ALDRIN

APOLLO 11	
ENTRY OPERATIONS CHECKLIST	
PART NO	S/N
SKB32100080-308	1002

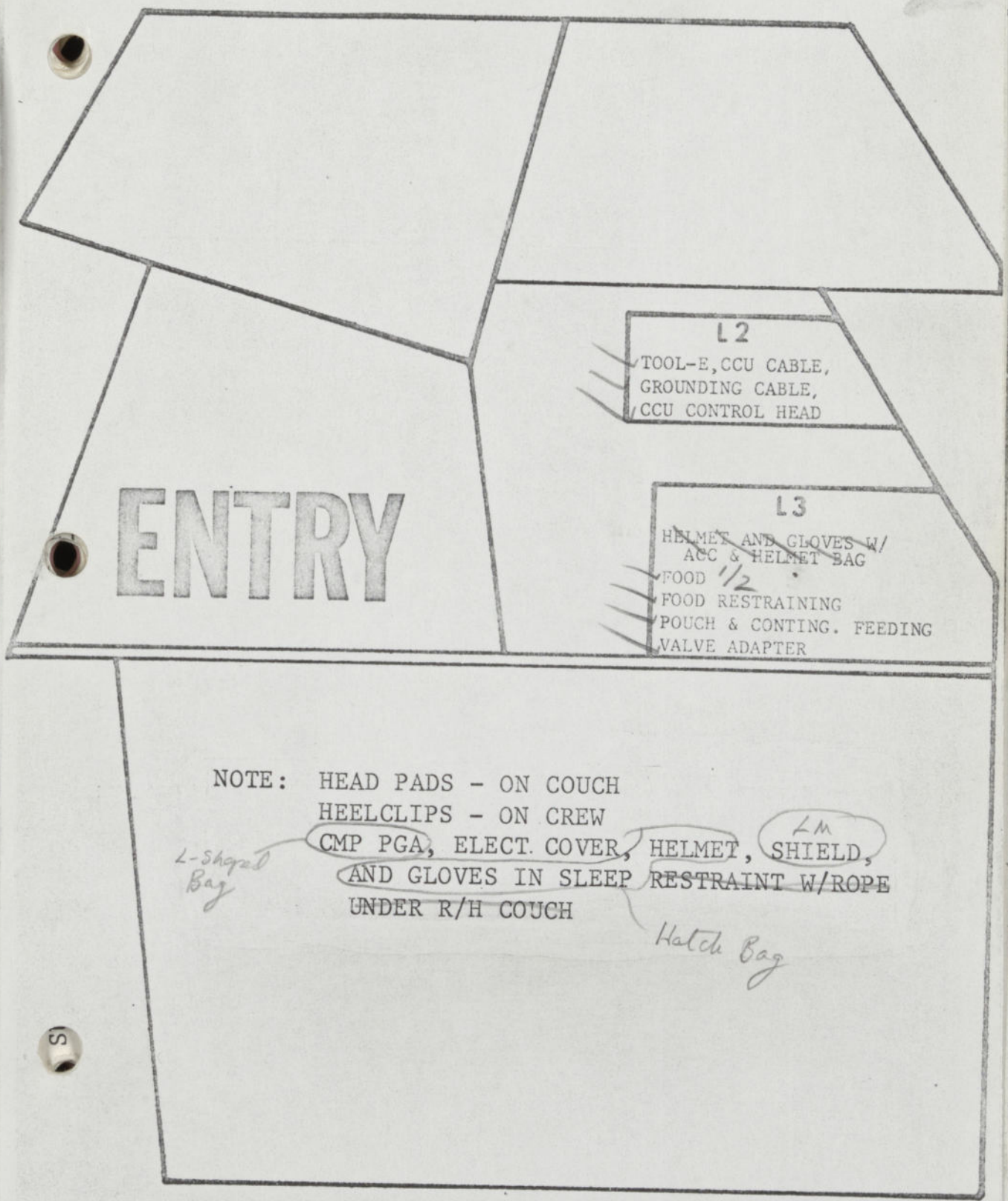
LMP

ENTRY TABLE OF CONTENTS

Basic Date APRIL 15, 1969
Changed MAY 14, 1969

CSM 107 & SUBS

L.H. EQUIPMENT BAY



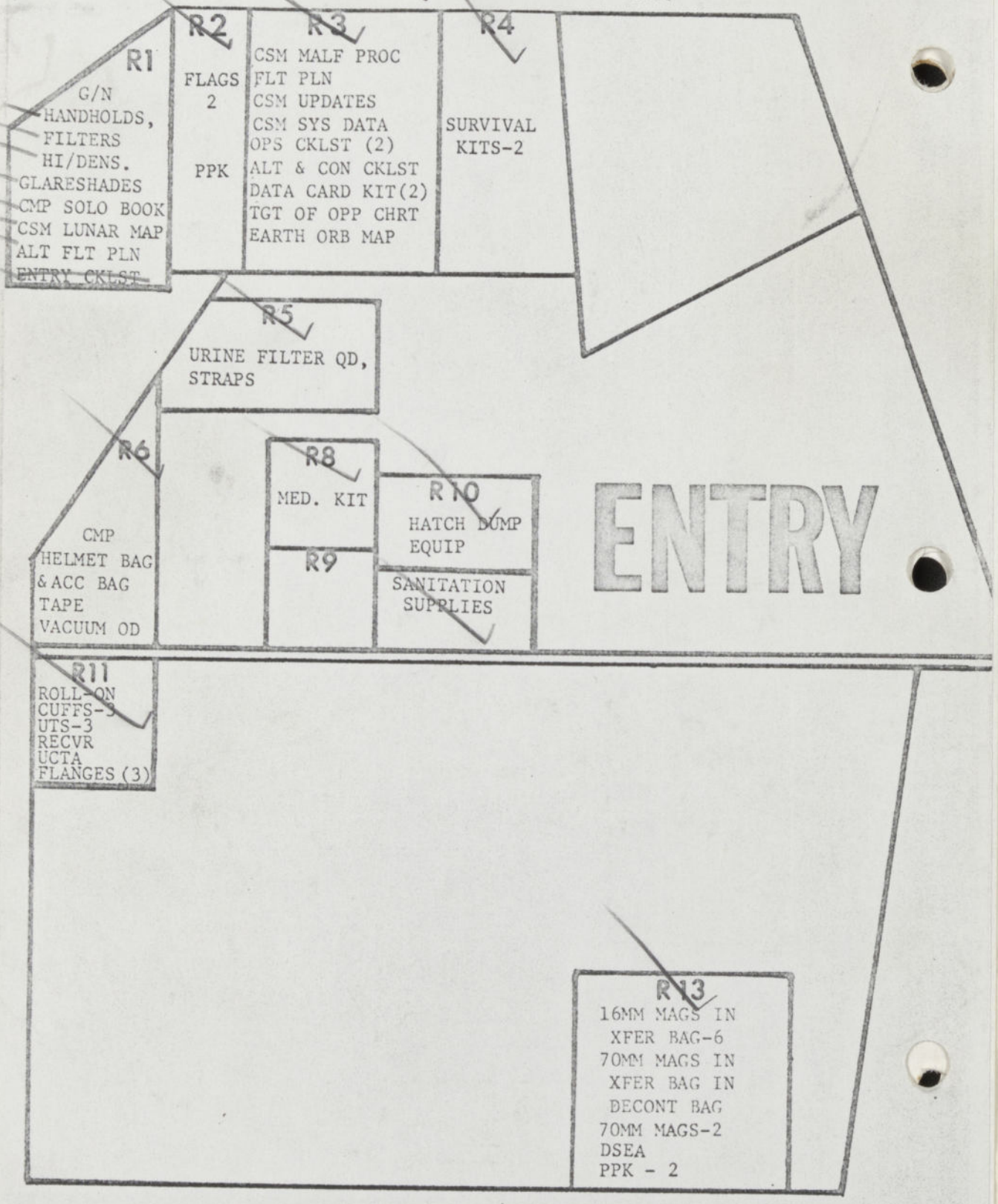
NOTE: HEAD PADS - ON COUCH
HEELCLIPS - ON CREW
CMP PGA, ELECT. COVER, HELMET, SHIELD, AND GLOVES IN SLEEP RESTRAINT W/ROPE UNDER R/H COUCH

L-Shaped Bag

LM

Hatch Bag

R.H. EQUIPMENT BAY



AFT BULKHEAD

A3
CO2 ABSORBERS (4)

BEEPER UNDER A3

A4
CO2 ABSORBERS (4)

A5
SPOTMETER, TIMER
CSC CASSETTE W/ BAG,
70MM BATT

A6
CO2 ABSORBERS-2
TV-CABLES-2
TV MONITOR&BRKT
URINE HOSE
(UNDER A6)

ENTRY

A7
TV CAMERA
RINGSIGHT

A1
70MM BRKT
AMPULES
TEMP STOWAGE BAGS (3)
02 INTERCONNECTS (3)
PLV DUCTS
16MM MAG. WINDOW 4
SEA WATER PUMP
SNAGLINE
PROBE STRAPS (2)
TISSUE DISPENSER 1 (5)
TOWELS (3)
TOOL SET
PENLIGHTS-5
H_2 SEP. CIGARS
SHAVING EQUIPMENT

PGA BAG

02 HOSE SCREEN CAPS-3
COUCH STRAPS-3
PGA ELECT. COVER
-2 ON PGA'S
UCTA CLAMP-3
PGA-(LMP&CDR)
+CMP

A8
10# LM MISC EQUIP
CWG ELECT. ADAPT.
70MM MAGS W/BAG-3
CWG's (3)
EXERCISER
FCS (2)
LCG'S (2)
LWHS (3)
EMU MAINT KIT
PPK (3) 4
LM PPK-4 (REPLACE FOOD)

