

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

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CHANGE CONTROL RECORD

APPOLO/SOYUZ TEST PROJECT

CUE CARDS

CHECKLIST

| CONTROL<br>NO. | FDF EDITION INCORPORATED |         | DISAPPROVED<br>OR OTHER<br>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 |  |
| 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            |                          |         | Superceded<br>Chg #35                  |
| 031            | PCN-1                    | 3/10/75 |  |
| 032            | PCN-1                    | 3/10/75 |  |
| 033            | PCN-1                    | 3/10/75 |  |
| 034            |                          |         | Disapproved                            |
| 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 |  |

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-671-209/89

LTV/CPD-0331

CHANGE CONTROL RECORD

APPOLO/SOYUZ TEST PROJECT

CUE CARDS

CHECKLIST

| CONTROL<br>NO. | FDF EDITION INCORPORATED                          |         | DISAPPROVED<br>OR OTHER<br>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 |  |
| 061            | FINAL   | 5/13/75 |  |
| 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<br>NO. | FDF EDITION INCORPORATED |         | DISAPPROVED<br>OR OTHER<br>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       |
|------|---|------------|
|      | PCN-S   | 7/9/75     |
| *i   | LIST OF EFFECTIVE PAGES . . . . .             | 7/9/75(RI) |
| *ii  | LIST OF EFFECTIVE PAGES (contd) . . . . .     | 7/9/75(RI) |
| 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 . . . . .                  | 7/9/75(RI) |
| 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 . . . . .                        | 7/4/75 (part)<br>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. . . . .                  | 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                   |

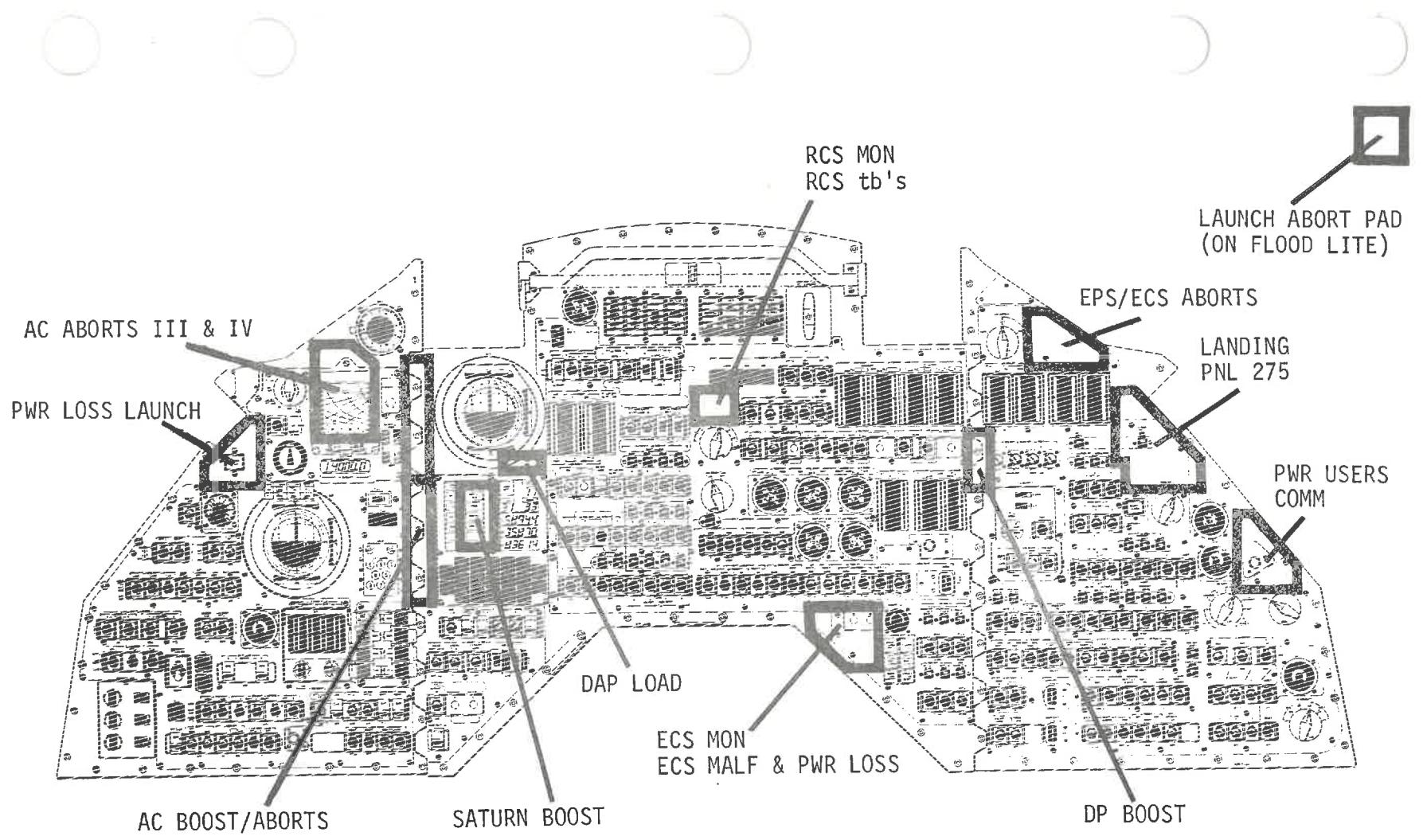
\* Current data changes

4th LAUNCH OPPORTUNITY

## MISSION PHASE CONFIGURATION SUMMARY

6/27/75

| MISSION PHASE<br>CARD DESCRIPTION                  | LAUNCH | T&D   | RNDZ  | EXP   | DEORBIT | ENTRY | LANDING | REMARKS                              |          |
|--|--------|-------|-------|-------|---------|-------|---------|--------------------------------------|----------|
|  |        |       |       |       |         |       |         | X                                    | Required |
| 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       | ..... | .....   |                                      |          |
| 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     |       |       |         |       |         | Reverse to UVA RANGE for UVA EXP     |          |
| F3 PWR LOSS ΔV, UVA RANGE                          |        | X     | X     | X     |         |       |         |                                      |          |
| F4 ΔV FAILURES                                     |        | X     | X     | ..... |         |       |         |                                      |          |
| F5 PWR LOSS ΔV, PNL 229                            |        | X     | ..... | X     | .....   |       |         |                                      |          |
| F6 SPS BURN RULES                                  |        | 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     | ..... |         |       |         | 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     | ..... | ..... |         |       |         | Install prior to rev 18              |          |
| E4 INTERIOR PHOTO, EXT                             | 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     |       |       |         |       |         | Contingency; use during UVA if reqd  |          |
| E16 UVA 150M O/P (NO EMP)<br>500M O/P (G&N/NO EMP) |        | X     |       |       |         |       |         | YELLOW PAPER                         |          |

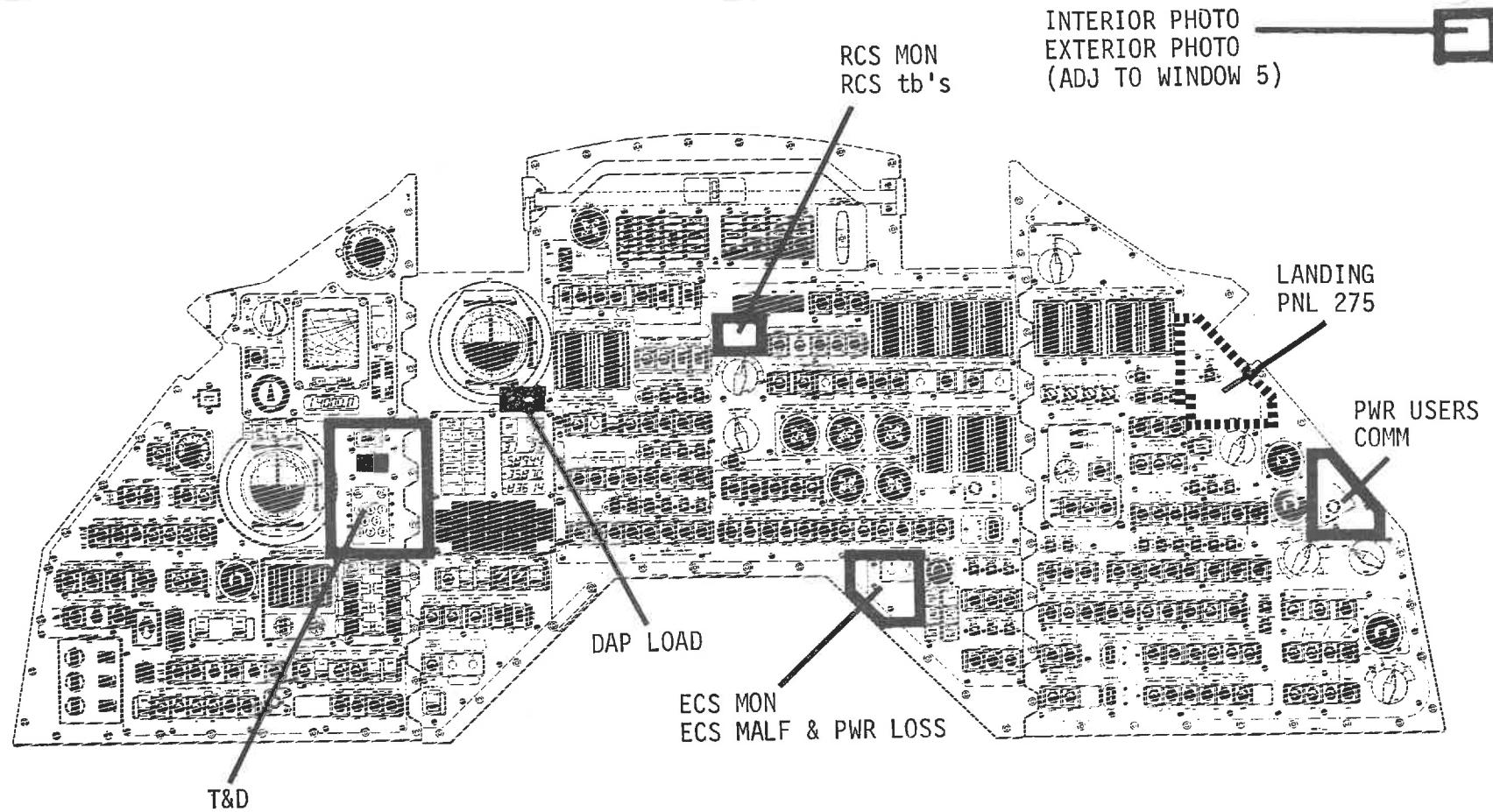


Note:

