

WORLD SPACEFLIGHT NEWS SPECIAL REPORT: STS-1 ASCENT CHECKLIST

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STS-1 Flight Data File Ascent Checklist

Orbital Flight Test

Flight Operations Directorate
Crew Training and Procedures Division

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National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

SWITCH LIST FOR HANDOVER INGRESS

LEFT SEAT	AFT	MIDDECK - FWD
L5.....1-3	O19.....1-10	MD42F.....1-15
L4.....1-3	C6.....1-10	MD58F.....1-15
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F9.....1-8		
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R1.....1-8		
R2.....1-9		
R4.....1-9		
R6.....1-9		

NOTES

- HANDOVER from LCC occurs at launch tower clear (LCC to MCC Handover)
- INGRESS denotes switch status at flight crew orbiter ingress

(Continued)

NOTES (Cont)

- ----- denotes a physical break in panel structure
- Radiator flow valve, indicated by an *, is in full radiator flow position and unpowered to allow maximum radiator flow capability if required
- Talkbacks on panels R12 and ML31C that are indicated by ** are bp because cb's on ML86B are open. Position of valves are indicated below

R12L: SPLY H2O TKA INLET - OP
TKA OUTLET - CL
DUMP ISOL VLV - CL
TKB INLET - OP
TKB OUTLET - OP
GALLEY SPLY VLV - OP
TKC INLET - OP
TKC OUTLET - OP

ML31C: WASTE H2O TK1 DRAIN VLV - CL
TK1 VLV - OP
DUMP ISOL VLV - CL
SPLY H2O TKD INLET - OP
OUTLET - OP
VAC VENT ISOL VLV CNTL - CL

- Before turning O1 PCMMU PWR switch on C3, indicated by ***, to OFF, notify the LCC so gnd power can be connected; also notify the LCC before turning it to 1 after crew ingress

SW LIST

LEFT SEAT SWITCH LIST FOR HANDOVER INGRESS

L5 L COMM PWR - SUIT OFF

L4: All cb's closed except:
 :B,Q All cb's - op
 :R cb AC2 #B INST OVHD - op

W1 16mm Camr - on OFF
 controls - as reqd

L1 HUMIDITY SEP A - OFF
 B - ON
 CAB TEMP - COOL
 TEMP CNTLR - OFF
 FAN A - ON
 B - OFF
 IMU FAN A - OFF
 B - ON
 C - OFF
 H2O PUMP LOOP 1 (two) - OFF, B
 LOOP 2 - ON
 LOOP 1 BYP MAN - ctr
 MODE - MAN
 LOOP 2 BYP MAN - ctr
 MODE - MAN
 AV BAY 1 FAN A - OFF
 B - ON
 2 FAN A - ON
 B - OFF
 3 FAN A - OFF
 B - ON

L1 FLOW PROP VLV (two) - ctr (tb-ICH)
 FREQN PUMP (two) - A
 RAD CNTLR OUT TEMP - NORM
 LOOP 1,2 (two) - OFF*
 BYP VLV MAN SEL (two) - ctr (tb-BYP)
 MODE (two) - MAN
 NH3 CNTLR (two) - OFF
 H2O ALT PRESS - CL
 FLASH EVAP CNTLR PRI (two) - OFF
 SEC (two) - A SPLY, OFF
 HI LOAD EVAP - ENA
 TOP EVAP HTR NOZ L,R (two) - A AUTO
 DUCT - OFF A/B
 HI LOAD DUCT HTR - OFF A/B

FIRE SUPPR (three) - SAFE
 pb (three) - 1t off
 SMOKE DETN SNSR - dn
 CKT TEST - OFF

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LEFT SEAT SWITCH LIST FOR HANDOVER INGRESS

L2 O2 SYS 1,2 SPLY (two) - ctr (tb-OP)
 EMER - ctr (tb-OP)
 XOVR (two) - OP
 N2 SYS 1,2 (four) - ctr (tb-OP)
 O2/N2 CNTLR VLV (two) - AUTO
 PPO2 SNSR/VLV - NORM

F1 DC UTIL PWR MNB - ON
 AC UTIL PWR AC1 - OFF

F2 All pb lts off except:
 BDY FLP pb - AUTO TE OFF
 SPDBK/THROTR pb - AUTO TE OFF
 ROLL/YAW pb - AUTO TE OFF
 PITCH pb - AUTO TE OFF

F6 INST PWR - FLT/MPS
 DATA BUS - 3
 AIR DATA - NAV
 ADI ATT - REF
 ERR - MED
 RATE - MED
 LDG GEAR pb (two) - 1ts off
 tb (three) - UP
 HSI SEL MODE - ENTRY
 SOURCE (two) - NAV, 1
 BFC DISENGAGE - dn
 CNTL EFF - NOM
 ALPHA BIAS - ZERO
 GAIN P - LO FWD
 R/Y - NOM

F6 FLT CNTLR PWR - ON
 TRIM RHC/PNL - INH
 PNL - ON
 RADAR ALTM - 1
 ABORT MODE - OFF
 pb - 1t off

F7 OMS PRESS N2/He TK sel - He
 MPS PRESS He sel - TK
 C/W matrix lts - off All off except HYD PRESS

C2 CRT1,2,3 PWR (three) - ON
 MAJ FUNC (three) - GNC
 L CRT SEL - as reqd
 R CRT SEL - as reqd
 EVENT TIMER MODE - DN
 CNTL - ctr
 TIMER SET tw (four) - 0903
 TIMER - ctr

C3 OMS ENG (two) - ARM/PRESS OFF
 BFC CRT DISP - ON OFF
 SEL - 3+1
 FCS CH (four) - AUTO
 BDY FLP - AUTO/OFF
 AIR DATA PROBE STOW (two) - INH
 MW ENG VIB SHUT DN - INH
 LIMIT SHUT DN - AUTO
 TRIM R,P,Y (three) - ctr

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LEFT SEAT SWITCH LIST FOR HANDOVER INGRESS

C3 SBTC - full forward
 DAP - all off
 SRB SEP - AUTO
 ET SEP - AUTO
 AUD CTR - 1
 OI PCMMU PWR - 1 OFF***
 FORMAT - FXD GPC
 S-BD PM CNTL - CMD
 ANT - GPC
 AIR DATA PROBE (two) - STOW
 DFI RCDRS (three) - CONT RCD (tb-gray)
 (tb-bp)
 UPLK BLK - NONE
 MSTR DFI PWR - ON
 C/W MEM - ctr
 MODE - NORM ACK
 PL SAFING (five) - SAFE
 EMER LTG - OFF/ON

O1 COAS - OFF
 AIR TEMP sel - CAB HX OUT
 H2O PUMP OUT PRESS sel - LOOP 2
 FREON sel - LOOP 1
 O2/N2 FLOW sel - SYS 1 O2
 PPO2 sel - SNSR A

O2 CRYO O2 HTR ASSY TEMP sel - TK1 1
 O2/H2 sel - TK1
 FC STACK TEMP sel - 1

L side OVHD Flood - BRT

O5 L AUD MSTR VOL - as reqd
 TACAN ID (two) - OFF, 1
 VOX SENS - as reqd
 A/G (two) - T/R
 A/A - T/R RCV
 ICOM (two) - T/R
 PWR - AUD/TONE
 CNTL - NORM
 XMIT/ICOM MODE - PTT/VOX
 VOL tw (six) - 5
 PAGE - dn

O6 LTG PNL (two) - OFF
 INST (two) - OFF
 L GLRSHLD FLOOD (two) - BRT, as reqd
 L SEAT/CTR CNSL FLOOD (two) - OFF, BRT
 STAR TRKR DR CNTL (two) - CL (tb-CL)
 PWR (two) - OFF
 UHF XMIT FREQ - 296.8
 SPLX PWR AMP - ON
 SQUELCH - ON
 MODE - SPLX
 ANNUN LAMP TEST - ctr
 BUS SEL ACA 1 - MNA
 ACA 2/3 - MNB
 INTEN (two) - BRT, MED
 MTU - AUTO
 DEU (four) - dn
 MDM PL1,2 (two) - ON
 PL3 - OFF

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LEFT SEAT SWITCH LIST FOR HANDOVER INGRESS

06 MDM FA1,2,3,4 (four) - ON
 FF1,2,3,4 (four) - ON
 GPC PWR (Five) - ON
 OUTPUT 1,2,3,4 (four) - NORM (tb-gray)
 5 - B/U (tb-bp)
 IPL SOURCE - OFF
 GPC MODE 1,2,3,4 (four) - RUN (tb-RUN)
 5 - RUN (tb-RUN)
 [HALT (tb-bp)]

07 TACAN 1,2,3 MODE (three) - T/R
 ANT SEL (three) - AUTO
 CH tw (twelve) - 069X
 AFT L RCS He PRESS (two) - OP (tb-OP)
 TK ISOL (three) - GPC (tb-OP)
 MANF ISOL (five) - OP (tb-OP)
 XFEED (two) - GPC (tb-CL)
 1/2 or 3/4/5 - [TEB-OP]
 MSTR RCS XFEED - OFF
 AFT R RCS He PRESS (two) - OP (tb-OP)
 TK ISOL (three) - GPC (tb-OP)
 MANF ISOL (five) - OP (tb-OP)
 XFEED (two) - GPC (tb-CL)
 1/2 or 3/4/5 - [TEB-OP]

013 All cb's - c1

014:A BRAKES MNA - ON
 RGA 1 - ON
 IMU 1 - ON
 FC1 CNTRL - ON
 :B,C,D,E All cb's closed except:
 :E cb MNA DDU AFT - op
 :F MMU 1 - ON
 RJDA 1A L2/R2 LOGIC - ON
 DRIVER - ON [OFF]
 RJDA 2A L4/R4 LOGIC - ON
 DRIVER - ON [OFF]
 RJDF 1B F1 LOGIC - ON
 DRIVER - ON [OFF]
 L OMS ENG VLV - ON [OFF]
 ASA 1 - ON

015:A BRAKES MNB - ON
 RGA (two) - ON
 IMU 2 - ON
 FC2 CNTRL - ON
 :B,C,D,E All cb's close
 :F MMU 2 - ON
 RJDA 1B L1/L5/R1 LOGIC - ON
 DRIVER - ON [OFF]
 RJDF 1A F2 LOGIC - ON
 DRIVER - ON [OFF]
 ASA 2 - ON
 ACCEL 4 - ON

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RIGHT SEAT SWITCH LIST FOR HANDOVER INGRESS

016:A BRAKES MNC - ON
 RGA 3 - ON
 IMU 3 - ON
 FC3 CNTRL - ON
 :B,C,D,E All cb's closed except:
 :E cb MNC DDU AFT - op
 :F RJDA 2B L3/R3/R5 LOGIC - ON
 DRIVER - ON [OFF]
 RJDF 2A F3 LOGIC - ON
 DRIVER - ON [OFF]
 RJDF 2B F4/F5 LOGIC - ON
 DRIVER - ON [OFF]
 R OMS ENG VLV - ON [OFF]
 ASA 3,4 (two) - ON
 ACCEL 3 - ON

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

08 RADAR ALTM (two) - ON
 MLS (three) - OFF
 CH tw (three) - 8
 R SEAT/CTR CNSL FLOOD (two) - OFF, BRT

08 LTG PNL R - OFF
 R OVHD - OFF
 R INST - OFF
 NUMERIC - BRT
 R GLRSHLD FLOOD (two) - BRT, as reqd
 OMS KIT He PRESS/VAP ISOL (two) - CL
 TK ISOL (two) - CL (tb-bp)
 L OMS He PRESS/VAP ISOL (two) - GPC
 TK ISOL (two) - OP (tb-OP)
 XFEED A - CL (tb-CL)
 B - GPC (tb-CL)
 [TEB-OP]
 R OMS He PRESS/VAP ISOL (two) - GPC
 TK ISOL (two) - OP (tb-OP)
 XFEED A - CL (tb-CL)
 B - GPC (tb-CL)
 FWD RCS He PRESS (two) - OP (tb-OP)
 TK ISOL (two) - OP (tb-OP)
 MANF ISOL (five) - OP (tb-OP)
 ANNUN LAMP TEST - ctr

09 R AUD PWR - AUD/TONE
 A/G (two) - T/R
 A/A - T/R [RCV]
 ICOM (two) - T/R
 VOX SENS - as reqd
 TACAN ID (two) - OFF, as reqd
 MSTR VOL - as reqd
 PAGE - dn