VACUUM BRUSH

U3
16MM BRKT
COAS BLBS.
LM DOCK
TARGET

on window #4

U4
RECORDER
TAPE&BATT
INTERVOLOMETER
250MM LENS
MONOCULAR

LH & CTR
SLEEPING BAG

WINDOW SHADE
02 MASKS

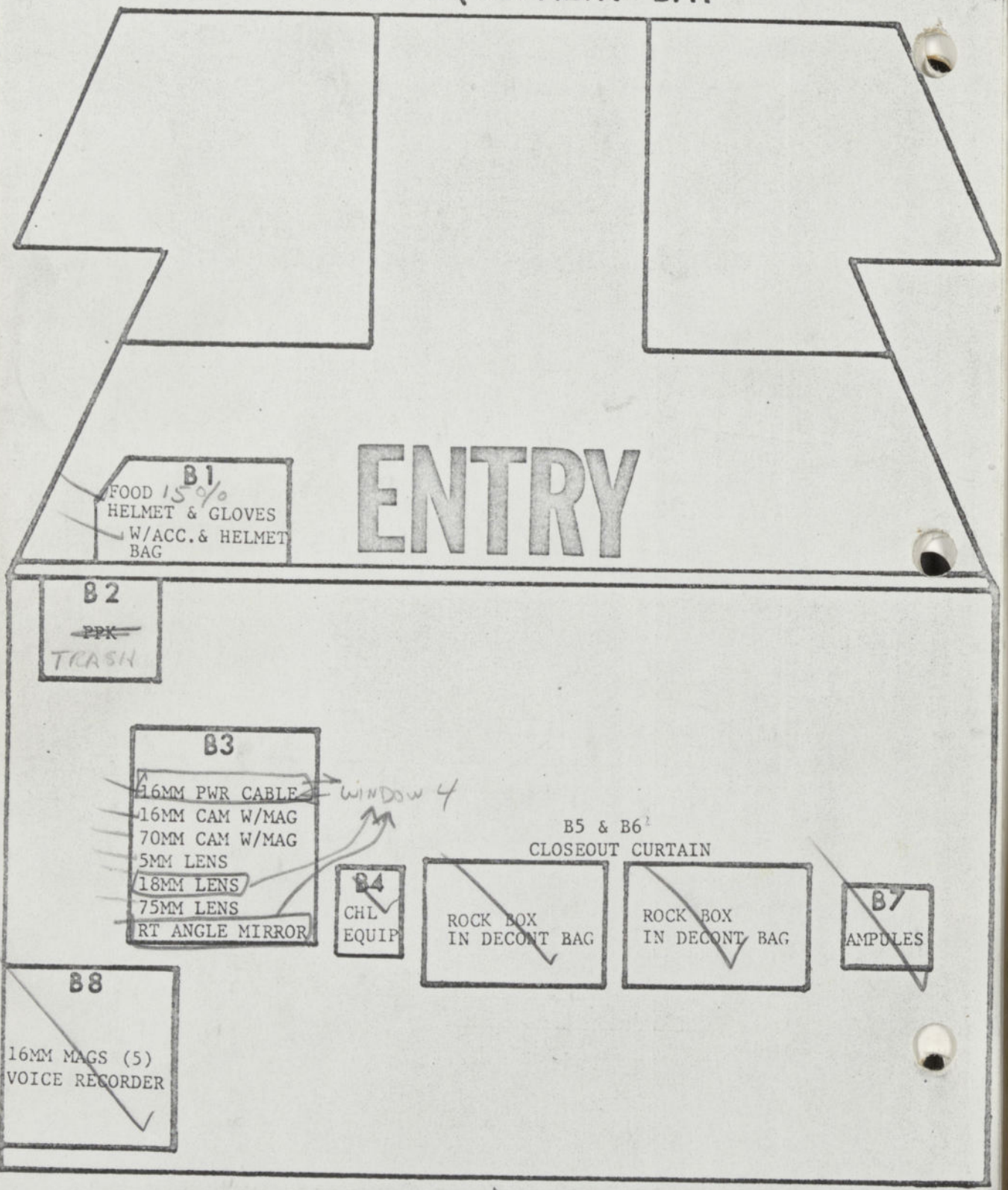
~~Stop Batt B chg~~ WX

Move 1500

13°19'N 169°10'W

20 ϕ80 ϕ10 6'

LOWER EQUIPMENT BAY



Basic Data - April 15, 1969

SECTION 1. VEHICLE PREPARATION

For deorbits perform steps with "*"; timeline is for Lunar Return

1		*INITIAL STOWAGE COMPLETED
2		*CMC & ISS START UP pg F/2-1
3		*SCS POWER UP pg F/9-1
4		*P51 - IMU ORIENTATION pg F/6-1
5		*LOAD DAP V48E 11102, 01111, PRO, PRO, PRO
6	-06:00h	LAST MCC DECISION
7	-05:35h	NO COMM - P52 & NAV SIGHTINGS
8		*DON MAE WESTS & FOOT RESTRAINTS
9		ACTIVATE VHF FOR COMM CHECKS
10	-04:30h	*P27 (SV,REFSMMAT), MNVR & ENTRY PAD UPDATES
11	-04:15h (__:__:__)	P52 - IMU REALIGN pg F/6-2 (OPTION 1)
12		P37 (NO COMM ONLY)
13		*CABIN COLD SOAK (CREW OPTION) pg F/10-12
14		*ECS CKS O2 SUPPLY REFILL pg F/10-7 PGA verification, (if suited) F/10-10 ECS Monitor Ck pg F/10-4 (382) EVAP H2O CONT PRI vlv - AUTO EVAP H2O CONT SEC vlv - AUTO SUIT HEAT EXCH SEC GLY - FLOW
15		*EPS CKS #1, 3, 4 (5 if req'd) pg F/10-2

Basic Date April 15, 1969
Changed June 27, 1969

CSM 104 SUBS

1. VEH PREP

16			*SPS CK (If req'd) pg F/10-1
17			*RCS CKS SM RCS Monit Ck pg F/10-1 CM RCS Monit Ck pg F/10-1
18			*C&W SYS CK pg F/10-15
19			*CMC SELF CK pg F/2-2
20			*DSKY COND LT TEST pg F/8-1
21	-03:45h		*MIDCOURSE MANEUVER P30 - EXT ΔV
	-03:15h		P40/41 - SPS/RCS THRUSTING
	-03:00h		MIDCOURSE (#7) BURN Key V66E
	-02:00h		*LOGIC SEQUENCE CK
		(8)	cb SECS LOGIC (2) - close (verify) cb SECS ARM (2) - close cb ELS (2) - close ELS LOGIC - on (up) ELS - AUTO Coordinate next 3 steps with MSFN SECS LOGIC (2) - on (up) MSFN confirm GO for PYRO ARM as req'd SECS LOGIC (2) - OFF cb SECS ARM (2) - open ELS LOGIC - OFF ELS - MAN cb ELS (2) - open
22			NO COMM NAV SIGHTINGS ~~OMNI - C~~
23			MNVR TO SUPERCIRCULAR ENTRY ATT ____° PITCH V62E
23A			~~V49~~E
23B	F 06 22		DESIRED FINAL GMBL ANGLES (.01°) LOAD ENTRY ATT PAD ANGLES PRO

Basic Date April 15, 1969
Changed June 27, 1969
CSM 1[illegible] Subs

23C F 50 18 REQ MNVR TO FDAI RPY ANGLES (.01°)
(AUTO) SC CONT - CMC
BMAG MODE (3) - RATE 2
CMC MODE - AUTO
PRO
(MAN) SC CONT - SCS
MNVR to 23E

SCS
W 16 N20

23D 06 18 AUTO MNVR TO FDAI RPY ANGLES (.01°)

23E F 50 18 REQUEST TRIM (.01°)
(TRIM) Go to 23C
(BYPASS) ENTR

✓ SBD ANT - OMNI C

24 BORESIGHT & SXT STAR CHECK
OPT MODE - CMC
OPT ZERO - OFF

Manual Drive V41 N91E

F 21 92 SHAFT, TRUN (.01°,.001°)
Load SXTS angles

41 OPTICS DRIVE

CHECK SXT STAR
OPT ZERO - ZERO
CHECK BORESIGHT STAR (If avail)

25 -01:35h ✓ *P52 - IMU REALIGN pg F/6-2 (OPTION 3)
Record gyro torquing angles
R_____
P_____
Y_____
If >1°, recycle P52
If confirmed, use SCS for EMS entry
OPTICS PWR - OFF

