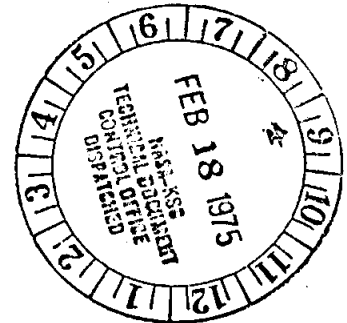


ASTP

REFERENCE

ENTRY CHECKLIST

PREPARED BY
PROCEDURES BRANCH
CREW TRAINING & PROCEDURES DIVISION



National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER
Houston, Texas
FEBRUARY 7, 1975

ASTP

JSC-09148
PA-N6-11160-4

ASTP ENTRY CHECKLIST

FEBRUARY 7, 1975

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It is requested that any organization having comments, questions, or suggestions concerning this document contact Charles O. Lewis, Procedures Branch, CG22, Bldg. 4, Room 211, Telephone 483-3048.

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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018			WITHDRAWN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	PENDING
022	REFERENCE	2/7/75	
023	REFERENCE	2/7/75	
024			
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	

ASTP ENTRY CHECKLIST

LIST OF EFFECTIVE PAGES

BASIC 2/7/75

PAGE	DATE
i	2/7/75
ii	2/7/75
iii	2/7/75
1-1	2/7/75
1-2	2/7/75
1-3	2/7/75
1-4	2/7/75
1-5	2/7/75
1-6	2/7/75
1-7	2/7/75
2-1	2/7/75
2-2	2/7/75
3-1	2/7/75
3-2	2/7/75
3-3	2/7/75
3-4	2/7/75
3-5	2/7/75
4-1	2/7/75
4-2	2/7/75
5-1	2/7/75
5-2	2/7/75
5-3	2/7/75
6-1	2/7/75
6-2	2/7/75
6-3	2/7/75
6-4	2/7/75
6-5	2/7/75
7-1	2/7/75
7-2	2/7/75
7-3	2/7/75
7-4	2/7/75
7-5	2/7/75
7-6	2/7/75
7-7	2/7/75
7-8	2/7/75

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CONTENTS

NORMAL PROCEDURES		PAGE
1	DEORBIT SEQUENCE	1-1
2	ENTRY	2-1
3	EARTH/POST LANDING	3-1
CONTINGENCY PROCEDURES		
4	RCS COMPLETION OF DEORBIT BURN (CHARTS)	4-1
5	SM RCS/HYBRID DEORBIT BURN	5-1
6	2-2/3-4 DEORBIT BURN SEQUENCE	6-3
7	SYSTEM FAILED PROCEDURES	
	IMU FAILURE	7-1
	GDC REFSMMAT REALIGN (P52)	7-2
	EMP SL-50 MANUAL LOAD	7-3
	EMS ΔV/RANGE DISPLAY BLANK	7-4
	IMU TO GDC ALIGN	7-4
	MARK BUTTON FAILED	7-4
	CDU FAILURE	7-4
	CMC ALARMS	7-4
	CANNOT SEE THROUGH OPTICS	7-5
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	MN BUS B LOST ENTRY	7-7
	CM LOW PWR RECONFIG	7-8

97+00

11112
01111

P52 (OPT 1) (33, 37, 42) (RECORD) *IF BLOCK DATA DEORBIT*
 P00 * P52 (OPT 2) *
 * TALIGN=TIG-90 SEC *

* * * * *

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

00:00

97+10

START SCS DRIFT CK (BHAG 2)
 ALIGN GDC
 RESET AND START DET COUNTING UP

V
A
N

97+20

97+30

E/1-1

DATE 2/7/75

DEORBIT SFO

97+30

11112
01111G
D
S

STDN 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)

30:00-

97+40

00:00-

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 *
* * * * *

LOGIC SEQUENCER CK

S
P
1
N
F
L

ACQUIRE ATS HGA: MAN, WIDE P -25, Y 4
S-BD 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)AT	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)
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

98+00

11112
01111H
A
D

P52 (OPT 3) (33, 37, 42) (RECORD) *IF N93 >1.5 DEG/HR/AXIS*
P00

* RECYCLE P52
* IF CONFIRMED:
* USE SCS FOR EMS ENTRY
* * * * *

98+10

30:00

T
A
N

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

98+20

EMS ENTRY CK

EMS AV TEST AND NULL BIAS CK

RSI ALIGNMENT
GDC ALIGN

98+30

SECONDARY WATER EVAP ACTIVATION

P52 (OPT 3)

