC
- TK ISOL (six) – CL (tb-CL)
- XFEED (four) – OP (tb-OP), then – CL (tb-CL), GPC
- TK ISOL (six) – OP (tb-OP), GPC

1: OFF	2: OFF
3: OFF	

C,MS,PS HATCH OPENING (Convoy)

SEAT EGRESS

- C,MS,PS Pull G SUIT controller clip (if inflated)
Lap Belt and Chute – Release
Egress seat (Helmet reqd if ELS)
- MS,PS Unstow 'Return to Houston' Bags (except ELS)

HATCH OPENING (ELS)

- ALL ✓Tabs/Visor – CL
Green Apple – PULL
- MS Open Hatch/Deploy Slide per decal
- C Give PLT GO for VEHICLE PWRDN

C,MS,PS ORBITER UNAIDED EGRESS

- Egress orbiter
Hand carry Landing Site Data book
(if ELS) (reference ELS POST
LANDING procedures)

1: OFF	2: OFF
3: OFF	

PLT

NOTE

If GO for EXTENDED PWR UP,
go to SYS DEACT FOR
EXTENDED PWR UP, 5-15.

If NO-GO for EXTENDED PWR
UP, continue ops

HATCH OPENING (ELS)

Before hatch opening:
✓ Tabs/Visor – CL

Green Apple – PULL

**EXTEND
PWR UP**

VEHICLE PWRDN (on GO from CDR)

NOTE

All vehicle lighting and
orbiter O2 will be lost at
pwrdn

R1 MN BUS TIE (three) – OFF
 FC/MN BUS (three) – OFF
 ESS BUS SOURCE FC (three) – OFF

EGRESS

Pull G SUIT controller clip (if inflated)
Egress seat, orbiter
(Helmet reqd if ELS)

MCC TO KSC HANDOVER (at crew egress)

MEDS

1: GNC 0 GPC MEMORY	2: AS DESIRED
3: AS DESIRED	

PLT SYS DEACT FOR EXTENDED PWR UP

F8 FLT CNTLR PWR – OFF
F3 TRIM PNL – OFF
 ✓RHC – INH
R4 HYD BRAKE HTR (three) – OFF
O8 LTG (five) – OFF
O17:A ATVC (four) – OFF

1: AS DESIRED	2: OFF
3: AS DESIRED	

C,MS,PS

C	L2	ANTISKID	- OFF
		✓NWS	- OFF
	C3	✓FCS CH (four)	- AUTO
	F3	TRIM PNL	- OFF
		✓RHC	- INH
MS		If reqd, install and lock PL Bay Window Shades	

IDP/CRT 4 PWRDN

MS	R12	IDP/CRT 4 PWR	- OFF
----	-----	---------------	-------

EGRESS

(After MS Sys Deact complete)

	L1	H2O PUMP LOOP 1	- ON
C	L5	L COMM PWR	- OFF
C,MS,PS		PULL G SUIT controller clip (if inflated) Egress seat	
MS MS,PS	A11,A15, MO39M	COMM CCU PWR	- OFF
		Unstow 'Return to Houston' Bags	
C,MS,PS		Egress orbiter	

MEDS

1: OFF	2: OFF
3: OFF	

PLT

NOTE

If GO for EXTENDED PWR UP,
go to SYS DEACT FOR
EXTENDED PWR UP, 5-15.

If NO-GO for EXTENDED PWR
UP, continue ops

HATCH OPENING (ELS)

Before hatch opening:
✓ Tabs/Visor – CL

Green Apple – PULL

**EXTEND
PWR UP**

VEHICLE PWRDN (on GO from CDR)

NOTE

All vehicle lighting and
orbiter O2 will be lost at
pwrdn

R1 MN BUS TIE (three) – OFF
FC/MN BUS (three) – OFF
ESS BUS SOURCE FC (three) – OFF

EGRESS

Pull G SUIT controller clip (if inflated)
Egress seat, orbiter
(Helmet reqd if ELS)

MCC TO KSC HANDOVER (at crew egress)

NOM

1: GNC 0 GPC MEMORY	2: AS DESIRED
3: AS DESIRED	

PLT SYS DEACT FOR EXTENDED PWR UP

F8	INST PWR	- OFF
	FLT CNTLR PWR	- OFF
F3	TRIM PNL	- OFF
	✓RHC	- INH
R4	HYD BRAKE HTR (three)	- OFF
O8	LTG (five)	- OFF
O17:A	ATVC (four)	- OFF

NOM

B5-15

ENT/NOM/GEN F

1: AS DESIRED	2: OFF
3: AS DESIRED	

C,MS,PS

C	L2	ANTISKID	- OFF
		√NWS	- OFF
	C3	√FCS CH (four)	- AUTO
	F6	INST PWR	- OFF
	F3	TRIM PNL	- OFF
		√RHC	- INH
MS		If reqd, install and lock PL Bay Window Shades	

EGRESS

(After MS Sys Deact complete)

	L1	H2O PUMP LOOP 1 - ON	
C	L5	L COMM PWR - OFF	
C,MS,PS		PULL G SUIT controller clip (if inflated) Egress seat	
MS MS,PS	A11,A15, MO39M	COMM CCU PWR - OFF	
		Unstow 'Return to Houston' Bags	
C,MS,PS		Egress orbiter	

NOM

1: AS DESIRED	2: OFF
3: AS DESIRED	

PLT

EGRESS

(When desired after ground support personnel establishes comm at PS station)

R6 R COMM PWR – OFF
 Pull G SUIT controller clip (if inflated)
 Egress seat, orbiter

MCC TO KSC HANDOVER

(At crew egress or GSE cooling activation, whichever occurs later)

**MS EXT
 PWR UP**

1: AS DESIRED	2: OFF
3: AS DESIRED	

MS EXT
PWR UP

MS MS SYS DEACT FOR EXTENDED PWR UP

MS1 Perform POST LANDING PAYLOAD ACTIVITIES
(if reqd), FS 5–19

MS2 LRU DEACTIVATION
(After APU/HYD SHUTDN)

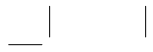
- O14,O15,
O16
- BRAKES (three) – OFF
 - cb GPS PRE AMPL (four) – OP
(OV103,105 only)
 - GPS 2 PRE AMPL UPPER – op
 - LOWER – op
(OV104 only)
 - RGA (four) – OFF
 - IMU (three) – OFF
 - ASA (four) – OFF
 - cb ADTA (four) – op
 - cb/sw ACCEL (four) – op/OFF
 - cb DDU (six) – op
 - MNA NWS – op
 - MNB NWS – op
 - O7 TACAN MODE (three) – OFF
 - O8 RADAR ALTM (two) – OFF
 - MLS (three) – OFF
 - C L1 IMU FAN (three) – OFF

APU HEATER DEACTIVATION
(After APU/HYD SHUTDN)

- A12 APU HTR
- TK/FU LINE H2O SYS (six) – OFF
 - GAS GEN/FUEL PUMP (three) – OFF
 - LUBE OIL LINE (three) – OFF

RCS/OMS HEATERS PWRDN

- A14 OMS CRSFD LINE A,B (two) – OFF
If reqd, install and lock PL Bay Window
Shades
- MS2 Inform CDR, “POST LANDING
PROCEDURE COMPLETE”



Replace this page with page(s) from Flight Supplement



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Replace this page with page(s) from Flight Supplement

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| | —

1: AS DESIRED	2: OFF
3: AS DESIRED	

ASP **INTEGRATED POST LANDING PROCEDURES
FOR EXTENDED PWR UP**

ASP 1 A15 Connect Comm (PS)
PS Comm CCU PWR – ON

ASP 1 Comm ck with MCC

ASP to MCC Report when “CREW READY TO
EGRESS”