✓

26(__:__:__) *GDC ALIGN
If drift >10°/hr, change rate source

Basic Date April 15, 1969
Changed Jan 27, 1969
CSM 107 & Subs

1. VEH PREP

27 -01:15h *EMS ENTRY CHECK

EMS FUNC - OFF
(8) cb EMS (2) - close
EMS MODE - STBY
EMS FUNC - EMS TEST 1 (wait 5 sec)
EMS MODE - NORMAL (wait 10 sec)
Check ind lts - off
RANGE ind - 0.0
Slew hairline over notch in self-test pattern
EMS FUNC - EMS TEST 2 (wait 10 sec)
.05G lt - on (all others out)
EMS FUNC - EMS TEST 3
.05G lt - on
RSI Lower lt - on (10 sec later)
Set RANGE counter to 58 nm ±0.0
EMS FUNC - EMS TEST 4
.05G lt - on (all others out)
G-V trace within pattern to lwr rt corner @9G
RANGE ind counts down to 0 ±0.2
EMS FUNC - EMS TEST 5
.05G lt - on
RSI upper lt - on (10 sec later)
RANGE ind - 0.0
Scribe traces vertical line 9g to 0.22 ±0.1
ALIGN SCROLL TO ENTRY PATTERN (on 37K ft sec line)
EMS FUNC - RNG SET
G-V scroll assy traces vert. line 0.22g to 0 ±0.1
EMS MODE - STBY

28 *EMS ΔV TEST (DEORBIT ONLY)

EMS FUNCT - ΔV SET/VHF RNG
Set ΔV ind to 1586.8 fps
EMS MODE - NORMAL
EMS FUNCT - ΔV TEST
SPS THRUST lt - on/off (10 sec)
ΔV ind stops at - 0.1 to -41.5
EMS MODE - STBY

Basic Date — April 15, 1969
Changed — June 27, 1969

CSM 107 [illegible]UBS

Basic Date — April 15, 1969

29 *PRIMARY WATER EVAP ACTIVATION
GLY EVAP H2O FLOW - AUTO
GLY EVAP STM PRESS - AUTO
PRI ECS GLY PUMP - AC1 (verify)
~~(380) PRI GLY TO RAD VLV BYPASS (pull)~~

30 *SEC WATER EVAP ACTIVATION (if NO cold soak)
ECS IND sel - SEC
SEC COOL LOOP PUMP - AC2
GLY DISCH SEC PRESS - 39-51 psig
SEC COOL LOOP EVAP - EVAP
SEC GLY EVAP OUT TEMP - 40 - 50.5°F
SUIT CKT HT EXCH - BYPASS 20 sec, OFF
ECS IND sel - PRIM

31 -01:10h *CM RCS PREHEAT
Note: If sys test mtr 5c,d,6a,b,c,d all read 3.9 vdc (28°F) or more, omit preheat
(8) cb RCS LOGIC (2) - close
CM RCS LOGIC - on(up)
UP TLM CM - BLOCK (verify)
(8) cb CM RCS HTRS (2) - close
(101) CM RCS HTRS - ON (LMP Confirm) (20 min or til lowest rdg is 3.9 vdc) (Monitor Manf press for press drop)

32 *FINAL STOWAGE
OPTICS (except for deorbits)
ORDEAL
(377) GLY TO RAD SEC vlv - BYPASS (verify)
Verify COUCH STRUT disengaged
(382) Cool pnl installed
Y-Y struts (2) extended
Stow Data Box R-12
Attach both strut unlock lanyards

CHECK FOR WATER IN TUNNEL AREA

33 -00:50m *TERM. CM RCS PREHEAT
UP TLM CM - BLOCK (verify)
(101) CM RCS HTRS - OFF
CM RCS LOGIC - OFF
(8) cb CM RCS HTR (2) - open

34 *SYSTEMS TEST PANEL CONFIGURATION
SYS TEST METER - 4B (BAT RLY BUS 3.4-4.1 vdc)

Basic Date April 15, 1969
Changed June 27, 1969

CSM 10[illegible] SUBS

LUNAR ENTRY PAD
2. SUPERCIRC ENTRY
7 ENTRY FMFDC

1. VEH PREP

(101) CM RCS HTRS - OFF (verify)
WASTE H2O DUMP HTR - OFF
(101) URINE DUMP HTR - OFF

35 (100) LEB FLOOD & INTGL LIGHTING - OFF

36 *PYRO BATT CK
(250) CB PYRO A SEQ A - close (verify)
CB PRYO B SEQ B - close (verify)
DC IND - PYRO BAT A(B)
*If PYRO BAT A(B) < 35 vdc *
(250) *cb PYRO A(B) seq A(B) - open*
cb *PYRO A(B)BAT BUS A(B)TO PYRO*
* BUS TIE - close *
~~BUS TIE close~~
(275) cb MNA BAT C - close
cb MNB BAT C - close
DC IND - MNB
PNL 8 - All cb's closed except:
EDS BAT (3) - open (verify)
PL VENT - open (verify)
FLOAT BAG (3) - open (verify)
SPS P&Y (4) - open (verify)
CM RCS HTRS (2) - open (verify)
DOCKING PROBE (2) - open (verify)
DIRECT ULLAGE (2) - open

37 (__:__:__) *FINAL GDC DRIFT CK (If req'd)
If drift >10°/hr, Suspect GDC. Do not use.RSI & FDAI #2 See cb Pyro Arm

38 *CM RCS ACTIVATION
(8) SECS LOGIC (2) - on(up)
MSFN confirm GO for PYRO ARM(if poss)
SECS PYRO ARM (2) - ARM
CM RCS PRPLNT 1&2 - ON
CM RCS PRESS - ON

Basic Date April 15, 1969
Changed June 27, 1969

CSM 107 UBS

RCS IND sw - CM1, then 2
He PRESS stabilizes at 3300 - 3500 psia after 15 minutes
MANF PRESS 287-302 psia
SECS PYRO ARM (2) - SAFE