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



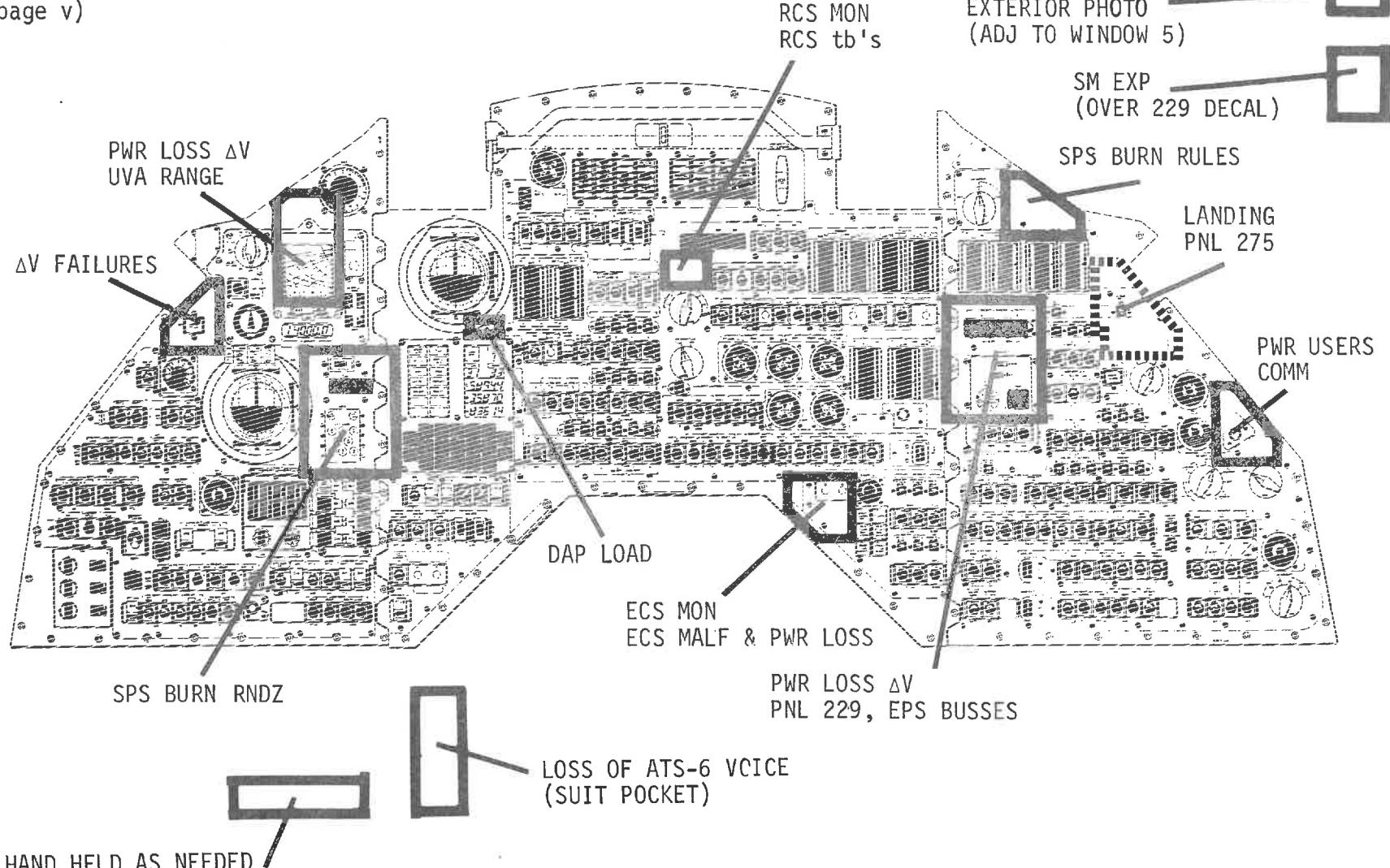
#### OPTIONAL .....

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)

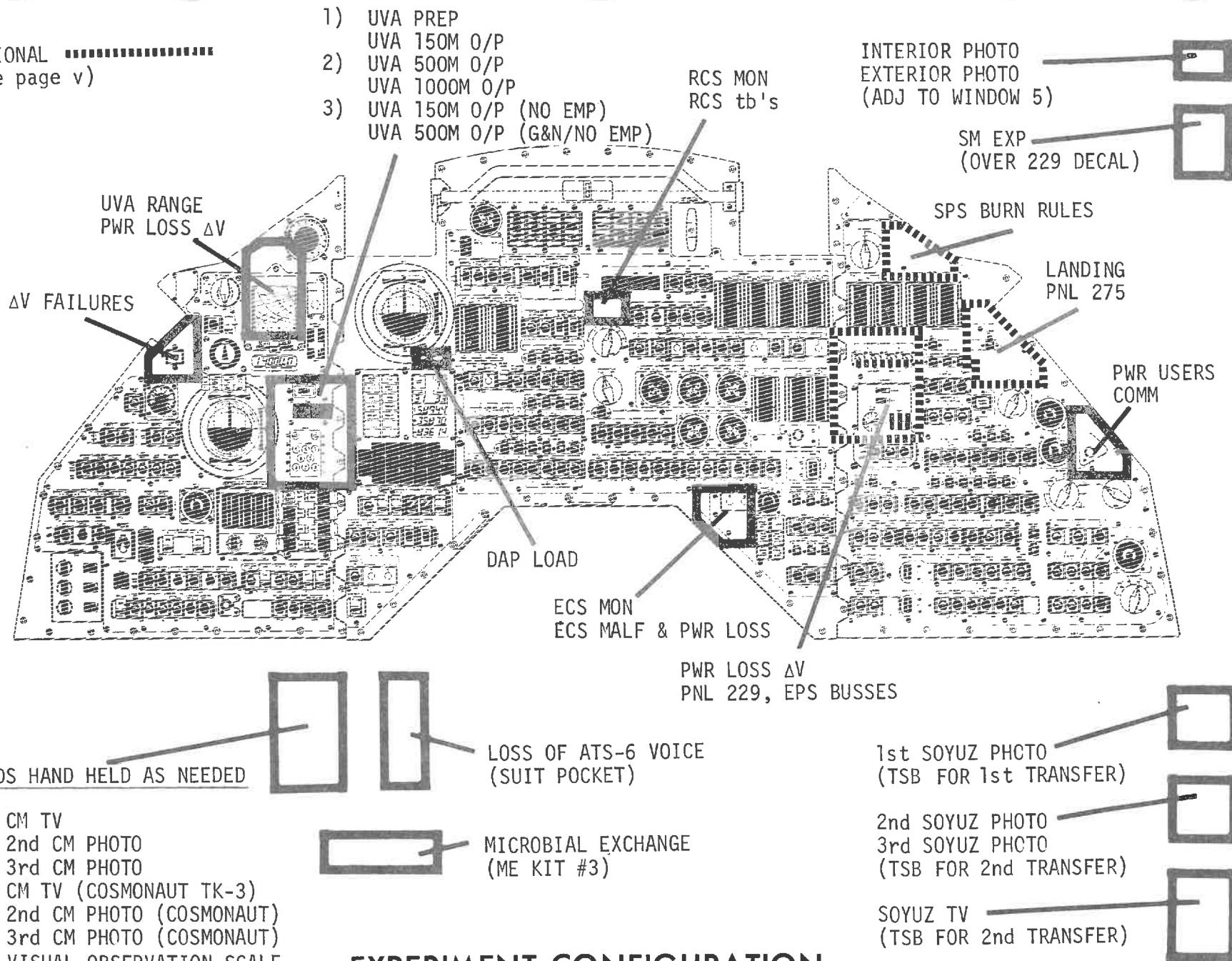


1) VISUAL OBSERVATION SCALE

## RNDZ CONFIGURATION

6/25/75

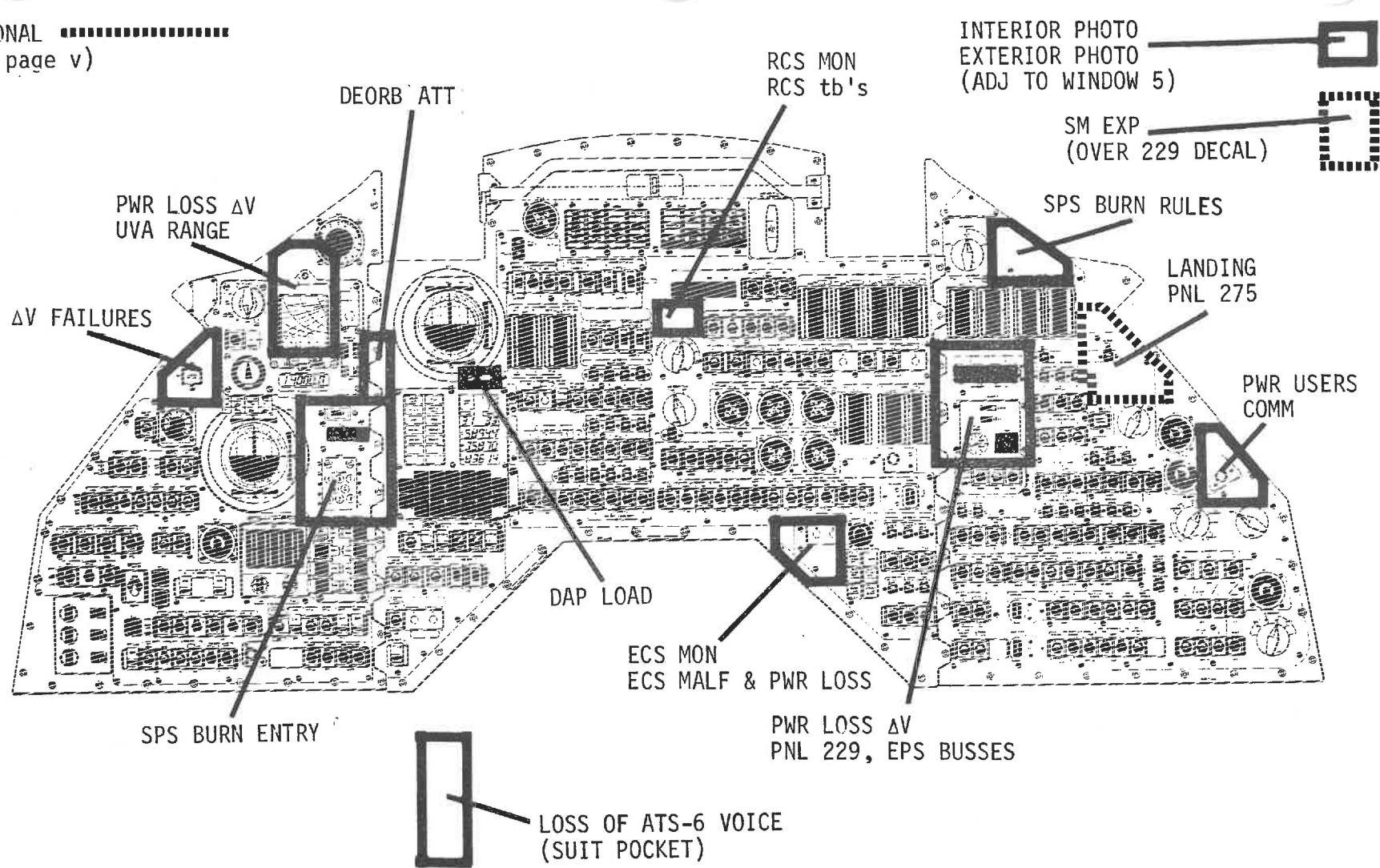
OPTIONAL .....  
(See page v)