ASP to MCC Report “POST LANDING PROCEDURE
COMPLETE”

**ASP EXT
PWR UP**

1: AS DESIRED	2: OFF
3: AS DESIRED	

CDR

NH3 DEACT

(On MCC call if Cooling Cart ready)

- L1
1. NH3 CNTLR A(B) – OFF
 2. RAD OUT TEMP – NORM

```

*           After NH3 TERMINATION:           *
*           If EVAP OUT TEMP alarm and       *
* O1       FREON EVAP OUT TEMP < 32 degF: *
* L1       1. FREON PUMP LOOP 1,2           *
*           (two) – OFF (ASAP)             *
*           2. H2O PUMP LOOP 1 – ON        *
*           3. If present, activate PL H2O  *
*           LOOP                           *
*           ✓MCC for steps                  *
*           If no comm:                     *
*           4. Go to VEHICLE PWRDN,        *
* O1       5-13 >>                          *
*           5. ✓MCC                          *
*           If EVAP OUT TEMP alarm and     *
*           FREON EVAP OUT TEMP > 65 degF *
*           for 5 min:                       *
*           6. Go to POST LANDING LOSS     *
*           OF COOLING, 5-24                *

```

1: AS DESIRED	2: OFF
3: AS DESIRED	

POST LANDING LOSS OF COOLING (NH3 FAILED OR DEPLETED)

- | | | |
|--------|----|---|
| C | L1 | 1. NH3 CNTLR A,B (two) – OFF |
| | | 2. ✓RAD BYP VLV MAN SEL (two) – RAD FLOW (tb–RAD, 3 sec) |
| | | 3. ✓RAD CNTLR OUT TEMP – NORM |
| C,P,MS | | 4. ✓Complete post landing procedures thru ENT C/L, 5–18 & FS 5–19 ASAP
Assume GO for EXTENDED PWR UP |
| B | C3 | 5. ✓BFC CRT SEL – 3+1
DISP – ON |

3: BFS, SM SYS SUMM 2

- | | | |
|---|------|---|
| | | Terminate monitoring if ground cooling established (Convoy commander call) >> |
| | CRT3 | 6. Monitor AV BAY TEMP (three)
When AV BAY TEMP 1 or 2 > 113 or AV BAY TEMP 3 > 107 or no temperature insight: |
| P | | 7. Go to VEHICLE PWRDN, 5–13 >> |
| A | | 8. Crew egress if not already complete |

1-ORBIT LATE DEORBIT PROCEDURES

Refer to DEORBIT BURN FLIGHT RULES
Cue Card for failures that require 1-orbit
delay

1-ORB
LATE

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST	

1-ORBIT LATE DEORBIT PROCEDURES

TRANS B
DAP

These procedures assume:

1. All DEORB PREP completed
2. DEORBIT BURN completed up to but not including SINGLE APU START, 3-13. If activities are not complete, then do them during troubleshooting time

C CRT1 GNC, OPS 301 PRO

R2 ✓HYD MN PUMP PRESS (three) – NORM

B A14 RCS/OMS HTR
 FWD RCS – A AUTO
 L POD (two) – A AUTO,B OFF
 R POD (two) – A AUTO,B OFF
 OMS CRSFD LINES (two) –
 A AUTO,B OFF
 FWD RCS JET 5 (one) – AUTO
 AFT RCS JET 5 (one) – AUTO

H2O TANK CONFIG

R11L SPLY H2O TKC INLET – OP (tb-OP)
 OUTLET – OP (tb-OP)

TIG-1:10> **IMU/IMU ALIGN**

Perform IMU/IMU alignment using best IMU as reference. ✓MCC for reference IMU

1: GNC 21 IMU ALIGN

C CRT1 IMU/IMU – ITEM 14 + __ EXEC
 ALIGN IMU 1(2,3) –
 ITEM 10(11,12) EXEC (*)
 If no comm, EXEC – ITEM 16 EXEC (*)
 Rcd MET ___/___:___
 ✓EXEC, ITEM 16 – (no *) (4-6 min)

6-2

ENT/ALL/GEN F

1-ORB
LATE

1: GNC DEORB MNVR EXEC | 2: GNC DEORB MNVR EXEC

3: BFS, GNC DEORB MNVR EXEC

C MCC UPDATE:
 DEL PAD
 PRPLT PAD
MCC UPLINK:
 PASS TGT
 BFS TGT

CRT2 GNC, OPS 302 PRO

ALL **FLUID LOADING: 1-ORBIT LATE**

Approx 1 hr prior to new TIG, drink 8 fluid
oz water plus take 2 salt tablets every
15 min for total of 16 fluid oz water and
4 salt tablets per crewmember

FINAL DEORB UPDATE/UPLINK

C MCC UPDATE:
 DEL PAD
 PRPLT PAD
MCC UPLINK:
 PASS SV
 BFS SV
 PASS TGT
 BFS TGT
 BFS IMU GYRO/ACCEL

G50 ✓LAND SITE as reqd
 SET TACAN tw

On MCC GO:

CRT1 LOAD – ITEM 22 EXEC
 TIMER – ITEM 23 EXEC

CRT1,3 ✓PASS & BFS TGTS per MNVR PAD:
 BURN ATT
 ΔVTOT
 TGO
 HA HP

1: GNC DEORB MNVR EXEC | 2: GNC DEORB MNVR EXEC

3: BFS, GNC DEORB MNVR EXEC

: :
: **IF WAVEOFF** :
: Go to IF NO-GO FOR :
: DEORBIT BURN, 3-11 :
: :

TIG-15>B A14 RCS/OMS HTR
FWD RCS - OFF
L POD (two) - A OFF,B OFF
R POD (two) - A OFF,B OFF
OMS CRSFD LINES (two) -
A AUTO,B AUTO
FWD RCS JET 5 (one) - OFF
AFT RCS JET 5 (one) - OFF

TIG-10> **MNVR TO 1-ORBIT LATE DEORBIT ATT**

C3 ✓DAP: AUTO
B F6,F8 ✓ADI ATT (two) - INRTL
✓ERR (two) - MED
✓RATE (two) - MED
C MNVR to BURN ATT
(✓ADI ATT with CRT BURN ATT)
B Copy last DEL PAD and OMS PRPLT PAD
data on DEORBIT BURN Cue Cards

F6/F8 ✓DEORBIT BURN and DEORBIT BURN
MONITOR Cue Cards installed

3: BFS, SM SYS SUMM 2

R2 HYD MN PUMP PRESS (three) - LO

Return to DEORBIT BURN Cue Cards and
SINGLE APU START, 3-13

SWITCH LIST AT WHEELS STOP EGRESS

LEFT SEAT

L5 7-2
 L1 7-2
 L2 7-2

F2 7-2
 F3 7-2
 F6 7-2
 F7 7-3

C2 7-3
 C3 7-3

O6 7-4
 O7 7-4
 O14 7-4
 O15 7-5

RIGHT SEAT

O16 7-6
 O17 7-6
 O8 7-6

RIGHT SEAT

F4 7-6
 F8 7-6

R1 7-7
 R2 7-7
 R4 7-7
 R6 7-8

R7 7-8
 R10 7-8
 R12 7-8
 R14 7-8

AFT

A11 7-9
 A12 7-9
 A13 7-9
 A14 7-9
 A15 7-9

MIDDECK – FWD

MO39M 7-10
 MO42F 7-10

NOTES

- This section contains switch configuration at egress for panels that are reconfigured in this checklist for EXTEND PWR UP option. Refer to DEORBIT PREP, section 3, for egress configuration of remaining panels subsequent to scheduled Deorbit Prep switch verification checks.
- _____ denotes physical break in panel structure.
- Switch list at WHEELS STOP EGRESS