39 -00:45m P27 & ENTRY PAD UPDATE

SUPERCIRCULAR ENTRY, pg E/2-1
SPS DEORBIT , pg E/4-1
SM RCS/HYBRID DEORBIT, pg E/3-1

CSM 107 & Subs
Basic Date April 15, 1969
Changed June 16, 1969

1. VEH PREP

E/1-13 @ 160:00:00 LUNAR ENTRY

	APOLLO						MID						AREA
	X	X	X	3	5	9	X	X	X	3	5	9	R 0.05 G
	X	X	X	1	5	2	X	X	X	1	5	3	P 0.05 G
	X	X	X	0	0	1	X	X	X	0	0	1	Y 0.05 G
1	9	4	4	6	0	3	1	9	4	6	0	3	GET HOR
	X	X	X	2	6	7	X	X	X	2	6	7	P CK
	+	0	1	1	0	2	+	0	1	1	0	2	LAT N61
	−	1	7	2	0	3	−	1	7	2	0	3	LONG
	X	X	X	0	6	8	X	X	X	0	6	7	MAX G
	+	3	6	1	9	4	+	3	6	1	9	4	V_{400K} N60
	−	0	0	6	5	6	−	0	0	6	5	5	γ_{400K}
	+	1	1	8	9	4	+	1	1	8	7	5	RTGO EMS
	+	3	6	2	7	5	+	3	6	2	7	5	VIO
1	9	5	0	3	0	3	1	9	5	0	3	0	3	RRT
	X	X	0	0	2	7	X	X	0	0	2	8	RET 0.05 G
	+	0	0	—	—	—	+	0	0	—	—	—	D_L MAX N69
	+	0	0	—	—	—	+	0	0	—	—		D_L MIN
	+			—	—	—	+			—	—	—	V_L MAX
	+			—	—	—	+			—	—	—	V_L MIN
	X	X	X	4	0	0	X	X	X	4	0	0	D_O
	X	X	0	2	0	9	X	X	0	2	1	0	RET V_{CIRC}
	X	X	0	0	1	7	X	X	0	0	1	8	RETBBO
	X	X	0	3	3	8	X	X	0	3	3	8	RETEBO
	X	X	0	8	2	0	X	X	0	8	2	1	RETDRO
	X	X	X	X	0	2	X	X	X	X	4	V	SXTS
	+	0	9	4	5	0	+	2	9	3	2	0	SFT
	+	1	4	9	0	0	+	3	8	0	0	0	TRN
	X	X	X	Scanpi		θ	X	X	X	Scanpi		θ	BSS
	X	X	UP	3	1	5	X	X	U	3	1	4	SPA
	X	X	X	RT	3	5	X	X	X	R	3	4	SXP
	X	X	X	X	U	P	X	X	X	X	V	P	LIFT VECTOR

Basic Date July 5, 1969 Rev I
Changed ____

Nom. EI-30 194 33 03 P 298
Assumes No MCC 6 ~.1 fps

No MCC EI -30 194 33 03 P 297

Domestic • Vega
079 078
284 233
240 340

LUNAR ENTRY PAD

2. SUPERCIRC ENTRY

7 ENTRY EMEDS

LUNAR ENTRY PAD

USE NON EXIT EMS - EI-30 HORV 194:23:06 P 288 P65 NO P66 E/1-14

CDC 4UN V40 R 078 P 233 V 340

MID	PAC			AREA
X X X	0 0 0	X X X		R 0.05 G
X X X	1 5 2	X X X		P 0.05 G
X X X	0 0 1	X X X		Y 0.05 G
194:46:06				GET HOR
X X X	2 6 7	X X X		P CK
+ 01 33 2		0		LAT N61
- 16 9.1 7				LONG
X X X	0 6.4	0C.3 X X	G46	MAX G
+ 36 19 4		+	36184	V_{400K} N60
- 00 6.4 8		-	G46	γ_{400K}
+ 140 33		+		RTGO EMS
+ 36275		+		VIO
195:03:06				RRT
X X 00:28		X X		RET 0.05 G
+ 00 1.5 4		+ 0 0		D_L MAX N69
+ 00 0.8 4		+ 0 0		D_L MIN
+ 22400		+		V_L MAX
+ 18000		+		VL MIN
X X X 4.00		X X X		DO
X X 02:14		X X		RET V_{CIRC}
X X 00:17		X X		RETBBO
X X 03:51		X X		RETEBO
X X 09:02		X X		RETDRO
X X X X 45		X X X X		SXTS
+ 018.90		+	0	SFT
+ 27.700		+	0 0	TRN
X X X — —		X X X		BSS
X X		X X		SPA
X X X		X X X		SXP
X X X X UP		X X X X		LIFT VECTOR

INIT TANK C WAS FULL NOT SET

Basic Date ____
Changed ____

SECTION 2. SUPERCIRCULAR ENTRY

1 Set DET (up, to EI)

2 EMS INITIALIZATION

* Scroll not on 37K: *
* EMS FUNCT - TEST 5 *
* Slew scroll to 37K *
EMS FUNCT - RNG SET
EMS MODE - NORMAL
SET RNG TO PAD DATA RNG
EMS FUNC - Vo SET
Slew Scroll to Pad Data VIO
Do not go thru TEST 3 or 5
EMS MODE - STBY ~~(verify)~~
EMS FUNC - ENTRY

3 RSI ALIGNMENT

FDAI SOURCE - ATT SET
ATT SET - GDC
EMS ROLL - on (up)
GDC ALIGN pb - push & hold
YAW THUMBWHEEL - Position RSI thru 45° & back to LIFT UP
GDC ALIGN pb - release
EMS ROLL - OFF
Align GDC to IMU

4 CM RCS CHECK

AUTO RCS A/C ROLL (4) - OFF (Verify)
(8) cb RCS LOGIC (2)-close (verify)
SC CONT - SCS Min Imp.
RCS TRANSFER - CM
AUTO RCS SEL (RING 1) - OFF
AUTO RCS SEL (RING 2) - MNB
TEST RING 2 THRUSTERS
AUTO RCS SEL (RING 2) - OFF
AUTO RCS SEL (RING 1) - MNA
TEST RING 1 THRUSTERS
AUTO RCS SEL (RING 2) - MNB
RCS TRANS - SM

