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JSC-09148

**ASTP**

**FINAL**

**PCN-1**

NOTE: This is a PAGE CHANGE NOTICE to be  
incorporated into the previous edition.  
DISCARD ONLY the changed out pages.

# **ENTRY CHECKLIST**

**PREPARED BY  
PROCEDURES BRANCH  
CREW TRAINING & PROCEDURES DIVISION**



*National Aeronautics and Space Administration*  
**LYNDON B. JOHNSON SPACE CENTER**  
*Houston, Texas*

**JULY 1, 1975**

ASTP

ASTP ENTRY CHECKLIST

JULY 1, 1975

JSC-09148  
PA-N6-11160-4

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#### ACKNOWLEDGMENTS

Acknowledgment is made to Mr. Bob Anderson, MDTSC-HO, contract NAS-9-14023, for assistance in preparation of this document.

CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT ENTRY CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
001	REFERENCE	2/7/75	
002	REFERENCE	2/7/75	
003	REFERENCE	2/7/75	
004	REFERENCE	2/7/75	
005	REFERENCE	2/7/75	
006	REFERENCE	2/7/75	
007	REFERENCE	2/7/75	
008	REFERENCE	2/7/75	
009	REFERENCE	2/7/75	
010	REFERENCE	2/7/75	
011	REFERENCE	2/7/75	
012	REFERENCE	2/7/75	
013	REFERENCE	2/7/75	
014	REFERENCE	2/7/75	
015	REFERENCE	2/7/75	
016	REFERENCE	2/7/75	
017	REFERENCE	2/7/75	
018			WITHDRAWN
019	REFERENCE	2/7/75	
020	REFERENCE	2/7/75	

CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT ENTRY CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
021	REFERENCE	2/7/75	
022	REFERENCE	2/7/75	
023	REFERENCE	2/7/75	
024	FINAL	5/9/75	
025	REFERENCE	2/7/75	
026	REFERENCE	2/7/75	
027	REFERENCE	2/7/75	
028	REFERENCE	2/7/75	
029	REFERENCE	2/7/75	
030	REFERENCE	2/7/75	
031	REFERENCE	2/7/75	
032	REFERENCE	2/7/75	
033	REFERENCE	2/7/75	
034	REFERENCE	2/7/75	
035	FINAL	5/9/75	
036	FINAL	5/9/75	
037	FINAL	5/9/75	
038	FINAL	5/9/75	
039	FINAL	5/9/75	
040	FINAL	5/9/75	

# CHANGE CONTROL RECORD

## APOLLO/SOYUZ TEST PROJECT ENTRY CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
041	FINAL	5/9/75	
042	FINAL	5/9/75	
043	FINAL	5/9/75	
044	FINAL	5/9/75	
045	FINAL	5/9/75	
046	FINAL	5/9/75	
047	FINAL	5/9/75	
048	FINAL	5/9/75	
049	FINAL	5/9/75	
050	FINAL	5/9/75	
051	FINAL	5/9/75	
052	FINAL	5/9/75	
053	FINAL	5/9/75	
054	FINAL	5/9/75	
055	FINAL	5/9/75	
056	FINAL	5/9/75	
057	FINAL	5/9/75	
058	FINAL	5/9/75	
059			DISAPPROVED
060			DISAPPROVED

CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT ENTRY CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
061	FINAL	5/9/75	DISAPPROVED
062	FINAL	5/9/75	
063	FINAL PCN-1	7/1/75	
064	FINAL PCN-1	7/1/75	
065	FINAL PCN-1	7/1/75	
066	FINAL PCN-1	7/1/75	
067	FINAL PCN-1	7/1/75	
068	FINAL PCN-1	7/1/75	
069	FINAL PCN-1	7/1/75	
070	FINAL PCN-1	7/1/75	
071			
072	FINAL PCN-1	7/1/75	
073	FINAL PCN-1	7/1/75	
074	FINAL PCN-1	7/1/75	
075	FINAL PCN-1	7/1/75	

# CHANGE CONTROL RECORD

## APOLLO/SOYUZ TEST PROJECT ENTRY CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
061	FINAL	5/9/75	DISAPPROVED
062	FINAL	5/9/75	
063	FINAL PCN-1	7/1/75	
064	FINAL PCN-1	7/1/75	
065	FINAL PCN-1	7/1/75	
066	FINAL PCN-1	7/1/75	
067	FINAL PCN-1	7/1/75	
068	FINAL PCN-1	7/1/75	
069	FINAL PCN-1	7/1/75	
070	FINAL PCN-1	7/1/75	
071			
072	FINAL PCN-1	7/1/75	
073	FINAL PCN-1	7/1/75	
074	FINAL PCN-1	7/1/75	
075	FINAL PCN-1	7/1/75	
075A	FINAL PCN-2 (P&I)	7/8/75	
076	FINAL PCN-2 (P&I)	7/8/75	
077	FINAL PCN-3 (P&I)	7-11-75	
078	FINAL PCN-4 (P&I)	7-12-75	



## ASTP ENTRY CHECKLIST

## LIST OF EFFECTIVE PAGES

BASIC 10/15/74  
 REFERENCE 2/7/75  
 FINAL 5/9/75  
 PCN-1 7/1/75  
 PCN-2 7-8-75  
 PCN-3 7-11-75

PCN #4 - 7-12-75 (P+D)

PAGE	DATE	PAGE	DATE
*i . . . . .	<del>7/1/75</del> 7-8-75 7-11-75	6-2 . . . . .	5/9/75
ii . . . . .	5/9/75	6-3 . . . . .	5/9/75
*iii . . . . .	7/1/75	6-4 . . . . .	5/9/75
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1-2 . . . . .	5/9/75	7-1 . . . . .	5/9/75
1-3 . . . . .	5/9/75	7-2 . . . . .	5/9/75
*1-4 . . . . .	7/1/75	7-3 . . . . .	5/9/75
1-5 . . . . .	5/9/75	7-4 . . . . .	5/9/75
1-6 . . . . .	5/9/75	7-5 . . . . .	5/9/75
*1-7 . . . . .	<del>7/1/75</del> 7-11-75	*7-6 . . . . .	7/1/75
2-1 . . . . .	5/9/75	7-7 . . . . .	5/9/75
*2-2 . . . . .	7/1/75	7-8 . . . . .	5/9/75
3-1 . . . . .	5/9/75	*8-1 . . . . .	7/1/75
3-2 . . . . .	5/9/75	8-2 . . . . .	5/9/75
*3-3 . . . . .	7/1/75	*9-1 . . . . .	7/1/75
3-4 . . . . .	5/9/75	*9-2 . . . . .	7/1/75
3-5 . . . . .	5/9/75	*9-3 . . . . .	7/1/75
4-1 . . . . .	5/9/75	*9-4 . . . . .	7/1/75
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*5-1 . . . . .	7/1/75	*9-6 . . . . .	7/1/75
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*5-3 . . . . .	7/1/75	*9-8 . . . . .	7/1/75
6-1 . . . . .	5/9/75	*9-9 . . . . .	7/1/75

\*Current Change

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## CONTENTS

NORMAL PROCEDURES		PAGE
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6	2-2/3-4 DEORBIT BURN SEQUENCE . . . . .	6-3
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9	QUICK DEORBIT. . . . .	9-1

97+00

11001  
01111P52 (OPT 1) (36, 37, 40) (RECORD)  
P0011112--  
01111V48E, LOAD 4 JET X TRANS, 5 DEG DBD, .5 DEG/SEC  
V49E, MNVR TO DEORBIT BURN ATT (0, 180, 0)

00:00-

97+10-

START SCS DRIFT CK (BMAG 2)  
ALIGN GDC  
RESET AND START DET COUNTING UPV  
A  
NSTDN UPLINK, UPDATE  
P27 (SV, SPS TARGET LOAD, ENTRY TARGET LOAD)  
PRELIMINARY DEORBIT BURN PAD (COPY PG E/1-6)  
PRELIMINARY ENTRY PAD (COPY PG E/1-7)

97+20

*EAT/SNACK*

97+30-

## P52 (OPT 1)

N71 1ST STAR	XX	0	0	0		
N71 2ND STAR	XX	0	0	0		
N05(R1) ANG ERR	XX					
TIME OF	HR	+	0	0	0	
GYRO	MIN	+	0	0	0	
TORQUE	SEC	+	0			0 0

E/1-1

DATE 5/9/75  
7-8-75

DEORBIT SEQ

97+30

11112  
01111G  
D  
S

LOGIC SEQUENCER CK

30:00-

97+40

END SCS DRIFT CK (BMAG 2)  
PERFORM GDC/IMU COMPARISON CK LIST

\*IF BMAG 2 >10 DEG/HR/AXIS\* \* \* \* \*  
 \*START SCS DRIFT CK (BMAG 1)  
 \* ALIGN GDC  
 \* BMAG MODE (3) - RATE 1  
 \* RESET AND START DET COUNTING UP\*  
 \* \* \* \* \*

00:00-

S  
P  
1  
N  
F  
LACQUIRE ATS HGA: MAN, WIDE P -25, Y 4  
S-80 ANT IND > 1/3 SCALE, HGA: REACQ, NARROW

97+50

UNSTOW AND DON LIFE VESTS (F1)  
 AND HEEL RESTRAINTS (B1)  
 UNSTOW HEADRESTS (B1)  
 INSTALL ENTRY CUE CARDS (R3)

PYRO BAT CK

M  
A  
D

98+00

## GDC/IMU COMPARISON CK LIST

V16 N20E  
 FDAI SELECT - 1  
 FDAI SOURCE - ATT SET  
 ATT SET - GDC  
 ZERO FDAI 1 ERROR NEEDLES  
 WITH ASCP TW  
 KEY VERB WHEN ZERO  
 RECORD N20 VALUES  
 RECORD ASCP TW VALUES  
 RECORD DET  
 FDAI SELECT - 1/2

## BMAG 2 GDC/IMU COMPARISON RESULTS

N20	R	+					
IMU	P	+					
	Y	+					
ASCP TW	R	XX					XX
GDC	P	XX					XX
	Y	XX					XX
DET(30:00)ΔT	XX	XX					

## LOGIC SEQUENCER CK

NOTE: CHECKS STATUS OF ELS PB'S  
 CM/SM SEP SW'S AND 24K BARO SW'S  
 SECS PYRO ARM (2) - SAFE (VERIFY)  
 SECS LOGIC (2) - OFF (VERIFY)  
 CB SECS LOGIC (2) - CLOSE (VERIFY)  
 CB SECS ARM (2) - CLOSE  
 CB ELS/CM-SM SEP (2) - CLOSE  
 ELS LOGIC - ON (UP)  
 ELS - AUTO  
 COORDINATE NEXT 3 STEPS WITH STDN  
 SECS LOGIC (2) - ON (UP)  
 STDN CONFIRM GO FOR PYRO ARM AS REQ  
 SECS LOGIC (2) - OFF  
 CB SECS ARM (2) - OPEN  
 ELS LOGIC - OFF  
 ELS - MAN  
 CB ELS/CM-SM SEP (2) - OPEN

## PYRO BAT CK

PNL 250  
 CB PYRO A SEQ A - CLOSE (VERIFY)  
 CB PYRO B SEQ B - CLOSE (VERIFY)  
 DC IND - PYRO BAT A, THEN B  
 \*IF PYRO BAT A(B) <35 VDC \*  
 \* (REPLACES FAILED PYRO BAT \*  
 \* WITH ENTRY BAT) \*  
 \*CB PYRO A(B) SEQ A(B) - OPEN\*  
 \*CB PYRO A(B) BAT BUS A(B) TO\*  
 \* PYRO BUS TIE - CLOSE \*  
 PNL 275  
 CB MNA BAT C - CLOSE  
 CB MNB BAT C - CLOSE (APPLIES  
 ENTRY BAT C TO BOTH MAIN  
 BUSES WHEN MAIN BUS TIE  
 SWITCHES ARE ON)  
 DC IND - MNB

E/1-2

DATE 5/9/75

98+00  
11112  
01111

H  
A  
D

98+10

30:00

T  
A  
N

98+20

98+30

PS2 (OPT 3) (33, 37, 42) (RECORD)\*IF N93 >1.5 DEG/HR/AXIS\*  
P00  
\* RECYCLE PS2  
\* IF CONFIRMED:  
\* USE SCS FOR EMS ENTRY\*  
\*\*\*\*\*

\*IF BMAG 2 >10 DEG/HR/AXIS\*  
\*END SCS DRIFT CK (BMAG 1) PERFORM  
\* GDC/IMU COMPARISON CK LIST PG E/1-2\*  
\*\*\*\*\*

TRANSMIT GYRO TORQUE ANGLES AND TIME OF GYRO TORQUE

EMS ENTRY CK

EMS ΔV TEST AND NULL BIAS CK  
TRANSMIT EMS NULL BIAS CK RESULTS

RSI ALIGNMENT  
GDC ALIGN

SECONDARY WATER EVAP ACTIVATION

# PS2 (OPT 3)

N71 1ST STAR	XX	0	0	0		
N71 2ND STAR	XX	0	0	0		
N05(R1) ANG ERR	XX					
N93	X					
GYRO						
TORQUING	Y					
ANGLES						
	Z					
TIME OF	HR	+	0	0	0	
GYRO	MIN	+	0	0	0	
TORQUE	SEC	+	0			0 0

## EMS ENTRY CK

EMS FUNC - OFF  
CB EMS (2) - CLOSE (PNL 8)  
EMS MODE - STBY  
EMS FUNC - EMS TEST 1 (WAIT 5 SEC)  
EMS MODE - NORMAL (WAIT 10 SEC)  
CHECK IND LTS - OUT  
RANGE IND - 0.0  
SLEW HAIRLINE OVER NOTCH  
IN SELF-TEST PATTERN  
EMS FUNC - EMS TEST 2  
.05G LT - ON (ALL OTHERS OUT)  
WAIT 10 SEC  
EMS FUNC - EMS TEST 3  
.05G LT - ON  
RSI LOWER LT - ON (10 SEC LATER)  
SET RANGE COUNTER TO 58 NM ±0.0  
EMS FUNC - TEST 4  
.05G LT - ON (ALL OTHERS OUT)  
G-V TRACE WITHIN PATTERN TO LWR RT  
CORNER AT 9G  
RNG IND COUNTS DOWN TO 0.0 ±0.2NM  
EMS FUNC - TEST 5  
.05G LT - ON  
RSI UPPER LT - ON (10 SEC LATER)  
RANGE IND - 0.0  
SCRIBE TRACES VERTICAL LINE 9G TO  
0.28 ±0.1G  
SET SCROLL TO 37K FPS  
EMS - OFF/STBY

## EMS ΔV TEST AND NULL BIAS CK

EMS MODE - STBY (VERIFY)  
EMS FUNC - ΔV SET/VHF RNG  
SET ΔV IND TO 1536.8 FPS  
EMS MODE - NORMAL  
EMS FUNC - ΔV TEST  
SPS THRUST LT - ON/OFF (10 SEC)  
ΔV IND STOPS AT -0.1 TO -41.5  
EMS MODE - STBY  
EMS FUNC - ΔV SET/VHF RNG  
SET ΔV IND TO -100.0 FPS  
CMC MODE-FREE(UNTIL MEAS COMPLETE)  
OR BMAG MODE (3) - RATE 2  
EMS FUNC - ΔV (WAIT 5 SEC)  
START DET  
00:00 EMS MODE - NORMAL  
01:40 EMS MODE - STBY(RECORD)OFF  
IF ΔV <1 FPS, DO NOT BIAS  
IF ΔV >1 FPS BUT <10 FPS,  
STON PROVIDE BIAS IN PAD ΔVC  
IF ΔV >10 FPS, EMS IS NO-GO

## SEC WATER EVAP ACTIVATION

ELECTROPHORESIS COOLING VLV - BYPASS  
(VERIFY) (PNL 165)  
EVAP H2O CONT SEC VLV - AUTO(PNL 382)  
ECS IND SEL - SEC  
SEC COOL LOOP PUMP - AC2  
GLY DISCH SEC PRESS - 40-52 PSIG  
SEC COOL LOOP EVAP - EVAP  
SEC GLY EVAP OUT TEMP- 38-50.5 DEG F  
ECS IND SEL - PRIM

## RSI ALIGNMENT

NOTE: RSI ALIGNMENT IS PERFORMED  
EVEN IF RSI ALIGNMENT IS CORRECT  
IN ORDER TO CK OPERATION OF RSI  
FDAI SOURCE - ATT SET  
ATT SET - GDC  
EMS ROLL - ON (UP)  
GDC ALIGN PB - PUSH AND HOLD  
YAW TH - POSITION RSI THROUGH 45 DEG  
SET TO LIFT UP (HDS ON)  
OR TO LIFT DN (HDS UP) ATT PER  
ENTRY UPDATE PAD  
GDC ALIGN PB - RELEASE  
EMS ROLL - OFF

98+30-

11112  
01111  
00:00-

## CM RCS PREHEAT CK LIST

## FINAL STOWAGE CK LIST

SET UP CAMERA FOR FIREBALL PHOTOGRAPHY  
CM4/DAC/25/CX05(F2) - BRKT, MIR  
(T11, 1/500, 7) 2 FPS

98+40-

98+50-

20:00-

CM RCS PREHEAT TERMINATION CK LIST  
CONFIGURE PANEL CB'S (NOT SWITCHES)

99+00-

## CM RCS PREHEAT CK LIST

## NOTES:

1. IF SYS TEST MTR 5C, 5D, 6A, 6B, 6C, & 6D ALL READ  $\geq 4.0$  VDC, OMIT PREHEAT  
SYS TEST METER-5B (BAT RLY BUS)
2. IF PREHEAT REQ'D, PREHEAT UNTIL ALL JETS READ  $\geq 4.0$  VDC, OR 20 MINUTES, WHICHEVER OCCURS FIRST
3. CHECKS CM RCS 24, 25, 12, 14, 16, AND 21 JET INJECTOR VALVE TEMPERATURES, RESPECTIVELY
4. DIRECT COILS USED FOR PREHEATING JETS

CB RCS LOGIC(2) - CLOSE (PNL 8)  
CM RCS LOGIC - ON (UP) (PNL 1)  
(ENERGIZES RCS LOGIC BUS)  
CB CM RCS HTRS (2) - CLOSE (PNL 8)  
CM RCS HTRS - ON (UP) (PNL 101)  
SET DET COUNTING UP