## EXPERIMENT CONFIGURATION

6/27/75

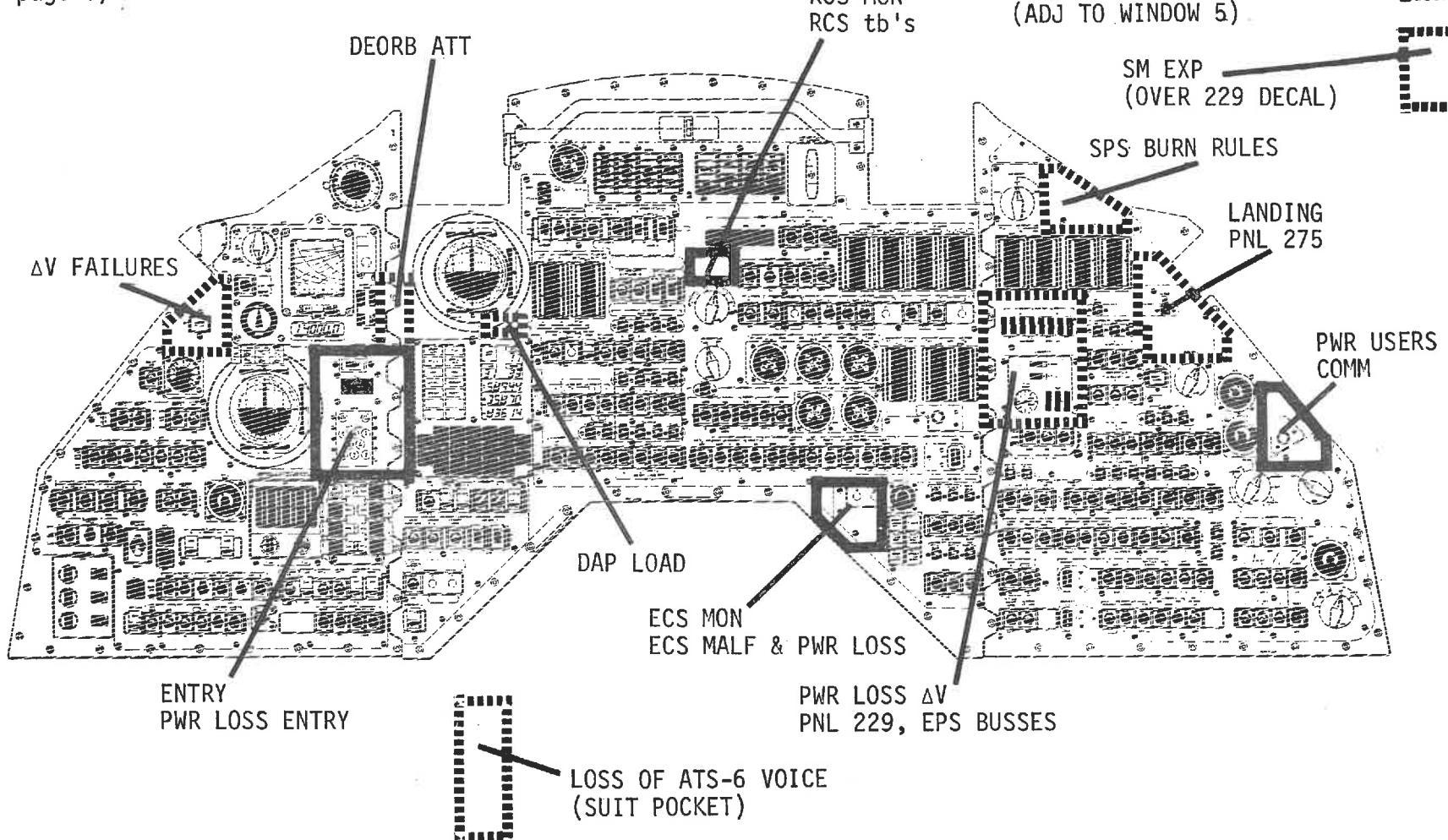
OPTIONAL .....  
(See page v)



## DEORBIT CONFIGURATION

5/13/75

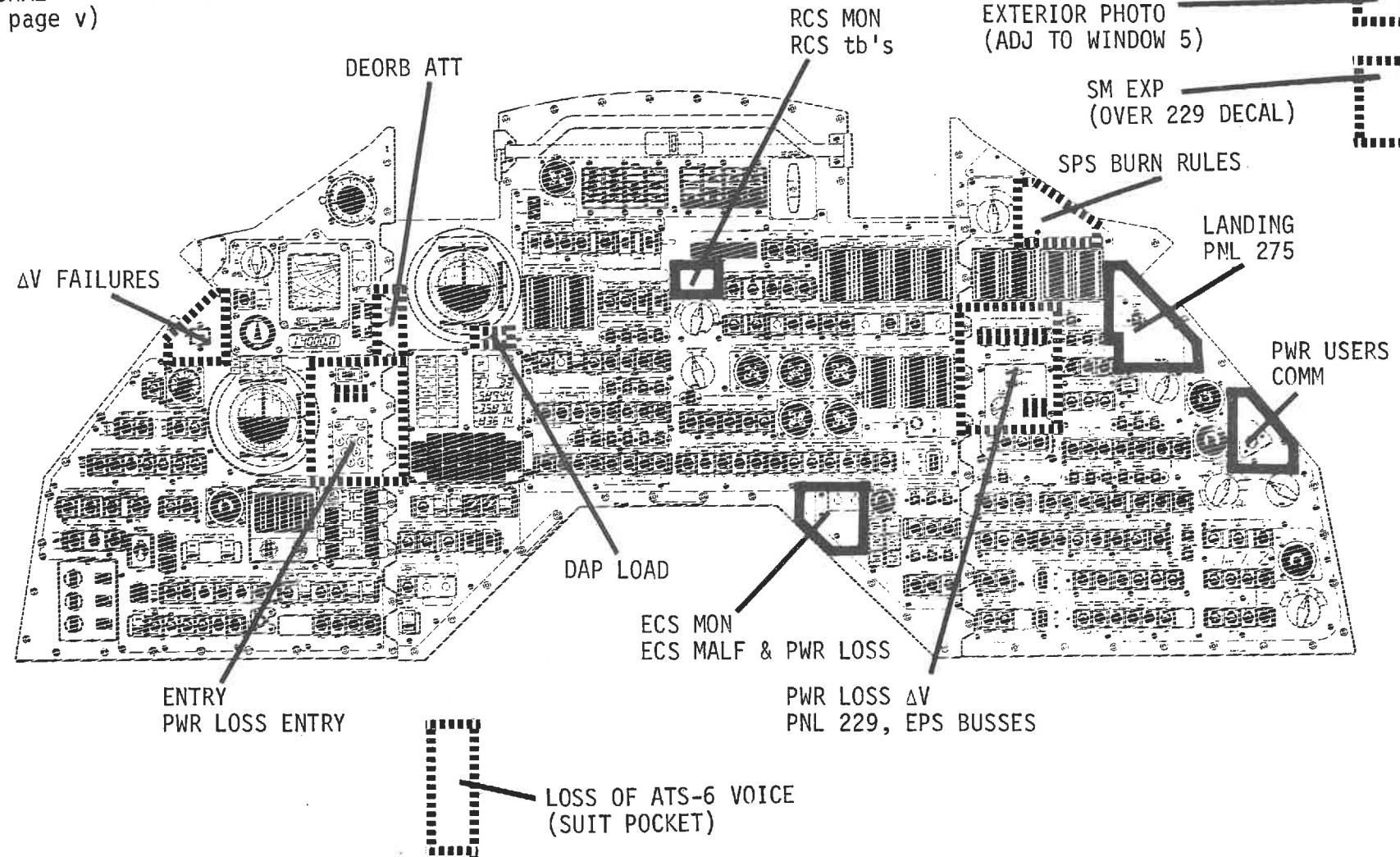
OPTIONAL .....  
(See page v)



## ENTRY CONFIGURATION

5/13/75

OPTIONAL .....  
(See page v)



LANDING CONFIGURATION  
5/13/75

# AC BOOST/ABORTS

FINAL O/T 6/27

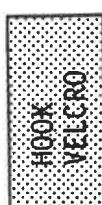
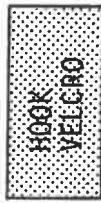
6/27/75

LOCATION  
MDC-2 on left side  
of FDAO & DSKY

5/13/75

L1

5/13/75



L2

## AC ABORTS III &amp; IV

5/13/75

CUT OUT  
THIS  
PART

|               |  |
|---------------|--|
|               | III                                    |
| :03           | CCW (4 sec)                            |
|               | LV SEP                                 |
| :05           | THC NEUT, +X to :24                    |
|               | BMAGS 1/2 N50                          |
|               | IIIA: 180/HORZ(355)/0<br>(SEF/DN/HORZ) |
|               | IIIB: 180/HORZ(199)/0<br>(BEF/UP/HORZ) |
|               | EMS - NORM                             |
|               | RATE - LOW                             |
|               | LV IND - GPI                           |
|               | ΔV THRUST A                            |
|               | ULLAGE (15 sec)                        |
|               | THRUST PB                              |
| PAD<br>(2:05) | BURN: HOU ΔV                           |
|               | OR: ΔR = -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                         |
| 30K<br>24K    | APEX/DROGUES                           |

|       |                      |
|-------|----------------------|
|       | IV                   |
| :03   | CCW (4 sec)          |
|       | LV SEP               |
| :05   | THC NEUT, +X to :24  |
|       | BMAGS 1/2            |
|       | 180/(CHART P)/0      |
|       | EMS - NORM           |
|       | RATE - LOW           |
|       | LV IND - GPI         |
|       | ΔV THRUST A          |
| <1:30 | ULLAGE (15 sec)      |
|       | THRUST PB            |
|       | SCS TVC P - RATE CMD |
|       | 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*  |

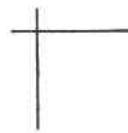
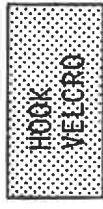
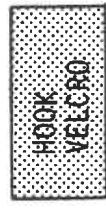
AK

P47 V82

|  |                  |
|--|------------------|
|  | 180/HORIZ/0      |
|  | Hdot = 0:        |
|  | Burn per IV to   |
|  | HP = 70nm + 4sec |

L2

5/13/75



LOCATION  
MDC-1 covering  
MASTER ALARM It

CUT OUT  
THIS PART

L3

## PWR LOSS LAUNCH

AC1

5/13/75

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

AC2

✓ BMAGS - RATE 1  
FDAL 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

MNA

EDS AUTO - OFF  
FDAL 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

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

L3

### LAUNCH LOGIC BUS LOSS

#### LOGIC BUS 1

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



#### LOGIC BUS 2

✓ FDAO 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

FDAO SEL - 1



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

L4

5/13/75

L4

**SATURN BOOST**

FINAL O/T

5/13/75

| DET  | $\Theta$ | V  | I   | 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 |

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

CUE CARDS

1-6

LOCATION  
MDC-2 covering a  
portion of DSKY lights

L5

5/13/75

L5

**DP BOOST**

5/13/75

FINAL O/T

0:00 IA  
0:50 CAB PRESS  
1:01 IB  
1:30 Ck CAB PRESS  
1:47 IC  
2:16 IECO/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.O  |
| 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

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: A11 MNA(B) - OFF,  
A11 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

67

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

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

68

AC PWR LOSS - LAUNCH

6/27/75

CUE CARDS

1-8

LOCATION  
MDC-3 adj to  
VHF antenna sel

LOCATION  
On floodlight

L7



5/13/75

L7

MODES  
III  
IV  
V  
VI  
VII  
VIII  
IX

L7

## LAUNCH ABORT PAD

5/13/75

|   |                           |             |
|---|---------------------------|-------------|
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>TIG</b><br>SECO + 2:05 |             |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>EMS ΔV</b>             | 1 9 9 9 . 9 |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>ΔV</b><br>FOR HP >70   | .           |
|   | <b>CUTOFF</b>             | .           |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>BT</b>                 |             |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>P (IGN)</b>            |             |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>GET 300K</b>           |             |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>P (.05G)</b>           |             |
| <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <b>GET DRO</b>            |             |

