

FRERE

JSC-09153

ASTP

FINAL

~~PCN-4~~

PCN 5
7/9/75 P&I

NOTE: This is a PAGE CHANGE NOTICE to be incorporated into the previous edition for the 4th & 5th LAUNCH OPPORTUNITIES as indicated

CUE CARDS

PREPARED BY
PROCEDURES BRANCH
CREW TRAINING & PROCEDURES DIVISION



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

JULY 8, 1975

ASTP

JSC-09153
PA-N6-11150-2

CUE CARDS

July 8, 1975

PREPARED BY:


W. K. Jones
Book Manager

APPROVED BY:


D. C. Schultz, Chief
Procedures Branch
Crew Training and Procedures Division

It is requested that any organization having comments, questions, or suggestions concerning this document contact W. K. Jones, TRW Task 104, Building 4, Room 265, Telephone 483-2541.

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes should be submitted to the ASTP Flight Data File Manager, T. W. Holloway, CG5, Building 4, Room 224A, Telephone 483-4771.

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CHANGE CONTROL RECORD

APPOLO/SOYUZ TEST PROJECT CUE CARDS CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
001	REFERENCE	1/20/75	
002	REFERENCE	1/20/75	
003	REFERENCE	1/20/75	
004	REFERENCE	1/20/75	
005	REFERENCE	1/20/75	
006	REFERENCE	1/20/75	
007	REFERENCE	1/20/75	
008	REFERENCE	1/20/75	
009	REFERENCE	1/20/75	
010	REFERENCE	1/20/75	
011	REFERENCE	1/20/75	
012	REFERENCE	1/20/75	
013	REFERENCE	1/20/75	
014	REFERENCE	1/20/75	
015	REFERENCE	1/20/75	
016	REFERENCE	1/20/75	
017	REFERENCE	1/20/75	
018	REFERENCE	1/20/75	
019	REFERENCE	1/20/75	
020	REFERENCE	1/20/75	
021	REFERENCE	1/20/75	
022	PCN-1	3/10/75	Superceded Chg #35
023	PCN-1	3/10/75	
024	PCN-1	3/10/75	
025	PCN-1	3/10/75	
026	PCN-1	3/10/75	
027	PCN-1	3/10/75	
028	PCN-1	3/10/75	
029	PCN-1	3/10/75	
030			
031	PCN-1	3/10/75	Disapproved
032	PCN-1	3/10/75	
033	PCN-1	3/10/75	
034			
035	PCN-1	3/10/75	
036	PCN-1	3/10/75	
037	PCN-1	3/10/75	
038	PCN-1	3/10/75	
039	PCN-1	3/10/75	
040	PCN-1	3/10/75	

CHANGE CONTROL RECORD

APPOLO/SOYUZ TEST PROJECT CUE CARDS CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
041	FINAL	5/13/75	
042	FINAL	5/13/75	
043	FINAL	5/13/75	
044	FINAL	5/13/75	
045	FINAL	5/13/75	
046	FINAL	5/13/75	
047	FINAL	5/13/75	
048	FINAL	5/13/75	
049	FINAL	5/13/75	
050	FINAL	5/13/75	
051	FINAL	5/13/75	
052	FINAL	5/13/75	
053	FINAL	5/13/75	
054	FINAL	5/13/75	
055	FINAL	5/13/75	
056	FINAL	5/13/75	
057	FINAL	5/13/75	
058	FINAL	5/13/75	
059	FINAL	5/13/75	
060	FINAL	5/13/75	
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062	FINAL	5/13/75	
063	FINAL	5/13/75	
064	FINAL	5/13/75	
065	FINAL	5/13/75	
066	FINAL	5/13/75	
067	FINAL	5/13/75	
068	FINAL	5/13/75	
069	FINAL	5/13/75	
070	FINAL	5/13/75	
071	FINAL	5/13/75	
072	Flight copies only, not included in CUE CARD book		
073	FINAL	5/13/75	
074	FINAL	5/13/75	
075	FINAL	5/13/75	
076	FINAL PCN-1	6/27/75	
077	FINAL PCN-1	6/27/75	
078	FINAL PCN-1	6/27/75	
079	FINAL PCN-1	6/27/75	
080	FINAL PCN-1	6/27/75	

CHANGE CONTROL RECORD

APPOLO/SOYUZ TEST PROJECT

CUE CARDS

CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
081	FINAL PCN-1	6/27/75	
082	FINAL PCN-1	6/27/75	
083	FINAL PCN-1	6/27/75	
084	FINAL PCN-1	6/27/75	
085	FINAL PCN-1	6/27/75	
086	FINAL PCN-1	6/27/75	
087	FINAL PCN-1	6/27/75	
088	FINAL PCN-1	6/27/75	
089	FINAL PCN-1	6/27/75	
090	FINAL PCN-1	6/27/75	
091	FINAL PCN-1	6/27/75	
092	FINAL PCN-1	6/27/75	
093	FINAL PCN-1	6/27/75	
094	FINAL PCN-1	6/27/75	
095	FINAL PCN-1	6/27/75	
096	FINAL PCN-1	6/27/75	
097	FINAL PCN-2	7/3/75	
098	FINAL PCN-2	7/3/75	
099	FINAL PCN-1	6/27/75	
100	FINAL PCN-3	7/4/75	
101	FINAL PCN-3	7/4/75	
102	FINAL PCN-3	7/4/75	
103	FINAL PCN-4	7/8/75	
104	} PCN-5	7/8/75	
105			

CUE CARDS

LIST OF EFFECTIVE PAGES

FINAL	5/13/75	
PCN-1	6/27/75	
PCN-2	7/3/75	(ALTERNATE LAUNCH DATES ONLY)
PCN-3	7/4/75	

PAGE	CONTENTS/CARD NO. AND TITLE	DATE
	<i>PCN-5 7/9/75</i>	
*i	LIST OF EFFECTIVE PAGES <i>7/9/75 (P.I.)</i>	7/4/75
*ii	LIST OF EFFECTIVE PAGES (contd) <i>7/9/75 (P.I.)</i>	7/4/75
iii	MISSION PHASE CONFIGURATION SUMMARY	6/27/75
iv	LAUNCH CONFIGURATION	6/27/75
v	T&D CONFIGURATION	5/13/75
vi	RNDZ CONFIGURATION	6/27/75
vii	EXP CONFIGURATION	6/27/75
viii	DEORBIT CONFIGURATION	5/13/75
ix	ENTRY CONFIGURATION	5/13/75
x	LANDING CONFIGURATION	5/13/75
1-1	L1 AC BOOST/ABORTS	6/27/75
1-2	Velcro locations (back of card)	5/13/75
1-3	L2 AC ABORTS III & IV	5/13/75
1-4	Velcro locations (back of card)	5/13/75
1-5	L3 PWR LOSS LAUNCH <i>7/9/75 (P.I.)</i>	5/13/75
1-6	L4 SATURN BOOST	5/13/75
1-7	L5 DP BOOST	5/13/75
1-8	L6 EPS/ECS ABORTS	6/27/75
1-9	L7 LAUNCH ABORT PAD	5/13/75
1-10	L8 LANDING	6/27/75
1-11	PNL 275	5/13/75
1-12	L9 DAP LOAD	5/13/75
1-13	L10 RCS MON, RCS tb's	5/13/75
1-14	L11 ECS MON	5/13/75
1-15	ECS MALF & PWR LOSS	5/13/75
1-16	L12 PWR USERS	5/13/75
1-17	COMM	5/13/75
2-1	F1 T&D	6/27/75
2-2	Velcro locations (back of card)	5/13/75
2-3	F2 SPS BURN RNDZ	5/13/75
2-4	SPS BURN RNDZ (contd)	5/13/75
2-5	F3 PWR LOSS ΔV	5/13/75
2-6	UVA RANGE	5/13/75
2-7	F4 ΔV FAILURES	5/13/75

* Current data changes

PAGE	CONTENTS/CARD NO. AND TITLE	DATE
2-8	F5 PWR LOSS ΔV	5/13/75
2-9	PNL 229 cb's, EPS BUSSES	5/13/75
2-10	F6 SPS BURN RULES	5/13/75
2-11	F7 SPS BURN ENTRY	5/13/75
2-12	SPS BURN ENTRY (contd).	5/13/75
2-13	F8 DEORB ATT	5/13/75
2-14	F9 ENTRY	6/27/75
2-15	PWR LOSS ENTRY	6/27/75
2-16	F10 LOSS OF ATS-6 VOICE	6/27/75
2-17	Velcro locations (back of card)	5/13/75
3-1	E1 UVA PREP	6/27/75
3-2	UVA 150 M O/P	6/27/75
3-3	E2 UVA 500 M O/P	5/13/75
3-4	UVA 1000 M I/P	6/27/75
3-5	E3 SM EXP	6/27/75
3-6	Velcro locations (back of card)	5/13/75
3-7	E4 MICROBIAL EXCHANGE	5/13/75
3-8	E5 INTERIOR PHOTO	5/13/75
*3-9	EXTERIOR PHOTO	7/4/75
3-10	E6 CM TV	5/13/75 7/2/75 (P+I)
3-11	CM TV (contd)	6/27/75
3-12	E7 SOYUZ TV	5/13/75
3-13	SOYUZ TV (contd).	5/13/75
3-14	E8 2nd CM PHOTO.	6/27/75
3-15	2nd CM PHOTO (contd).	5/13/75
3-16	E9 3rd CM PHOTO.	5/13/75
3-17	Velcro locations (back of card)	5/13/75
3-18	E10 1st SOYUZ PHOTO	6/27/75
3-19	Velcro locations (back of card)	5/13/75
3-20	E11 2nd SOYUZ PHOTO	5/13/75
*3-21	3rd SOYUZ PHOTO	7/4/75
3-22	E12 CM TV (COSMONAUT TK-3)	5/13/75
3-23	CM TV (COSMONAUT TK-3) (contd).	5/13/75
3-24	E13 2nd CM PHOTO (COSMONAUT).	6/27/75
3-25	2nd CM PHOTO (COSMONAUT) (contd).	5/13/75
3-26	E14 3rd CM PHOTO (COSMONAUT).	5/13/75
3-27	Velcro locations (back of card)	5/13/75
3-28	E15 VISUAL OBSERVATION SCALE	6/27/75
*3-29	E16 UVA 150M O/P (G&N/NO EMP)	7/4/75
*3-30	UVA 500M O/P (G&N/NO EMP)	7/4/75

* Current data changes

4th LAUNCH OPPORTUNITY

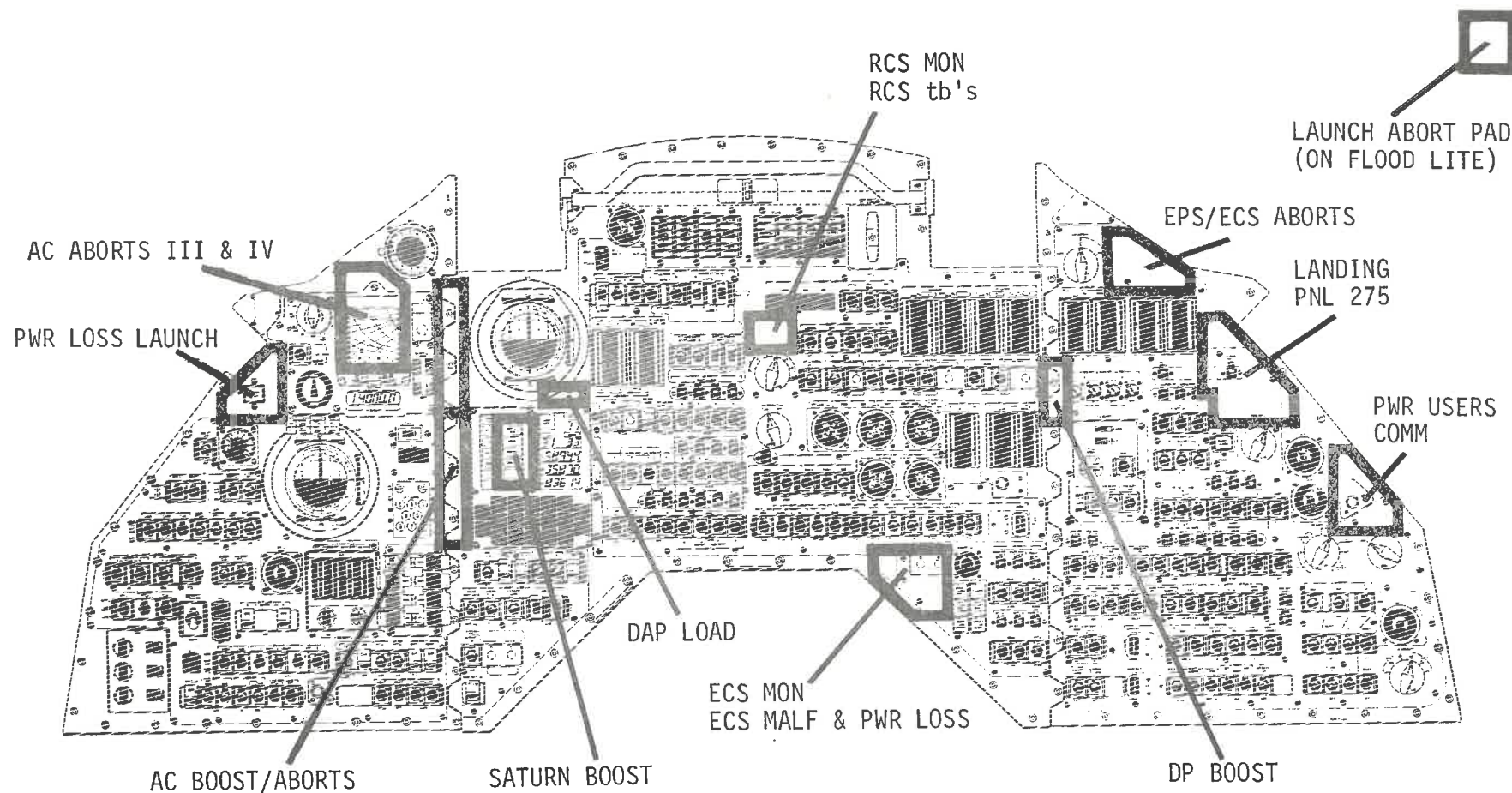
MISSION PHASE CONFIGURATION SUMMARY

6/27/75

MISSION PHASE		LAUNCH	T&D	RNDZ	EXP	DEORBIT	ENTRY	LANDING	REMARKS
CARD DESCRIPTION									
L1	AC BOOST/ABORTS	X							
L2	AC ABORTS III & IV	X							
L3	PWR LOSS LAUNCH	X							
L4	SATURN BOOST	X							
L5	DP BOOST	X							
L6	EPS/ECS ABORTS	X							
L7	LAUNCH ABORT PAD	X							
L8	LANDING, PNL 275	X	.....					X	
L9	DAP LOAD	X	X	X	X	X	X	.....	
L10	RCS MON, RCS tb's	X	X	X	X	X	X	X	
L11	ECS MON, ECS MALF	X	X	X	X	X	X	X	
L12	PWR USERS, COMM	X	X	X	X	X	X	X	
F1	T&D		X						Stow in AC suit pocket for launch
F2	SPS BURN RNDZ			X					
F3	PWR LOSS ΔV , UVA RANGE			X	X	X			Reverse to UVA RANGE for UVA EXP
F4	ΔV FAILURES			X	X	X	.....		
F5	PWR LOSS ΔV , PNL 229			X	X	X	.....		
F6	SPS BURN RULES			X	X	X	.....		
F7	SPS BURN ENTRY					X			
F8	DEORB ATT					X	.....		
F9	ENTRY, PWR LOSS ENTRY					X	.....		
F10	LOSS OF ATS-6 VOICE			X	X	X	.....		Stow in suit pocket after PGA OFF
E1	UVA PREP, 150 M O/P				X				Install prior to 1st UNDKG
E2	UVA 500 M O/P, 1000 M				X				Install after 150 M O/P is complete
E3	SM EXP			X	X	.....			Install prior to rev 18
E4	INTERIOR PHOTO, EXT		X	X	X	X	.....		Install early in RNDZ phase
E5	MICROBIAL EXCHANGE				X				Stow in ME Kit #3 after 1st transfer
E6	CM TV				X				
E7	SOYUZ TV				X				Stow in TSB for 2nd transfer
E8	2nd CM PHOTO				X				Use for 2nd JA period
E9	3rd CM PHOTO				X				Use for 3rd JA period
E10	1st SOYUZ				X				Stow in TSB for 1st transfer
E11	2nd SOYUZ PHOTO, 3rd				X				Stow in TSB for 2nd transfer
E12	CM TV (COSMONAUT TK-3)				X				
E13	2nd CM PHOTO (COSMONAUT)				X				Use for 2nd JA period
E14	3rd CM PHOTO (COSMONAUT)				X				Use for 3rd JA period
E15	VISUAL OBS SCALE			X	X				
E16	UVA 150M O/P (NO EMP) 500M O/P (G&N/NO EMP)				X				Contingency; use during UVA if reqd YELLOW PAPER

X Required

..... Optional,
see page v

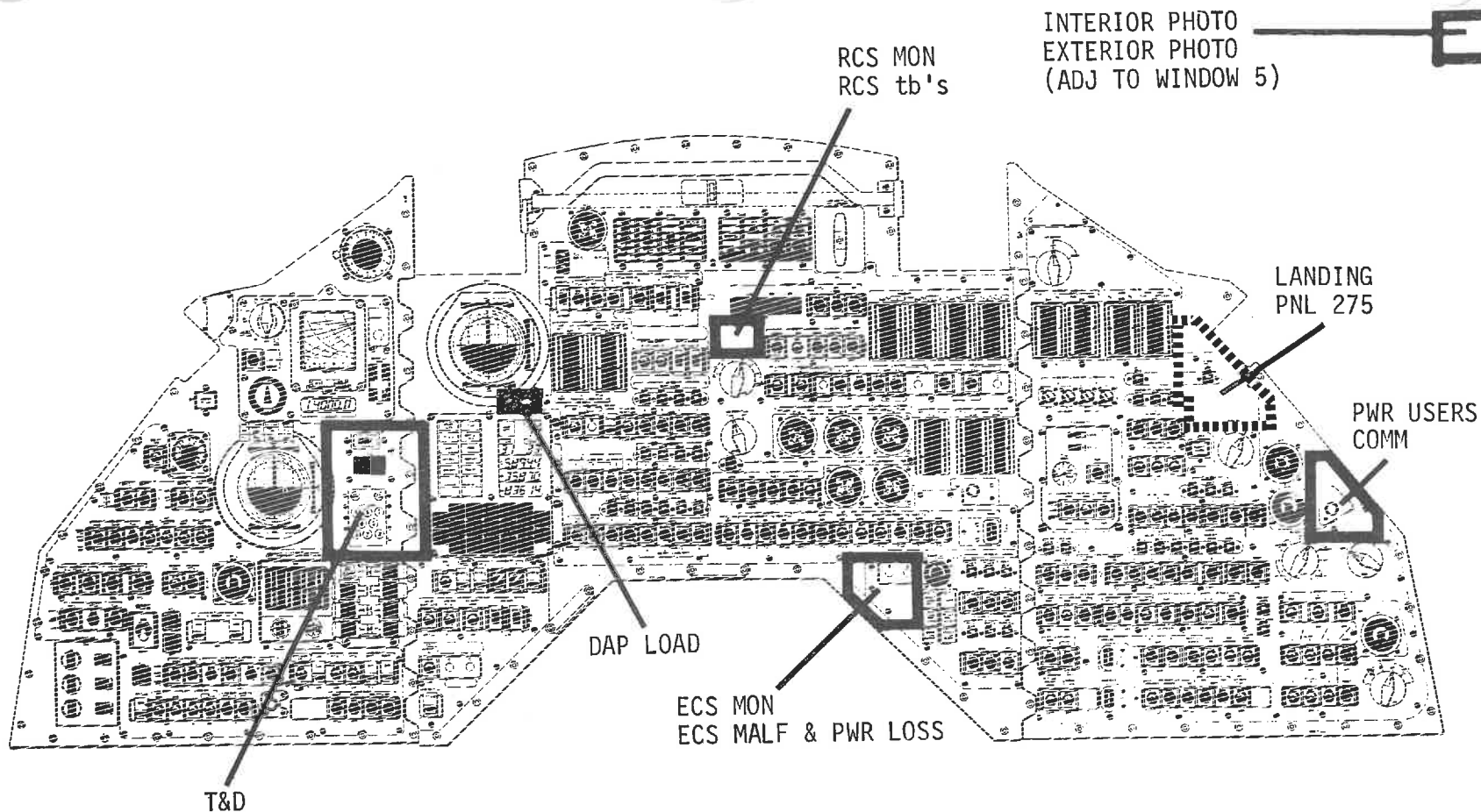


Note:

Launch phase cue cards are installed as shown by the backup crew during the pre-launch countdown. All other cue cards are stowed prior to launch in the DATA CARD KIT in compartment R3. After launch, the flight crew will move cards to and from stowage as required. The T&D cue card is stowed in the AC suit pocket for launch.