SW LIST

NOT FLOWN

7-1

ENT/ALL/GEN F

SW LIST

LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

L5	L COMM PWR – ON <input type="checkbox"/>	F3	R TRIM PNL – as reqd <input type="checkbox"/>
<hr/>		DRAG CHUTE ARM 1/ARM 2 pb – as reqd <input type="checkbox"/>	
L1	All switches per DEORB PREP except: IMU FAN B – ON <input type="checkbox"/> H2O PUMP LOOP 1 (two) – OFF,B <input type="checkbox"/> RAD CNTLR LOOP 1,2 (two) – AUTO B BYP VLV MAN SEL 1 – ctr (tb–RAD) SEL 2 – ctr (tb–RAD or BYP) MODE 1 – AUTO MODE 2 – AUTO or MAN NH3 CNTLR A(B) – OFF <input type="checkbox"/>	DPY 1/DPY 2 pb – as reqd <input type="checkbox"/> JETT 1/JETT 2 pb – as reqd <input type="checkbox"/>	
<hr/>		<hr/>	
L2	ANTISKID – ON <input type="checkbox"/> NWS – 1 <input type="checkbox"/> BDY FLP – AUTO/OFF ENTRY MODE – AUTO TRIM R,P,Y (three) – ctr SBTC – as reqd <input type="checkbox"/> O2 SYS 1,2 SPLY (two) – ctr (tb–OP) <input type="checkbox"/> ctr (tb–CL) N2 SYS 1,2 (four) – ctr (tb–OP)	F6	(OV103,5) INST PWR – FLT/MPS <input type="checkbox"/> DATA BUS – 3 AIR DATA – NAV ADI ATT – LVLH ERR – as reqd RATE – as reqd LDG GEAR ARM pb – ARM/lt on <input type="checkbox"/> DN pb – DN/lt on <input type="checkbox"/> tb (three) – DN HSI SEL MODE – ENTRY SOURCE (two) – NAV,1 BFC DISENGAGE – dn ABORT MODE – OFF pb – lt off (OV102,4) HUD DATA BUS – 1 AIR DATA – NAV ADI ATT – LVLH ERR – as reqd RATE – as reqd LDG GEAR ARM pb – ARM/lt on <input type="checkbox"/> DN pb – DN/lt on <input type="checkbox"/> tb (three) – DN HSI SEL MODE – ENTRY
<hr/>		<hr/>	
F2	All pb lts – as reqd <input type="checkbox"/>		
<hr/>			
F3	L HUD PWR – ON <input type="checkbox"/> TRIM RHC/PNL – as reqd <input type="checkbox"/> PNL – as reqd <input type="checkbox"/> R HUD PWR – ON <input type="checkbox"/> TRIM RHC/PNL – as reqd <input type="checkbox"/>		

NOT FLOWN

7–2

ENT/ALL/GEN F

LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

F6 HSI SEL SOURCE (two) – NAV,1
 BFC DISENGAGE – rt
 ABORT MODE – OFF
 pb – lt off
 FLT CNTLR POWER – ON OFF
 RADAR ALTM – 1

(OV103,5)
 F7 FLT CNTLR PWR – ON OFF
 RADAR ALTM – 1

(OV103,5)
 C2 CRT PWR (1,3) – ON
 2 PWR – ON OFF
 L CRT SEL – as reqd
 R CRT SEL – as reqd
 (OV102,4)
 IDP/CRT PWR (1,3) – ON
 2 PWR – ON OFF
 L IDP/CRT SEL – as reqd
 R IDP/CRT SEL – as reqd
 (all)
 1,2,3 MAJ FUNC (three) – GNC
 EVENT TIMER MODE – as reqd
 CNTL – ctr
 TIMER SET tw (four) – as reqd
 TIMER – ctr

C3 OMS ENG (two) – OFF
 BFC CRT DISP – ON
 SEL – 3+1
 FCS CH (four) – AUTO
 BDY FLP – AUTO/OFF
 AIR DATA PROBE STOW (two) – INH
 OV102 MN ENG VIB SHUTDN – INH
 MN ENG LIMIT SHUTDN – AUTO
 TRIM R,P,Y (three) – ctr
 SBTC – full forward
 DAP – lts off
 SRB SEP – MAN/AUTO
 ET SEP – MAN
 AUD CTR – 1
 OI PCMMU PWR – 1
 FORMAT – GPC
 S-BD PM CNTL – CMD
 ANT – GPC
 AIR DATA PROBE (two) – DPY
 UPLK – ENA
 OV103,4,5 MSTR MADS PWR – ON OFF
 OV102 MSTR OEX PWR – ON OFF
 C/W MEM – ctr
 MODE – NORM
 OV102 PL SAFING (five) – SAFE
 OV103,4 RTG PUMP – PRI
 OV103 PL SAFING (2,3,4,5) – SAFE
 OV104 RTG SHORT PRI(SEC) ENA – DSBL
 OV104 RTG SHORT PRI(SEC) SHORT – OFF
 EMER LTG – FF/ON (as reqd)

NOT FLOWN

7-3

ENT/ALL/GEN F,1

LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

O6 LTG PNL (two) – BRT, as reqd OFF
 INST (two) – BRT, as reqd OFF
 L GLRSHLD FLOOD (two) – BRT, as reqd OFF
 L SEAT/CTR CNSL FLOOD (two) – BRT, as reqd OFF
 STAR TRK DR CNTL (two) – OFF (tb-CL)
 PWR (two) – OFF
 UHF SPLX/EVA XMIT FREQ – 259.7/414.2
 PWR AMPL – ON
 SPLX SQUELCH – ON
 EVA STRING – 1
 ENCRYPT – OFF
 MODE – SPLX
 ANNUN LAMP TEST – ctr
 BUS SEL ACA 1 – MNA
 ACA 2/3 – MNB
 INTEN (two) – VAR, as reqd
 MTU – AUTO
 OV103,5 DEU (four) – dn
 OV102,4 IDP (four) – dn
 MDM PL1,PL2 (two) – ON
 PL3 – OFF
 FA1,2,3,4 (four) – ON
 FF1,2,3,4 (four) – ON
 GPC PWR 1,5 – ON
 2,3,4 – ON OFF
 OUTPUT 1 – NORM (tb-gray)
 2,3,4 – NORM (tb-gray) bp
 5 – BACKUP (tb-bp)
 IPL SOURCE – OFF
 GPC MODE 1,5 – RUN (tb-RUN)
 2,3,4 – RUN (tb-RUN)

NOT FLOWN

O6 GPC MODE 2,3,4 – HALT (tb-bp)

O7 TACAN 1,2,3 MODE (three) – GPC OFF
 ANT SEL (three) – AUTO
 CH tw (three) – 111X
 (if Edw landing)
 AFT L RCS He PRESS (two) – OP (tb-OP)
 GPC (tb-CL)
 TK ISOL (three) – GPC (tb-OP)
 MANF ISOL 1,2,3,4 (four) – OP
 (tb-OP)
 GPC (tb-OP)
 5 – GPC (tb-OP)
 XFEED (two) – GPC (tb-CL)
 MSTR RCS XFEED – OFF
 AFT R RCS He PRESS (two) – OP (tb-OP)
 GPC (tb-CL)
 TK ISOL (three) – GPC (tb-OP)
 MANF ISOL 1,2,3,4 (four) – OP
 (tb-OP)
 GPC (tb-OP)
 5 – GPC (tb-OP)
 XFEED (two) – GPC (tb-CL)