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

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 - STBY(RECORD)OFF
IF AV <1 FPS, DO NOT BIAS
IF AV >1 FPS BUT <10 FPS,
STON PROVIDE BIAS IN PAD AVC
IF AV >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

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 ± 0.2 NM
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 ± 0.1 G
SET SCROLL TO 37K FPS
EMS - OFF/STBY

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 ON (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/18/CX03 - BRKT, MIR
(T11, 1/500, 7) 12 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 ≥ 4.0 VDC, OMIT PREHEAT
SYS TEST METER-5B (BAT RLY BUS)
2. IF PREHEAT REQ'D, PREHEAT UNTIL ALL JETS READ ≥ 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

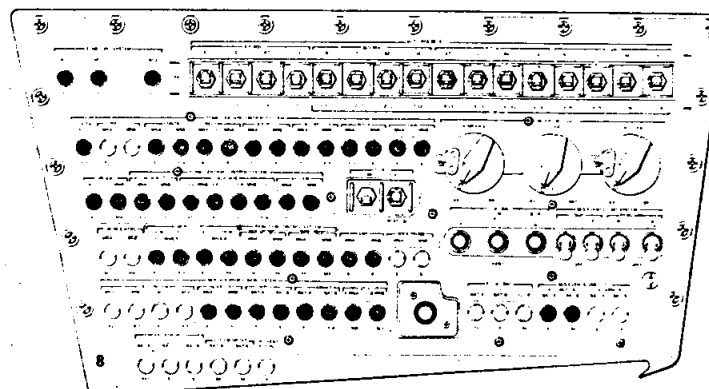
CM RCS PREHEAT TERMINATION CK LIST

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 A1, A4, AND A6
VERIFY UCTA'S STOWED IN PORTABLE WASTE STOWAGE CONTAINER (U1),
HDC AND MAG IN (B3), AND
DAC MAG CX02 IN (R13)
CHANGE DAC TO CM4 WINDOW
UNSTOW CX03 MAG FROM (T5)
AND INSTALL ON DAC



● - CLOSE
○ - OPEN

99+00-

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D
S

TRANSMIT EHS NULL BIAS CK RESULTS

99+10-

STDN 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-BD 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

SM RCS PRPLNT CONFIG CK LIST

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 STDN
 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

SM RCS PRPLNT CONFIG CK LIST

SC CONT - CMC/FREE
 SM RCS QUAD HE (4) - OPEN,
 TB (4) - GRAY
 SM RCS PSM PRPLNT (4) - CLOSE,
 TB (4) - BP
 SM RCS PRPLNT (4) - OPEN,
 TB (8) - GRAY
 SM RCS PSM HE - CLOSE,
 TB - BP
 SC CONT - CMC/AUTO

PRE-SEP CK LIST

DC IND - BAT C
 REQUEST STDN 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
 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
 GLY EVAP TEMP IN - MAN (REMOVES PWR
 FROM GLY MIXER TO CONSERVE BAT PWR
 ABORT SYS PRPLNT - RCS CMD (VERIFY)

99+30-

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11102
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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

SXT BORESIGHT STAR CK, V41 N91E (PG G/2-4)
(LIMIT: SXT FOV, GNCS GO/NO-GO) IF GNCS NO-GO, SET TH TO:
• PAD BURN ATT
• SC CONT - SCS
• TRK HORZ WITH 15 DEG
• WINDOW MK (HDS DN)

STOW OPTICS EYEPieces
CREW STRAPPED IN AND SEATS LOCKED
STOW COAS AND DIM LIGHTS
GO TO SPS BURN-ENTRY CUE CARD
(SINGLE BANK)

• AT TIG - 2 MIN.
• HOLD ATT
• GDC ALIGN PB - PUSH
• BURN SCS AT 0.180,0
(7 DEG MK)
•

99+40-

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	0	
	P	+	1	8	0	0	0		+			0	0		+			0	0	
	Y	+	0	0	0	0	0		+			0	0		+			0	0	
	ΔVC	XX	XX	1	7	6	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		+			0	0	
	ULLAGE	XX	XX	XX	1	5	4		XX	XX	XX				XX	XX	XX			