LAUNCH CONFIGURATION

6/27/75



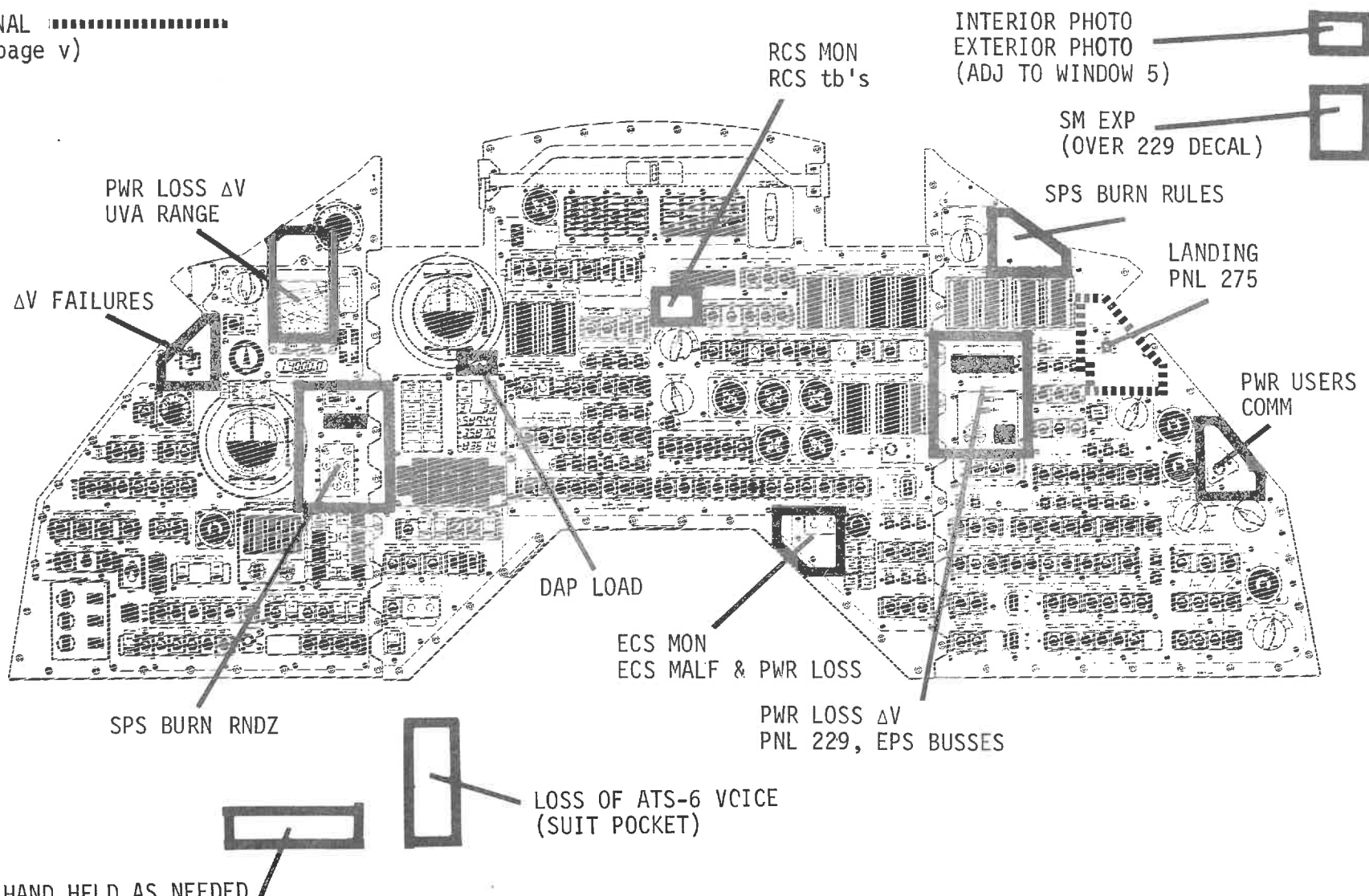
OPTIONAL

Cards indicated with dotted lines are not required for the phase shown but may (flight crew option) be left in place on the panel in lieu of returning to stowage. Cards will be required for subsequent phase. After final usage, crew may elect to leave cards that are not in the way on panels until splashdown.

T&D CONFIGURATION

5/13/75

OPTIONAL
(See page v)



RNDZ CONFIGURATION

6/25/75

OPTIONAL
(See page v)

- 1) UVA PREP
UVA 150M O/P
- 2) UVA 500M O/P
UVA 1000M O/P
- 3) UVA 150M O/P (NO EMP)
UVA 500M O/P (G&N/NO EMP)

RCS MON
RCS tb's

INTERIOR PHOTO
EXTERIOR PHOTO
(ADJ TO WINDOW 5)

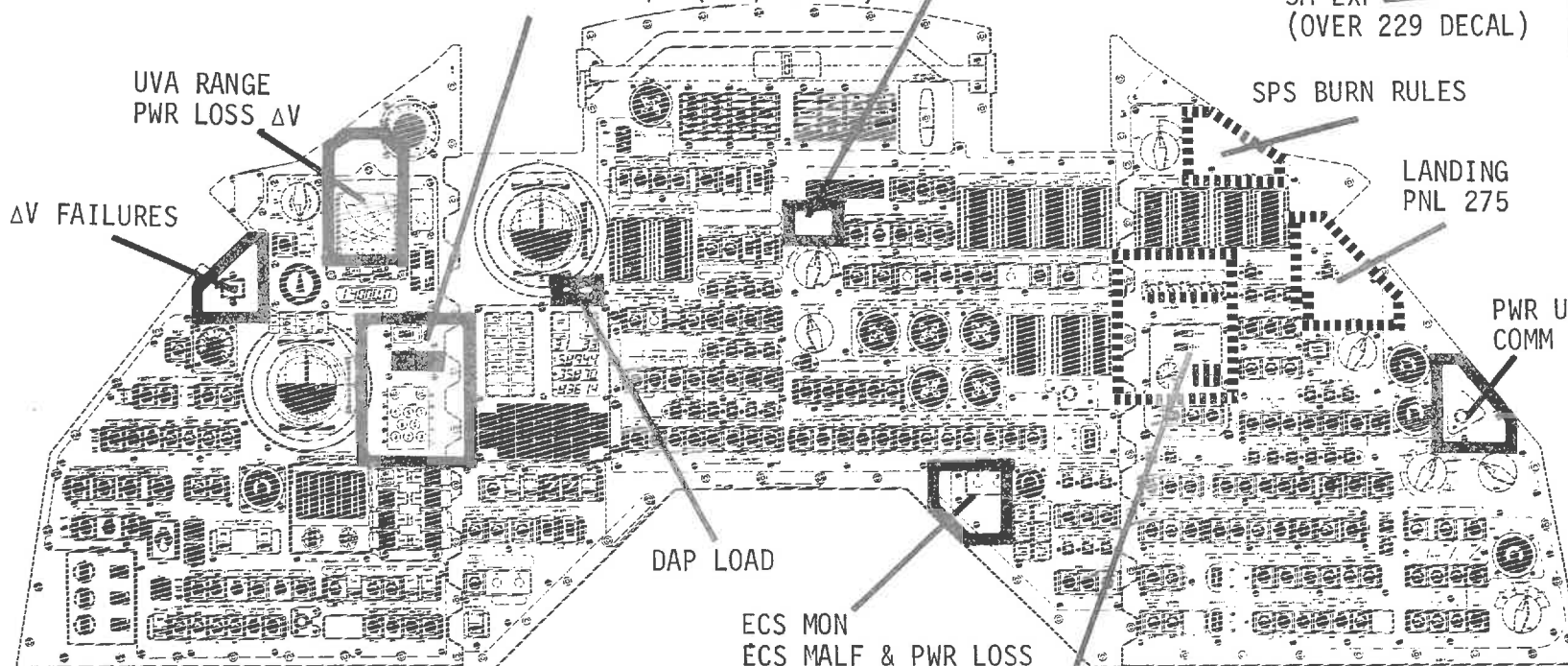
SM EXP
(OVER 229 DECAL)

SPS BURN RULES

LANDING
PNL 275

PWR USERS
COMM

vii



PWR LOSS ΔV
PNL 229, EPS BUSSES

CARDS HAND HELD AS NEEDED

- 1) CM TV
- 2) 2nd CM PHOTO
- 3) 3rd CM PHOTO
- 4) CM TV (COSMONAUT TK-3)
- 5) 2nd CM PHOTO (COSMONAUT)
- 6) 3rd CM PHOTO (COSMONAUT)
- 7) VISUAL OBSERVATION SCALE

LOSS OF ATS-6 VOICE
(SUIT POCKET)

MICROBIAL EXCHANGE
(ME KIT #3)

1st SOYUZ PHOTO
(TSB FOR 1st TRANSFER)

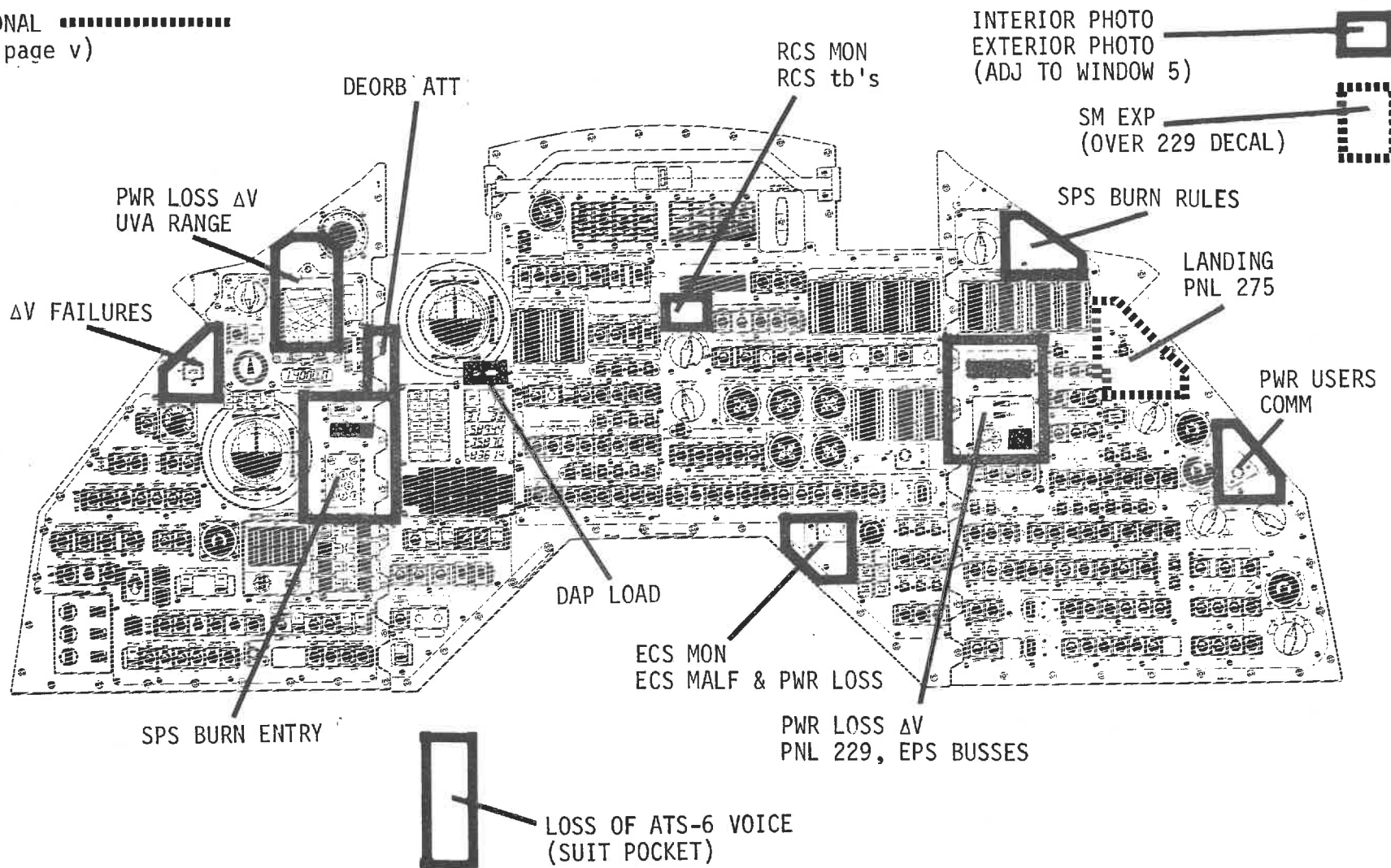
2nd SOYUZ PHOTO
3rd SOYUZ PHOTO
(TSB FOR 2nd TRANSFER)

SOYUZ TV
(TSB FOR 2nd TRANSFER)

EXPERIMENT CONFIGURATION

6/27/75

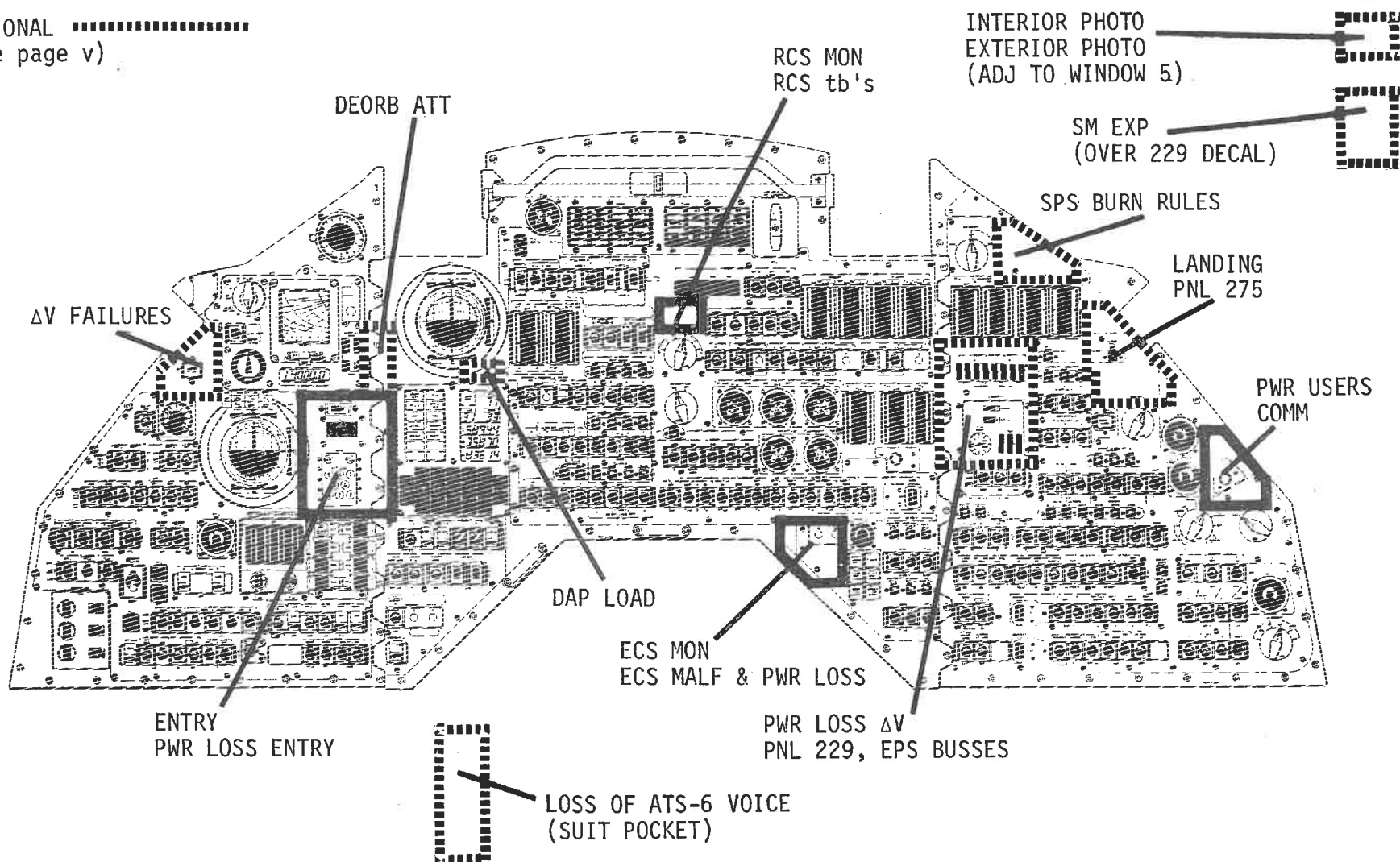
OPTIONAL
(See page v)



DEORBIT CONFIGURATION

5/13/75

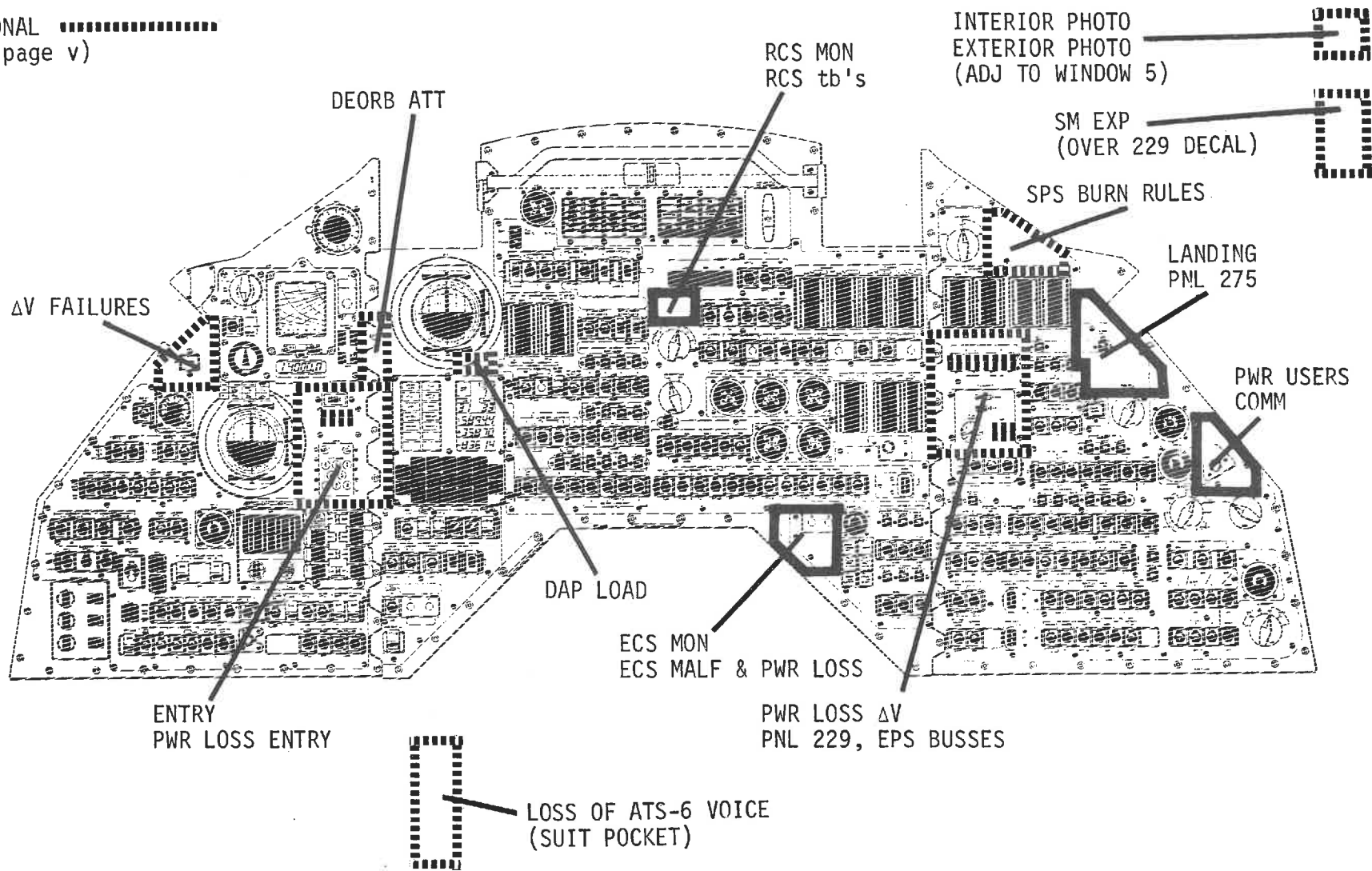
OPTIONAL
(See page v)



