FAO

APOLLO 12	
LM SYSTEMS ACTIVATION CHECKLIST	
PART NO	S/N
SKB32100081-360	1002

Basic Date October 2, 1969
Changed

CSM TO LM TRANSFER LIST(TLC)

Box of Kleenex - LHSSC, Urine Bag

2 Towels - LHSSC, Urine Bag

16 MM Magazines in Bag (6)

70 MM Magazines in Bag (3)

70 MM Magazines HCEX (2) - ISA

Flight Data In Bag:

LM ACTIVATION CHECKLIST

PPK (2)

CWG Connector

Basic Date October 7, 1969
Changed

TLC-1

64:10

IVT TO LM

1 Activate CABIN DUMP VALVE & Open Hatch
Take CSM O2 Hose When Transfering

2 Record Docking Tunnel Index Angle

_____

3 FLOOD LIGHT - All
EXTERIOR LTG - OFF
Window Shades - Down

4 DES H2O - OPEN
DES O2 - OPEN
CABIN REPRESS - AUTO
CB(16) CABIN REPRESS - Close
SUIT ISOL (Both) - SUIT FLOW
SUIT ISOL (Both) - ACTUATE OVERRIDE (SUIT DISC)

5 Check AOT Visibility

TLC-2

65:46

IVT TO CSM

1 DES H20 - CLOSE
DES 02 - CLOSE
CABIN REPRESS - CLOSE
CB(16) CABIN REPRESS - Open
FLOOD LIGHT - OFF
Window Shades - Up

2 CABIN DUMP VALVE - OPEN
IVT TO CSM
CLOSE LM HATCH

Basic Date October 7, 1969
Changed

Basic Date October 7, 1969
Changed

LOI DAY

ACT-1

********** LOS 89:13 **********

89:20

LMP IVT TO LM

1 Activate CABIN DUMP VALVE & Open Hatch
Carry Comm Carrier, CWG Connector &
CSM 02 Hose

2 FLOOD LIGHT - All
Window Shades - Down

3 DES H20 - OPEN
DES 02 - OPEN
CABIN REPRESS - AUTO
CB(16) CABIN REPRESS - Close
LDG ANT - AUTO

ACT-2

89:25

ENTRY STATUS CHECK

1 Unstow TSB And Give To CSM
Unstow ISA And Install Over PLSS
Recharge Station

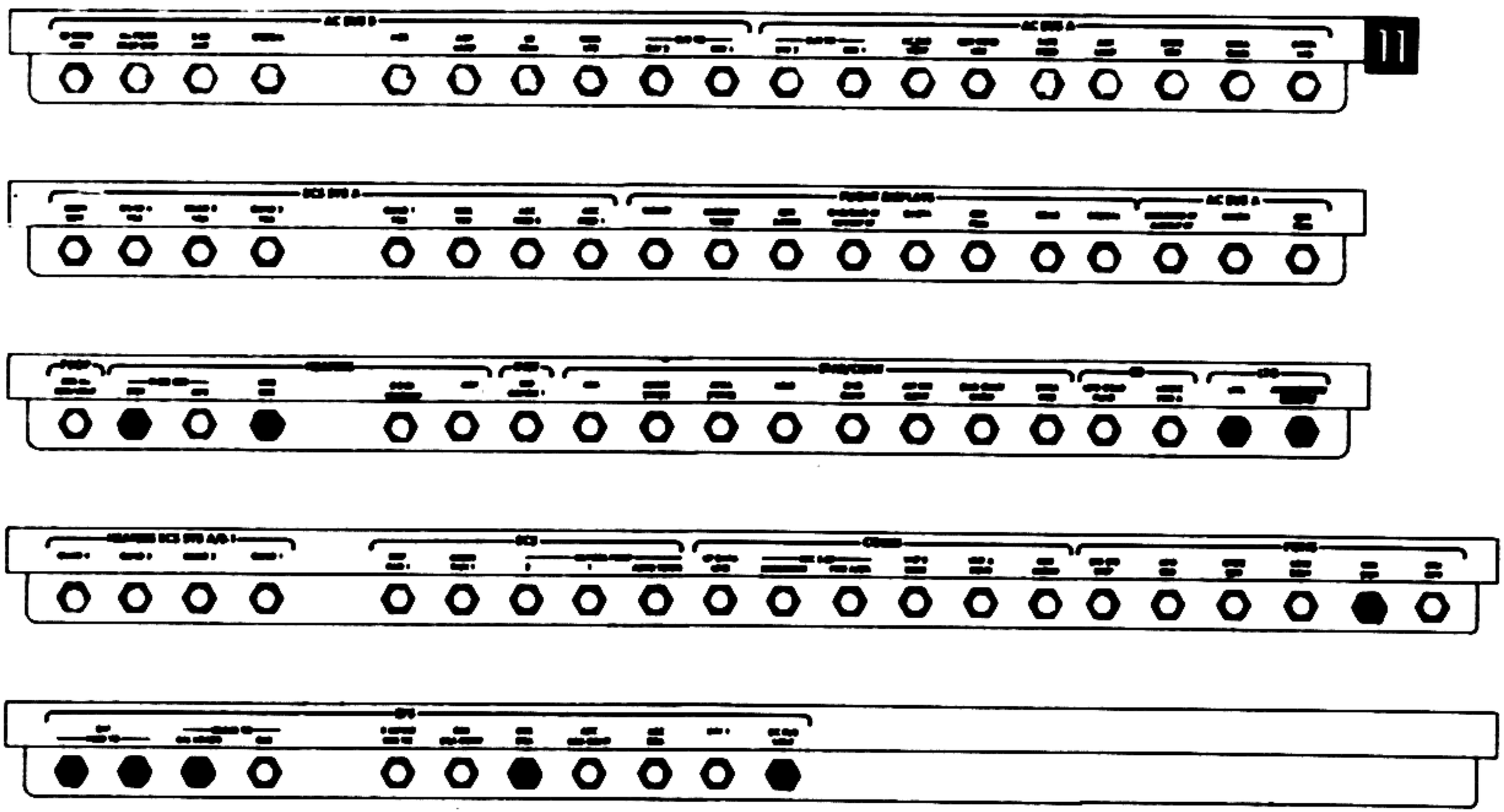
2 Verify CB Status Per INITIAL ACTIVATION
Status Chart

Basic Date October 7, 1969
Changed

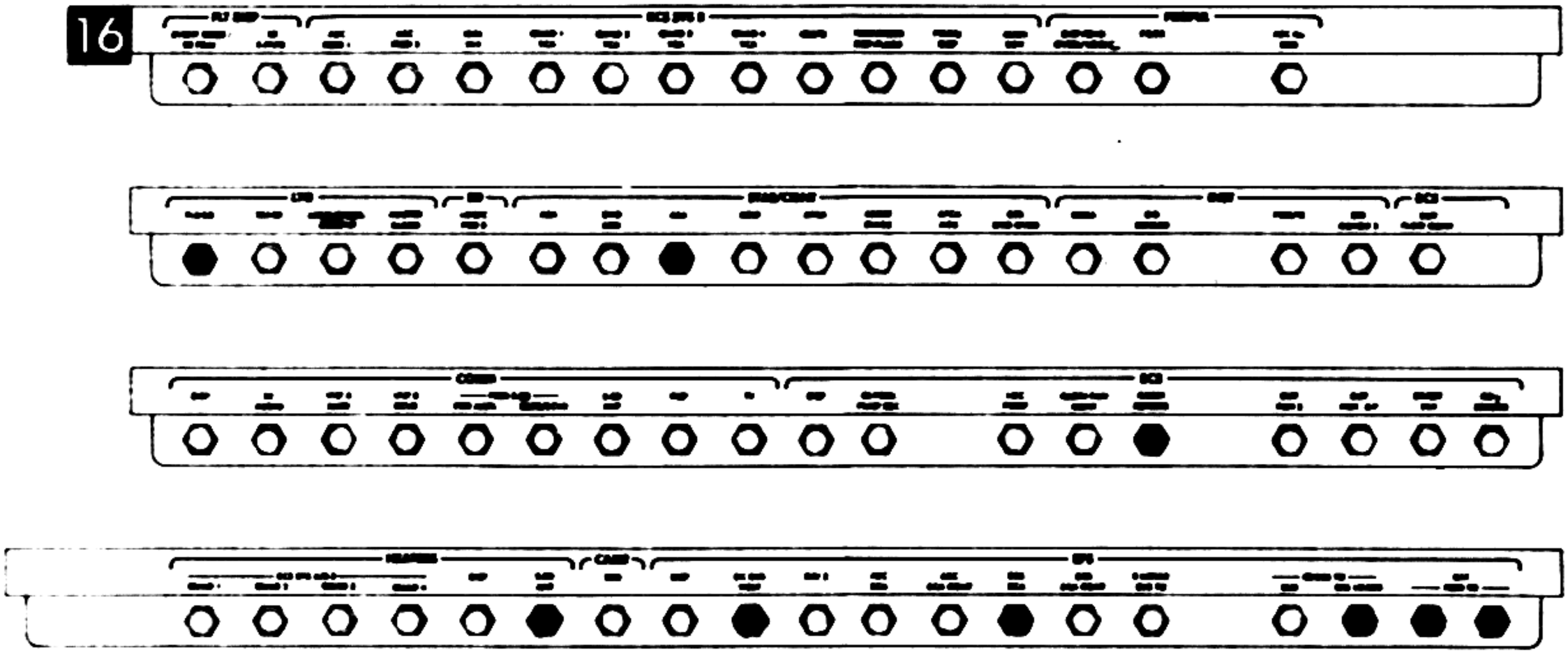
Basic Date October 7, 1969
Changed

ACT-3

INITIAL ACTIVATION STATUS



INITIAL ACTIVATION STATUS



L

Basic Date October 7, 1969
Changed

ACT-5

3 RR GYRO SEL - PRIM

4 FDAI 1&2 - INRTL
EARTH/LUNAR - PWR OFF
LTG - OFF
MODE - HOLD/FAST
ALT SET - 60

5 DES PROP ISOL-SAFE
MASTER ARM - OFF
ASC He SEL - BOTH
STAGE-SAFE (Guarded)

6 S-BAND T/R - OFF
ICS T/R - OFF
RELAY - OFF
MODE-ICS/PTT
AUDIO CONT - NORM
VHF A&B - OFF
VOX SENS - 9
COAS - OFF
THUMBWHEEL VOL(5)-6