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RIGHT SEAT SWITCH LIST FOR HANDOVER INGRESS

09 R AUD VOL tw (six) - 5
 XMIT/ICOM MODE - PTT/VOX
 CNTRL - NORM

R side OVHD Flood - BRT

03 RCS/OMS PRESS sel - OMS PRPLT
 PRPLT QTY sel - OMS FUEL
 MSN TIME sel - MET

F4 All pb lts off except:
 PITCH pb - AUTO [TE OFF]
 ROLL/YAW pb - AUTO [TE OFF]
 SPDBK/THROT pb - AUTO [TE OFF]
 BOY FLP pb - AUTO [TE OFF]

F8 INST PWR - ON
 DATA BUS - 4
 AIR DATA - NAV
 ADI ATT - REF
 ERR - MED
 RATE - MED
 LDG GEAR pb (two) - lts off
 tb (three) - UP
 HSI SEL MODE - ENTRY
 SOURCE (two) - NAV, 2
 FLT CNTRL PWR - ON
 TRIM RHC/PNL - INH
 PNL - ON
 RADAR ALTM - 2
 APU sel (two) - FUEL, 1

F9 AC Volts sel - as reqd
 DC Volts/Amp sel - VOLTS MNA

M6 16mm Camr - off
 controls - as reqd

R1 CNTRL BUS PWR (three) - dn
 ESS BUS SOURCE MN (three) - ON
 FC (three) - ON [OFF]
 FC/MN BUS (three) - ctr (tb-ON)
 MN BUS TIE (three) - ctr (tb-OFF)
 PL CAB - MNA
 PRI (three) - ctr (tb-OFF)
 AUX - OFF
 AFT MNB - OFF
 MNC - OFF
 INV PWR (three) - ctr (tb-ON)
 INV/AC BUS (three) - ctr (tb-ON)
 cb AC CONTR (nine) - op
 AC BUS SNSR (three) - MONITOR [AUTO TRIP]

 02 MANF VLV (two) - ctr (tb-OP)
 TK1,2 HTRS (four) - OFF
 RESET/TEST (two) - ctr
 TK3 HTRS (two) - OFF
 RESET/TEST - ctr
 FC1,3,2 REAC (three) - ctr
 tb (six) - OP
 FC (three) - ctr
 RDY tb (three) - gray
 COOL PUMP ΔP tb (three) - gray

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AFT FLIGHT DECK SWITCH LIST FOR HANDOVER INGRESS

A1L	S-BD PL FREQ SWEEP	- OFF	A1R	PL RCDR PNL CNTL tb	- bp
	MOD	- OFF		FUNC	- OPERATE
	PWR SYS	- OFF		MODE	- SERIAL RCD (tb-RCD)
	PWR SEL	- BOTH			[tb-bp]
	PSP CMD OUTPUT	- PL UMB		PWR	- ON
	PL DATA INTLVR PWR	- OFF		SPEED	- 1
	S-BD PM ANT SW ELEC	- 1	AUD CTR VOICE RCD SEL CH 1	- A/G 1	
	PRE AMPL	- 1		CH 2	- ICOM A
	PWR AMPL STBY	- 1		DOCK RING (seven)	- OFF
	OPER	- 1		SL (seven)	- OFF
	MODE	- STDN HI		UHF A/G (two)	- OFF
	XPNDR	- 1		A/A	- T/R
	NSP DATA RATE (two)	- HI		PL BAY OUTLETS (two)	- OFF
	UPLK DATA	- S-BD			
	CODING (two)	- OFF	A2	PTT sw	- ctr
	PWR	- 1		MIC LEVEL	- ccw
	ENCRYPTOR PWR	- OFF	A4	MSN TIMER sel	- GMT
	ENCRYPTION	- OFF	A3	MON 1 PWR	- OFF
A1R	OPS RCDRS 1 PNL CNTL tb	- bp		controls	- as reqd
	MODE	- RCD (tb-RCD) [tb-bp]		MON 2 PWR	- OFF
	2 PNL CNTL tb	- bp		controls	- as reqd
	MODE	- RCD (tb-RCD) [tb-bp]			
	rotary sw	- MAN			
	PWR (two)	- ON			
	ANOM SEQ	- OFF (tb-bp)			
	S-BD FM CNTL	- CMD			
	ANT	- GPC			
	PWR	- 1			
	DATA SOURCE	- ME			

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AFT FLIGHT DECK SWITCH LIST FOR HANDOVER INGRESS

A6U	DAP	- all off	A7U	VID IN pb (thirteen)	- 1t off
	SENSE	- Z		OUT pb (eight)	- 1t off
	FLT CNTLR PWR	- OFF		CAMR CMD PAN/TILT	- LO RATE
	DATA BUS	- 1		FOCUS	- ctr
	ADI ATT	- INRTL		ZOOM	- ctr
	ERR	- MED		IRIS	- ctr
	RATE	- MED		TILT	- ctr
	OS LTG FLOOD (two)	- OFF, BRT		PAN	- ctr
	PNL	- OFF		ALC pb (three)	- 1t off
	INST	- OFF		GAMMA pb (three)	- 1t off
	NUMERIC	- OFF			
	ANNUN BUS SEL	- OFF	A11	CRYO TK4 HTR O2 (two)	- OFF
	LAMP TEST	- ctr		RESET/TEST	- ctr
	INTEN (two)	- VAR, MED		H2 (two)	- OFF
	EVENT TIMER tw (four)	- as reqd		MS COMM CCU PWR	- OFF
	MODE	- UP		OS COMM CCU PWR	- OFF
	CNTL	- ctr		DC UTIL PWR MNC	- OFF
	TIMER	- ctr	A12	APU HTR GAS GEN/FUEL PUMP (three)	- A AUTO
	PL RETEN LAT	- ctr (tb-bp)		LUBE OIL LINE (three)	- A AUTO
	RDY tb (three)	- bp		TK/FU LINE/H2O SYS 1A,2A,3A	- OFF
	PL SEL	- 3		1B,2B,3B	- AUTO
A7U	MSTR ALARM pb	- 1t off		LG ARM/DN RESET	- dn
	PL BAY FLOOD (eight)	- OFF		FC3 STRUCT RTN	- ctr (tb-ON)
	RMS SPOT (two)	- OFF		HYD HTR A (four)	- AUTO
	CAMR (two)	- MTRST		B (four)	- OFF
	TV CAMR PWR (five)	- ctr (tb-OFF)		CIRC PUMP PWR 1	- MNA
	PWR CNTL	- CMD		2	- MNB
	CONTR UNIT	- OFF		3	- MNC
	DNLK	- ENA			
	SYNC	- NORM			

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AFT FLIGHT DECK SWITCH LIST FOR HANDOVER INGRESS

A13	OS AUD PWR	- OFF	L9	PS FLOOD (two)	- OFF, BRT
	A/G (two)	- T/R		AUD PWR	- OFF
	A/A	- T/R		A/G (two)	- T/R
	ICOM A	- T/R		A/A	- T/R
	B	- as reqd		ICOM A	- T/R
	VOX SENS	- as reqd		B	- as reqd
	MSTR SPKR VOL	- as reqd		VOX SENS	- as reqd
	PAGE	- dn		PAGE	- dn
	VOL tw (five)	- as reqd		VOL tw (five)	- as reqd
	XMIT/ICOM MODE	- PTT/PTT		XMIT/ICOM MODE	- PTT/PTT
	SPKR PWR	- SPKR/MIC			
A14	RCS/OMS HTR FWD RCS	- OFF	L12	All cb's open except:	
	L POD (two)	- OFF		cb PL TIMING BUFFER	- c1
	R POD (two)	- OFF		cb VTR (two)	- c1
	OMS KIT	- OFF		All switches down except:	
	CRSFD LINES (two)	- A AUTO,		VTR PWR	- OFF
		B AUTO		AUD MODE	- PTT
	FWD RCS JET 1,2,3,4 (four)	- OFF		VID MODE	- B&W/FSC
		[AUTO]		controls	- as reqd
	5	- AUTO			
	AFT RCS JET 1,2,3,4 (four)	- OFF			
		[AUTO]			
	5	- AUTO			
	PYRO (fourteen)	- SAFE			
	RMS JETT DEADFACE	- dn			
A15	PS COMM CCU PWR	- OFF			
	DC UTIL PWR MNC	- OFF			
	AC UTIL PWR AC3	- OFF			

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MIDDECK - FORWARD SWITCH LIST FOR HANDOVER **INGRESS**

MO42F	MIDDECK SPKR AUD PWR	- OFF	MO29J	PTT sw	- ctr
	A/G (two)	- T/R		MIC LEVEL	- ccw
	A/A	- T/R	MO52J	DC UTIL PWR MNA	- OFF
	ICOM A	- T/R		AC UTIL PWR AC1	- OFF
	B	- OFF		MSTR ALARM pb	- lt off
	VOX SENS	- as reqd	MO30F	DC UTIL PWR MNC	- OFF
	MSTR SPKR VOL	- as reqd	ML86B:	A11 cb's open except:	
	PAGE	- dn		:A cb MNB SPLY H2O B SPLY ISOL VLV	- c1
	VOL tw (five)	- as reqd		cb MNC SPLY H2O XOVR VLV	- c1
	XMIT/ICOM MODE	- PTT/PTT	MO24K	CONT H2O X-TIE ISOL VLV	- OP
	TONES	- ACCU/BYP		SPLY H2O TK F,E INLET vlv (two)	- OP
	SPKR PWR	- OFF		OUTLET vlv (two)	- OP
	GPC MEM DUMP	- OFF	MO44F	CAB TEMP CNTL vlv	- FULL COOL
	BYP TONE VOL	- as reqd			
MO58F	MIDDECK CCU AUD PWR	- OFF			
	A/G (two)	- T/R			
	A/A	- T/R			
	ICOM A	- T/R			
	B	- OFF			
	VOX SENS	- as reqd			
	PAGE	- dn			
	VOL tw (five)	- as reqd			
	XMIT/ICOM MODE	- PTT/PTT			
	TV PWR	- OFF			
MO32M	POS 5,6 vlv (two)	- CL			
MO39M	MIDDECK COMM CCU PWR	- OFF			
MO69M	POS 7,8 vlv (two)	- CL			

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MIDDECK - AFT SWITCH LIST FOR HANDOVER **INGRESS**

MA73C:A,B	MCA LOGIC MNA (four)	- ON	MO10W	14.5 CAB REG INLET vlv (two)	- CL
	MNB (six)	- ON		PP02 CNTLR (two)	- EMER
	MNC (four)	- ON		O2 REG INLET vlv (two)	- OP
	: All cb's closed except:			H2O TK N2 REG INLET vlv (two)	- OP
	:E,G All cb's - op			O2 EMER vlv	- OP
	:F cb AC1 RMS PRI Φ A - op			N2 XOVR vlv	- CL
	cb AC2 RMS B/U Φ A - op			H2O TK N2 ISOL vlv (two)	- OP
	:G OMS KIT VLV LOGIC - OFF			PL O2 vlv (two)	- CL
	:I AFT POD VLV LOGIC (three)	- ON	WCS	COMMODE CNTL	- DN/OFF
MO13Q	MIDDECK FLOODS (eight)	- OFF		MODE (two)	- OFF, as reqd
	MO13Q LTG	- OFF		VAC VLV	- CL
	AIRLK 2	- OFF/ON		FAN SEP	- 1
	DC UTIL PWR MNB	- OFF			
	AC UTIL PWR AC3	- OFF			
ML18F	EMER LTG	- ON/OFF			
	MNC FLOOD	- OFF			
ML26C	SPLY H2O TKA PRESS CNTL vlv	- VENT			
ML31C	WASTE H2O TK1 DRAIN VLV	- ctr (tb-bp)**			
	TK1 VLV	- ctr (tb-bp)**			
	DUMP ISOL VLV	- ctr (tb-bp)**			
	DUMP VLV	- ctr (tb-bp)**			
	DUMP VLV ENA/NOZ HTR	- OFF			
	SPLY H2O TKD INLET	- ctr (tb-bp)**			
	OUTLET	- ctr (tb-bp)**			
	VAC VENT ISOL VLV MODE	- MN A			
	CNTL	- ctr (tb-bp)**			
	NOZ HTR	- OFF			