O14:A BRAKES MNA – ON OFF
 RGA 1 – ON OFF
 IMU 1 – ON OFF
 FC1 CNTLR – ON
 All cbs closed except:
 :C OV102,3,5 cb MNA TACAN 1 – op

7-4

ENT/ALL/GEN F,1

LEFT SEAT SWITCH LIST AT WHEELS STOP EGRESS

O14:D OV104 GPS 1 PRE AMPL UPPER - op
 OV104 GPS 1 PRE AMPL LOWER - op
 cb MNA GPS PRE AMPL (two) - op
 CAB VENT - op
 VENT ISOL - op op

:E ADTA 1 - cl op
 ACCEL 1 - cl op
 DDU L - cl op
 AFT - op op
 NWS - cl

:F MMU 1 - ON
 RJD (six) - ON OFF
 L OMS ENG VLV - ON OFF
 ASA 1 - ON

O15:F ASA 2 - ON OFF
 ACCEL 4 - ON OFF

O15:A BRAKES MNB - ON OFF
 RGA (two) - ON OFF
 IMU 2 - ON OFF
 FC2 CNTLR - ON

:D cb MNB NWS - cl op
 All cbs closed except:

:C OV104 GPS 2 PRE AMPL UPPER - op
 :D OV104 GPS 2 PRE AMPL LOWER - op
 :C OV102,3 cb MNB TACAN 2 - op

:E cb MNB ADTA 2 - cl op
 ACCEL 2 - cl op
 DRAG CHUTE SYS 2 - cl op
 DDU (two) - cl op

:F MMU 2 - ON
 RJD (four) - ON OFF

NOT FLOWN

RIGHT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

O16:A BRAKES MNC - ON OFF
 RGA 3 - ON OFF
 IMU 3 - ON OFF
 FC3 CNTLR - ON
 All cbs closed except:
 :C OV102 cb MNC TACAN 3 - op
 :D OV104 GPS 3 PRE AMPL UPPER - op
 OV104 GPS 3 PRE AMPL LOWER - op
 cb MNC GPS PRE AMPL (two) - op
 O2 EMER - op
 :E ADTA (two) - cl op
 DDU R - cl op
 AFT - op
 DRAG CHUTE SYS 1 - cl op
 :F RJD (six) - ON OFF
 R OMS ENG VLV - ON OFF
 ASA 3,4 (two) - ON OFF
 ACCEL 3 - ON OFF
 RJD L5/F5/R5 DRIVER - OFF

O17:A ATVC (four) - ON OFF
 :B EIU (three) - OFF
 :C SIG CONDR FREON A - AC2
 B - AC3
 OL 1/2 - ON
 OR 1/2 - ON
 :D SIG CONDR OA 1/2/3 - ON
 MDM OA 1/2/3 - ON
 MEC (two) - OFF

O8 RADAR ALTM (two) - ON OFF
 MLS (three) - ON OFF

NOT FLOWN

O8 MLS CH tw (three) - as reqd
 R SEAT/CTR CNSL FLOOD (two) - as reqd
 LTG PNL R - BRT OFF
 R OVHD - BRT OFF
 R INST - BRT OFF
 NUMERIC - BRT OFF
 R GLRSHLD FLOOD - OFF
 OMS KIT He PRESS/VAP ISOL (two) - CL
 TK ISOL (two) - CL (tb-bp)
 L OMS He PRESS/VAP ISOL (two) - CL GPC
 TK ISOL (two) - OP (tb-OP) GPC (tb-OP)
 XFEED (two) - CL (tb-CL) GPC (tb-OP)
 R OMS He PRESS/VAP ISOL (two) - CL GPC
 TK ISOL (two) - OP (tb-OP) GPC (tb-OP)
 XFEED (two) - CL (tb-CL) GPC (tb-CL)
 FWD RCS He PRESS (two) - OP (tb-OP)
 GPC (tb-CL)
 TK ISOL (two) - OP (tb-OP)
 GPC (tb-OP)
 MANF ISOL 1,2,3,4 - OP (tb-OP)
 GPC (tb-OP)
 5 - GPC (tb-OP)
 ANNUN LAMP TEST - ctr

F4 All pb lts - as reqd

F8 OV103,5 INST PWR - ON OFF
 OV103,5 DATA BUS - 4
 OV102,4 HUD DATA BUS - 4
 AIR DATA - NAV
 ADI ATT - LVLH
 ERR - as reqd

7-6

ENT/ALL/GEN F

RIGHT SEAT SWITCH LIST AT WHEELS STOP EGRESS

R6	R COMM PWR – ON	R14:B	OV104,5 cb MNB PALLET DSC 4B – op OV102,4,5 cb MNC PALLET DSC 2A – op* OV104,5 cb MNC PALLET DSC 3B/4A – op
R7	(NOTE: Pnl may be deleted if spacelab not flown) All switches per DEORB PREP except powered spacelab config: SS INV – ctr (lt on) AC/DC PWR – ctr (lt on) AV FAN ON 1 – ctr (lt on) H2O LOOP PUMP 1 – ctr (lt on) Unpowered spacelab config same as above except lts off:	:C	cb MNA UHF EVA – op MNB KU ELEC – op ANT HTR – op CABLE HTR – op MNC KU SIG PROC – op UHF EVA – op
		:F	ESS 1BC LDG GEAR ARM/DN RESET – op cl
		* Closed if EDO	
R10	MS AUD PWR – AUD/TONE A/G (two) – T/R A/A – T/R ICOM (two) A – T/R B – T/R VOX SENS – as reqd PAGE – dn VOL tw (five) – as reqd XMIT/ICOM MODE – PTT/PTT		
R12	OV103,5 CRT 4 PWR – ON OFF OV102,4 IDP/CRT 4 PWR – ON OFF MAJ FUNC – SM		
R14:B	All cbs closed except: OV102,4,5 cb MNA PALLET DSC 1A/2B – op* OV104,5 cb MNA PALLET DSC 3A – op OV102,4,5 cb MNB PALLET DSC 1B – op*		

NOT FLOWN

7-8

ENT/ALL/GEN F,1

AFT FLIGHT DECK SWITCH LIST AT WHEELS STOP EGRESS

A11 MS COMM CCU PWR – ON OFF

A12 APU HTR GAS GEN/FUEL PUMP (three) – B AUTO OFF
 LUBE OIL LINE (three) – B AUTO OFF
 TK/FU LINE H2O SYS 1A,2A,3A – OFF
 1B,2B,3B – AUTO OFF

LG ARM/DN RESET – dn
 FC3 STRUCT RTN – ctr (tb–ON)
 HYD HTR (eight) – OFF
 CIRC PUMP PWR 1 – MNA
 2 – MNB
 3 – MNC

A13 OS AUD MSTR SPKR VOL – as reqd
 SPKR PWR – OFF

A14 RCS/OMS HTR FWD RCS – OFF
 L POD (two) – OFF
 R POD (two) – OFF
 OMS KIT – OFF
 CRSFD LINES (two) – A AUTO OFF
 – B AUTO OFF
 FWD RCS JET 1,2,3,4 (four) – AUTO
 5 – OFF
 AFT RCS JET 1,2,3,4 (four) – AUTO
 5 – OFF