7 TTCA (CDR) - JETS

8 TIMER CONT - STOP
LTG OVERRIDE (3) - OFF
SIDE PANELS - OFF

FLOOD OVHD/FWD - BRIGHT
ANUN/NUM - DIM
INTEGRAL - DIM

9 X-POINTER SCALE -HI MULT
RATE/ERR MON - LDG RDR/CMPTR
ATTITUDE MON - PGNS
GUID CONT - PGNS
MODE SEL - LDG RADAR
RNG/ALT MON - ALT/ALT RT
SHFT/TRUN - ±50°
RATE SCALE - 25°/SEC
ACA PROP - ENABLE
THR CONT - AUTO
MAN THROT - CDR
ENG ARM - OFF
ATT/TRANSL - 2 JETS
BAL CPL - ON
ASC He REG 1&2 - tb-gray (vlv Open)
DESCENT He REG 1-tb-gray (vlv Open)
DESCENT He REG 2-tb-bp (vlv Closed)
PRPLNT QTY MON - OFF
PRPLNT TEMP/PRESS MON - ASC
HELIUM MON - OFF
ABORT and ABORT STAGE - Flush/Guarded

Basic Date October 7, 1969
Changed

Basic Date October 7, 1969
Changed

ACT-7

10 SYS A&B ASC FUEL & ASC OXID(4) -tb-bp
(Feed 2-Close, Feed 1-Open)
SYS A&B QUADS (8)-tb-gray (vlv open)
CRSFD -tb-bp (vlv closed)
SYS A&B MAIN SOV - tb-gray (vlv open)
TEMP/PRESS MON - He
ACA PROP (2) - ENABLE
RATE/ERR MON - LDG RDR/CMPTR
ATTITUDE MON - AGS
GLYCOL - PUMP 2
SUIT FAN - 1
O2/H2O QTY MON - ASC 2

11 ENG GMBL - ENABLE
DES ENG CMD OVRD - OFF
LDG ANT - AUTO
RADAR TEST - OFF
TEST MONITOR - ALT XMTR
SLEW RATE - HI
RNDZ RDR - SLEW
DEAD BAND - MIN
GYRO TEST - ROLL
ATTITUDE CONTROL (3) - MODE CONT
MODE CONT: (Both) - OFF
EVENT TIMER: TIMER CONT - STOP
TEMP MON - LDG
RCS SYS A/B-2 QUADS - OFF

ACT-8

LTG: SIDE PANELS - OFF
FLOOD-ALL
OVHD/FWD - BRIGHT
EXTERIOR LTG - OFF
LAMP/TONE TEST - OFF
X-POINTER SCALE - HI MULT

12 ACA/4 JET (2) - ENABLE
TTCA/TRANSL (2) - ENABLE
RDZ ANT RELEASE - Stowed
AOT - CL, ANGLE - 0000 (Pushed In)
TTCA (LMP) - JETS
AGS STATUS - OFF

13 PWR TEMP MON-ED/OFF
INV-OFF
DES PWR (5)-tb-bp
ASC PWR (4)-tb-bp
UPLINK SQUELCH-ENABLE

14 AUDIO CONT - NORM
S-BAND T/R - OFF
ICS T/R - OFF
RELAY - OFF
MODE - ICS/PTT
UPDATA LINK - OFF
VHF A&B - OFF
VOX SENS - 9
THUMBWHEEL VOL(5)-6

Basic Date October 7, 1969
Changed _____

Basic Date October 7, 1969
Changed

ACT-7

10 SYS A&B ASC FUEL & ASC OXID(4) -tb-bp
(Feed 2-Close, Feed 1-Open)
SYS A&B QUADS (8)-tb-gray (vlv open)
CRSFD -tb-bp (vlv closed)
SYS A&B MAIN SOV - tb-gray (vlv open)
TEMP/PRESS MON - He
ACA PROP (2) - ENABLE
RATE/ERR MON - LDG RDR/CMPTR
ATTITUDE MON - AGS
GLYCOL - PUMP 2
SUIT FAN - 1
O2/H2O QTY MON - ASC 2

11 ENG GMBL - ENABLE
DES ENG CMD OVRD - OFF
LDG ANT - AUTO
RADAR TEST - OFF
TEST MONITOR - ALT XMTR
SLEW RATE - HI
RNDZ RDR - SLEW
DEAD BAND - MIN
GYRO TEST - ROLL
ATTITUDE CONTROL (3) - MODE CONT
MODE CONT: (Both) - OFF
EVENT TIMER: TIMER CONT - STOP
TEMP MON - LDG
RCS SYS A/B-2 QUADS - OFF

Basic Date October 7, 1969
Changed

ACT-9

15 S-BAND MODULATE - PM
XMTR/RCVR - OFF
PWR AMPL - OFF
VOICE - OFF
PCM - OFF
RANGE - OFF/RESET
VHF A - OFF (SQUELCH-3)
VHF B - OFF (SQUELCH-3)
TELEMETRY - OFF/HI
RECORDER - OFF
VHF - AFT
TRACK MODE - OFF
PITCH - -75°
YAW - -12°
S-BAND - AFT

16 SUIT GAS DIVERTER - Pull/EGRESS
CABIN REPRESS - AUTO
PLSS FILL - CLOSE
PRESS REG A&B - CLOSE
DES O2 - OPEN
ASC O2(2)-CLOSE
SUIT ISOL (2) - SUIT DISC
SUIT CIRCUIT RELIEF - AUTO
CABIN GAS RETURN - AUTO
CO2 CANISTER SEL - PRIM
PRIM & SEC CO2 CANISTER - CLOSE
WATER SEP SEL - PULL/SEP 2

ACT-10

ASC H20 - CLOSE
SEC EVAP FLOW - CLOSE
PRIM EVAP FLOW (2)-CLOSE
DES H20-OPEN
WATER TANK SELECT -DES
SUIT TEMP - COLD
LIQUID COOLING GARMENT -COLD

17 Verify (192 PKG) Lanyard Not Seated

18 FWD CABIN RELIEF AND DUMP - AUTO

89:30

HOUSEKEEPING

1 Unsnap LMP's HSB And Stow Next To CDR's HSB On Floor Velcro. Unsnap CDR's HSB

2 Unstow 70mm Film Bag (Top Left of RHSSC)
Unstow 16mm Bag, Remove 1 Mag, Stow Bag (Top Right Of LHSSC),Install 16mm Mag, CEX (f11,250,7) 6 fps

3 Put Up Snap Straps

Basic Date October 7, 1969
Changed October 22, 1969

Basic Date _____October 7, 1969
Changed __ _____

ACT-11

********** SR 89:37 **********

********** AOS 90:03 **********

90:30

COMM ACTIVATION

1 Transfer To LM POWER (FLOOD Lts. Blink, C/W PWR Caution Lt - On)
GET ___:___:___
CB(11) EPS: XLUNAR BUS TIE - Close
CB(16) EPS: XLUNAR BUS TIE - Close
Activate Utility Lights

2 CB(11) COMM: VHF B XMTR - Close
: VHF A RCVR - Close
: CDR AUDIO-Close
INST: SIG CONDR 1 - Close
ECS: GLYCOL PUMP 2 - Close

3 CB(16) INST: SIG CONDR 2-Close
EPS: DISP - Close
: DES ECA CONT-Close

ACT-12

Verify DES BATS tb(4) - LO,DES BATS-tb-gray
PWR/TEMP MON - Check Voltages
CB(16)EPS: CROSS TIE BAL LOADS - Open

When ≤ 27V, Select HI Voltage Taps
BAT 1 HI VOLTAGE - OFF/RESET
BAT 1 HI VOLTAGE - ON
Repeat For BATS 2,3,4
CB(16) EPS: CROSS TIE BAL LOADS - Close

4 CB(16) COMM: DISP - Close
: VHF A XMTR - Close
: VHF B RCVR - Close
: PRIM S-BD(2) - Close
: PMP - Close
INST: SIG SENSOR - Close
: PCM/TE - Close
ECS: DISP - Close

5 Connect To LM COMM Umbilical Using CWG Connector

6 CB(16) SE AUDIO - Close

Basic Date October 7, 1969
Changed October 20, 1969

Basic Date October 7, 1969
Changed

ACT-13

90:40

* S-BAND/VHF SIMPLEX VOICE TEST

1 AUDIO (LMP): S-BAND T/R - T/R
: VHF A - T/R
: VHF B - OFF
COMM: S-BAND-PM,PRIM,PRIM,DN VOICE BU, PCM, OFF/RESET,OFF,LO
VHF A XMTR - VOICE
VHF A RCVR - ON
S-BAND ANT - AFT
Perform VHF A Voice Check With CSM

2 COMM: VHF A XMTR & RCVR - OFF
: VHF B XMTR - VOICE
: VHF B RCVR - ON
AUDIO (LMP): VHF A-OFF
: VHF B-T/R
Perform VHF B Voice Check With CSM

3 Perform S-BD Voice & LBR Check With MSFN
TLM-HI
Perform Voice & HBR Check With MSFN

4 BIOMED-RIGHT
Perform Voice & HBR Check With MSFN

5 TLM-LO
Perform Voice & LBR Check With MSFN

6 S-BAND: VOICE-VOICE
Perform Voice & LBR Check With MSFN

7 TLM-HI
Perform Voice & HBR Check With MSFN

8 TLM-LO
S-BAND: RANGE-RANGE
Perform Voice & Ranging Check With MSFN

********** SS 90:51 **********

90:55

OPS CHECKOUT

1 Perform OPS Checkout
Read And Record Source Pressures
CDR OPS _____

LMP OPS _____

Basic Date October 7, 1969
Changed _____

Basic Date _____October 7, 1969
Changed ___ _____

ACT-15

91:00

COMM DEACTIVATION

1 AUDIO (LMP): S-BAND T/R - OFF
: VHF B - OFF

2 COMM: S-BAND - PM,OFF,OFF,OFF,OFF,
OFF/RESET,OFF,LO
: VHF B XMTR - OFF
: VHF B RCVR - OFF

3 CB(16) EPS: CROSS TIE BAL LOADS-Open
Select LO TAPS

4 Verify CB Status Per INT ACT STATUS
Chart (ACT 3,4)
Disconnect From LM Comm Umbilical
UTILITY Lts - OFF
CB(11) LTG: UTIL - Open

5 Transfer To CSM Power, Observe C/W
PWR Lt - Off
GET ___:___:____

ACT-16

91:10

LMP IVT TO CSM

1 DES O2 - CLOSE
DES H2O - CLOSE
CABIN REPRESS - CLOSE
CB(16) ECS: CABIN REPRESS - Open
Window Shades - Up

2 FLOOD LIGHT - OFF
Check AOT Visibility

3 CABIN RELIEF & DUMP (OVHD) - Open
IVT TO CSM, Close LM Hatch

********** LOS 91:11 **********

Basic Date October 7, 1969
Changed

Basic Date October 7, 1969
Changed

DOI DAY

Basic Date October 2 1969
Changed

CSM TO LM TRANSFER LIST (DOI)

Suits And Ancillary Eqpt:

Liners & Extra Set

IV Gloves

Helmet

Bio belt & Instrumentation

Comm Cap

Wristwatch (2)

Sunglasses in pouch

Pens & Pencils

Penlight

Scissors

Personal Radiation Dosimeter

Monocular - RHSSC (Fecal Comp.)