5 30:00m (-30:00) MN BUS TIE (2) - ON
TAPE RCDR - REWIND

Basic Date April 15, 1969
Changed June 27, 1969

CSM 107 & Subs

E
2-2

6 35:00m SEPARATION CK LIST
(-25:00) (8) cb ELS BAT (2) - close (verify)
(326) REPRESS PKG vlv - FILL
O2 SM SUPPLY vlv - OFF
SURGE TK - ON (verify)
REPRESS PKG vlv - ON
(325) CAB PRESS REL vlv (2) - NORM
ABORT SYS PRPLNT - RCS CMD (verify)
SM RCS SEC PRPLNT FUEL PRESS (4)-OPEN
VHF AM A&B - off (ctr)
HI GAIN ANT PWR - OFF
(5) FC PUMPS (3) - OFF
FC 2 MN A&B - OFF
Verify Loads Balanced
S BD PWR AMP - LOW
S BD ANT OMNI - best
(5) cb ECS RAD CONT/HTR (2) - open
cb WASTE H2O/URINE DUMP HTR (2) - open
cb RAD HTRS OVLD (2) - open
POT H2O HTR - OFF
GLY EVAP TEMP IN - MAN
(380) PRI GLY TO RAD VLV - BYPASS (PULL)

f 16 1/250

Time ?

7 MNVR TO CM/SM SEP R,P,Y ATT
SC CONT - SCS
CMC MODE - FREE
MNVR TO PAD ATT
R 0 (0°)
P 267 (265°)
Y 0 (0°)

Basic Date April 15, 1969
Changed June 27, 1969

41:00m P61 - ENTRY PREP
(-19:00)

1 V37E 61E

* 05 09 01427 - ROLL REVERSED*
* 05 09 01426 - IMU UNSAT *

2 F 06 61 ✓ IMPACT LAT, LONG, HDS UP/DN (+/-)
PRO (.01°,.01°,±00001)

3 F 06 60 GMAX,V400K,GAMMA EI (.01G,fps,.01°)

CSM 10[illegible] Subs

Record
GMAX 646
V400K 36184
GAMMA EI 646
PRO

4 F 06 63 RTOGO (.1nm) 14177 PAD _____
VIO (fps) 36267 PAD _____
TFE(min-sec) -1746
If NO COMM, Set RTOGO & VIO in EMS
& initialize
(ACCEPT) PRO
(UPDATE TFE) V32E to 4

P62 - CM/SM SEP & PRE-ENTRY MNVR

5 F 50 25 00041 REQUEST CM/SM SEP
SC CONT - SCS/FREE
43:00m COMPARE PITCH ATT WITH PAD DATA _____
(within 5°)
If not ±5°, G&N NO GO
(-17:00) YAW - 45° OUT-OF-PLANE (LEFT) (315°)
RATE-HIGH
ATT DB-MIN
MAN ATT(3)-RATE CMD
BMAG MODE (3) - ATT1/RATE 2
MN BUS TIE (2) - ON (verify)
PRIM GLY TO RAD - BYPASS (verify)
EMS MODE-STBY (verify)
CM RCS LOGIC - on (up)
SECS LOGIC (2)-on(up)(verify)
SECS PYRO ARM (2) - on (up)
45:00m CM/SM SEP (2) - ON
(-15:00) If docking ring still on:
CSM/LM FNL SEP (2) - on(up)(verify)
MAN ATT (3) - MIN IMP
BMAG MODE (3) - RATE 2
C&W MODE - CM
(258°P) RCS TRNFR - CM
CM RCS MANF PRESS - 287-302 psia
CM RCS LOGIC - OFF
SECS PYRO ARM (2)-SAFE

Monitor VMA/B:
If <25 vdc go to EMERG
POWERDOWN pg E/7-1

50:00m
(-10:00)
(236°P)

AUTO RCS SEL A/C ROLL (4) - OFF
AUTO RCS SEL CM 2(6)-OFF
AUTO RCS SEL CM 1(6)-MNA
YAW back to 0°
PITCH TO HORIZ TRACK ATT
ROLL - 0° (LIFT UP)
PITCH - 400K Horiz Mark (31.7°)
YAW - 0°
ATT DB - MAX
EMS DATA - Verify
EMS FUNC - ENTRY (verify)
EMS MODE - NORMAL
MAINT HORIZ TRK
MAN ATT (3) - RATE CMD
PRO (Act ENTRY DAP)

13.32 -169.17 -1

6 F 06 61 IMPACT LAT,LONG,HDS/DN (.01°,.01°,-00001)
PRO

7 POSS 06 22 FINAL ATT DISP, RPY (.01°)
(Only if X-axis beyond 45° of Vel vector)

P63 - ENTRY INIT

8 06 64 G,VI,RTOGO (.01G,fps,.1nm)
FDAI SCALE - 5/5
ROT CONTR PWR DIR (2) - MNA/MNB
TAPE RCDR - HBR/FWD

58:00m
(-02:00)
(177°P)

HORIZ CHECK
Pitch error needle goes toward
zero approaching .05G time
If CMC is GO:
SC CONT - CMC/AUTO

* If DAP NO GO: *
* SC CONT - SCS *
* FLY BETA *
* If CMC NO GO: *
* SC CONT - SCS *
* FLY EMS *

Basic Date April 15, 1969
Changed June 27, 1969

CSM 10[illegible] Subs

Mag M

f11 1/250
7' 12 fps

E
2-5

P64 - ENTRY POST .05G
(If no P64 at .05G ±5 sec, GNCS NO GO)

Camera On

9 (158°P) AT 400 K' RTOGO AT .05G AGREES WITH EMS-verify
(RRT=0:00) HORIZ CHECK
.05G lt - on (EMS START)

.05G time
(+0__:__)
(__:__:__)
(152°) AT .05G

* No EMS START within 3 sec: *
* EMS MODE - BACKUP/VHF RNG *

.05G sw - on (up)
EMS ROLL - on (up)

06 74 BETA, VI, G (.01°,fps,.01G)

NOTE: To monitor N68,
Key V16 N68E
Compare RSI & FDAI
If CMC or PAD cmds Lift DN,
MNVR Lift DN
EMS GO/NO GO
G-V Plot within limits
Monitor G-meter for
convergence with pad data (Do)
CMC is NO GO if commanding constant
90° command when g <5.4
Go to 13 (P67)
or continue

? Camera Off ?