1-16

DATE 02/02/81

AIRLOCK SWITCH LIST FOR HANDOVER **INGRESS**

AW18A	LTG FLOOD 1,3,4 (three)	- OFF	AIRLOCK STOWABLE HATCH		
	2	- ON/OFF	Equalization vlv (two)	- NORM	
AW18D	AIRLK AUD PWR	- OFF	CAP VENT	- Installed	
	A/G (two)	- T/R	AIRLOCK UNIVERSAL HATCH		
	A/A	- T/R	Equalization vlv (two)	- OFF	
	ICOM (two)	- T/R	CAP VENT	- Installed	
	PAGE	- dn			
	VOL tw (five)	- as reqd			
	CNTL	- NORM			
	VOX SENS	- as reqd			
	MSTR VOL 1	- as reqd			
	XMIT/ICOM MODE	- PTT/PTT			
	MSTR VOL 2	- as reqd			
AW18H	PWR/BATT CHGR EMU 1 BUS SEL	- OFF			
	MODE	- OFF			
	2 BUS SEL	- OFF			
	MODE	- OFF			
	INPUT sel	- EMU 1			
AW82B	AIRLK DEPRESS vlv	- CL			
	EV-1, EV-2 O2 vlv (two)	- CL			
AW82D	EMU 1 H2O (two)	- ctr (tb-CL)			
	EMU 2 H2O (two)	- ctr (tb-CL)			
	CCU 1,2 PWR (two)	- OFF			

1-17

DATE 02/02/81

PRELAUNCH

1: GNC GPC MEMORY	2: GNC 104 GND IMU CNTL/MON
3: GNC 1 DPS UTILITY	

-1:50:00 B INGRESS ORBITER & SEATS

NOTE
During seat ingress COMM PWR - SUIT (L5,R6) and suit fans - ON

Contact LCC (OTC & STD) on A/G 1

-1:35:00 POST INGRESS SW RECONFIGURATION

NOTE
GND Crew turns on RCS DRIVERS (eight), (014,015 & 016), OMS ENG VLV (two) (014, 016), ESS BUS SOURCE FC (three) (R1); OI PCMMU PWR - 1***, OI PCMMU FORMAT - FXD, C/W MODE - NORM (C3), DFI PCMMU-1, cb DFI PCM FWD CONTAINER FM XMTR MNC - close (R11), and RCS/OMS HTR FWD, AFT RCS JET 1,2,3,4 (eight) - OFF (A14)

Install ASC Flip Cards and Ascent ADI Cards
✓ Cue Card positions

-1:30:00 B ASTRO COMM CHECK

LCC will contact CDR & PLT on A/G 2, ICOM A, ICOM B then A/A

A/G VOICE CHECK

A/G 1 Voice Check
05/09 L,R AUD A/G 2 (two) - OFF
A/A (two) - OFF
Voice check with MCC

A/G 2 Voice Check
L,R AUD A/G 2 (two) - T/R
A/G 1 (two) - OFF
Voice check with MCC

2-2

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1: GNC GPC MEMORY	2: GNC 104 GND IMU CNTL/MON
3: GNC 1 DPS UTILITY	

A/A Voice Check
L,R AUD A/A - T/R
A/G 2 - OFF
Voice check with MCC

Simo Voice Check (Launch Config)
05/09 L,R AUD A/G 1 (two) - T/R
A/G 2 (two) - T/R
Voice check with MCC

-1:20:00 C ABORT ADVISORY CHECKS

NOTE
The ABORT It controlled from LCC

F6 ✓ ABORT It - bright, dim, then off

NOTE
Side hatch closure

-1:10:00

-1:05:00 C CABIN LEAK CHECK

L2 ✓ CAB VENT tb (two) - CL
01 ✓ CAB PRESS - increasing to 16.7 (MA)

-1:00:00 P RGA & AA TEST

2: GNC GPC MEMORY

(DEU Equivalent)

3: GNC 102 RCS/RGA/ADTA TEST
3: GNC 101 SENSOR SELF-TEST

CRT3 Report any up or down arrows

2-3

DATE 02/02/81

1: GNC GPC MEMORY	2: GNC GPC MEMORY
3: GNC 101 SENSOR SELF-TEST	

NOTE
Flt crew functions from this point on will be initiated by a call from the OTC to proceed. The flt crew will report back to the OTC after completion

-51:00 (DEU Equivalent)

2: GNC 104 GND IMU CNTL/MON

NOTE
IMU preflight align begins

-50:00 P H2O BOILER PREACTIVATION

R2 BLR CNTLR (three) - ON
N2 SPLY (three) - ON

-32:00 C PASS/BFS TRANSFER PREP

3: GNC GPC MEMORY

O6 GPC MODE 5 - STBY
C3 ✓ BFC CRT SEL - 3+1
DISP - ON

3: BFS, GNC BFS MEMORY

CRT3 PASS/BFS XFER ENA - ITEM 24 EXEC

-30:00 C OMS GN2 PRESS

C3 OMS ENG (two) - ARM/PRESS

CABIN VENT

L2 CAB VENT (two) - OP (tb-OP)
(klaxon)
01 ✓ CAB PRESS - decreasing

2-4

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1: GNC GPC MEMORY	2: GNC 104 GND IMU CNTL/MON
3: BFS, GNC BFS MEMORY	

NOTE
GND-Controlled Fuel Cell Purge

-25:00 B **A/G VOICE CHECK**

Simo Voice Check (Launch Config)

05/09 L,R AUD VOX SENS (two) - adj as reqd
Voice check with MCC

Update RTLS WINDS PAD, ASC Flip
Cards, RTLS, and ALTM, 2-6 (if
reqd)

-22:00 **PASS/BFS TRANSFER (DEU Equivalent)**
(ONE-SHOT TRANSFER)

1: GNC 100 GTS DISPLAY

CRT3 ✓ITEM 24 - (no *)

NOTE
At T-20 there will be a planned
20 minute hold

-20:00 **OPS 1 LOAD (DEU Equivalent)**

1: GNC LAUNCH TRAJ	2: GNC LAUNCH TRAJ
1: GNC O GPC MEMORY	

ERR LOG RESET

1: GNC FAULT

C Report faults other than from
unpowered equipment

∞

CRT1 GNC, SPEC 99 PRO

2-5

DATE 02/02/81

1: GNC FAULT	2: GNC LAUNCH TRAJ
3: BFS, GNC BFS MEMORY	

-19:00 C **BFS to OPS 1**

3: BFS, GNC FAULT

CRT3 GNC, SPEC 99 PRO

06 GPC 5 MODE - RUN
CRT3 GNC, OPS 101 PRO

3: BFS, GNC LAUNCH TRAJ 1
3: BFS, GNC FAULT

Report faults other than from
unpowered equipment

CRT3 GNC, SPEC 99 PRO

P **HORIZ SIT CONFIG**

2: GNC 50 HORIZ SIT	
3: BFS, GNC 50 HORIZ SIT	

ALTM - ITEM 1 +

--	--	--	--	--

	PASS ITEM	BFS ITEM
RWY	KSC 15 2/	KSC 15 2/

* If RWY KSC 33 selected: *
* 08 MLS CH tw (three) - 6 *

GLD SLOPE	LO WND 5/	LO WND 5/
NEP	NEP 7/	NEP 7/
TAC	INH 18/	INH 18/
DRAG H	AUT 20/	AUT 20/
ADTA H	INH 24/	INH 24/
ADTA TO G&C	INH 27 EXEC	AUT 26/
TAC	DELTA 33 EXEC	--

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 2	

2-6

DATE 02/02/81

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 2	

-16:00 P **MPS He RECONFIGURATION**

R2 MPS He ISOL A,B (six) - OP
PNEU He ISOL - OP

-15:00 B **ABORT ADVISORY CHECKS**

NOTE
The ABORT TE controlled
from MCC & LCC

F6 ✓ABORT It - bright, dim, then off
(two times) then bright, then off

NOTE
OMS/RCS XFEED vTvs are reconfigured
for launch by LPS

C 01 Report cabin pressure to OTC

-10:00 **CLOSE VENT VLVS**

L2 CAB VENT (two) - CL (tb-CL)

NOTE
At T-9 there will be a
planned 10 min hold

-9:00 **'GO FOR LAUNCH' - All**

C2 EVENT TIMER - START
F7 ✓EVENT TIME ind - counting down

NOTE
GLS starts

2-7

DATE 02/02/81

6

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 2	

-8:00 P AC SNSR TO MONITOR

R1 AC BUS SNSR (three) - OFF (1 sec),
then MONITOR

-7:00 NOTE
ACCESS ARM RETRACT

B CLOSE VISOR

Close visor
✓Seat in launch position

-6:00 P APU PRE START

R4 ✓HYD LG RET/CIRC VLV - CL

R2 ✓BLR N2 SPLY (three) - ON
✓CNTLR (three) - ON
✓CNTLR PWR/HTR (three) - A

✓APU FUEL TK VLV (three) - CL
✓PUMP/VLV COOL (two) - OFF

R2 APU CNTLR PWR (three) - ON
✓HYD CIRC PUMP (three) - GPC
MN PUMP PRESS (three) - LO

✓APU AUTO SHUT DN - ENA
✓SPEED SEL (three) - NORM
✓CNTL (three) - OFF

-5:30 C3 ✓DFI RCDRS tb (three) - gray

2-8

DATE 02/02/81

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 2	

-5:00 ► APU START

R2 APU FUEL TK VLV (three) - OP
✓APU/HYD RDY tb (three) - gray

* If any tb not gray, *
* consult LCC before *
* continuing *

APU CNTL 1 - START/RUN
F8 ✓HYD PRESS 1 ind - LO green
R2 ✓READY TO START 1 tb - bp
HYD MN PUMP PRESS 1 - NORM
F8 ✓HYD PRESS 1 ind - HI green

Repeat for APU 2, then for APU 3

R2 HYD CIRC PUMP (three) - OFF
F7 ✓HYD PRESS 1t - off

C HTR RECONFIG

L2 FLASH EVAP FDLN HTR (two) - OFF
L1 TOP EVAP HTR DUCT - OFF
HI LOAD DUCT HTR - OFF

3: BFS, SM SYS SUMM 1

-3:30

NOTE

GLS transfers power to fuel
cell power

2-9

DATE 02/02/81

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 1	

P CLEAR C/W MEMORY

2: GNC 99 FAULT
3: BFS, GNC 99 FAULT

Verify no unexpected errors
CRT2 GNC, SPEC 99 PRO
CRT3 GNC, SPEC 99 PRO

2: GNC SYS SUMM 1
3: BFS, GNC LAUNCH TRAJ 1

C3 C/W MEM - CLEAR

-2:00 B CONFIG FOR LIFT-OFF

05/09 L,R AUD MSTR VOL (two) - adj
as reqd

P R2 APU AUTO SHUT DN - INH

-0:30 C W1 16mm Camr - on

2-10

DATE 02/02/81

1: GNC LAUNCH TRAJ 2: GNC SYS SUMM 1
 3: BFS, GNC LAUNCH TRAJ 1

MET
 -00:07 **SSME START**
 √MPS PRESS Pc ind (three) > 90%

NOTE
 If Pc < 90 after 4.6 sec or any MAIN
 ENG STATUS lt amber prior to SRB igni-
 tion, sequential shutdown occurs

00:00 **LIFT-OFF**

1: GNC ASCENT TRAJ
 3: BFS, GNC ASCENT TRAJ 1

00:07 TOWER CLEAR
 MNVR initiate

00:08(1.34M) * If no roll mnvr initiated: *
 * Manual throttle & CSS *

* If SSME fail: *
 * AC BUS SNSR (three) - OFF *

NOTE
 FREON LOOP C&W (MA) until
 flash evap is activated

00:30(R180)MNVR complete =
 ADI ATT (two) - LVLH =

00:48(2.0M)Throttle down to 65% =

* If throttle cmd not 65%: *
 * Manual throttle & CSS *

Monitor Trajectory per ASCENT ADI -
NOMINAL Cue Card

* If P or Y rate > 50/s in steady state *
 * flight: *
 * Engage BFS *

3-2 DATE 02/02/81

1: GNC ASCENT TRAJ 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 1

MET
 00:53 Max q̄ (EAS = 435)
 01:02(2.2M)Throttle up to 100% =
 * If throttle cmd not 100%: *
 * Manual throttle & CSS *

01:54 NEGATIVE SEATS - MCC Report
 (120k ft)

02:00 GO FOR SRB SEP - MCC Report
 (135k ft)

02:06 'Pc < 50' (CRT) (Backup 2:14.5) =
 * If 'SEP INH': * =
 * √ATT RATES < 5,2,2 and MCC GO * =
 * for SRB SEP, or if rates in- * =
 * creasing at 'SEP INH' + 5 sec * =
 * C3 SRB SEP - MAN/AUTO * =
 * SRB SEP pb - SEP * =

02:12 **SRB SEP - Report**

3: BFS, GNC ASCENT TRAJ 2

02:16 GUID INITIATE - TMECO stable =
 * If not stable in 10 sec: * =
 * Manual throttle & CSS * =