Flight Data In Bag:

LM LUNAR SURFACE MAPS

LM STRIPS CHART

LM TIMELINE BOOK

CWG CONNECTOR

Basic Date October 7, 1969
Changed October 31, 1969

ACT-17

SR 103:27

AOS 103:47

UD - 4:00 (103:54)

L O I 103:54

LMP IVT TO LM

1 Activate CABIN DUMP VALVE & Open Hatch
Carry Comm Carrier, CWG Connector,
& Monocular (Stow In RHSSC In TSB)
Mount TSB

2 Verify Docking Tunnel Index
Angle (See TLC-1)
Window Shades - Down

3 Transfer To LM PWR
GET ___:___:___
(FLOOD Lts. Blink, C/W PWR Caution Lt-On)
CB(11) EPS: XLUNAR BUS TIE - Close
CB(16) EPS: XLUNAR BUS TIE - Close

ACT-18

4 FLOOD LIGHT - All
CB(11) LTG UTIL: Close
Activate Utility Lts

5 DES H20 - OPEN
DES 02 - OPEN
CABIN REPRESS - AUTO
CB(16) ECS: CABIN REPRESS - Close

L O I 104:10

EPS ACTIVATION

1 LTG: ANUN/NUM - BRIGHT (1 Caution, 9 Power Failure, 1 COMP Lt - On)

2 CB(11) INST: SIG CONDR 1 - Close
EPS: DES ECA CONT- Close
CB(16) INST: SIG SENSOR - Close
: PCM/TE - Close
: SIG CONDR 2 - Close
EPS: DISP - Close
: DES ECA CONT -Close

3 Connect To LM Comm Umbilical Using CWG Connector

Basic Date October 7, 1969
Changed

AUDIO (LMP): S-BAND T/R - T/R
: ICS - T/R
CB(16) COMM: DISP - Close
: S.E. AUDIO-Close
: PRIM S-BD(2)-Close
: S-BD ANT - Close
: PMP-Close
S-BAND - PM,PRIM,PRIM,VOICE,PCM,RANGE, OFF,LO
S-BAND ANT - FWD
Perform COMM Check with MSFN

4 Verify BAT 1,2,3,4 - tb-LO
DES BATS tb-gray
BATS 5&6 NORMAL & BACKUP (4)-tb-bp
Check BAT and BUS Voltages
CB(16) EPS: CROSS TIE BAL LOADS - Open

When BUS Volts ≤27V, Select High Voltage Taps
BAT 1 HI VOLTAGE-OFF/RESET
BAT 1 HI VOLTAGE-ON
Repeat for BATS 2,3,4

5 CB(11) AC BUS B&A: BUS TIE INV 2&1(4) - Close
: AC BUS VOLT(1)-Close
EPS: INV 1 - Close
CB(16) EPS: INV 2 - Close

6 POWER/TEMP MON - AC BUS
INV -1 Then 2
Verify Voltage in GREEN Band
CB(11) EPS: INV 1 - Open

L O I 104:14

MISSION TIMER ACTIVATION

1 CB(11) AC BUS B: NUM LTG - Close
FLIGHT Displays: MISSION TIMER-Close
Set MSN TMR On CSM Mark

L O I 104:16

PRIMARY GLYCOL LOOP ACTIVATION

1 CB(16) ECS: DISP - Close
GLYCOL - PUMP 1 _____ psia
- INST(SEC) _____ psia
- PUMP 2
CB(11) ECS: GLYCOL PUMP AUTO TRNFR-Close
: GLYCOL PUMP 1 - Close
: GLYCOL PUMP AUTO TRNFR-Open
GLYCOL - PUMP 1
CB(11) ECS: GLYCOL PUMP 2 - Close

Basic Date. October 7, 1969
Changed _____

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104:18

CAUTION/WARNING CHECKOUT

1 CB(16) LTG: MASTER ALARM - Close
INST: CWEA - Close

WARN	CAUT	COMP
ASC PRESS	PREAMP	H2O SEP
CES AC	HEATER	
CES DC	ECS	
LGC	GLYCOL (On If Temp >50°)	
RCS A REG		
RCS B REG		

(ASC PRESS Lt-On Thru Descent)
CB(16) LTG: ANUN/DOCK/COMPT - Close
STAB/CONT: ATCA - Close
HEATER: DISP - Close
CB(11) STAB/CONT: ENG CONT - Close

2 RCS SYS A/B-2: QUADS(4) - AUTO
HTR TEMP MONITOR - Cycle Then LDG
(HEATER Lt - Off)
LAMP/TONE TEST - Check All Positions

3 PRIM EVAP FLOW No 1 - OPEN

4 Select HI Voltage Taps
Close CB's Per ACTIVATION PWR UP Chart

C/W CHECKOUT

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ACT-22

ACTIVATION PWR UP

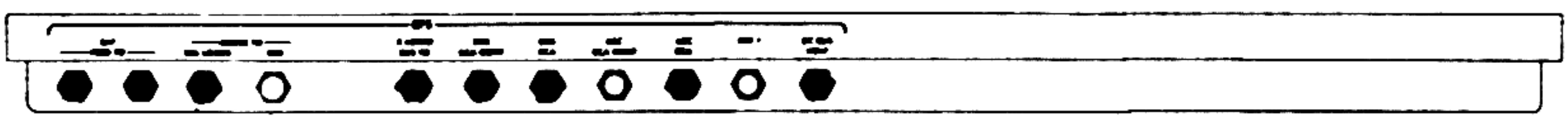
6

6

8

6

M.A.,LGC,RESTART



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Basic Date October 7, 1969
Changed

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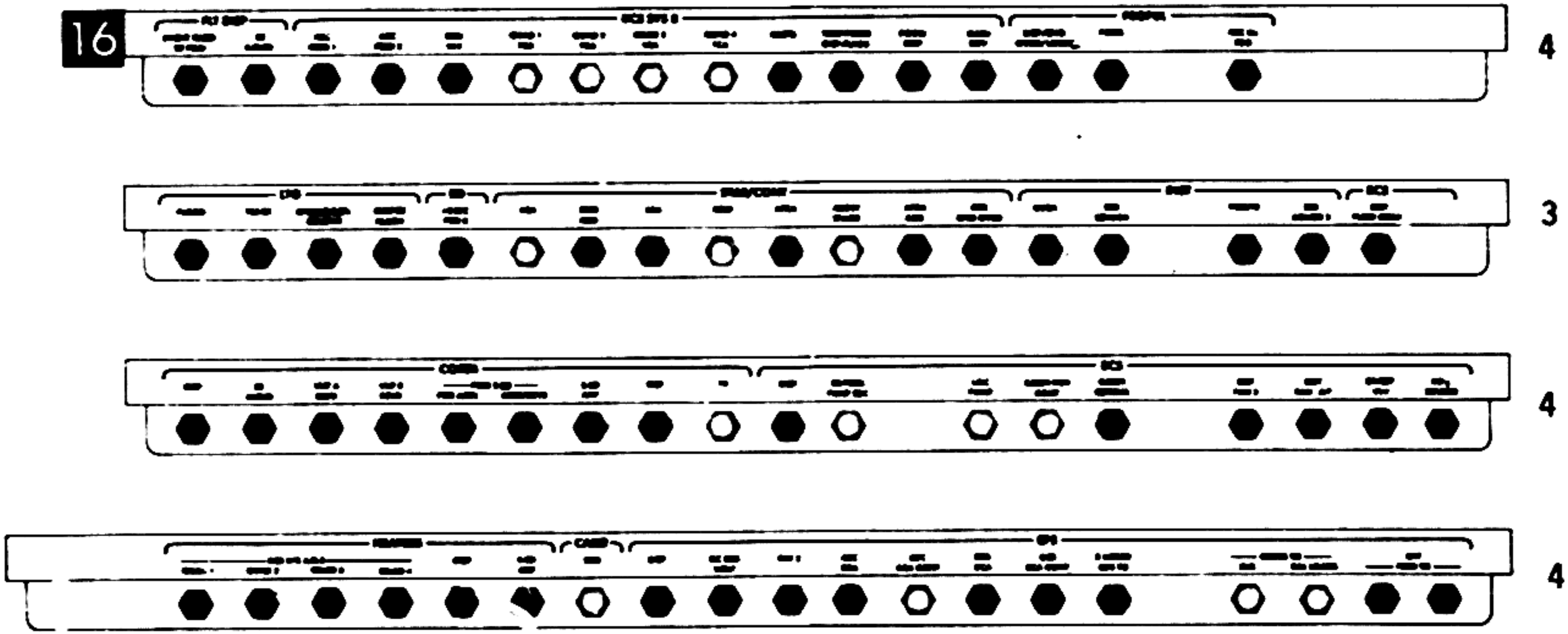
ACT-23