\* TIG AT APOGEE

\* ΔV FOR 3400 NM SPLASH

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 |  |  |  |  |  |
| CUT OUT<br>THIS PART | BBO  |  |  |  |  |  |
|                      | EBO  |  |  |  |  |  |
|                      | DRO  |  |  |  |  |  |
|                      | MNS  |  |  |  |  |  |

CUT OUT  
THIS PART

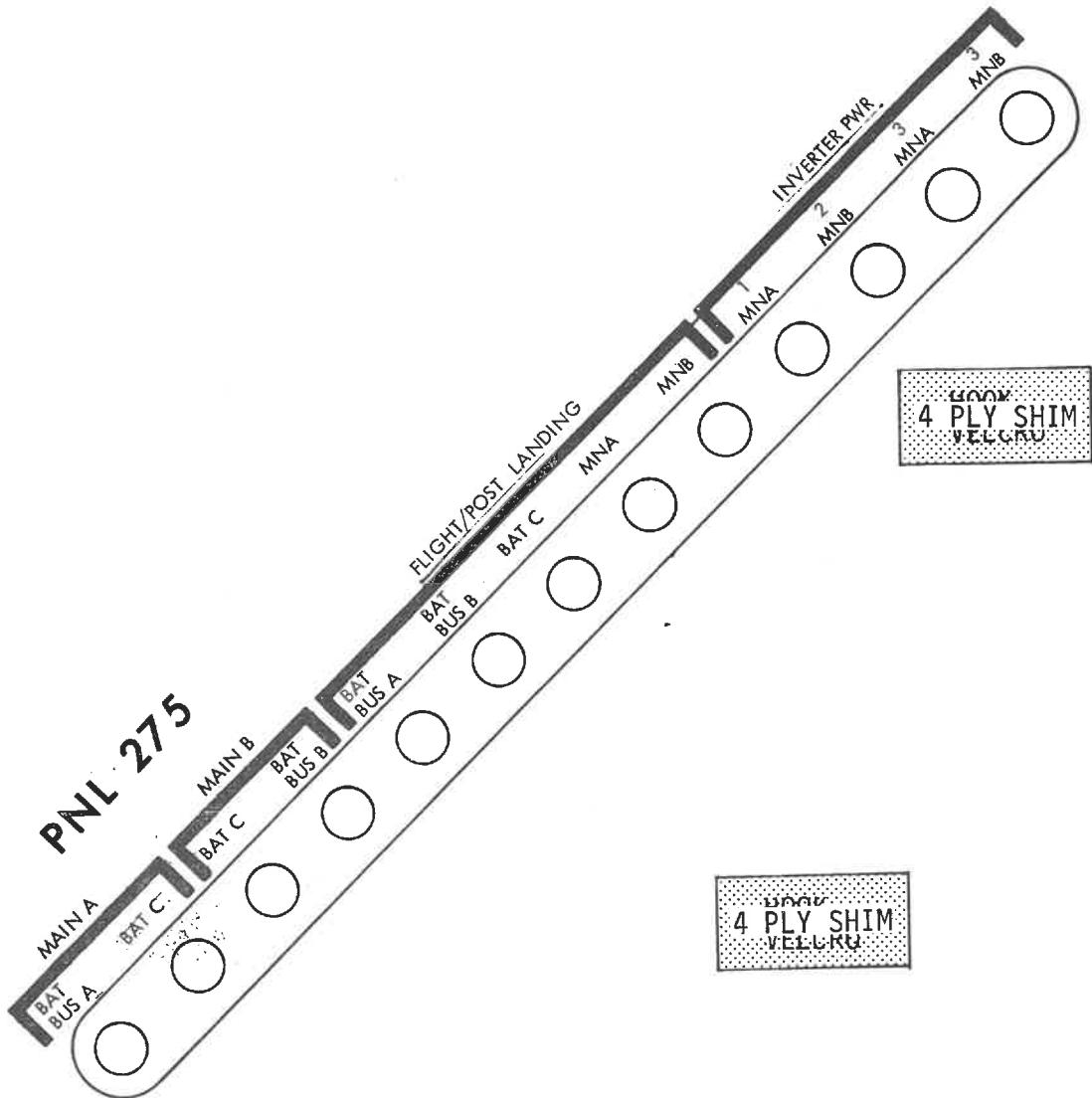
VHF AM A - SMPLX  
 VHF BCN - ON  
 Stow DAC  
 STRUT LOCKS (4) - UNLOCK  
 cb FLT/PL BAT BUS A&B  
 & BAT C (3) - closed  
 cb FLT/PL MNA/B (2) - open (unsuited)  
 cb BAT RELAY BUS (2) - open (unsuited)  
 800 CAB PRESS REL (2) - CLOSE  
 DIR O2 OPEN (suited)  
 MN BUS TIE (2) - OFF

POST LANDING

cb MN REL PYRO (2) - close

L8

5/13/75



LOCATION  
MDC-2 over  
DSKY

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

HOOK VELCRO

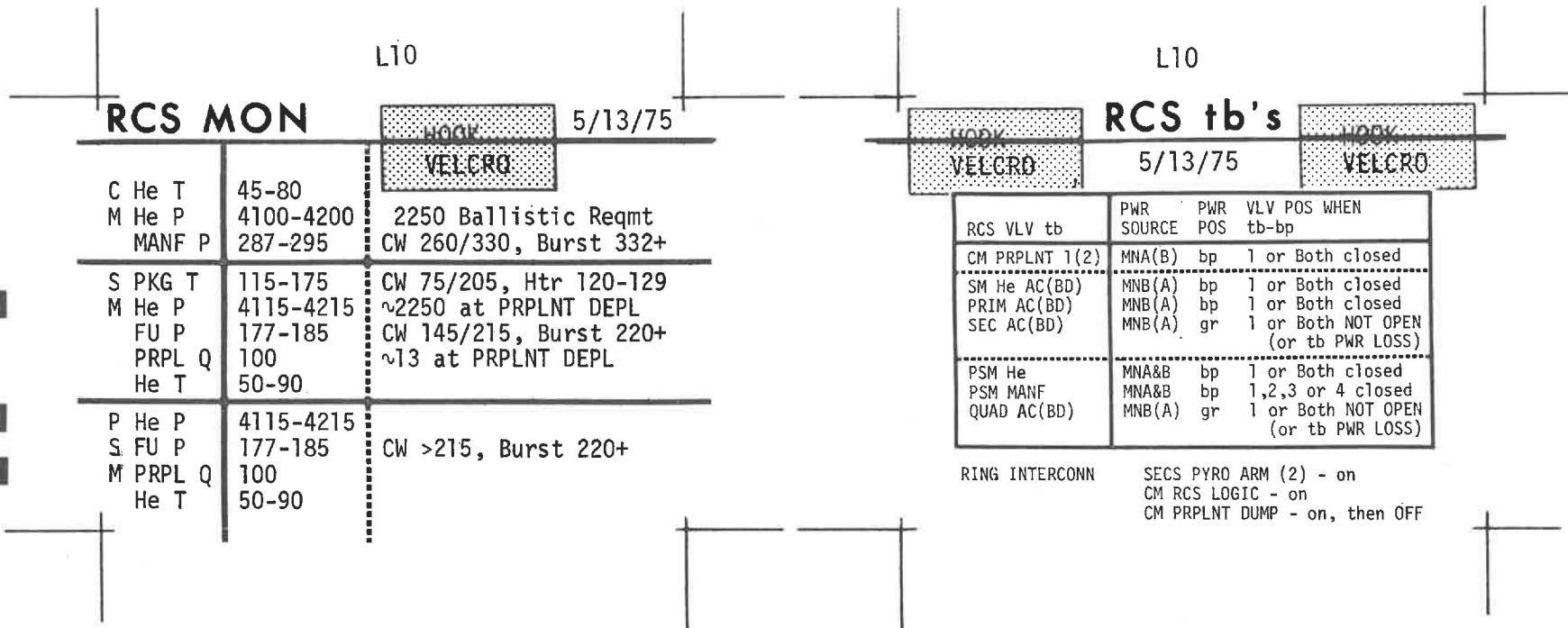
| ROLL PREFERENCE  | QUAD A/C FOR $\ddot{x}$ | QUAD B/D FOR $\ddot{x}$                              | PITCH  | YAW  |
|--|-------------------------|--|--|--|
| 0 = B/D<br>1 = A/C   | 0 = Avoid<br>1 = Allow  | 0 = Avoid<br>1 = Allow                               | 0 = Couple<br>1 = Force (Z)  | 0 = Couple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

5/13/75

HOOK VELCRO

L9

L9



LOCATION  
Over the RCS IND sel

L11

5/13/75

**ECS MON**

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

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

CUT OFF  
THIS PART

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

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

L11

## 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

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

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

AC1

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

MNA

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

AC2

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

MNB  
RAD FLOW CONT - 1

4 PLY SHIM  
YELLOW

5/13/75

**PWR USERS**

5/13/75

AC BUSES  
 EPS: \*FC PUMPS, \*CHGR,  
 CRYO SCE, H2 FANS

ECS: \*SUIT COMP, \*PUMPS,  
 RAD CNTL; AC1 SEC EVAP,  
 FANS, PRI TEMP IN & STM VLV;  
AC2 PRI EVAP AUTO

LTS: \*G&N; AC1 8 INT/NUM, 5 INT;  
AC2 EXT SPOT, 100 INT/NUM, EMS

CUT OUT  
THIS PART

SCS: \*SERVOS, \*SIG CONDR/DB, BMAGS,  
 FDAI/GPI; AC1&2 GDC/ECA; AC2 ORDEAL

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

**MN DC BUSES**

EPS: \*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,

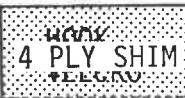
RCS: LOGIC, BD Q/P & CM HTRS, He/PSM MANF & CM PRP VLVS;  
MNA AC Q/P SEC HTRS, BD PRP/SEC FU & PSM PRPLNT VLVS  
MNB AC Q/P PRI HTRS, AC PRP/SEC FU & PSM PRPLNT VLVS

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

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

**COMM**PRIVACOM

Headset pn1 9 CCU  
 9 VHF FM - OFF\*  
 S-BD - T/R  
 INTERCOM - OFF\*  
 VHF AM - OFF\*  
 6,10 S-BD - OFF\*

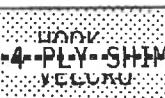


\*Return to T/R  
after PRIVACOM

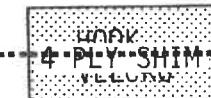
NO COMM SOYUZ

✓ 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

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

L12

5/13/75

T&D

6/27/75

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

DKG

Stab/align CSM

At capture:

PROBE E/R tb 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 \*

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)

Dk latches engaged:

PROBE E/R tb - gray  
(A-1,5,9 & B-3,7,11)  
DK PROBE EXTD/REL - OFF  
DK PROBE RETR (2) - OFF  
SECS PYRO (2) - SAFE  
SECS LOGIC (2) - OFF

EDS PWR - OFF  
TVC SERVO #1 - ACT/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

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

(DET)

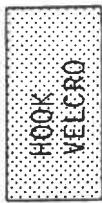
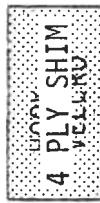
56:00 TVC SERVO #1 - ACT/MNA  
VTR/HD - ON  
TAPE - RCD  
58:00 TV STA SEL CM1 - CM2  
HBR/RCD/FWD/CMD RESET  
SECS PYRO (2) - ARM  
59:30 EMS - NORM  
RCS CMD - ON  
59:58 THC +X, hold  
00:00 CSM/LV SEP pb  
LV TANK PRESS - SEP ind  
:02 THC release (~.5 fps)  
✓ SM RCS tb (12) - gray  
:15 SC CONT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