## CM RCS PREHEAT TERMINATION CK LIST

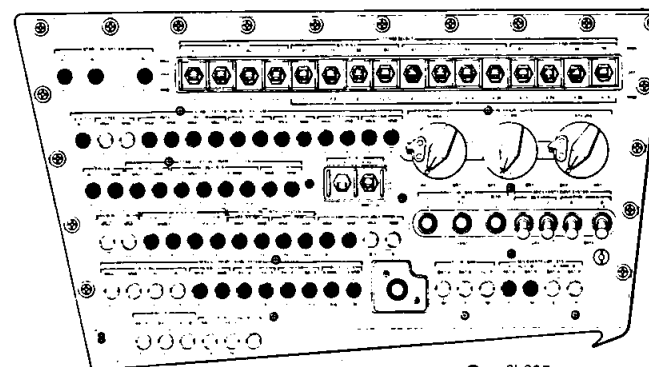
CM RCS HTRS - OFF (PNL 101)  
CM RCS LOGIC - OFF (PNL 1)  
CB CM RCS HTRS (2) - OPEN (PNL 8)  
SYS TEST MTR - 5B (BAT RLY BUS)

## FINAL STOWAGE CK LIST

## ORDEAL

FDAI (2) - INRTL  
PWR - OFF, STOW  
GLY TO RAD SEC VLV - BYPASS (CCW)  
(VERIFY) (PNL 377)  
ATTACH BOTH STRUT UNLOCK LANYARDS  
VERIFY SUIT BAGS TIED DOWN TO A4,  
A5, AND A6  
VERIFY UCTA'S STOWED IN PORTABLE  
WASTE STOWAGE CONTAINER (U1),  
HDC AND MAG IN (83)

CHANGE DAC TO CM4 WINDOW  
UNSTOW CX05 MAG FROM (F2)  
AND INSTALL ON DAC



● - CLOSE  
○ - OPEN

E/1-4

DATE 7/1/75

99+00

11112  
01111

G  
D  
S

99+10

STON UPLINK, UPDATE  
P27 (SV, SPS TARGET LOAD)  
FINAL DEORBIT BURN PAD (COPY PG E/1-6)  
FINAL ENTRY PAD (COPY PG E/1-7)

N  
F  
L

99+20

ACQUIRE ATS HGA: MAN, WIDE P -38, Y 342  
S-80 ANT IND > 1/3 SCALE, HGA: REACO, NARROW

S  
P  
1

CM RCS HTRS - OFF (VERIFY) (PNL 101)  
CM RCS LOGIC - OFF (VERIFY) (PNL 1)  
CB CM RCS HTRS (2) - OPEN (VERIFY) (PNL 8)

CM RCS ACTIVATION

PRE-SEP CK LIST

\*\*\*\*\*  
\*IF SM RCS OR HYBRID\*  
\* DEORBIT BURN, GO \*  
\* TO PG E/5-1 \*  
\*\*\*\*\*

M  
A  
D

99+30

CM RCS ACTIVATION

CB SECS ARM (2) - CLOSE  
CUE STON  
SECS LOGIC (2) - ON (UP)  
STON CONFIRM GO  
FOR PYRO ARM (IF POSS)  
SECS PYRO ARM (2) - ON (UP)  
CM RCS PRPLNT 1 & 2 TB (2) - GRAY  
(VERIFY) (INDICATES FUEL AND  
OXIDIZER ISOLATION VALVES OPEN)  
CM RCS PRESS - ON (UP)  
RCS IND SEL - CM1, THEN 2  
HE PRESS STABILIZES AT 3600-3800  
PSIA AFTER 15 MINUTES  
MANF PRESS 287-302 PSIA  
SECS PYRO ARM (2) - SAFE

PRE-SEP CK LIST

REPRESS PKG VLV - ON  
O2 SM SUPPLY VLV - OFF  
SURGE TK - ON (VERIFY)  
CAB PRESS REL VLV (2) - NORM  
CB WASTE H2O/URINE DUMP HTR(2)-OPEN  
(PNL 5)  
CB ECS RAD CONT/HTRS MNA/B (2)-OPEN  
POT H2O HTR - OFF  
ABORT SYS PRPLNT - RCS CMD (VERIFY)

E/1-5

DATE 5/9/75



99+30

11112  
01111  
11102  
01111

CYCLE CMC MODE SWITCH - FREE - AUTO  
V48E, LOAD .5 DEG DBD, N47 AND N48 FROM DEORBIT BURN PAD  
P30, VERIFY N33 AND N81 WITH DEORBIT BURN PAD  
SET DET COUNTING UP TO DEORBIT BURN TIG  
P00, V62E  
V49E, MNVR TO DEORBIT BURN PAD ATT

99+40

SXT BORESIGHT STAR CK, V41 N91E (PG G/2-4)  
(LIMIT: SXT FOV, GNCS GO/NO-GO) IF GNCS NO-GO, SET TW TO:  
\* PAD BURN ATT \*  
\* SC CONT - SCS \*  
\* TRK HORZ WITH 15 DEG \*  
\* WINDOW MK (HDS DN) \*  
\* AT TIG - 2 MIN, \*  
\* HOLD ATT \*  
\* GDC ALIGN PB - PUSH \*  
\* BURN SCS AT 0.180,0 \*  
\* (7 DEG MK) \*  
STOW OPTICS EYEPIECES  
CREW STRAPPED IN AND SEATS LOCKED  
STOW COAS AND DIM LIGHTS  
GO TO SPS BURN-ENTRY CUE CARD  
(DUAL BANK)

99+50

## TAKEOVER RULES

P OR Y RATES	ATTITUDE DEVIATION	CO TIME
+/-5 DEG/SEC TAKEOVER, COMPLETE	+/-5 DEG/SEC TAKEOVER, COMPLETE	AT BT +1 SEC

NOTE: LARGEST SPS EXECUTION ERRORS THAT  
CAN BE STEERED OUT BY ENTRY GUIDANCE:  
BURN LATE (90 SEC)  
UNDERBURN (11 FPS)  
OVERBURN (16 FPS)  
IF SPS TRIM RESIDUALS >.2 FPS, .2G DRE  
NAV CK IS NOT VALID

SPS DEORBIT BURN

100+00

SPS DEORBIT BURN PAD  
NOMINAL

## PRELIMINARY

## FINAL

N33	HR	+	0	0	1	0	0	+	0	0		+	0	0	
	MIN	+	0	0	0	0	0	+	0	0	0	+	0	0	0
	SEC	+	0	0	0	0	0	+	0			+	0		
N81	ΔVX	-	0	1	9	1	3		0				0		
	ΔVY	+	0	0	0	0	0		0				0		
	ΔVZ	+	0	0	2	0	1		0				0		
N22	R	+	0	0	0	0	0	+			0	0	+		0
	P	+	1	8	0	0	0	+			0	0	+		0
	Y	+	0	0	0	0	0	+			0	0	+		0
	ΔVC	XX	XX	1	7	4	0	XX	XX			XX	XX		
	BT	XX	XX	0	0	0	7	XX	XX			XX	XX		
	ΔV75	XX	XX	0	7	8	0	XX	XX			XX	XX		
	TARGET HP	+	XX	XX	1	0	3		XX	XX			XX	XX	
N47	WT	+	2	5	2	9	1	+				+			
N48	PT	+	0	0	0	6	9		0	0			0	0	
	YT	-	0	0	0	2	9		0	0			0	0	
	STAR	XX	0	0	0	3	3	XX	0	0	0	XX	0	0	0
	SFT	+	0	4	8	5	0	+			0	+			0
	TRN	+	3	2	2	0	0	+			0	+			0
	ULLAGE	XX	XX	XX	1	4	4	XX	XX	XX		XX	XX	XX	

## SPS BURN STATUS (AFTER TRIM)

## COMPLETION RULES

ΔTIG	XX	XX			
ΔVC		XX			
FDAI (IF ATT P NOT NOM)	R	+		XX	XX
	P	+		XX	XX
	Y	+		XX	XX
N85	ΔVX		0	0	
(IF VG >.2)	ΔVY		0	0	
	ΔVZ		0	0	

SITUATION	COMPLETION RULE
VG <60 FPS	TRIM VG TO +/- .2 START WITHIN 30 SEC
VG >60 FPS	RESTART SPS SCS
NO RESTART, HP <75	USE RCS COMPLETION CHARTS (4 OR 3 QUADS) AS APPLICABLE
NO RESTART, HP >75, 4 QUAD CAPABILITY	USE RCS 4 QUAD COMPLETION CHART
NO RESTART, HP >75, 3 QUAD CAPABILITY	GO AROUND 6 REVS TO BACKUP TARGET

E/1-6

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100+00-  
11102  
01111

# RECORD BURN STATUS

WARNING: WAIT UNTIL COMP ACTY LT - OUT

V66E  
CM RCS CK  
BMAG MODE (3) - ATT 1/RATE 2  
YAW TO CM/SM SEP ATT  
PER ENTRY PAD

\*IF BOTH RINGS FAILED\*  
\*PERFORM ROLLING ENTRY\*  
\*CK LIST

V37E 62E  
CM/SM SEP CK LIST

## CM/SM SEP

MONITOR V MNA/B  
YAW BACK TO 0 DEG  
PRO  
VERIFY LAT, LONG FROM PAD  
LOAD R3=-1(LIFT UP);  
+1(LIFT DN)  
PRO  
(POSSIBLE 06 22 IF ANGLE  
OF ATTACK >045 DEG)  
STDN UPDATE FINAL ENTRY  
PAD  
EMS INITIALIZATION

PITCH TO PAD P.05G  
(050 DEG)

GO TO ENTRY (PG E/2-1)

P62  
F50 25

F06 61

P63  
06 64

\*POSSIBLE ALARMS\*  
\*01427-ROLL REVERSED\*  
\*01426-IMU UNSAT\*

\*IF <25 VDC, PERFORM CM LO\*  
\*PWR RECONFIG, PG E/7-8\*

\*IF LIFT DN\*  
\*ROLL TO 180 DEG AND TRACK\*  
\*HORZ ON 9 DEG WINDOW MK\*

100+10

100+20

100+30

## CM RCS CK

AUTO RCS SEL A/C ROLL (4) - OFF  
(VERIFY)  
CB RCS LOGIC (2) - CLOSE (VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (RING 1) - OFF  
AUTO RCS SEL (RING 2) - MNB  
TEST RING 2 THRUSTERS (MIN IMP MAY  
NOT PRODUCE AUDIBLE JET FIRING.  
USE 3 CYCLES)  
AUTO RCS SEL (RING 1) - MNA  
AUTO RCS SEL (RING 2) - OFF  
TEST RING 1 THRUSTERS  
AUTO RCS SEL (RING 2) - MNB  
RCS TRNFR - SM  
MAN ATT (3) - RATE CMD

## CM/SM SEP CK LIST

PRIM GLY TO RAD-BYPASS  
(PULL)  
GLY EVAP TEMP IN-MAN  
CB SPS P & Y (4) - OPEN  
CB ELS/CM-SM SEP (2) -  
CLOSE  
VHF AM (A&B) - OFF(CTR)  
STON CONFIRM GO FOR ATS  
PWR DN  
ATS F PWR AMPL-OFF(CTR)  
ATS F XPNDR-OFF(CTR)  
ATS F HGA POWER-OFF  
RHC PWR DIRECT #2-MNA/B  
CM RCS LOGIC - ON (UP)  
CUE STON IF IN CONTACT  
STON CONFIRM GO FOR  
PYRO ARM (IF POSS)  
SECS PYRO ARM(2)-ON(UP)  
VERIFY CORRECT SEP ATT  
PER ENTRY PAD REMARKS  
CM/SM SEP (2) - ON (UP)  
MAN ATT (3) - MIN IMP  
RHC PWR DIRECT #2 - OFF  
BMAG MODE (3) - RATE 2  
C/W MODE - CM  
RCS TRNFR - CM  
CM RCS MANF PRESS -  
287 - 302 PSIA  
SECS PYRO ARM(2) - SAFE  
AUTO RCS SEL(12)-MNA/B  
(VERIFY)  
CM RCS LOGIC - OFF

## EMS INITIALIZATION

EMS FUNC - TEST 5  
VERIFY SCROLL ON 37K  
EMS FUNC - RNG SET  
SET RNG TO PAD RTGO  
EMS FUNC - VO SET  
SLEW SCROLL TO PAD VIO  
EMS MODE - STBY(VERIFY)  
EMS FUNC - ENTRY  
VERIFY .05G LT FILTER  
IS DOWN

\*ROLLING ENTRY CK LIST\*  
\*PERFORM CM/SM SEP CK LIST THROUGH\*  
\*SECS PYRO ARM (2) - ON (UP)\*  
\*BMAG MODE (3) - ATT 1/RATE 2\*  
\*MAN ATT (3) - RATE CMD (VERIFY)\*  
\*SC CONT - SCS\*  
\*MNVN TO 0, 0 DEG\*  
\* (PITCH FROM ENTRY PAD REMARKS)\*  
\*DBD/RATE - MIN/LOW\*  
\*CAUTION: ATT HOLD IN PITCH AND YAW\*  
\*MUST BE MAINTAINED UNTIL SEP\*  
\*AT RET .05G - 120 SEC\*  
\* FDOI SCALE - 50/15\*  
\* MAN ATT ROLL - ACCEL CMD\*  
\* ROLL RIGHT ~20 DEG/SEC\*  
\*AT RET .05G - 90 SEC\*  
\* CM/SM SEP (2) - ON (UP)\*

## ENTRY PAD PRELIMINARY FINAL

AREA	XX					XX					
SEP ATT	Y	TO				Y	TO				
P.05G	+			0	0	+			0	0	
N61 LAT		0					0				
LONG											
RTGO .05G	+					+					
VIO .05G	+					+					
RET .05G	XX	XX				XX	XX				
RET 0.2G	XX	XX				XX	XX				
N66 DRE											
BANK AN											
RET RB	XX	XX				XX	XX				
RET BBO	XX	XX				XX	XX				
RET EBO	XX	XX				XX	XX				
RET DROG	XX	XX				XX	XX				
RET MAIN	XX	XX				XX	XX				
REMARKS:											

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→ MN BUS TIE (2) - ON (VERIFY)

## ENTRY

## P63 - ENTRY - INIT

1 06 64 G,VI,RTOGO (.01G,fps,.1nm)

RET .05G FDAI SCALE - 5/5  
-5 min

RET .05G GNCS/SCS\_ATTITUDE\_CHK  
-2 min

Check IMU vs. GDC pitch attitudes agree  
within 5 deg  
\*DO NOT AGREE \* \* \* \* \*

\* Lift up \*

\* RET .05G - 1 min, check horiz on 33 deg \*  
\* window mk (Limit: +/- 5 deg) GO/NO-GO \*  
\* If GNCS GO, fly lift up to .2G, \*  
\* then CMC/AUTO \*  
\* \*If GNCS NO-GO, track horiz on \*  
\* 29 deg window mk, hold lift \*  
\* up to .2G, then EMS entry \* \*

\* Lift dn \*

\* Check pitch error needle centered \*  
\* (Limit: +/- 5 deg) GO/NO-GO \*  
\* If GO or NO-GO, track horiz on 9 deg \*  
\* window mk, hold lift dn to 1.0G \*  
\* (V16 N74, R3) then, \*  
\* If GNCS GO, CMC/AUTO \*  
\* \*If GNCS NO-GO, EMS entry \* \*

\* \* \* \* \*

## GNCS\_GO, Lift up

Hold PAD entry att, fly lift up to .2G  
GNCS\_GO, Lift dn

Track horiz on 9 deg window mk, fly  
lift dn to 1.0G (V16 N74, R3)

RET .05G EMS MODE - BACKUP/VHF RNG  
(.05G lt - on)  
(---:---) .05G sw - on (up)  
EMS ROLL - on (up)

## P64 - ENTRY - POST .05G

2 06 74 BETA,VI,G (.01 deg,fps,.01G)  
Start DAC  
MAN ATT (3) - RATE CMD

RET .2G P67 - ENTRY - FINAL PHASE (POST .2G)

3 (---:---)  
06 66 BETA,CRSRNG ERR,DNRNG ERR (.01 deg,.1nm)  
(\* is north & long)

## DOWN\_RANGE\_GNCS\_GO/NO-GO\_NAV\_CHK:

KEY VERB  
Record DNRNG ERR ----- PAD -----  
KEY RLSE  
(Limit: +/-180 NM IF ΔV TRIM <30 FPS,  
GNCS GO/NO-GO)  
(DRE CHECK INVALID FOR ΔV TRIM >30 FPS)  
\*If GNCS NO-GO: \*  
\* Fly EMS (Pg E/2-2) \*

## 1ST\_CROSS\_RANGE\_GNCS\_GO/NO-GO\_NAV\_CHK

If initial BETA direction not same  
as PAD -----, GNCS is NO-GO  
\*If GNCS NO-GO: \*  
\* Fly EMS (Pg E/2-2) \*

E/2-1

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ENTRY

At .2G (lift up) or 1G (lift dn)

If GNCS is GO:

SC CONT - CMC/AUTO

\*If DAP NO-GO: \*

\* SC CONT - SCS \*

\* Fly BETA \*

\*If GNCS NO-GO:

\* Fly EMS \*

\* Go to PAD BACKUP BANK AN at .2G (lift up) or 1G (lift dn) \*

\* Reverse bank at RET RB \*

\* At 800 nm scroll line \*

\* If RTOGO < 500 nm, roll toward 90 deg \*

\* If RTOGO > 600 nm, roll toward 0 deg \*

\* Fly to get RTOGO convergence between \*

\* 300 nm and 200 nm scroll lines \*

\* At 4000 fps for nom tgt, 16 nm at 2.7G \*

\* If RTOGO > 16 nm, fly toward lift up \*

\* If RTOGO < 16 nm, fly toward lift dn \*

\*If GNCS & EMS NO-GO: \*

\* Fly PAD bank/reverse bank \*

CH RCS CK

RCS IND - CH 1, 2

\*If both RCS rings \*

\* He pressure < 2000 psia: \*

\* Roll right ~20deg/sec \*

S BAND NORMAL PWR AMPL HIGH - HIGH  
Select best omni as req'd to maintain  
Comm after exit blackout

ENTRY

RET RB  
-1 min

2ND CROSS RANGE GNCS GO/NO-GO NAV CK:

(\_\_:\_\_)

If BETA reverses earlier than 1 min  
before PAD RET RB, GNCS is NO-GO.