SPS BURN STATUS (AFTER TRIM)

COMPLETION RULES

ΔTIG	XX	XX				SITUATION	COMPLETION RULE
ΔVC		XX				VG <60 FPS	TRIM VG TO +/- .2 START WITHIN 30 SEC
FDAl (IF ATT P NOT NOM)	R	+			XX XX	VG >60 FPS	RESTART SPS SCS
	P	+			XX XX	HP <75, NO RESTART	USE RCS COMPLETION CHARTS (4 OR 3 QUADS) AS APPLICABLE
	Y	+			XX XX	HP >75, NO RESTART, 4 QUAD CAPABILITY	USE RCS 4 QUAD COMPLETION CHART
N85 (IF VG >.2)	ΔVX		0	0		HP >75, NO RESTART, 3 QUAD CAPABILITY	GO AROUND 6 REVS TO BACKUP TARGET
	ΔVY		0	0			
	ΔVZ		0	0			

E/1-6

DATE 2/7/75

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 REMARKS

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)

STDN UPDATE FINAL ENTRY

PAD

EMS INITIALIZATION

PITCH TO PAD P.05G

(050 DEG)

GO TO ENTRY (PG E/2-1)

F06 61

IF <25 VDC, PERFORM CM LO

* PWR RECONFIG, PG E/7-8 *

P63

06 64

*IF LIFT DN *

ROLL TO 180 DEG AND TRACK

* HORZ ON 9 DEG WINDOW MK *

100+10

O
R
R

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

ROLLING ENTRY CK LIST

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

AT RET .05G - 90 SEC. JUST

* BEFORE CH/SM SEP;

* FDAI SCALE - 50/15*

* MAN ATT ROLL - ACCEL CMD*

ROLL RIGHT ~20 DEG/SEC

* CAUTION: ATT HOLD IN PITCH AND

* YAW MUST BE MAINTAINED UNTIL

* CM/SM SEP *

CM/SM SEP CK LIST

CB SPS P & Y (4) - OPEN

CB ELS/CM-SM SEP (2) -

CLOSE

VHF AM (A&B) - OFF(CTR)

CM RCS LOGIC - ON (UP)

CUE STDN IF IN CONTACT

STDN 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

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 RTOGO

EMS FUNC - VO SET

SLEW SCROLL TO PAD VIO

EMS MODE - STBY(VERIFY)

EMS FUNC - ENTRY

VERIFY .05G LT FILTER

IS DOWN

ENTRY PAD

PRELIMINARY

FINAL

AREA	XX					XX					
SEP ATT	Y		TO			Y		TO			
P.05G	+				0 0	+				0 0	
N61 LAT			0					0			
LONG											
RTOGO .05G	+					+					
VIO .05G	+					+					
RET .05G	XX	XX				XX	XX				
RET 0.2G	XX	XX				XX	XX				
N66 DRE											
BANK AN	R					R					
RET RB	XX	XX				XX	XX				
RET B80	XX	XX				XX	XX				
RET E80	XX	XX				XX	XX				
RET DROG	XX	XX				XX	XX				
RET MAIN	XX	XX				XX	XX				

REMARKS:

E/1-7

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ENTRY

P63 - ENTRY - INIT

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

RET .05G FDAI SCALE - 5/5
-5 min RHC PWR DIRECT #2 - MNA/BRET .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)
(+0:--)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: +/-70 nm (lift up) or +/-120 nm
(lift dn), GNCS GO/NO-GO)
*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*

CM RCS CK

RCS IND - CM 1, 2

*If both RCS rings *

* He pressure <2000 psia: *

* Roll right ~20deg/sec *

Select best omni as req'd to maintain
Comm after exit blackout

RET RB
-1 min
(+0:--)

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

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 RTOGO _____ *
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)
(5) MN BUS TIE (2) - OFF

E/3-1

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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
- (376) * PLVC - OPEN
- *To turn off PLV:
 - * PL VENT - OFF

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
- cb PYRO B SEQ B - open
- Verify BAT BUS A & B voltage ≥ 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)

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
 - * CP attempt to contact recovery forces
 - * If contact reestablished and AC or DP 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)
- If shipboard recovery, go to Pg E/3-3
- If helicopter recovery, go to Pg E/3-3
- *If unaided egress, go to Pg E/3-4

E/3-2

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SHIPBOARD EGRESS & POWERDOWN

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.
Recovery will open hatch.