LOCATION

MDC-1 covering ABORT  
and LV light panel

F1

5/13/75



5/13/75

## SPS BURN RNDZ

G&amp;N

AUTO RCS (12) - on  
 EMS  $\Delta V$  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

HOOK VELCRO

GMBL TRIM

P +0.70

Y -0.60

TAILOFF

13.0

SCS DELTA

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

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  $\Delta V$  (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

HOOK VELCRO

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

F2

## SPS BURN RNDZ (contd)

5/13/75

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

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

HOOK VELCRO

THRUST PB

4 PLY SHIM  
VELCRO

RATE - HIGH

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

F3

5/13/75

CUT

CUT

**PWR LOSS ΔV****G&N**

TVC GMBL DR P&amp;Y - 2

Reconfigure

FDAI 1

GMBL MTR P1&amp;Y1

ΔV THRUST A

GDC/Except RSI

BMAG 1 Htrs

SCS AUTO TVC

**SCS**

TVC GMBL DR P&amp;Y - 2

SCS TVC - RT CMD

\*cb SPS P2&amp;Y2 - open

FDI/SOURCE - 2/CMC

RHC PWR DIR 2 - MNB

BMAGS - RATE 2 (up)

✓ ΔV THRUST B - NORM

AUTO RCS - MNB

**MNA****MNB**

Reconfigure

FDAI 2

GMBL MTR P2&amp;Y2

ΔV THRUST B

GDC

BMAG 2 Htrs

TVC SERVO 1 - AC2/MNB

Reconfigure

FDI 1

GDC/Except RSI

BMAG 1 GPI 1

MIN IMP, RHC 1

RCS RT CMD

SCS AUTO TVC

EMS ΔV Ltg

SCS TVC - RT CMD

TVC GMBL DR P&amp;Y - 1

\*cb SPS P1&amp;Y1 - open

RHC PWR DIR 1 - MNA

BMAGS - RATE 1 (dn)

✓ ΔV THRUST A - NORM

AUTO RCS - MNA

**AC1****AC2**

Reconfigure

FDI 2 GDC

BMAG 2 MTVC

TVC RT CMD

GPI 2

TVC SERVO 2 - 1/A

BMAGS - RATE 1 (dn)

SCS TVC - AUTO

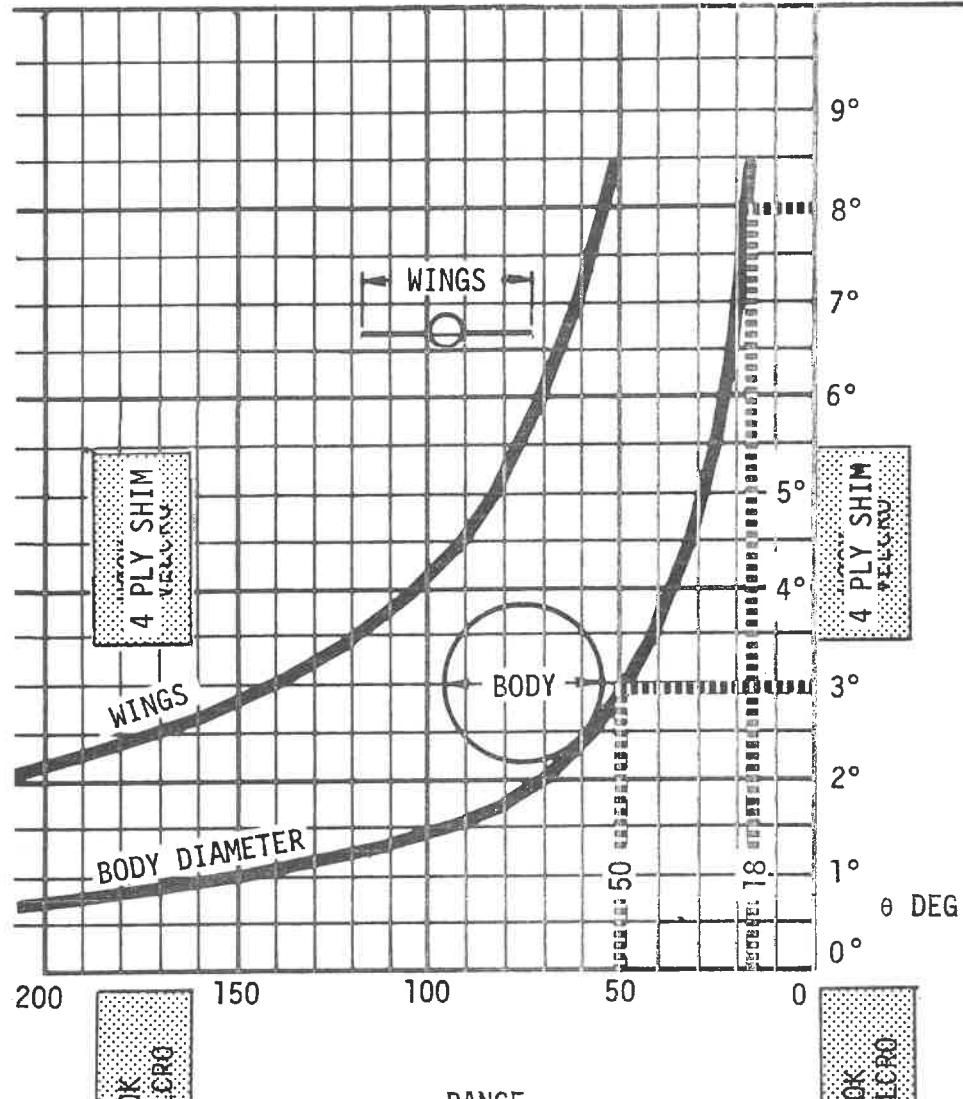
ATVC GAIN - LO

TVC with TRIM TWs

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 2**RATE NEEDLE HARDOVER &  
FDAI DIVERGE****ΔV THRUST (2) - OFF  
BMAGS - RATE 1****F4****ΔV FAILURES****G & N** 5/13/75**NO START, CMC LITE,  
ISS + PROG LITES,  
ALARM 1407 OR EARLY ECO**SCS 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 SHUTDOWN**SC CONT - SCS  
THC PWR - OFF  
cbs DIR ULL - open  
AUTO RCS SEL - OFF  
SM RCS PRPLNT  
(AFFECTED QUAD) - OFF**SM RCS  
THRUSTER FAILED ON**Chg to other SC CONT  
AUTO RCS SEL (16) - OFF  
(as reqd)  
RHC PWR DIR (2) - MNA/MNB  
Stop SC rates  
w/DIR RCS**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) - OFF

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 O2 1 100w htr  
 CRYO O2 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 O2 2 100w htr  
 CRYP O2 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 & O2 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 & O2 2 q/t ind

**CMC****LOGIC BUS 1**

TVC GMBL (2) - 1 or 2

**SCS**

5/13/75

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 (MNVR)

FDAI SCALE - 5/1

FDAI SEL - 1/2

Not Operative

THC/CW, 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 - CW

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

CUE CARDS

PNL 229

cb's

5/13/75

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  
VELCRO

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

4 PLY SHIM  
VELCRO

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  
VELCRO

4 PLY SHIM  
VELCRO

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

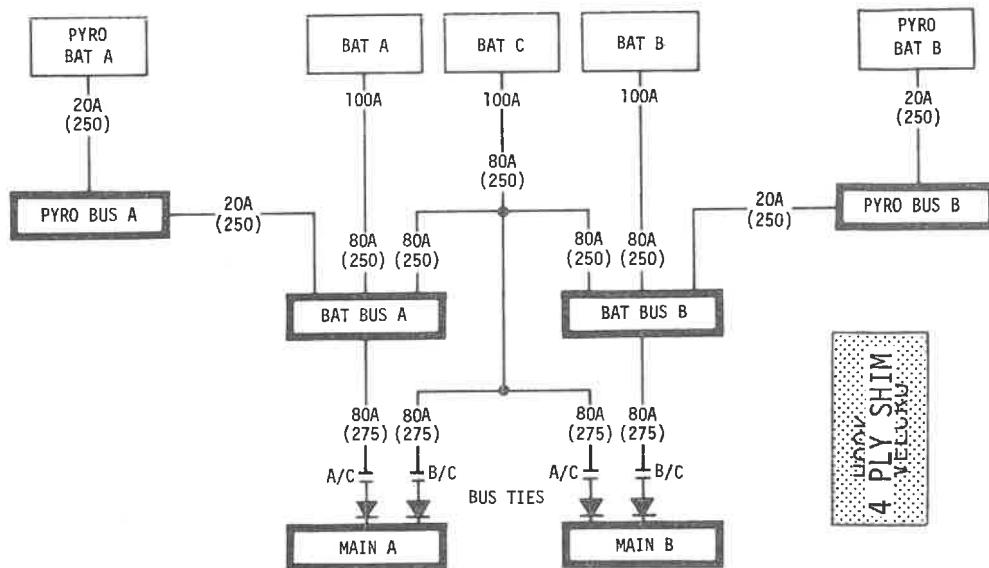
LOST: SPS Eng, AUTO RCS B/D ROLL, EMS

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



# SPS BURN RULES

## NOMINAL LIMITS (FAIL CRITERIA)

FU/OX FEEDLINE 45-75°F (<40, >110)

CUT OUT  
THIS PART

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)

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

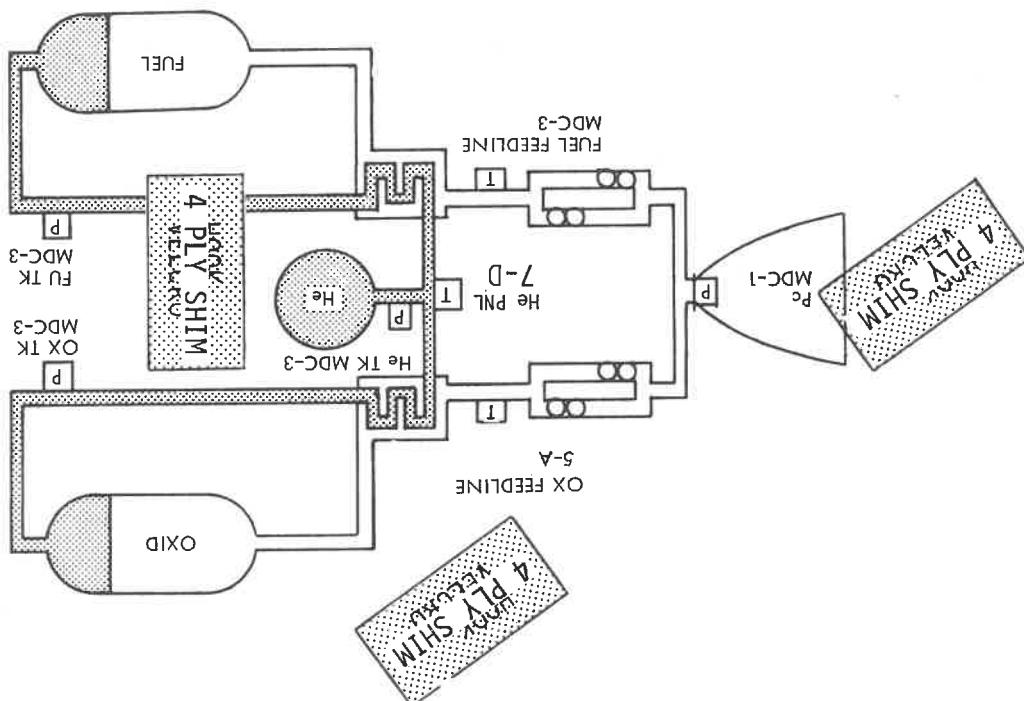
THC - CW

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

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  
GDC ALIGN

HOOK VELCRO

GMBL TRIM

P -19

Y -78

TAILOFF

18.0

SCS DELTA

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

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 (V16 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  
\*