\*If GNCS NO-GO: \*

\* Fly EMS (see above) \*

RET

90K' (\_\_:\_\_) STEAM PRESS - pegged at ~90K'

Start Watch  
(00:00)

4 F 16 67 RTOGO, LAT, LONG (Vrel=1000 fps) (.1nm, .01 deg)

SC CONT - SCS

RTOGO NEG (R1) - LIFT UP

RTOGO POS (R1) - LIFT DN

Monitor altimeter

Stop DAC

DAC - T8, 12 FPS

Go to EARTH/POST LANDING, pg E/3-1

E/2-2

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# EARTH/POST LANDING

RET  
 50K'(\_:\_:\_)\_ CABIN PRESS REL vlv (2) - BOOST/ENTRY (00:50) Watch  
 SECS PYRO ARM (2) - on (up)  
 Check altimeter  
 40K'(\_:\_:\_)\_ \*If\_CM\_unstable: (01:04)  
 \* RCS CMD - OFF  
 \* 40K' APEX COVER JETT pb - push  
 \* DROGUE DEPLOY pb - push  
 \* (2 sec after apex cover jett)  
 30K' ELS LOGIC - on (up) (01:23)  
 ELS - AUTO  
 24K'(\_:\_:\_)\_ RCS disable (auto) Start DAC (01:36)  
 (May be 23K') \*RCS CMD - OFF\*  
 Apex cover jett (auto)  
 \*APEX COVER JETT pb - push\*  
 (Wait 2 sec)  
 Drogue parachutes deployed (auto)  
 \*DROGUE DEPLOY pb - push\*  
 \*If\_both\_drogues\_fail: \*  
 \* ELS - MAN \*  
 \* Stabilize CM (direct RCS)\*  
 \* 5K' MAIN DPLY pb - push \*  
 \* ELS - AUTO \*  
 23.5K' Cabin pressure increasing  
 \*If\_not\_increasing\_by\_17K': \*  
 \*CABIN PRESS REL vlv (RH) - DUMP \*  
 CM RCS PRPLNT (2) - OFF

10K'(\_:\_:\_)\_ Main chutes deployed(drogues +46 sec) (02:22)  
 (Cab Press = 10 psia) MAIN DEPLOY pb - push  
 (3) VHF ANT - RECY  
 VHF AM A - SIMPLEX  
 (If B-SIMPLEX or A-DUPLEX req'd, turn beacon off during comm)  
 VHF BCN - ON  
 Record LAT \_:\_:\_:\_\_, LONG \_:\_:\_:\_:\_  
 & voice to REC-Y at 10K'  
 \*IF GNCS NO-GO, \*  
 \* RECORD EMS RTGO \_:\_:\_:\_ \*  
 EMS - OFF/STBY  
 \*If\_no\_contact\_with\_recovery\_forces: \*  
 \* Refer to POST\_LANDING \*  
 \* COMMUNICATIONS, Pg E/3-2 \*  
 CABIN PRESS REL vlv (RH) - DUMP  
 Stow DAC  
 STRUT LOCKS (4) - UNLOCK  
 \*If\_night\_landing: \*  
 \* cb FLOAT BAG #3, FLT/PL (1) - close \*  
 \* PL BCN LT - LO \*  
 \* (Max. of 5 minutes operation in HI, \*  
 \* if requested by recovery) \*  
 (275) cb FLT & PL BAT BUS A, B, & BAT C (3) - close  
 cb FLT & PL MNA & B (2) - open  
 (5) cb BAT RLY BUS (2) - open  
 (8) cb SPS P & Y (4) - open (verify)  
 (2) ELS - AUTO (verify)  
 ELS LOGIC - on (up) (verify)  
 (8) FLOOD LTS - POST LDG  
 (325) CAB PRESS REL vlv (2) - CLOSE (latch off)  
 (7) Direct O2 vlv - open (CCW) (if suited)  
 (5) MN BUS TIE (2) - OFF

EARTH/POST  
 LANDING

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EARTH/POST  
LANDING

STABILIZATION AFTER LANDING

- (229) cb MAIN REL PYRO (2) - close
- (2) MAIN RELEASE - on (up)
- (8) SECS PYRO ARM (2) - SAFE
- SECS LOGIC (2) - OFF
- (8) cb PL VENT - close
- cb FLOAT BAG (3) - close
- (278) cb UPRIGHT SYS COMPRESS (2) - close

If Stable II:

FLOAT BAG (3) - FILL till 2 min after  
upright, then OFF

VHF AM A/B & BCN - OFF while inverted

If Stable I:

After 10 min cooling period,  
FLOAT BAG (3) - FILL 7 min, then off

POST STABILIZATION AND VENTILATION

- (15) PL BCN LT - LO (night landing)  
(Max. of 5 minutes operation in HI, if  
requested by recovery)
- (2) PL VENT vlv - UNLOCK (pull into detent)  
Remove PL VENT exh cover
- (15) PL VENT - HIGH or LOW  
(Max. of 12 hours operation in HIGH, if  
selected)
  - \*If fan frozen \*
  - \* PL VENT - LOW \*
  - \* cb PL VENT - open \*
  - \*To close PLV: \*
  - \* cb PL VENT - close \*
  - \* PL VENT - OFF \*
  - \*If attitude switch failure, to operate PLV\* \*
  - \* PL VENT - LOW \*
  - \* PLVC - OPEN \*
  - \*To turn off PLV: \*
  - \* PL VENT - OFF \*
- (376)

If dye marker req'd:

PL DYE MARKER - ON (by request)

- (275) cb MNA BAT BUS A & BAT C (2) - open
- cb MNB BAT BUS B & BAT C (2) - open
- cb FLT & PL BAT C - open
- (250) cb PYRO A SEQ A - open (helicopter recovery only)
- cb PYRO B SEQ B - open (helicopter recovery only)
- Verify BAT BUS A & B voltage  $\geq 27.5$  vdc
  - \*If  $< 27.5$  vdc: \*
  - \* cb FLT & PL BAT C (1) - close \*
  - \* cb FLT & PL BAT BUS A & B (2) - open \*
  - \* Go to LOW POWER CHECKLIST, Pg E/3-5 \*
- (U3) Unstow and install PLV DISTRIB DUCT (3)  
Deploy grappling hook and line if req'd  
(by request)

E/3-2

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## POST LANDING COMMUNICATIONS

- (3) VHF ANT - RECY (verify)
- VHF BCN - ON (verify)
- (6,9) VHF AM - T/R (verify)
- (3) VHF AM A & B - SIMPLEX (verify)
- \*If no contact with recovery forces:
- (6,9) \* VHF AM - REC
- \* Center couch attempt to contact
- \* recovery forces
- \* If contact reestablished and left or
- \* right couch wish to Transmit:
- (6,9) \* VHF AM - T/R (only long enough to
- \* transmit, then VHF AM - REC)
- \*If still no contact with recovery forces:
- \* Monitor VHF Beacon transmission with
- \* VHF AM B Rcvr and/or Survival Trncvr
- \* (VOICE)
- \* If VHF Beacon not operating:
- \* Connect Survival Trncvr cable conn
- \* J1 to bcn ant cable conn P112
- \* behind ant access pnl and place
- \* radio in BCN mode
- \* (Use tool E to open VHF antenna
- \* access panel and tool F to loosen
- \* connector P112)
- \*After 1 hour on the water:
- (3) \* VHF AM A(B) - OFF
- \* VHF AM RCV ONLY - A
- \*On the quarter hour and every quarter
- \* hour thereafter:
- (3) \* VHF AM A - SIMPLEX
- \* VHF RCV ONLY - OFF
- (6,9) \* VHF AM - REC
- \* Center couch transmit in blind,
- \* 5 minutes
- (3) \* VHF AM A - OFF
- \* VHF AM RCV ONLY - A

If shipboard recovery, continue Pg E/3-3

If helicopter recovery, go to Pg E/3-4

\*If unaided egress, go to Pg E/3-4\*

## SHIPBOARD EGRESS & POWERDOWN

- GEAR BOX SEL - N
- ACTR HNDL SEL - N
- Check hatch GN2 pressure gauge
- If > mid-white
- GN2 vlv HNDL - VENT (pull)
- GN2 vlv HNDL - Neutral (detent)
- Check pressure gauge (mid-white)
- \*Repeat press/vent to obtain mid-white\*
- If < mid-white
- Charge hatch counterbalance
- GN2 vlv HNDL - PRESS (push)
- GN2 vlv HNDL - Neutral (detent)
- Check pressure gauge (mid-white)
- \*Repeat press/vent to obtain mid-white\*
- Inform recovery you are ready for egress

### COMMENTS:

Recovery will keep you informed of retrieval status.

CM will remain powered up for comm until immediately prior to egress.

Stay strapped in couch for retrieval.

When CM is safely on ship (recovery will so inform you) inform recovery you are ready for egress

Recovery Team Leader will knock three times on side hatch window to indicate crew is clear to open side hatch

Crew will open hatch

GEAR BOX SEL - UNLATCH

ACTR HNDL SEL - UNLATCH

LOCK PIN REL KNOB - UNLOCK

Operate ratchet handle until hatch open

Verify hatch overcenter lock engaged

ACTR HNDL SEL - N

Stow ratchet handle

When hatch open

(15) PL VENT - OFF

cb PANEL 250 (all) - open

(R1) Remove MA151 (Germanium & Sodium Iodide Crystal Experiment)

Hand MA151 experiment and bag to

Recovery Team Leader

(U2) Remove PAO film bag (tv monitor cable bag)

Hand bag to Recovery Team Leader

Egress

## HELICOPTER EGRESS & POWERDOWN

GEAR BOX SEL - N  
ACTR HNDL SEL - N  
Check hatch GN2 pressure gauge  
If > mid-white  
GN2 vlv HNDL - VENT (pull)  
GN2 vlv HNDL - Neutral (detent)  
Check pressure gauge (mid-white)  
\*Repeat press/vent to obtain mid-white\*  
If < mid-white  
Charge hatch counterbalance  
GN2 vlv HNDL - PRESS (push)  
GN2 vlv HNDL - Neutral (detent)  
Check pressure gauge (mid-white)  
\*Repeat press/vent to obtain mid-white\*

Inform swimmer you are ready for equipment bag by knocking on side hatch window

### COMMENTS:

CM VHF - BCN and BCN LT will remain on to aid in maintaining visual/radio acquisition after crew egress.  
Swimmer will open hatch.  
Swimmer will hand in equipment bag containing Life Preserver Units (LPU), Tempscribe temperature recorder, tape, and MA151 handling container  
Crew will close hatch; swimmers will assist

Receive equipment bag from swimmer  
Close hatch

GEAR BOX SEL - LATCH  
ACTR HNDL SEL - LATCH  
Overcenter Lock - Disengage  
(Use D ring to disengage lock)  
Operate ratchet handle until hatch locked  
GEAR BOX SEL - N  
ACTR HNDL SEL - N

Tape Tempscribe to X-X foot strut  
Don LPU's

(R1) Remove MA151 (Germanium & Sodium Iodide Crystal Experiment)/bag and place in handling container

(15) PL VENT - OFF

PL BCN LT - LO (verify) (night landing only)

(3) VHF AM A/B - OFF

(6,9,10) VHF AM - OFF

Inform swimmer you are ready for egress by knocking on side hatch window

Egress, inflate LPU when out of hatch (last man out hand MA151 handling container to swimmer)

## 3. CREWMEN UNAIDED EGRESS PROCEDURES

\*If no ventilation or CM O2 supply \*

\* If Stable I, open side hatch as req'd\*  
\* If Stable II, initiate egress within \*  
\* 2-1/2 hrs \*

### STABLE I

(PSA) Disconnect umbilicals (if suited)  
Neck dams on (if suited)

Configure center couch to 0 deg  
Armrests stowed

Check hatch GN2 pressure gauge

If > mid-white

GN2 vlv HNDL - VENT (pull)

GN2 vlv HNDL - Neutral (detent)

Check pressure gauge (mid-white)

\*Repeat press/vent to obtain mid-white\*

If < mid-white

Charge hatch counterbalance

GN2 vlv HNDL - PRESS (push)

GN2 vlv HNDL - Neutral (detent)

Check pressure gauge (mid-white)

\*Repeat press/vent to obtain mid-white\*

(R4) Unstow rucksacks 1B & 2

Connect lanyards

(yellow to rucksack, green to head strut, white to crew, in order of egress printed on lanyards)



- (15) PL VENT - OFF  
 cb PANEL 250 (all) - open  
 Open side hatch  
 GEAR BOX SEL - UNLATCH  
 ACTR HNDL SEL - UNLATCH  
 LOCK PIN REL KNOB - UNLOCK  
 Operate ratchet handle until hatch opens  
 Verify hatch overcenter lock engaged  
 ACTR HNDL SEL - N  
 Remove life raft from rucksack 2  
 Throw life raft overboard and inflate  
 Transfer to life raft with rucksack 1B

**CAUTION:** Inflate life vests and egress in order designated on white lanyards.

Last man out disconnect green lanyard from head strut. Attach lanyard to sea anchor attach fitting on CM

#### STABLE II

- Disconnect umbilicals (if suited)  
 (PGA) Neck dams on (if suited)  
 Configure center couch to 0 deg  
 Armrests stowed  
 (6,9,10) PWR (3) - OFF  
 SUIT FWR (3) - OFF  
 (R4) Unstow rucksacks 1B & 2  
 Attach yellow lanyards from rucksack 2 to 1B  
 Reposition umbilicals to clear tunnel area  
 Review tunnel hatch handle location and hatch unlocking procedure  
 PRESS EQUAL vlv - OPEN  
 Pull dentent knob on end of handle, then pivot up 90 deg  
 Rotate crank ~3 turns CCW to fully open valve  
 NOTE: Tunnel will fill with water

- (F2) Remove and stow tunnel hatch on F2  
 Connect lanyards from rucksack 2 (green to foot strut, white to crewmen, in order of egress printed on lanyards)

Egress Procedure: Face LEB, verify lanyard routing, exit feet first, first man carrying rucksack. When clear of S/C inflate life vest and board raft.

**CAUTION:** Egress in order designated on white lanyards.

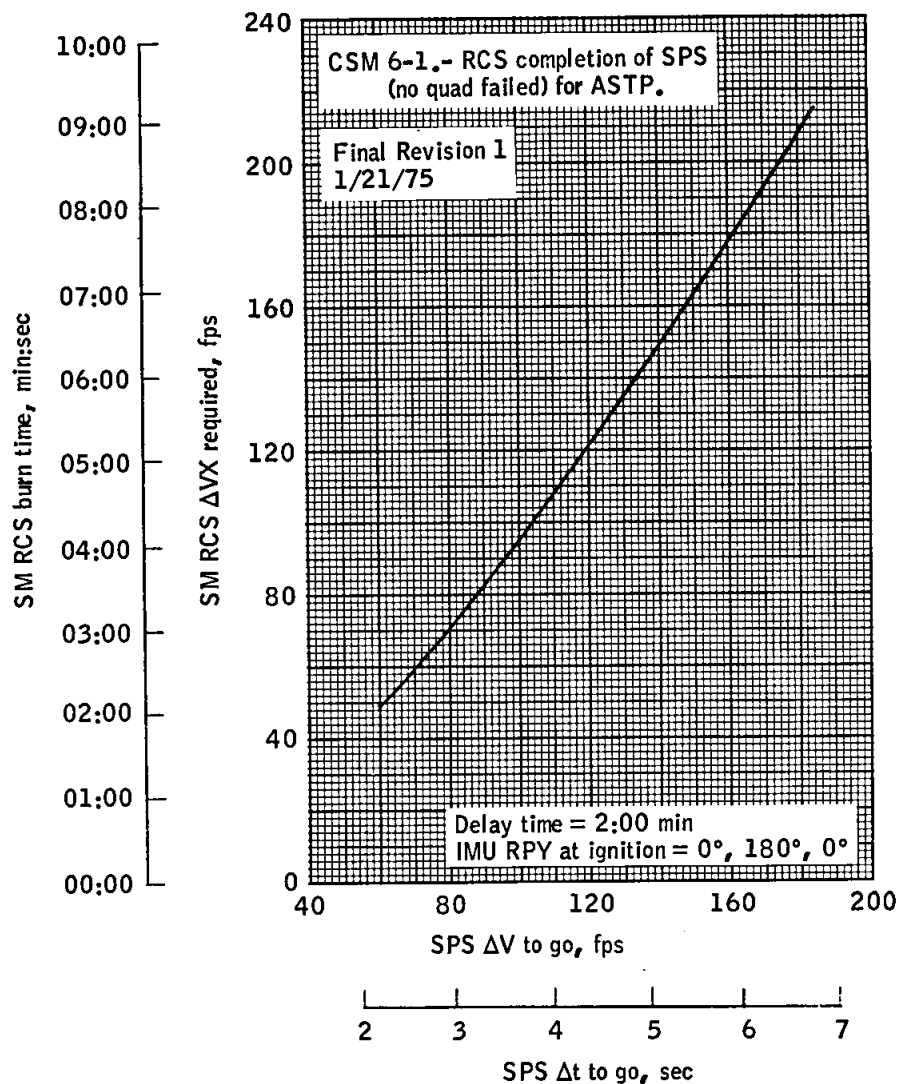
1st - Before egress lower rucksack 1B through man tunnel. Carry rucksack 2 out.  
 out After egress inflate raft, retrieve rucksack 1B.