* If att err > 30 with rates not converg- *
 * ing the error, or att rates > 30/s *
 * and no corresponding att errors: *
 * Manual throttle & CSS *

C L1 FLASH EVAP CNTLR PRI A - ON =
 TOP EVAP HTR DUCT - A =
 HI LOAD DUCT HTR - A =

03:00 √FREON EVAP OUT TEMP < 60° =
 EVAP IS GO - MCC Report

3-3 DATE 02/02/81

1: GNC ASCENT TRAJ 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 2

MET
 04:18 PRESS TO MECO - MCC Report
 (VI = 8400)

04:25 T-fail
 * If no mnvr in 10 sec: *
 * Manual throttle & CSS *

04:26 NEGATIVE RETURN - MCC Report
 (VI = 8700)

05:00 P R1 O2 TK1,2 HTRS B (two) - AUTO =
 H2 TK1,2 HTRS B (two) - AUTO =

SINGLE ENG, THERMAL - MCC Report

SINGLE ENG PRESS TO MECO - MCC Report

* If one eng fail and *
 * LIMITS ENABLE - MCC Report *
 * C3 MN ENG LIMIT SHUT DN - ENA *
 * Then if sec eng fail: *
 * MN ENG LIMIT SHUT DN - INH * =

* Manual MECO Overspeed (AOA) * =
 * If 2 OMS PRPLT TKS FAIL, * =
 * VI=20K Manual throttle & CSS * =
 * MECO target VI = 26K, H = 580 * =
 * VI=25,800 MN ENG SHUT DN pb (three) - push * =
 * Auto ET SEP, -Z xlation * =
 * OMS ENG (two) - OFF * =
 * Perform Manual MPS_DUMP Cue Card * =
 * Go to POST OMS 1, 3-10 * =

07:33 3-g Throttling =

* If > 3 g's and throttle cmd not *
 * decreasing: *
 * Manual throttle & CSS *

3-4 DATE 02/02/81

FLIGHT

10

11

1: GNC ASCENT TRAJ 2: GNC SYS SUMM 1
3: BFS, GNC ASCENT TRAJ 2

MET

08:27 Throttle down to 65%
* If MAN THROT and $V_I = 25,450$ (3 eng), * =
* 25,500 (2 eng) * =
* C3 MN ENG SHUT DN pb (three) - push * =

08:32 MECO ($V_I = 25,668$ fps)

✓MN ENG STAT lt (three) - red
Note V_I

✓R $\geq 170^\circ$ =

08:50 ET SEP (MECO + 18) =

✓MN ENG STATUS lt (three) - off

* If 'SEP INH', check rates: * =
* For rates $< .7, .7, .7$ * =
* GNC, OPS IO4 PRO * =
* 1: GNC OMS 1 MNVR EXEC * =
* 3: BFS, GNC SYS SUMM 1 * =
* ET SEP - MAN * =
* If MPS MANF P L02 or LH2 not * =
* increasing: * =
* Go to FDLN DISC VLV FAIL, 4-2 * =
* If MPS MANF P L02 and LH2 * =
* increasing: * =
* ET SEP - SEP * =
* For rates $> .7, .7, .7$ wait for * =
* rates to damp * =

08:56 -Z XLATION COMPLETE

1: GNC OMS 1 MNVR EXEC
3: BFS, GNC OMS 1 MNVR EXEC

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

MET

* If BFS still in MM103, *
* CRT3 BFS, GNC, OPS IO4 PRO * =

✓R, Y ERROR ≤ 10 =
* If Not: * =
* Delay to TIG -1:19 then * =
* mnvr to R, Y ≤ 10 * =

If Roll for ET SEP $\geq 170^\circ$:
Perform +Y xlation for 24 sec =
* If Not: * =
* Perform -Y xlation for 24 sec * =

OMS 1 BURN SETUP

If $V_I > 25,000$:
✓OMS 1 TARGETS Cue Card

* If $V_I < 25,000$: *
* Go to 2 SSME OUT ($>$ SINGLE *
* ENG THERMAL), 8-7, step 2 * =

* If required: *
* Go to POST-MECO EMER DESCENT, *
* 8-14 * =

MCC give:
Nav State
OMS 1 Target Selection
----- Go for APU Shutdown -----

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

MET

CAUTION
Delayed OMS 1 is required for
slipped TIG > 4 min on a nominal
MECO only. If targeting requires
an underspeed ATO (AOA-S), per-
form Burn prior to apogee (TTA=0)

NOTE
Do not LOAD TIG in the past

* If reqd: * =
* F6 ABORT MODE - ATO (AOA-S) * =
* ABORT pb - ABORT * =
* If no joy: 2: GNC 51 OVERRIDE * =
* ATO (AOA) - ITEM 2(1) EXEC * =
* ABORT - ITEM 3 EXEC * =

OMS 1 Target:
TIG = MECO + 2 =
C1 = 0 =
C2 = .0 =
HT = 130 =
θT = 160 =

* If ATO: * =
* TIG = MECO + 2 * =
* C1 = 0 * =
* C2 = .0 * =
* HT = 109 * =
* θT = 235 * =

* If AOA Shallow: * =
* TIG = MECO + 2 * =
* C1 = 0 * =
* C2 = .0 * =
* HT = 90 * =
* θT = 230 * =

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

MET

* If Delayed OMS 1 (> 4 min) reqd: * =
* Go to DELAYED OMS 1, 5-2 * =

F6/F8 ADI ATT (two) - INRTL =
Mnvr to OMS 1 Burn Attitude =
(Compare ADI ATT with CRT BURN
ATT)

CRT3 ✓BFS TGT

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

R2 ✓MPS PRPLT DUMP SEQ - GPC =

Go to OMS 1 BURN Cue Card

11:53 ***** BDA LOS (UPLINK BLK - ALL)*****

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

MET

C POST BURN STATUS

NOMINAL

Δ TIG



W1 16mm Camr - off

P C3 DFI RCDRS WB ASC - STBY (tb-bp)
MSN - STBY (tb-bp)
F8 FLT CNTLR PWR - OFF

* C ALPHA MANAGEMENT (If reqd) *
* * *
* If underspeed ATO or AOA-S OMS-1 *
* selected: *
* Maneuver to LVLH R180, P340, Y000 *
* (maintain LVLH P = +20) *
* After 10 minutes: *
* Maneuver to LVLH P = 340 *
* After 10 minutes: *
* Maneuver to Burn Attitude *
* * *

P APU/HYD SHUTDOWN (Not AOA)

F4 ✓BDY FLP pb - 1t off (PASS only)
(MPS stowed) (~3 min 21 sec)
R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)
R2 APU AUTO SHUT DN - ENA
BLR CNTLR (three) - OFF
APU CNTL (three) - OFF (MA)
FUEL TK VLV (three) - CL
✓CNTLR PWR (three) - ON
BLR N2 SPLY (three) - OFF
APU FUEL PUMP/VLV COOL A - AUTO

POST
OMS 1

3-8

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

MET

* P HYD DEPRESS (AOA only) *
* * *
* F4 ✓BDY FLP pb - 1t off (PASS only) *
* (MPS stowed) (~3 min 21 sec) *
* R4 HYD MPS/TVC ISOL VLV (three) - CL *
* (tb-CL) *
* R2 ✓APU SPEED SEL (three) - NORM *
* AUTO SHUT DN - ENA *
* HYD MN PUMP PRESS (three) - LO *
* (MA) *
* * *

HEATER ACTIVATION

C L2 FLASH EVAP FDLN HTR (two) - 1
P R1 O2 TK1,2 HTRS A (two) - AUTO
H2 TK1,2 HTRS A (two) - AUTO

AC BUS SNSR

R1 AC BUS SNSR (three) - OFF (1 sec),
then AUTO TRIP

MAJOR MODE CHANGE

CRT2 GNC, OPS 105 PRO

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

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3-10

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3-11

DATE 02/02/81

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

MET

B OMS 2 BURN SETUP

✓OMS 2 TARGETS Cue Card

CRT1 TRIM L,R - ITEM 12 +0.4 -5.7
+5.7 EXEC

* For single eng burn (good eng): *
* TRIM L - ITEM 13 + 5.2 EXEC *
* R - ITEM 14 - 5.2 EXEC *
* *
* ENG SEL L - ITEM 16 EXEC *
* R - ITEM 17 EXEC *

* For RCS burn: *
* RCS +X - ITEM 18 EXEC *

✓Nominal target: =
TIG = 44:00 =
C1 = 0 =
C2 = .0 =
HT = 137 =
θT = 340 =

* ATO: * =
* TIG = TTA -00:30 * =
* C1 = 0 * =
* C2 = .0 * =
* HT = 106 * =
* θT = 62 * =

NOTE

If AOA, do not load
targets until OPS 3

LOAD - ITEM 39 EXEC
ST CRT TMR - ITEM 40 EXEC

CRT3 ✓BFS TGT

3-12

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

MET

P MPS POWERDOWN

R2 MPS ENG PWR (six) - OFF
He ISOL A,B CTR,R (four) - CL
✓He I'CONNECT (three) - GPC
R4 ENG CNTLR HTR (three) - AUTO

MPS VACUUM INERTING ACT

R2 ✓MPS He ISOL A,B L (two) - OP
PNEU L ENG He XOVR - OP
✓He ISOL - OP

R4 MPS L02 PREV LV (three) - CL
Wait 3 sec - OP
Wait 2 sec - GPC

MPS H2 PRESS LINE VENT - OP
(Start Watch)
FILL/DRAIN LH2 INBD - CL
OUTBD - CL
L02 INBD - CL
OUTBD - CL

Wait 10 sec:
LH2 INBD - OP
OUTBD - OP
L02 INBD - OP
OUTBD - OP

After 1 minute
MPS H2 PRESS LINE VENT - GND

3-13

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

MET

P ET UMBILICAL DOOR CLOSURE

NOTE
If FdIn Disc Vtv failed and
not AOA, stow CTRLINE LAT
but DO NOT CLOSE DOORS

NOTE
Double times for single motor
operation

R2 ET UMB DR
MODE - GPC/MAN
CTRLINE LAT - STOW
✓After 6 sec, CTRLINE LAT tb - STO
L,R DR (two) - CL (tb-bp)
After 24 sec, L,R DR tb - CL
L,R LAT (two) - LAT (tb-bp)
After 6 sec, L,R LAT tb - LAT

* If doors not closed: *
* ET UMB DR MODE - GPC *
* | 2: GNC 51 OVERRIDE | *
* ET UMB DR CLOSE - ITEM 6 EXEC *

00:18:09 ***** MAD AOS (UPLINK BLK - NONE)*****

OMS 1 Burn Status
OMS 2 Target selection
Nav State

***** IF AOA: ABORT-AOA, GO to AOA, 6-2 *****

NOTE
If HYD DEPRESS and not AOA, per-
form APU/HYD SHUTDOWN, 3-10, then:

3-14

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

MET

OMS BURN PREP

P 08 L,R OMS
 ✓He PRESS/VAP ISOL A (two) - GPC
 B (two) - CL
 ✓TK ISOL (four) - OP (tb-OP)
 XFEED (four) - CL (tb-CL)

B C6 Install OMS 2 BURN and ASCENT BURN
 MONITOR Cue Cards (F6/F8)

OMS 2 BURN ATTITUDE MNVR

C F6 ✓FLT CNTLR PWR - ON
 B F6/F8 ✓ADI ATT (two) - INRTL
 C RHC Mnvr to Burn Attitude

3: BFS, GNC SYS SUMM 2

00:24:37 ***** MAD LOS (UPLINK BLK - ALL)*****

B SEAT SAFING AND ADJUSTMENT

Open Visor
 Remove from pocket and install:
 SCRAMBLE HANDLE CLIP
 D-RING PIN
 PANEL JETTISON T-HANDLE PIN
 Vent and retract Back Angle

00:35:26 ***** IOS AOS (UPLINK BLK - NONE)*****

39:00 ▶ P **VACUUM INERTING TERMINATE**
 (TIG-5)

R4 MPS FILL/DRAIN
 LH2,LO2 OUTBD (two) - CL
 Wait 10 sec - GND
 LH2,LO2 INBD (two) - GND
 R2 MPS He ISOL A,B L (two) - CL
 PNEU L ENG He XOVR - CL
 He ISOL - CL

42:00 ▶ B Go to OMS 2 BURN Cue Card
 (TIG-2)

00:43:25 ***** IOS LOS (UPLINK BLK - ALL)*****

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

MET

FEEDLINE DISCONNECT VALVE FAILURE

B OMS 1 TARGET CHECK

✓MM 104
 C3 ✓ET SEP - MAN

Check for underspeed:
 Load TIG = MECO + 2
 LOAD - ITEM 39 EXEC
 ✓OMS 1 TARGETS Cue Card

CAUTION

If targeting requires underspeed
 ATO (AOA-S), perform manual ET
 SEP and ATO (AOA-S) OMS 1 burn
 prior to apogee (TTA = 0)

MPS DUMP

C Perform +X xlation for 5 sec

P		2 Hyd Fail/ =
		AC Shutdn =
		(No Extend =
	Nom	for 2 APU ↓) =
R2	MPS PRPLT DUMP	=
	SEQ - START	TIG (or 5 sec +X) =
	- STOP	3+00 4+00 =

BFS MPS DUMP

.....
 . Depress hydraulics .
 . Repress prior to OMS 1 .
 . At completion of MPS Dump, perform .
 . APU/HYD SHUTDOWN or HYD DEPRESS, .
 . 4-4 .