ENTRY CONFIGURATION

5/13/75

OPTIONAL
(See page v)



LANDING CONFIGURATION

5/13/75

AC BOOST/ABORTS

FINAL O/T

6/27/75

6/27/75		:00	IA	LIFTOFF																
		:10		ROLL & PITCH																
:14	A CCW NEUT *CM/SM SEP* ELS AUTO ELS LOGIC TWR/APEX/DROGUES 3800 MAINS	1:01	IB	PRPLNT DUMP-RCS CMD V82E, N62																
:11	B CCW NEUT *CM/SM SEP* CANARDS	1:40		EDS AUTO - OFF 2 ENG OUT - OFF LV RATES - OFF																
:14	ELS AUTO ELS LOGIC CAB PRESS INCR TWR/APEX/DROGUES 24K	1:47	IC	H=16.5																
				+5°/sPY +20°/sR																
		2:10		PITCH STOP																
		2:16		IECO																
		2:21		STAGING																
:11	C CCW NEUT *CM/SM SEP* CANARDS KR N44 CM RCS (5) N62	2:51	II	TWR (TFF >1+20) V46E, V46E, N62 MAN ATT P-RT CMD STEAM & H2)-AUTO GUID INIT																
PLATFORM GO AND NO GO OR HA >32: HA <32: TWR JETT Damp R,Y MAN ATT P-RT CMD PITCH+5°/s BMAGS 1/2 HI P: R 90 0/135/0 Damp rates EMS ENTRY/NORM R HDS DN .05G/EMS ROLL on		6:15		SEC FU (4) - OPEN																
		7:00		GMBL MOTORS ON P+0.7, Y-0.6																
30K	ELS LOGIC N67 ELS AUTO	9:24	IIIA	(24015)																
24K	TWR/APEX/DROGUES	9:33	IIIB																	
	II CCW (4 sec) LV SEP KR N44 THC NEUT, +X to :24 BMAGS 1/2 TFF >2m: YAW 45L BAT C SM SEP CM RCS (5) 0/130/0 By 1+40 cb DM FNL SEP (2) DM FNL SEP (2) EMS ENTRY/NORM N62 .05G/EMS ROLL - on ELS LOGIC/AUTO APEX/DROGUES	9:36	IV	(24950)																
:03				+10°/sPY +20°/sR																
:05		9:43	SECO	N62																
		<table><tr><td>N44</td><td>N50</td><td>N62</td><td>N67</td></tr><tr><td>H.A</td><td>Δ.R</td><td>VI.</td><td>RTOG.0</td></tr><tr><td>H.P</td><td>H.P</td><td>Hdot.</td><td>L.AT +N</td></tr><tr><td>TFF</td><td>TFF</td><td>.H</td><td>L.ING +E</td></tr></table>			N44	N50	N62	N67	H.A	Δ.R	VI.	RTOG.0	H.P	H.P	Hdot.	L.AT +N	TFF	TFF	.H	L.ING +E
N44	N50	N62	N67																	
H.A	Δ.R	VI.	RTOG.0																	
H.P	H.P	Hdot.	L.AT +N																	
TFF	TFF	.H	L.ING +E																	
		MAN GUID		MAN SIVB C/O																
		LV CMC: ASAP		Lead C/O by																
		After TWR JET,		200 fps																
		use RHC		THC - CCW <3s																
		MAN SIVB C/O																		
30K																				
24K																				

LOCATION

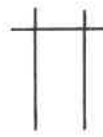
MDC-2 on left side
of FDAI & DSKY

CUE CARDS



5/13/75

5/13/75



L2

AC ABORTS III & IV

5/13/75

CUT OUT
THIS
PART

:03 **III**
:05 CCW (4 sec)
LV SEP
THC NEUT, +X to :24
BMAGS 1/2 N50

IIIA: 180/HORZ(355)/0
(SEF/DN/HORZ)

IIIB: 180/HORZ(199)/0
(BEF/UP/HORZ)

EMS - NORM
RATE - LOW
LV IND - GPI
 ΔV THRUST A
ULLAGE (15 sec)
THRUST PB

PAD
(2:05)

BURN: HOU ΔV
OR: $\Delta R = -200.0'$
OR: TFF <1+40(IIIA)
TFF <1+00(IIIB)

RATE - HI
TFF >2m: YAW 45L
BAT C
SM SEP
CM RCS (5)

0/112/0

DM FNL SEP cb(2)/sw(2)
EMS ENTRY/NORM N62
.05G/EMS ROLL - on
ROLL 55L
ELS LOGIC/AUTO
APEX/DROGUES

30K
24K

:03 **IV**
:05 CCW (4 sec)
LV SEP
THC NEUT, +X to :24
BMAGS 1/2

180/(CHART P)/0

EMS - NORM
RATE - LOW
LV IND - GPI
 ΔV THRUST A
ULLAGE (15 sec)
THRUST PB
SCS TVC P - RATE CMD

<1:30

FLY HDOT TO ZERO
BURN TO CHART VI
*If unable to fly *
*HDOT to </100/: *
* KR N44 *
* -HDOT: BURN *
* HP >70nm + 4sec *
* +HDOT: BURN *
* HA >200, then AK*

AK

P47 V82

180/HORIZ/0

Hdot = 0:
Burn per **IV** to
HP = 70nm + 4sec

L2

5/13/75

4 PLY SHIM
VELCRO

4 PLY SHIM
VELCRO

HOOK
VELCRO

HOOK
VELCRO

L3

PWR LOSS LAUNCH

AC1 5/13/75

BMAGS - RATE 2
FDAI SEL - 2
TVC SERVO - AC2/MNB
SCS TVC - RATE CMD

AC2

✓ BMAGS - RATE 1
FDAI SEL - 1
TVC SERVO - AC1/MNA
TVC with TWs

BAT BUS A

EDS AUTO - OFF
AUTO RCS (Ring 1) - OFF
TVC GMBL DR - 2
after GMBL MTRS ON
cb SPS P2 & Y2 - open
after GMBL MTRS ON

BAT BUS B

EDS AUTO - OFF
AUTO RCS (Ring 2) - OFF
TVC GMBL DR - 1
after GMBL MTRS ON
cb SPS P1 & Y1 - open
after GMBL MTRS ON

MNA

EDS AUTO - OFF
FDAI SEL - 2
TVC GMBL DR - 2
SCS TVC - RATE CMD
BMAGS - RATE 2
cb SPS P2 & Y2 - open
after GMBL MTRS ON

MNB

EDS AUTO - OFF
TVC GMBL DR (2) - 1
SCS TVC (2) - RATE CMD
cb SPS P1 & Y1 - open
after GMBL MTRS ON

L3

LAUNCH LOGIC BUS LOSS

LOGIC BUS 1

BMAGS - RATE 2 or
ATT1/RATE 2 (as reqd)
SPS THRUST - DIR (as reqd)

HOOK
VELCRO

LOGIC BUS 2

✓ FDAI SEL - 1/2
✓ BMAG (R) - RATE 1

LOGIC BUS 3

THC - cw (~~as reqd~~) "SC CONT-CMC"
✓ BMAG (P&Y) - RATE 1
SCS TVC (2) - RATE CMD

LOGIC BUS 4

FDAI SEL - 1

HOOK
VELCRO

HOOK
VELCRO

7/9/75 (P&I)
5/13/75

L4

L4

5/13/75

SATURN BOOST

FINAL O/T

5/13/75

DET	Θ	VI	H	H
0+00	90	1 340	0	.0
0+30	84	1 423	393	.9
1+00	66	1 973	1013	4.3
1+30	46	3 253	1738	11.0
2+00	31	5 571	2592	21.7
2+30	26	7 565	2826	36.0
3+00	29	8 000	2313	48.6
3+30	32	8 530	1942	59.1
4+00	28	9 159	1593	67.8
4+30	25	9 891	1263	74.8
5+00	22	10 730	951	80.3
5+30	18	11 679	664	84.3
6+00	15	12 749	404	86.9
6+30	11	13 955	177	88.3
7+00	8	15 318	-8	88.7
7+30	4	16 865	-141	88.4
8+00	1	18 519	-231	87.4
8+30	357	20 223	-288	86.1
9+00	354	22 184	-261	84.7
9+30	350	24 483	-125	83.7
9+43	350	25 629	-4	83.6

HOOK VELCRO
SHIM-CONTINUOUS STRIP OF 4 PLY
HOOK VELCRO

FABRICATE TRAINING CARDS WITH FRONT
AND BACK SHEETS LAMINATED DIRECTLY.
DO NOT USE 4 PLY STRATBOARD CENTERS.

L5

5/13/75

L5

DP BOOST

5/13/75

4 PLY SHIM

FINAL O/T

0:00 IA
 0:50 CAB PRESS
 1:01 IB
 1:30 Ck CAB PRESS
 1:47 IC
 2:16 IECD/STAGING/IGN
 2:51 II TWR JETT
 STM & H2O - AUTO
 6:15 OMNI A/C
 7:00 GMBL MTRS
 9:24 IIIA
 9:33 IIIB
 9:36 IV
 9:43 SECO

4 PLY SHIM

N44	N50	N62	N67
H.A	Δ .R	VI.	RTOG.0
H.P	H.P	Hdot.	L.AT +N
TFF	TFF	.H	L.NG +E

CUE CARDS

1-7

LOCATION
 MDC-3 over
 SPS QTY

EPS/ECS ABORTS

EPS ABORTS 6/27/75

UNCONTROLLED MN BUS SHORT

LOSS OF ALL AC PWR:

Up to 7+00 Abort MODE I or II
After 7+00 Boost to $\Delta R = -200.0$,
abort MODE III. (NO BURN)

After $\Delta R = -200.0$: NO ACTION

LOSS OF ALL FC's & (1) ENTRY BAT

LOSS OF (2) FC's & (2) ENTRY BATS

LOSS OF BOTH BAT BUSSES

CUT OUT
THIS PART

97 MNA(B) SHORT >25A
EDS AUTO - OFF
INV 1(2) AC1(2) - OFF
INV 1(2) - OFF
INV 3 - MNB(A)
INV 3 AC1(2) - on
FC's: All MNA(B) - OFF,
All MNB(A) - on(up)**
** OFF if after SEP
275 cb's MNA(B) BAT
BUS A(B) - open
MNB(A) BAT C - close

BAT A(B) SHORT >10A
EDS AUTO - OFF
RCS RING 1(2) - OFF
275 cb's MNA(B) BAT
BUS A(B) - open
MNA(B) BAT C - close

FC LOSS
Try RECONNECT
Try FC's 1&2 - MNB
& FC3 - MNA
Then SCE PWR - AUX
EDS AUTO - OFF
275 cb MNA & MNB
BAT C - close

ECS ABORTS

CAB & SUIT - LOSS OF PRESS or O2 INADEQUATE
FIRE OR SMOKE

AC2 AC INV 2 - OFF
AC INV 2 BUS 2 - OFF
FC PUMPS 2&3 - AC1

AC1 AC INV 1 - OFF
AC INV 1 BUS 1 - OFF
FC PUMPS 1 - AC2
SUIT COMP - AC2
ECS GLY PUMP - AC2
S-BD NORM XPDR - SEC
S-BD NORM PWR AMP - SEC

AC PWR LOSS - LAUNCH



6/27/75

LANDING

6/27/75

90K (___:___) Watch

STM peg 0:00

Stop DAC

DAC - T8, 12fps

50K CAB PRESS B/E 0:50

SECS PYRO (2) - ARM

30K ELS LOGIC/AUTO

Start DAC

24K RCS/APEX/DROGUES 1:36

23K CAB PRESS INCR

*No incr by 17K *

CAB PRESS (RH) - DUMP

10K Cab 10 psi 2:22

VHF ANT - RECY

RET

.05G

BBO

EBO

DRO

MNS

CUT OUT
THIS PARTCUT OUT
THIS PART

VHF AM A - SMPLX

VHF BCN - ON

Stow DAC

STRUT LOCKS (4) - UNLOCK

cb FLT/PL BAT BUS A&B

& BAT C (3) - closed

cb FLT/PL MNA/B (2) - open (unsuited)

cb BAT RELAY BUS (2) - open (unsuited)

800 CAB PRESS REL (2) - CLOSE

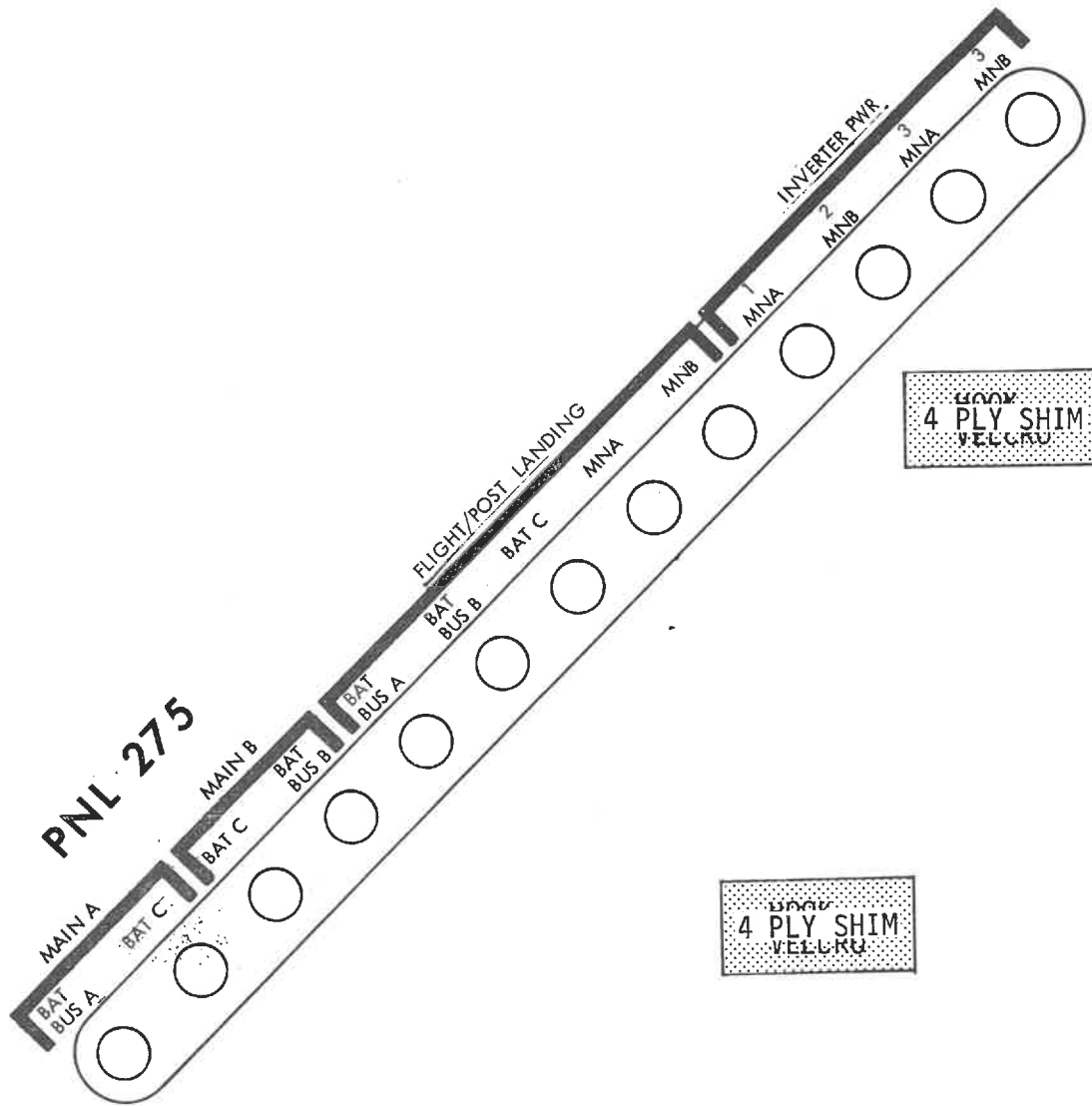
DIR 02 OPEN (suited)

MN BUS TIE (2) - OFF

POST LANDING

cb MN REL PYRO (2) - close

5/13/75



L9

	VEHICLE CONFIG	QUAN A/C FOR $\ddot{x}$	QUAD B/D FOR $\ddot{x}$	ERR DEAD BAND	RATE SELECT
R1	0 = No DAP 1 = CSM or CSM & DM 3 = CSM & SIVB 6 = CSM & DM	0 = Fail A/C 1 = Use A/C	0 = Fail B/D 1 = Use B/D	0 = $\pm 0.5^\circ$ 1 = $\pm 5.0^\circ$	0 = $0.05^\circ/\text{sec}$ 1 = $0.2^\circ/\text{sec}$ 2 = $0.5^\circ/\text{sec}$ 3 = $2.0^\circ/\text{sec}$
	5/13/75				
	Roll Quad Select	Quad A	Quad B	Quad C	Quad D
R2	0 = Use B/D 1 = Use A/C	0 = Fail 1 = Use	0 = Fail 1 = Use	0 = Fail 1 = Use	0 = Fail 1 = Use
	HOOK VELCRO				

L9

	ROLL PREFERENCE	QUAD A/C FOR $\ddot{x}$	QUAD B/D FOR $\ddot{x}$	PITCH	YAW
R1	0 = B/D 1 = A/C	0 = Avoid 1 = Allow	0 = Avoid 1 = Allow	0 = Couple 1 = Force (Z)	0 = Couple 1 = Force (Y)
R2	CHANNEL 5 JET INHIBIT (X-trans, P&Y couples) (Code shown will inhibit jet shown)		1 = B3(+Y - $\ddot{x}$) 2 = B4(-Y + $\ddot{x}$)	1 = A4(-P + $\ddot{x}$) 2 = D3(+Y + $\ddot{x}$) 4 = D4(-Y - $\ddot{x}$)	1 = C3(+P + $\ddot{x}$) 2 = C4(-P - $\ddot{x}$) 4 = A3(+P - $\ddot{x}$)
R3	CHANNEL 6 JET INHIBIT (Roll couples, P&Y forces)		1 = C1(+R +Y) 2 = C2(-R -Y)	1 = D2(-R +P) 2 = A1(+R -Y) 4 = A2(-R +Y)	1 = B1(+R +P) 2 = B2(-R -P) 4 = D1(+R -P)
	5/13/75		HOOK VELCRO		

L10

RCS MON

		HOOK VELCRO	5/13/75
C He T	45-80	2250 Ballistic Reqmt CW 260/330, Burst 332+	
M He P	4100-4200		
MANF P	287-295		
S PKG T	115-175	CW 75/205, Htr 120-129 ~2250 at PRPLNT DEPL CW 145/215, Burst 220+ ~13 at PRPLNT DEPL	
M He P	4115-4215		
FU P	177-185		
PRPL Q	100	CW >215, Burst 220+	
He T	50-90		
P He P	4115-4215		
S FU P	177-185		
M PRPL Q	100		
He T	50-90		

L10

RCS tb's

RCS tb's			
HOOK			HOOK
VELCRO	5/13/75		VELCRO
RCS VLV tb	PWR SOURCE	PWR POS	VLV POS WHEN tb-bp
CM PRPLNT 1(2)	MNA(B)	bp	1 or Both closed
SM He AC(BD)	MNB(A)	bp	1 or Both closed
PRIM AC(BD)	MNB(A)	bp	1 or Both closed
SEC AC(BD)	MNB(A)	gr	1 or Both NOT OPEN (or tb PWR LOSS)
PSM He	MNA&B	bp	1 or Both closed
PSM MANF	MNA&B	bp	1,2,3 or 4 closed
QUAD AC(BD)	MNB(A)	gr	1 or Both NOT OPEN (or tb PWR LOSS)

RING INTERCONN

SECS PYRO ARM (2) - on
CM RCS LOGIC - on
CM PRPLNT DUMP - on, then OFF

ECS MON

5/13/75

SUIT ΔP	O2 FLOW	CRYO PRESS	H2 TKS	SRG TK	O2 TKS
-1 to -3.5	.2-.45	NOMINAL	225-260	865-935	865-935
		CW	220-270		800-950
		RELIEF VLV	273-285	1020-1070	983-1010

RAD TEMP INLET PRIM/SEC	RAD TEMP OUTLET PRIM SEC	GLY EVAP TEMP OUT	STEAM PRESS	GLY DISCH PRESS
60-90	-12 to 65 35-70	40-43	.1-.2	40-52
Decr <42: Mixing start	Incr >48: Mixing stop EVAP start	EVAP off: 38-51		ACCUM Q/4 +40

CUT OFF
THIS PART

SUIT COMP ΔP	ACCUM QTY %	H2O QTY %
.3-.4	PRIM 30-65	POTABLE 10-100
CW <.22	If <30:	Post SEP: >90
	Fill 40-55	WASTE 15-85
	SEC 30-60	If >85: Dump