2nd - Egress

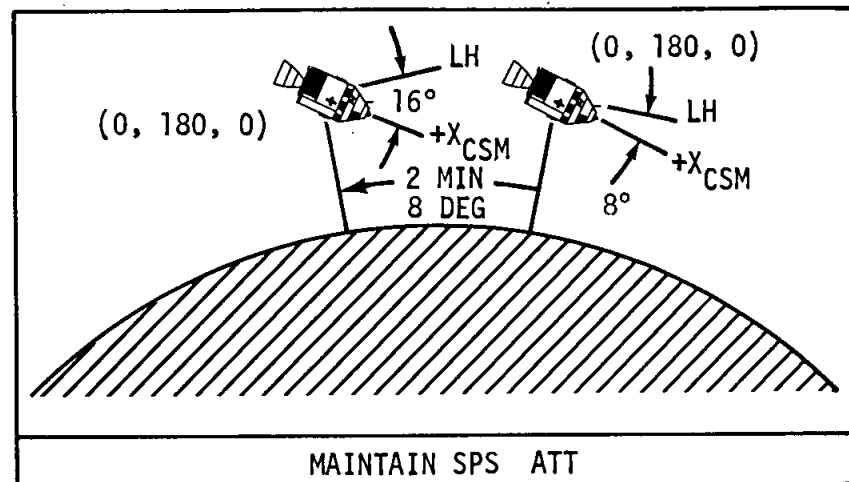
3rd - Before egress disconnect green lanyard from foot strut. After egress attach green lanyard to sea anchor attach fitting on CM.

#### LOW POWER CHECKLIST

- VHF BCN - OFF  
 VHF AM (3) - RCV  
 FLOOD LTS - OFF  
 VHF AM A & B - off (ctr)  
 VHF AM RCV ONLY - A (verify)  
 POST LANDING VENT SYS: minimize use  
 (Min. of 5 minutes/hour to scrub cabin air of CO2)  
 SURV RADIO - plug into VHF BCN ANT cable conn P112 behind VHF ant access pnl & turn radio on in BCN mode



COMPLETION  
CHARTS



RCS COMPLETION OF SPS  
(NO QUADS FAILED)

NOTE: MAX CONTINUOUS  $+X$   
BURN TIME IS 12 MIN,  
30 SEC

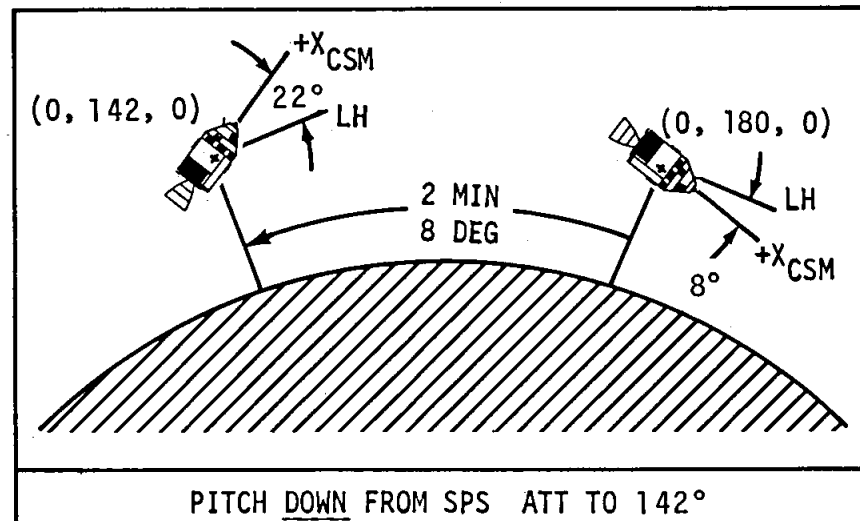
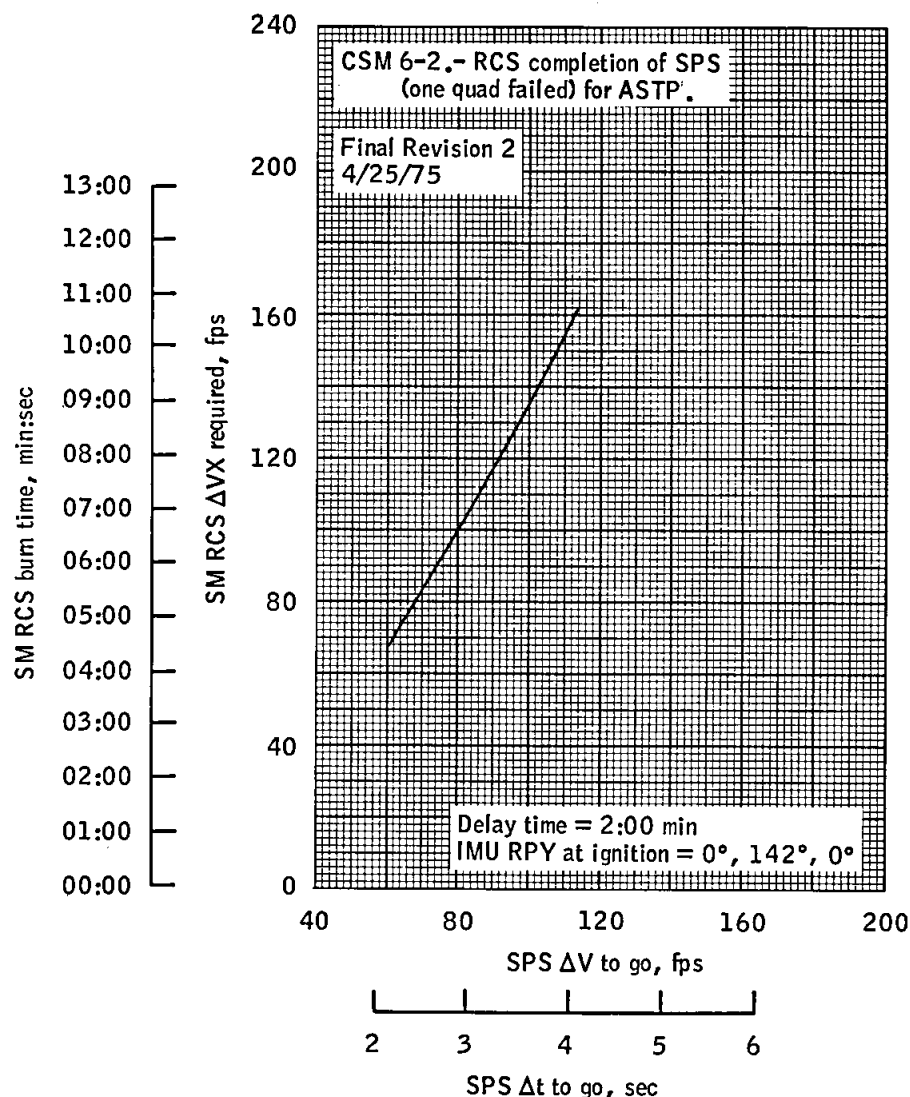
1. MAINTAIN SPS ATT
2. AT SPS FAIL, RECORD VG FROM N40  
R2 OR FROM EMS  $\Delta V$  COUNTER  $+18 =$  \_\_\_\_\_ FPS.
3.  $\Delta V$  THRUST - OFF (VERIFY)
4. V34E, F37, 47E
5. SC CONT - CMC
6. AUTO RCS SEL A/C ROLL (4) - MNA/B
7. THC - BEGIN  $+X$  RCS THRUSTING
8. SPS GMBL MTRS - OFF
9. CHART SM RCS  $\Delta V_X$  REQ'D = \_\_\_\_\_ FPS
10. V82E, N83E
11. AT RCS COMPLETION, COMPLETE SPS BURN-ENTRY  
CUE CARD AND CONTINUE ON Pg E/1-7.
12. FOR ENTRY  
LIFT DN TO 1G THEN GNCS (RSI REVERSED)  
(IF NO GNCS, ROLL TO PAD BANK AN)  
START EMS AT PAD RET .05G WITH PAD VALUES.  
0.2G DRE CK AND RET RB -1 MIN CK NOT VALID.

SPS  
+2:00

E/4-1

DATE 5/9/75

# COMPLETION CHARTS



## RCS COMPLETION OF SPS (ONE QUAD FAILED)

NOTE: MAX CONTINUOUS  $+X$   
BURN TIME IS 12 MIN,  
30 SEC

1. AT SPS FAIL, RECORD VG FROM N40  
R2 OR FROM EMS  $\Delta V$  COUNTER  $+18 =$  \_\_\_\_\_ FPS.
2.  $\Delta V$  THRUST - OFF (VERIFY)
3. V25 N17E,  $+E$ ,  $+14200E$ ,  $+E$ , V63E
4. V34E, F37, 47E
5. SC CONT - CMC
6. AUTO RCS SEL ROLL (CHART) - MNA/B  
VERIFY DAP LOAD (CHART)

QUADS FAILED	AUTO RCS SEL-MNA/B	DAP LOAD
A	C1&C2	10102, 00111
B	D1&D2	11002, 11011
C	A1&A2	10102, 01101
D	B1&B2	11002, 11110

7. SPS GMBL MTRS - OFF
8. RHC - MNVR TO (0, 142, 0)
9. FLY ERROR NEEDLES
10. THC - BEGIN  $+X$  RCS THRUSTING
11. CHART SM RCS  $\Delta V$  REQ'D = \_\_\_\_\_ FPS.
12. V82E, N83E
13. AT RCS BURN COMPLETION, COMPLETE SPS BURN-ENTRY  
CUE CARD AND CONTINUE ON Pg E/1-7.
14. FOR ENTRY  
LIFT DN TO 1G THEN GNCS (RSI REVERSED)  
(IF NO GNCS, ROLL TO PAD BANK AN)  
START EMS AT PAD RET .05G WITH PAD VALUES.  
0.2G DRE CK AND RET RB -1 MIN CK NOT VALID.

E/4-2

DATE 5/9/75

99+30-

11112  
01111  
11102  
01111

\*IF PLANNED HYBRID PERFORM\*  
\* CM RCS CK  
\*\*\*\*\*

CYCLE CMC MODE SWITCH - FREE - AUTO  
V48E, LOAD .5 DEG DBD, N47 FROM DEORBIT BURN PAD  
P30, VERIFY N33 AND N81 FROM DEORBIT BURN PAD  
SET DET COUNTING UP TO DEORBIT BURN TIG  
P00, V62E  
V49E, MNVR TO DEORBIT BURN PAD ATT

SXT BORESIGHT STAR CK, V41 N91E (PG 6/2-4)  
(LIMIT: SXT FOV, GNCS GO/NO-GO)\*IF GNCS NO-GO, SET TH TO:

REQUEST STDN MONITOR NEXT STEP  
(IF POSS)

MN BUS TIES (2) - ON (UP)  
VHF AM A & B - OFF (CTR)  
CB SPS P & Y - OPEN  
STOW OPTICS EYEPieces  
CREW STRAPPED IN AND SEATS LOCKED  
STOW COAS AND DIM LIGHTS  
AUTO RCS SEL (16) - AS REQ'D  
FOAI SCALE - 5/1  
MAN ATT (3) - RATE CMD  
DBD/RATE - MIN/LOW  
BMAG MODE (3) - RATE 2  
SC CONT - CMC/AUTO  
FOAI (2) - INRTL  
GDC ALIGN  
RHC (2) - ARMED  
RHC PWR NORMAL (2) - AC/DC  
RHC PWR DIRECT (2) - MNA/B  
SET EMS ΔV TO PAD ΔVC (SM ΔV)  
LOAD CM BURN ATT FROM PAD  
REMARKS INTO N17  
P41, PRO, ENTR  
BMAG MODE (3) - ATT 1/RATE 2  
NO ATS: HBR/RCD/FWD/CMD RESET  
THC - ARMED  
PRIM GLY TO RAD - BYPASS (PULL)  
GLY EVAP TEMP IN - MAN  
AT 59:30; EMS MODE - NORMAL  
THC PWR - ON

## SM RCS DEORBIT BURN INITIATION

## NOMINAL

NULL N85 VG'S TO +/-2  
POST BURN CK LIST

## PLANNED HYBRID

BURN EMS TO ZERO  
CONTINUE NEXT PAGE

\*IF LOSS OF SM RCS TRANS\*  
\* CAPABILITY OCCURS  
\*V82E  
\*IF HP>75, GO AROUND 6 REVS  
\*IF 75 NM>HP>46 NM, GO TO  
\* NEXT PAGE, DO HYBRID ASAP  
\*IF HP<46 NM, DO POST BURN  
\* CK LIST  
\*\*\*\*\*

## RCS DEORBIT BURN PAD

		PRELIMINARY					FINAL					FINAL UPDATE				
N33	HR	+	0	0			+	0	0			+	0	0		
	MIN	+	0	0	0		+	0	0	0		+	0	0	0	
	SEC	+	0				+	0				+	0			
N81	ΔVX		0					0					0			
	ΔVY		0					0					0			
	ΔVZ		0					0					0			
N22	R	+			0	0	+			0	0	+			0	0
	P	+			0	0	+			0	0	+			0	0
	Y	+			0	0	+			0	0	+			0	0
	ΔVC	XX	XX				XX	XX				XX	XX			
	BT	XX	XX				XX	XX				XX	XX			
	ΔV75	XX	XX				XX	XX				XX	XX			
	TARGET HP	+	XX	XX			+	XX	XX			+	XX	XX		
N47	WT	+					+					+				
	STAR	XX	0	0	0		XX	0	0	0		XX	0	0	0	
	SFT	+				0	+				0	+				0
	TRN	+			0	0	+			0	0	+			0	0

## POST BURN CK LIST

## CM RCS CK

CAPTURE HP = \_\_\_\_ NM

V82E, PRO  
RCS BURN STATUS  
PRO, P00  
EMS - OFF/STBY  
MAN ATT (3) - MIN IMP  
RHC #1 - LOCKED  
RHC PWR NORMAL #1-OFF  
RHC PWR DIRECT(2)-OFF  
THC - LOCKED  
THC PWR - OFF  
BMAG MODE(3) - RATE 2  
GO TO Pg E/1-7  
FLY LIFT DOWN ENTRY

AUTO RCS SEL A/C ROLL (4)  
- OFF (VERIFY)  
CB RCS LOGIC (2) - CLOSE  
(VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (RING 1)-OFF  
AUTO RCS SEL (RING 2)-MNB  
TEST RING 2 THRUSTERS(MIN  
IMP MAY NOT PRODUCE  
AUDIBLE JET FIRING.  
USE 3 CYCLES)  
AUTO RCS SEL (RING 1)-MNA  
AUTO RCS SEL (RING 2)-OFF  
TEST RING 1 THRUSTERS  
AUTO RCS SEL (RING 2)-MNB  
RCS TRNFR - SM  
MAN ATT (3) - RATE CMD

CM RCS PITCH  
ATTITUDE = \_\_\_\_ DEG  
TIG-1 MIN SM  
RCS HORIZ CK  
WINDOW MK = \_\_\_\_ DEG

## RCS BURN STATUS

ΔVC		XX			
FDAI	R	+		XX	XX
	P	+		XX	XX
	Y	+		XX	XX
N85	ΔVX		0	0	
	ΔVY		0	0	
	ΔVZ		0	0	

100+00-

SM RCS/  
HYBRID

E/5-1

DATE 7/1/75

# HYBRID

2 MIN  
or  
ASAP

RATE-HIGH  
FDAI SCALE - 5/5  
SC CONT - SCS  
AUTO RCS A/C ROLL (4) - OFF  
cb ELS/CM - SM SEP (2) - CLOSE  
CM RCS LOGIC - ON  
SECS PYRO ARM (2) - ON  
CM/SM SEP (2) - ON  
C/W MODE - CM  
RCS TRNFR - CM  
CM RCS LOGIC - OFF  
CM RCS MANF PRESS - 287-302  
V MNA/B >25V  
\* IF <25V - CM LO PWR, PG E/7-8 \*

MAN ATT PITCH - ACCEL CMD  
V63E (CM BURN ATT)  
\* IF GNCS NO-GO \*  
\* SET TH TO CM BURN ATT \*  
\* FROM BURN PAD REMARKS \*  
\* FDAI - ATT SET, 1 or 2, GDC \*

PITCH UP TO CM BURN ATT (NULL NEEDLES)  
(110 DEG > SM BURN ATT)

## CM RCS BURN

RHC #1 - CONTINUOUS PITCH DOWN  
RHC #2 - MODULATE PITCH TO NULL NEEDLES  
\* IF ONLY 1 RHC \*  
\* PULSE +/- P = 5 DEG FROM BURN ATT \*  
\* MAINTAIN RATES <3 DEG/SEC \*

## BURN RULES

### UNPLANNED HYBRID

BURN FOR 100 SEC  
V82E, IF Hp >46 NM - BURN Hp = 46 NM

### PLANNED HYBRID

BURN VGZ TO +/- .2  
V82E, IF Hp > PAD - BURN Hp = PAD  
\* IF HE TK PRESS <2000, BURN Hp = CAPTURE HP \*

## PRO

### RECORD BURN STATUS

#### RCS BURN STATUS (AFTER BURN)

ΔVC			XX	XX			
FDAI (IF ATT P NOT NOM)	R	+				XX	XX
	P	+				XX	XX
	Y	+				XX	XX
N85	ΔVX		0	0			
	ΔVY		0	0			
	ΔVZ		0	0			

PRO  
 00E  
 SECS PYRO ARM (2) - SAFE  
 EMS - OFF/STBY  
 MAN ATT (3) - MIN IMP  
 RHC #1 - LOCKED  
 RHC PWR NORMAL #1 - OFF  
 RHC PWR DIRECT (2) - OFF  
 THC - LOCKED  
 THC PWR - OFF  
 BMAG MODE (3) - RATE 2

V66E  
 CONFIGURE CM RCS  
 FOR SINGLE RING ENTRY (AUTO RCS SEL (RING 1  
 OR 2)(6)-OFF FOR RING WITH LOWEST He PRESS)  
 V37E 62E (AVE G ON)  
 \*05 09 01427 - ROLL REVERSED\*  
 \*05 09 01426 - IMU UNSAT \*

F 50 25 00041 REQUEST CM/SM SEP  
 PRO

F 06 61 IMPACT LAT, LONG, LIFT UP/DN (-/+)  
 (.01deg, +/-00001)  
 Verify LAT, LONG from PAD (Pg E/1-7)  
 Load R3 = +1 (lift dn)

PRO  
 POSS 06 22 FINAL ATT DISP, RPY (.01 DEG)  
 (Only if angle of attack >45 deg)

# P63 - ENTRY - INIT

06 64 G, VI, RTOGO (.01G, fps, .1nm)

## EMS\_INITIALIZATION

EMS FUNC - TEST 5  
 Verify scroll on 37K fps  
 EMS FUNC - RNG SET  
 Set RNG to PAD DATA RTOGO  
 EMS FUNC - Vo SET  
 Slew scroll to PAD DATA VIO  
 EMS MODE - STBY (verify)  
 EMS FUNC - ENTRY  
 Verify .05G lt filter is down