4-2

DATE 02/02/81

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

MET

C OMS 1 BURN SETUP

MCC give:
 Nav State
 OMS 1 Target Selection

----- Go for APU Shutdown -----

3: BFS, GNC OMS 1 MNVR EXEC

CRT1 Enter Target

Delayed Nominal:	=
TIG = 2 0:3 2	=
C1 = 0	=
C2 = .0	=
HT = 1 3 2	=
QT = 2 3 0	=

* Delayed ATO:	*	=
* TIG = 2 0:3 2	*	=
* C1 = 0	*	=
* C2 = .0	*	=
* HT = 109	*	=
* QT = 235	*	=

* Delayed AOA Shallow:	*	=
* TIG = 2 0:3 2	*	=
* C1 = 0	*	=
* C2 = .0	*	=
* HT = 9 4	*	=
* QT = 1 5 4	*	=

LOAD - ITEM 39 EXEC
 ST CRT TMR - ITEM 40 EXEC

CRT3 ✓BFS TGT

4-3

DATE 02/02/81

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

MET
00:11:53 ***** BDA LOS (UPLINK BLK - ALL) *****

P APU/HYD SHUTDOWN (Not AOA)

F4 ✓BDY FLP pb - 1t off (PASS only)
(MPS stowed) (~3 min 21 sec)

R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)

R2 APU AUTO SHUT DN - ENA
BLR CNTLR (three) - OFF
APU CNTL (three) - OFF(MA)
FUEL TK VLV (three) - CL
✓CNTLR PWR (three) - ON
BLR N2 SPLY (three) - OFF
APU FUEL PUMP/VLV COOL A - AUTO

* HYD DEPRESS (AOA only) *

* F4 ✓BDY FLP pb - 1t off (PASS only)
(MPS stowed) (~3 min 21 sec)
* R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)
* R2 ✓APU SPEED SEL (three) - NORM
* AUTO SHUT DN - ENA
* HYD MN PUMP.PRESS (three) - LO (MA) *

HEATER ACTIVATION

C L2 FLASH EVAP FDLN HTR (two) - 1

P R1 O2 TK1,2 HTRS A (two) - AUTO
H2 TK1,2 HTRS A (two) - AUTO

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

MET

P AC BUS SNSR

R1 AC BUS SNSR (three) - OFF (1 sec),
then AUTO TRIP

▶ C ET SEP (MECO + 6 MIN)

✓R,Y Error ≤ 10

* If Not: *
* Mnr to R,Y ≤ 10 *

ET SEP pb - SEP
✓MN ENG STAT 1t (three) - off

Wait 10 sec (for -Z translation),
then perform +Y xlation for 24 sec

LOAD - ITEM 39 EXEC
ST CRT TMR - ITEM 40 EXEC

B F6/F8 ADI ATT (two) - INRTL =

Mnr to OMS 1 Burn Attitude =
(Compare ADI ATT with CRT BURN
ATT)

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

00:18:09 ***** MAD AOS (UPLINK BLK - NONE) *****

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

MET

C POST BURN STATUS

NOMINAL

Δ TIG

□

□ : □ □ □

W1 16mm Camr - off

P C3 DFI RCDRS WB ASC - STBY (tb-bp)
MSN - STBY (tb-bp)

F8 FLT CNTLR PWR - OFF

MAJOR MODE CHANGE

CRT2 GNC, OPS 105 PRO

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

C OMS 2 BURN SETUP

✓OMS 2 TARGETS Cue Card

CRT1 TRIM L,R - ITEM 12 +0.4 -5.7
+5.7 EXEC

* For single eng burn (good eng): *
* TRIM L - ITEM 13 + 5.2 EXEC *
* R - ITEM 14 - 5.2 EXEC *
* ENG SEL L - ITEM 16 EXEC *
* R - ITEM 17 EXEC *

* For RCS burn: *
* RCS +X - ITEM 18 EXEC *

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

MET

Enter target

Nominal after delayed nominal OMS 1: =

TIG = TTA -01:00 =

C1 = 0 =

C2 = .0 =

HT = 1 2 9 =

θT = 5 0 =

* ATO after delayed ATO OMS 1: * =

* TIG = TTA -00:30 * =

* C1 = 0 * =

* C2 = .0 * =

* HT = 106 * =

* θT = 62 * =

NOTE

If AOA, do not load
targets until OPS 3

LOAD - ITEM 39 EXEC
ST CRT TMR - ITEM 40 EXEC

CRT3 √BFS TGT

00:24:37 ***** MAD LOS (UPLINK BLK - ALL) *****

B Go to POST OMS 1, MPS POWERDOWN, 3-13

4-7

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

AOA

B C6/R5 Stow ASC PKT C/L
Unstow ENT PKT C/L

F6/F8 Install DEORBIT BURN and DEORBIT
BURN MONITOR Cue Cards (C6)
Stow Ascent Cue Cards (C6)

P RECONFIGURE DPS FOR ENTRY

CRT2 √OPS 301 flashing (if AOA selected)

GNC, OPS 301 PRO

CRT3 BFS, GNC, OPS 106 PRO

BFS, GNC, OPS 301 PRO

CRT2 **GNC, OPS 302 PRO**

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

C3 OI PCMMU PWR - 2

B OMS 2 BURN SETUP

CRT1 TRIM L,R - ITEM 12 +0.4 -5.7
+5.7 EXEC

* For single engine burn (good *
* engine:)

* TRIM L - ITEM 13 + 5.2 EXEC *

* R - ITEM 14 - 5.2 EXEC *

* *

* ENG SEL L - ITEM 16 EXEC *

* R - ITEM 17 EXEC *

* For RCS burn: *

* RCS +X - ITEM 18 EXEC *

6-2

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

Enter Target

AOA after nominal OMS 1: =

TIG = 58:55 REI = 4300 =

C1 = 16028 EI-5 P = 236 =

C2 = -.6417 Y = 002 =

HT = 65.8 =

θT = 67 =

PRPLT = + _____ (Calculator) |

AOA after delayed nominal OMS 1: =

TIG = 45:11 REI = 4300 =

C1 = 15627 EI-5 P = 236 =

C2 = -.6254 Y = 002 =

HT = 65.8 =

θT = 126 =

PRPLT = - _____ (Calculator) |

AOA shallow after nominal OMS 1: =

TIG = 49:32 REI = 4900 =

C1 = 16989 EI-5 P = 228 =

C2 = -.6701 Y = 355 =

HT = 65.8 =

θT = 97 =

PRPLT = - _____ (Calculator) |

AOA after any ATO OMS 1: =

TIG = 56:12 REI = 4310 =

C1 = 17195 EI-5 P = 235 =

C2 = -.6868 Y = 002 =

HT = 65.8 =

θT = 79 =

PRPLT = + _____ (Calculator) |

AOA shallow after on time ATO OMS 1: =

TIG = 38:18 REI = 5110 =

C1 = 18969 EI-5 P = 224 =

C2 = -.7459 Y = 352 =

HT = 65.8 =

θT = 152 =

PRPLT = + _____ (Calculator) |

6-3

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

AOA shallow after delayed AOA
 Shallow OMS 1 (Nominal MECO):
 TIG = 1:00:18 REI = 5190
 C1 = 19524 EI-5 P = 224
 C2 = -.7682 Y = 351
 HT = 65.8
 θT = 44
 PRPLT = + _____ (Calculator)

AOA shallow after AOA Shallow OMS 1
 (Large Underspeed):
 TIG = 52:40 REI = 5220
 C1 = 18933 EI-5 P = 224
 C2 = -.7439 Y = 351
 HT = 65.8
 θT = 78
 PRPLT = + _____ (Calculator)

AOA after manual MECO Overspeed:
 TIG = 30:00 REI = 4510
 C1 = 12613 EI-5 P = 237
 C2 = -.5080 Y = 004
 HT = 65.8
 θT = 187
 PRPLT = + _____ 0

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

3: BFS, GNC 50 HORIZ SIT

CRT3 ✓RWY NOR 17 - ITEM 2*
 ✓EDW 23 - ITEM 3
 ✓NOR 35 - ITEM 4

- * If BFS LAND SITE UPDATE reqd: *
- * ITEM 34 + 15 EXEC (NOR rwy 17) *
- * ITEM 35 + 1 EXEC (EDW rwy 23) *
- * ITEM 36 + 16 EXEC (NOR rwy 35) *
- * ✓RWY - ITEM 2,3 & 4 correct *

3: BFS, GNC DEORB MNVR EXEC

CRT1 LOAD - ITEM 39 EXEC
 ST CRT TMR - ITEM 40 EXEC

Enter appropriate EI-5 P and Y on
 6-16

CRT3 ✓BFS TGT

00:24:55 ***** MAD LOS (UPLINK BLK - ALL) *****

B SEAT ADJUSTMENT

Vent and retract Back Angle

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

P OMS BURN PREP

08 L,R OMS
 ✓He PRESS/VAP ISOL A (two) - GPC
 B (two) - CL
 ✓TK ISOL (four) - OP (tb-OP)
 XFEED (four) - CL (tb-CL)

.....RCS BURN PREP.....

P 08 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)
 07 AFT L,R RCS
 XFEED (four) - OP (tb-OP)
 TK ISOL (six) - CL (tb-CL)

00:36:55 ***** IOS AOS (UPLINK BLK - NONE) *****

B
 MCC
 UPDATE: OMS PRPLT PAD
 DEL PAD
 MNVR PAD (if reqd)

Advise crew to close or not to
 close pre valves during MPS/H2 PURGE
 PREP, 6-9

MCC
 UPLINK: STATE VECTORS
 ✓(or LOAD) TGT per MNVR & DEL
 PADS
 ✓STATE VECTOR UPDATED

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

C CRT1 ✓ or load INRTL EI-5 MM303 ATT from DEL PAD

R - ITEM 8 +

2	2	0		
---	---	---	--	--

P - ITEM 9 +

--	--	--	--	--

 (from pg 6-3/4)

Y - ITEM 10 +

--	--	--	--	--

 (from pg 6-3/4)

RHC Mnv to EI-5 ATT

* If UNDERBURN, ignore INRTL ATT ERR *
 * needles and Mnv to LVLH ROOI, Y358 *
 * and P per table below *

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

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

2: GNC 50 HORIZ SIT

3: BFS, GNC 50 HORIZ SIT

P STATE VECTOR CHANGE (if reqd)

CRT2 ΔT - ITEM 16 ()

--	--	--	--	--

LOAD - ITEM 14 EXEC
 PASS/BFS SV XFER - ITEM 15 EXEC
 LOAD - ITEM 14 EXEC

HORIZ SIT CONFIG

ALTM - ITEM 1 +

--	--	--	--	--

	PASS ITEM	BFS ITEM
RWY (DEL PAD)	NOR 17 2*✓	NOR 17 2*✓
	EDW 23 3✓	EDW 23 3✓
	NOR 35 4✓	NOR 35 4✓
GLD SLOPE	LO WND 5✓	LO WND 5✓
MEP (LH TURN)(DEL PAD)	MEP 7 EXEC	MEP 7 EXEC
TAC	INH 18✓	INH 18✓
DRAG H	AUT 20✓	AUT 20✓
ADTA H	INH 24✓	INH 24✓
ADTA TO G&C	INH 27 EXEC	AUT 26✓
TAC	DELTA 33 EXEC	--
Failed TACANs deselected	✓	--

* If BFS engaged: *
 * Set HSD BFS ITEMS to PASS Config *
 * Any failed TACANs: *
 * 07 TACAN MODE (1,2,3) - OFF *

2: GNC DEORB MNVR COAST

3: BFS, GNC DEORB MNVR COAST

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

MET (EET)

* If APUs shutdown: *
 * Perform APU HOT RESTART *
 * (ENT PKT C/L, APU/HYD, 1-4), then: *