P65 - ENTRY - UP CONT (VL>18K fps)

10 F 16 69 BETA (.01°) _____
DL (.01G) _____ PAD _____
VL (fps) _____ PAD _____

* IF NO AGREEMENT: *
* SC CONT - SCS *
* FLY EMS *

PRO

11 06 74 BETA,VI,G (.01°,fps,.01G)
(V<VL+500 fps & RDOT Neg) Go to 13

Basic Date April 15, 1969
Changed June 16, 1969

CSM 107 & Subs

6. EARTH/POST LDG
7. ENTRY EMERG

LUNAR ENTRY PAD

2. SUPERCIRC ENTRY

P66 - ENTRY - BALLISTIC (D<DL)

12 06 22 ? DESIRED GMBL ANGLES RPY (.01°)
Monitor horiz ±12° of 31.7° mark

? Camera off

P67 - ENTRY - FINAL PHASE (AUTO AT .2G)

13 06 66 BETA,CRSRNG ERR,DNRNG ERR
(.01°,.1nm,.1nm)
BETA will be ±15° until DN RNG ERR <-9nm
Monitor lift vector on RSI & FDAI
CM RCS: change rings when HE PRESS <1150 psia

F 16 67 RTOGO,LAT,LONG (Vrel=1000fps)
(.1nm,.01°,.01°)
SC CONT - SCS
RTOGO NEG - LIFT UP
RTOGO POS - LIFT DOWN
Monitor altimeter
Record LAT,LONG & VOICE TO RECY at 10K'
Record EMS RTGO
EMS MODE - STBY
EMS FUNCT - OFF

Go To EARTHLANDING pg E/6-1

Basic Date April 15, 1969
Changed June 16, 1969

CSM 107 Subs

SECTION 6. EARTH/POST LANDING

07:20 96

Start watch

RRT (~~06:~~) STEAM PRESS - pegged at 90~~K~~ (0:00)

50K' (~~0~~ 32) CABIN PRESS REL vlv (2) - BOOST/ENTRY (~~0~~)

09:16 32

SECS PYRO ARM (2) - ARM 00:56

Check Altimeter

~~07:46~~ 10

40K' (~~0~~) * CM UNSTABLE (01:~~0~~) *

09:30 *RCS CMD - OFF *

* 40K' APEX COVER JETT PB-PUSH *

DROGUE DEPLOY PB - PUSH (2 sec

*after apex cover jett) *

f 2.0 1/60 50'

30K' ELS LOGIC - on (up) Camera On

ELS - AUTO

09:02

24K' (~~0~~) RCS disable (auto) (01:~~4~~6)

~~08:18~~ *RCS CMD - OFF* 42

12 fps

Apex cover jett (auto)

APEX COVER JETT PB - PUSH

(WAIT 2 SECS)

Drogue parachutes deployed (auto)

DROGUE DEPLOY PB - PUSH

Camera off

If Both Drogues Fail:

*ELS - MAN *

*Stabilize CM *

5K' MAIN DPLY PB - PUSH

*ELS - AUTO *

23.5K' Cabin Pressure increasing (Drogues + 50s)

*If not increasing by 17K': *

CABIN PRESS REL vlv (RH) - DUMP

09:51 / ~~09:07~~ Camera On 12 fps

10K' (~~0~~) Main parachutes deployed (02:31)

MAIN DEPLOY PB - PUSH (within 1 sec)

SURGE Tank O2 Press Reg Press Valve Off Dir O2 Open

VHF ANT - RECY

VHF AM A - SIMPLEX

VHF BCN - ON

DIRECT O2 - ON (if suited)

Basic Date April 15, 1969
Changed ADI June 27, 1969

CSM 107 & Subs

6. EARTH/POST LDG

7. ENTRY EMERG

1 & 2 E
6-2

Hawaii Rescue
C-130
:40 min

CABIN PRESS REL vlv (2) - CLOSE
CM RCS LOGIC - on (up)
CM PRPLNT - DUMP (burn audible)
Monitor CM RCS 1&2 for He press decrease
*NO BURN or PRESS DECREASE *
* USE BOTH RHC's *
*DO NOT FIRE PITCH JETS *
CM PRPLNT-PURGE (to zero He press)
*CM RCS He DUMP PB - PUSH *
*RHC (2) - 30 secs *
* NO PITCH *
STRUT LOCKS (4) - UNLOCK
If night landing:
(8) cb FLOAT BAG #3, FLT/PL (1 cb)-close
PL BCN LT - HIGH

Hornet
Recovery
Helio

(275) cb FLT & PL BAT BUS A,B,&BAT C (3)-close
cb FLT & PL MNA & B (2) - open
(5) cb RAD HTR OVLD (2) - open (verify)
(8) cb SPS P&Y (4) - open (verify)
(5) cb BAT RELAY BUS (2) - open

3K' CABIN PRESS REL vlv (RH) - DUMP (after purge completed)
ELS-AUTO (verify)
ELS LOGIC-ON (verify)
FLOOD Lts - POST LDG
CM RCS PRPLNT (2) - OFF

800' CAB PRESS RELF vlv - CLOSE (latch off)
MN BUS TIE (2) - OFF

POSTLANDING
STABILIZATION, VENTILATION, COMMUNICATIONS

1 Stabilization after landing

(229) cb MAIN REL PYRO (2) - close

MAIN RELEASE - on (up)
SECS PYRO ARM (2) - SAFE
SECS LOGIC (2) - OFF
~~DIRECT O2 - OFF (verify)~~

Basic Date April 15, 1969
Changed June 27, 1969

CSM 107 & Subs

No contact with recovery forces
*VHF AM A&B - off (ctr) *
*VHF AM RCV ONLY - A *

(8) cb PL VENT - close
cb FLOAT BAG (3) - close
(278) cb UPRIGHT SYS COMPRESS (2) - close
If Stable II:
FLOAT BAG(3)-FILL till 2 min after upright, then - OFF
VHF AM A/B & BCN - OFF while inverted
If Stable I:
After 10 Min Cooling Period,
FLOAT BAG (3) - FILL 7 min, then OFF

2 Post Stabilization And Ventilation

(15) PL BCN LT - BCN LT LOW
PL VENT v1v - UNLOCK (Pull)
Remove PL VENT Exh Cover
(15) PL VENT - HIGH or LOW
PL DYE MARKER - ON (swimmer comm)
Release footstraps and restraints
(275) cb MNA BAT BUS A & BAT C (2) - open
cb MNB BAT BUS B & BAT C (2) - open
cb FLT & PL BAT C - open
(250) cb PYRO A SEQ A - open
cb PYRO B SEQ B - open
*EACH HR - CHECK DC VOLTS $\geq$ 27.5 V *
*If Not: *
(275) * cb FLT & PL-BAT BUS A&B (2) -open*
* cb FLT & PL BAT C (1) - close *
* GO TO LOW POWER CHECKLIST *
Unstow and install PLV DISTRIB DUCT
Deploy grappling hook and line if req.