## RSI\_ALIGNMENT

Verify correct RSI alignment  
 lift dn = 180 DEG

## DIM\_LIGHTS

ROLL TO 180 DEG AND TRACK HORIZ ON  
 9 DEG WINDOW MK (LIFT DN)

GO TO ENTRY, Pg E/2-1 \*IF UNPLANNED HYBRID\* \* \*  
 \* LIFT DN TO 1G, THEN \*  
 \* ROLL RIGHT TO 270 DEG\*  
 \* (LV SOUTH), NO RB \*  
 \* \* \* \* \*

LAUNCH CHECKLIST ITEMS

OPTICS DUST COVER JETTISON

INSTALL OPTICS EYEPieces  
G/N PWR OPTICS - ON (UP)  
OPT ZERO - OFF, THEN ZERO (15 SEC)  
OPT ZERO - OFF  
OPT MODE - MAN  
OPT COUPLING CONT - DIRECT  
OPT SPEED CONT - HI  
OHC - MAX RIGHT (OBS EJECT THRU SCT)  
(SXT 40 DEG, SCT 150 DEG SHAFT ANGLE)

21:30 SIVB MNVR TO RETROGRADE LOCAL HORIZONTAL

ECS POST INSERTION CONFIG

(MUST BE PERFORMED BETWEEN +20:00M & +55:00M)

- (352) POT TK IN VLV - OPEN (CCW)
- (326) GLY RSVR BYPASS VLV - OPEN (CCW)  
GLY RSVR OUT VLV - CLOSE (CW)  
GLY RSVR IN VLV - CLOSE (CW)  
PRIM GLY ACCUM QTY 30-65%
- (379) PRIM ACCUM FILL VLV - ON (CCW) UNTIL 40-55%  
ECS RAD FLOW CONT - PWR  
PRIM GLY TO RAD VLV - NORMAL (PUSH)  
ECS RAD TEMP PRIM OUT BELOW PRIM IN
  - \* AFTER 5 MIN, IF OUTLET TEMP > INLET: \*
  - \* PRIM GLY TO RAD VLV - BYPASS(PULL) \*
  - \* RECHECK IN 10 MIN \*

ECS RAD TB - GRAY  
GLY EVAP TEMP IN - AUTO  
POT H2O HTR - MNA  
CB WASTE H2O/URINE DUMP HTR (2) - CLOSE

CSM/LV SEPARATION PREP

AUTO RCS SELECT (16) - MNA/MNB  
SET ΔVC TO -100.0  
EMS FUNC - ΔV  
FDAI SCALE - 5/1  
MAN ATT (3) - RATE CMD (VERIFY)  
ATT DB - MIN/HIGH (VERIFY)  
THC PWR - ON (UP)  
RHC PWR NORMAL #2 - AC/DC (VERIFY)  
RHC PWR DIRECT #2 - MNA/MNB  
BMAG MODE (3) - RATE 2 (VERIFY)  
RCS TRNFR - SM (VERIFY)  
SM RCS PRPLNT TB (8) - GRAY (VERIFY)  
\* IF LV GUID - CMC: \*  
\* DO NOT RELOAD DAP \*  
\* MNVR TO SEP ATT ( . . . ) \*  
LOAD RCS DAP 11103,01111  
V46E  
LOAD N17 (SEP)  
V63E (MONITOR SIVB MNVR)

50:00 SIVB MNVR TO SEP ATTITUDE

CSM SEPARATION

ATT SET TW - R=0,P=180,Y=0  
CB RCS LOGIC (2) - OPEN  
CB SECS LOGIC (2) - CLOSE (VERIFY)  
CB SECS ARM (2) - CLOSE  
SECS LOGIC (2) - ON (UP)  
SECS PYRO ARM (2) - ARM  
TVC SERVO PWR #1 - AC1/MNA  
RHC & THC - ARMED  
SET DET - 59:30  
RCS CMD - ON  
FC REAC VLV - LATCH

E/6-1

DATE 5/9/75

TAPE RCDR - HBR/RCD/FWD/CMD RESET

\*IF LV GUID - CMC: \*

\* INSURE RATES NULLED AND \*

\* YAW DRIFTING TOWARDS 0 \*

\*LOAD DAP 11103,01111 \*

\*V46E, V60E, V63E \*

GDC ALIGN (0, 180, 0)

V62E

0+59:30 START DET

59:30 P47

EMS MODE - NORMAL

THRUST +X AND HOLD

59:58

00:00

CSM/LV SEP PB - PUSH, HOLD, AND RELEASE

LV TANK PRESS - FULL SCALE LOW (SEP IND)

\*IF NO SEPERATION: \*

\* CB RCS LOGIC (2) - CLOSE \*

\* THC - CCW (4 SEC MIN) \*

\* DET RESET AND COUNTING UP (AUTO) \*

\* LV TK PRESS - FULL SCALE LOW \*

~00:02 THC - RELEASE ( $\Delta V = 0.5$  FPS)

SM RCS PRPLNT TB (8) - GRAY (VERIFY)

SM RCS QUAD HE TB (4) - GRAY (VERIFY)

FC REAC VLV - NORM

00:30 THRUST +X 4 QUAD, 8 SEC ( $\Delta V = 3.0$  FPS)

P00

EMS - OFF/STBY

THC PWR - OFF

THC - LOCKED

RHC PWR DIRECT #2 - OFF

TAPE RCDR - LBR

SECS PYRO ARM (2) - SAFE

SECS LOGIC (2) - OFF

EDS PWR - OFF

CB EDS (3) - OPEN

COAS PWR - OFF

TVC SERVO PWR #1 - OFF

CB SECS ARM (2) - OPEN

LV/SPS IND - GPI

AC ROLL (4) - OFF

BLOCK DATA		2-2 DEORBIT						3-4 DEORBIT					
N33	HR	+	0	0				+	0	0			
	MIN	+	0	0	0			+	0	0	0		
	SEC	+	0			0	0	+	0			0	0
N81	$\Delta V_X$		0						0				
	$\Delta V_Y$		0						0				
	$\Delta V_Z$		0						0				
N22	R	+				0	0	+				0	0
	P	+				0	0	+				0	0
	Y	+				0	0	+				0	0
	$\Delta V_C$	XX	XX					XX	XX				
	BT	XX	XX					XX	XX				
	P .05G	XX				0	0	XX				0	0
	RTOGO .05G	+						+					
	VIO .05G	+						+					
	RET .05G	XX	XX					XX	XX				
N66	RET 0.2G	XX	XX					XX	XX				
	DRE												
	BANK AN												
	RET RB	XX	XX					XX	XX				
N61	RET DROG	XX	XX					XX	XX				
	LAT		0						0				
	LONG												
REMARKS:													



2-2

3-4

2-2/3-4 DEORBIT

## ASSUMPTIONS:

1. NOMINAL INSERTION ORBIT
2. NO RENDEZVOUS MANEUVERS HAVE BEEN PERFORMED
3. SUITS MAY BE DOFFED AT CREW'S DISCRETION IF TIME PERMITS (PG E/6-5)
4. PRE-BURN PROCEDURES MARKED BY \* ARE NECESSARY TO ENSURE A SAFE RETURN AND MUST BE PERFORMED BY THE CREW  
THESE PROCEDURES CAN NOMINALLY BE PERFORMED IN ~20 MINUTES
5. PROCEDURES NOT MARKED BY \* SHOULD BE PERFORMED AT THE CREW'S DISCRETION AS TIME PERMITS
6. THE DEORBIT BURN IS PERFORMED WITH THE G&N (N&I ΔV'S FROM BLOCK DATA PAD)
7. THIS CK LIST MAY BE ENTERED FROM EITHER THE LAUNCH OR RNDZ CK LISTS
8. TIMES AT TOP OF BOXES ARE FOR 2-2 DEORBIT.  
TIMES AT BOTTOM OF BOXES ARE FOR 3-4 DEORBIT.

00+30

03+15

VERIFY LAUNCH CHECKLIST ITEMS (PG E/6-1, 2) COMPLETE

SET DET COUNTING UP TO DEORBIT BURN TIG  
V48, VERIFY CSM DAP, 4 JET, .5 DEG DBD, AND 2 DEG/SEC  
V46E  
VERIFY ORDEAL STOWED  
LOGIC SEQUENCER CK (IF IN STDN CONTACT)

00+40

03+25

11103  
01111

UNSTOW AND DON LIFE VESTS (F1) AND HEEL RESTRAINTS (B1)  
UNSTOW HEADRESTS (B1)  
INSTALL ENTRY CUE CARDS (R3)

25:00

SET UP CAMERA FOR FIREBALL PHOTOGRAPHY  
CM4/DAC/T8/CX03 - BRKT, MIR  
(T11, 1/500, 7) 12 FPS  
PYRO BAT CK

00+50

03+35

## LOGIC SEQUENCER CK

NOTE: CHECKS STATUS OF ELS PB'S  
CM/SM SEP SW'S, AND 24K' BARO SW'S  
SECS PYRO ARM (2) - SAFE (VERIFY)  
SECS LOGIC (2) - OFF (VERIFY)  
CB SECS LOGIC (2) - CLOSE (VERIFY)  
CB SECS ARM (2) - CLOSE  
CB ELS/CM-SM SEP (2) - CLOSE  
ELS LOGIC - ON (UP)  
ELS - AUTO  
COORDINATE NEXT 3 STEPS WITH STDN  
SECS LOGIC (2) - ON (UP)  
ARM AND SAFE PYROS PER STDN COMMAND  
SECS LOGIC (2) - OFF  
CB SECS ARM (2) - OPEN  
ELS LOGIC - OFF  
ELS - MAN  
CB ELS/CM-SM SEP (2) - OPEN

## PYRO BAT CK

PNL 250  
CB PYRO A SEQ A - CLOSE (VERIFY)  
CB PYRO B SEQ B - CLOSE (VERIFY)  
DC IND - PYRO BAT A, THEN B  
\* IF PYRO BAT A(B) <35 VDC \*  
\* (REPLACES FAILED PYRO BAT \*  
\* WITH ENTRY BAT \*  
\* CB PYRO A(B) SEQ A(B) - OPEN \*  
\* CB PYRO A(B) BAT BUS A(B) TO \*  
\* PYRO BUS TIE - CLOSE \*  
PNL 275: CB MNA BAT C - CLOSE  
CB MNB BAT C - CLOSE (APPLIES ENTRY  
BAT C TO BOTH MAIN BUSES WHEN  
MAIN BUS TIE SWITCHES ARE ON)  
DC IND - MNB

## RSI ALIGNMENT

NOTE: RSI ALIGNMENT IS PERFORMED  
EVEN IF RSI ALIGNMENT IS CORRECT  
IN ORDER TO CK OPERATION OF RSI  
FDAI SOURCE - ATT SET  
ATT SET - GDC  
EMS ROLL - ON (UP)  
GDC ALIGN PB - PUSH AND HOLD  
YAW TH - POSITION RSI THROUGH  
45 DEG SET TO LIFT UP (HDS DN)  
OR TO LIFT DN (HDS UP) ATT PER  
BLOCK DATA REMARKS  
GDC ALIGN PB - RELEASE  
EMS ROLL - OFF

## EMS ENTRY CK

EMS FUNC - OFF  
CB EMS (2) - CLOSE (PNL 8)  
EMS MODE - STBY  
EMS FUNC - EMS TEST 1 (WAIT 5 SEC)  
EMS MODE - NORMAL (WAIT 10 SEC)  
CHECK IND LTS - OUT  
RANGE IND - 0.0  
SLEW HAIRLINE OVER NOTCH  
IN SELF-TEST PATTERN  
EMS FUNC - EMS TEST 2  
.05G LT - ON (ALL OTHERS OUT)  
WAIT 10 SEC  
EMS FUNC - EMS TEST 3  
.05G LT - ON  
RSI LOWER LT - ON (10 SEC LATER)  
SET RANGE COUNTER TO 58 NM ±0.0  
EMS FUNC - TEST 4  
.05G LT - ON (ALL OTHERS OUT)  
G-V TRACE WITHIN PATTERN TO LWR  
RT CORNER AT 9G  
RNG IND COUNTS DOWN TO 0.0 ±0.2NM  
EMS FUNC - TEST 5  
.05G LT - ON  
RSI UPPER LT - ON (10 SEC LATER)  
RANGE IND - 0.0  
SCRIBE TRACES VERTICAL LINE 9G TO  
0.28 ±0.1G  
SET SCROLL TO 37K FPS  
EMS - OFF/STBY

E/6-3

DATE 5/9/75

00+50  
03+35  
11103  
01111

RS1 ALIGNMENT (PG E/6-3)  
ALIGN GDC

EMS ENTRY CK (PG E/6-3)

35:00--

EMS AV CK AND NULL BIAS CK

P00, V62E  
V49E, MNVR TO DEORBIT BURN PAD ATT (BLOCK DATA PAD)

01+00  
03+45

CONFIGURE PANEL & CB'S (NOT SWITCHES)  
ACTIVATE CM RCS

P30, LOAD N33 AND N81 FROM BLOCK DATA PAD

PRE-SEP CK LIST

45:00--

P52 (OPT 3) ( ) AUTO OPTICS TO STAR  
(LIMIT: SXT FOV, GNCS GO/NO-GO)\*IF GNCS NO-GO\* \* \* \* \*  
EXIT 06 92, V37E 40E \* SET TW TO (0, 180, 0)\*  
DEORBIT BURN PREP CK LIST \* SC CONT - SCS  
GO TO SPS BURN-ENTRY CUE CARD \* TRK HORIZ WITH 15 DEG\*  
(DUAL BANK) \* WINDOW MK (HDS DN) \*  
\* \* \* \* \*  
\* AT TIG - 2 MIN, \*  
\* HOLD ATT \*  
\* GDC ALIGN PB - PUSH\*  
\* BURN SCS AT 0,180,0 \*  
\* (7 DEG MK) \*  
\* \* \* \* \*

01+10  
03+55

55:00--

#### TAKEDOVER RULES

P OR Y RATES	ATTITUDE DEVIATION	CO TIME
5 DEG/SEC TAKEOVER & COMPLETE	5 DEG/SEC TAKEOVER & COMPLETE	AT BT +1 SEC

DEORBIT BURN

01+20  
04+05

#### EMS AV TEST AND NULL BIAS CK

EMS MODE - STBY (VERIFY)  
EMS FUNC - AV SET/VHF RNG  
SET AV IND TO 1586.8 FPS  
EMS MODE - NORMAL  
EMS FUNC - AV TEST  
SPS THRUST LT - ON/OFF (10 SEC)  
AV IND STOPS AT -0.1 TO -41.5  
EMS MODE - STBY  
EMS FUNC - AV SET/VHF RNG  
SET AV IND TO -100.0 FPS  
CMC MODE-FREE(UNTIL MEAS COMPLETE)  
OR BMAG MODE (3) - RATE 2  
EMS FUNC - AV (WAIT 5 SEC)  
START DET  
00:00 EMS MODE - NORMAL  
01:40 EMS MODE - OFF/STBY  
IF AV <1 FPS, DO NOT BIAS  
IF AV >1 FPS BUT <10 FPS,  
STON CONFIRM BIAS IN PAD AVC  
IF AV >10 FPS, EMS IS NO-GO

#### CM RCS ACTIVATION

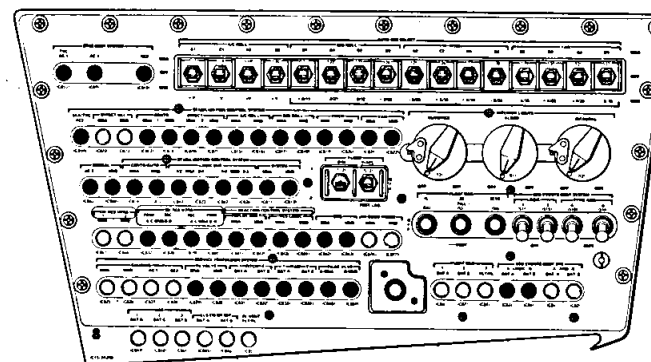
CB SECS ARM (2) - CLOSE  
CUE STON  
SECS LOGIC (2) - ON (UP)  
STON CONFIRM GO  
FOR PYRO ARM (IF POSS)  
SECS PYRO ARM (2) - ON (UP)  
CM RCS PRPLNT 1 & 2 TB (2) - GRAY  
(VERIFY) (INDICATES FUEL AND  
OXIDIZER ISOLATION VALVES OPEN)  
CM RCS PRESS - ON (UP)  
RCS IND SEL - CM1, THEN 2  
HE PRESS STABILIZES AT 3600-3800  
PSIA AFTER 15 MINUTES  
MANF PRESS 287-302 PSIA  
SECS PYRO ARM (2) - SAFE

#### PRE-SEP CK LIST

OC IND - BAT C  
REQUEST STON MONITOR NEXT STEP  
(IF POSS)  
MN BUS TIE (2) - ON (UP)  
CONNECTION WILL BE VERIFIED BY BAT  
C VOLTAGE DROP OF 0.5-5.0 VOLTS  
TO WITHIN 0.5 VOLTS OF MAIN BUS  
VOLTAGE  
SECOND CONNECTION MAY BE LESS  
OBVIOUS  
PRIM GLY TO RAD - BYPASS (PULL)  
REPRESS PKG VLV - ON  
OZ SM SUPPLY VLV - OFF  
SURGE TK - ON (VERIFY)  
CAB PRESS REL VLV (2) - NORM  
CB WASTE H2O/URINE DUMP HTR(2)-OPEN  
(PNL 5)  
CB ECS RAD CONT/HTRS MNA/B (2)-OPEN  
POT H2O HTR - OFF  
GLY EVAP TEMP IN - MAN (REMOVES PWR  
FROM GLY MIXER TO CONSERVE BAT PWR  
ABORT SYS PRPLNT - RCS CMD (VERIFY)

#### DEORBIT BURN PREP CK LIST

STOW OPTICS EYEPIECES  
INSTALL OPTICS COVERS  
CREW STRAPPED IN AND SEATS LOCKED  
STOW COAS AND LOCK IN MOUNT  
SET ASCP TW TO DEORBIT BURN PAD ATT  
DIM LIGHTS FOR HORIZ CK