TEMP	PRESS
SUIT 45-55	4.7-5.3
EVAP off: 45-70	CAB <3.75:
CAB 70-80	SUIT 3.7

ECS MALF & PWR LOSS

4 PLY SHIM
YELLOW

CAB P DECR - FLOW HI
CAB PRESS RLF (2) -
CLOSED
Suit up
✓ BATT VENT - CLOSED
✓ WASTE VENT - CLOSED
✓ OVBD DRAIN - OFF

AC1

SUIT COMP - AC2
GLY PUMP - AC2
RAD FLOW CONT - 2
382 GEIT/EVAP OUT
manually >40

AC2

SEC LOOP - EVAP/AC1
GLY PUMP - OFF
PRI H2O FLOW - OFF

4 PLY SHIM
YELLOW

CAB P INCR - FLOW HI

✓ DIR 02 - close(CW)
DEMAND REGS - OFF
H2O ACCUM - OFF
H2O/GLY TK REG - OFF
EMER CAB PRESS - OFF
REPRESS - OFF
382 H2O ACCUM - OFF

MNA

RAD FLOW CONT - 2
H2O & URN (2) - HTR B
H2O ACCUM 2 - AUTO/ON

MNB

RAD FLOW CONT - 1

4 PLY SHIM
YELLOW

P INCR - NO FLOW HI

✓ 02 FLOW mtr:
Cycle H2O ACCUM
or DIR 02
SRG TK - OFF, mon
MN REG (2) - OFF

5/13/75

PWR USERS

AC BUSES 5/13/75

EPS: *FC PUMPS, *CHGR,
CRYO SCE, H2 FANSECS: *SUIT COMP, *PUMPS,
RAD CNTL; AC1 SEC EVAP,
FANS, PRI TEMP IN & STM VLV;
AC2 PRI EVAP AUTOCUT OUT
THIS PARTLTS: *G&N; AC1 8 INT/NUM, 5 INT;
AC2 EXT SPOT, 100 INT/NUM, EMSSCS: *SERVOS, *SIG CONDR/DB, BMAGS,
FDAI/GPI; AC1&2 GDC/ECA; AC2 ORDEAL

T/C: *AMPL, *DSE, *PCM, *XPNDRS, *FM XMTR

.....
MN DC BUSESEPS: *INV 3, 1&2, CHGR, UTIL, CTE, C/W, FC PRG,
O2 & PRG HTRS, BUSES INST, FLT, PL, EXP, BAT;
MNA&B FLOODS; MNA O2 50w HTR TK2; MNB 50w TK1

ECS: *POT HTR, ACCUM, EVAP, RAD, H2O/URN & STM HTRS,

RCS: LOGIC, BD Q/P & CM HTRS, He/PSM MANF & CM PRP VLVS;
MNA AC Q/P SEC HTRS, BD PRP/SEC FU & PSM PRPLNT VLVS
MNB AC Q/P PRI HTRS, AC PRP/SEC FU & PSM PRPLNT VLVS

SPS: HTRS, GMBL CNTL, He/PLT & N2 VLVS * = switchable

G&C: *RCS SEL, *SERVOS, *RHC-D, IMU, IMU HTR, OPTICS, CMC,
RCS ENABLE, BMAG, FDAI/GPI, LOGIC, EMS, RHC-N, THC;
MNA&B GDC/ECA; MNA DIR ULL B4D3; MNB A4C3, ORDEAL

COMMPRIVACOM

Headset pnl 9 CCU

9 VHF FM - OFF*

S-BD - T/R

INTERCOM - OFF*

VHF AM - OFF*

6,10 S-BD - OFF*

4-PLY SHIM

*Return to T/R
after PRIVACOM

NO COMM SOYUZ

✓ Soyuz range <300 KM

✓ all 225 cb's - close

✓ 815 cb VHF XCVR DM A - close

From DM: ✓ 815 cb DM AUDIO/TV DM B - close

Using VHF AM: Set squelch to noise + 1

Sel alt VHF antenna

Use alt spkr box, headset and/or audio ctr

Inform MCC-H:

NO COMM SOYUZ

4-PLY SHIM

4-PLY SHIM

NO COMM MCC-H

✓ all 225 cb's - close

From DM: ✓ 815 cb DM AUDIO/TV DM B - close

Use alt spkr box, headset and/or audio ctr

✓ AOS, try alt S-BD link (ATS-6/STDN)

(If LOS: Try SEC XPNDR, PWR AMPL)

3 VHF AM A - SIMPLEX

6,9,10 VHF AM - T/R

Sel best VHF antenna

Try VHF

5/13/75

L12

F1

PET : : SIVB MNVR
 : : SEP
 / / N17 SEP
 / / N22 DOCK

MAN ATT P - ACCEL CMD
Pitch up 2°/sec
When GDC pitch > 200:
 PRO, PRO
MAN ATT P - RT CMD
F50 18 MNVR COMPL, ENTR
THC +X 3 sec (~.7 fps)
Load RCS DAP 11102, 01111
SM RCS SEC FU (4) - OPEN
FC REAC - NORM, Start DAC

CUT OUT
THIS PART

```
(PET)
59:00 FUEL TANK vent
59:39 SIVB mnvr compl

SEP Set DET (up to SEP)
      ASCP tw's - 0/180/0
      cb RCS LOGIC (2) - open
      ✓ cb SECS LOGIC (2) - close
      cb SECS ARM (2) - close
      SECS LOGIC (2) - on
      RHC & THC - ARMED
      V49, F06 22 DOCK
      FC REAC - LATCH
      GDC ALIGN (0/180/0)
```

```

(DET)
56:00 TVC SERVO #1 - AC1/MNA
      VTR/HD ON
      TAPE - RCD
58:00 TV STA SEL CM1 - CM2
      HBR/RCD/FWD/CMD RESET
      SECS PYRO (2) - ARM
59:30 EMS - NORM
      RCS CMD - ON
59:58 THC +X, hold
-----
00:00 CSM/LV SEP pb
      LV TANK PRESS - SEP ind
:02  THC release (~.5 fps)
      ✓ SM RCS tb (12) - gray
:15  SC CONT - CMC/AUTO
      V62E

```

Stab/align CSM
At capture:
PROBE E/R to A &/or B - bp
CMC - FREE
Damping 10 sec
THC align P & Y < 3°
DK PROBE RETR - PRIM 1

```
*No RETR: *
* At 20 sec, SEC 1 *
```

Dk latches engaged:
 PROBE E/R tb - gray
 (A-1,5,9 & B-3,7,11)
 DK PROBE EXT D/REL - OFF
 DK PROBE RETR (2) - OFF
 SECS PYRO (2) - SAFE
 SECS LOGIC (2) - OFF
 EDS PWR - OFF
 TVC SERVO #1 - OFF
 ✓ RCS LOGIC (2) - OPEN
 cb DK PROBE (2) - open
 cb EDS (3) - open
 COAS - OFF
 EMS - STBY/OFF
 LV/SPS IND - GPI
 THC & RHC - LOCKED
 Stop DAC
 PCM BIT RT - LOW
 VTR/HD - OFF
 CM1 & CM2 TV STA PWR - OFF
 TUNL LTS - on
 ✓ EXT LTS - OFF
 COUCHES 90/0/180
 226 cb 50W HTRS (2) - open

LOCATION
MDC-1 covering ABORT
and LV light panel

F1

5/13/75

HOOK
VELCRO

HOOK
4 PLY SHIM
VELCRO

HOOK
VELCRO

HOOK
VELCRO

5/13/75

SPS BURN RNDZ**G&N**

AUTO RCS (12) - on
 EMS ΔV CK (1586.8)
 FDAI SCALE - 5/1
 MAN ATT (3) - RATE CMD
 ATT DB/RATE - MIN/LOW
 *BMAG (3) - RATE 2
 *SC CONT - CMC/AUTO
 *FDAI (2) - INRTL
 Set GDC tw

GMBL TRIM

P +0.70Y -0.60

TAILOFF

13.0**SCS DELTA**

BMAG (3) - 1/2
 SC CONT - SCS
 NO CMC CHART BURN:
 FDAI 1 - ORB RT

HOOK
VELCROCUT OUT
THIS PART

cb SPS (8) & SCS (24) - close
 SCS TVC (2) - RATE CMD
 TVC GMBL DR P&Y - AUTO, ATVC - HI
 RHC 2 - ARMED
 Set EMS ΔV (Min 7) ?
 Set DET (V16 N45)
 *P40 to F50 18, PRO (MNVR)
 GDC ALIGN

54:00 MN BUS TIE (2) - on
 No ATS: HBR/RCD/FWD/CMD RESET
 TVC SERVO PWR 1 - 1/A, 2 - 2/B
 RHC PWR NORM (2) - AC, DIR (2) - OFF
 BMAG (3) - 1/2

SC CONT - SCS
 GMBL MOT P1 & Y1 - START, Set trim
 ✓ MTVC

*
 THC - CW, ✓ NO MTVC
 GMBL MOT P2 & Y2 - START, Set trim
 *SC CONT - CMC
 ✓ MTVC

THC neutral, ✓ NO MTVC
 */ GPI returns to 0,0
 RHC PWR NORM (2) - AC/DC
 RHC PWR DIR (2) - MNA/MNB

*BMAG (3) - RATE 2, PRO
 *BMAG (3) - 1/2, ENTR

F 50 25 *GMBL TEST OPTION, PRO

4 PLY SHIM
VELCRO

RHC to Burn ATT

SCS TVC (2) - AUTO

✓ SC CONT - SCS

GPI to trim

HOOK
VELCRO

Ck Burn ATT
 Omit this step
 Omit this step

HOOK
VELCRO

F2

SPS BURN RNDZ (contd)

06 40 *RATE HIGH
 RHC 2 & THC - ARMED
 ✓ EMS, DET, SPS N2 & He
 59:00 EMS - NORM
 THC PWR - ON
 59:30 ΔV THRUST A (B) - NORM
 Ck PIPAS <2 fps 5 sec
 59:40 *ULLAGE

HOOK
VELCRO

✓ RATE - LOW

5/13/75

06 40 BYP
 V21N01E
 3451E
 37777E

59:46 ULLAGE

F 99 40 ENG ON ENABLE REQ
 PRO
 00:00 *IGN
 00:03 ΔV THRUST (2) - NORMAL
 *
 XX:XX ECO
 F 16 40 ΔV THRUST (2) - OFF

THRUST PB

RATE - HIGH

4 PLY SHIM
VELCRO

PRO
 AUTO RCS (all) - on

F 16 85 Null residuals & log
 PRO
 AUTO RCS A/C ROLL - OFF
 GMBL MOT (4) - OFF
 TVC SERVO PWR 1 & 2 - OFF
 *BMAG (3) - RATE 2
 MN BUS TIE (2) - OFF
 EMS FUNC - ΔV SET/VHF RNG
 EMS MODE - BU/VHF RNG

HOOK
VELCRO

✓ 1/2

VHF RNG - RESET
 THC & RHC - LOCKED
 RHC PWR DIR (2) - OFF
 THC PWR - OFF
 PCM BIT RATE - LOW

HOOK
VELCRO

G&N Reignition

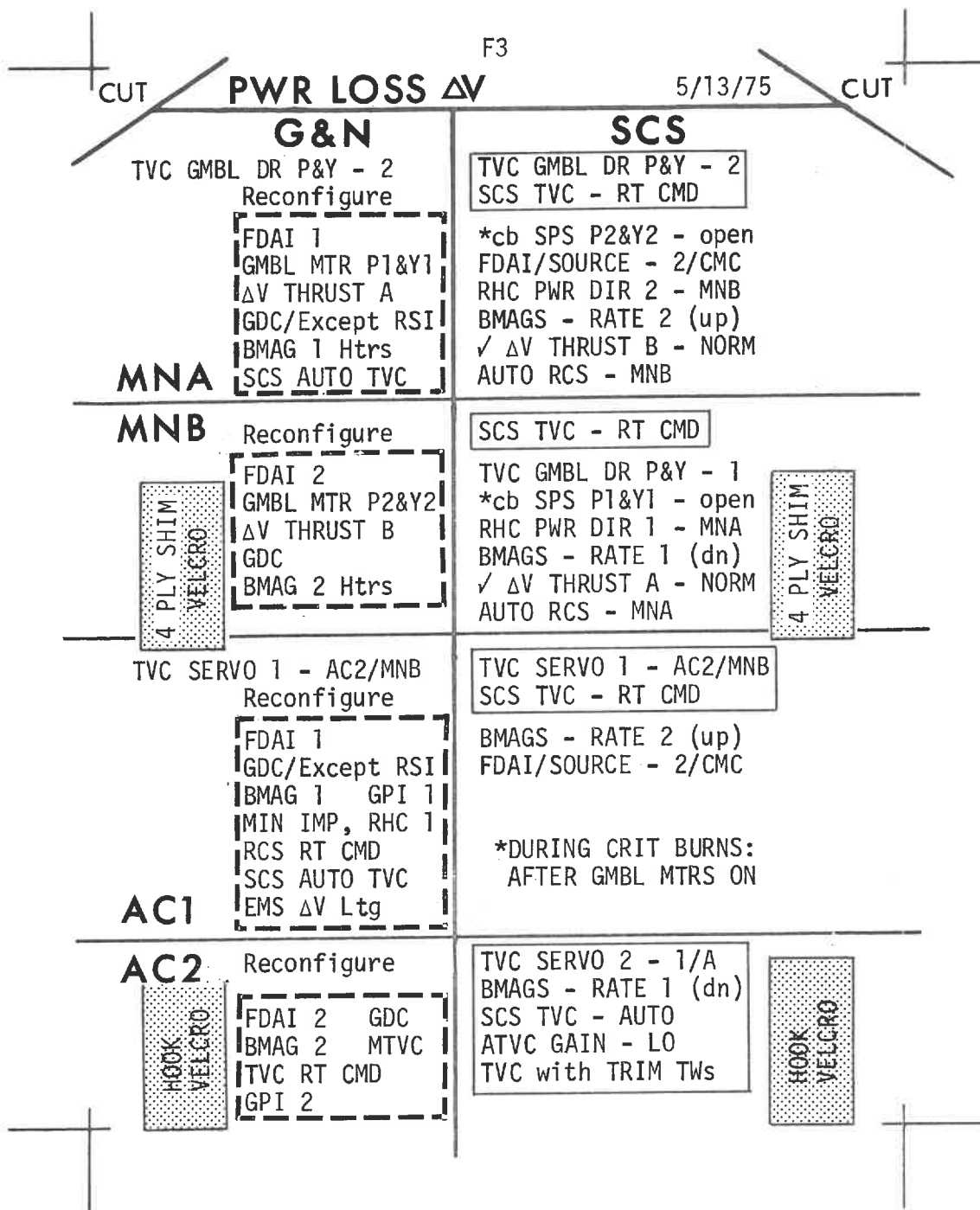
F97 40 ENTR
 06 40
 F99 40 ΔV THRUST
 GMBL TRIM
 ULLAGE
 PRO: IGN

SCS Reignition

SC CONT - SCS
 Ck ATT
 BMAGS - 1/2
 TVC (2) - AUTO
 EMS - ΔV/NORM
 ΔV THRUST ON
 ULLAGE
 THRUST PB

RCS Completion

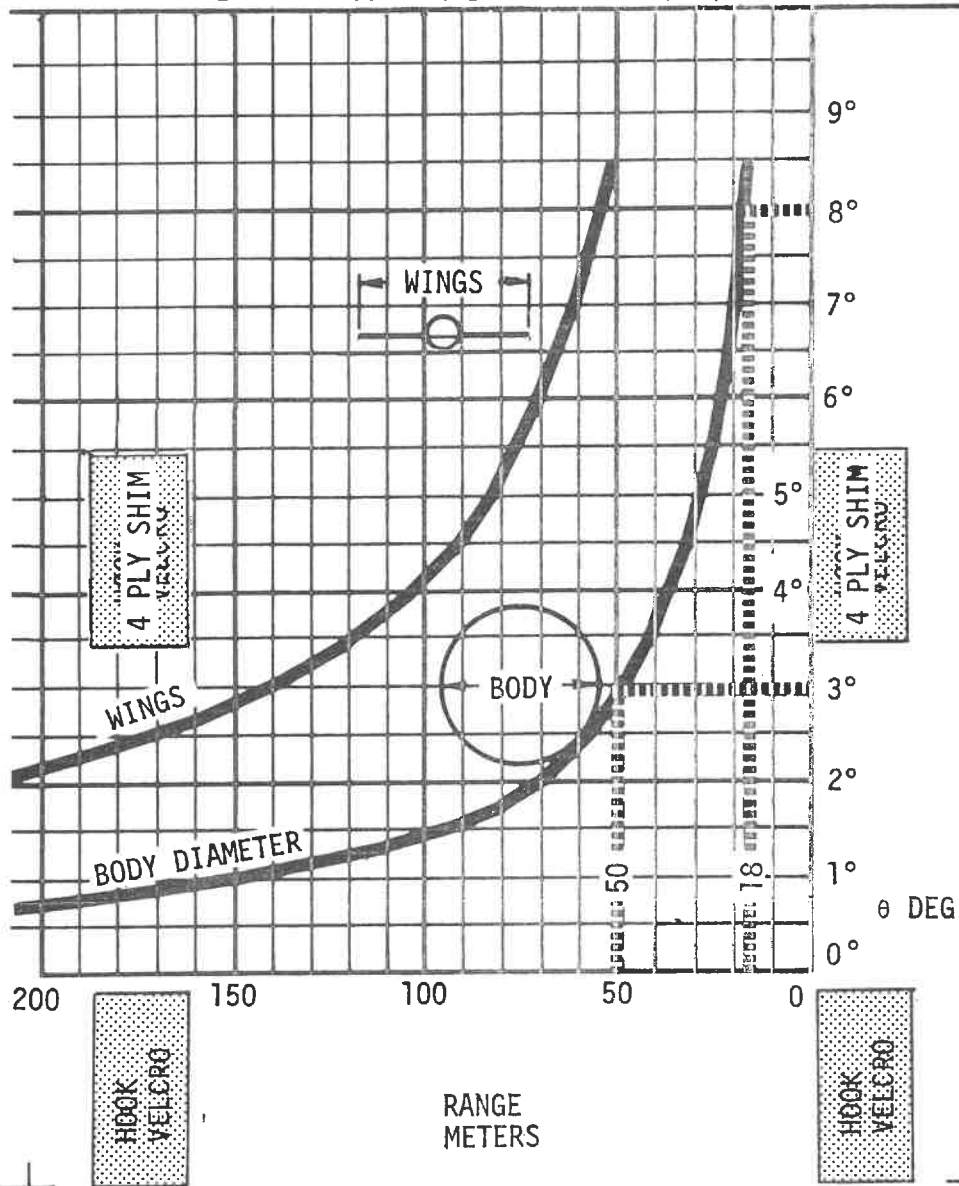
F 97 40 ENTR
 06 40
 F 99 40 ENTR
 F 16 85
 Burn RCS/THC



F3

UVA RANGE

5/13/75



CUT OUT
THIS PART**SCS**NO START OR
EARLY ECO

SPS THRUST - DIR (MOM)

ABNORMAL DYNAMICS AUTO

THC CW, use MTVC
BMAGS - RATE 2RATE NEEDLE HARDOVER &
FDAI DIVERGE Δ V THRUST (2) - OFF
BMAGS - RATE 1

F4

 Δ V FAILURES**G&N** 5/13/75NO START, CMC LITE,
ISS + PROG LITES,
ALARM 1407 OR EARLY ECOSCS TVC (2) - AUTO
SC CONT - SCS
✓ ATT, ULLAGE
SPS THRUST - DIR (MOM)

ABNORMAL DYNAMICS

THC CW, use MTVC
After SHUTDOWN:
AUTO RCS (16) - OFF

NO ECO AFTER THRUST OFF

cbs SPS PILOT VLV - open

EMS & N40 STILL COUNTING
AFTER SHUTDOWNSC CONT - SCS
THC PWR - OFF
cbs DIR ULL - open
AUTO RCS SEL - OFF
SM RCS PRPLNT
(AFFECTED QUAD) - OFF

F4

SM RCS
THRUSTER FAILED ONChg to other SC CONT
AUTO RCS SEL (16) - OFF
(as reqd)RHC PWR DIR (2) - MNA/MNB
Stop SC rates
w/DIR RCSHOOK
VELCRO

IF CONDITION PERSISTS

AUTO RCS SEL (16) - ON (as reqd)
MAN ATT (3) - ACCEL CMD
Stop SC rates
Pn1 8 cb SCS DIR ULL (2) - open
RHC PWR DIR (2) - OFF