01:06:39 ***** ORR LOS (UPLINK BLK - ALL) *****

ENTRY SW CHECK

B F6/F8 Stow Deorbit Burn Cue Cards (C6)
 C6 Install Entry Cue Cards and ENT Flip Cards

C L2 ✓CAB RELIEF (two) - ENA (tb-ENA)
 ✓ANTISKID - ON
 ✓NWS - OFF
 ✓ENTRY R MODE - AUTO

B L2/C3 ✓SBTC - full fwd
 C3 ✓SRB SEP - AUTO
 ✓ET SEP - AUTO

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
 C F6 ✓CNTL EFF - NOM
 ✓ALPHA BIAS - ZERO
 ✓GAIN P - LO FWD
 ✓R/Y - NOM

6-18

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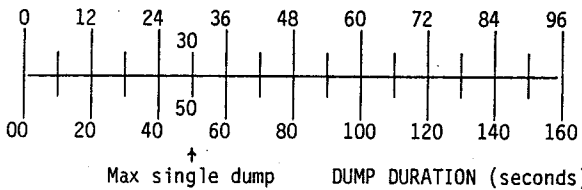
1: GNC DEORB MNVR COAST 2: GNC DEORB MNVR COAST
3: BFS, GNC DEORB MNVR COAST

- B F6/F8 ✓TRIM RHC/PNL - INH
 ✓PNL - ON
- 07 ✓RADAR ALTM - 1(C), 2(P)
 TACAN MODE (three) - GPC
 ✓ANT SEL (three) - AUTO
- 08 ✓RADAR ALTM (two) - ON
 MLS (three) - ON (PASS)
 ✓MLS CH (three) - 8 (NOR17, EDW23)
 I/O RESET EXEC

P FORWARD RCS DUMP (Underspeed AOA only)

Determine FWD RCS 'DUMP TO %' (Calculator or DEL PAD; dump FWD RCS to 0% normally)

F RCS PRPLT TO BE DUMPED (%)



NOTE

Dump 50 sec ON, 40 sec OFF, until dump complete

- CRT X F RCS ARM - ITEM 24 EXEC
 DUMP - ITEM 25 EXEC
 When required:
 OFF - ITEM 26 EXEC

When dump complete:

- FWD RCS
MANF ISOL (five) - CL (tb-CL)
He PRESS (two) - CL (tb-CL)

AOA and EOM entry procedures have been combined and are contained under this tab. AOA-unique procedures are prefaced by 'AOA' prior to a crew action.

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

PRE EI CHECKLIST

- * EI-5 APU START *
- * *
- * If APUs have not been started, *
- * perform ENT C/L, DEORBIT *
- * BURN, APU START, 3-7 *
- * *
- * If only one APU running: *
- * Good HYD MAIN PUMP PRESS - LOW *
- * Delay MM304 transition to EI-2 *
- * Just prior to transition: *
- * Good HYD MAN PUMP PRESS - NORM *
- * APU SPEED SEL - HIGH *

NOTE

If OMS/RCS He or TK PRESS leak, do not perform this procedure

EI-5 CRT2 VENT DOOR CNTL CLOSE - ITEM 23 EXEC

2: GNC DEORB MNVR EXEC

...If BFS.....

2: BFS, GNC 50 HORIZ SIT

CRT2 VENT DOOR CL - ITEM 38 EXEC

2: BFS, GNC DEORB MNVR EXEC

AOA ENTRY

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

- C ✓ADI ATT - LVLH
 Mnvr to R 001, P 039, Y 358
- P CRT2 **GNC, OPS 304 PRO**

1: GNC ENTRY TRAJ 1 2: GNC ENTRY TRAJ 1
3: BFS, GNC ENTRY TRAJ 1

- C ADI ✓ENTRY ATT (R 000, P 040, Y 000)
 F2 SPDBK/THROT pb - AUTO
 PITCH pb - AUTO (PASS)
 ROLL/YAW pb - AUTO (PASS)
 (CSS if PREBANK)
- P F8 FLT CNTLR PWR - ON

- * PREBANK: [] (AOA 90° if *
* (DEL PAD) [] Shallow) *
* or [] *
* If UNDERBURN - Adjust Roll, 3-9 *
* [] (AOA 6-15) *
* [] *
* [] *

* Roll toward PRI BRG Pointer at 1°/sec *

2: GNC SYS SUMM 1

C C3 **DFI RCDRS WB MSN - CONT RCD**
(tb-gray)

EI-1 ***** GWM LOS (UPLINK BLK - ALL) *****

- P 08 FWD RCS
 MANF ISOL (five) - CL (tb-CL)
 He PRESS (two) - CL (tb-CL)
- 07 AFT L,R RCS
 MANF ISOL 5 (two) - OP (tb-OP)

1: GNC ENTRY TRAJ 1 2: GNC SYS SUMM 1

3: BFS, GNC ENTRY TRAJ 1

(V = 24.5 - 19.0K)

h = 400K EI * If Prebank reqd: $\sqrt{\text{Roll}}$ *
 (00:00)
 q = 0.5 $\sqrt{\text{Auto elevon trim}}$
 (2:36) BDY FLP pb - AUTO
 q = 1 (AOA) **HYD MAIN PUMP PRESS (three) - NORM**
 q = 2 $\sqrt{\text{Elevons active}}$
 (3:30)
 q = 10 Roll jets inactive
 (4:57)

D = 4 * If PREBANK - R/Y to AUTO (TIME CRITICAL) *

Closed loop guidance

		:		:	
--	--	---	--	---	--

* If SHUTTLE SYMBOL is above TRAJ 1 upper *
 * limit line due to excess energy, fly CSS, *
 * Phugoid Damper, BIAS 0 to achieve a safe *
 * bail-out altitude *
 * If below lower limit line - fly CSS R/Y, *
 * Maintain $\Delta\text{AZ} = 0^\circ$ *

* AUTO GUIDANCE FAILURE *
 * Fly CSS to maintain DRAG profile *

* Whenever returning from CSS to AUTO *
 * ZERO H BIAS if > 30 in CSS *

* LOW L/D *
 * If α 3° low, monitor ROL REF. If ROL *
 * REF \downarrow before first roll reversal, perform *
 * Roll Reversal at $\Delta\text{AZ} = 5^\circ$ *
 * Do not redesignate until TAEM *

1: GNC ENTRY TRAJ 1 2: GNC SYS SUMM 1

3: BFS, GNC ENTRY TRAJ 1

(V = 24.5 - 19.0K)

q = 20 Pitch jets inactive
 (8:12) (ADI yaw needle now displays scaled Ay)

Monitor BDY FLP. If $\delta_{BF} > 87\%$, manually adjust to < 87%. Do not allow δ_E to exceed 1° Down

D = 11 $\sqrt{\text{Drag H update active}}$

* If Drag H EDITING occurs: *
 * 3: GNC 50 HOR SIT *
 * DRAG H FOR - ITEM 22 EXEC *

q = 50 RCS activity lts reconfig
 (14:20) Roll lts - 3 or 4 Yaw jets
 Pitch lts - δ_E rate sat

$\Delta\text{AZ} = 10.5^\circ$ First Roll Reversal
 ADI RATE - HI

VREL

--	--	--	--	--

1: GNC ENTRY TRAJ 2 2: GNC SYS SUMM 1

3: BFS, GNC ENTRY TRAJ 2

(V = 19.0 - 14.0K)

V = 15K * If manual BDY FLP was required: *
 * BDY FLP pb - AUTO *
 * Power up prev powered down TACAN, *
 * RADAR ALTM, FLT CNTLR/INST PWR *

NAV DELTA PAD

ΔX 8	()				
ΔY 9	()				
ΔZ 10	()				
ΔX 11	()				
ΔY 12	()				
ΔZ 13	()				

ΔX 8	()				
ΔY 9	()				
ΔZ 10	()				
ΔX 11	()				
ΔY 12	()				
ΔZ 13	()				

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6-25

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6-26

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1: GNC ENTRY TRAJ 3 2: GNC SYS SUMM 1
 3: BFS, GNC ENTRY TRAJ 3

(V = 14.0 - 10.5K)

***** Exit S-Band blackout (UPLINK BLK - NONE) *****

V = 12K S-BAND, two-way voice

1: GNC ENTRY TRAJ 4 2: GNC SYS SUMM 1
 3: BFS, GNC ENTRY TRAJ 4

(V = 10.5 - 6.0K)

3: GNC 50 HORIZ SIT
 UHF two-way voice
 TACAN AOS

M = 8 ✓Aileron trim. If > 2.0, anticipate lateral direction problems through M = 2

TACAN MGMT

	RATIO <1	RATIO >1	ONE TACAN LOCKED
PRE-COMM	INH	INH	INH
COMM OK	MCC: AUTO or INH (if TACAN will degrade NAV state)	MCC: INH (+Δ STATE) or FORCE or ZERO Δ STATE or CHG TACAN CH	MCC: DESELECT MISSING TACAN(S) then - AUTO

NO COMM TACAN MGMT

V = 6.0K TACAN MODE (three) - T/R

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

1: GNC ENTRY TRAJ 5 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT
 (V = 6.0 - 2.5K)

DME = 132 Auto TACAN CH chg to Nav region

h = 120K NH3 CNTLR A - PRI/GPC

M = 5 **MPS/H2 PURGE**
 MPS PNEU L ENG He XOVR - OP
 He ISOL - OP

M = 4 2: GNC 51 OVERRIDE

M = 3.8 AIR DATA PROBES (two) - DEPLOY
 ✓AIR DATA R,L, then NAV
 2: GNC SYS SUMM 1

h = 100K Excessive H Avoidance
 * If sink rate > 486 fps, *
 * fly R/Y - CSS to reduce *
 * sink rate, then R/Y - AUTO *

M = 3.5 RUD activation: ✓Aileron trim < 3°
 ✓Rudder trim < 6°
 If trims are saturated, anticipate FCS trim problems through M = 2

M = 2.9 ✓HYD LG HYD ISOL VLV tb (three) - OP
 h = 85K 16mm Camr (two) - on (AOA PLT only)
 FLASH EVAP CNTLR PRI A - OFF

1: GNC VERT SIT 1 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT

(M = 2.5 to H = 30K)

M = 2.5

TAEM

* If one APU shutdown: *
 * APU SPEED SEL (two) - HIGH *

ADTA - H NAV MGMT

	RATIO <1	RATIO >1	
		IF BAD ADTA	IF BAD NAV STATE
COMM OK	MCC: AUTO or INH*	MCC: INH	MCC: FORCE
NO COMM	AUTO	NO TACAN	
		TACAN OK	ADTA ERRATIC
		INH	FORCE

*(If ADTA H will degrade NAV state)

When ADTA - H AUTO/FORCE, ADTA to G&C - AUTO

M = 2.4

Fuselage vents open

* If no Air Data: *
 * M < 1.5, ✓ θ within NOSE HI/LO limits *
 * Fly P,R/Y CSS as reqd, limit φ < 50° *
 * SPD BK MAN at .9M if reqd for ranging *

M = 1

Yaw jets inactive

M = 0.85

FLY P and R/Y - CSS (prior to HAC)

1: GNC VERT SIT 2 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT

(H = 30K to TD)

50K	/
40K	/
30K	/
20K	/
7K	/
SURF	/

MLS LOCK HSI SOURCE (PLT)
 - MLS
 10K BDY FLP - MAN
 - TRAIL

2500' Nominal SPD BK
 RETRACT

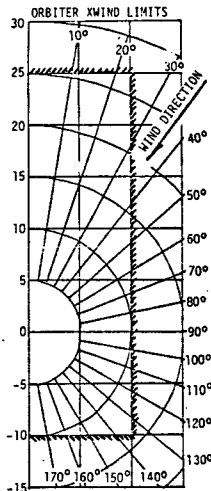
1850' PREFLARE
 LDG GEAR pb - ARM
 LDG GEAR pb - DN