ACTIVATION PWR UP



CDR IVT TO LM

CDR IVT TO LM

ACT-24

********** UD - 3:30 (104:24) **********

104:27

CDR IVT To LM With
Helmet & Gloves

104:27

TB VERIFICATION

1 CB(16) INST: CWEA - Open Then Close
Cycle TEMP MON

WARN	CAUT	COMP
RCS A REG	ECS	H2O SEP
RCS B REG		SUIT FAN

2 FUEL & OXID VENT (2) -tb -gray
LDG GEAR DEPLOY - tb-bp

3 ASCENT He REG 1&2 -tb-gray
DESCENT He REG 1-tb-gray
DESCENT He REG 2 -tb-bp

4 SYS A&B ASC FUEL & OXID (4)-tb-bp
SYS A&B QUADS (8) - tb-gray
CRSFD tb-bp
SYS A&B MAIN SOV -tb-gray

5 RECORDER - OFF - tb-bp

Basic Date October 7, 1969
Changed November 3, 1969

104:29

* SEC S-BAND T/R AND PWR AMPL CHECK

1 Notify MSFN of SEC S-BD Check
S-BAND XMTR/RCVR - SEC
S-BAND PWR AMPL - SEC
(Up To 60 sec To Relock)

2 Perform Comm Check (With MSFN)

3 S-BAND XMTR/RCVR - PRIM
S-BAND PWR AMPL - PRIM
(Up To 60 sec To Relock)

L O I

104:32

ECS ACTIVATION & CHECKOUT

1 O2/H2O QTY MON - ASC 2, ASC 1, DES

2 SUIT ISOL (2) - SUIT FLOW
SUIT ISOL (2)-ACTUATE OVRD (Suit Disc)
SUIT GAS DIVERTER - PUSH/CABIN

S-BD ANT ACT
ECS ACT

L O I

104:32

* S-BAND STEERABLE ANTENNA ACTIVATION

1 HTR CONT TEMP MONITOR - S-BAND
(-52° to +135°)
S-BAND -PM,PRIM,PRIM,VOICE,PCM,
RANGE,OFF,HI
CSM Mnvr To Proper Attitude

3 SUIT FAN - 2 (Master Alarm (Twice), SUIT/FAN Warning Lt-On & SUIT FAN Comp Lt-On Momentarily, ECS Caution, H2O SEP Comp Lts - ON Then Off In 2 Min)

L O I 104:34

CDR CONNECT TO LM ECS

1 Connect To CDR Hoses
(Stow Gas Connector Plugs In TSB)
SUIT ISOL - SUIT FLOW
Verify (192 PKG) Lanyard Stopper Not Seated
CB(16) ECS: LCG PUMP - Close
PRESS REG A - EGRESS (Suit Gas Diverter Automatically Extends)

2 Connect To LM Comm Umbilical
CB(11) COMM: CDR AUDIO - Close
AUDIO (CDR): S-BAND T/R
: ICS - T/R

2 HI GAIN: PITCH - -75°
YAW - -12°
TRACK MODE - SLEW (Wait 30 sec)
PITCH (From MSFN) _____ (+68°)CCW
YAW (From MSFN) _____ (+19°)CCW
ANTENNA S-BAND - SLEW

3 Verify Signal Strength (> 3.0)
TRACK MODE - AUTO (>3.8)

4 S-Band Check With MSFN

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104:37

PGNS TURN-ON & SELF TEST

1 Check Bus Voltages

2 CB(11) PGNS: IMU OPR - Close
NO ATT Lt - On (90 sec)

3 V35E
F 88 88
(Master Alarm, LGC Warning, ISS Warning And All DSKY Lts - On, 8's In All Registers; Lts And DSKY Reset In 5 sec)
NO ATT Lt - Off, Wait 20 sec
RSET
V37E 00E

4 V25 N01E 1365E
E,E,E

5 V15 N01E 1365E
R1,R2,R3 All Zero

6 V21 N27E 10E (Test Fixed And Erasable Memory)

104:37

SUIT FAN/H2O SEP CHECK

1 CB(16) ECS: SUIT FAN 2 - Open
(Master Alarm, SUIT/FAN Warning SUIT FAN Comp Lts - On)

2 CB(11) ECS: SUIT FAN 1-Close
H2O SEP SEL-PUSH SEP 1

3 SUIT FAN - 1 (SUIT/FAN Warning, FAN Comp Lts-Off,ECS Caution, H2O SEP Comp Lts -Off In 2 min)
CB(16) ECS: SUIT FAN 2 - Close

104:40

GLYCOL PUMP CHECK

1 CB(11) ECS: GLYCOL PUMP 1 - Open
(Master Alarm, ECS Caution Lt - On Momentarily)
CB(11) ECS: GLYCOL PUMP 1 - Close
(GLYCOL Comp Lt-On)

ACT-28

R1 Number Of Errors
R2 Number Of Tests Started
R3 Number Of Tests Successful
(Test Successful If R2 ≥ 3 Within 78 sec)

```
*PROG Lt-On                    *
*        V05 N09E 01102 SELF-*
*        TEST ERROR          *
* N08E   Record For MSFN     *
*                            *
*        R1 _____ ____       *
*                            *
*        R2 _____            *
*                            *
*        R3 _____            *
```

7 V21 N27E OE TERMINATE SELF TEST

2 GLYCOL - INST (SEC) (8 psia)
CB(16) ECS: GLYCOL PUMP SEC - Close
(10-20 psi Rise)
: GLYCOL PUMP SEC - Open

3 GLYCOL - PUMP 2 (21-37 psi)
(GLYCOL Comp Lt - On Then Off)
CB(11) ECS: GLYCOL PUMP AUTO
TRNFR-Open
GLYCOL - PUMP 1 (21-37 psi)

********** SS 104:40 **********

Basic Date October 7, 1969
Changed _____

ACT-28

R1 Number Of Errors
R2 Number Of Tests Started
R3 Number Of Tests Successful
(Test Successful If R2 ≥ 3 Within 78 sec)

```
*PROG Lt-On                    *
*        V05 N09E 01102 SELF-*
*        TEST ERROR          *
* N08E   Record For MSFN     *
*                            *
*        R1 ____________     *
*                            *
*        R2 ____________     *
*                            *
*        R3 ____________     *
```

7 V21 N27E 0E TERMINATE SELF TEST

2 GLYCOL - INST (SEC) (8 psia)
CB(16) ECS: GLYCOL PUMP SEC - Close
(10-20 psi Rise)
: GLYCOL PUMP SEC - Open

3 GLYCOL - PUMP 2 (21-37 psi)
(GLYCOL Comp Lt - On Then Off)
CB(11) ECS: GLYCOL PUMP AUTO
TRNFR-Open
GLYCOL - PUMP 1 (21-37 psi)

********** SS 104:40 **********

Basic Date October 7, 1969
Changed _____

LOI 104:41

*LGC/CMC CLOCK SYNC/TEPHEM UPDATE

1 V25 N36E

2 Load CSM Time _____:_____:_____

3 On CSM Mark - ENTR

4 V06 N65E - Compare With CSM N65
V55E - Load ΔT
Check Mission Timer

5 CSM Read TEPHEM

R1 _____

R2 _____

R3 _____

6 V25 N01E, 1706E Load TEPHEM (Octal)

7 V05 N01E, 1706E Verify TEPHEM
V21N01E, 1462E, 576E

8 Verify MSFN Contact
V74E (Erasable Dump) (42 Sec)

LOI 104:42

*VHF B CHECKOUT

1 CSM Configure For VHF Simplex B
VHF B XMTR - VOICE
VHF B RCVR - ON
VHF ANT - FWD
AUDIO (Both): VHF B - T/R

2 Both CDR & LMP Perform Voice Check On VHF Simplex B

LOI 104:43

*VHF A CHECKOUT

1 CSM Configure For VHF Simplex A
VHF A XMTR - VOICE
VHF A RCVR - ON
VHF B XMTR - OFF
TLM - HI
AUDIO (Both): VHF B - RCV
: VHF A - T/R

2 Both CDR & LMP Perform Voice Check On VHF Simplex A

VHF CHECKOUT

104:46

DOCKED IMU COARSE ALIGN

Verify CSM In Min DEADBAND ATT HOLD

Calculate LM Gimbal Angles

OG	IG	MG
300.00	180.00	360.00

_____ +RC (See TLC-1)

_____ -CM	_____ +CM	_____ -CM
(240.0)	(270.0)	(00.0)
_____ LM	_____ LM	_____ LM
(060.0)	(090.0)	(00.0)

V41 N20E COARSE ALIGN IMU
F 21 22 LOAD ICDU ANGLES OG,IG,MG (.01°)
(NO ATT Lt - On, FDAI Torques)

```
*PROG Lt-On              *
*V05 N09E 00211 COARSE   *
*         ALIGN ERROR, Go*
*         To 3           *
```

104:46

CB(16) COMM: SE AUDIO - Open
Disconnect From LM Comm Umbilical
CB(16) COMM: SE AUDIO - Close
LMP IVT TO CSM

Basic Date October 7, 1969
Changed October 31, 1969

4 V40 N20E ZERO CDU (NO ATT Lt-Off)
Notify CSM ATT HOLD No Longer Required

5 V25 N07E
F 21 07 SET REFSMFLG
77E,10000E,1E, V01 N01E,77E Confirm Bit 13 Is Set
(Set If 1st Digit Is 1,3,5 or 7)

6 V37E 51E
PRO
V37E 00E

7 V06 N20 On LM MARK - ENTR
Note Time; Copy CSM & LM OG, IG, MG
GET ___:___:___

OG	IG	MG
_____.____ CM	_____.____ CM	_____.____ CM
(240.0)	(270.0)	(00.0)
_____.____ LM	_____.____ LM	_____.____ LM
(060.0)	(090.0)	(00.0)

8 Voice Gimbal Angles And Time To MSFN

104:57

1 Match Indicated Angles
SLEW,
Set P _____ (+68)
Y _____ (+19)
ANT - FWD
TLM - OFF/LO

2 VHF B XMTR - DATA

********** LOS 104:59 **********

105:10

LMP IVT TO LM

1 CB(16) SE AUDIO - Open
CB(16) LCG PUMP - Open
Connect To LMP Hoses
SUIT ISOL - SUIT FLOW
Connect To LM Comm Umbilical

2 CB(16) SE AUDIO - Close
LCG PUMP - Close

Basic Date _____ October 7, 1969
Changed _____ October 22, 1969

105:20

DROGUE AND PROBE INSTALLATION

1 Verify:
- Both Electrical Umbilicals Removed
- Drogue Lock Lever Engaged & Flush
- Three Capture Latches Engaged & Locked
- LM Hatch Exterior Insulation O.K.
- Flaps Secured Around Handles