GEAR BOX SEL - N (verify)

ACTR HNDL SEL - N (verify)

Check hatch GN2 pressure gauge

If in green:

GN2 vlv HNDL - VENT (pull)

GN2 vlv HNDL - Neutral (detent)

Check pressure gauge (mid-white)

Repeat press/vent to obtain mid-white

If not green:

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

(15) PL VENT - OFF

cb PANEL 250 (all) - open

Egress

*If required - open side 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 *

HELICOPTER EGRESS & POWERDOWN

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, and tape
Crew will close hatch; swimmers will assist

GEAR BOX SEL - N (verify)

ACTR HNDL SEL - N (verify)

Check hatch GN2 pressure gauge

If in green:

GN2 vlv HNDL - VENT (pull)

GN2 vlv HNDL - Neutral (detent)

Check pressure gauge (mid-white)

Repeat press/vent to obtain mid-white

If not in green:

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

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

(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

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

Disconnect umbilicals (if suited)

(F2) Neck dams on (if suited)

Configure center couch to 0 deg

Armrests stowed

Check hatch GN2 pressure gauge

If in green:

GN2 vlv HNDL - VENT (pull)

GN2 vlv HNDL - Neutral (detent)

Check pressure gauge (mid-white)

Repeat press/vent to obtain mid-white

Remove TV camera, bracket

If not in green:

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

Remove TV camera, bracket

(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)

(F2) Neck dams on (if suited)

Configure center couch to 0 deg

Armrests stowed

(6,9,10) PWR (3) - OFF

SUIT PWR (3) - OFF

Remove TV camera, bracket

(F1) Stow on F1

(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 CCH to fully
open valve

NOTE: Tunnel will fill with water

E/3-4

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- (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.