IF CONDITION PERSISTS

Neutralize RHC
SM RCS PRPLNT (affected quad) - OFFHOOK
VELCROHOOK
VELCRO

5/13/75

5/13/75

PWR LOSS ΔV**MNA**

AC INV 3 - MNB
 AC INV 3 AC1 - ON
 AC INV 1 - OFF
 AC INV 1 AC1 - OFF
 A11 FC's MNA - OFF
 A11 FC's MNB - on(up)
 275 cb MNA

BAT BUS A - open

CRYO H2 1 htr
 CRYO 02 1 100w htr
 CRYO 02 2 50w htr
 INV 1

MNB

AC INV 3 - MNA
 AC INV 3 AC2 - ON
 AC INV 2 - OFF
 AC INV 2 AC2 - OFF
 A11 FC's MNB - OFF
 A11 FC's MNA - on(up)
 275 cb MNB

BAT BUS B - open

CRYO H2 2 htr
 CRYO 02 2 100w htr
 CRYO 02 1 50w htr
 INV 2

AC1

AC INV 1 - OFF
 AC INV 1 BUS 1 - OFF
 FC PUMPS 1 - AC2
 SUIT COMP - AC2
 ECS GLY PUMP - AC2
 S-BD NORM XPNDR - SEC
 S-BD NORM PWR AMP - SEC

CRYO H2 1 fan
 CRYO H2 & 02 1 q/t ind

AC2

AC INV 2 - OFF
 AC INV 2 BUS 2 - OFF
 FC PUMPS 2&3 - AC1

CRYP H2 2 fan
 CRYO H2 & 02 2 q/t ind

CMC**LOGIC BUS 1**

TVC GMBL (2) - 1 or 2

SCS

BMAG (3) - 1/2 or RT 2
 TVC GMBL (2) - 1 or 2
 Optional (status)
 MAN ATT (3) - RT CMD
 LIM CYCLE - on
 ATT DB/RATE - MAX/LOW
 *Use THC & DIR ON for ΔV

CUT OUT
THIS PART**LOGIC BUS 2**

FDAI SCALE - 5/1
 FDAI SEL - 1/2
 SCS TVC (2) - ACCEL CMD
 SPS GMBL tw (2) - zero
 *SCS TVC (RHC, tw)
 enabled also

BMAG (R) - RT 1 (MNR)
 FDAI SCALE - 5/1
 FDAI SEL - 1/2

Not Operative

THC/CH, GDC/IMU compare
 Y Rt Nd1 w/Roll (= Entry)

*For Gmb1 2, TVC GMBL (2) - 2

LOGIC BUS 3

FDAI SEL - 1/2

*For Gmb1 2,
 TVC GMBL (2) - AUTO
 GMBL MOT PT,Y1 - OFF

THC - CH
 SC CONT - CMC
 FDAI SEL - 1/2
 BMAG (P,Y) - RT 1
 TVC GMBL (2) - 1
 SCS TVC (2) - RT CMD (status)

*For Gmb1 2,
 TVC GMBL (2) - AUTO

LOGIC BUS 4

FDAI SCALE - 5/5 or 5/1
 FDAI SEL - 1 or 2

FDAI SCALE - 5/5 or 5/1
 FDAI SEL - 1 or 2

CUT OUT
THIS PART

Not Operative
 RCS Entry
 Cross Cpl
 Entry
 GDC Align

5/13/75

PNL 229
cb's

MNA GP1
SCS PITCH, LOGIC BUS 3/4,
SM RCS HTRS PRIM B/D,
SCS CONTR/AUTO, RCS PRPLNT ISOL
LOST: ALL QUAD B & D ISOL FNS;
ALL AUTO RCS SEL A COILS

MNB GP1
SCS PITCH, LOGIC BUS 2/3,
SM RCS HTRS SEC B/D,
SCS CONTR/AUTO, RCS PRPLNT ISOL
LOST: ALL QUAD A & C ISOL FNS;
ALL AUTO RCS SEL B FNS

4 PLY SHIM

LOST: ALL QUAD ISOL FNS, ALL AUTO
RCS FNS, LOGIC BUS 3

4 PLY SHIM

MNA GP2
SCS SYSTEM, SCS A/C ROLL
Reconfig SCS per MNA loss

MNB GP2
SCS SYSTEM, SCS A/C ROLL
Reconfig SCS per MNB loss

LOST: SCS, AUTO RCS A/C ROLL

MNA GP3
SCS YAW, LOGIC BUS 1/2,
SM RCS HTRS SEC A/C

MNB GP3
SCS YAW, LOGIC BUS 1/4,
SM RCS HTRS PRIM A/C, ORDEAL

LOST: LOGIC BUS 1, AUTO RCS YAW, ORDEAL

4 PLY SHIM

4 PLY SHIM

MNA GP4
SCS B/D ROLL, SPS He VLV,
EMS, DOCK PROBE
LOST: SPS BANK A

MNB GP4
SCS B/D ROLL, SPS He VLV,
EMS, DOCK PROBE
LOST: SPS BANK B

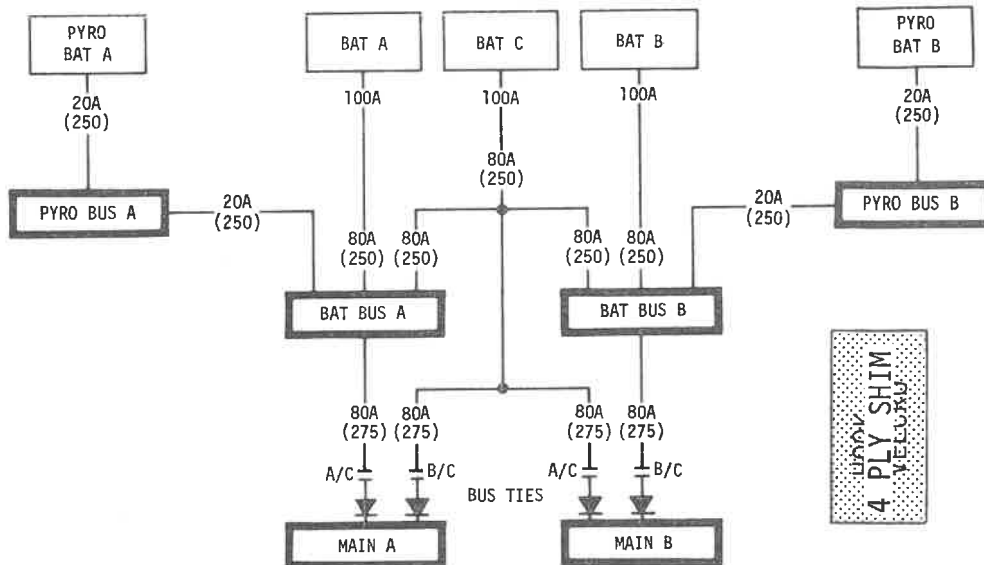
LOST: SPS Eng, AUTO RCS B/D ROLL, EMS

MNA GP5
SCS CONTR/DIR 1 & 2, RCS LOGIC,
CM RCS HTRS 1, SPS PILOT VLV A,
DIR ULL
LOST: RCS TRNSFR MTR 1, RING 1
PURGE, FV He & OX
INTERCONNECTS, SPS BANK A

MNB GP5
SCS CONTR/DIR 1 & 2, RCS LOGIC,
CM RCS HTRS 2, SPS PILOT VLV B,
DIR ULL
LOST: RCS TRNSFR MTR 2, RING 2
PURGE, OX He & FU
INTERCONNECTS, SPS BANK B

LOST: RCS TRNSFR, RCS DIR COILS
SPS ENG, He PURGE

EPS BUSSES



4 PLY SHIM

SPS BURN RULES

NOMINAL LIMITS (FAIL CRITERIA)

FU/OX FEEDLINE 45-75°F (<40, >110)
 FU/OX ΔT (>60)
 He TEMP 35-150°F
 FU/OX PRESS 170-195 psi (<115*, >200)
 FU/OX ΔP <20 psi
 Pc 95-105 (<70*)
 GN2 2900 psi max (<400)

CUT OUT
THIS PART

5/13/75

*TIGHT LIMITS: FU/OX PRESS <160, Pc <80

BURNS <10 sec: Use SINGLE BANK

BURN: Start watch, INJ VLV (4) - OPEN He VLV tb (2) - gray

SPS PRESS LT

Continue CRIT BURN

FU/OX LO (HI):

He VLV(2) - ON(OFF)

HI ΔP: He VLV (2) - ON

If condition persists,

OFF till Pc <70

EARLY SHUTDOWN

He VLV (2) - ON

✓ cb's closed:

PILOT VLV (2)

He VLV (2)

EPS GP 3 & 5

ΔV THRUST (2) - NORM

NO SHUTDOWN

ΔV THRUST (2) - OFF

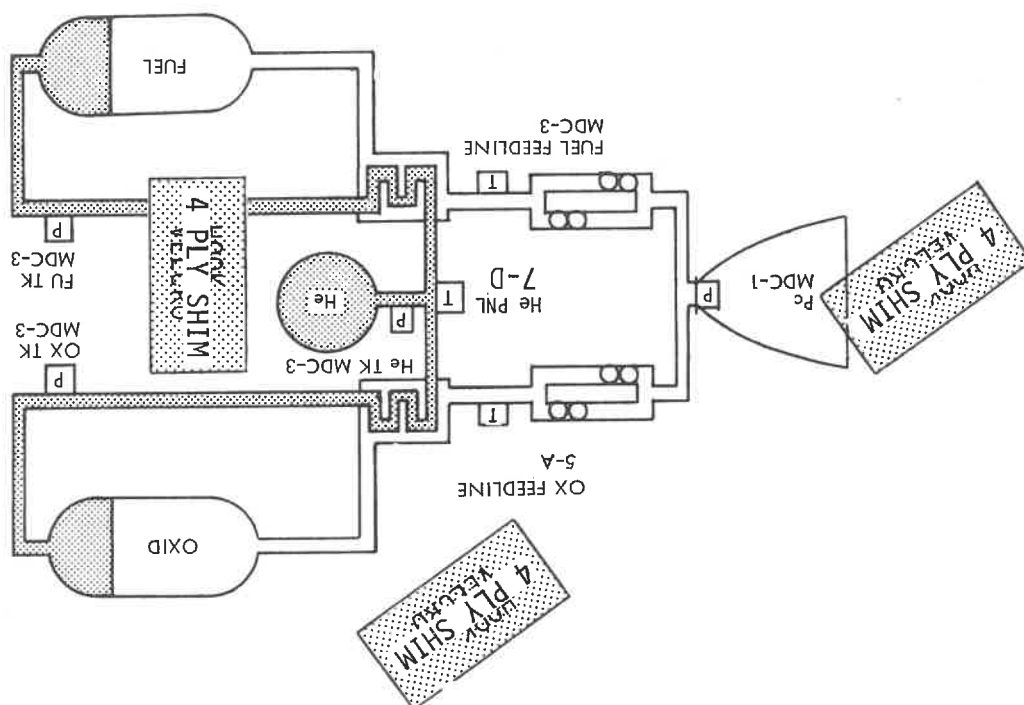
THC - CW

THRUST DIR ON - OFF

cb PILOT VLV

(2) - open

cb EPS GP 5 - open



5/13/75

CUE CARDS

SPS BURN ENTRY

5/13/75

G&N

AUTO RCS (12) - on

GMBL TRIM

SCS DELTA

FDAI SCALE - 5/1

P -0.19

MAN ATT (3) - RATE CMD

Y -0.78

ATT DB/RATE - MIN/LOW

*BMAG (3) - RATE 2

*SC CONT - CMC/AUTO

FDAI (2) - INRTL

GDC ALIGN

TAILOFF

18.0

BMAG (3) - 1/2
SC CONT - SCS

HOOK
VELCRO

CUT OUT
THIS PART

cb SPS (8) & SCS (24) - close

SCS TVC (2) - RATE CMD

TVC GMBL DR P&Y - AUTO, ATVC - HI

RHC 2 - ARMED

Set EMS ΔV (Min 7)

Set DET (VI6 N45)

*P40 to F50 18, PRO (MNVR)

Set GDC tw to PAD

54:00 STDN mon: MN BUS TIE (2) - on

No ATS: HBR/RCD/FWD/CMD RESET

TVC SERVO PWR 1 - 1/A, 2 - 2/B

RHC PWR NORM (2) - AC, DIR (2) - OFF

BMAG (3) - 1/2

SC CONT - SCS

GMBL MOT P1 & Y1 - START, Set trim

✓ MTVC

*

THC - CW, ✓ NO MTVC

GMBL MOT P2 & Y2 - START, Set trim

*SC CONT - CMC

✓ MTVC

THC neutral, ✓ NO MTVC

*✓ GPI returns to 0,0

RHC PWR NORM (2) - AC/DC

RHC PWR DIR (2) - MNA/MNB

*BMAG (3) - RATE 2, PRO

*BMAG (3) - 1/2, ENTR

57:00 *STAR CK NO GO:

4 PLY SHIM
VELCRO

RHC to Burn ATT

SCS TVC (2) - AUTO

✓ SC CONT - SCS

GPI to trim

Ck Burn ATT
Omit this step

HOOK
VELCRO

HOOK
VELCRO

TK HORZ at 15°
TVC (2) - AUTO
SC CONT - SCS

SPS BURN ENTRY (contd)

58:00 *

5/13/75

F 50 25 *GMBL TEST OPTION, PRO
 06 40 *RATE - HIGH
 RHC 2 & THC - ARMED
 ✓ EMS, DET, SPS N2 & He
 59:00 EMS - NORM
 THC PWR - ON
 59:30 ΔV THRUST A (B) - NORM

HOOK
VELCRO

Hold ATT
 GDC ALIGN (Pad)
 0/180/0 (7°/TIG)

Omit this step
 ✓ RATE - LOW

06 40 BYP
 V21NOTE
 3451E
 37777E

 Ck PIPAS <2 fps 5 sec
 59:46 *ULLAGE
 F 99 40 ENG ON ENABLE REQ
 PRO
 00:00 *IGN

00:03 ΔV THRUST (2) - NORMAL

*

XX:XX ECO
 F 16 40 ΔV THRUST (2) - OFF

 PRO
 AUTO RCS (all) - on
 F 16 85 Null residuals & log
 V82E
 ✓ HP <38nm (>38: Burn)
 PRO, PRO
 F 37 AUTO RCS A/C ROLL - OFF
 GMBL MOT (4) - OFF
 TVC SERVO PWR 1 & 2 - OFF
 *BMAG (3) - RATE 2
 EMS - OFF/STBY
 THC - LOCKED
 THC PWR - OFF
 RHC PWR DIR (2) - OFF

HOOK
VELCRO

OOE

59:46 ULLAGE

THRUST PB

RATE - HIGH

4 PLY SHIM
VELCRO

G&N Reignition
 F97 40 ENTR
 06 40
 F99 40 ΔV THRUST
 GMBL TRIM
 ULLAGE
 PRO: IGN

SCS Reignition
 SC CONT - SCS
 Ck ATT
 BMAGS - 1/2
 TVC (2) - AUTO
 EMS - ΔV/NORM
 ΔV THRUST ON
 ULLAGE
 THRUST PB

✓ 1/2

HOOK
VELCRO

RCS Compl
 ΔV THRUST OFF
 Go to CHARTS

F8

F8

5/13/75

DEORB ATT

5/13/75

HOOK
VELCRO

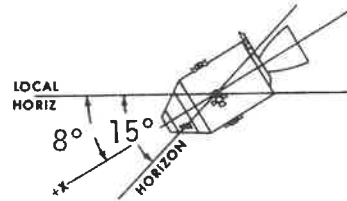
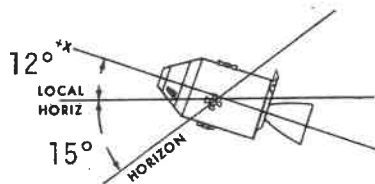
HOOK
VELCRO

SPS

-5:00 HORZ 27° +3

*If not: Track *
 *HORZ at 15° *
 *TWs to 0/180/0 *
 *2:00 GDC ALIGN *

(0/180/0)
 HORZ at 7°



HOOK
VELCRO

RCS

-2:00 HORZ 35° +3

*If not: Track *
 *HORZ at 31° *
 *(0/180/0) *
 *1:00 GDC ALIGN *

(0/180/0) BT 6:10
 HORZ at 27°

HOOK
VELCRO

LOCATION
 MDC-1
 between FDAI
 and EMS

F9

ENTRY

6/27/75

DEORBIT BURN COMPLETE
V82E, PRO, OOE, V66E
CM RCS CK
BMAGS - 1/2
YAW _____ to _____°

P62

50 25 00041 CM/SM SEP CHECKLIST
✓ MN BUS TIE (2) - on
SEP

CUT OUT
THIS PART

YAW back to ZERO
PRO

06 61 L.AT, LO.NG, L/V UP (-1)
Load R3 = +1

EMS TEST 5, Set 37K
Set EMS, EMS - ENTRY/STBY
✓ RSI ALIGN
PRO

06 22 CMC DESIRED A.TT
MNVR TO ENTRY ATT:

L/V UP 0/_____/0
(SPS Deorbit)

L/V DN (RCS or completion)
Track HORZ at 9° to 1G

P63

06 64 .XG, VI, RTOG.0

Ck time, EMS & CMC to .05G
✓ RTOGO = EMS

-2:00 FDAI CK IMU vs GDC

RET.05G _____:

EMS - BU/VHF RNG
EMS ROLL/.05G sw

If L/V DN: ✓ PAD P +5°

P64

06 74 BE.TA, VI, .XG
MAN ATT (3) - RT CMD
At .2G (P67) KEY VERB

P67

RET .2G _____:

06 66 BE.TA, XRER.R, DRER.R

PAD XR R _____

DR nm _____

✓ DRER.R ± 180 , trim < 30
(Invalid if trim > 30)

*G&N NO GO: Fly EMS *
* EMS NO GO: *
* Fly BK _____° *

SC CONT - CMC/AUTO

✓ DRER.R CONVERG

✓ EMS G ONSET

✓ RET RB $>$ /PAD -1 min/

PAD RB _____

After B0, sel best OMNI
Ck He press

RET RB _____:

06 67 RTOG.0, L.AT, LO.NG
SC CONT - SCS

50K BOOST/ENTRY
PYRO ARM

30K ELS LOGIC/AUTO

RET DRO _____:

24K RCS CMD - OFF

*If DROQUES FAIL: *

* ELS - MAN *

* 5K MAINS, ELS AUTO*

✓ CAB PRESS INCR by 17K

CM RCS PRPLNT (2) - OFF

10K MAINS, RET _____:

.8K CAB PRESS - CLOSE

DIR 02 - OPEN (Suited)

BUS TIES - OFF

PWR LOSS ENTRY

6/27/75

MNA HOOK VELCRO	FDAI 1, BMAG 1 GDC Except RSI AUTO RCS - MNB FDAI/SOURCE - 2/CMC RHC PWR DIR 2 - MNB* BMAGS - RATE 2 (up)
MNB HOOK VELCRO	FDAI 2, BMAG 2 GDC AUTO RCS - MNA RHC PWR DIR 1 - MNA* BMAGS - RATE 1 (dn)
AC1 HOOK VELCRO	FDAI 1, BMAG 1 GDC Except RSI MIN IMP, RHC 1 RCS RT CMD GPI 1 EMS ΔV Ltg FDAI/SOURCE - 2/CMC
AC2 HOOK VELCRO	FDAI 2, BMAG 2 GDC RSI BMAGS - RATE 1 (dn)
BAT BUS A	cb SCS B/D ROLL, P&Y MNA (3) - Before SEP: open After RCS xfer: close cb SCS CONT/AUTO (2) - After APEX: open
BAT BUS B	cb SCS B/D ROLL, P&Y MNB (3) - Before SEP: open After RCS xfer: close cb SCS CONT/AUTO (2) - After APEX: open
HOOK VELCRO	

* If DIR RCS is on

HOOK
VELCRO

LOSS OF ATS-6 VOICE

A. ✓ 225 cb's ATSF SYS (2) - closed

✓ 230 CONFIG:

6/27/75

PWR AMPL - 2

XPNDR - PRIM

HGA PWR - on (up)

HGA SERVO - PRIM

HGA BEAM - NARROW

HGA TRACK - REACQ

UP TLM - UP TLM

PCM RELAY - ON

RMC TV & DATA (4) - UP TLM

PWR AMPL CONT - UP TLM

HGA SCAN - NORM

SQUELCH - ON

HGA PITCH & YAW - as reqd

✓ VTR PLAYBACK It - off

To disable PLAYBACK for VOICE dnlk:

RMC DATA - PCM/SCI

RMC TV - DATA

If loss of DM COMM only:

✓ 815 cb DM AUDIO/TV DM B - closed

✓ AUDIO 1&2 PWR - ON

✓ 225 cb CREW STA AUDIO R - closed

B. HGA < HALF-SCALEAttempt REACQ

✓ P&Y not in scan limit (EMP 75)