A14 PYRO (twelve) – SAFE
 RMS LAT – SAFE

A15 PS COMM CCU PWR – ON OFF
 DC UTIL PWR MNC – as reqd
 AC UTIL PWR AC3 – OFF

NOT FLOWN

7–9

ENT/ALL/GEN F

MIDDECK – FORWARD SWITCH LIST AT WHEELS STOP EGRESS

MO39M MIDDECK COMM CCU PWR – ON OFF

MO42F MIDDECK SPKR AUD PWR – OFF
A/G (two) – T/R
A/A – T/R
ICOM (two) – T/R
VOX SENS – as reqd
MSTR SPKR VOL – as reqd
PAGE – dn
VOL tw (five) – as reqd
XMIT/ICOM MOD – PTT/VOX
TONES – ACCU/BYP
SPKR PWR – OFF
GPC MEM DUMP – OFF
BYP TONE VOL – as reqd

NOT FLOWN

7-10

ENT/ALL/GEN F

CUE CARD
CONFIG

ENTRY CUE CARD CONFIG

FAB USE ONLY

8-1

ENT/ALL/GEN F

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE ENT-1a/D/I

	FAILURE	PRE TIG		POST TIG
		Delay (max)		Stop Burn, > Safe HP
		One Orbit	One Day	
1	APU/HYD No APU operating	X		
2	LDG/DECEL NWS (KSC)	X		
3	DPS RDNT fail, Split		X	X
4	1 GPC	X		
5	BFS		X	
6	GPC BITE (Multiple GPCs)		X	
7	ECLS 2 Av Bay Fans in Bay 3	X		
8	2 Av Bay Fans in Bay 1 or 2		X	
9	ELEC H2 Manf or TK leak (not in depleted tk(s) _____)	X		
10	2 MN Buses		X	X
11	CNTL CA1 (No BFS Engage in GPC 3/5)		X	
12	Multi Φ AC BUS (unshorted)	X		
13	GNC 1 MLS (if reqd), IMU, or TACAN (C-band not avail)	X		
14	IMU Dilemma		X	X
15	RHC Dilemma	X		
16	2 IMUs		X	
17	3 ADTAs	X		
HOOK VELCRO				HOOK VELCRO
18	2 ADTAs, AAs, RGAs, FCS (LKBD not avail)	X		
19	OMS Prplt Tank	X		X ①
20	Ignition (neither eng ignites)	X		
21	Both OMS Eng fail			X ②
22	Prplt Lk after LAST LOS	perigee adjust		
23	AFT RCS 2 jets, same direction, same pod	X		
24	Prplt Lk after LAST LOS	X		
25	1 AFT RCS PROP TK fail	X		
26	COMM MCC GO for DEORBIT not rcvd		X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)
 ② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

(reduced copy)

TOP
BACK OF 'DEORBIT BURN FLIGHT RULES'

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE NOT AVAILABLE ENT-1b/D/I

	FAILURE	PRE TIG	POST TIG
		Delay (max)	Stop Burn, > Safe HP
		One Day	
1	APU/HYD No APU operating	X	
2	LDG/DECEL NWS (KSC)	X	
3	DPS RDNT fail, Split	X	X
4	1 GPC		
5	BFS	X	
6	GPC BITE (Multiple GPCs)	X	
7	ECLS 2 Av Bay Fans in Bay 3		
8	2 Av Bay Fans in Bay 1 or 2	X	
9	ELEC H2 Manf or TK leak (not in depleted tk(s) _____)	X	
10	2 MN Buses	X	X
11	CNTL CA1 (No BFS Engage in GPC 3/5)	X	
12	Multi ΦAC BUS (unshorted)		
13	GNC 1 MLS (if reqd), IMU, or TACAN (C-band not avail)	X	
14	IMU Dilemma	X	X
15	RHC Dilemma	X	
16	2 IMUs	X	
17	3 ADTAs		
HOOK VELCRO			
18	2 ADTAs, AAs, RGAs, FCS (LKBD not avail)	X	
19	OMS Prplt Tank	X	X ①
20	Ignition (neither eng ignites)	X	
21	Both OMS Eng fail		X ②
22	Prplt Lk after LAST LOS	perigee adjust	
23	AFT RCS 2 jets, same direction, same pod	X	
24	Prplt Lk after LAST LOS	X	
25	1 AFT RCS PROP TK FAIL	X	
26	COMM MCC GO for DEORBIT not rcvd	X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)
② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

(reduced copy)

TOP
HINGED AT BOTTOM OF
'DEORBIT BURN (RCS)'
HINGE

* **RCS COMPLETION:**

* THC +X to TGT HP or TOT AFT QTY 1 %

* At AFT QTY 1 if CUR HP: THC +X to PREBANK/FLIP HP or
TOT AFT QTY 2 % then
PREBANK/FRCS COMPLETION

* PREBANK/FLIP HP -----
PREBANK/FRCS COMPLETION

* AFT HP -----
THC +X to TGT HP

* TGT HP -----

* **FRCS COMPLETION (if applicable):**

* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)

CUTOFF VGOx = 0, release THC
AFT RCS RECONFIG
Trim Inplane X,Z residuals < 2 fps (< 0.5 if shallow)

ENT-3aa/D/K

(reduced copy)

FAB USE ONLY

CC 8-5

ENT/ALL/GEN F



(reduced copy)

FAB USE ONLY

CC 8-6

ENT/ALL/GEN F



TOP
HINGED AT BOTTOM OF
BACK OF 'DEORBIT BURN (RCS)'
HINGE

ENT-3bb/D/D

(reduced copy)

FAB USE ONLY

CC 8-7

ENT/ALL/GEN F

TOP

HOOK
VELCRO

DEORBIT
BURN (2 ENG)

HOOK
VELCRO

- ✓MM302 ✓OMS BOTH
- Enter TGO + 5 sec
- ✓TRIM per MNVR PAD or P +0.0, LY -5.7, RY +5.7
- L,R OMS He PRESS/VAP ISOL A (two) - GPC
- B (two) - OP
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON

- TIG-2 OMS ENG (two) - ARM/PRESS
- :15 EXEC (NO EXEC > TIG + [] : [])
 - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
 - :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)

If no OMS ignition: APUs - SHUT DN

OMS PRPLT FAIL:

- Failed OMS ENG - OFF
- STOP BURN:
- Good OMS ENG - OFF
- APUs - SHUT DN
- Secure aff OMS

L OMS FAIL HP	R OMS FAIL HP
[][]	[][]

- CONTINUE BURN:
- ITEM 18 +0 EXEC
 - When good OMS QTY:
 - 5%: L,R OMS XFEED (four) - OP
 - 4%: Good OMS TK ISOL (two) - CL
 - If OMS Pc < 80 or OMS TEMP,
 - OMS ENG - OFF
 - ✓ADI - LVLH, center needles
 - RCS COMPLETION

OMS ENG FAIL:

- Failed OMS ENG - OFF
- OMS XFEED at 1/2 ΔVTOT at fail [][]
- or OMS QTY [][] %L or [][] %R

2nd OMS FAIL (ENG or PRPLT):

- Failed OMS ENG - OFF
- If PRPLT FAIL:
- Secure aff OMS
- ITEM 18 +0 EXEC
- Both ENG FAIL HP [][]
- Either PRPLT FAIL (SAFE) HP [][]
- STOP BURN:
- APUs - SHUT DN

- CONTINUE BURN:
- ✓ADI - LVLH, center needles
 - Interconnect good OMS to RCS
 - THC +X (✓OMS% vs RCS Burn Time)
 - RCS I'CNCT TK SW (N/A PRPLT FAIL)
 - THC +X (✓OMS% vs RCS Burn Time)
 - AFT RCS RECONFIG
 - RCS COMPLETION

ENT-4a/D/K

HINGE
(reduced copy)

FAB USE ONLY

CC 8-8

ENT/ALL/GEN F

TOP
BACK OF 'DEORBIT BURN (2 ENG)'