HOOK VELCRO

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

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

# SPS BURN ENTRY (contd)

58:00 \*

5/13/75

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

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

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

59:46 ULLAGE

4 PLY SHIM  
VELCRO

00:03 ΔV THRUST (2) - NORMAL  
\*

THRUST PB

XX:XX ECO

RATE - HIGH

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

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

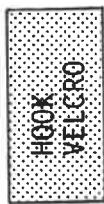
F8

5/13/75

F8

5/13/75

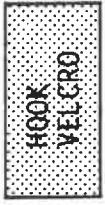
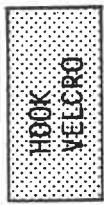
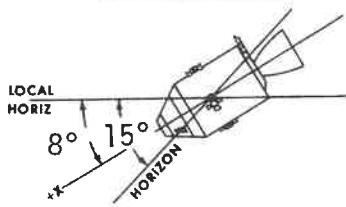
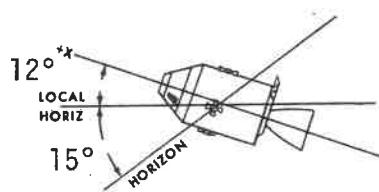
## DEORB ATT



### SPS

-5:00 HORZ  $27^\circ$   $\pm 3$   
\*If not: Track \*  
\*HORZ at  $15^\circ$  \*  
\*TWs to 0/180/0 \*  
\*2:00 GDC ALIGN \*

(0/180/0)  
HORZ at  $7^\circ$



### RCS

-2:00 HORZ  $35^\circ$   $\pm 3$   
\*If not: Track \*  
\*HORZ at  $31^\circ$  \*  
\*(0/180/0) \*  
\*1:00 GDC ALIGN \*

(0/180/0) BT 6:10  
HORZ at  $27^\circ$

**ENTRY**

6/27/75

F9

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 HORIZ at 9° to 1G

P63

06 64 .XG, VI, RTOG.O

Ck time, EMS &amp; 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&amp;N NO GO: Fly EMS \*

\* EMS NO GO: \*

\* Fly BK \_\_\_\_ ° \*

SC CONT - CMC/AUTO

✓ DRER.R CONVERG

✓ EMS G ONSET

✓ RET RB &gt; /PAD -1 min/

PAD RB \_\_\_\_\_

After B0, sel best OMNI  
 Ck He press

RET RB \_\_\_\_ : \_\_\_\_

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

50K BOOST/ENTRY

PYRO ARM

30K ELS LOGIC/AUTO

RET DRO \_\_\_\_ : \_\_\_\_

24K RCS CMD - OFF

\*If DROGUES 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

6/27/75

**PWR LOSS ENTRY**

|                  |   |   |                      |
|------------------|---|---|----------------------|
| <b>MNA</b>       | FDAI 1, BMAG 1<br>GDC Except RSI  | AUTO RCS - MNB<br>FDI/SOURCE - 2/CMC<br>RHC PWR DIR 2 - MNB*<br>BMAGS - RATE 2 (up)                                       | RECONFIGURE          |
| <b>MNB</b>       | FDAI 2, BMAG 2<br>GDC   | AUTO RCS - MNA<br>RHC PWR DIR 1 - MNA*<br>BMAGS - RATE 1 (dn)   |                      |
| <b>AC1</b>       | FDAI 1, BMAG 1<br>GDC Except RSI<br>MIN IMP, RHC 1<br>RCS RT CMD<br>GPI 1<br>EMS ΔV Ltg | FDAI/SOURCE - 2/CMC   | 4 PLY SHIM<br>VELCRO |
| <b>AC2</b>       | FDAI 2, BMAG 2<br>GDC RSI   | BMAGS - RATE 1 (dn)   | 4 PLY SHIM<br>VELCRO |
| <b>BAT BUS A</b> |   | cb SCS B/D ROLL, P&Y MNA (3) -<br>Before SEP: open<br>After RCS xfer: close<br>cb SCS CONT/AUTO (2) -<br>After APEX: open |                      |
| <b>BAT BUS B</b> |   | cb SCS B/D ROLL, P&Y MNB (3) -<br>Before SEP: open<br>After RCS xfer: close<br>cb SCS CONT/AUTO (2) -<br>After APEX: open |                      |
|                  |   |   | HOOK<br>VELCRO       |

\* If DIR RCS is on



F10

## LOSS OF ATS-6 VOICE

- A. ✓ 225 cb's ATSF SYS (2) - closed
  - ✓ 230 CONFIG:
    - PWR AMPL - 2 6/27/75
    - 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-SCALE  
Attempt 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 REACQ

- C. HGA > HALF-SCALE  
Use 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

LOCATION  
Hand held

F10

5/13/75

HOOK  
VELCRO

HOOK  
VELCRO

IF NO GRN GO TO E16

E1

**UVA PREP**

ECLIPSE

6/27/75

- ✓ DET up, UNDKG (pad)
- 00:00 CAPTURE LATCH A&B - REL
  - ✓ G/R CAPTURE lt - out
  - ✓ PASSIVE lt - on
  - ✓ S/R CONTACT lt - out
  - Mon  $\Delta$ VC = +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 -  $\Delta$ V SET/STBY
- Set  $\Delta$ VC = +101.3
- EMS FUNC -  $\Delta$ V
- 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

HOOK  
VELCRO

- ← Inform: PREPARING FOR UNDOCKING
- ✓ 274 DKG SYS A&B cb's (12) - closed
- ✓ S/L OPEN lt - on
- ✓ G/R CAPTURE lt - on
- ✓ PASSIVE lt - on
- ✓ S/R CONTACT lt - on
- Align GDC to IMU

55:00 ← Inform: READY FOR UNDK

56:00 AUTO RCS (16) - MNA/B  
EMS - NORM  
Stop DET, reset  
At UNDKG: Start DET

00:00 SOYUZ ACTIVE UNDKG  
✓ G/R CAPTURE lt - out  
✓ S/R CONTACT lt - out  
Mon  $\Delta$ VC = +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  
θ BODY 8°  
(P20 OPT 5 holds LH)

EMS -  $\Delta$ V SET/BACKUP  
VHF RNG - RESET  
STA KEEP  
Set DET for 150 M - O/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

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

00:00

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

HOOK  
VELCRO

← 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°

Null R ERR & hold  
 06:30~ ✓ 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

← Inform: BEACONS &  
 ORIENTATION LTS OFF

DATA TAKE  
 V23N78E +27000E  
 V23N78E +28500E

22:15~ ✓ Y ERR nulled

V23N78E +28500E

TERM

✓ NO4 P ERR -1° &amp; incr

27:00~ ✓ DATA TAKE compl  
 & UV COVER closed  
 AUTO RCS (16) - MNA/B

← Inform:  
EXT LT ON  
EXT LT - SPOT

4 PLY SHIM  
VELCRO

✓ P ERR stable &lt; /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 - 0/P

HOOK  
VELCRO

← Inform:  
EXT LT OFF  
EXT LT - OFF

E2

## UVA 500 M O/P

5/13/75

COAST

✓ DET 100:50:00  
 59:30 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

Null R ERR & hold  
 05:30~ ✓ 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

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

&amp; UVA COVER closed

AUTO RCS (16) - MNA/B

← Inform: BEACONS &amp;

ORIENTATION LTS ON

MAN ATT (3) - RT CMD

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 &amp; adj

N78 to ctr SOYUZ

← Inform:

EXT LT ON

EXT LT - SPOT

COAST V16N4E

THC ctr SOYUZ

in COAS &amp;

null LOS RT



-----  
 θ BODY dia 2°  
 (VHF ~.04nm)

SC CONT - SCS

MAN ATT (3) - RT CMD

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

MAN ATT (3) - MIN IMP

RHC trk SOYUZ &amp;

✓ R ERR nulled

Incr N78 as R3 → 0

✓ P ERR stable &lt;/3°/

\*MAN ATT P - RT CMD \*

\*THC &gt;+3: UP, &lt;-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 &amp;

NO4 P &amp; Y ERR &lt;/3°/

STA KEEP MAN ATT (3) - MIN IMP

SC CONT - CMC

RHC - LOCKED

HOOK VELCRO Contd on back

CUE CARDS

3-3

LOCATION

MDC-1 covering ABORT  
and LV light panel

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  
POO

-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

4 PLY SHIM  
VELCRO

DATA TAKE  
RHC align COAS CAL MK  
on REFLECTOR

← Inform: BEACONS &  
ORIENTATION LTS OFF

DATA TAKE compl when  
R3 > 285°

POO  
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

6/27/75

**SM EXP****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 H<sub>2</sub>O), RCS quad or thruster failure.

Power down EUV and He GLOW for any SM gas leak.

LOCATION  
Over P 229 cb  
Decal

E3

5/13/75

HOOK  
VELCRO

HOOK  
VELCRO

## 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



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

TABLE 1

E4

Fold kit #3 and place in bungee bag in LEB

3-7

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 stabilizer beam  
 A4 Between PNL 10 and 12  
 A5 RH flood light (side near window 4)

|     |   |
|-----|---|
| 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 | Forward of PNL 225                              |

5/13/75

E4

Fold kit #4 and place in bungee bag in LEB

LOCATION  
In MICROBIAL KIT

**INTERIOR PHOTO**

5/13/75

E5

**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

- HOOK VELCRO
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 f8For CT film: open 2 more stops  
EXAMPLE: f11 becomes f5.6SUNRISE/SUNSET

EARTH LIMA (f6.7 +/- 1 stop, 1/125, INF)

MOONSET (f8 +/- 1/2 stop, 1/250, INF)

| FILM TYPE | ASA | NO. ROLLS (SEXPERROLL)  | USE |
|-----------|-----|---|-----|
| CX        | 64  | HRC:11(70) 7 - EARTH OBS<br>HDC:1 (170) 4 - PAO<br>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

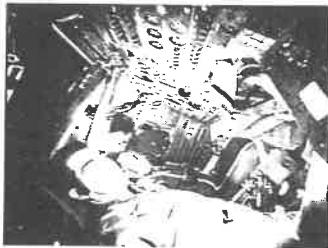
## FILM AVAILABLE - EXTERNAL

|          |      |      |      |          |       |
|----------|------|------|------|----------|-------|
| 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 (DET)  
5/13/75

## CM TV

TV  
2.1TV  
2.2TV  
2.9TV  
2.10TV  
2.14LEB PRESS CONF,  
TOUR, FOOD DEMOHOOK  
VELCRO

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)

## 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)

## 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

CM 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)

## 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

6/27/75

## CM TV (contd)

|        |
|--------|
| HOOK   |
| VELCRO |

TV  
2.15

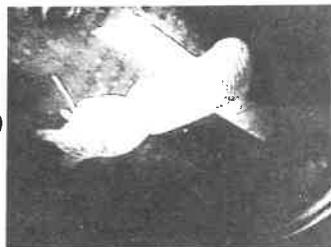
## CDR COUCH

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 &amp; 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