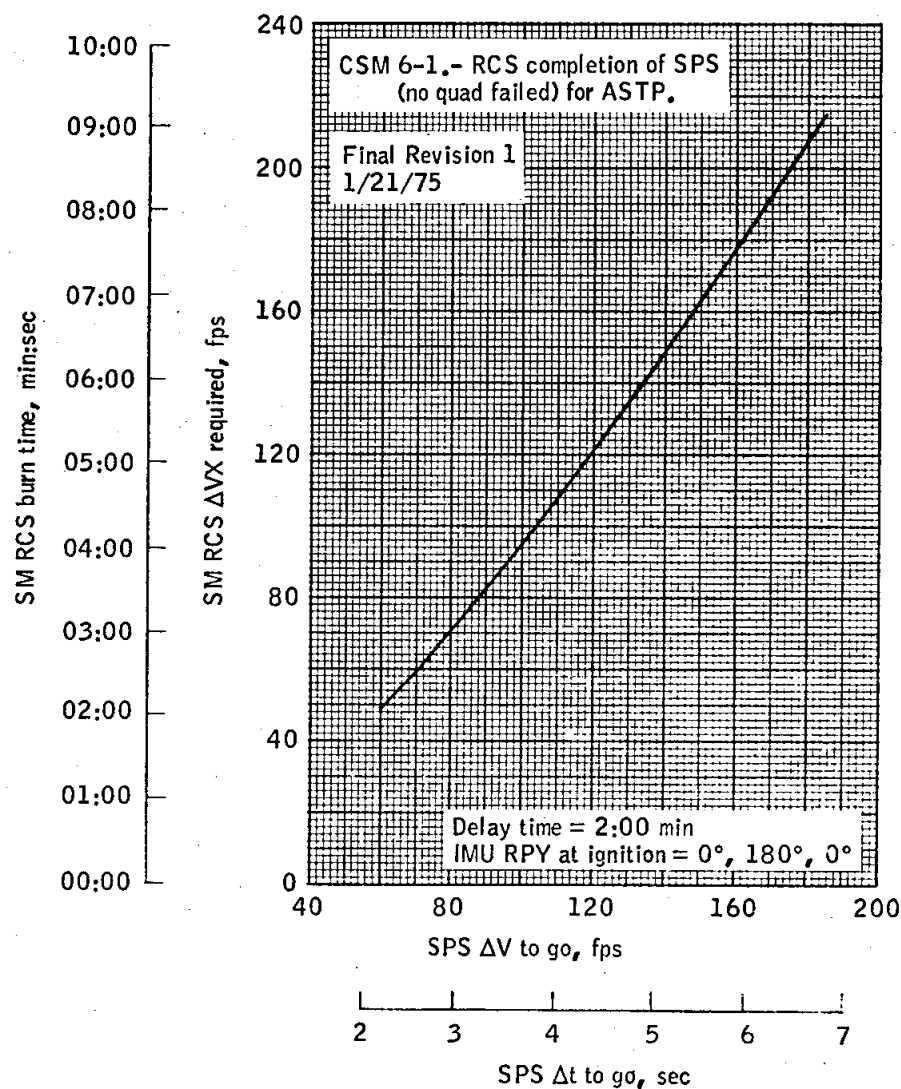
LOW POWER CHECKLIST

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

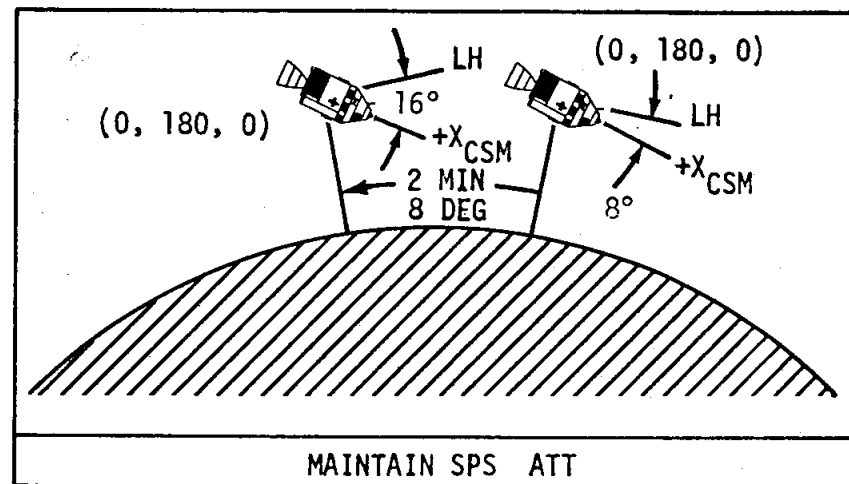
E/3-5

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**CONTINGENCY
PROCEDURES**



COMPLETION
CHARTS



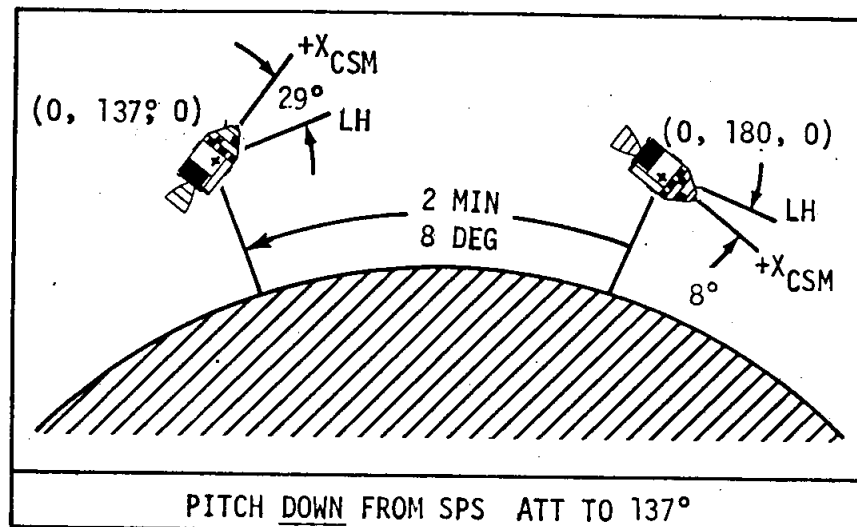
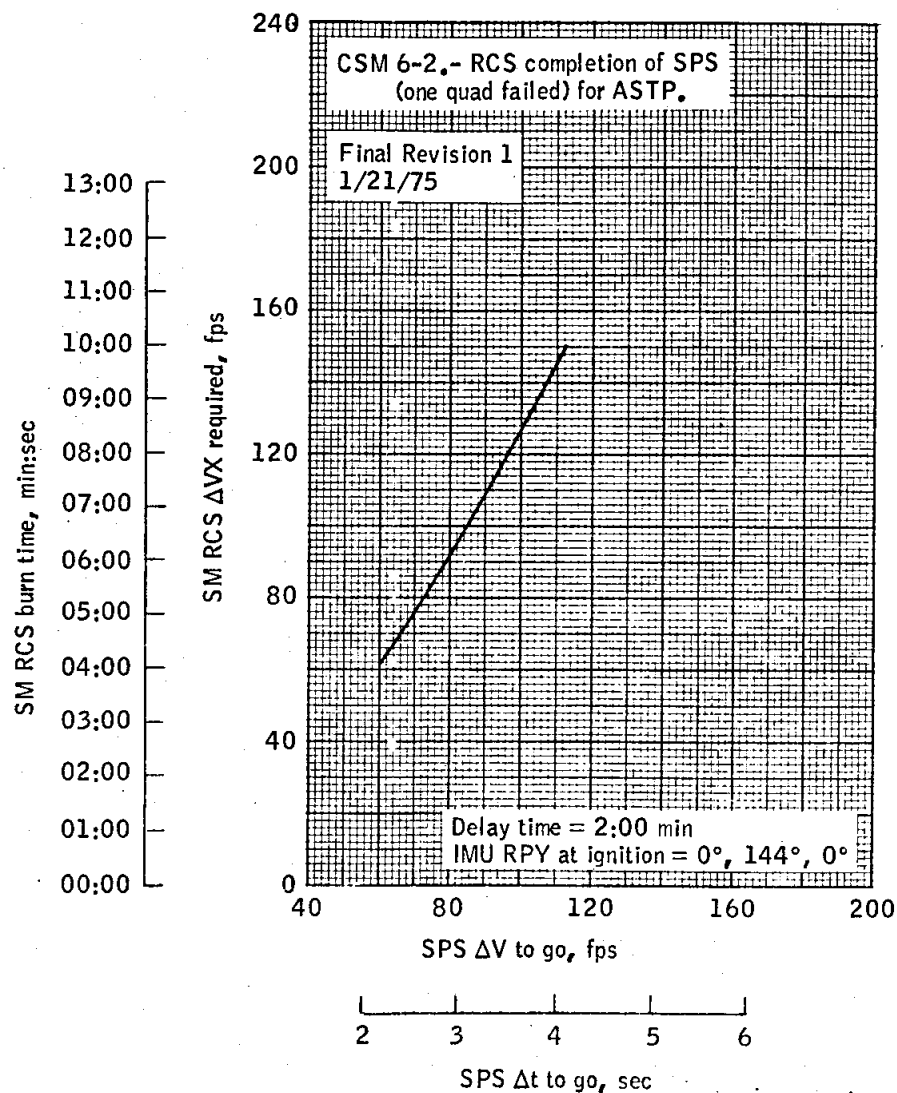
RCS COMPLETION OF SPS
(NO QUADS FAILED)

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 ΔV COUNTER +17 = _____ FPS.
3. ΔV 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 SH RCS ΔV_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.

E/4-1

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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 ΔV COUNTER +17 = _____ FPS.
2. ΔV THRUST - OFF (VERIFY)
3. V25 N17E, +E, +13700E, +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, 137, 0)
9. FLY ERROR NEEDLES
10. THC - BEGIN +X RCS THRUSTING
11. CHART SM RCS ΔV 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

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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

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 _____ DEG
* (31 DEG) WINDOW MK
* (HDS DN)
* AT TIG - 1 MIN,
* HOLD ATT
* GDC ALIGN PB - PUSH
* BURN SCS AT PAD PITCH
* AN _____ DEG (27 DEG MK)

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
FDAI SCAIF - 5/1
MAN ATT (3) - RATE CMD
DBD/RATE - MIN/LOW
BMAG MODE (3) - RATE 2
SC CONT - CMC/AUTO
FDAI (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
TAPE RCDR - HBR/RCD/FWD/CMD RESET
THC - ARMED
AT 59:30; EMS MODE - NORMAL
THC PWR - ON

99+50

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>70, GO AROUND 6 REVS
* IF 70 NM>HP>38 NM, GO TO
* NEXT PAGE, DO HYBRID ASAP
* IF HP<38 NM, DO POST BURN
* CK LIST

100+00

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 #1-OFF
THC - LOCKED
THC PWR - OFF
BMAG MODE(3) - RATE 2
GO TO Pg E/1-7