2 Close & Secure Hatch
CABIN DUMP (OVHD) - AUTO
PRESS REG A&B - CABIN
SUIT GAS 'VERTER - PUSH/CABIN

105:20

ASCENT BATTERY ACTIVATION & CHECKOUT

1 CB(16) EPS: ASC ECA CONT - Close

2 POWER/TEMP MON SEL - BAT 5
BAT 5 NORMAL FEED-ON (Verify BAT Current)

3 POWER/TEMP MON SEL - SE BUS Then BAT 6
BAT 6 NORMAL FEED-ON (Verify BAT Current)

4 BAT 1,2 HI-VOLT-OFF/RESET
BAT 3,4 HI-VOLT-OFF/RESET
Verify BAT Current = 0
POWER/TEMP MON SEL-CDR BUS Then SE BUS

5 BAT 5 BACKUP FEED-ON
BAT 6 BACKUP FEED-ON
BAT 5 NORMAL FEED-OFF/RESET
BAT 6 NORMAL FEED-OFF/RESET
POWER/TEMP MON SEL-CDR BUS, SE BUS, Then BAT Current

********** UD - 2:30 (105:24) **********

DROGUE & PROBE
ASC BAT CK

********** SR 105:26 **********

6 BAT 1&2 HI VOLT-ON
BAT 3&4 HI VOLT-ON
Verify BAT Current

7 BAT 5 BACKUP FEED-OFF/RESET
BAT 6 BACKUP FEED-OFF/RESET
Verify BAT Current = 0

8 CB(16) EPS: ASC ECA CONT - Open

9 Record ED BAT Voltage For MSFN

BAT A _____

BAT B _____

L 105:30
O
I AGS ACTIVATION & SELF TEST

1 AGS STATUS - STBY (Master Alarm, AGS Warning Lt-On)
CB(16) STAB/CONT: AEA-Close (AGS Warning Lt-Off)
CB(11) AC BUS B: AGS - Close
AGS STATUS - OPERATE (Master Alarm & AGS Warning Lt-On)
O2/H2O QTY MON - C/W RESET

Basic Date _____October 7, 1969
Changed _____October 22, 1969

ACT-35

2 000+888888 (OPR ERR Lt-On)

3 123-45679

4 412+0 REINITIATE TEST
412R +1 SELF TEST SATISFACTORY
+3 LOGIC TEST FAILURE
+4 MEMORY TEST FAILURE
+7 LOGIC AND MEMORY TEST FAILURE

5 574R DESCENT STAGE FLAG (+ Not Staged)

6 604 LUNAR SURFACE FLAG (+ Not On Lunar Surface)

7 612R STAGING SEQ COUNTER (+0 Nom)

********** AOS 105:45 **********

L 105:46
O
I LANDING GEAR DEPLOY

1 CB(11) ED: LDG GEAR FLAG-Close
: LOGIC POWER A-Open
MASTER ARM-ON
LDG GEAR DEPLOY-FIRE, tb-gray

LDG GEAR DEPLOY
AGS T/O

105:45

ANT-FWD,Verify Comm
SLEW (>3.0), AUTO (>3.8)
TLM-HI, BIOMED - LEFT

LDG GEAR DEPLOY
AGS T/O

ACT-36

CB(11) ED: LOGIC POWER A-Close
LDG GEAR DEPLOY-FIRE
MASTER ARM-OFF
CB(11) ED: LDG GEAR FLAG-Open

L
O
I

105:50

*MSFN - UPDATE

1 UPDATA LINK - DATA
MSFN P-27 Updates REFSMMAT/
STATE VECTOR
UPDATE LINK - OFF

********** UD - 2:00 (105:54) **********

L
O
I

105:55

*IMU FINE ALIGN

1 Copy DAP Data _____ Code
_____ LM Wt
_____ CSM Wt
Copy Ground Calculated Gyro
Torquing Angles

X_____, Y_____, Z_____

L

Basic Date _____ October 7, 1969
Changed _____

2 V42E Fine Align IMU
F 21 93 Load Gyro Torquing
Angles X,Y,Z (.001°)

3 V16 N93E Monitor Torquing
(All Zero)

4 V06 N20 On CSM Mark-ENTR
OG _____
IG _____
MG _____
GET ____:____:____

L
O
I

105:57

AGS INITIALIZATION

1 V16 N65E
Set AGS Time (377) 100 nr Bias

2 V47E, 414+1

3 400+3 AGS/PGNS Align

4 V83E, 317R, 440R

ACT-38

L O I 106:00

* DAP SET, GIMBAL/THROTTLE TEST

1 CB(11) STAB/CONT: DECA PWR-Close
MODE CONT: PGNS - AUTO
Verify GUID CONT - PGNS
THR CONT - MAN
MAN THROT - CDR
TTCA (Both) - THROTTLE (MIN) Set Friction

2 Verify MSFN Contact
V48E
R1 32022
PRO

3 F 06 47 LM,CSM Wt. (lbs)
R1 _____ (+33926)
R2 _____ (+37208)
PRO

4 F 06 48 GMBL TRIM,PITCH,ROLL (.01°)
R1 _____ (+00501)
R2 _____ (+00566)

106:00

1 Copy & Load AGS Pad

224 _____ (+60326)

225 _____ (+58158)

226 _____ (+70312)

227 _____ (-50181)

UNDOCKING Time _____:_____:_____

SEP Time _____:_____:_____

2 232 00600

233 00250

464 00500

465 00195

616 +0

LM

Basic Date October 7, 1969
Changed November 3, 1969

ACT-39

ENG STOP - PUSH
ENG ARM - DES (DES REG Warn Lt-On) 623 +0
MSFN Verify GDA Position 514 R _____ (-65034)
(TERM) V34E 515 R _____ (-41734)
516 R _____ (+00000)

5 TTCA (Both)-Min,Then Soft Stop (50%)
Then Max (98%), Then Min
Adjust Friction
MAN THROT - SE
Repeat Test For LMP TTCA
6 ENG ARM - OFF
Cycle CWEA (DES REG Lt - off)
ENG STOP - RESET
MAN THROT - CDR
TTCA(CDR)-JETS
7 Give CSM Go For MNVR To
Landmark Track Attitude

********** UD - 1:45 (106:09) **********

106:15

RATE GYRO CHECK

1 Verify CSM Holding Attitude
GYRO TEST - POS RT (RPY RATE +5°/sec)
GYRO TEST - NEG RT (YPR RATE -5°/sec)

RATE GYRO CK
RCS PRESS

RATE GYRO CK
RCS PRESS

ACT-40

2 RATE SCALE -5° SEC
Repeat Tests

106:20

1 After CSM Mnvr To
Landmark Track Attitude
V06N20 On CSM Mark-ENTR
OG _____
IG _____
MG _____
GET ____:____:____

1 Match Indicated Angles
SLEW
Set P _____ (+104)
Y _____ (+01)
ANT - FWD
TLM - OFF/LO

********** UD - 1:30 (106:24) **********

L
O
I

106:25

RCS PRESSURIZATION

1 RECYCLE: SYS A&B ASC FEED 2(2) - CLOSE
SYS A&B ASC FEED 1(2) - OPEN

2 RCS QUANTITY A&B - 100%
SYS A&B ASC FUEL & ASC OXID - tb(4) Remain-bp
SYS A&B THRUSTER PAIR QUADS - tb(8) gray
(Possible tb-Red, Cycle CWEA If Necessary)
RECYCLE: CRSFD-CLOSE
: MAIN SOV SYS A&B - OPEN
HTR CONT TEMP MON - Check RCS QUADS (>119°)

LM

Basic Date October 7, 1969
Changed November 3, 1969

Basic Date _____October 7, 1969
Changed _____October 22, 1969

ACT-41

3 TEMP/PRESS MON - He 2820-3280 psia
PRPLNT (40°-100°/10-50 psi)
FUEL MANF (25-90 psi)
OXID MANF (25-90 psi)

4 CB(16) LOGIC PWR B-Open
MASTER ARM - ON
HE PRESS RCS - FIRE
(RCS A&B REG Warning Lts-Off)
RECYCLE: SYS A&B ASC FEED 2(2) - CLOSE
CB(16) LOGIC PWR B-Close
MASTER ARM-OFF

5 RECYCLE: SYS A&B ASC FEED 1(2) - OPEN
: SYS A&B THR PAIR QUADS(8)-OPEN
: CRSFD - CLOSE
: SYS A&B MAIN SOV-OPEN

6 TEMP/PRESS MON - OXID MANF (175-188 psi)
- FUEL MANF (175-188 psi)
- PRPLNT (40°-100°/178-188 psi)
- He (2750-3200 psi)
Read He Pressure To MSFN

********** SS 106:38 **********

106:40

1 After CSM Completes Tracking
On CSM MARK - ENTR
OG _____
IG _____
MG _____
GET ____:____:____

2 Monitor FDAI For Gimbal Lock Avoidance

106:45

2 After CSM Mnvr To AGS Calib Att
On CSM MARK - ENTR
OG _____
IG _____
MG _____
GET ____:____:____

106:40

ANT - FWD, Verify Comm
SLEW (>3.0), AUTO (>3.8)
TLM - HI, BIOMED - LEFT

106:46

* RCS CHECKOUT

1 GUID CONT - PGNS
ATT TRANSL - 4 JET
ATT CONT (3) - PULSE
MODE CONT (Both) - ATT HOLD

Basic Date _____October 7, 1969
Changed _____November 3, 1969

Basic Date _____October 7, 1969
Changed ____ ____

ACT-43

ACA/4 JET (CDR) - DISABLE
TTCA (CDR) - JETS
Verify HBR With MSFN & CSM In
Wide Deadband & Attitude Hold

2 <u>TTCA (Cold Fire) Check</u>

V76E
V11N10E, 5E
CDR TTCA

UP	(+X) -	R1	00252	(QUAD Flags & RCS TCA
DN	(-X) -		00125	Warn Lts - On)
E, 6E				
RIGHT	(+Y) -	R1	00220	
LEFT	(-Y) -		00140	
FWD	(+Z) -		00011	
AFT	(-Z) -		00006	

3 <u>PGNS RATE CMD (Cold Fire), AGS PULSE (Cold Fire) Check</u>

CB(11) ATT DIR CONT - CLOSE
V77E
V15 N01E, 42E

CDR ACA (To Soft Stop, Pause 2 sec At Null)