E7

SOYUZ TV

5/13/75

TV  
2.7



OM PANEL & TOUR

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

HOOK  
VELCRO

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

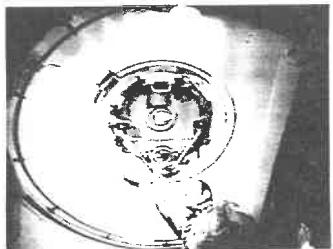
E7

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

7/3/75

## 2nd CM PHOTO

## 2 SECOND JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN APOLLO)

INITIAL SETUP: 606/DAC01(RHTSB)/5mm(RHTSB)/C104(F2) - PWR CABLE(PNL 16),  
 \*\*\* REMOTE(RHTSB) X=330 Y=270 Z=290/PIN IN HOLE #1

DAC TV BRKT  
IN RHTSB 231/DAC02(LHTSB)/10mm(RHTSB)/C109(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<br>Z            | Y<br>PIN # | LENS SETTING       | PORT LT LOC               | SHOOTING DIRECTIONS |
|-------------|---------------------------------|---------------------------|------------------|------|-------------------|------------|--------------------|---------------------------|---------------------|
| 2.1         | SC XFER TO CM<br>***<br>606     | DAC01<br>231              | C104             | 5mm  | 330<br>270<br>290 | 1          | f2.0<br>1/60<br>-- | PL1<br>FACING<br>LEB      | SHOOT UP MAG        |
| P/M<br>8.1A | SC XFER TO CM<br>231            | DAC02                     | C109<br>HH       | 10mm | 270<br>320<br>355 | 1          | f1.8<br>1/60<br>6' | PL1<br>FACING<br>LEB      | 2 MIN               |
| P/M<br>8.2A | DP WELCOME SD                   | DAC02<br>HH               | C109             | 10mm |                   |            | f1.8<br>1/60<br>3' | POINT AT DP               | 30 SEC              |
| P/M<br>8.3A | CM TOUR                         | FK-6                      | N7               | 45mm |                   |            | f3.5<br>1/15       | PL1<br>FACING<br>LH COUCH | 2-3FR               |
| P/M<br>8.4A | CM TOUR - SC<br>HH              | DAC02                     | C109             | 10mm |                   |            | f1.8<br>1/60<br>3' | PL1<br>FACING<br>LH COUCH | 30 SEC              |
| 2.2.1       | PLAQUE<br>JOINING<br>***<br>606 | DAC01<br>C106<br>(pocket) | C106<br>(pocket) | 5mm  | 330<br>270<br>290 | 1          | f2.0<br>1/60<br>-- | PL1<br>FACING<br>LEB      | 30 SEC              |

## 4th LAUNCH OPPORTUNITY

3-14

LOCATION  
Hand held

CUE CARDS

E8

7/3/75

HOOK  
VELCRO

HOOK  
VELCRO

**4th LAUNCH OPPORTUNITY**

**3-15**

CUE CARDS

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<br>Y<br>Z | PIN # | LENS SETTING | PORT LT LOC | SHOOTING DIRECTIONS |
|----------|---------------|---------|---------|------|-------------|-------|--------------|-------------|---------------------|
| P/M 9.9A | GIFT EXCHANGE | FK-6    | N10     | 45mm |             |       | f3.5<br>1/15 |             | 3-4FR               |

4th LAUNCH OPPORTUNITY

3-16

LOCATION  
Hand held

CUE CARDS

E9

7/3/75

HOOK  
VELCRO

**4th LAUNCH OPPORTUNITY**

**3-17**

CUE CARDS

E10

## 1st SOYUZ PHOTO

6/27/75

| 1<br>FIRST JOINT ACTIVITY PERIOD PHOTO PROCEDURES (IN SOYUZ) |                                |              |             |                   |                 |       |                      |                     |                             |
|--|--------------------------------|--------------|-------------|-------------------|-----------------|-------|----------------------|---------------------|-----------------------------|
| PHOTO #  | ACTIVITY                       | CAM LOC      | MAG LOC     | LENS              | X<br>Y<br>Z     | PIN # | LENS SETTING         | LIGHTING            | SHOOTING DIRECTIONS         |
| 1.2S   | SIGNING OF DOCKING CERTIFICATE | DAC01<br>TA1 | CS01        | 5mm<br>270<br>310 | 0<br>270<br>310 | 1     | f4<br>1/60           | SL1-ON<br>PLU-ON/T1 | 2 MIN                       |
| 1.3S   | SIGNING OF DOCKING CERTIFICATE | NK           |             | 35mm              |                 |       | f11<br>1/60<br>FOCUS | FLASH RANGE 2       | 4 FR                        |
| 1.4S   | MEAL                           | DAC01<br>TA1 | CS01        | 5mm<br>90<br>300  | 0<br>90<br>300  | 3     | f4<br>1/60           | SL1-ON<br>PLU-ON/T1 | SHOOT UP MAG                |
| 1.5S   | PANORAMA OF OM                 | DAC01<br>HH  | CS02<br>TSB | 10mm              |                 |       | f4<br>1/60<br>3'     | SL1-ON<br>PLU-ON/T1 | USE AS MUCH FILM AS DESIRED |
| 1.6S   | MEAL                           | NK           |             | 35mm              |                 |       | f11<br>1/60<br>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/M 8.4 | FE PERFORMING ZFF EXPERIMENT | K-3A HH | N3 CON3 | 20mm | f2.0            | SL1-ON        | 20SEC               |
| Z.ZS    | JOINING OF PLAQUE            | NK      |         | 35mm | f11, 1/60 FOCUS | FLASH RANGE 2 | 2 FR                |

4th LAUNCH OPPORTUNITY

3-20

CUE CARDS

LOCATION  
Hand held

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<br>HH | N3<br>CON3 | 12.5mm | f2.0               | SL1-ON<br>SL2-ON    | 20 SEC              |
| P/M 9.3  | SC WORKS WITH PRESSURE LEAK C&D        | K-3A<br>HH | N3         | 20mm   | f2.0               | SL1-ON<br>SL2-ON    | 15 SEC              |
| P/M 9.6  | SC COMMUNICATES WITH MCC               | K-3A<br>HH | N3         | 20mm   | f2.0               | SL1-ON<br>PLU-ON/T1 | 20 SEC              |
| 3.1S     | PRESS CONFERENCE - SC                  | NK         |            | 35mm   | f11, 1/60<br>FOCUS | FLASH<br>RANGE 2    | 2 FR                |
| 3.2S     | PRESS CONFERENCE - AC                  | NK         |            |        |                    |                     | 2 FR                |
| 3.3S     | MICROBIAL EXCHANGE<br>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<br>SC SAMPLES       | K-3A<br>HH | N4<br>CON3 | 12.5mm | f2.0               | SL1-ON<br>SL2-ON    | 20 SEC              |

CM TV (COSMONAUT TK-3)

5/13/75

ОЗНАКОМЛЕНИЕ С СИСТЕМАМИ НИЖЕГО ОТСЕКА  
ОБОРУДОВАНИЯ КМ /5 МИН/

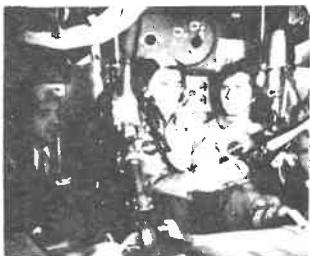
TB  
10.2



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

HOOK  
VELCRO

TV  
10.2



Familiarization with CM LEB  
(5 min)

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

E12

CM TV (COSMONAUT TK-3) (contd)

5/13/75

СОВМЕСТНАЯ ПРЕСС-КОНФЕРЕНЦИЯ У НОО КМ  
/5 МИН/



TV  
11.2



TV  
11.2



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

- 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)

E13

## 2nd CM PHOTO (COSMONAUT)

7/3/75

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

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

КРОНШТЕЙН  
КАМЕРЫ "ДАК"  
В ПРАВОМ  
КОНТЕЙНЕРЕ  
"АПОЛЛОНА"

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

ПЕРЕНОСНОЙ СВЕТИЛЬНИК - ПОД ПЕРЕГР. УСТР. /Р11/, НАПРАВЛЕННЫЙ НА НИЖНИЙ ОТСЕК ОБОРУДОВАНИЯ

\*\*\* УСТАНОВИТЬ ДАК НА ТВ-КАМЕРУ

| № ФОТО-СЪЕМКА | СОДЕРЖАНИЕ                    | КАМЕРА,<br>ПОЛОЖЕ-<br>НИЕ | КАССЕ-<br>ТА, ПО-<br>ЛОЖЕНИЕ | ОБЪЕК-<br>ТИВ | X<br>Y<br>Z       | #<br>ОТВЕР-<br>СТИЯ | УСТА-<br>НОВКА<br>ОБЪЕК-<br>ТИВА | МЕСТО-<br>ПОЛОЖ.<br>ПЕРЕНОС.<br>СВЕТИЛЬН. | ИНСТРУКЦИИ<br>ПО СЪЕМКЕ                 |
|---------------|-------------------------------|---------------------------|------------------------------|---------------|-------------------|---------------------|----------------------------------|---|---|
| 2.1           | ПЕРЕХОД<br>КС В КМ            | ДАКО1<br>***<br>606       | С104                         | 5 мм          | 330<br>270<br>290 | 1                   | Д=2.0<br>1/60<br>--              | Р11<br>НАПРАВЛЕН<br>НА НОО                | ИСПОЛЬЗОВАТЬ<br>ВСЮ ПЛЕНКУ<br>В КАССЕТЕ |
| КФ<br>8.1A    | ПЕРЕХОД<br>КС В КМ            | ДАКО2<br>231              | С109                         | 10 мм         | 270<br>320<br>355 | 1                   | Д=1.8<br>1/60<br>6'              | Р11<br>НАПРАВЛЕН<br>НА НОО                | 2 МИНУТЫ                                |
| КФ<br>8.2A    | ПС ПРИ-<br>ВЕТСТВУЕТ<br>КС    | ДАКО2<br>С РУК            | С109                         | 10 мм         |                   |                     | Д=1.8<br>1/60<br>3'              | НАПРАВЛЕН<br>НА ПС                        | 30 СЕКУНД                               |
| КФ<br>8.3A    | ОЗНАКОМ-<br>ЛЕНИЕ С КМ        | FK-6                      | №7                           | 45 мм         |                   |                     | Д=3.5<br>1/15                    | Р11 НАПРАВ-<br>ЛЕН НА ЛЕ-<br>ВОЕ КРЕСЛО   | 2-3 КАДРА                               |
| КФ<br>8.4A    | КС: ОЗНА-<br>КОМЛЕНИЕ<br>С КМ | ДАКО2<br>С РУК            | С109                         | 10 мм         |                   |                     | Д=1.8<br>1/60<br>3'              | Р11<br>НАПРАВЛЕН<br>НА ЛЕВОЕ<br>КРЕСЛО    | 30 СЕКУНД                               |
| 2.2.1         | СОЕДИН.<br>ПЛАСТИНЫ           | ДАКО1<br>***<br>606       | С106<br>/КАР-<br>МАН/        | 5 мм          | 330<br>270<br>290 | 1                   | Д=2.0<br>1/60<br>--              | Р11<br>НАПРАВЛЕН<br>НА НОО                | 30 СЕКУНД                               |