- ✓MM302 ✓OMS L or R
- ✓OMS BURN CONFIG (L or R XFEED)
- Enter TGO + 10 sec
- ✓TRIM per MNVR PAD or P +0.0, LY +5.2, RY -5.2
- L,R OMS He PRESS/VAP ISOL A (two) - OP
- Wait 2 sec B (two) - OP
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON
- TIG-2 Good OMS ENG - ARM/PRESS :)
- :15 EXEC (NO EXEC > TIG +)
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)
- * If no OMS ignition: APU's - SHUT DN *
- OMS XFEED RETURN at ΔVTOT =
- or at %
- L,R OMS TK ISOL (four) - OP
- XFEED (four) - CL

```

* OMS PRPLT FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU's - SHUT DN
* Secure aff OMS
SAFE  
HP  -----
*
* CONTINUE BURN:
* Secure aff OMS
* ITEM 18 +Q EXEC
* ✓ADI - LVLH, center needles
* Interconnect good OMS to RCS
* THC +X(✓OMS% vs RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* OMS ENG FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU's - SHUT DN
ENG
FAIL   
HP  -----
*
* CONTINUE BURN:
* ✓ADI - LVLH, center needles
* Interconnect OMS to RCS
* THC +X(✓OMS% vs RCS Burn Time)
* RCS I'CNCT TK SW
* THC +X (✓OMS% vs RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* RCS +X JET FAIL OFF:
*
* STOP BURN:
* APU's - SHUT DN
SAFE  
HP  -----
*
* CONTINUE BURN:
* ITEM 18 +Q EXEC
* [G23]Resel jets
  
```

ENT-4b/D/I

HINGE
(reduced copy)

TOP
HINGED AT BOTTOM OF
'DEORBIT BURN (1 ENG)'
HINGE

* **RCS COMPLETION:** *
 * THC +X to TGT HP or TOT AFT QTY 1 % *
 * *
 * At AFT QTY 1 THC +X to PREBANK/FLIP HP or *
 * if CUR HP: TOT AFT QTY 2 % then *
 * PREBANK/FRCS COMPLETION *
 * *
 * PREBANK/FLIP ----- *
 * HP PREBANK/FRCS COMPLETION *
 * *
 * AFT ----- *
 * HP THC +X to TGT HP *
 * *
 * TGT ----- *
 * HP *
 * *
 * **FRCS COMPLETION (if applicable):** *
 * MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
 * THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *

CUTOFF
 + :02 OMS ENG - OFF (If < 3 IMU, at :)
 * AFT RCS RECONFIG if INTERCONNECT *
 Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

ENT-4bb/D/J

(reduced copy)

FAB USE ONLY

CC 8-11

ENT/ALL/GEN F

TOP
HINGED AT BOTTOM OF 'UNBALANCED PRPLT DEORBIT BURN'
HINGE

```

* OMS PRPLT FAIL:
* Failed OMS ENG - OFF
*
*      L OMS      R OMS      STOP BURN:
*      FAIL HP    FAIL HP    Good OMS ENG - OFF
*      [ ][ ][ ]  [ ][ ][ ]  APU's - SHUT DN
*                               Secure aff OMS
*-----
*                               CONTINUE BURN:
*                               ITEM 18 +0 EXEC
*                               When good OMS QTY:
*                               5%: L,R OMS XFEED (four) - OP
*                               4%: Good OMS TK ISOL (two) - CL
*                               If OMS Pc < 80 or OMS TEMP,
*                               OMS ENG - OFF
*                               ✓ADI - LVLH, center needles
*                               RCS COMPLETION
*
* OMS ENG FAIL:
* Failed OMS ENG - OFF
* OMS XFEED at 1/2 ΔVTOT at fail [ ][ ][ ]
* or OMS QTY [ ][ ][ ] %L or [ ][ ][ ] %R
*
* 2nd OMS FAIL (ENG or PRPLT):
* Failed OMS ENG - OFF
* If PRPLT FAIL:
*   Secure aff OMS
*   ITEM 18 +0 EXEC
*
*      Both      Either
*      ENG FAIL  PRPLT FAIL
*      HP        (SAFE) HP
*      [ ][ ][ ] [ ][ ][ ] STOP BURN:
*                               APU's - SHUT DN
*-----
*                               CONTINUE BURN:
*                               ✓ADI - LVLH, center needles
*                               Interconnect Good OMS to RCS
*                               THC +X (✓OMS% vs RCS Burn Time)
*                               RCS I'CNCT TK SW (N/A PRPLT FAIL)
*                               THC +X (✓OMS% vs RCS Burn Time)
*                               AFT RCS RECONFIG
*                               RCS COMPLETION
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1 [ ][ ][ ] %
*
*      At AFT QTY 1      THC +X to PREBANK/FLIP HP or
*      if CUR HP:      TOT AFT QTY 2 [ ][ ][ ] % then
*                       PREBANK/FRCS COMPLETION
*-----
* PREBANK/FLIP HP [ ][ ][ ] PREBANK/FRCS COMPLETION
*-----
* AFT HP [ ][ ][ ] THC +X to TGT HP
*-----
* TGT HP [ ][ ][ ]
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
* CUTOFF
* + :02 OMS ENG(s) - OFF (If < 3 IMU, at [ ][ ] : [ ][ ][ ] )
*       * AFT RCS RECONFIG if INTERCONNECT *
*       Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5aa/D/M

(reduced copy)

FAB USE ONLY

CC 8-13

ENT/ALL/GEN F

TOP
BACK OF 'UNBALANCED PRPLT DEORBIT BURN'

HOOK VELCRO

**DEORBIT
BURN
(MIXED
XFEED)**

HOOK VELCRO

- ✓MM302 ✓OMS L(R) or RCS
Enter TGO + 10 sec
- ✓L,R OMS TK ISOL (four) – GPC
- ✓XFEED (four) – GPC
- ✓tb config from table (OMS SSR-1)
- ✓DAP – AUTO(PASS)/DISC
- ADI – LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) – ON
- Man repress to maintain good OMS Tk Ps > 234 psi (simo)
- If OMS BURN INITIATION:

- ✓TRIM per MNVR PAD or: P +0.0, LY +5.2, RY -5.2
 - Good OMS ENG – ARM/PRESS
- TIG-2: EXEC (No EXEC > TIG + :)
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :15 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)
- :00 * If no OMS ignition, APUs – SHUT DN *
- If RCS BURN INITIATION:
- Man repress L,R OMS > L,R RCS TK Ps
- L,R RCS XFEED (four) – OP
- TK ISOL (six) – CL
- :00 THC +X (No Deorbit > TIG + :)
- Maintain PITCH ATT ERR ± 3°

FEED FROM GOOD POD:
 at ΔVTOT =
 or at %
 OMS He PRESS/VAP ISOL (two) – OP
 TK ISOL (two) – OP (tb-OP)
 XFEED (two) – OP (tb-OP)
 SECURE OMS

OMS PRPLT LOW
 AFT RCS RECONFIG at ΔVTOT =
 RCS COMPLETION

+ HINGE ENT-5b/D/I +
(reduced copy)

TOP
 Hinged at bottom of 'DEORBIT BURN (MIXED XFEED)'
 HINGE