NO HGA ACQ

PITCH -60° ~5s, then orig setting

Still NO HGA ACQ

XPNDR - SEC, HGA SERVO - SEC

Attempt REACQC. HGA > HALF-SCALEUse alt audio ctr & personal equip

SQUELCH - OFF

NO COMM (Try PM MODE)

RMC TV - DATA

RMC DATA (2) - PCM/REALTIME

Still NO COMM (Try FM MODE)

RMC DATA - PCM/SCI

Still NO COMM

PWR AMPL - 1, PWR AMPL CONT - MAN

D. NO COMM: Wait for US STDN/USSR pass

F10

5/13/75

HOOK
VELCRO

HOOK
VELCRO

IF NO CAN GO TO E16

E1

UVA PREP

6/27/75

ECLIPSE

✓ DET up, UNDKG (pad)

00:00 CAPTURE LATCH A&B - REL

✓ G/R CAPTURE 1t - out

✓ PASSIVE 1t - on

✓ S/R CONTACT 1t - out

Mon ΔVC = +100.2

← Inform: UNDKG COMPL

00:15 THC -X (4 jet) 3s

00:30 THC -X (4 jet) 4s

HOOK
VELCRO

CUT OUT
THIS PART

← Inform: DKG ASSY ILLUM

03:00 MAN ATT (3) - RT CMD

AUTO RCS (16) - MNA/B

RHC ctr SOYUZ in COAS

04:00 THC +X (4 jet) 16s

UVA UNDKG

DET up, UNDKG 99:07:00

EMS - ΔV SET/STBY

Set ΔVC = +101.3

EMS FUNC - ΔV

RHC PWR NORM #2 - AC/DC

RHC PWR DIR #2 - MNA/B

SC CONT - CMC/HOLD

MAN ATT (3) - MIN IMP

DBD/RATE - MIN/LOW

BMAGS (3) - 1/2

THC PWR - on (up)

COAS PWR - on (up)

RHC #2 - LOCKED

THC - ARMED

V16N4E

← Inform: PREPARING FOR
UNDOCKING

✓ 274 DKG SYS A&B cb's
(12) - closed

✓ S/L OPEN 1t - on

✓ G/R CAPTURE 1t - on

✓ PASSIVE 1t - on

✓ S/R CONTACT 1t - on

Align GDC to IMU

HOOK
VELCRO

55:00 ← Inform: READY FOR UNDKG

56:00 AUTO RCS (16) - MNA/B

EMS - NORM

Stop DET, reset

At UNDKG: Start DET

00:00 SOYUZ ACTIVE UNDKG

✓ G/R CAPTURE 1t - out

✓ S/R CONTACT 1t - out

Mon ΔVC = +101.5

← Inform: UNDKG COMPL

V46E

SC CONT -

CMC/AUTO

V58E Estab ORB

RT DRIVE

00:40 At 0 BODY 8°:

THC +X(F)

1.5 fps EMS

THC hold SOYUZ

in COAS

4 PLY SHIM

V44E Load all zeros N87

V45E

Once → V31E Act MIN IMP THC EMP
only ✓ RHC - LOCKED

THC null LOS RT &

STA KEEP 18 M ahead

0 BODY 8°

(P20 OPT 5 holds LH)

EMS - ΔV SET/BACKUP

VHF RNG - RESET

STA KEEP

Set DET for 150 M - 0/P

-NOTE-

SUN/SOYUZ may pass < 5°

04:00 ← Inform: OPEN REFLECTOR
COVERS AS PROGRAMMED

274 DKG SYS A&B cb's

(12) - open

HOOK
VELCRO

UVA 150 M O/P

6/27/75

E1

COAST

59:30 ✓ DET 99:21:00
✓ BMAG (3) - 1/2
✓ MAN ATT (3) - MIN IMP
✓ SC CONT - CMC/AUTO

HOOX
VELCRO

00:00 **THC -Y(L) 6 pulses @ 2s**
SC CONT - SCS
RHC trk SOYUZ, null R RT
V16N4E
V23N78E +25500E

06:30~ Null R ERR & hold
✓ Y ERR nulled
(-5° & incr)
SC CONT - CMC/HOLD
THC +Y(R) 3 pulses @ 2s
RHC - LOCKED
V58E Estab ORB RT DRIVE
V16N4E
THC null LOS RT,
(1°/min ~ 0.1 fps)
ctr SOYUZ in COAS +1°

17:30 SC CONT - CMC/AUTO

SWEEP

18:00 **THC -Z(U) 3 pulses @ 2s**
-Y(L) 4 pulses @ 2s

SC CONT - SCS
JETS A3,C4,B3,D4 - OFF
✓ R ERR nulled
RHC align COAS CAL MK
on REFLECTOR

HOOX
VELCRO

← Inform: BEACONS &
ORIENTATION LTS OFF

DATA TAKE
V23N78E +27000E

22:15~ ✓ Y ERR nulled
V23N78E +28500E

TERM

27:00~ ✓ NO4 P ERR -1° & incr
✓ DATA TAKE compl
& UV COVER closed
AUTO RCS (16) - MNA/B

← Inform: BEACONS &
ORIENTATION LTS ON

28:00~ ✓ P ERR nulled

SC CONT - CMC/AUTO

THC -Z(U) 3 pulses @ 2s
+Y(R) 4 pulses @ 2s

V58E Estab ORB RT DRIVE

THC null LOS RT 3m max

SC CONT - SCS

COAST V16N4E

RHC trk SOYUZ &
✓ R ERR nulled
When Y ERR +5°:
Incr N78 10°

← Inform:
EXT LT ON
EXT LT - SPOT

4 PLY SHIM
VELCRO

✓ P ERR stable < /3°/

*MAN ATT P - RT CMD *
THC >+3: UP, <-3: DN
*MAN ATT P - MIN IMP *

N78 R3 0° & Y ERR → 0
MAN ATT (3) - RT CMD

44:30~ **THC +Y(R) 3s**

✓ R ERR nulled &
NO4 P & Y ERR < /3°/

MAN ATT (3) - MIN IMP

SC CONT - CMC

RHC - LOCKED

V58E Estab ORB RT DRIVE

THC null LOS RT &
STA KEEP 50 M behind,
0 WINGS 9°, 0 BODY 3°

✓ SOYUZ mnvr to LH ASAP

GDC ALIGN to IMU

Set DET for 500 M - O/P

STA
KEEP

HOOX
VELCRO

← Inform:
EXT LT OFF
EXT LT - OFF

E2

UVA 500 M O/P

5/13/75

COAST

59:30 ✓ DET 100:50:00
SC CONT - SCS
MAN ATT (3) - RT CMD
RHC - ARMED

HOOK
VELCRO

00:00 THC +Y(R) 9s
MAN ATT (3) - MIN IMP
RHC trk SOYUZ, null R RT
V16N4E
V23N78E +25500E

CUT OUT
THIS PART

05:30~ Null R ERR & hold
✓ Y ERR nulled
MAN ATT (3) - RT CMD
THC -Y(L) 2s
MAN ATT (3) - MIN IMP
SC CONT - CMC/AUTO
RHC - LOCKED
V58E Estab ORB RT DRIVE
V16N4E
✓ VHF ranging on
THC null LOS RT,
(1°/min ~ 0.3 fps)
ctr SOYUZ in COAS +1°

17:30 SC CONT - SCS
MAN ATT (3) - RT CMD

SWEEP 18:00 THC -Z(U) 5s, +Y(R) 7s

MAN ATT (3) - MIN IMP
JETS A3,C4,B3,D4 - OFF
✓ R ERR nulled
RHC align COAS CAL MK
on REFLECTOR

← Inform: BEACONS &
ORIENTATION LTS OFF

DATA TAKE
V23N78E +27000E

22:15~ ✓ Y ERR nulled
V23N78E +28500E

TERM

✓ NO4 P ERR -1° & incr
27:00~ ✓ DATA TAKE compl

HOOK
VELCRO

28:00~ THC -Z(U) 5s, -Y(L) 7s
MAN ATT (3) - MIN IMP
SC CONT - CMC
RHC - LOCKED
V58E Estab ORB RT DRIVE
THC null LOS RT & adj
N78 to ctr SOYUZ
← Inform:
EXT LT ON
EXT LT - SPOT

COAST V16N4E
THC ctr SOYUZ
in COAS &
null LOS RT
✓ θ BODY dia 2°
(VHF ~.04nm)

4 PLY SHIM
VELCRO

SC CONT - SCS
MAN ATT (3) - RT CMD
THC -X(A) 3s, +Y(R) 2s
MAN ATT (3) - MIN IMP
RHC trk SOYUZ &
✓ R ERR nulled
Incr N78 as R3→0
✓ P ERR stable </3°/

*MAN ATT P - RT CMD *
THC >+3: UP, <-3: DN
*MAN ATT P - MIN IMP *

When NO4 Y ERR ~5°:
MAN ATT (3) - RT CMD

44:30~ THC -Y(L) 3s
✓ R ERR nulled &
NO4 P & Y ERR < /3°/
STA KEEP MAN ATT (3) - MIN IMP

HOOK
VELCRO

SC CONT - CMC
RHC - LOCKED

Contd on back

E2

UVA 500 M O/P (contd)

V58E Estab ORB RT DRIVE

THC null LOS RT &
STA KEEP 50 M ahead,
θ WINGS 9°, θ BODY 3°

GDC ALIGN 0,0,0

Set DET for 1000M - I/P
✓ VHF ranging off

← Inform: EXT LT OFF
EXT LT - OFF

HOOK
VELCRO

6/27/75

RHC trk SOYUZ &
✓ GDC R nulled
P00

-NOTE-
SUN/SOYUZ may pass < 5°

✓ VHF ranging on
P25 N77 R, RDOT
V83E

UVA 1000 M I/P

PHOTO

✓ DET 102:16:00

45:00 THC ctr SOYUZ in COAS
& null LOS RT

51:30 SC CONT - SCS
MAN ATT (3) - RT CMD

52:00 THC -Z(U) 2s

✓ SOYUZ GO for photos

← Inform: BEGINNG P ROT

MAN ATT P - ACCEL CMD

FDAI SCALE - 5/5

Pitch UP 2°/s, 360°

& ctr SOYUZ in COAS

FDAI SCALE - 5/1

V31E Terminate EMP 76

V48E 61112, 01111

V46E

MAN ATT P - MIN IMP

RHC ctr SOYUZ in COAS

← Inform: P ROT COMPL

P30

Load N33 102:16:00

Load N81 1.8,0,0.6

SEP

P41 BYPASS MNVR

59:30 MAN ATT (3) - RT CMD

00:00 SEP MNVR (1.8,0,0.6)

MAN ATT P - MIN IMP

DBD/RATE - MAX/LOW

HOOK
VELCRO

DATA MAN ATT P&Y -
MIN IMP

21:00 JETS A3,C4,
B3,D4 - OFF

DATA TAKE

RHC align COAS CAL MK
on REFLECTOR

← Inform: BEACONS &
ORIENTATION LTS OFF

DATA TAKE compl when
R3 > 285°

P00

SC CONT - CMC/AUTO

MAN ATT (3) - RT CMD

BMAG (3) - RT 2

By 102:52

V49 I/P SCAN MNVR
(181, 270, 315)

✓ UV COVER closed

✓ VHF ranging off

By 102:56

V49 O/P DATA MNVR
(278, 268, 045)

HOOK
VELCRO
4 PLY SHIM

HOOK
VELCRO

CAUTION

When opening or closing covers, tb goes bp for < 5 sec, then gray. If not gray in 15 sec, put cover sw to off (ctr). If X-RAY or EUV cover failed open do not maneuver

X-RAY OPS

✓ Att
 ✓ 230 HV PWR - off (ctr)
 X-RAY COVER - OPEN
 LV PWR - ON, bp
 HV PWR - 1, gray

He GLOW OPS

✓ Att
 230 He GLOW COVER - OPEN
 tb bp/gray +10s:
 HELIUM GLOW - ON

EUV OPS

✓ Att
 230 EUV COVER - OPEN
 tb bp/gray +10s:
 TELESCOPE - POWER/DET 2

EUV POWER DOWN

TELESCOPE - OFF
 EUV COVER - CLOSE

He GLOW POWER DOWN

HELIUM GLOW - OFF
 He GLOW COVER - CLOSE

X-RAY POWER DOWN

X-RAY PURGE - CAL, hold 30s
 HV PWR - off (ctr), bp
 LV PWR - OFF, gray
 X-RAY COVER - CLOSE

X-RAY CAL/BACKGROUND

STDN GO
 ✓ 230 X-RAY COVER - CLOSE
 ✓ HV PWR - off (ctr)
 LV PWR - ON, bp
 HV PWR - 1, gray
 Wait 1 min
 X-RAY PURGE - CAL, hold 30s

SM EXP CONTAMINATION GUIDELINES

Power down X-RAY, EUV and He GLOW for any liquid leak (except H2O), RCS quad or thruster failure.
 Power down EUV and He GLOW for any SM gas leak.

E3

HOOK
VELCRO

5/13/75

HOOK
VELCRO

CUE CARDS

3-7

LOCATION
In MICROBIAL KIT

MICROBIAL EXCHANGE

(AS-2)

5/13/75

MICROBIAL EXCHANGE CSM

DP Obtain MICROBIAL EXCHANGE KIT #3
Unfold and fasten with velcro to LEB wall

Replace used tubes in kit reversed from stowed position

NOTE - Log next to table any deviations of sampling locations from TABLE 1

HOOK
VELCRO

TABLE 1

TUBE	AREA	DEVIATIONS
1	HAIR	
2	AUDITORY CANALS	
3	BACK OF NECK BELOW HAIR LINE	
4	NOSTRILS	
5	ORAL CAVITY	
6	PALM	

Fold kit #3 and place in bungee bag in LEB

E4

5/13/75

CSM SAMPLING

Swab the entire area between the black lines where applicable per this list

Replace used tubes in kit reversed from stowed position

TUBE	AREA
A1	Left X-X head strut
A2	Right X-X foot strut
A3	Right hand couch stablizer beam
A4	Between PNL 10 and 12
A5	RH flood light (side near window 4)

HOOK
VELCRO

A6	Left hand rotational controller
A7	Right girth shelf
A8	PNL 325
A9	Area near location 607
A10	Cover of ORDEAL STOWAGE LOCKER
A11	B6 behind bag
A12	L3 inside door
A13	Top of VTR
A14	PNL 251 WASTE STOWAGE QD and URINE OVBD QD AREA
A15	Foward of PNL 225

Fold kit #4 and place in bungee bag in LEB

E4

E5

INTERIOR PHOTO

5/13/75

A. NK with FLASH:

FILM TYPE	ASA	NO. ROLLS (EXP/ROLL)	USE
CI	500	10 (60)	Documentation

PROCEDURES: 1. Make flash setting
RANGE 2 (3'-9') use f11
Optional: RANGE 1 (3'-13'), f8
RANGE 2 (3'-6'), f16

2. Make camera settings
(f11, 1/60) or as noted above
3. Verify flash is charged
(ON/verify Lt/OFF)
4. Film counter counts up

B. NK without FLASH:

FILM TYPE	ASA	NO. ROLLS (EXP/ROLL)	USE
CI	500	10 (60)	For photos 1' to 3' from cam to subject
CX	64	1 (60)	Air to air and ground photos
CS		1 (60)	For photos in Soyuz without flash

PROCEDURES: Make camera settings per light
meter.

C. HRC with 50mm lens:

FILM TYPE	ASA	NO. ROLLS (EXP/ROLL)	USE
CX	64	4 (70)	Backup to NK int photos

PROCEDURES: 1. Make flash setting -
RANGE 3
2. Make camera settings -
(f5.6, 1/125)
3. Verify flash is charged
(ON/verify Lt/OFF)

FILM AVAILABLE - INTERNAL

NK - CI13	CI17	CI21	HRC - CX06
CI14	CI18	CI22	CX07
CI15	CI19		CX08
CI16	CI20	CS03	CX09

* PROCEDURES FOR DATA RECORDING *
* *
* Use one of these recording systems (in *
* priority shown): *
* 1-VOICE RECORDER (cassette) *
* 2-REAL TIME VOICE *
* 3-DSE (when already in LBR) *
* 4-WRITTEN LOG (Photo Ops Bk sect. 8) *
* Record these items for each site: *
* *
* SITE ID *
* GET *
* MAG ID *
* FR COUNT at end of pass *
* SETTINGS (if non-nominal) *
* COMMENTS *
* *

E5

EXTERIOR PHOTO

7/4/75

A. HRC with 250mm lens:

Use with CX film only - 1/500 sec

SUN ANGLE	GENERAL	DESERT	OCEANS	JUNGLE
90-35 deg	f8	f11	f5.6	f5.6
35-22 deg	f6.7	f9.5	ΔΔΔ	ΔΔΔ
22-15 deg	f5.6	f8	***	***
15-10 deg	ΔΔΔ	f6.7	---	---
10-5 deg	***	f5.6	---	---

ΔΔΔ - f6.7 at 1/250 sec

*** - f5.6 at 1/250 sec

B. HRC with 50mm lens:

HDC with 60mm, 100mm lens:

Use with CX film only - 1/500 sec

SUN ANGLE	GENERAL	DESERT	OCEANS	JUNGLE
90-35 deg	f9.5	f13.4	f6.7	f6.7
35-22 deg	f8	f11	f5.6	f5.6
22-15 deg	f6.7	f9.5	***	***
15-10 deg	f5.6	f8	f4	f4
10-5 deg	***	f6.7	---	---

*** - f6.7 at 1/250

For IF film: open 1 more stop
EXAMPLE: f11 becomes f8

For CT film: open 2 more stops
EXAMPLE: f11 becomes f5.6

SUNRISE/SUNSET**EARTH LIMB** (f6.7 +/- 1 stop, 1/125, INF)**MOONSET** (f8 +/- 1/2 stop, 1/250, INF)

FILM TYPE	ASA	NO. ROLLS (EXP/ROLL)	USE
CX	64	HRC:11 (70)	7 - EARTH OBS
		HDC:1 (170)	4 - PAO
		2 (60)	EARTH OBS
CT	12	HDC:5 (170)	EARTH OBS
IF	100	HRC:2 (70)	EARTH OBS

PROCEDURES: 1. Make settings from proper table - DO NOT USE SPOTMETER
2. Use shutter speed of 1/500 for 250mm lens, 1/250 for other lenses
3. Film counter counts up

OTHER COMMENTS:

-JUNGLE: Tropical rain forest areas with dense vegetation - Try for near vertical photos

-CLOUDS & TROPICAL STORMS: Use DESERT settings, but increase fstop by one full stop (e.g. f11 to f16)

-ALL: Avoid highly oblique photos at full open lens apertures, unless haze or pollution is the subject

FILM AVAILABLE - EXTERNAL

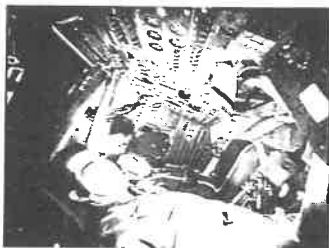
HRC-CX06	CX10	CX15	IF01	HDC-CT02	CT06
CX07	CX11	CX16	IF02	CT03	CX13
CX08	CX12	CX17		CT04	*CX19
CX09	CX14			CT05	*CX20
				*60 FR EA	

7/9/75 (PFI)
5/13/75

CM TV

LEB PRESS CONF,
TOUR, FOOD DEMOHOOK
VELCROTV
2.1

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 10,175,105
 F,ZOOM,FOC - 3.5,9,10 (ZOOM IS FOR PR CONF)
 CAMR - AVG,SLAVE,LINEAR
 LOC - 605 (HOLE 4)
 LIGHTS - MAX & PL (STRUT LTS
 OFF FOR TOUR)
 FILTERS REMOVED (U2)

TV
2.2

MAIN PANEL

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 305,90,45
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,SLAVE,LINEAR
 LOC - 231 (HOLE 1)
 LIGHTS - MAX - TV FILTERS
 INSTALLED (U2)

TV
2.9

OTW GROUND TOURS

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 20,90,225
 F,ZOOM,FOC - 22,100,inf (ZOOM LENS)
 CAMR - AVG,SLAVE,LINEAR
 LOC - 605 (HOLE 1)
 LIGHTS - MAX EXCEPT RH INTERIOR
 LTS OFF

TV
2.10CM SIDE HATCH
AREA

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 290,40,200
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,SLAVE,LINEAR
 LOC - 11 (HOLE 3)
 LIGHTS - MAX & PL- TV FILTERS
 INSTALLED (U2)

TV
2.14

HATCH 1 AREA

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 260,10,5
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,SLAVE,LINEAR
 (MASTER IF OM CAMR OFF)
 LOC - 11 (HOLE 4)
 LIGHTS - MAX