## 4th LAUNCH OPPORTUNITY

3-24

LOCATION  
Hand held

E13

7/3/75



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: 606/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, ПОЛОЖЕНИЕ | КАССЕТА, ПОЛОЖЕНИЕ | ОГЪЕКТИВ | X<br>Y<br>Z | № ОТВЕРСТИЯ | УСТАНОВКА ОБЪЕКТИВА | МЕСТО-ПОЛОЖ. ПЕРЕНОСН. СВЕТИЛЬН. | ИНСТРУКЦИИ ПО СЪЕМКЕ |
|---------------|----------------------------|-------------------|--------------------|----------|-------------|-------------|---------------------|----------------------------------|----------------------|
| КФ 9.9A       | СИМВОЛИЧЕСКАЯ ДЕЯТЕЛЬНОСТЬ | FK-6              | №10                | 45 ММ    |             |             | Д=3.5<br>1/15       | PLL НАПРАВЛЕН НА НОО             | 3-4 КАДРА            |

6/2/75

**4th LAUNCH OPPORTUNITY****3-26**

LOCATION  
Hand held

CUE CARDS

E14

7/3/75

HOOK  
VELCRO

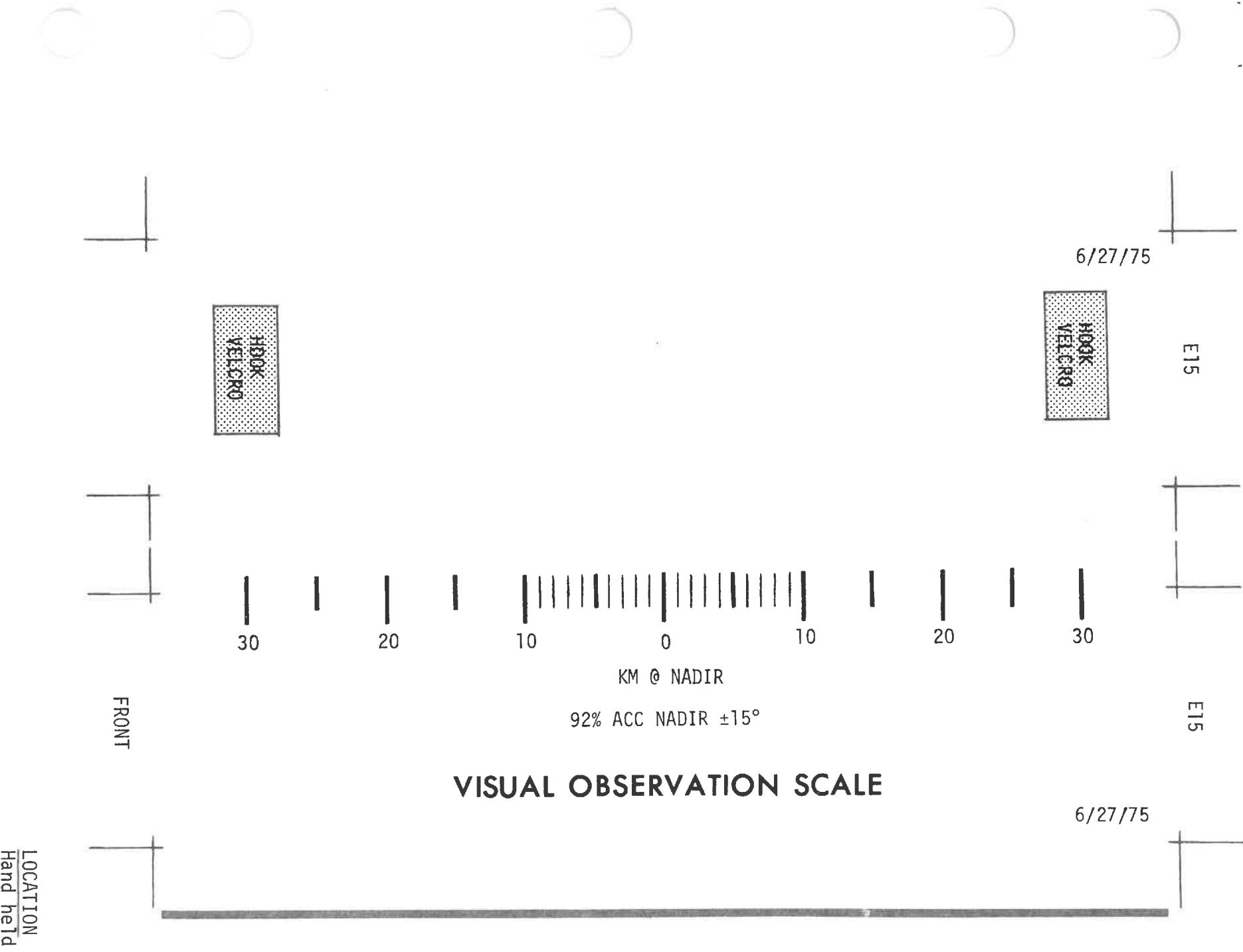
**4th LAUNCH OPPORTUNITY**

**3-27**

CUE CARDS

CUE CARDS

3-28



PRINT FLIGHT CARDS ON YELLOW PAPER

E16

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

COAST

✓ DET 99:21:00  
59:30 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

COAST

V16N4E

← Inform: BEACONS &  
ORIENTATION LTS ON

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



6/27/75

CUT OUT  
THIS PART

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

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



SWEET 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

✓ NO4 P ERR -1° & incr

27:00~ ✓ DATA TAKE compl

& UV COVER closed

AUTO RCS (16) - MNA/B

← Inform:  
EXT LT ON  
EXT LT - SPOT

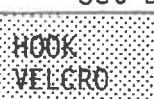


✓ P ERR stable < /3°/  
\*MAN ATT P - RT CMD \*  
\*THC >+3: UP, <-3: DN\*  
\*MAN ATT P - MIN IMP \*

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



← 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



00:00

THC +Y(R) 9s

SC CONT - CMC/FREE

RHC trk SOYUZ, null R

V16N4E RT

6/27/75

V23N78E +25500E  
Null R ERR & hold

05:30~ ✓ 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

← 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  
& 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



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

✓ 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



← Inform:

EXT LT OFF

EXT LT - OFF

PRINT FLIGHT CARDS ON YELLOW PAPER

## CUE CARDS

## LIST OF EFFECTIVE PAGES

|       |         |
|-------|---------|
| FINAL | 5/13/75 |
| PCN-1 | 6/27/75 |
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| *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 |
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| 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<br>HH | N3<br>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

CUE CARDS

LOCATION  
Hand held

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<br>SC SAMPLES SOYUZ | NK         |            | 35mm   | f11, 1/60<br>FOCUS | FLASH RANGE 2    | 3 FR                |
| 3.5S        | EXCHANGE OF SEEDS                      | NK         |            |        | !                  | !                | 2 FR                |
| P/M<br>10.2 | MICROBIAL EXCHANGE<br>SC SAMPLES       | K-3A<br>HH | N4<br>CON3 | 12.5mm | f2.0               | SL1-ON<br>SL2-ON | 20 SEC              |



4th LAUNCH OPPORTUNITY

CUE CARDS

3-21

**5th LAUNCH OPPORTUNITY**

INCORPORATE  
4TH LAUNCH OPPORTUNITY  
CHANGE PCN

**5th LAUNCH OPPORTUNITY**

5th LAUNCH OPPORTUNITY

CUE CARDS

LIST OF EFFECTIVE PAGES

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| PCN-4 | 7/8/75  |

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| ix   | ENTRY CONFIGURATION . . . . .                 | 5/13/75 |
| x    | LANDING CONFIGURATION . . . . .               | 5/13/75 |
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| 1-2  | Velcro locations (back of card) . . . . .     | 5/13/75 |
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| 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 | L9 PNL 275 . . . . .                          | 5/13/75 |
| 1-12 | L10 DAP LOAD . . . . .                        | 5/13/75 |
| 1-13 | L11 RCS MON, RCS tb's . . . . .               | 5/13/75 |
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| 1-17 | COMM . . . . .                                | 5/13/75 |
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| 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

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| 2-16  | F10 LOSS OF ATS-6 VOICE . . . . .         | 6/27/75 |
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| 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 |
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| 3-14  | E8 2nd CM PHOTO. . . . .                  | 7/3/75  |
| 3-15  | Velcro locations (back of card) . . . . . | 7/3/75  |
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| 3-17  | Velcro locations (back of card) . . . . . | 7/3/75  |
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| 3-22  | E12 CM TV (COSMONAUT TK-3) . . . . .      | 5/13/75 |
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| 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

## MISSION PHASE CONFIGURATION SUMMARY

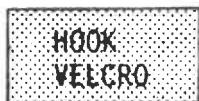
7/3/75

5th LAUNCH OPPORTUNITY

| MISSION PHASE<br>CARD DESCRIPTION                  |        |       |       |       |         |       | REMARKS   |
|--|--------|-------|-------|-------|---------|-------|---|
|  | LAUNCH | T&D   | RNDZ  | EXP   | DEORBIT | ENTRY |   |
| 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       | ■■■■■ |   |
| L10 RCS MON, RCS tb's                              | X      | X     | X     | X     | X       | X     |   |
| L11 ECS MON, ECS MALF                              | X      | X     | X     | X     | X       | X     |   |
| L12 PWR USERS, COMM                                | 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     | ■■■■■ | ■■■■■ |         |       |   |
| F6 SPS BURN RULES                                  |        | X     | ■■■■■ | ■■■■■ |         |       |   |
| F7 SPS BURN ENTRY                                  |        |       | X     |       |         |       |   |
| F8 DEORB ATT                                       |        |       | X     | ■■■■■ |         |       |   |
| F9 ENTRY, PWR LOSS ENTRY                           |        |       |       | X     | ■■■■■   |       |   |
| F10 LOSS OF ATS-6 VOICE                            |        | 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)<br>500M O/P (G&N/NO EMP) |        | X     |       |       |         |       | Contingency; use during UVA if reqd<br>YELLOW PAPER |

E11

7/8/75



## 5th LAUNCH OPPORTUNITY

3-21

CUE CARDS

PRINT FLIGHT CARDS ON YELLOW PAPER

E16

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

COAST ✓ DET 99:21:00  
57:00 SC CONT - CMC/AUTO  
EMP: ✓ N26 1,1536,12007  
V31E, V48E 61002, V46E  
00:00 THC -Y(L) 3s  
SC CONT - SCS  
RHC trk SOYUZ, null R RT  
V16N4E  
V23N78E +25500E

← Inform: BEACONS &  
ORIENTATION LTS ON

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

7/4/75

CUT OUT  
THIS PART

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

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°

← Inform:  
EXT LT ON  
EXT LT - SPOT



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

44:30~ THC +Y(R) 3s  
✓ 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  
STA KEEP 50 M behind,  
θ WINGS 9°, θ BODY 3°  
V58E Estab ORB RT DRIVE  
THC null LOS RT &  
GDC ALIGN to IMU  
Set DET for 500 M O/P

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



← Inform:  
EXT LT OFF  
EXT LT - OFF

PRINT FLIGHT CARDS ON YELLOW PAPER

CUE CARDS

PRINT FLIGHT CARDS ON YELLOW PAPER

E16

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

COAST

✓ DET 100:50:00  
 57:00 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

7/4/75

HOOK  
VELCRO

V23N78E +25500E  
 Null R ERR & hold  
 05:30~ ✓ 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°

SWEET 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

TERM

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

HOOK  
VELCRO

ORIENTATION LTS ON

SC CONT - CMC/AUTO  
**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**

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**

✓ 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