ROLL RIGHT	R3	00051	
ROLL LEFT		77726	
PITCH UP	R1	00051	(QUAD Flags & RCS TCA Warn Lts-On)
PITCH DN		77726	
YAW RIGHT	R2	77726	
YAW LEFT		00051	

RCS C/O

4 <u>AGS RATE CMD (Cold Fire), 4 JET SEC COIL (Hot Fire) Check</u>

CSM WIDE DEADBAND, ATT HOLD
Verify CMC MODE - FREE And Tunnel Vented To Zero

GUID CONT - AGS
ATT CONT (3) - MODE CONT
ACA/4 JET (CDR) - ENABLE
CDR ACA (Deflect Slowly To Hardover, Pause 2 sec At Null)
ROLL - RIGHT
ROLL - LEFT
PITCH - UP (QUAD Flags & RCS TCA Warn Lts-On)
PITCH - DN
YAW - RIGHT
YAW - LEFT

5 <u>PGNS MIN IMP (Hot Fire) Check</u>

GUID CONT - PGNS
V76E

CB(11) RCS SYS A: QUAD TCA (4) - Close
CB(16) RCS SYS B: QUAD TCA (4) - Close
CB(16) INST: CWEA - Open Then Close
CYCLE TEMP MON
V11N10E, 31E R1 67777
CDR ACA (Out Of Detent (2 1/2°), Pause 2 sec At Null)

ROLL RIGHT -	R1 27757
ROLL LEFT -	R1 27737
YAW RIGHT (Twice) -	R1 27767
YAW LEFT (Twice) -	R1 27773

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ACT-45

V48E, V21E, 31022E, PRO, V34E
V11N10E, 31E
CDR ACA(Out of Detent (2 1/2°), Pause 2 sec At Null)
PITCH UP - R1 27776
PITCH DN - R1 27775

6 ATT CONT (3) - PULSE
GUID CONT - AGS
ATT TRANSL - 2 JET

106:53

1 Match Indicated Angles
SLEW
Set P _____ (+131)
Y _____ (+24)
ANT - AFT
TLM-OFF/LO

2 VHF B XMTR - DATA

********** UD - 1:00 (106:54) **********

********** LOS (106:57) **********

RR SELF TEST
AGS CALIB

ACT-46

107:00

RNDZ RDR SELF TEST

1 CB(11) RR(2) - Close (NO TRACK Lt-On)
Verify: CSM RCS Thruster B3 - OFF
: Radar Xponder - Off
RNDZ RDR ANT - Released
X-POINTERS (Both)-HI MULT
RATE/ERR MON (Both) - RNDZ RADAR
ATTITUDE MON (Both) - PGNS
MODE SEL - LDG RDR

2 RNG/ALT MON - RNG/RNG RATE
SHFT/TRUN - ±50°
RR MODE - SLEW
TEMP MONITOR - RNDZ (+10° To +50°)

CB(11) AC BUS A: RNG/RNG RT/ALT/ALT
RT - Close
RR GYRO SEL - SEC
FLIGHT DISPLAYS: RNG/RNG RT/ALT/ALT
RT-Close

3 SLEW RATE-HI
Slew Left To Mode I Region (18 sec)
Slew Right, Down, Left, Up
(FDAI Needles Right, Down, Left, Up)

107:01

AGS CALIBRATION

1 V16 N20E
16 20 ICDU Angles, O, I, M
CSM Mnvr Until LM ICDU'S:
292.5° (OG)
338.0°
337.0°
RATES <.075/sec

2 V40 N20E ICDU ZERO

L

Basic Date October 7, 1969
Changed NOVEMBER 5, 1969

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Changed _____October 31, 1969

ACT-47

SLEW RATE - LO
SHFT/TRUN - ± 5°
Slew Right, Down, Left, Up
(FDAI Needles Right, Down, Left, Up, 1°/sec; X-Pointer-3 mr/sec)

4 RR MODE - AUTO TRACK
RADAR TEST - RNDZ RDR (Rng Rt Tape Drives To -500fps, X-Pointers and FDAI Needles Vary Between ±5°. After 12 sec Rng Tape Drives to 194, NO TRACK Lt-Off)

5 TEST MONITOR - AGC (1.5)
- XMTR (3.7)
- SHAFT ERR(2.2 To 2.6 @1/ cps)
- TRUN ERR (2.2 To 2.5 @1/2 cps)
- AGC

6 Set NORRMON Flag
V25 N07E
101E, 10E, 1E
RR MODE - LGC (NO TRACK Lt - On)
(Wait 10 sec)

3 Read and record: ACCEL BIAS COEFF

540 X _____ (.001 ft/sec 2)
(-00014)

541 Y _____ (.001 ft/sec 2)
(-00004)

542 Z _____ (.001 ft/sec 2)
(+00002)

GYRO DRIFT COEFF

544R X _____ (.01/hr)
(-00006)

545R Y _____ (.01°/hr)
(+00016)

546R Z _____ (.01°/hr)
(+00007)

4 Verify CSM Thrusters Disabled and LM in AGS PULSE MODE

7 V63E Start RR Self Test
F 04 12
R1 00004 Specify Radar
R2 00001 Rndz Radar
PRO
NO TRACK Lt-On(Off After 12 sec)

8 F 16 72 TRUN, SHAFT (.01°)
R1 Varying At 1/2 cps
R2 Varying At 1/2 cps
PRO

9 F 16 78 RANGE, RANGE RATE, TFI (.01nm, fps min-sec)
R1 +195.30 To +195.70 (TM Within ±1.2 of R1)
R2 -00480 To -00520 (TM-R2 <2)

10 V34E

11 RADAR TEST -OFF(NO TRACK Lt-On, X-Pntr-Center)

12 V40 N72E RR CDU ZERO (10 sec)
SHFT/TRUN - ±50°

5 400 + 6 CALIBRATE GYRO & ACCEL
After 32 sec:
Read and Record

540R _____ (.001 ft/sec 2)
541R _____ (.001 ft/sec 2)
542R _____ (.001 ft/sec 2)
Values Should Not Change From Step 3 By More Than .039 ft/sec2 (.008nom)

6 400R(+0 After 302 sec)
Notify CSM To Enable Thrusters
Read and Record

544R _____ (.01°/hr)

545R _____ (.01/hr)

546R _____ (.01/hr)
Values Should Not Change From Step 3 By More Than 2.0°/hr (.9 Nominal)

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13 V41 N72 (+04000, +04000)
PRO
V44E

14 SHFT/TRUN -±5°
RR GYRO SEL - PRIM
V41 N72 (-00400, -00400)
PRO
V44E

15 V41 N72 (+00000, +28300)
PRO
CB(11) RR(2) - Open
(NO TRACK Lt-Off)
V44E
Notify CSM To Enable Thruster B3
16 RATE/ERR MON (LMP)-LDG RDR/CMPTR
ATT MON (LMP) - AGS

********** UD - :45 (107:09) **********

107:12

Don Helmet & Gloves

107:12

Don Helmet & Gloves

ACT-50

107:17

ARS/PGA PRESSURE INTEGRITY CHECK

1 SUIT GAS DIVERTER - PULL/EGRESS
CABIN GAS RETURN - EGRESS
SUIT CIRCUIT RELIEF - CLOSE
PRESS REG A - CLOSE
PRESS REG B - DIRECT O2 (Suit Press to 8.85 psia)
PRESS REG B - CLOSE (Monitor Cuff Gage Decay <.3 Psi in 1 min)

2 CO2 CANISTER SEL - SECONDARY (CO2 Comp Lt-On, Monitor Cuff Gage, <.3 psi In 1 min)
CO2 CANISTER SEL - PRIMARY (CO2 Comp Lt-Off)

3 SUIT CIRCUIT RELIEF - AUTO
PRESS REG A&B - CABIN
CABIN GAS RETURN - AUTO
SUIT GAS DIVERTER - PUSH/CABIN

Basic Date _____October 7, 1969
Changed ____ ___October 20, 1969

ACT-51

107:22

REGULATOR CHECK

1 Verify CSM Tunnel Hatch, Press Equalization, And Tunnel Vent vlvs Closed, And Tunnel Vented

2 CABIN GAS RETURN - EGRESS
Verify: OVHD CABIN DUMP VALVE - AUTO
: CABIN REPRESS - AUTO
PRESS REG B - EGRESS
(SUIT GAS DIVERTER - EGRESS)

3 FWD CABIN DUMP VALVE - OPEN Then AUTO At Master Alarm, CABIN Warning Lt - On
Verify AUTO CABIN REPRESS Between 4.45 to 3.7 psi

4 As Soon As Possible:
PRESS REG A - CLOSE
(CABIN Warning Lt - Off, Cabin Repress Stops)
CABIN REPRESS - CLOSE
FWD CABIN DUMP VALVE - OPEN Then AUTO At 3.5 psi (Verify Suit Press 3.6 to 4.3 psi)

REG CHECK
DPS PRESS

REG CHECK
DPS PRESS

ACT-52

5 PRESS REG B - CLOSE (Possible Master Alarm,
CABIN Warning Lt - On (Momentarily)
SUIT CIRCUIT RELIEF - OPEN Then
AUTO At Suit Press of 3.5 psi
PRESS REG B - EGRESS (Suit Press
3.6 to 4.0 psi, Possible Master Alarm &
CABIN Warning Lt - On (Momentarily),
CABIN REPRESS - AUTO

6 PRESS REG A&B - CABIN (CABIN Warning Lt-On)
Cabin Press Rises 4.6 to 5.0 psia
(CABIN Warning Lt-Off)
CABIN GAS RETURN - AUTO
SUIT GAS DIVERTER - PUSH/CABIN

********** UD - :30 (107:24) **********

********** SR 107:24 **********

L O I 107:32

DPS PRESSURIZATION AND CHECKOUT

1 PRPLNT TEMP/PRESS MON - DES 1&2
(50°-90° FUEL,50°-90° OXID/
58-144 psi FUEL, 33-255 psi OXID)

L O I 107:32

AGS UPDATE

1 V47E, 414+1

2 400 + 3 AGS/PGNS Align

L!