HOOK
VELCRO

TV
2.15



CDR COUCH

SHOE - LEFT
ARROW - REAR
X,Y,Z - 80,175,95
F,ZOOM,FOC - 3.5,9,10
CAMR - AVG,SLAVE,LINEAR
LOC - 11 (HOLE 4)
LIGHTS - MAX - TV FILTERS
INSTALLED (U2)

TV
2.18



AC & CP COUCHES

SHOE - LEFT
ARROW - REAR
X,Y,Z - 105,190,65
F,ZOOM,FOC - 3.5,9,10
CAMR - AVG,MASTER,LINEAR
LOC - 11 (HOLE 4)
LIGHTS - MAX - TV FILTERS
INSTALLED (U2)

TV
2.19



OTW OF SOYUZ, DM

SHOE - LEFT
ARROW - REAR
X,Y,Z - 325,90,155
F,ZOOM,FOC - 22,25,15
CAMR - AVG,SLAVE,LINEAR
LOC - 606 (HOLE 1)
LIGHTS - RH WALL LIGHT - OFF
REMARKS - READJUST ZOOM AS RANGE
REQUIRES
- SELECT PEAK IF WHITE
CONTENT OF SCENE DROPS
BELOW APPROX 10%

TV
2.20



SAM EQUIP INSTALL

SHOE - RIGHT
ARROW - REAR
X,Y,Z - 90,100,40
F,ZOOM,FOC - 3.5,9,10
CAMR - AVG,MASTER,LINEAR
LOC - 11 (HOLE 1)
LIGHTS - MAX

SOYUZ TV

5/13/75

TV
2.7

OM PANEL & TOUR

HOOK
VELCRO

SHOE - RIGHT
 ARROW - REAR
 X,Y,Z - 0,0,105
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,MASTER,LINEAR
 LOC - TA3 (HOLE 4)
 LIGHTS - GRP I-OFF,GRP II-ON,
 PLU-ON/T2
 - WORK LTS - MAX

TV
2.8

DV INTERIOR & TOUR

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 30,70,20
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,MASTER,LINEAR
 LOC - TA4 (HOLE 1)
 LIGHTS - SPECIAL LTS-ON,
 SPECIAL LT 9-OFF
 - WORK LTS - MAX
 - INSTALL RH WINDOW
 SHADE

TV
2.12

OM SOFA

SHOE - LEFT
 ARROW - REAR
 X,Y,Z - 340,0,65
 F,ZOOM,FOC - 3.5,9,10
 CAMR - AVG,MASTER,LINEAR
 LOC - TA1 (HOLE 2)
 LIGHTS - GRP II-OFF,GRP I-ON,
 PLU-ON/T1
 - WORK LTS - MAX

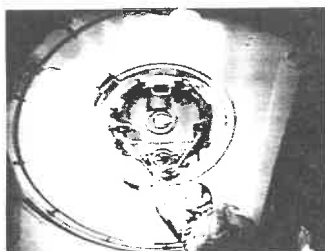
E7

SOYUZ TV (contd)

5/13/75

HOOK
VELCRO

TV
2.16



HATCH 4 AREA

SHOE - TOP
ARROW - RIGHT
X,Y,Z - 290,170,0
F,ZOOM,FOC - 3.5,9,10
CAMR - AVG,MASTER,LINEAR
LOC - TA2 (HOLE 1)
LIGHTS - GRP I-OFF, GRP II-ON,
PLU-ON/T3
WORK LTS - OFF

TV
2.17



OM WINDOW AREA

SHOE - LEFT
ARROW - REAR
X,Y,Z - 325,0,75
F,ZOOM,FOC - 3.5,9,10
CAMR - AVG,MASTER,LINEAR
LOC - TA1 (HOLE 2)
LIGHTS - GRP II-OFF, GRP I-ON,
PLU-ON/T1
- WORK LTS - MAX

E8

2nd CM PHOTO

7/3/75

2 SECOND JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN APOLLO)

INITIAL SETUP: 606/DAC01(RHTSB)/5mm(RHTSB)/CI04(F2) - PWR CABLE(PNL 16),
 *** REMOTE(RHTSB) X=330 Y=270 Z=290/PIN IN HOLE #1

**DAC TV BRK
IN RHTSB**

231/DAC02(LHTSB)/10mm(RHTSB)/CI09(F2) - PWR CABLE(PNL 100), REMOTE X=270 Y=320 Z=355/PIN IN HOLE #1

PORTABLE LIGHT - UNDER SPEAKER BOX(PL1) FACING LEB

***** MOUNT DAC TO TV CAM**

PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	X Y Z	PIN #	LENS SET- TING	PORT LT LOC	SHOOTING DIRECTIONS
2.1	SC XFER TO CM	DAC01 *** 606	CI04	5mm	330 270 290	1	f2.0 1/60 --	PL1 FACING LEB	SHOOT UP MAG
P/M 8.1A	SC XFER TO CM	DAC02 231	CI09	10mm	270 320 355	1	f1.8 1/60 6	PL1 FACING LEB	2 MIN
P/M 8.2A	DP WELCOME SC	DAC02 HH	CI09	10mm			f1.8 1/60 3	POINT AT DP	30 SEC
P/M 8.3A	CM TOUR	FK-6	N7	45mm			f3.5 1/15	PL1 FACING LH COUCH	2-3FR
P/M 8.4A	CM TOUR - SC	DAC02 HH	CI09	10mm			f1.8 1/60 3	PL1 FACING LH COUCH	30 SEC
2.2.1	PLAQUE JOINING	DAC01 *** 606	CI06 (poc ket)	5mm	330 270 290	1	f2.0 1/60 --	PL1 FACING LEB	30 SEC

4th LAUNCH OPPORTUNITY

E8

7/3/75

HOOK
VELCRO

HOOK
VELCRO

4th LAUNCH OPPORTUNITY

E9

3rd CM PHOTO

7/3/75

3

THIRD JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN APOLLO)

INITIAL SETUP: 606/DAC02(LH TSB)/5mm/C108(F2) - PWR CABLE(PNL 16),
 *** REMOTE X=330 Y=270 Z=290/PIN IN HOLE #1

*** MOUNT DAC TO TV CAM

PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	X Y Z	PIN #	LENS SET- TING	PORT LT LOC	SHOOTING DIRECTIONS
P/M 9.9A	GIFT EXCHANGE	FK-6	N10	45mm			f3.5 1/15		3-4FR

4th LAUNCH OPPORTUNITY

E9

HOOK
VELCRO

7/3/75

4th LAUNCH OPPORTUNITY

3-17

CUE CARDS

E10

1st SOYUZ PHOTO

6/27/75

1

FIRST JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ)

PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	X Y Z	PIN #	LENS SET- TING	LIGHTING	SHOOTING DIRECTIONS
1.2S	SIGNING OF DOCKING CERTIFICATE	DAC01 TA1	CS01	5mm	0 270 310	1	f4 1/60	SL1-ON PLU-ON/T1	2 MIN
1.3S	SIGNING OF DOCKING CERTIFICATE	NK		35mm			f11 1/60 FOCUS	FLASH RANGE 2	4 FR
1.4S	MEAL	DAC01 TA1	CS01	5mm	0 90 300	3	f4 1/60	SL1-ON PLU-ON/T1	SHOOT UP MAG
1.5S	PANORAMA OF OM	DAC01 HH	CS02 TSB	10mm			f4 1/60 3'	SL1-ON PLU-ON/T1	USE AS MUCH FILM AS DESIRED
1.6S	MEAL	NK		35mm			f11 1/60 FOCUS	FLASH RANGE 2	8-10 FR

6/25/75

LOCATION
Hand held

E10

5/13/75

HOOK
VELCRO

HOOK
VELCRO

E11

2nd SOYUZ PHOTO

7/3/75

SECOND JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ)							
PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	LENS SETTING	LIGHTING	SHOOTING DIRECTIONS
P/N 8.4	FE PERFORMING ZFF EXPERIMENT	K-3A HH	N3 CON3	20mm	f2.0	SL1-ON	20SEC
2.2S	JOINING OF PLADUE	NK		35mm	f11.1/60 FOCUS	FLASH RANGE 2	2 FR

4th LAUNCH OPPORTUNITY

E11

3rd SOYUZ PHOTO

7/4/75

THIRD JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ)

PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	LENS SETTING	LIGHTING	SHOOTING DIRECTIONS
P/M 9.2	SC CHECKS HATCH INTEGRITY	K-3A HH	N3 CON3	12.5mm	f2.0	SL1-ON SL2-ON	20 SEC
P/M 9.3	SC WORKS WITH PRESSURE LEAK C&D	K-3A HH	N3	20mm	f2.0	SL1-ON SL2-ON	15 SEC
P/M 9.6	SC COMMUNICATES WITH MCC	K-3A HH	N3	20mm	f2.0	SL1-ON PLU-ON/T1	20 SEC
3.1S	PRESS. CONFERENCE - SC	NK		35mm	f11, 1/60 FOCUS	FLASH RANGE 2	2 FR
3.2S	PRESS. CONFERENCE - AC	NK					2 FR
3.3S	MICROBIAL EXCHANGE SC SAMPLES SOYUZ	NK					3 FR
3.4S	AC DOING TOUR OF FLORIDA	NK					2 FR
3.5S	EXCHANGE OF SEEDS	NK					2 FR
P/M 10.2	MICROBIAL EXCHANGE SC SAMPLES	K-3A HH	N4 CON3	12.5mm	f2.0	SL1-ON SL2-ON	20 SEC

CM TV (COSMONAUT TK-3)

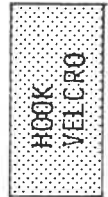
5/13/75

ОЗНАКОМЛЕНИЕ С СИСТЕМАМИ НИЖЕГО ОТСЕКА
ОБОРУДОВАНИЯ КМ /5 МИН/

ТВ
10.2

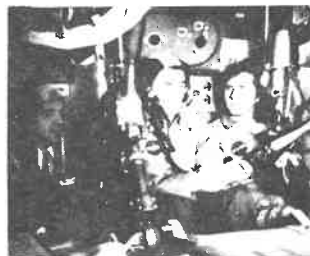


- | | |
|-------------|--|
| хвостовик | - верхний |
| риски | - синие |
| белая риска | - между 2 и 3 |
| кронштейн | - 607 |
| освещение | - вкл ВСЕ СВЕТИЛЬНИКИ |
| | - макс /кроме свет. стоек/ |
| | - ПЕРЕНОС СВЕТ в точке 1 /в направлении НОУ/ |
| Примечание: | - КОНТРОЛИРОВАТЬ загорание сигнальной лампы на ТК-3 после включения ТВ-камеры по КРЛ /71:05/ |
| | - СОДЕРЖАНИЕ ТВ-передачи: КА объясняет устройство КМ корабля "Аполлон" /на русском языке/ |



Familiarization with CM LEB
(5 min)

ТВ
10.2



- | | |
|------------|---|
| shoe | - top |
| marks | - blue |
| white mark | - between 2 and 3 |
| bracket | - 607 |
| lights | - all lights - max. (except strut lights - OFF) |
| | - PL in location PL1 facing LEB |

- Note: - Monitor cue light on TK-3 - ON upon activation via CRL (71:05)
- Content of TV scene:
AC explains Apollo CM systems arrangement (in Russian)

CM TV (COSMONAUT TK-3) (contd)

5/13/75

СОВМЕСТНАЯ ПРЕСС-КОНФЕРЕНЦИЯ У НОО КМ
/5 МИН/



ТВ
11.2



хвостовик - нижний /съемный
переходник/
риски - красные
белая риска - между 1 и 4
кронштейн - 11
освещение - вкл ВСЕ СВЕТИЛЬНИКИ

- макс
- ПЕРЕНОС СВЕТА в точке 1
/в направлении НОО/

Примечание: - КОНТРОЛИРОВАТЬ загорание
сигнальной лампы на ТК-3,
после включения ТВ-камеры
по КРЛ /77:11/
- СОДЕРЖАНИЕ ТВ-передачи:
совместная пресс-конференция
/на русском и английском
языках/

Press conference at the CM LEB
(5 min)

ТВ
11.2



shoe - lower (removable adapter)
marks - red
white mark - between 1 and 4
bracket - 11
lights - All lights - max.
- PL in location PL1
facing LEB

Note: - Monitor cue light on TK-3 - ON
upon activation via CRL (77:11)
- Content of TV scene:
Joint press conference (in Russian and
English)

2nd CM PHOTO (COSMONAUT)

7/3/75

ИНСТРУКЦИИ ПО ВЕДЕНИЮ КИНОФОТОСЪЕМОК В ТЕЧЕНИЕ ВТОРОГО ПЕРИОДА
СОВМЕСТНОЙ ДЕЯТЕЛЬНОСТИ /В КМ "АПОЛЛОН"/

ИСХОДНАЯ УСТАНОВКА: 606/ДАКО1/ПРАВЫЙ КОНТЕЙНЕР "АПОЛЛОНА"/5 мм/ПРАВЫЙ КОНТЕЙНЕР "АПОЛ-
ЛОНА"/С104/F2/ - КАБЕЛЬ ПИТАНИЯ/ПАНЕЛЬ 16/, КАБЕЛЬ ДИСТАНЦ.
УПРАВЛ./ X=330 Y=270 Z=290 /ШТЫРЕК В ОТВЕРСТИИ № 1/

КРОНИШТЕЙН
КАМЕРА "ДАК"
В ПРАВОМ
КОНТЕЙНЕРЕ
"АПОЛЛОНА"

231/ДАКО2/ЛЕВЫЙ КОНТЕЙНЕР "АПОЛЛОНА"/10 мм/ПРАВЫЙ КОНТЕЙНЕР "АПОЛ-
ЛОНА"/С109/F2/ - КАБЕЛЬ ПИТАНИЯ /ПАНЕЛЬ 100/, КАБЕЛЬ ДИСТАНЦ.
УПРАВЛ./ X=270 Y=320 Z=355 /ШТЫРЕК В ОТВЕРСТИИ № 1/

ПЕРЕНОСНОЙ СВЕТИЛЬНИК - ПОД ПЕРЕГ. УСТР. /P11/, НАПРАВЛЕННЫЙ НА
НИЖНИЙ ОТСЕК ОБОРУДОВАНИЯ

*** УСТАНОВИТЬ ДАК НА ТВ-КАМЕРУ

№ ФОТО- СЪЕМКИ	СОДЕРЖАНИЕ	КАМЕРА, ПОЛОЖЕ- НИЕ	КАССЕ- ТА, ПО- ЛОЖЕНИЕ	ОБЪЕК- ТИВ	X Y Z	№ ОТВЕР- СТИЯ	УСТА- НОВКА ОБЪЕК- ТИВА	МЕСТО- ПОЛОЖ. ПЕРЕНОСН. СВЕТИЛЬН.	ИНСТРУКЦИИ ПО СЪЕМКЕ
2.1	ПЕРЕХОД КС В КМ	ДАКО1 *** 606	С104	5 мм	330 270 290	1	Д=2.0 1/60 --	P11 НАПРАВЛЕН НА НОО	ИСПОЛЬЗОВАТЬ ВСЮ ПЛЕНКУ В КАССЕТЕ
КФ 8.1A	ПЕРЕХОД КС В КМ	ДАКО2 231	С109	10 мм	270 320 355	1	Д=1.8 1/60 6'	P11 НАПРАВЛЕН НА НОО	2 МИНУТЫ
КФ 8.2A	ПС ПРИ- ВЕТСТВУЕТ КС	ДАКО2 С РУК	С109	10 мм			Д=1.8 1/60 3'	НАПРАВЛЕН НА ПС	30 СЕКУНД
КФ 8.3A	ОЗНАКОМ- ЛЕНИЕ С КМ	FK-6	№7	45 мм			Д=3.5 1/15	P11 НАПРАВ- ЛЕН НА ЛЕ- ВОЕ КРЕСЛО	2-3 КАДРА
КФ 8.4A	КС: ОЗНА- КОМЛЕНИЕ С КМ	ДАКО2 С РУК	С109	10 мм			Д=1.8 1/60 3'	P11 НАПРАВЛЕН НА ЛЕВОЕ КРЕСЛО	30 СЕКУНД
2.2.1	СОЕДИН. ПЛАСТИНЫ	ДАКО1 *** 606	С106 /КАР- МАН/	5 мм	330 270 290	1	Д=2.0 1/60 --	P11 НАПРАВЛЕН НА НОО	30 СЕКУНД

4th LAUNCH OPPORTUNITY

E13

7/3/75

HOOK
VELCRO

HOOK
VELCRO

4th LAUNCH OPPORTUNITY

E14

3rd CM PHOTO (COSMONAUT)

7/3/75

ИНСТРУКЦИИ ПО ВЕДЕНИЮ КИНОФОТОСЪЕМОК В ТЕЧЕНИЕ ТРЕТЬЕГО ПЕРИОДА
СОВМЕСТНОЙ ДЕЯТЕЛЬНОСТИ /В КК "АПОЛЛОН"/

ИСХОДНАЯ УСТАНОВКА: 506/ДАКО2/ЛЕВЫЙ КОНТЕЙНЕР "АПОЛЛОНА"/5 мм/С108/F2/- КАБЕЛЬ
*** ПИТАНИЯ /ПАНЕЛЬ 16/, КАБЕЛЬ ДИСТАНЦ. УПРАВЛ./
X=330 Y=270 Z=290 /ШТЫРЕК В ОТВЕРСТИИ № 1/

*** УСТАНОВИТЬ ДАК НА ТВ-КАМЕРУ

№ ФОТО- СЪЕМКИ	СОДЕРЖАНИЕ	КАМЕРА, ПОЛОЖЕ- НИЕ	КАССЕ- ТА, ПО- ЛОЖЕНИЕ	ОБЪЕК- ТИВ	X Y Z	№ ОТВЕР- СТИЯ	УСТА- НОВКА ОБЪЕК- ТИВА	МЕСТО- ПОЛОЖ. ПЕРЕНОСН. СВЕТИЛЬН.	ИНСТРУКЦИИ ПО СЪЕМКЕ
КФ 9.9А	СИМВОЛИ- ЧЕСКАЯ ДЕЯТЕЛЬ- НОСТЬ	ЕК-6	№10	45 мм			Д=3.5 1/15	Р11 НАПРАВЛЕН НА НОО	3-4 КАДРА

6/1/75

4th LAUNCH OPPORTUNITY

E14

7/3/75

HOOK
VELCRO

4th LAUNCH OPPORTUNITY

6/27/75

E15

HOOK
VELCRO

HOOK
VELCRO

E15

6/27/75



30

20

10

0

10

20

30

KM @ NADIR

92% ACC NADIR $\pm 15^\circ$

VISUAL OBSERVATION SCALE

FRONT

LOCATION
Hand held

CUE CARDS

3-28

PRINT FLIGHT CARDS ON YELLOW PAPER

E16

UVA 150 M O/P (G&N/NO EMP)

COAST

59:30 ✓ DET 99:21:00
V74E
V48E, N46 61002; V46E
✓ SC CONT - CMC/AUTO

00:00 **THC -Y(L) 3s**
SC CONT - SCS
RHC trk SOYUZ, null R RT
V16N4E
V23N78E +25500E

HOOK
VELCRO

6/27/75

CUT OUT
THIS PART

06:30~ Null R ERR & hold
✓ Y ERR nulled
(-5° & incr)
SC CONT - CMC/AUTO
THC +Y(R) 1s
RHC - LOCKED
V58E Estab ORB RT DRIVE
V16N4E
THC null LOS RT,
(1°/min ~ 0.1 fps)
ctr SOYUZ in COAS +1°

17:30 SC CONT - CMC/AUTO

SWEEP

18:00 **THC -Z(U) 1.5s**
-Y(L) 2s

SC CONT - SCS
JETS A3,C4,B3,D4 - OFF
✓ R ERR nulled
RHC align COAS CAL MK
on REFLECTOR

HOOK
VELCRO

←Inform: BEACONS &
ORIENTATION LTS OFF
DATA TAKE
V23N78E +27000E
22:15~ ✓ Y ERR nulled
V23N78E +28500E

TERM

27:00~ ✓ NO4 P ERR -1° & incr
✓ DATA TAKE compl
& UV COVER closed
AUTO RCS (16) - MNA/B

28:00~ Inform: BEACONS &
ORIENTATION LTS ON

✓ P ERR nulled
SC CONT - CMC/AUTO
THC -Z(U) 1.5s
+Y(R) 2s

V58E Estab ORB RT DRIVE
THC null LOS RT 3m max
SC CONT - SCS

COAST V16N4E

RHC trk SOYUZ &
✓ R ERR nulled
When Y ERR +5°:
Incr N78 10°

←Inform:
EXT LT ON
EXT LT - SPOT

4 PLY SHIM

✓ P ERR stable < /3°/
*MAN ATT P - RT CMD *
THC >+3: UP, <-3: DN
*MAN ATT P - MIN IMP *
N78 R3 0° & Y ERR → 0
MAN ATT (3) - RT CMD