KEAS = 270
 TOUCHDOWN - main gear
 SPD BK to 100%
 Lower θ to ~ 6°

KEAS = 185 PITCH down at ~ 2°/sec

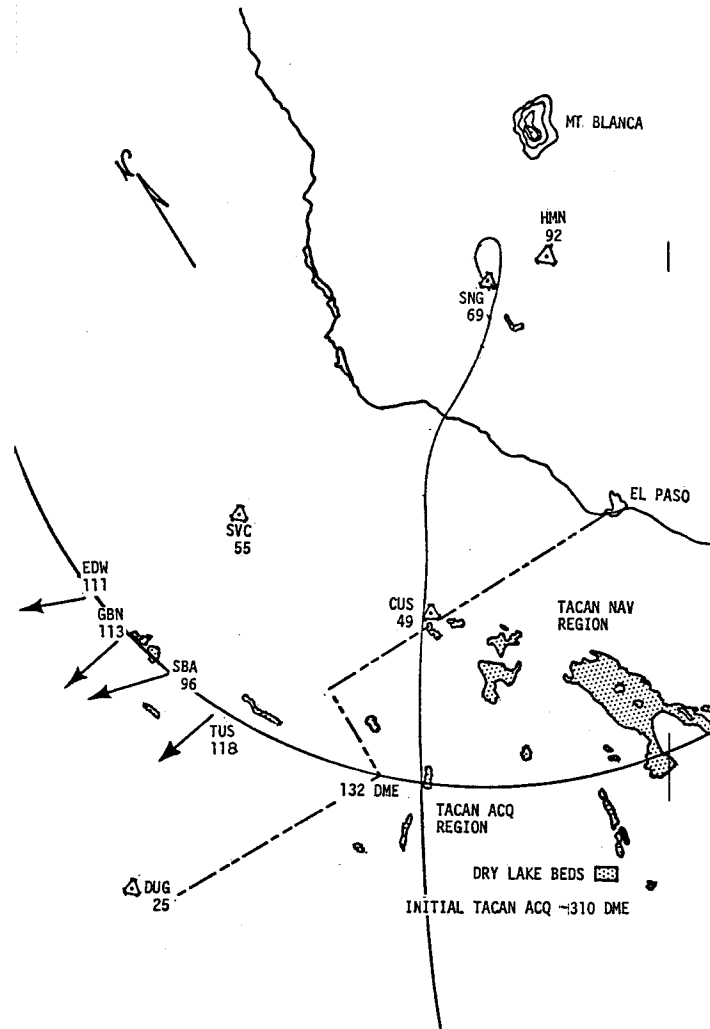
NOSE WHEEL CONTACT
 RHC FULL FWD, Aileron into wind
 SRB SEP - MAN/AUTO
 ET SEP - MAN

STOP
 ET/SRB SEP pb (two) - push
 BRAKING - Light/moderate as reqd
 Go immediately to POST LANDING, 5-3
 (AOA 6-34)



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1: GNC VERT SIT 2 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT

AOA POST LANDING

- After Orbiter stops:
- C L1 ✓RAD BYP VLV MODE (two) - MAN
 - CNTLR LOOP (two) - AUTO A
 - BYP VLV MAN SEL (two) -
 - RAD FLOW (3 sec) (tb-RAD)
 - NH3 CNTLR B - PRI/GPC
 - P C3 ✓DFI RCDRS PCM - CONT RCD
 - W6 16 mm Camr - off
 - C L2 ANTISKID - OFF
 - ✓NWS - OFF
 - SBTC - full fwd
 - B C2 Doff, stow Gloves
 - Seat Raise Helmet Visor
 - Install
 - D-RING PIN
 - SCRAMBLE HANDLE CLIP
 - C PANEL JETTISON T-HANDLE PIN
 - B Disconnect
 - Shoulder harness straps (two)
 - Lap belt
 - Seat Kit straps (two)
 - Foot spurs (two)
 - Doff Helmet

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1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: GNC 50 HORIZ SIT	

L5,R6 L,R COMM PWR - OFF (ctr)
Disconnect O2, comm, restraint
strap
Stow Helmet/Gloves in Bag
Don Mini Headset, connect comm
L,R COMM PWR - CCU (up)

C C6 Unstow Handheld Radio, establish
comm with ground support commander
on 282.8

APU/HYD SHUTDOWN

P R2 MPS ENG PWR (six) - ON
R4 HYD MPS/TVC ISOL VLV SYS (three) -
OP (tb-OP)

R2 APU CNTL (three) - OFF
FUEL TK VLV (three) - CL
CNTLR PWR (three) - OFF
HYD CIRC PUMP (three) - ON
MPS ENG PWR (six) - OFF
Report APU SHUTDOWN

RCS, OMS SAFING

C C3 ✓OMS ENG (two) - OFF
014:F RJD (six) - OFF
L OMS ENG VLV - OFF
015:F RJD (four) - OFF

016:F RJD (six) - OFF
R OMS ENG VLV - OFF

P 07 AFT L,R RCS
MANF ISOL (ten) - CL (tb-CL)
TK ISOL (six) - OP (tb-OP)
He PRESS (four) - CL (tb-CL)
XFEED (four) - CL (tb-CL)
✓MSTR RCS XFEED - OFF

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: GNC 50 HORIZ SIT	

P 08 L,R OMS
✓He PRESS/VAP ISOL (four) - CL
✓TK ISOL (four) - OP (tb-OP)
XFEED (four) - OP (tb-OP)

FWD RCS
✓MANF ISOL (five) - CL (tb-CL)
✓TK ISOL (two) - OP (tb-OP)
✓He PRESS (two) - CL (tb-CL)

C Report OMS/RCS SAFING COMPLETE

L1 RAD BYP MAN SEL (two) - BYP
CNTLR LOOP (two) - OFF

C3 DFI RCDRS PCM - HI SAMP

P ET UMBILICAL DOOR OPENING

ADVISE GND COMMANDER 'ET
UMBILICAL DOORS ARE COMING
OPEN'

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

1: GNC VERT SIT 2	2: GNC SYS SUMM 1
3: GNC 50 HORIZ SIT	

NAV AID POWERDOWN

P 07 TACAN MODE (three) - OFF
08 RADAR ALTM (two) - OFF
MLS (three) - OFF

DEACTIVATE RIGHT FWD SWITCHES

P F8 INST PWR - OFF
FLT CNTLR PWR - OFF
✓TRIM RHC - INH
PNL - OFF
08 LTG (five) - OFF

DEACTIVATE LEFT FWD SWITCHES

C F6 INST PWR - OFF
FLT CNTLR PWR - OFF
✓TRIM RHC - INH
PNL - OFF
C3 FCS CH (four) - OFF

GPC DEACTIVATION

C 06 GPC MODE 1(2,3,4,5) - STBY
(tb-bp)
1(2,3,4,5) - HALT
PWR 1(2,3,4,5) - OFF
LTG (five) - OFF
C2 CRT 1,2,3 PWR (three) - OFF

CDR

EJECTION SEAT EGRESS

L5 L COMM PWR - OFF (center)
Seat Disconnect
Biomed Cable
Comm Cable
Vent Hose (controller remains
with hose)

LRU DEACTIVATION

014:A BRAKES MNA - OFF
 RGA 1 - OFF
 IMU 1 - OFF
 :E cb MNA ADTA 1 - op
 cb MNA ACCEL 1 - op
 cb MNA DDU L - op
 cb MNA NWS - op
 :F ASA 1 - OFF
 015:A BRAKES MNB - OFF
 RGA (two) - OFF
 IMU 2 - OFF
 :E cb MNB ADTA 2 - op
 cb MNB ACCEL 2 - op
 cb MNB DDU (two) - op
 :F ASA 2 - OFF
 ACCEL 4 - OFF
 016:A BRAKES MNC - OFF
 RGA 3 - OFF
 IMU 3 - OFF
 :E cb MNC ADTA (two) - op
 cb MNC DDU R - op
 :F ASA (two) - OFF
 ACCEL 3 - OFF
 017 ATVC (four) - OFF
 L1 IMU FAN (three) - OFF

**NH3 SYSTEM DEACTIVATION
 HOLD FOR NH3 DEPLETION**

C L1 NH3 CNTLR (two) - OFF (at system depletion, EVAP OUT T > 50°F)

**MIDDECK SPEAKER AUDIO STATION
 (Optional)**

C Unstow POS
 Descend to middeck
 M042F MIDDECK SPKR AUD PWR - AUD/TONE
 SPKR PWR - SPKR
 M029J ✓Comm as reqd

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VEHICLE POWERDOWN

P R1 FC/MN BUS A - OFF (verify tb-OFF)
 B - OFF (verify tb-OFF)
 C - OFF (verify tb-OFF)
 ESS BUS SOURCE FC1 - OFF
 FC2 - OFF
 FC3 - OFF
 ALL POWER IS OFF

PLT

EJECTION SEAT EGRESS

R6 R COMM PWR - OFF (ctr)
 Disconnect
 Biomed Cable
 Comm Cable (stow in pocket)
 Vent Hose (controller remains with hose)
 L,R Suit Fan (two) - OFF

ORBITER UNAIDED EGRESS

B Unstow POS
 Descend to middeck
 Don POS
 POS INTERNAL OXYGEN - ON
 ISOL VLV - OP
 C ADVISE GND COMMANDER 'HATCH IS COMING OPEN'
 Open hatch, deploy egress bar
 Descend to ground

RETURN TO LAUNCH SITE (RTL) PROCEDURES

1: GNC ASCENT TRAJ 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 2

NOTE
 If CSS: Man Throttle
 Man MECO
 Abort initiated:
 after 2:30 (2 eng)
 at 4:18 (3 eng)

✓RTL abort with MCC

C F6 ABORT - RTL

1: GNC RTL TRAJ 3: BFS, GNC RTL TRAJ 2

* If no joy, *
 * GNC, OPS 601 PRO *

NOTE
 If TMECO not stable for 10 sec:
 Manual throttle & CSS

F7 ✓MPS PRESS Pc - 100% (2 eng)
 - 67% (3 eng)
 ✓Fuel dissipation attitude

ENG OUT TIME	OUTBOUND INITIAL θ (+30 CTR)	PITCHAROUND at PRPLT REMAINING (100/sec)	FLYBACK INITIAL θ
LIFTOFF	60	33%	29
:30	58	38%	24
1:00	55	41%	40
:30	51	46%	49
2:00	49	48%	39
:30	38	50%	47
3:00	35	51%	38
:30	30	51%	38
4:00	25	51%	33
After 4:18		Immediately	29
4:26		Last RTL	29

Copy pitcharound time from MCC: _____

1: GNC RTLS TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC RTLS TRAJ 2	

P R1 02 TK1,2 HTRS B (two) - AUTO =
 H2 TK1,2 HTRS B (two) - AUTO =

C ✓Pitcharound at time received =
 from MCC (100/sec to flyback =
 initial θ) =

* If no comm: *
 * Use table for pitcharound *
 * at % ET PRPLT REMAINING *

P ✓OMS dump =
 F7 ✓OMS PRESS Pc =
 03 ✓RCS/OMS PRPLT QTY =

* If dump does not start: *
 * 2: GNC 52 CONT ABORT *
 * DUMP START - ITEM 1 EXEC *

✓MPS PRESS Pc -- 95% (2 eng) =
 -- 70% (3 eng) =

TIME CRITICAL SEP - MCC REPORT

After $V_{rel} = 0$ (course pointer =
 swings), =
 ✓WAYPOINT 1 on nose =
 ✓ V_{rel} on WAYPOINT 1 =

SINGLE ENG PRESS - MCC Report

1: GNC RTLS TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC RTLS TRAJ 2	

* If sec eng down: *
 * C3 MN ENG SHUT DN pb *
 (failed eng) - push *
 * Then if ΔR bug at PD3 tic: *
 * AUTO Completion *
 * Otherwise: CSS, Man Throttle *
 * MPS PRESS Pc - 100% *
 * Pitch to hold H = 350 fps *
 (max $\theta = 75^\circ$) *
 * C3 ET SEP - MAN *
 * ΔR bug at PD MPS PRESS Pc - 65% *
 Pitchdown to $\alpha = -40^\circ$ *
 * ΔR bug at CO MN ENG SHUT DN pb - push *
 ET SEP pb - SEP *
 THC -Z (3 sec) *
 $\alpha = 50^\circ$ *

MECO-20 ✓Powered Pitchdown to $\alpha = -40^\circ$, =
 $\beta = 0^\circ$ =
 ✓MPS PRESS Pc - 65% =

* If MAN THROT and ΔR Bug at CO: * =
 * C3 MN ENG SHUT DN pb * =
 * (three) - push * =

MECO =

F7 ✓MN ENG STATUS 1t (three) - red =

✓Attitude =
 Alpha = -40° +2
 -85

Beta = 0° +2
 Pitch rate = $-.25^\circ/\text{sec}$ +.5
 -4.75

Yaw rate = $0^\circ/\text{sec}$ +.5
 Roll rate = $0^\circ/\text{sec}$ +5.0

NOTE
 MPS CMD C/W will occur

1: GNC RTLS TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC RTLS TRAJ 2	

ET SEP (MECO + 14)