Basic Date October 7, 1969
Changed NOVEMBER 5, 1969

ACT-53

2 HELIUM MON: AMB PRESS (1490-1780 psi)
: SUPCRIT PRESS (750-1320 psi)

3 V83E, 317R, 440R, 277R

4 TLM-LO

3 DES HE REG 1 tb gray
DES HE REG 2 tb-bp

5 Configure 70mm Camr
(DC/HCEX, f11, focus)

4 MASTER ARM - ON
DES PRPLNT ISOL VLV - FIRE
HE PRESS/DES START - FIRE
MASTER ARM-OFF

5 PRPLNT TEMP/PRESS MON: DES 2&1
(50°-90° FUEL,50°-90° OXID/FUEL 242-253 psi)
HELIUM MON: AMB PRESS (200-1110 psi)
: SURCRIT PRESS (750-1320 psi)

********** UD - :15 (107:39) **********

********** AOS 107:43 **********

107:43

ANT-AFT, Verify Comm
SLEW (>3.0), AUTO (>3.8)
TLM-HI, BIOMED - RIGHT

PREP TO UNDOCK

ACT-54
GO/NO GO FOR UNDOCKING

107:45

PREP FOR UNDOCKING

1 Verify Undocking Attitude (180,285,300)
S-BD-PM, PRIM, PRIM, VOICE,
PCM, RANGE
VHF-VOICE, ON, OFF, ON, RIGHT, HI
AUDIO (Both): VHF A - T/R
VHF B - RCV

2 MISSION TIMER-SET
EVENT TIMER-SET, Count Up To 108:24 (Undock
At ET of 30:00)
OVHD HATCH-LOCKED
OVHD CABIN RELIEF & DUMP - AUTO
PRESS REG A&B - CABIN

3 GUID CONT - AGS
MODE SEL - LDG RADAR
RNG/ALT MON - RNG/RNG RT
RATE ERR MON (CDR) - RNDZ RDR
(LMP) - LDG RDR/CMPTR
ATTITUDE MON (CDR) - PGNS
(LMP) - AGS
RATE SCALE - 5°/SEC

Basic Date October 7, 1969
Changed October 22, 1969

Basic Date October 7, 1969
Changed ~~October 20, 1969~~ November 10, 1969

ACT-55

4 ATT/TRANSL - 2 JET
BAL CPL - ON
DEADBAND - MAX
ATTITUDE CONTROL (3)-PULSE
MODE CONT (Both) - ATT HOLD
TTCA (Both) - JET
RR MODE - SLEW
CB(11) HTRS: AOT - Close
Mount Camera On Window Bar
Install COAS

5 ~~Notify CSM To Re-Enable B3 & C4 After Undocking~~
Verify CB Status Per UNDOCKING Chart
Then Go To LM TIMELINE BOOK

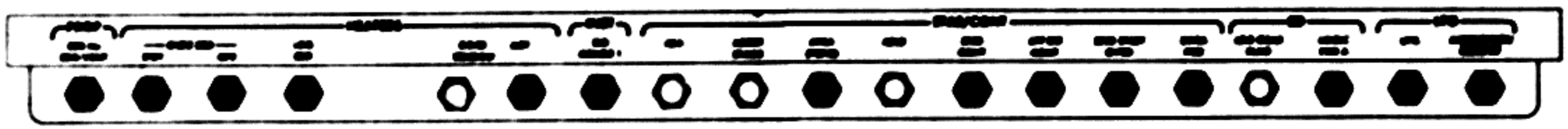
Voice AGS CALIB Data To MSFN

ACT-56

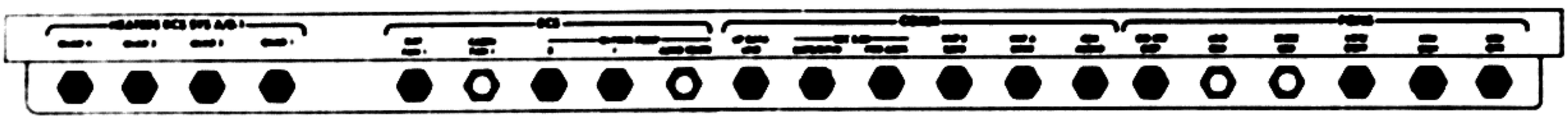
UNDOCKING

5

0



5



4

3

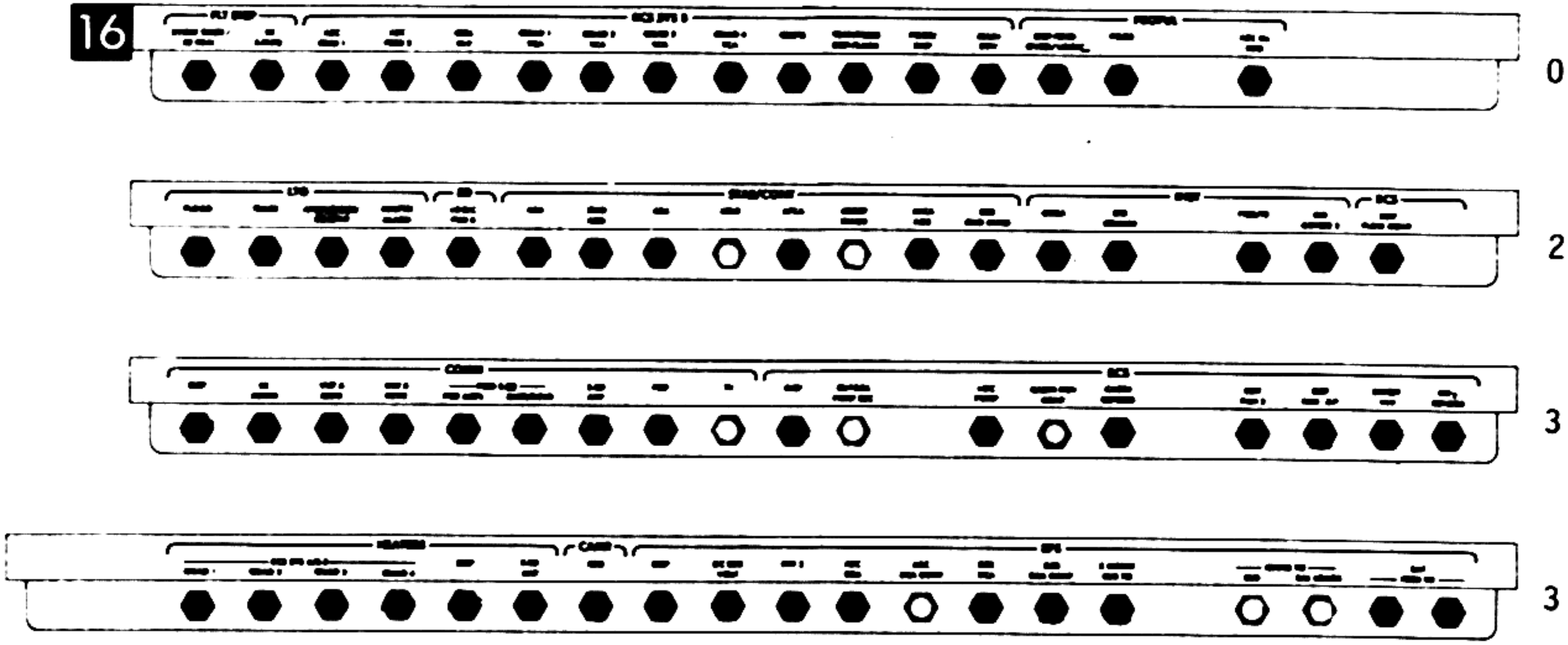
Basic Date October 7, 1969
Changed

Basic Date October 7, 1969
Changed

ACT-57

LOI

UNDOCKING



LOI/PGNS/DOCKED DPS

1 RCS CHECKOUT

CB (11) ATT DIR CONT - Close
GUID CONT - PGNS
ATT CONT (3) - PULSE
MODE CONTROL (Both) - ATT HOLD
ATT/TRANSL - 4 JETS
TTCA (LMP) - JETS

CB (11 & 16) QUAD TCA 1,2,3,4 (8) - Close
Cycle CWEA
Cycle TEMP MON

Verify HBR With MSFN
Verify CSM In Wide Deadband & Attitude Hold

2 TTCA (Hot Fire)

V76E
V11N10E, 5E
TTCA (LMP)

Up (+X) -	R1	00252
Dn (-X) -		00125
E,6E		
Rt (+Y)		00220
Lt (-Y)		00140
Fwd(+Z)		00011
Aft(-Z)		00006

BURN PREP SUIT GAS DIVERTER - CABIN

CSM Mnvr To Burn Attitude

-4:00 CB (11) INV 1 - Close
MODE CONTROL (PGNS) - AUTO
ATTITUDE CONT (3) - MODE CONTROL

Basic Date November 5, 1969
Changed November 6, 1969

LOI/PGNS/DOCKED
DPS

CB (16) Cycle CWEA
Cycle TEMP MON

TTCA (CDR) - THROTTLE (Min)
TTCA (LMP) - JETS

RATE/ERR MCN (Both) - LDG RDR/CMPTR
ATTITUDE MON (CDR) - PGNS
(LMP) - AGS
RATE SCALE - 5°/SEC

ENG GMBL - ENABLE
THR CONT - AUTO
MAN THROT - CDR
ATT/TRANSL - 4 JETS
BAL CPL - ON
DES ENG CMD OVRD - OFF
ENG STOP (2) - Reset
ABORT/ABORT STAGE - Reset
PRPLNT QTY MON - DES 1
V65E