● - CLOSE  
○ - OPEN

E/6-4

DATE 5/9/75

01+20  
04+05  
11103  
01111

WARNING: WAIT UNTIL COMP ACTY LT - OUT

V66E  
CM RCS CK  
BMAG MODE (3) - ATT 1/RATE 2  
YAW TO CM/SM SEP ATT  
PER BLOCK DATA PAD

\*IF BOTH RINGS FAILED \*  
\*PERFORM ROLLING ENTRY\*  
\* CK LIST

V37E 62E  
CM/SM SEP CK LIST

P62  
F50 25

\*POSSIBLE ALARMS\* \*  
\*01427-ROLL REVERSED\*  
\*01426-IMU UNSAT

CM/SM SEP

MONITOR V MNA/B  
YAW BACK TO 0 DEG  
PRO  
VERIFY LAT, LONG FROM PAD  
LOAD R3=-1(LIFT UP);  
+1(LIFT DN)  
PRO  
(POSSIBLE 06 22 IF ANGLE  
OF ATTACK >045 DEG)  
EMS INITIALIZATION

F06 61

P63  
06 64

\*IF <25 VDC, PERFORM CM LO\*  
\* PWR RECONFIG, PG E/7-8 \*

PITCH TO PAD P.05G

\*IF LIFT ON \* \* \* \* \*

\*ROLL TO 180 DEG AND TRACK\*  
\* HORIZ ON 9 DEG WINDOW MK\*

GO TO ENTRY (PG E/2-1)

#### PGA DOFFING AND STOWAGE CK LIST

INSTALL HOSE SCREENS (B2)  
ON RETURN HOSES  
PWR - OFF  
SUIT PWR - OFF FOR DISCONNECT  
AUDIO CONT - NORM  
SUIT FLOW VLV - CABIN FLOW  
(FOR UNSUITED CREWMAN)  
(FULL FLOW FOR 3 UNSUITED)  
DOFF PGA'S

(PGA BAG C, AFT BKH)  
(U2)  
(R11)

DON BOOTS, JACKETS, COUNTER  
PRESSURE GARMENTS, AND CWG  
HARNESS (W/O CONN COVER)  
SNAP BIO-BELTS TO GARMENTS  
UNSTOW PGA BAG L AND R  
STOW PGA'S, HELMETS, HELMET  
BAGS, AND ACCESSORY BAGS IN PGA  
BAGS, AND REMOVE THE PGA POCKET  
ASSEMBLIES, WRIST DAMS, AND  
NECK DAMS FROM F2 AND STOW ON  
TOP OF A4, A5, AND A6  
SECURE BAGS WITH TIE DOWN STRAPS  
ATTACHED TO LOCKERS  
UNSTOW UTCA CLAMPS, ATTACH TO  
UTCA'S, AND STOW IN PORTABLE  
WASTE STOWAGE CONTAINER (U1)

01+40  
04+25

01+50  
04+35

#### SPS BURN STATUS (AFTER TRIM)

ΔTIG		XX	XX						
ΔVC			XX						
FOAI	R	+				XX	XX		
(IF ATT P		+				XX	XX		
NOT NOM)	Y	+				XX	XX		
N85	ΔVX		0	0					
(IF VG									
>.2)	ΔVY		0	0					
	ΔVZ		0	0					

#### CM RCS CK

AUTO RCS SEL A/C ROLL (4) - OFF  
(VERIFY)  
CB RCS LOGIC (2) - CLOSE (VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (RING 1) - OFF  
AUTO RCS SEL (RING 2) - MNB  
TEST RING 2 THRUSTERS (MIN IMP MAY  
NOT PRODUCE AUDIBLE JET FIRING.  
USE 3 CYCLES)  
AUTO RCS SEL (RING 1) - MNA  
AUTO RCS SEL (RING 2) - OFF  
TEST RING 1 THRUSTERS  
AUTO RCS SEL (RING 2) - MNB  
RCS TRNFR - SM  
MAN ATT (3) - RATE CMD

#### EMS INITIALIZATION

EMS FUNC - TEST 5  
VERIFY SCROLL ON 37K  
EMS FUNC - RNG SET  
SET RNG TO PAD RTOGO  
EMS FUNC - VO SET  
SLEW SCROLL TO PAD VIO  
EMS MODE - STBY(VERIFY)  
EMS FUNC - ENTRY  
VERIFY .05G LT FILTER  
IS DOWN

#### COMPLETION RULES

SITUATION	COMPLETION RULE
VG <60 FPS	TRIM VG TO +/- .2 START WITHIN 30 SEC
VG >60 FPS	RESTART SPS SCS
NO RESTART, HP <75	USE RCS COMPLETION CHARTS(4 OR 3 QUADS) AS APPLICABLE
NO RESTART, HP >75 4 QUAD CAPABILITY	USE RCS 4 QUAD COMPLETION CHART

MN BUS TIE (2) - DN (verify)  
CM/SM SEP CK LIST

CB SPS P & Y (4) - OPEN  
CB ELS/CM-SM SEP (2) - CLOSE  
CB CSM/DM FINAL SEP (2) - CLOSE  
VHF AM (A & B) - OFF (CTR)  
RHC PWR DIRECT #2 - MNA/B  
CM RCS LOGIC - ON (UP)  
CUE STON IF IN CONTACT  
STON CONFIRM GO FOR PYRO ARM  
(IF POSS)  
SECS PYRO ARM (2) - ON (UP)  
VERIFY CORRECT SEP ATT PER BLOCK  
DATA PAD REMARKS (PG E/6-2)  
CSM/DM FINAL SEP (2) - ON (UP)  
CM/SM SEP (2) - ON (UP)  
MAN ATT (3) - MIN IMP  
RHC PWR DIRECT #2 - OFF  
BMAG MODE (3) - RATE 2  
C/W MODE - CM  
RCS TRNFR - CM  
CM RCS MANF PRESS - 287-302 PSIA  
SECS PYRO ARM (2) - SAFE  
AUTO RCS SEL (12) - MNA/B (VERIFY)  
CM RCS LOGIC - OFF

\*ROLLING ENTRY CK LIST\* \* \* \* \*

\*PERFORM CM/SM SEP CK LIST THROUGH-  
\* SECS PYRO ARM (2) - ON (UP)  
\*BMAG MODE (3) - ATT 1/RATE 2  
\*MAN ATT (3) - RATE CMD (VERIFY)  
\*SC CONT - SCS  
\*MNVR TO 0, 0 DEG  
\* (PITCH FROM ENTRY PAD REMARKS)  
\*DBD/RATE - MIN/LOW  
\*CAUTION:ATT HOLD IN PITCH AND YAW  
\* MUST BE MAINTAINED UNTIL SEP  
\*AT RET .05G - 120 SEC:  
\* F0AI SCALE - 50/15  
\* MAN ATT ROLL - ACCEL CMD  
\* ROLL RIGHT ~20 DEG/SEC  
\*AT RET .05G - 90 SEC:  
\* CM/SM SEP (2) - ON (UP)  
\* \* \* \* \*

E/6-5

DATE 7/1/75

## SYSTEMS FAILED PROCEDURES

### IMU FAILURE

#### WHEN IMU FAILURE OCCURS

##### 1.) PERFORM IMU FAILURE SWITCH LIST

SC CONT - SCS  
IMU PWR - OFF  
DBD/RATE - MIN/HIGH  
BMAG MODE (3) - ATT 1/RATE 2  
MAN ATT (3) - RATE CMD  
FDAI SELECT - 1  
FDAI SOURCE - ATT SET  
ATT SET - GDC  
LIMIT CYCLE - OFF

##### 2.) SET REFSMMAT FLAG

KEY V37E00E  
V25N7E, 77E, 10000E, 1E

##### 3.) INITIALIZE NO-DAP CONFIG

(VERIFY CSM DAP ACTIVATED  
PRIOR TO NO-DAP CONFIG)  
KEY V48E, V21E, 0E, PRO, PRO  
V24E AND LOAD PT & YT REQ'D FOR  
DEORBIT, PRO, V46E

##### 4.) EMP SL-50

REQUEST UPLINK AT 1ST  
AVAILABLE OPPORTUNITY  
(MANUAL LOAD ON Pg E/7-3)

##### 5.) PROCEED TO APPROPRIATE POINT IN TIMELINE

AND AT NEXT STDN SITE -  
REPORT TRANSFER TO IMU FAILURE  
SYSTEM FAILED PROCEDURES

## NOTES

- 1.) N20 NEED NOT AGREE WITH CURRENT  
SC ATT EXCEPT FOR P52 CALC OF N22, EMP SL-50  
CALC OF N22, AND V83 CALC OF THETA.
- 2.) EMP SL-50 CONVERTS GYRO TORQUE  
ANGLES (N93) INTO RESULTANT  
ACTUAL CDU ANGLES (N22) AND  
SETS N20=N22.

### CMC FAILURE

#### WHEN CMC FAILURE OCCURS

##### 1.) PERFORM CMC FAILURE SWITCH LIST

BMAG MODE(3) - RATE 2  
DBD/RATE - MIN/HIGH  
BMAG MODE(3) - ATT 1/RATE 2  
MAN ATT(3) - RATE CMD  
LIMIT CYCLE - OFF  
IF STDN CONFIRMS: CB GUID/NAV COMPUTER MNA/B - OPEN

##### 2.) PERFORM IMU GO/NO-GO CHECK

IF GDC AND IMU COMPARE WITHIN 5 DEG - IMU IS GO  
IF NOT, PERFORM BACKUP GDC AND IMU ALIGNMENT  
(Pg G/3-12)

BACKUP GDC ALIGN PAD FOR STARS  
ANTARES (33) AND NUNKI (37)

R			
P			
Y			

E/7-1

DATE 5/9/75

SYSTEMS  
FAILED

SYSTEMS  
FAILED

GDC\_REFSMMAT\_REALIGN (P52)

- NOTES: 1. P51 IS NOT REQUIRED AS LONG AS A VALID REFSMMAT IS STORED OR CAN BE OBTAINED VIA STON UPLINK.
2. IF DAP RELATED EXTENDED VERBS (i.e. V46, V48 LOAD) ARE EXECUTED, EMP SL-50 WILL REQUIRE RELOADING.
3. IT IS DESIRABLE TO MAINTAIN A CONSTANT INERTIAL ATT THROUGHOUT THE ENTIRE P52 OPT 3 (OR P52 OPT 3 & OPT 1) PROCEDURE. IF A MNVR IS REQUIRED, HOWEVER, RELOAD N20 WITH THE NEW ATT.
4. IT IS PROBABLE THAT THE GDC DRIFT RATE WILL BE GREATER THAN THE BMAG'S. AS A RESULT, THE FDAI BALL MAY BE DRIFTING WHEREAS THE SC IS MAINTAINING AN INERTIAL ATT. THEREFORE, THE SC ATT SHOULD NOT BE SLAVED TO THE INITIAL BALL READING, AND N20 SHOULD NOT BE RELOADED UNLESS A MNVR IS ACTUALLY COMMANDED BY THE ASTRONAUT.

ASSUMPTIONS: REFSMMAT FLAG SET; CSM DAP HAS BEEN ACTIVATED, FOLLOWED BY A NO-DAP INITIALIZATION; EMP SL-50 HAS BEEN LOADED.

(P52 OPT 3)

1. BMAG MODE (3) - RATE 2  
OBD/RATE-MIN/LOW  
BMAG MODE (3) - ATT 1/RATE 2  
LIMIT CYCLE - ON (UP)
2. RHC-MNVR TO ACQUIRE STAR PAIR  
ATT SET-GDC (VERIFY)  
ZERO FDAI 1 ERROR NEEDLES WITH ASCP TW.  
V25N20E  
LOAD N20 WITH ASCP TW ANGLES.

3. V37E52E  
PROCEED THRU P52 AND PERFORM STAR MARKS.  
(IF ATT MNVR REQUIRED BETWEEN STAR MARKS RELOAD N20)
4. F 06 05 ACCEPT ANGULAR SEPARATION ERROR (REG 1) UP TO .40 DEG.  
PRO
- F 06 93 TORQUING ANGLES OG, IG, MG (.001 DEG.)  
V5N26E  
VERIFY N26 = 10001, 1642, 50006 (IF NOT: RELOAD N26)  
KEY RLSE  
V30E \*F 01 70 (RESTART)\*  
\*REDO 2ND MARK \*
- F 06 22 NEW ICDU ANGLES OG, IG, MG  
SET ASCP TW TO N22 VALUES.  
GDC ALIGN PB-PUSH.  
PRO (SETS N20 = N22)
- F 06 93 TORQUING ANGLES OG, IG, MG  
V32E (.001 DEG)
- F 50 25 00014 ALIGNMENT CHECK  
(PERFORM 3RD STAR CHECK) PRO
5. V3700E  
(IF IMMEDIATELY FOLLOWED BY P52 OPT 1, BYPASS REMAINING PROCEDURES)  
LIMIT CYCLE - OFF  
RATE - HIGH

E/7-2

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- (P52 OPT 1) (IF IMMEDIATELY PRECEDED BY P52 OPT 3,  
STEPS 1 & 2 MAY NOT BE REQUIRED)
1. BMAG MODE (3) - RATE 2  
DBD/RATE - MIN/LOW  
BMAG MODE (3) - ATT 1/RATE 2  
LIMIT CYCLE - ON (UP)
  2. RHC - MNVR TO ACQUIRE STAR PAIR  
ATT SET-GDC (VERIFY)  
ZERO FDAI 1 ERROR NEEDLES WITH ASCP TH.  
V25N20E  
LOAD N20 WITH ASCP TH ANGLES.
  3. V37E52E  
ALIGN GDC TO N22.  
RECORD N22 AND  
LOAD N20 WITH N22.  
PRO ON GYRO TORQUE REQUEST (REG 1 = 00013).  
IGNORE PROG ALARM (#'S 211 & 217)  
DO NOT TOUCH DSKY UNTIL F 50 25 00015 IS  
DISPLAYED OR THE NEW REFSMMAT WILL BE LOST.  
(WILL TAKE ~5 MIN)  
CONTINUE IN P52 AND PERFORM STAR CHECK TO  
VERIFY ALIGNMENT
  4. IF STAR CHECK FAILS: CONTINUE IN P52 AND  
PERFORM STAR MARKS (REF P52 OPT 3  
PROCEDURES, STEPS 3, 4 & 5)
  5. V37E00E  
LIMIT CYCLE - OFF  
RATE - HIGH

# EMP SL-50 MANUAL LOAD

DSKY (REG 3  
LOAD ADDRESS)

V21 N1E	77776E
3242E	E
6006E (3242)	34124E
	E
	55237E
N15E	E
77775E	35040E (3270)
E	
2703E	E
E	4647E
2661E	E
E	24000E
77775E	E
E	20456E
2711E	E
E	5537E
2667E (3250)	E
	1677E
E	E
77775E	5537E
E	E
2717E	4E
E	E
2675E	6E (3300)
E	
77634E	E
E	31300E
24017E	E
E	52033E
47471E	E
E	31301E
77634E	E
E	54034E
24017E (3260)	E
	5537E (3305)
E	
34747E	
E	
77634E	V25 N26E
E	10001E
24017E	1642E
E	50006E
47303E	
E	

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### EMS ΔV/RANGE DISPLAY BLANK

FOR SCS BURNS, EMS FUNC - OFF, MAKE TIMED BURNS  
SPS THRUST - DIRECT ON (TO INITIATE BURN)  
ΔV THRUST - OFF (TO TERMINATE BURN)  
SPS THRUST - NORMAL

### IMU TO GDC ALIGNMENT

FDAI SEL - 1  
FDAI SOURCE - ATT SET  
ATT SET DIALS - 0,0,0  
ATT SET - IMU  
MNVR TO 0,0,0 ON FDAI 1 (IMU)

IMU CAGE - ON (UP) & HOLD  
ATT SET - GDC  
MNVR TO 0,0,0 ON FDAI 1 (GDC) AND NULL  
ERROR NEEDLES  
IMU CAGE - RELEASE

### MARK BUTTON FAILED

FAILED\_OPEN (BIT 6 CHANNEL 16 REMAINS = ZERO)

NOTE: DSKY OPERATIONS (e.g., V82E, V16 N20E) ARE  
PERMITTED DURING ALIGNMENT MARKS.

BEFORE ANY MARKING,  
LOAD FOLLOWING EMP (SL-5) (CAN BE LOADED ANYTIME)  
V25 N26E  
1E (1cs TIME DELAY)  
2151E  
16067E (FIXED MEMORY ADDRESS OF MARKDIF)

FOR EACH MARK,

KEY V31 (DO NOT KEY ENTR)  
ENTR (WHEN STAR CENTERED)  
(ENTR MUST BE DONE FROM NAV DSKY)

AFTER MARKING,  
KEY V21 N26E, 0E (TO DISABLE EMP SL-5)

FAILED\_CLOSED (BIT 6 CHANNEL 16 REMAINS = ONE)

NOTE: EMP SL-5 IS NOT REQUIRED.  
PERFORM ALL PROGRAM PROCEDURES ON MAIN DSKY.

TO MARK, DEPRESS ANY KEY ON NAV DSKY.

### CDU FAILURE

SYMPTOM - STRANGE STEERING IN P62 SERIES  
SUSPECT TRANSIENT CDU PROBLEM (BIAS)  
V16 N20E COMPARE N20 WITH BALL  
IF Δ EXISTS - V40E  
CONTINUE NORMAL G&N ENTRY  
SYMPTOM - ISS LITE, ALARM 03777  
SUSPECT CDU FROZEN OR RUNAWAY  
V16 N20E COMPARE N20 WITH BALL  
IF Δ EXISTS (EXCEPT YAW INTO GIMBAL LOCK,  
IN WHICH CASE MAKE SCS/EMS ENTRY)  
V25 N7E, 12E, 20E, 1E TO ZERO ALL CDU'S  
LOAD N20 WITH 0, .05G PAD PITCH, 0 (LIFT UP)  
180, .05G PAD PITCH, 0 (LIFT DN)  
FLY ROLL DISPLAY ON DSKY UNDER SCS CONTROL

### CMC ALARMS

THE CMC WILL BE TEMPORARILY NO-GO FOR MANEUVER  
EXECUTION FOR ANY OF THE FOLLOWING ALARMS:

<u>SINGLE OCCURENCE</u>		<u>CONTINUOUS OCCURENCE</u>	
00205	07777	20430	21501
00214	10777	20607	21521
00777	13777	21204	31104
01107	14777	21206	31201
01407		21210	31202
03777		21302	31203
04777			31211

E/7-4

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CANNOT SEE THROUGH OPTICS

FOR IMU ALIGNMENTS

IF COAS NOT CALIBRATED-

1. IF GDC & IMU COMPARE WITHIN 5 DEG-  
PERFORM COAS LOS DETERMINATION  
PROCEDURES (Pg G/2-19) ASAP.

IF NOT- VERIFY IMU ALIGNMENT:

USE P21 (G/4-5) TO OBTAIN ALTITUDE.  
MNVR TO & MAINTAIN +X AXIS TRACK OF  
HORIZON.