44:30~ **THC +Y(R) 3s**

✓ R ERR nulled &
NO4 P & Y ERR < /3°/
MAN ATT (3) - MIN IMP
SC CONT - CMC
RHC - LOCKED
V58E Estab ORB RT DRIVE
**THC null LOS RT &
STA KEEP 50 M behind,
θ WINGS 9°, θ BODY 3°**
✓ SOYUZ mnvr to LH ASAP
GDC ALIGN to IMU
Set DET for 500 M O/P

STA
KEEP

HOOK
VELCRO

←Inform:
EXT LT OFF
EXT LT - OFF

PRINT FLIGHT CARDS ON YELLOW PAPER

PRINT FLIGHT CARDS ON YELLOW PAPER

E16

UVA 500 M O/P (G&N/NO EMP)

COAST

✓ DET 100:50:00
V74E
V48E, N46 61002; V46E
V46E
59:30 RHC - ARMED

HOOK
VELCRO

59:30

00:00

THC +Y(R) 9s
SC CONT - CMC/FREE
RHC trk SOYUZ, null R
V16N4E RT

6/27/75

05:30~

V23N78E +25500E
Null R ERR & hold
✓ Y ERR nulled
SC CONT - CMC/AUTO
THC -Y(L) 2s
RHC - LOCKED
V58E Estab ORB RT DRIVE
V16N4E
✓ VHF ranging on
THC null LOS RT,
(1°/min ~ 0.3 fps)
ctr SOYUZ in COAS +1°

SWEEP 18:00

THC -Z(U) 5s, +Y(R) 7s
SC CONT - CMC/FREE
JETS A3,C4,B3,D4 - OFF
✓ R ERR nulled
RHC align COAS CAL MK
on REFLECTOR

HOOK
VELCRO

22:15~

DATA TAKE
V23N78E +27000E
✓ Y ERR nulled
V23N78E +28500E

TERM

27:00~ ✓ NO4 P ERR -1° & incr
DATA TAKE compl
& UVA COVER closed
AUTO RCS (16) - MNA/B
← Inform: BEACONS &

ORIENTATION LTS ON

SC CONT - CMC/AUTO

28:00~ THC -Z(U) 5s, -Y(L) 7s
RHC - LOCKED
V58E Estab ORB RT DRIVE
THC null LOS RT & adj
N78 to ctr SOYUZ
← Inform: EXT LT ON
EXT LT - SPOT

COAST V16N4E THC ctr SOYUZ
in COAS &
null LOS RT

✓ θ BODY dia 2°
(VHF ~.04nm)

THC -X(A) 3s,
+Y(R) 2s

HOOK
VELCRO

SC CONT -
CMC/FREE
RHC trk SOYUZ
& ✓ R ERR
nulled

Incr N78 as R3→0
✓ P ERR stable </3°/

*SC CONT - CMC/HOLD *
THC >+3: UP, <-3: DN
*SC CONT - CMC/FREE *

When NO4 Y ERR ~5°:
SC CONT - CMC/AUTO

44:30~ THC -Y(L) 3s

STA
KEEP

✓ R ERR nulled &
NO4 P & Y ERR < /3°/
RHC - LOCKED
V58E Estab ORB RT DRIVE
THC null LOS RT &
STA KEEP 50 M ahead,
θ WINGS 9°, θ BODY 3°

GDC ALIGN 0,0,0
Set DET for 1000M I/P
✓ VHF ranging off

HOOK
VELCRO

← Inform:
EXT LT OFF
EXT LT - OFF

PRINT FLIGHT CARDS ON YELLOW PAPER

4th LAUNCH OPPORTUNITY

i
CUE CARDS

LIST OF EFFECTIVE PAGES

FINAL 5/13/75
PCN-1 6/27/75
PCN-2 7/3/75
PCN-3 7/4/75
PCN-4 7/8/75

PAGE	CONTENTS/CARD NO. AND TITLE	DATE
*i	LIST OF EFFECTIVE PAGES	7/8/75
*ii	LIST OF EFFECTIVE PAGES (contd)	7/8/75
iii	MISSION PHASE CONFIGURATION SUMMARY	6/27/75
iv	LAUNCH CONFIGURATION	6/27/75
v	T&D CONFIGURATION	5/13/75
vi	RNDZ CONFIGURATION	6/27/75
vii	EXP CONFIGURATION	6/27/75
viii	DEORBIT CONFIGURATION	5/13/75
ix	ENTRY CONFIGURATION	5/13/75
x	LANDING CONFIGURATION	5/13/75
1-1	L1 AC BOOST/ABORTS	6/27/75
1-2	Velcro locations (back of card)	5/13/75
1-3	L2 AC ABORTS III & IV	5/13/75
1-4	Velcro locations (back of card)	5/13/75
1-5	L3 PWR LOSS LAUNCH	5/13/75
1-6	L4 SATURN BOOST	5/13/75
1-7	L5 DP BOOST	5/13/75
1-8	L6 EPS/ECS ABORTS	6/27/75
1-9	L7 LAUNCH ABORT PAD	5/13/75
1-10	L8 LANDING	6/27/75
1-11	PNL 275	5/13/75
1-12	L9 DAP LOAD	5/13/75
1-13	L10 RCS MON, RCS tb's	5/13/75
1-14	L11 ECS MON	5/13/75
1-15	ECS MALF & PWR LOSS	5/13/75
1-16	L12 PWR USERS	5/13/75
1-17	COMM	5/13/75
2-1	F1 T&D	6/27/75
2-2	Velcro locations (back of card)	5/13/75
2-3	F2 SPS BURN RNDZ	5/13/75
2-4	SPS BURN RNDZ (contd)	5/13/75
2-5	F3 PWR LOSS ΔV	5/13/75
2-6	UVA RANGE	5/13/75
2-7	F4 ΔV FAILURES	5/13/75

* Current data changes

E11

2nd SOYUZ PHOTO

7/8/75

SECOND JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ)							
PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	LENS SETTING	LIGHTING	SHOOTING DIRECTIONS
P/M 8.4	FE PERFORMING ZFF EXPERIMENT	K-3A HH	N3 CON3	20mm	f2.0	SL1-ON	20SEC
2.2S	JOINING OF PLAQUE	NK		35mm	f11, 1/60 FOCUS	FLASH RANGE 2	2 FR

4th LAUNCH OPPORTUNITY

3-20

LOCATION
Hand held

CUE CARDS

E11

3rd SOYUZ PHOTO

7/8/75

THIRD JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ)							
PHOTO #	ACTIVITY	CAM LOC	MAG LOC	LENS	LENS SETTING	LIGHTING	SHOOTING DIRECTIONS
3.3S	MICROBIAL EXCHANGE SC SAMPLES SOYUZ	NK		35mm	f11, 1/60 FOCUS	FLASH RANGE 2	3 FR
3.5S	EXCHANGE OF SEEDS	NK			!	!	2 FR
P/H 10.2	MICROBIAL EXCHANGE SC SAMPLES	K-3A HH	N4 CON3	12.5mm	f2.0	SL1-ON SL2-ON	20 SEC

HOOK
VELCRO

4th LAUNCH OPPORTUNITY

5th LAUNCH OPPORTUNITY

**INCORPORATE
4TH LAUNCH OPPORTUNITY
CHANGE PCN**

5th LAUNCH OPPORTUNITY

5th LAUNCH OPPORTUNITY

CUE CARDS

LIST OF EFFECTIVE PAGES

FINAL 5/13/75
PCN-1 6/27/75
PCN-2 7/3/75
PCN-3 7/4/75
PCN-4 7/8/75

PAGE	CONTENTS/CARD NO. AND TITLE	DATE
*i	LIST OF EFFECTIVE PAGES	7/8/75
*ii	LIST OF EFFECTIVE PAGES (contd)	7/8/75
iii	MISSION PHASE CONFIGURATION SUMMARY	7/3/75
iv	LAUNCH CONFIGURATION	6/27/75
v	T&D CONFIGURATION	5/13/75
vi	RNDZ CONFIGURATION	6/27/75
vii	EXP CONFIGURATION	6/27/75
viii	DEORBIT CONFIGURATION	5/13/75
ix	ENTRY CONFIGURATION	5/13/75
x	LANDING CONFIGURATION	5/13/75
1-1	L1 AC BOOST/ABORTS	6/27/75
1-2	Velcro locations (back of card)	5/13/75
1-3	L2 AC ABORTS III & IV	5/13/75
1-4	Velcro locations (back of card)	5/13/75
1-5	L3 PWR LOSS LAUNCH	5/13/75
1-6	L4 SATURN BOOST	5/13/75
1-7	L5 DP BOOST	5/13/75
1-8	L6 EPS/ECS ABORTS	6/27/75
1-9	L7 LAUNCH ABORT PAD	5/13/75
1-10	L8 LANDING	6/27/75
1-11	PNL 275	5/13/75
1-12	L9 DAP LOAD	5/13/75
1-13	L10 RCS MON, RCS tb's	5/13/75
1-14	L11 ECS MON	5/13/75
1-15	ECS MALF & PWR LOSS	5/13/75
1-16	L12 PWR USERS	5/13/75
1-17	COMM	5/13/75
2-1	F1 T&D	6/27/75
2-2	Velcro locations (back of card)	5/13/75
2-3	F2 SPS BURN RNDZ	5/13/75
2-4	SPS BURN RNDZ (contd)	5/13/75
2-5	F3 PWR LOSS ΔV	5/13/75
2-6	UVA RANGE	5/13/75
2-7	F4 ΔV FAILURES	5/13/75

* Current data changes

PAGE	CONTENTS/CARD NO. AND TITLE	DATE
2-8	F5 PWR LOSS ΔV	5/13/75
2-9	PNL 229 cb's, EPS BUSSES	5/13/75
2-10	F6 SPS BURN RULES	5/13/75
2-11	F7 SPS BURN ENTRY	5/13/75
2-12	SPS BURN ENTRY (contd).	5/13/75
2-13	F8 DEORB ATT	5/13/75
2-14	F9 ENTRY	6/27/75
2-15	PWR LOSS ENTRY	6/27/75
2-16	F10 LOSS OF ATS-6 VOICE	6/27/75
2-17	Velcro locations (back of card)	5/13/75
3-1	E1 UVA PREP	6/27/75
3-2	UVA 150 M O/P	6/25/75
3-3	E2 UVA 500 M O/P	5/13/75
3-4	UVA 1000 M I/P	6/27/75
3-5	E3 SM EXP	6/27/75
3-6	Velcro locations (back of card)	5/13/75
3-7	E4 MICROBIAL EXCHANGE.	5/13/75
3-8	E5 INTERIOR PHOTO	5/13/75
3-9	EXTERIOR PHOTO	6/27/75
3-10	E6 CM TV	5/13/75
3-11	CM TV (contd)	6/27/75
3-12	E7 SOYUZ TV	5/13/75
3-13	SOUYZ TV (contd).	5/13/75
3-14	E8 2nd CM PHOTO.	7/3/75
3-15	Velcro locations (back of card)	7/3/75
3-16	E9 3rd CM PHOTO.	7/3/75
3-17	Velcro locations (back of card)	7/3/75
3-18	E10 1st SOYUZ PHOTO	6/27/75
3-19	Velcro locations (back of card)	5/13/75
3-20	E11 2nd SOYUZ PHOTO	7/3/75
*3-21	Velcro locations (back of card)	7/3/75
3-22	E12 CM TV (COSMONAUT TK-3)	5/13/75
3-23	CM TV (COSMONAUT TK-3) (contd).	5/13/75
3-24	E13 2nd CM PHOTO (COSMONAUT).	7/3/75
3-25	Velcro locations (back of card)	7/3/75
3-26	E14 3rd CM PHOTO (COSMONAUT).	7/3/75
3-27	Velcro locations (back of card)	7/3/75
3-28	E15 VISUAL OBSERVATION SCALE	6/27/75
3-29	E16 UVA 150M O/P (NO EMP)	6/27/75
3-30	UVA 500M O/P (G&N/NO EMP)	6/27/75

* Current data changes

5th LAUNCH OPPORTUNITY

5th LAUNCH OPPORTUNITY

iii

MISSION PHASE CONFIGURATION SUMMARY

7/3/75

MISSION PHASE		LAUNCH	T&D	RNDZ	EXP	DEORBIT	ENTRY	LANDING	REMARKS
CARD DESCRIPTION									
L1	AC BOOST/ABORTS	X							
L2	AC ABORTS III & IV	X							
L3	PWR LOSS LAUNCH	X							
L4	SATURN BOOST	X							
L5	DP BOOST	X							
L6	EPS/ECS ABORTS	X							
L7	LAUNCH ABORT PAD	X							
L8	LANDING, PNL 275	X	.....	.....	.....	.....	.....	X	
L9	DAP LOAD	X	X	X	X	X	X	.....	
L10	RCS MON, RCS tb's	X	X	X	X	X	X	X	
L11	ECS MON, ECS MALF	X	X	X	X	X	X	X	
L12	PWR USERS, COMM	X	X	X	X	X	X	X	
F1	T&D		X						Stow in AC suit pocket for launch
F2	SPS BURN RNDZ			X					
F3	PWR LOSS ΔV, UVA RANGE			X	X	X			Reverse to UVA RANGE for UVA EXP
F4	ΔV FAILURES			X	X	X	.....		
F5	PWR LOSS ΔV, PNL 229			X	X	X	.....		
F6	SPS BURN RULES			X	X	X	.....		
F7	SPS BURN ENTRY					X			
F8	DEORB ATT					X	.....		
F9	ENTRY, PWR LOSS ENTRY						X		
F10	LOSS OF ATS-6 VOICE			X	X	X	.....		Stow in suit pocket after PGA DOFF
E1	UVA PREP, 150 M O/P				X				Install prior to 1st UNDKG
E2	UVA 500 M O/P, 1000 M				X				Install after 150 M O/P is complete
E3	SM EXP			X	X	.....			Install prior to rev 18
E4	INTERIOR PHOTO, EXT		X	X	X	X	.....		Install early in RNDZ phase
E5	MICROBIAL EXCHANGE				X				Stow in ME Kit #3 after 1st transfer
E6	CM TV				X				
E7	SOYUZ TV				X				Stow in TSB for 2nd transfer
E8	2nd CM PHOTO				X				Use for 2nd JA period
E9	3rd CM PHOTO				X				Use for 3rd JA period
E10	1st SOYUZ				X				Stow in TSB for 1st transfer
E11	2nd SOYUZ PHOTO				X				Stow in TSB for 2nd transfer
E12	CM TV (COSMONAUT TK-3)				X				
E13	2nd CM PHOTO (COSMONAUT)				X				Use for 2nd JA period
E14	3rd CM PHOTO (COSMONAUT)				X				Use for 3rd JA period
E15	VISUAL OBS SCALE			X	X				
E16	UVA 150M O/P (NO EMP)				X				Contingency; use during UVA if reqd
	500M O/P (G&N/NO EMP)								YELLOW PAPER

X Required
..... Optional,
see page v

E11

7/8/75

HOOK
VELCRO

5th LAUNCH OPPORTUNITY

CUE CARDS

3-21

PRINT FLIGHT CARDS ON YELLOW PAPER

E16

UVA 150 M O/P (G&N/NO EMP)

COAST

57:00 ✓ DET 99:21:00
SC CONT - CMC/AUTO
EMP: ✓ N26 1,1536,12007
V31E, V48E 61002, V46E

28:00~ ✓ P ERR nulled

SC CONT - CMC/AUTO

THC -Z(U) 1.5s
+Y(R) 2s

V58E Estab ORB RT DRIVE

THC null LOS RT 3m max

SC CONT - SCS

00:00

THC -Y(L) 3s

SC CONT - SCS

RHC trk SOYUZ, null R RT

V16N4E

V23N78E +25500E

COAST V16N4E

RHC trk SOYUZ &
✓ R ERR nulled
When Y ERR +5°:
Incr N78 10°

CUT OUT
THIS PART

HOOK
VELCRO

7/4/75

Null R ERR & hold

06:30~ ✓ Y ERR nulled

(-5° & incr)

SC CONT - CMC/AUTO

THC +Y(R) 1s

RHC - LOCKED

V58E Estab ORB RT DRIVE

V16N4E

THC null LOS RT,

(1°/min ~ 0.1 fps)

ctr SOYUZ in COAS +1°

17:30 SC CONT - CMC/AUTO

SWEEP

18:00

THC -Z(U) 1.5s

-Y(L) 2s

SC CONT - SCS

JETS A3,C4,B3,D4 - OFF

✓ R ERR nulled

RHC align COAS CAL MK

on REFLECTOR

←Inform: BEACONS &

ORIENTATION LTS OFF

DATA TAKE

V23N78E +27000E

22:15~ ✓ Y ERR nulled

V23N78E +28500E

TERM

27:00~ ✓ N04 P ERR -1° & incr

& UV COVER closed

AUTO RCS (16) - MNA/B

←Inform:

EXT LT ON

EXT LT - SPOT

4 PLY SHIM

✓ P ERR stable < /3°/

*MAN ATT P - RT CMD *

THC >+3: UP, <-3: DN

*MAN ATT P - MIN IMP *

N78 R3 0° & Y ERR → 0

MAN ATT (3) - RT CMD

44:30~

THC +Y(R) 3s

✓ R ERR nulled &

N04 P & Y ERR < /3°/

MAN ATT (3) - MIN IMP

SC CONT - CMC

RHC - LOCKED

V58E Estab ORB RT DRIVE

THC null LOS RT &

STA KEEP 50 M behind,

θ WINGS 9°, θ BODY 3°

✓ SOYUZ mnvr to LH ASAP

GDC ALIGN to IMU

Set DET for 500 M O/P

STA
KEEP

HOOK
VELCRO

HOOK
VELCRO

←Inform:

EXT LT OFF

EXT LT - OFF

PRINT FLIGHT CARDS ON YELLOW PAPER

PRINT FLIGHT CARDS ON YELLOW PAPER

L16

UVA 500 M O/P (G&N/NO EMP)

ORIENTATION LTS ON

COAST

57:00 ✓ DET 100:50:00
SC CONT - CMC/AUTO
EMP: ✓ N26 1,1536,12007
V31E, V48E 61002, V46E
59:30 RHC - ARMED
00:00 **THC +Y(R) 9s**
SC CONT - CMC/FREE
RHC trk SOYUZ, null R
V16N4E RT

28:00~ **THC -Z(U) 5s, -Y(L) 7s**
RHC - LOCKED
V58E Estab ORB RT DRIVE
THC null LOS RT & adj
N78 to ctr SOYUZ
← Inform: EXT LT ON
EXT LT - SPOT

HQOK
VELCRO

7/4/75

05:30~ V23N78E +25500E
Null R ERR & hold
✓ Y ERR nulled
SC CONT - CMC/AUTO
THC -Y(L) 2s
RHC - LOCKED
V58E Estab ORB RT DRIVE
V16N4E
✓ VHF ranging on
THC null LOS RT,
(1°/min ~ 0.3 fps)
ctr SOYUZ in COAS +1°

COAST V16N4E THC ctr SOYUZ
in COAS &
null LOS RT

✓ 0 BODY dia 2°
(VHF ~.04nm)

**THC -X(A) 3s,
+Y(R) 2s**

SC CONT -
CMC/FREE
RHC trk SOYUZ
& ✓ R ERR
nulled

Incr N78 as R3→0
✓ P ERR stable </3°/

*SC CONT - CMC/HOLD *
THC >+3: UP, <-3: DN
*SC CONT - CMC/FREE *

SWEEP 18:00 **THC -Z(U) 5s, +Y(R) 7s**

SC CONT - CMC/FREE
JETS A3,C4,B3,D4 - OFF
✓ R ERR nulled
RHC align COAS CAL MK
on REFLECTOR

← Inform: BEACONS &
ORIENTATION LTS OFF

DATA TAKE
V23N78E +27000E
22:15~ ✓ Y ERR nulled
V23N78E +28500E

When NO4 Y ERR ~5°:
SC CONT - CMC/AUTO

44:30~ **THC -Y(L) 3s**
✓ R ERR nulled &
NO4 P & Y ERR < /3°/

STA
KEEP
RHC - LOCKED
V58E Estab ORB RT DRIVE
**THC null LOS RT &
STA KEEP 50 M ahead,
0 WINGS 9°, 0 BODY 3°**

GDC ALIGN 0,0,0
Set DET for 1000M I/P
✓ VHF ranging off

TERM

27:00~ ✓ NO4 P ERR -1° & incr
✓ DATA TAKE compl
& UVA COVER closed
AUTO RCS (16) - MNA/B
← Inform: BEACONS &

← Inform:
EXT LT OFF
EXT LT - OFF

HQOK
VELCRO

PRINT FLIGHT CARDS ON YELLOW PAPER