✓MN ENG STAT 1t (three) - off

NOTE
 If 'SEP INH', auto seq will
 perform SEP in 6 sec

* If CSS and fast sep: *
 * THC - -Z (3 sec) *

Rudder activated for yaw control

-Z XLATION complete (10 sec and
 $\alpha > 10^\circ$) =
 ✓MM 602 Transition =

1: GNC VERT SIT 1
3: BFS, GNC VERT SIT 1

NOTE
 On MM 602 transition, elevons
 and body flap activated

F2/F4 Remove appropriate Cue Cards
 ✓P and R/Y, SPD BK, BDY FLP - AUTO =
 Use ASC PKT C/L

P R2 ✓ET UMB DR CTRLINE LAT tb - STO =

* If not STO: *
 * ET UMB DR MODE - GPC/MAN *
 * CTRLINE LAT - STOW *
 * ✓LAT tb - STO *
 * L,R DR (two) - CL *
 * LAT (two) - LAT *
 * DR tb (two) - CL *
 * LAT tb (two) - LAT *

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

α RECOVERY PHASE

Monitor α recovery (α = 50° until 2g)

h = 220 K TACAN AOS
 DME = 235 NM BFC CRT DISP - OFF

3: GNC 50 HORIZ SIT

TACAN MGMT

RATIO <1	RATIO >1	ONE TACAN LOCKED
MCC: AUTO or INH (if TACAN will degrade NAV state)	MCC: INH (+Δ STATE) or FORCE or ZERO Δ STATE or CHG TACAN CH	MCC: DESELECT MISSING TACAN(S) then - AUTO

KEAS = 54 Roll jets inactive
 KEAS = 77 ✓SPD BK activated, opening to 81%
 ✓Pitch jets inactive
 If BFS engaged
 ✓ET UMB DR tb(two) - CL
 KEAS = 121 RCS activity lts reconfig:
 ROLL lts - 3 or 4 yaw jets
 PITCH lts - δE rate sat
 C3 ✓ET SEP - AUTO
 ✓SRB SEP - AUTO

7-6 DATE 02/02/81

1: GNC VERT SIT 1 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT

Nz=1.65 g's Nz HOLD PHASE

Nz constant at 2 g's

h = 120K NH3 CNTLR A - PRI/GPC
 ✓HYD LG HYD ISOL VLV tb (three) - OP=

h = 110K NO COMM TACAN MGMT

RATIO <1	RATIO >1		ONE TACAN LOCKED	NO LOCK
	TROUBLESHOOT		BELOW V = 4.7K	BELOW V = 4.7K
	IF BAD TACAN	IF BAD NAV STATE	DESELECT MISSING TACANS, then -	TAC (three) - GPC
AUTO	AUTO	If 1st acq-FORCE IF NOT - ZERO Δ STATE	AUTO	

h > -250 α TRANSITION PHASE

Monitor:
 Orbiter on α-MACH profile
 S-turn if required

Vent and retract seat back angle
 Adjust seat

M = 4 2: GNC 51 OVERRIDE

M = 3.8 C3 AIR DATA PROBES (two) - DEPLOY

✓AIR DATA R, L, then NAV

2: GNC SYS SUMM 1

7-7 DATE 02/02/81

1: GNC VERT SIT 1 2: GNC SYS SUMM 1
 3: GNC 50 HORIZ SIT

M = 3.2 TAEM ACQUISITION PHASE

✓MM 603 Transition
 P R4 HYD MPS/TVC ISOL VLV(three) - CL (tb-CL)
 h = 85K W6 16mm Camr - on
 h = 83K 08 FLASH EVAP CNTLR PRI A - OFF
 MLS (three) - ON
 ✓CH (three) - 8 (KSC 15)
 - 6 (KSC 33)

**I/O RESET EXEC
 M = 2.5 ADTA - H NAV MGMT**

COMM OK	RATIO <1	RATIO >1	
		IF BAD ADTA	IF BAD NAV STATE
	MCC: AUTO or INH*	MCC: INH	MCC: FORCE
NO COMM	AUTO	TACAN OK	NO TACAN
		INH	ADTA ERRATIC ADTA STEADY
		AUTO	FORCE

*(If ADTA H will degrade NAV state)
 When ADTA-H AUTO/FORCE,
 ADTA to G&C - AUTO

M = 2.4 Fuselage vents open

* If no Air Data:
 * M < 1.5, ✓θ within NOSE HI/LO limits
 * Fly P,R/Y CSS as reqd, limit φ < 50°
 * SPD BK MAN at .9M if reqd for ranging
 M = 1 Yaw jets inactive

M = 0.85 Fly P and R/Y - CSS (prior to HAC) =

7-8 DATE 02/02/81

(2 SSME OUT)
 (TIME CRITICAL SEP)
 (> SINGLE ENG THERMAL)

1: GNC ASCENT TRAJ | 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 2

2) SINGLE ENG THERMAL (>16K fps) =

Continue in AUTO to fuel depletion
 or MECO Tgt: Continue Below

MECO

AUTO ET SEP =

If VI > 25,000: Go to OMS 1 =
 TARGET and OMS 1 BURN Cue Cards =

If VI < 25,000: Continue below =

P | 2: GNC 52 CONT ABORT =

CRT3 DUMP START - ITEM 1 EXEC =

C F6 Roll Hds up and Pitch to $\theta > 20^\circ$ =
 ABORT - RTLS =
 Pitch to $\alpha = 50^\circ$ =

Go to HIGH SPEED ENTRY, 8-8 =

8-7

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1: GNC VERT SIT 1 | 2: GNC VERT SIT 1
 3: GNC 52 CONT ABORT

HIGH SPEED ENTRY =

$\sqrt{\alpha} = 50^\circ$ =
 $\sqrt{MM} 602$ =
 $\sqrt{DUMP} START$ =

P R2 ET UMB DR =
 MODE - GPC/MAN =
 CTRLINE LAT - STOW (tb-STO) =
 L,R DR (two) - CL (tb-CL) =
 L,R LAT (two) - LAT (tb-LAT) =

C \sqrt{SBTC} - Full Fwd =
 SPD BK pb - MAN =
 $\sqrt{BODY FLAP}$ - AUTO =
 Wings level =

Hold 3.5 g's max =

Fly $\alpha = 50^\circ$ max until M = 10 =

M	α	
10	40°	SPD BK - 100%
9	33°	
8	30°	
7	28°	
6	23°	
5	17°	
4		SPD BK - 65%

3.8 AIR DATA PROBE (two) - DPY =

2 $\alpha = 12^\circ$ =

.9 SPD BK - closed =
 Fly EAS = 200 KT =

H ~ 10K

EJECT

8-8

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1: GNC ASCENT TRAJ | 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 1

CONTINGENCY ABORT (3 SSMEs OUT) =

IF IN FIRST STAGE =

After roll CSS pb - push =
 P ET SEP - MAN =
 | 2: GNC 52 CONT ABORT =

CRT2 DUMP START - ITEM 1 EXEC =

PC < 50 ET SEP - SEP =
 Roll to Heads up and $\theta > 20^\circ$ =
 OPS 602 PRO =
 Pitch to $\alpha = 50^\circ$ =

Go to LOW SPEED ENTRY, 8-3

1: GNC ASCENT TRAJ | 2: GNC SYS SUMM 1
 3: BFS, GNC ASCENT TRAJ 1

IF IN SECOND STAGE (<16K fps) =

P CSS pb - push =
 ET SEP - MAN =
 | 2: GNC 52 CONT ABORT =

DUMP START - ITEM 1 EXEC =

EAS < 15 ET SEP - SEP =
 Roll to Heads Up and $\theta > 20^\circ$ =
 ABORT - RTLS =
 Pitch to $\alpha = 50^\circ$ =

If M < 16 Go to LOW SPEED ENTRY, 8-3

If M > 16 Go to HIGH SPEED ENTRY, 8-8

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

POST-MECO EMERGENCY DESCENT

✓ $V_I > 25,450$
 ✓ADI ATT (two) - LVLH

C Mnv (ACCEL) to P = 285
 R = 180
 Y = 000

P CRT2 ✓TIG = MECO + 2
 $\Delta VZ = \text{ITEM } 36 + 0 + 0 + 7 \ 0 \ 0 \ \text{EXEC}$

LOAD - ITEM 39 EXEC
 ST CRT TMR - ITEM 40 EXEC

✓MPS DUMP SEQ - GPC

B ✓FLT CNTLR PWR (two) - ON
 ✓OMS ENG (two) - ARM/PRESS
 (P VLVs)

-:15 EXEC

:00 TIG
 C Mnv to R = 000 (during burn)
 Center pitch error needle
 DAP - AUTO

CUTOFF
 +:02 OMS ENG (two) - OFF

C Mnv (ACCEL) to P = 040
 R = 000
 Y = 000

P R2 ET UMB DR
 MODE - GPC/MAN
 CTRLINE LAT - STOW (tb-STO)
 L,R DR (two) - CL (tb-CL)
 L,R LAT (two) - LAT (tb-LAT)

8-14

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

-16:45 P RECONFIGURE DPS FOR ENTRY

CRT2 GNC, OPS 105 PRO
 GNC, OPS 301 PRO
 CRT3 BFS, GNC, OPS 106 PRO
 BFS, GNC, OPS 301 PRO
 CRT2 GNC, OPS 302 PRO
 GNC, OPS 303 PRO
 ✓R000, P040, Y000
 GNC, OPS 304 PRO

1: GNC ENTRY TRAJ 1	2: GNC ENTRY TRAJ 1
3: BFS, GNC ENTRY TRAJ 1	

C F2 BDY FLP pb - AUTO
 SPD BK/THROT pb - AUTO

P ITEM 27 2: GNC 50 HORIZ SIT
 EXEC, RESUME

D = 4 Fly Phugoid Damper Bank Commands
 ✓BIAS = 0

* If Phugoid Damper Bank Commands fail: *
 * Fly CSS to control drag to Phugoid *
 * Damper $D_{ref} \pm 2 \text{ fps}^2$ *

D = 11 ✓DRAG H UPDATE ACTIVE

* If editing occurs: *
 * 2: GNC 50 HORIZ SIT - ITEM 22 EXEC *

M = 6.0 Wings Level, follow α sched

h = 120K NH3 BOILER active

* If FREON EVAP OUT TEMP H1, *
 * NH3 CNTLR (two) - SEC/ON *

M = 4.0 2: GNC 51 OVERRIDE

8-15

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1: GNC DEORB MNVR COAST	2: GNC 51 OVERRIDE
3: BFS, GNC DEORB MNVR COAST	

M = 3.8 AIR DATA PROBE (two) - DPY/HEAT

P ✓AIR DATA R,L then NAV
3: GNC 50 HORIZ SIT

RATIO < 1	RATIO > 1	
AUTO	ADTA ERRATIC	ADTA STEADY
	AUTO	FORCE

When ADTA-H AUTO/FORCE:
 ADTA to G&C - AUTO

* If no Air Data: *
 * M < 1.5, ✓ θ within Nose HI/LOW *
 * limits, fly P CSS as reqd, *
 * wings level *

h = 100K Excessive \dot{h} Avoidance

* If sink rate > 486 fps: *
 * Fly R/Y - CSS to reduce sink rate, *
 * then R/Y - AUTO *

M = 2.5 Fly $\alpha = 12^\circ$

M = 0.9 Fly Max L/D ($\alpha = 10^\circ$)

h = 15K EJECT

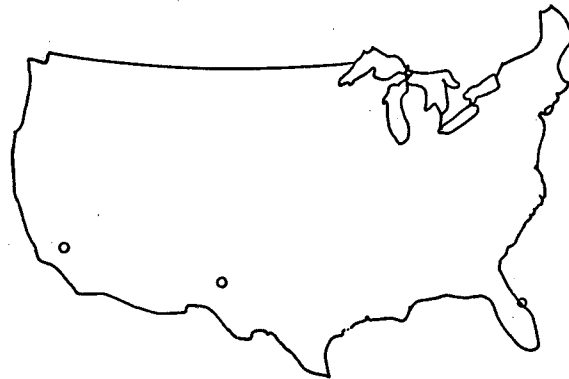
8-16

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WEATHER

SURFACE MAP FOR LIFT-OFF



9-2

END

KSC LAUNCH WEATHER

SKY:
VIS:
TEMP:

ASCENT WINDS

SURF	_____ / _____
7K	_____ / _____
20K	_____ / _____
30K	_____ / _____
40K	_____ / _____
50K	_____ / _____
60K	_____ / _____

Max \bar{q} : _____ @ _____ ft// _____ KEAS

Max Shear: _____ ft/sec

@ _____ ft// _____ DEG

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