```

* OMS PRPLT FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU(s) - SHUT DN
* Secure L,R OMS
SAFE  
HP 
-----
* CONTINUE BURN:
* Secure L,R OMS
* ITEM 18 +Q EXEC
* ✓ADI - LVLH, center needles
* RCS COMPLETION
*
* OMS ENG FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU(s) - SHUT DN
ENG   
FAIL  
HP 
-----
* CONTINUE BURN:
* Man repress L,R OMS > L,R RCS TK Ps
* FEED FROM GOOD POD:
*  OMS HE PRESS/VAP ISOL
* (two) - OP
* TK ISOL (two) - OP
*  OMS XFEED (two) - CL
* L,R RCS XFEED (four) - OP
* TK ISOL (six) - CL
* ✓ADI - LVLH, center needles
* THC +X (✓Lowest OMS % vs
* RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* RCS +X JET FAIL OFF:
*
* STOP BURN:
* APU(s) - SHUT DN
SAFE   
HP 
-----
* CONTINUE BURN:
* ITEM 18 +Q EXEC
* G23 Resel jet
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1    %
*
* At AFT QTY 1
* if CUR HP:
*   THC +X to PREBANK/FLIP HP or
*   TOT AFT QTY 2   % then
*   PREBANK/FRCS COMPLETION
*
* PREBANK/FLIP  
* HP  PREBANK/FRCS COMPLETION
*
* AFT  
* HP  THC +X to TGT HP
*
* TGT  
* HP 
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
* CUTOFF VGOx = 0, Release THC
* + :02 OMS ENG(s) - OFF (If < 3 IMU, at  :   )
* * AFT RCS RECONFIG if INTERCONNECT *
* Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5bb/D/I

(reduced copy)

FAB USE ONLY

CC 8-15

ENT/ALL/GEN F

TOP

ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	✓LVLH ATT GNC, OPS 304 PRO * If PREBANK, R/Y - CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° * If previous OMS OX TK or He TK or RCS OX TK leak: [G51] VENT DOORS - OP PTI - ENA at EI-5 when applicable
$\bar{q} = 1$	(AOA) HYD MN PUMP PRESS (three) - NORM
'Guidance Box' @ $\bar{q} - 8$ or D - 3	CLOSED LOOP GUIDANCE ____ : ____ : ____ * If PREBANK: P,R/Y - AUTO * Begin ALL trim monitoring
D = 11	✓DRAG H (FORCE if editing)
V = 19K	✓MPS/TVC ISOL VLV - CL
V = 15K	✓NAVAIDS (I/O RESET if reqd) * If ELS: UHF MODE - G T/R *
V = 12K	RAD BYP VLV MODE (two) - AUTO CNTLR LOOP (two) - AUTO B(A)
V = 10K	✓SPDBK to 81%
$\Delta Az = 10.5^\circ$	FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

PILE
VELCRO

PILE
VELCRO

PILE
VELCRO

PILE
VELCRO

ENT-6a/E/L

(reduced copy)

FAB USE ONLY

CC 8-16

ENT/ALL/GEN F

TOP
BACK OF 'ENTRY MANEUVERS'

HOOK
VELCRO

FLIGHT CONDITIONS	MANEUVER			
V = 7K	✓TACAN status			
V = 5K	ADTA PROBES – DEPLOY (✓HEAT) Begin AIL and RUD trim monitoring			
M = 2.7	✓APUs HUD PWR (two) – ON			
* If M < 2.5; P CSS for ADTA to G&C incorp *				
M = 2.0	Ensure ADTA to G&C else ✓Theta limits			
M = 0.9	P, R/Y – CSS as reqd ✓SPDBK CMD vs POS ✓R FLT CNTLR – ON ✓NWS – 1 Lock Inertia Reels MAX Nz <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td><td>.</td><td> </td></tr></table>		.	
	.			
M = 0.7	✓LG EXTEND ISOL VLV – OP			
h = 15K	✓MLS			
h = 10K	✓A/L, TABS/VISORS – CL/LES O2 – ON (KSC)			
h = 2K	LANDING GEAR ARM pb – ARM			
h = 300	LANDING GEAR DN pb – DN			
MAIN GEAR TD	✓SPDBK – 100%			
V = 195 KEAS	DRAG CHUTE pb (two) – ARM, DPY (simo)			
V = 185 KEAS	DEROTATE			
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb ✓Auto Load Relief ✓HYD BRAKE ISOL VLV (three) – OP			
MIDFIELD and V < 140 KGS	BRAKE as required (8–10 fps ² , –0.25 to –0.3G)			
* If 5K' remaining and V > 140 KGS – MAX BRAKING *				
V = 60 KGS	DRAG CHUTE JETT pb – JETT			
V = 40 KGS	BRAKE < 6 fps ² (–0.2G) (Antiskid cutout)			
WHEEL STOP	Go to ENT C/L, POST LANDING PROCEDURES			

HOOK
VELCRO

DRAG CHUTE DEPLOY	
MCC Call	Flight Condition
Early	Main Gear TD
NOMINAL	195 KEAS If leaking/flat tire delay derot 10 kts
Late	Post–Nose Gear TD Xwind DTO
Emergency Only	No Deploy Except CDR call
NO DEPLOY prior to MGTD > 230 KEAS < 80 KGS Xwind > 15 kts	

HOOK
VELCRO

50K	/
38K	/
28K	/
20K	/
12K	/
7K	/
3K	/
1K	/
SURF	/

HOOK
VELCRO

ENT–6b/E/Q

(reduced copy)

FAB USE ONLY

CC 8–17

ENT/ALL/GEN F

FAB USE ONLY

CC 8-18

ENT/ALL/GEN F

(reduced copy)

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

TOP

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

ENTRY NO-GO CHECKLIST

FAILURE OF:	AERO PTI DTO	AUTO FCS MODE	XWIND DTO ①
APU/HYD: 1 APU			X
2 APUs	X		X
DISPLAYS: 2 ADIs	X		
CDR HUD			X ②
CONTROLLERS:			
RHC: 1L			X
2L & 2R	X		X
RPTA: 2L or 2R			X
GNC: 2 AAs (LAT)	X		X
2 AAs (NORM)	X (M < 2.5)		X ③
2 RGAs	X		X
2 R DDU PWR SPLY			X
2 IMU (or 1 IMU + BITE)	X		X
2 ADTAs			X
ADTA NOT INCORP OR DLMA		X (M < 2)	
MLS NOT INCORP 2 FCS CH (same surface)	X		X
DECS: 1 GPC (not restrung)			X ④
2 GPC (restrung)	X		X
2 GPC (not restrung)	X	X ③	X
1 FF			X ④
2 FF	X	X ③	X
2 FA	X		X
RCS: LEAK (AFT - during ENT)	X		X
2 YAW JETs (same side)	X		X
MIN RCS QTY	X		X
TRIM: All > ± 2.0 deg	X		X
DOWNMODE:			
FCS problem	X	X	X
AOA	X		X
PLB: PLBD Latch Gang	X		X
LDG/DECEL:			
Tire Leak			X
HYD BRAKE ISOL VLV			X
< 100% Brakes			X
NWS			X
ENERGY - OFF NOMINAL:			
Roll Ref Alert	X		
Above Upper Traj Line	X		
MCC GCA, or VEL & PSN update	X	X	
No A/L by BK B	X		X
DATA: OPS RECORDERS	X (LOS)		
XWIND:			
< 10 Knots Peak			X
> 15 Knots Peak			X
> 10 Knots Gust			X
GROUND SYSTEMS:			
No Runway Aim Point			X

NOTES

- ① Consider runway redesignation (M > 6) to avoid Xwind landing
- ② GO if PAPI and BALL BAR available
- ③ Pitch AUTO mode NO-GO for M < 2.5
- ④ GO if only string 4 affected

TIME to EI (min)	LVLH PITCH (deg)
20	339
	343
	347
	351
	355
15	359
	3
	7
	11
	15
10	19
	23
	27
	31
	35
5	39

ENT-7a/E/I

FAB USE ONLY

CC 8-19

ENT/ALL/GEN F,1

(reduced copy)

TOP
BACK OF 'ENTRY NO-GO CHECKLIST'