KEY V83E & VERIFY DEPRESSION ANGLE.

80 NM ALT = 348 DEG DEP ANG

120 NM ALT = 345 DEG DEP ANG

160 NM ALT = 343 DEG DEP ANG

IF IMU COMPARE WITHIN 5 DEG-

PERFORM COAS LOS DETERMINATION  
PROCEDURES (Pg G/2-19) ASAP.

IF NOT- USE NOMINAL COAS

ANGLES (+0, +57470) FOR P54's .

2. IN PLACE OF P52 OPT 3-

USE P20 OPT 1 TO OBTAIN STAR SIGHTING  
ATTITUDES:

LOAD N78 WITH +ZERO'S.

LOAD 1ST STAR, RECORD N18 AND

PERFORM AUTO MNVR TO STAR ATT.

RECALL P20, LOAD 2ND STAR & RECORD.

RECALL P20, LOAD 3RD STAR & RECORD.

PERFORM P54 OPT 3 (G/3-9):

CENTER STAR IN COAS.

VERIFY N91 LOADED WITH COAS LOS

ANGLES RECORDED (Pg G/2-20).

MANUALLY MNVR TO 2ND STAR.

FOR SUBSEQUENT P54's (WITH SAME REFSMMAT),

CAN USE V49 MNVR TO 1ST STAR.

3. IN PLACE OF P52 OPT 1 COARSE ALIGN- PERFORM

P52 OPT 1 PULSE TORQUE (ENTER ON  
TORQUE REQUEST)

(DO NOT PERFORM STAR SIGHTINGS).

IF COAS LOS DETERMINATION HAS BEEN PERFORMED-  
REPEAT ABOVE STEPS 2 & 3, AS REQUIRED.

FOR DEORBIT BURN IMU CK (PG E/1-6).

PERFORM P20 (OPT 1) MNVR TO CHECK STAR

IMU IS GO IF STAR <5 DEG FROM CENTER OF COAS.

STAR      ROLL      PITCH      YAW

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

E/7-5

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**OPTICS FROZEN**

BEFORE DOING IMU ALIGN (PERFORM ONE TIME)

1. OPTICS POWER - ON
2. OPT ZERO - ZERO
3. VERIFY SXT/SCT LOS SLAVED  
IF NOT, CONTINUE USING SCT
4. RECORD TPACS  
IF TA NEGATIVE (XXX.XX) SUBTRACT 270 DEG
5. KEY V64E, LOAD N94 WITH SA & TA.  
PRO, RECORD N78 REG 1 & REG 2.  
PRO
6. GO TO IMU ALIGN

FOR IMU ALIGNMENTS

IN PLACE OF P52 OPT 3-

USE P20 OPT 1 TO OBTAIN STAR SIGHTING  
ATTITUDES:

LOAD N78 WITH VALUES RECORDED ABOVE.

LOAD 1ST STAR, RECORD N18 AND

PERFORM AUTO MNVR TO STAR ATT.

RECALL P20, LOAD 2ND STAR & RECORD.

RECALL P20, LOAD 3RD STAR & RECORD.

PERFORM P54 OPT 3 (G/3-9):

CENTER STAR IN SXT WITH MIC.

VERIFY N94 LOADED WITH RECORDED SA & TA.

MANUALLY MNVR TO 2ND STAR.

FOR SUBSEQUENT P54'S (WITH SAME REFSMMAT),

CAN USE V49 MNVR TO 1ST STAR.

IN PLACE OF P52 OPT 1 COARSE ALIGN - PERFORM  
P52 OPT 1 PULSE TORQUE (ENTER ON TORQUE  
REQUEST)

(DO NOT PERFORM STAR SIGHTINGS).

FOR DEORBIT BURN IMU CK (PG E/1-6).

PERFORM P20 (OPT 1) (LOAD N78 = 0)

MNVR TO CHECK STAR

IMU IS GO IF STAR <5 DEG FROM CENTER OF COAS.

**N91 OR TPAC'S**

SA	_____.
TA	_____.

**N78**

R1	_____.
R2	_____.

STAR      ROLL      PITCH      YAW

_____	_____.	_____.	_____
_____	_____.	_____.	_____
_____	_____.	_____.	_____

**MN BUS A LOST ENTRY**

CM RCS CHECK

AUTO RCS SEL A/C ROLL (4) - OFF (VERIFY)  
CB RCS LOGIC (2) - CLOSE (VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (ALL) - OFF  
RHC PWR DIR #2 - MNA/B  
TEST RING 1 PITCH & YAW THRUSTERS  
    USING DIRECT RCS  
AUTO RCS SEL (RING 2) - MNB  
TEST RING 2 THRUSTERS (MIN IMP MAY  
    NOT PRODUCE AUDIBLE JET FIRING.  
    USE 3 CYCLES)  
RCS TRNFR - SM

POST CM/SM SEP

AUTO RCS SEL (21, 22) - OFF  
TEST RING 1 +/-ROLL THRUSTERS  
    USING DIRECT RCS  
AUTO RCS SEL (21, 22) - MNB  
RHC PWR DIR #2 - OFF

**MN BUS B LOST ENTRY**

CM RCS CHECK

AUTO RCS SEL A/C ROLL (4) - OFF (VERIFY)  
CB RCS LOGIC (2) - CLOSE (VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (ALL) - OFF  
RHC PWR DIR #2 - MNA/B  
TEST RING 2 PITCH & YAW THRUSTERS  
    USING DIRECT RCS  
AUTO RCS SEL (RING 1) - MNA  
TEST RING 1 THRUSTERS (MIN IMP MAY  
    NOT PRODUCE AUDIBLE JET FIRING.  
    USE 3 CYCLES)  
RCS TRNFR - SM

POST CM/SM SEP

AUTO RCS SEL (11, 12) - OFF  
TEST RING 1 +/-ROLL THRUSTERS  
    USING DIRECT RCS  
AUTO RCS SEL (11, 12) - MNA  
RHC PWR DIR #2 - OFF

E/7-7

DATE 5/9/75

# CM LO PWR RECONFIG

SYSTEM	SYSTEM LOAD (AMPS)	TOTAL SC LOAD (AMPS)
NOMINAL CM SYSTEMS CONFIGURATION	-	53.0
VERIFY DSE RECORDING	-	53.0
MISC PWR DOWN CB G&N OPTICS MNA/B (2) - OPEN G&N PWR (AC) - OFF LIGHTS - MIN REQ'D MISSION TIMER (PNL 306) - STOP EVENT TIMER (PNL 306) - STOP OPTICS EYEPIECE HTR - UNPLUG	2.0	51.0
ECS PWR DOWN ECS GLY PUMP SEL - OFF ECS RAD FLOW CONT PWR - OFF GLY EVAP TEMP IN - MAN GLY EVAP H2O FLOW - OFF GLY EVAP STEAM PRESS - MAN SEC COOL EVAP - RESET (FOR 58 SEC) SEC COOL EVAP - OFF SEC COOL LOOP PUMP - OFF SUIT COMP - OFF	7.1       3.9	43.9       40.0
CONFIGURE FOR SINGLE INVERTER OPERATION	4.0	36.0
COMM PWR DOWN S BD NORM PWR AMPL - OFF	3.0	33.0
SCS PWR DOWN BMAG POWER 1 - WARMUP BMAG POWER 2 - OFF FDAI/GPI PWR - OFF SCS ELECTRONICS PWR - OFF CB SCS LOGIC BUS (4) - OPEN RHC PWR NORMAL (2) - OFF	10.0	23.0
TOTAL	30.0	23.0

## IF CM IN LO PWR CONFIG AND G&N FAILURE

CMC MODE - FREE  
SCS PWR UP  
CB SCS LOGIC BUS (4) - CLOSE  
BMAG PWR 1 - ON  
FDAI/GPI PWR - BOTH  
SCS ELECTRONICS PWR - GDC/ECA  
RHC PWR NORMAL #2 - AC/DC  
CMC/IMU POWER DOWN  
CB IMU HTR (2) - OPEN  
CB G&N IMU MNA/B (2) - OPEN  
V37E 06E  
F 50 25, 00062, CMC PWR DN  
PRO, HOLD (~5 SEC) UNTIL  
STBY LT - ON

E/7-8

DATE 5/9/75

BLOCK	DEORBIT	PROCEDURE LOCATION		
-5+30	DM CLOSEOUT	D/13-1	+35 P52 (OPT 3) (RECORD)	E/
-4+20	P00 V62E V49 MNVR TO BLOCK DATA DEORBIT PAD ATT		-1+30 EMS ENTRY CK EMS AV & NULL BIAS CK RSI ALIGN ALIGN GDC	E/1-3 E/1-3 E/1-3
-4+10	CLOSE HATCH 1 HATCH 1 INTEGRITY CK	DECAL (TUNNEL 1) DECAL (TUNNEL 1)	-1+20 SEC H2O EVAP ACTIVATION CM RCS PREHEAT CK LIST	E/1-3 E/1-4
-4+00	APOLLO ACTIVE UNDOCKING	J/2-5	-1+10 FINAL STOWAGE CK LIST	E/1-4
-3+45	UNDOCK AT UNDOCK + 30 SEC: THC (-X) 3 SEC (4 JET)  SC CONT - CMC BMAG MODE (3) - RATE 2		-1+00 CM RCS PREHEAT TERMINATION CK LIST CONFIGURE PANEL 8 CB'S	E/1-4 E/1-4
-3+40	DON SUITS SUIT INTEGRITY CK	S/1-12 S/1-15 (STEP 8)	-0+40 CM RCS ACTIVATION PRE SEP CK LIST	E/1-5 E/1-5
-2+30	PRE DM JETT CHECKLIST	S/3-5	-0+30 CYCLE CMC MODE SW - FREE - AUTO V48E, LOAD .5 DEG DBD (11102) P30, LOAD FROM BLOCK DATA (01111) SET DET P52 (OPT 3) AUTO OPTICS TO STAR (LIMIT: SXT FOV, GNCS GO/NO-GO) EXIT 06 92 STOW OPTICS CREW STRAPPED IN, SEATS LOCKED STOW COAS, DIM LIGHTS	
-2+16	DM JETTISON  V48E, (11112) (01111)		-0+15 GO TO SPS BURN CUE CARD	
-2+10	P52 (OPT 3) (RECORD) P00 ALIGN GDC START SCS DRIFT CK (BMAG 2) DOFF SUITS	S/1-20	0+00 DEORBIT BURN	
-1+45	DON LIFE VESTS, HEEL RESTRAINTS INSTAL HEAD RESTS, CUE CARDS		CM/SM SEP	E/1-7
-1+40	PYRO BATT CK END SCS DRIFT CK	E/1-2 E/1-2	ENTRY	E/2-1

BLOCK DATA  
DEORBIT

E/8-1

DATE 7/1/75

BLOCK DATA  
DEORBIT

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DATE 7/1/75

E/9-1

WHEN ONE FAILURE AWAY FROM QUICK DEORBIT

1. IF ELECTRICAL POWER CRITICAL (ONE FUEL CELL), POWER DOWN PER POWER DOWN CK LIST  
REAPPLY POWER AT C/W LIMITS AS REQ'D.  
POWER UP BOTH BMAGS

POWER DOWN CK LIST

4 IF UNSUITED, SUIT COMP (2) - OFF  
(CYCLE ON 10 MIN EVERY HOUR)  
5 FC PUMPS (FAILED FUEL CELLS) - OFF  
CB G&N OPTICS MNA & MNB (2) - OPEN  
G&N PWR (AC) - OFF  
2 O2 HTRS (2) - OFF (CTR)  
H2 HTRS (2) - OFF (CTR)  
H2 FANS (2) - OFF (CTR)  
C/W NORMAL - ACK  
POT H2O HTR - OFF  
SM RCS ENG PKG HTRS (4) - OFF  
1 EMS FUNC - OFF  
RHC PWR DIRECT (2) - OFF  
THC PWR - OFF  
181 CM/DM CAMR PWR - OFF  
TV AMPL - OFF  
274 SM RCS QUAD HTRS (4) - OFF  
EXT LTS - OFF  
225 CB ATSF SYSTEM (2) - OPEN  
400 VTR PWR - OFF  
3 VHF RANGING - OFF  
S BD AUX TV - OFF (CTR)  
CONFIGURE FOR SINGLE INVERTER  
OPERATION (TURN OTHER INVERTER OFF)  
LIGHTS - MIN REQ'D

2. SET WRIST WATCH TO CURRENT CDT.
3. STOW ALL UNNECESSARY ITEMS.
4. PERFORM SYSTEMS CHECKS:  
CM RCS PREHEAT CK LIST (E/1-4)  
(IF ONE FUEL CELL; MN BUS TIE (2) - ON FOR PREHEAT)  
EMS DV AND NULL BIAS CK (E/1-3)
5. ACCEPT STDN UPLINK OF INPLANE REFSMMAT AND REALIGN IMU (P52 OPT 1).  
(PNL 5; G/N PWR - AC1; CB G/N OPTICS (2) - CLOSE FOR P52, THEN OFF, OPEN)
6. VERIFY BOTH BMAGS POWERED UP.  
KEEP GDC AND ASCP TW'S ALIGNED TO IMU.
7. COORDINATE WITH SOYUZ ON SITUATION. REVIEW QUICK TRANSFER AND  
UNDocking PROCEDURES.

NOTES: GROUND WILL PROVIDE QUICK DEORBIT PADS TO  
INSURE A CURRENT SOLUTION (>1 HR 15 MINUTES BUT <2 HR 45 MIN)

GROUND WILL ALSO PROVIDE DEORBIT AND ENTRY PAD FOR NEXT  
GO/NO-GO TARGET.

PLAN ON CONTINUING TO NEXT GO/NO-GO TARGET AND USING NOMINAL  
DEORBIT AND ENTRY PROCEDURES, UNLESS FINAL TIME CRITICAL  
FAILURE OCCURS.

QUICK  
DEORBIT

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
ΔVC		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
ΔVC		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
ΔVC		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
ΔVC		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

QUICK  
DEORBIT

DATE 7/1/75

1/9-3

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							



1/9-4

DATE 7/1/75

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

DATE 7/1/75

E/9-5

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

## QUICK DEORBIT PAD

CDT	HR	+	0	0	0		
	MIN	+	0	0	0		
	SEC	+	0			0	0
FDAI	R	+				0	0
	P	+				0	0
	Y	+				0	0
$\Delta VC$		XX	XX				
P .05G		+				0	0
RET 0.2G		XX	XX				
REMARKS:							

-01:30-

# SCS CONTROL CK LIST

VERIFY BOTH BMAGS OPERATING  
 AUTO RCS SEL A3,C4,B3,D4 - OFF  
 A/C ROLL (4) - OFF  
 BMAG MODE (3) - RATE 2  
 MAN ATT (3) - RATE CMD  
 DBD/RATE - MIN/HIGH  
 SC CONT - SCS  
 BMAG MODE - ATT 1/RATE 2  
 FDAI SELECT - 1  
 FDAI SOURCE - ATT SET  
 ATT SET - GDC  
 VERIFY GDC ALIGNED TO TW'S  
 IF GDC NOT ALIGNED TO TW'S,  
 ALIGN GDC TO TW'S

# HORIZ TRACK CK LIST

INFORM SOYUZ: READY TO MNVR.ПОТОБ  
 VERIFY PAD ROLL, PAD YAW ВЫПОЛНИТЬ  
 MAN ATT (P) - MIN IMP МАНЕВР.  
 RHC - PITCH TO TRACK HORIZ ON  
 15 DEG WINDOW MK (HEADS DOWN)

# LOSS OF LAST FUEL CELL

(DON'T TROUBLESHOOT IF  
 <1 HR 15 MIN TO TIG)

MN BUS TIE (2) - ON  
 CB MN A BAT C - CLOSE  
 CB MN B BAT C - CLOSE  
 SELECT DEORBIT PAD WITH TIG >1 HR 15 MIN BUT <2 HR 45 MIN

# SCS CONTROL CK LIST

# EMERGENCY POWER DOWN CK LIST

# CREW TRANSFER/DM CLOSEOUT CK LIST

UNSTOW AND DON LIFE VESTS (F1)  
 AND HEEL RESTRAINTS (B1)  
 UNSTOW READRESTS (B1)  
 INSTALL ENTRY CUE CARDS

# HORIZ TRACK CK LIST

# CONFIGURE PANEL 8 CB'S

# CM RCS ACTIVATION

# PRE-SEP CK LIST

SET DET COUNTING UP TO PAD TIG

# CREW TRANSFER/DM CLOSEOUT CHECKLIST

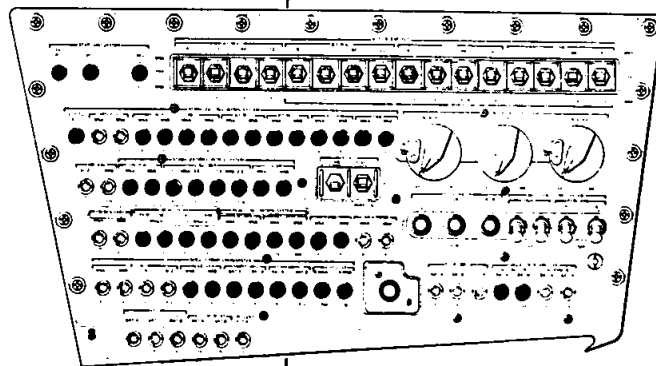
CLOSE HATCH 3 AND PEV  
 REQUEST SOYUZ CLOSE HATCH 4 AND VENT TUNNEL  
 OPEN WASTE STOWAGE VENT VALVE (PNL 252)  
 DIRECT O2 ON (.7 LB/HR)  
 OPEN HATCH 2 PEV  
 WHEN PRESSURE EQUALIZED OPEN HATCH 2  
 UNSTOW PROBE AND DROGUE AND PLACE IN DM  
 PERFORM HATCH 2 CLOSURE (DECAL, STEPS 1-4)  
 HATCH 2 PEV - CLOSE (CCH)/LOCK (VERIFY)  
 CB DM PWR (2) - OPEN (PNL 274)  
 INSTALL HATCH 1 (DECAL)  
 PERFORM HATCH 1 PRESSURE TEST