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

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 TW 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 >38 NM - BURN Hp = 38 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 NOT NOM)	R	+				XX	XX
	P	+				XX	XX
	Y	+				XX	XX
N85	ΔVX		0	0			
	ΔVY		0	0			
	ΔVZ		0	0			

PRO
OOE
SECS PYRO ARM (2) - SAFE
EMS - OFF/STBY
MAN ATT (3) - MIN IMP
RHC #1 - LOCKED
RHC PWR NORMAL #1 - OFF
RHC PWR DIRECT #1 - 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
Slow scroll to PAD DATA VIO
EMS MODE - STBY (verify)
EMS FUNC - ENTRY
Verify .05G 1t 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 *
* * * * *

E/5-3

DATE 2/7/75

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 (CCH)
- (326) GLY RSVR BYPASS VLV - OPEN (CCH)
GLY RSVR OUT VLV - CLOSE (CW)
GLY RSVR IN VLV - CLOSE (CW)
PRIM GLY ACCUM QTY 30-65%
- (379) PRIM ACCUM FILL VLV - ON (CCH) 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 AVC TO -100.0
EMS FUNC - AV
FOAI 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 - CHC: *
* 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 2/7/75

TAPE RCDR - HBR/RCD/FWD/CMD RESET

*IF LV GUID - CHC: *

* 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

ENS MODE - NORMAL

59:58

THRUST +X AND HOLD

00:00

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

LV TANK PRESS - FULL SCALE LOW (SEP IND)

*IF NO SEPERATION: *

* CB RCS LOGIC (2) - CLOSE *

* THC - CCH (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	ΔV_X		0						0				
	ΔV_Y		0						0				
	ΔV_Z		0						0				
N22	R	+				0	0	+				0	0
	P	+				0	0	+				0	0
	Y	+				0	0	+				0	0
	ΔV_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				
	RET 0.2G	XX	XX					XX	XX				
N66	DRE												
	BANK AN	R						R					
	RET RB	XX	XX					XX	XX				
	RET DROG	XX	XX					XX	XX				
N61	LAT		0						0				
	LONG												
REMARKS:													

E/6-2

DATE 2/7/75

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 (N81 AV'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 TW - POSITION RSI THROUGH
45 DEG SET TO LIFT UP (HDS DN)
OR TO LIFT ON (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 ± 0.2 NM
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 ± 0.1 G
SET SCROLL TO 37K FPS
EMS - OFF/STBY

E/6-3

DATE 2/7/75

00:50
03:39
11103
01111

RSI 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
03:49

* CONFIGURE PANEL & CB'S (NOT SWITCHES)
* ACTIVATE CH 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 F0V, 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 *
(SINGLE 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
03:59

TAKEOVER 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,
STDN CONFIRM BIAS IN PAD ΔVC
IF AV >10 FPS, EMS IS NO-GO

CH RCS ACTIVATION

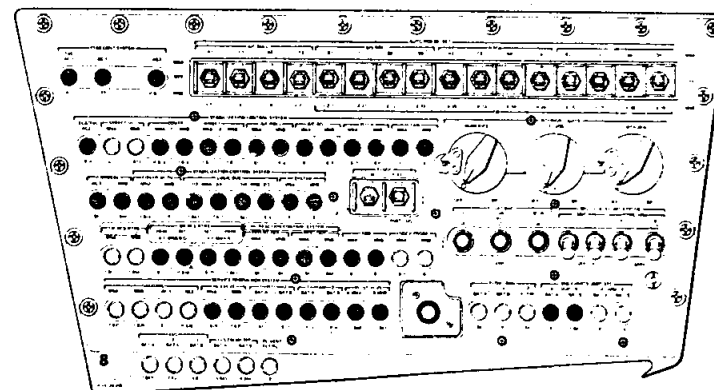
CB SECS ARM (2) - CLOSE
CUE STDN
SECS LOGIC (2) - ON (UP)
STDN CONFIRM GO
FOR PYRO ARM (IF POSS)
SECS PYRO ARM (2) - ON (UP)
CM RCS PRPLNT 1 & 2 TB (2) - GRAY
(VERIFY) (INDICATES FUEL AND
OXIDIZER ISOLATION VALVES OPEN)
CM RCS PRESS - ON (UP)
RCS IND SEL - CM1, THEN 2
HE PRESS STABILIZES AT 3600-3800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