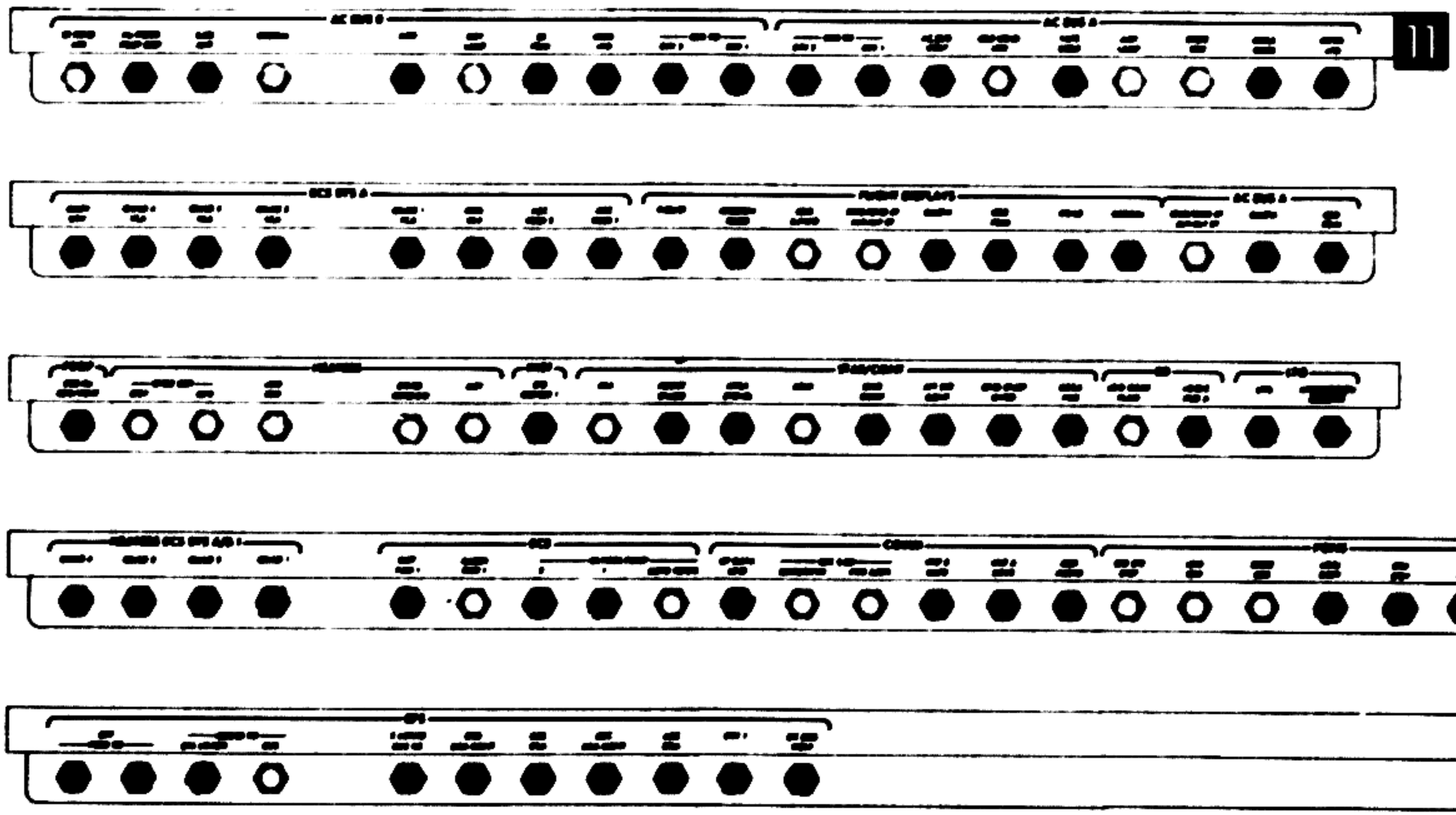
-1:00 MASTER ARM - ON
CB (11 & 16) ABORT STAGE (2) - Close

- :30 ENG ARM - DES
DEADBAND - MAX
MODE CONT (AGS) - AUTO

- :02 CMC MODE - FREE

Basic Date November 5, 1969
Changed November 6, 1969

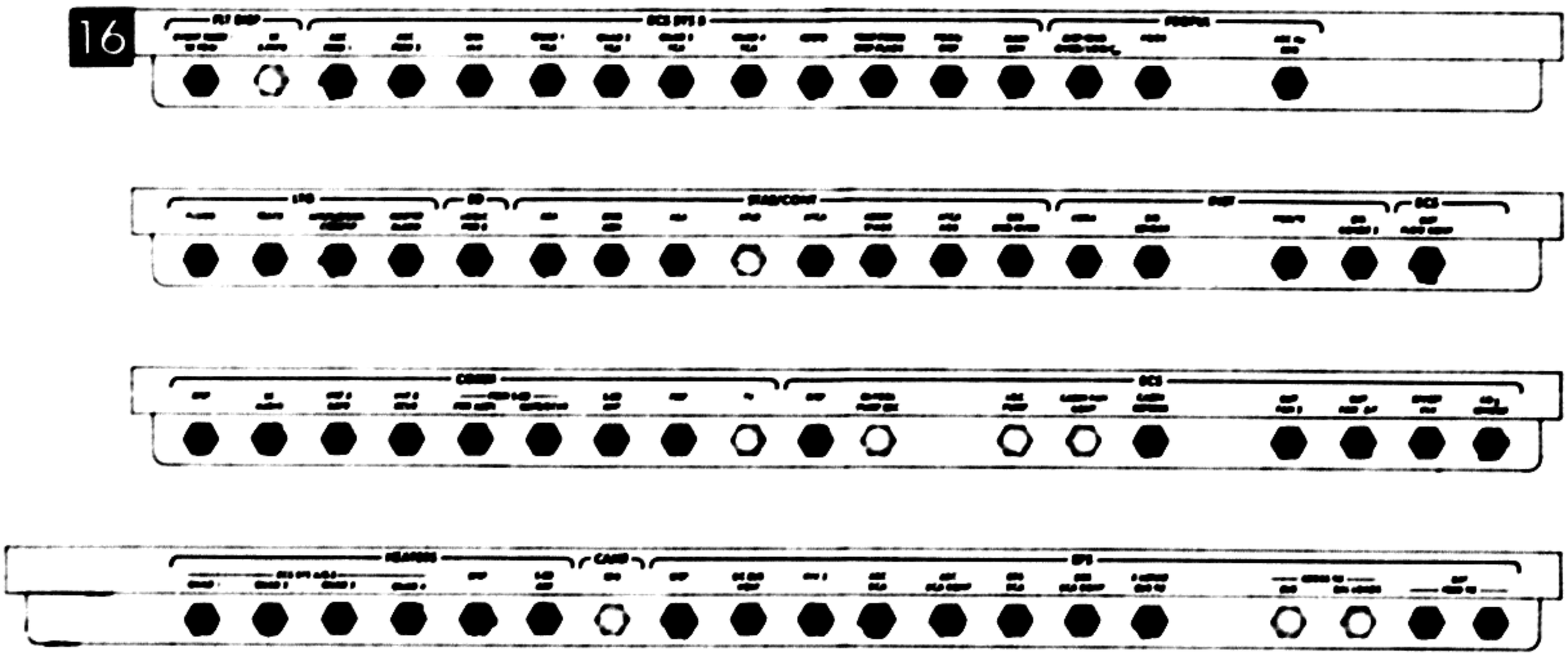
LOI/AGS/APS (PGNS TARGETED)



LOI/AGS/DOCKED
APS

LOI/AGS/DOCKED
APS

LOI/AGS/APS (PGNS TARGETED)



Basic Date November 5, 1969
Changed

AGS/APS (PGNS TARGETED)

APS PREP

1 ENG STOP - RESET
TTCA (CDR) - JETS

2 MSFN SUPPLY VGX____.____fps

3 CB (11 & 16) AELD (2) - CLOSE

ASC BAT ACT (Must Be Done 20 min Prior To BAT 2,4-OFF/RESET)

1 BAT 5, 6 - ON, tb - gray
Verify BAT Current

2 BAT 1, 3 - OFF/RESET, tb-bp

APS PRESS

1 HELIUM MON - ASC PRESS 1 & 2
PRPLNT TEMP/PRESS MON - ASC
ASC He REG 1 & 2, tb (2) - gray
MASTER ARM - ON
ASC He SEL - BOTH
ASC He PRESS - FIRE
MASTER ARM - OFF

DES/ASC CONSUMABLES

1 DES H2O - CLOSE
WATER TANK SEL - ASC
ASC H2O - OPEN

2 DES O2 - CLOSE
CABIN REPRESS - CLOSE
ASC O2 NO. 1 - OPEN

DEACTIVATE DES BATS

1 BAT 2, 4 - OFF/RESET, tb-bp
DES BATS - DEADFACE, tb-bp

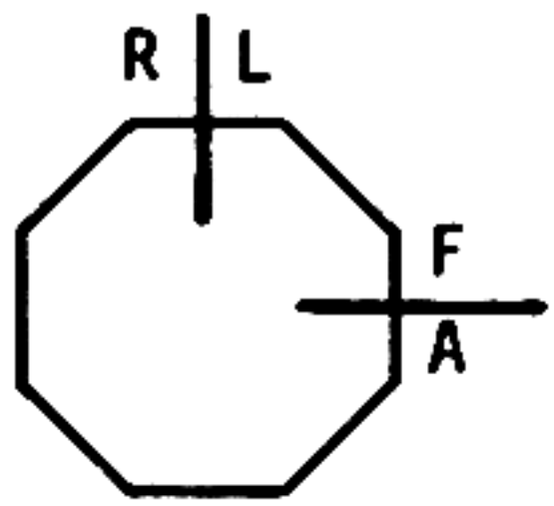
AGS CONFIG

(MSFN Will Uplink State Vector & Target Load)

1 V47E, 414+1
400+3

DOCKED APS BURN

```
*                APS BURN TECH                *
*                                             *
*If PITCH Error Needle Goes Down,             *
*LMP Thrust AFT (Pull Out On TTCA).           *
*If ROLL Needle Left, CDR Thrust              *
*   Right (Push Right ON TTCA).               *
*See FDAI Picture Below.                      *
*                                             *
*                                             *
*                                             *
*                                             *
*                                             *
*                                             *
*                                             *
*When APS Ignition Occurs, LMP                *
*Should Immediately Thrust Aft To             *
*Maintain Control.  Use Of PITCH              *
*ATTITUDE CONTROL Switch To MODE              *
*CONT Will Provide An Assist.                 *
```



-6:00 CSM Mnvr To Burn Attitude

411+1
Target PGNS (P30/42) & AGS (410+5)

GUID CONT - AGS
ATTITUDE MON (CDR) - PGNS
RATE SCALE - 5°/SEC
ATT/TRANSL - 4 JET
BAL CPL - ON

ATTITUDE CONT (R,P) - PULSE
(YAW) - MODE CONT
MODE CONTROL (Both) - ATT HOLD
ENG STOP (2) - Reset
ABORT/ABORT STAGE - Reset

Basic Date November 5, 1969
Changed November 6, 1969

LM

ACT/APS-5

-1:00	MASTER ARM - ON
-:30	ENG ARM - ASC
-:10	Manual Ullage
-:07	STAGE - FIRE
-:02	CMC MODE - FREE
-:00	ENG START - Push

Basic Date
Changed ___