# CM RCS ACTIVATION

CB SECS ARM (2) - CLOSE  
 CUE STDN (IF POSS)  
 SECS LOGIC (2) - ON (UP)  
 STDN CONFIRM GO  
 FOR PYRO ARM (IF POSS)  
 SECS PYRO ARM (2) - ON (UP)  
 CM RCS PRPLNT 1 & 2 TB (2) - GRAY  
 (VERIFY) (INDICATES FUEL AND  
 OXIDIZER ISOLATION VALVES OPEN)  
 CM RCS PRESS - ON (UP)  
 RCS IND SEL - CM1, THEN 2  
 HE PRESS STABILIZES AT 3600-3800  
 PSIA AFTER 15 MINUTES  
 MANF PRESS 287-302 PSIA  
 SECS PYRO ARM (2) - SAFE

# PRE-SEP CK LIST

REPRESS PKG VLV - ON  
 O2 SM SUPPLY VLV - OFF  
 SURGE TK - ON (VERIFY)  
 CAB PRESS REL VLV (2) - NORM  
 ABORT SYS PRPLNT - RCS CMD (VERIFY)



● - CLOSE  
 ○ - OPEN

# EMERGENCY POWER DOWN CK LIST

4 IF UNSUITED, SUIT COMP (2) - OFF  
 (CYCLE ON 10 MIN EVERY HOUR)  
 CB ECS GLYCOL PUMPS (6) - OPEN  
 5 FC PUMPS (3) - OFF  
 G/W PWR (AC) - OFF  
 CB ECS RADIATORS (6) - OPEN  
 CB ECS POT H2O HTR (2) - OPEN  
 CB ECS H2O ACCUM (2) - OPEN  
 CB ECS WASTE H2O/URINE DUMP  
 HTR (2) - OPEN  
 CB ECS AC UTIL AC2 (3) - OPEN  
 CB GUIDANCE/NAVIGATION(10)-OPEN  
 MINIMUM LIGHTS  
 3 FC HEATERS (3) - OFF  
 SPS LINE HTRS - OFF  
 BATTERY CHARGE - OFF  
 S-BD NORMAL PWR AMPL - OFF (CTR)  
 S-BD AUX TAPE - OFF (CTR)  
 S-BD AUX TV - OFF (CTR)  
 UP TLM CMD RESET - RESET THEN OFF  
 VHF RANGING - OFF  
 TAPE RECORDER FWD/REWIND - OFF  
 PCM BIT RATE - HIGH  
 CONFIGURE FOR SINGLE INVERTER,  
 OTHER INVERTER - OFF  
 2 HZ HEATERS - OFF (CTR)  
 O2 HEATERS - OFF (CTR)  
 SM RCS ENG PKG HTRS (4) - OFF  
 (AT C/W LIMIT - 1)  
 CAUTION/WARNING NORMAL - ACK  
 225 CB ATSF SYSTEM (2) - OPEN  
 226 CB CRYOGENIC FAN MOTORS (6) - OPEN  
 274 CB ALL ON TOP ROW - OPEN  
 IF DM UNMANNED, CB DM POWER(2)-OPEN  
 EXTERIOR LIGHTS (2) - OFF  
 SM RCS QUAD HEATERS (4) - OFF(CTR)  
 100 MINIMUM LIGHTS  
 8 CB ORDEAL (2) - OPEN  
 MINIMUM LIGHTS  
 7 FDAI/GPI POWER - 1  
 IF OFF, BMAG POWER 1 - ON  
 1 EMS FUNC - OFF  
 RHC PWR DIRECT (2) - OFF  
 THC PWR - OFF

# TLM POWER DOWN

(RESET C/W AS REQ'D)  
 5 CB ECS TRANSDUCER (8) - OPEN  
 CB ECS SECONDARY COOLANT LOOP  
 XDCERS (2) - OPEN  
 276 CB INSTRUMENTATION POWER  
 CONTROL(4)-OPEN(CYCLE FOR S/C  
 DATA AS REQ'D)  
 3 POWER SCE - OFF (CTR)

# S-BD POWER DOWN FOR LOS PERIOD

3 S BAND NORMAL XPONDER-OFF(CTR)  
 POWER PMP - OFF (CTR)  
 4 TELCOM (2) - OFF (CTR)

# FOR S-BD ACQUISITION:

4 TELCOM (2) - AC1/2  
 3 POWER PMP - NORM  
 S BAND NORMAL XPONDER - PRIM

-01:20-

01:10

01:00

E/9-6

DATE 7/1/75

DATE 7/7/75

E/9-7

-01:00-

## FINAL STOWAGE CK LIST (IF TIME PERMITS)

## FINAL STOWAGE CK LIST

ORDEAL  
 FDAI (2) - INRTL  
 PWR - OFF, STOW  
 STOW OPTICS EYEPIECES  
 STOW COAS  
 GLY TO RAD SEC VLV - BYPASS (CCW)  
 (VERIFY) (PNL 377)  
 VERIFY SUIT BAGS TIED DOWN  
 VERIFY UCTA'S STOWED IN PORTABLE  
 WASTE STOWAGE CONTAINER (U1),  
 HOC AND MAG IN (B3)  
 SET MET TO DET

DET  
05:00--

-00:50-

15:00

INFORM SOYUZ: THERE ARE 5 MIN. UNTIL  
 SYNC OF CLOCKS.

-00:40-

INFORM SOYUZ: I WILL GIVE YOU A COUNTDOWN.  
 ARE YOU READY? 5,4,3,2,1 MARK (DET=20:00)  
 AUTO RCS SEL A3, C4, B3, D4 - ON

25:00--

-00:30-

## METER POWER UP (AS REQ'D)

METER	PANEL	CB
CABIN PRESS, PART PRESS CO2	5	ECS TRANSDUCER PRESS GROUPS 2 (2)
CM RCS PRESS	276	INSTRUMENTATION POWER CONTROL 1 & 2
SM RCS PRESS, QTY	276	INSTRUMENTATION POWER CONTROL 3 & 4
SPS PRESS	276	INSTRUMENTATION POWER CONTROL 3 & 4
ECS	5	ECS RADIATORS CONT/HTRS (2) ECS TRANSDUCER PRESS GROUPS 1 & 2 (4)

## UNDOCKING/SEPARATION CHECKLIST

RHC PWR NORMAL #2 - AC/DC (VERIFY)  
 RHC PWR DIRECT #2 - MNA/B  
 THC PWR - ON  
 MAN ATT (3) - MIN IMP  
 DBD/RATE - MIN/HIGH (VERIFY)  
 BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)  
~~AUTO RCS SEL A3, C4, B3, D4 - OFF (VERIFY)~~ *Delete*  
 A/C ROLL (4) - OFF (VERIFY)  
 SC CONT - SCS (VERIFY)  
 RHC #2 - ARMED (VERIFY)

GUIDE RING A&B - OFF (VERIFY)  
 STRUCT LATCH A&B - OFF (VERIFY)  
 BACKUP PASSIVE A&B - OFF (VERIFY)

INFORM SOYUZ: PREPARING FOR BACKUP PASSIVE  
 UNDOCKING. ПОДГОТОВКА К РЕЗЕРВНОЙ  
 ПАССИВНОЙ РАССТЫКОВКЕ.  
~~INFORM APOLLO: PREPARING FOR UNDOCKING.~~

274 DOCKING SYSTEM CB'S (12) - CLOSE

38:00 MAN ATT (3) - RATE CMD (HORIZ ON 15 DEG WINDOW MK)  
 VERIFY GDC ALIGNMENT (PAD R, PAD P+80 DEG, PAD Y)  
 IF REQ'D, GDC ALIGN TO (PAD R, PAD P+80 DEG, PAD Y)

INFORM SOYUZ: READY FOR BACKUP PASSIVE UNDOCKING.  
 ГОТОВ К РЕЗЕРВНОЙ ПАССИВНОЙ  
~~INFORM APOLLO: READY TO UNDOCK.~~ РАССТЫКОВКЕ.

INFORM SOYUZ: INITIATING UNDOCKING. НАЧИНАЮ РАССТЫКОВКУ,  
 5,4,3,2,1 MARK. 5,4,3,2,1 MARK.

39:55 BACKUP PASSIVE A&B AND CAPTURE LATCH A&B (4) -  
 40:00 RELEASE (SIMULTANEOUSLY) ~8 SEC  
 GUIDE RING CAPTURE LT - OUT  
 PASSIVE LT - ON  
 STRUCT RING CONTACT LT - OUT  
 INFORM SOYUZ: UNDOCKING COMPLETED.  
 РАССТЫКОВКА ЗАВЕРШЕНА.

40:30 AUTO RCS SEL (16) - MNA/B  
 THC - THRUST (+Y) FOR 10 SEC  
 MAN ATT (P) - MIN IMP  
 RHC - TRACK HORIZ ON 15 DEG WINDOW MK)  
 274 DOCKING SYSTEM CB'S (12) - OPEN  
 THC PWR - OFF

-00:30-

UNDOCKING/SEPARATION CK LIST (PG 9-7)

NOTE: SOYUZ UNDOCK/SEPARATION MUST BE PERFORMED  
20 MINUTES BEFORE TIG

35:00--

-00:20-

SOYUZ UNDOCK/SEPARATION

DM JETT/SEPARATION CK LIST

NOTE: DM JETT/SEPARATION MUST BE PERFORMED  
10 MINUTES BEFORE TIG

45:00--

DM JETT/SEPARATION CHECKLIST

46:00 CB CSM/DM FINAL SEP (2) - CLOSE  
CB SECS ARM (2) - CLOSE  
SECS LOGIC (2) - ON (VERIFY)  
SECS PYRO ARM (2) - ARM

48:00 MAN ATT(3) - RATE CMD(HORIZ ON 15 DEG WINDOW MK)  
VERIFY GDC ALIGNMENT (PAD R,PAD P+40 DEG,PAD Y)  
IF REQ'D GDC ALIGN TO(PAD R,PAD P+40 DEG,PAD Y)  
THC PWR - ON

50:00 CSM/DM FINAL SEP (2) - ON (UP)

50:30 THC - THRUST (+Y) FOR 10 SEC  
THC PWR - OFF  
MAN ATT (P) - MIN IMP  
RHC - TRACK HORIZ ON 15 DEG WINDOW MK

SECS PYRO ARM (2) - SAFE  
CB CSM/DM FINAL SEP (2) - OPEN

-00:10-

DM JETT/SEPARATION

SPS DEORBIT BURN CK LIST

55:00--

CREW STRAPPED IN AND SEATS LOCKED

00:00-

SPS DEORBIT BURN

SPS DEORBIT BURN CK LIST

CB INSTRUMENTATION POWER (4) - CLOSE (PNL 276)  
AUTO RCS SEL (12) - MNA/B (VERIFY)  
FDAI SCALE - 5/1 (VERIFY)  
DBD/RATE - MIN/LOW  
BMAG MODE (3) - ATT 1/RATE 2 (VERIFY)  
SC CONT - SCS (VERIFY)  
RHC - TRACK HORIZ ON 15 DEG WINDOW MK  
SCS TVC (2) - RATE CMD  
TVC GMBL DR P&Y - AUTO  
ATVC - HI  
SET EMS ΔV  
VERIFY DET COUNTING UP TO PAD DEORBIT BURN TIG

TVC SERVO PWR 1 - 1/A, 2 - 2/B  
RHC PWR NORMAL (2) - AC, DIRECT (2) - OFF  
GMBL MOTORS P1 & Y1 - START, SET TRIM (1ST PAD REMARKS)  
VERIFY MTVC  
SCS TVC (2) - AUTO  
THC - CW, VERIFY NO MTVC  
GMBL MOTORS P2 & Y2 - START, SET TRIM  
VERIFY MTVC  
THC - NEUTRAL, VERIFY NO MTVC  
VERIFY GPI RETURNS TO TRIM  
RHC PWR NORMAL (2) - AC/DC  
RHC PWR DIRECT (2) - MNA/B  
CONTINUE TO TRACK HORIZ ON 15 DEG WINDOW MK

58:00 MAN ATT (3) - RATE CMD (HORIZ ON 15 DEG WINDOW MK)  
VERIFY GDC ATTITUDE EQUAL PAD BURN ATTITUDE  
IF REQ'D, GDC ALIGN TO PAD BURN ATTITUDE  
RHC 2 & THC - ARMED  
VERIFY EMS, DET, SPS N2 & He

59:00 CHECK HORIZ ON 11 DEG WINDOW MK (7 DEG WINDOW MK AT TIG)  
EMS - NORMAL  
THC PWR - ON

59:30 ΔV THRUST A (B) - NORMAL

59:46 ULLAGE

00:00 THRUST PB - PUSH  
00:03 ΔV THRUST (2) - NORMAL  
RATE - HIGH

XX:XX ECO

ΔV THRUST (2) - OFF  
TRIM EMS ΔV TO 18.0  
GMBL MOTORS (4) - OFF  
TVC SERVO PWR 1 & 2 - OFF  
MAN ATT (3) - MIN IMP  
RHC - TRACK HORIZ ON 29 DEG WINDOW MK  
EMS - OFF/STBY  
THC - LOCKED  
THC PWR - OFF  
RHC PWR DIRECT (2) - OFF

E/9-8

DATE 7/1/75

DATE 7/1/75

E/9-9

00:00

RECORD BURN STATUS

CM RCS CK

\*IF BOTH RINGS FAILED\*  
\*PERFORM ROLLING ENTRY\*  
\*CK LIST\*  
\*\*\*\*\*

YAW RIGHT TO 45 DEG

CM/SM SEP CK LIST

05:00

CM/SM SEP

YAW BACK TO 0 DEG

TRACK HORIZ ON 29 DEG WINDOW MK

00:10

FOR ENTRY, HOLD LIFT UP UNTIL RET 0.2G,  
THEN FLY CONSTANT BANK (ROLL LEFT TO 305 DEG) ENTRY.

15:00

00:20

ATTACH BOTH STRUT UNLOCK LANYARDS

CB ECS TRANSDUCER PRESS GROUPS 2 (2) - CLOSE

25:00

FDAI SCALE - 5/5  
.05G SW - ON (UP)  
EMS ROLL - ON (UP)

RCS IND - CM 1,2

\*IF BOTH RCS RINGS\*  
\*H PRESS <2000\*  
\*PSIA:ROLL RIGHT\*  
\*~20 DEG/SEC\*  
\*\*\*\*\*

28:00

AT PAD RET 0.2G,  
MAN ATT (3) - RATE CMD  
ROLL LEFT TO 305 DEG

00:30

FLY CONSTANT BANK ENTRY  
START WATCH WHEN STM PRESS PEGGED (90K'), MONITOR ALTIMETER  
GO TO EARTH/POST LANDING, PG E/3-1

SPS BURN STATUS (AFTER TRIM)

ΔTIG		XX	XX						
ΔVC			XX						
FDAI	R	+				XX	XX		
(IF ATT	P	+				XX	XX		
NOT NOM)	Y	+				XX	XX		

\*ROLLING ENTRY CK LIST\*  
\*PERFORM CM/SM SEP CK LIST THROUGH\*  
\*SECS PYRO ARM (2) - ON (UP)\*  
\*BMAG MODE (3) - ATT 1/RATE 2\*  
\*MAN ATT (3) - RATE CMD (VERIFY)\*  
\*SC CONT - SCS\*  
\*MNVN TO 0,P.05G+19 DEG.....0 DEG\*  
\*DBD/RATE - MIN/LOW\*  
\*CAUTION:ATT HOLD IN PITCH AND YAW\*  
\*MUST BE MAINTAINED UNTIL SEP\*  
\*AT RET .05G - 120 SEC\*  
\*FDAI SCALE - 50/15\*  
\*MAN ATT ROLL - ACCEL CMD\*  
\*ROLL RIGHT ~20 DEG/SEC\*  
\*AT RET .05G - 90 SEC\*  
\*CM/SM SEP (2) - ON (UP)\*  
\*\*\*\*\*

CM RCS CK

AUTO RCS SEL A/C ROLL (4) - OFF  
(VERIFY)  
CB RCS LOGIC (2) - CLOSE (VERIFY)  
SC CONT - SCS/MIN IMP  
RCS TRNFR - CM  
AUTO RCS SEL (RING 1) - OFF  
AUTO RCS SEL (RING 2) - MNB  
TEST RING 2 THRUSTERS (MIN IMP MAY  
NOT PRODUCE AUDIBLE JET FIRING.  
USE 3 CYCLES)  
AUTO RCS SEL (RING 1) - MNA  
AUTO RCS SEL (RING 2) - OFF  
TEST RING 1 THRUSTERS  
AUTO RCS SEL (RING 2) - MNB  
RCS TRNFR - SM  
MAN ATT (3) - RATE CMD

CM/SM SEP CK LIST

CB SPS P & Y (4) - OPEN  
CB ELS/CM-SM SEP (2) - CLOSE  
VHF AM (A&B) - OFF(CTR)  
RHC PWR DIRECT #2-MNA/B  
CM RCS LOGIC - ON (UP)  
CUE STDN IF IN CONTACT  
SECS PYRO ARM(2)-ON(UP)  
VERIFY CORRECT SEP ATT  
CM/SM SEP (2) - ON (UP)  
MAN ATT (3) - MIN IMP  
BMAG MODE (3) - RATE 2  
C/W MODE - CM  
RCS TRNFR - CM  
CM RCS MANF PRESS - 2&7-302 PSIA  
SECS PYRO ARM (2) -SAFE  
AUTO RCS SEL(12) - MNA/B (VERIFY)  
CM RCS LOGIC - OFF

ASTP

CHECKLIST DISTRIBUTION LIST

5/14/75

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STD 91

ENTRY CHECKLIST

SPEC \_\_\_\_\_

T. KELLER, TRW  
H2/2085

EXTRA 1

TOTAL 95