PRE-SEP CK LIST

DC IND - BAT C
REQUEST STDN 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
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
GLY EVAP TEMP IN - MAN (REMOVES PHR
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

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

PITCH TO PAD P.05G

GO TO ENTRY (PG E/2-1)

F06 61

IF <25 VDC, PERFORM CM LO

PWR RECONFIG, PG E/7-8

P63

06 64

*IF LIFT DN*****

ROLL TO 180 DEG AND TRACK

HORZ ON 9 DEG WINDOW MK

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)

DON BOOTS, JACKETS, COUNTER

PRESSURE GARMENTS, AND CWG

HARNESS (W/O CONN COVER)

SNAP BIO-BELTS TO GARMENTS

(U2)

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 A1, A4, AND A6

SECURE BAGS WITH TIE DOWN STRAPS

ATTACHED TO LOCKERS

(R11)

UNSTOW UTCA CLAMPS, ATTACH TO

UTCA'S, AND STOW IN PORTABLE

WASTE STOWAGE CONTAINER (U1)

SPS BURN STATUS (AFTER TRIM)

ΔTIG	XX	XX					
ΔVC		XX					
FDAI	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			

COMPLETION RULES

SITUATION	COMPLETION RULE
VG <22 FPS	TRIM VG TO +/- .2
VG >22 FPS	RESTART SPS SCS
HP <75, NO RESTART	USE RCS COMPLETION CHARTS (4 OR 3 QUADS) AS APPLICABLE
HP >75, NO RESTART, 4 QUAD CAPABILITY	USE RCS 4 QUAD COMPLETION CHART

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

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)
 CM RCS LOGIC - ON (UP)
 CUE STDN IF IN CONTACT
 STDN 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
 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

 *BMAG MODE (3) - ATT 1/RATE 2
 *MAN ATT (3) - RATE CMD (VERIFY)
 *SC CONT - SCS
 *MNVN TO 0, -0 DEG
 * (PITCH FROM BLOCK DATA REMARKS)
 *DBD/RATE - MIN/LOW
 *AT RET .05G-90 SEC, JUST
 * BEFORE CM/SM SEP;
 * FDAI SCALE - 50/15
 * MAN ATT ROLL - ACCEL CMD
 *ROLL RIGHT ~20 DEG/SEC

CAUTION: ATT HOLD IN PITCH AND YAW MUST BE MAINTAINED UNTIL CM/SM SEP.

01+30

04+15

01+40

04+25

01+50

04+35

E/6-5

DATE 2/7/75

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
FOAI SELECT - 1
FOAI 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, OE, PRO, PRO
V24E AND LOAD PT 8' 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.

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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
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 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

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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 TW.
V25N20E
LOAD N20 WITH ASCP TW 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
N15E	55237E
77775E	E
	35040E (3270)
2703E	E
2661E	4647E
77775E	E
	24000E
2711E	E
	20456E
2667E (3250)	E
	5537E
	E
77775E	1677E
	E
2717E	5537E
	E
2675E	4E
	E
77634E	6E (3300)
	E
24017E	E
	31300E
47471E	E
	52033E
77634E	E
	31301E
24017E (3260)	E
	54034E
	E
	5537E (3305)
	E
34747E	
77634E	
24017E	
47303E	

V25 N26E	
10001E	
1642E	
50006E	

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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 IN CMC CONTROL

SYMPTOM - ISS LITE, ALARM 37777
SUSPECT CDU FROZEN OR RUNAWAY
V16 N20E COMPARE N20 WITH BALL
IF Δ EXISTS (EXCEPT YAH INTO GIMBAL LOCK,
IN WHICH CASE MAKE SCS/EMS ENTRY)
V25 N7E, 12E, 20E, 1E TO ZERO ALL CDU'S
LOAD N20 WITH 0, 50, 0
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:

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

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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

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

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OPTICS FROZEN

BEFORE DOING IMU ALIGN (PERFORM ONE TIME)

1. OPTICS PWR - OFF.
2. KEY V16 N91E AND COMPARE WITH TPAC'S
IF N91 = TPAC'S $\pm .22$ DEG, RECORD N91.
IF NOT, RECORD TPAC'S
3. KEY V64E, LOAD N94 WITH RECORDED SA & TA.
PRO, RECORD N78 REG 1 & REG 2.
PRO
4. 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 REFSHMAT),
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

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

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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

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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

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