HOOK
VELCRO

**BAILOUT
MODE 8**

REPORT POSITION
✓ MACH < .95
P, R/Y - CSS
OPS 305/603 PRO (if reqd)
SB - AUTO; BF - AUTO
FLY 185-195 KEAS, $\phi = 0^\circ$
ABORT MODE - ATO
ABORT PBI - PUSH
P, R/Y - AUTO
FLT CNTLR PWR (two) - OFF

-50K FT

TABS - RELEASE
VISOR - CLOSE / LOCK
LES O2 - ON
GREEN APPLE - PULL

-40K FT

MS3 - VENT CABIN
CDR, PLT SEATS - LOWER
KNEEBOARDS - REMOVE
COOLING - DISCONNECT
RESTRAINT - RELEASE
D-RING - UNCOVER

-30K FT

MS3 - JETTISON HATCH
COMM - DISCONNECT
(G-SUIT CLIP - PULL)
LES O2 - DISCONNECT
EGRESS SEAT
POLE - DEPLOY
D-RING - HOOK UP
BAILOUT

HOOK
VELCRO

**POST LANDING
MODE 5**

TABS - RELEASE
VISOR - CLOSE/LOCK
LES O2 - ON
GREEN APPLE - PULL
KNEEBOARDS - REMOVE
COOLING - DISCONNECT
RESTRAINT - RELEASE
PARACHUTE (four) -
RELEASE
COMM - DISCONNECT
(G-SUIT CLIP - PULL)
LES O2 - DISCONNECT
PLT - EMER PWR DOWN
EGRESS SEAT
SLIDE/ESCAPE PANEL

HOOK
VELCRO

ADTA MGMT

		NAV		G&C
		RATIO > 1		Two or more good ADTAs
		IF BAD ADTA	IF BAD NAV STATE	
COMM OK	MCC: AUTO or INH*	MCC: INH	MCC: FORCE	Evaluate h, ,M MCC: AUTO (G&C)
NO COMM	AUTO	TACAN OK	NO TACAN	Evaluate h, ,M If reasonable: AUTO (G&C)
		ADTA ERRATIC	ADTA STEADY	
		INH AUTO	FORCE	

*(If ADTA H will degrade NAV state)

NO COMM TACAN MGMT

V = 6K

RATIO < 1	RATIO > 1	ONE TACAN LOCKED	NO LOCK
AUTO	TROUBLESHOOT	BELOW V = 5.5K	BELOW V = 5.5K
	IF BAD TACAN	DESELECT MISSING TACANS, then - AUTO	TOGGLE TACAN
	AUTO		
	IF 1st acq - FORCE IF NOT - ZERO Δ STATE		

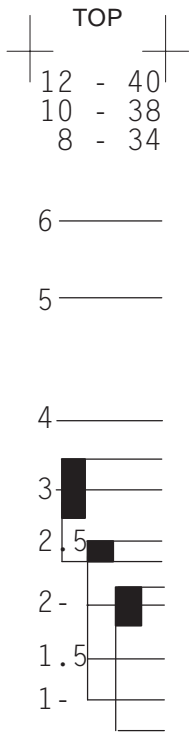
NAV DELTA PAD

ΔX 10	()						
ΔY 11	()						
ΔZ 12	()						
ΔX 13	()						
ΔY 14	()						
ΔZ 15	()						

For Δ STATE UPDATES (on MCC call):
P, R/Y - CSS
DRAG H, TACAN, ADTA - INH
On MCC call, back to AUTO

HOOK
VELCRO

ENT-7b/E/N



TOP BACK



ENT/8b/
A,E/B

Align
with
0 →

█ MAX L/D
MACH/

ENT/8a/
A,E/C



FAB USE ONLY

CC 8-20

ENT/ALL/GEN F

FAB USE ONLY

CC 8-21

ENT/ALL/GEN F

(reduced copy)

TOP

HOOK
VELCRO

HOOK
VELCRO

ENTRY CONTROL

ARCS QTY (L + R) < 10%

ARCS QTY = 0 & JETS FAIL OFF	1. ENTRY MODE – NO Y JET (R/Y CSS; expect sluggish control)
$\bar{q} \geq 20$ & $M > 6$	2. [G51] ELEVON FIXED – ITEM 18 EXEC (*)
CONTROL PROBLEMS* & ARCS QTY > 0	3. ENTRY MODE – AUTO When control regained: 4. ENTRY MODE – NO Y JET 5. \checkmark AIL trim
$M < 6$ & ARCS QTY > 0	6. ENTRY MODE – AUTO
$M < 5$	7. TRIM/RHC PNL – ENA 8. TRIM ROLL – away from AIL trim (to < 1)

*Region of least margin: M 12-8

AIL TRIM $\geq 3^\circ$

TAL	1. [G51] WRAP MODE – ITEM 45 EXEC (ACT)														
AIL trim = 5	2. BF – MAN 3. BF – UP (to 0%)														
NO Y JET	4. Perform roll reversals at 3°/s (expect sluggish control)														
$M < 13$ & AIL trim = 5	5. P – CSS 6. Fly α per schedule: <table border="1" style="margin-left: 40px;"> <tr> <td>M</td> <td>12</td> <td>11</td> <td>10</td> <td>9</td> <td>8-6</td> <td>5</td> </tr> <tr> <td>α</td> <td>37</td> <td>36</td> <td>35</td> <td>33</td> <td>30</td> <td>26</td> </tr> </table>	M	12	11	10	9	8-6	5	α	37	36	35	33	30	26
M	12	11	10	9	8-6	5									
α	37	36	35	33	30	26									
$M < 5$	7. TRIM/RHC PNL – ENA 8. TRIM ROLL – away from AIL trim (to < 1) 9. P – AUTO														
$M < 2$	10. BF – AUTO														

(Continued on back for 'HIGH-FREQ OSC OR SURF/JET CYCLE')

ENT-10a/A,E/A

HOOK
VELCRO

HOOK
VELCRO

FAB USE ONLY

CC 8-22

ENT/ALL/GEN F

(reduced copy)

TOP
BACK OF 'ENTRY CONTROL'

HOOK
VELCRO

HOOK
VELCRO

HIGH-FREQ OSC OR SURF/JET CYCLE

Returning PL > 10K lbs	1. <input type="checkbox"/> FILTER ALT – ITEM 21 (*)
	2. P, R/Y – CSS
Osc/Cycle continues	3. ENTRY MODE – LO GAIN
Osc/Cycle stops	4. ENTRY MODE – AUTO 5. P, R/Y – AUTO

HOOK
VELCRO

HOOK
VELCRO

ENT-10b/A,E/A

— | |

| | —

Replace this page with page(s) from Flight Supplement

FAB USE ONLY

8-23

ENT/ALL/GEN F

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Replace this page with page(s) from Flight Supplement

FAB USE ONLY

8-24

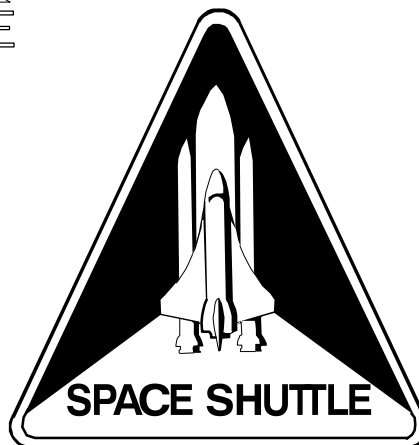
ENT/ALL/GEN F

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Space Shuttle Program
FLIGHT DATA FILE

JSC-48019
GENERIC, REV F



**ENTRY
CHECKLIST**

ALL

Flight Cover (trim bottom to expose tabs)