EGRESS PROCEDURES

CMP LMP	PL VENT - OFF (15) cb Pnl 250 (all) - open

STABLE I

ALL Disconnect umbilicals
Neck dam on (if suited)
CMP Center couch - 270° position

CDR,LMP	Armrests stowed
CDR	Connect raft to S/C, if desired, with green lanyard
	Connect raft white lanyards to suits inflate water wings when exiting
CMP	GN2 RATCHET HNDL - CW
	GN2 VLV HNDL - UNLATCH & PUSH (Outbd)
	Side Hatch opened
	ACTR HNDL SEL - N
	Egress with liferaft
LMP	Put hardware kit out
LMP,CDR	Egress

or C. STABLE II

LMP	cb CREW STA AUDIO (3) - open
ALL	Disconnect umbilicals
	Couch seat pans (3) - 170° position
	Neck dam on (if suited)
CMP	Arm rests stowed
	Survival kits removed from stowage
CDR	Connect life raft mainline to CDR or S/C
CMP	Connect first raft white lanyard to suit
CDR	Connect third raft white lanyard to suit
CMP	PRESSURE EQUALIZATION vlv - OPEN
CMP,LMP	Remove and stow hatch
CMP	Exit feet first with rucksacks; when clear of S/C inflate water wings and raft
LMP	Exit feet first; when clear of S/C inflate water wings
CDR	Exit feet first; when clear of S/C inflate water wings

POST LANDING COMMUNICATIONS

VHF ANT-RECY (verify)
VHF BCN - ON (verify)
If no contact with recovery forces perform VHF BEACON Check
MONITOR VHF BEACON transmission with VHF AM B Rcvr and/or Survival Transceiver
*VHF Beacon not operating *
connect Survival Transceiver to ant
cable behind VHF ant access pnl and
*place radio in BCN mode *

CSM 107 & Subs
Basic Date July 15, 1969
Changed June 27, 1969

LOW POWER CHECKLIST

VHF BCN - OFF
VHF AM (3) - RCV
FLOOD LTS - OFF
VHF AM A&B - off (ctr)
VHF AM RCV ONLY - A (verify)
COUCH LIGHTS - OFF
POSTLANDING VENT SYS: minimize use
SURV RADIO - plug into VHF BCN ANT cable conn behind VHF ant access pnl & turn radio on in BCN mode

CSM 107 & Subs
Basic Date April 15, 1969
Changed June 16, 1969

. EARTH/POST LDG

LUNAR ENTRY PAD

SECTION 7. ENTRY EMERGENCY PROCEDURES

CM RCS FAILS TO PRESSURIZE OR FEED PRPLNT

1. Verify electrical power for pressurization
   cb EPS BAT BUS (2) - close (Pnl 229)
   cb PYRO A/B SEQ A/B (2) - close (Pnl 250)
   cb SECS ARM (2) - close (Pnl 8)
   SECS PYRO ARM (2) - ARM
   SECS LOGIC (2) - on (up)
2. Cycle CM RCS - PRESS (Pnl 2)
3. Verify electrical power to CM RCS prplnt vlvs
   cb EPS GRP 1&3 - close (Pnl 229)
   cb SM RCS HTR A&B - close (Pnl 8)
   cb RCS PRPLNT ISOL (2) - close
4. Cycle CM RCS PRPLNT 1&2 - on (up) (Pnl 2)
5. Open He & PRPLNT Crossfeed
   cb EPS GRP 5 - close (Pnl 229)
   cb RCS LOGIC (2) - close (Pnl 8)
   CM RCS LOGIC - on (up) (Pnl 1)
   CM PRPLNT - DUMP (momentarily, then OFF)

EMERGENCY POWERDOWN

(MN BUS voltage <26.0 vdc, no short verified)

	Amps	
S BD PWR AMP - off (ctr)	4.35	
SEC COOL EVAP - RESET for 58 sec, then OFF	4.26	
SEC COOL PUMP - OFF		
SUIT COMPR (2) - OFF	8.44	
DIRECT O2 vlv - ON (if suited)		
TAPE RCDR FWD - off (ctr)	1.69	
POT H2O HTR - OFF	1.62	
LIGHTS - (min req'd)		
cb G&N OPT (2) - open	3.1	
ECS GLY PUMPS (2) - OFF	2.76	per pump
PWR SCE - off (ctr)	0.70	
TELECOM GRP 1&2 - OFF	1.8	
cb INSTR ESS (2) - open	1.10	

Note: After 0.05G, cb G&N (all 10) - open

Basic Date April 15, 1969
Changed June 27, 1969

CSM 107 & SUBS

BUS LOST RECONFIGURATION

A. Loss of MN BUS A
- FC 2 - MNB only
- FC 1 (MNA&B) - off (ctr) (on line for deorbit burn)
- INV 3 - MNB, AC1
- cb MNA BAT BUS A - open
- cb MNA BAT C - open
- cb MNB BAT C - closed
- cb BAT C BAT BUS A - closed
- AUTO RCS SEL (desired thrusters) - MNB
- FDAI SEL - 2
- RHC PWR DIR (2) - MNB
- BMAG MODE (3) - RATE 2

B. Loss of MN BUS B
- FC 2 - MNA only
- FC 3 (MNA&B) - off (ctr)(on line for deorbit burn)
- INV 3 - MNA, AC2
- cb MNB BAT C - open
- cb MNB BAT BUS B - open
- cb BAT C BAT BUS B - closed
- cb MNA BAT C - closed
- AUTO RCS SEL (desired thrusters) - MNA
- FDAI SEL - 1
- RHC PWR DIR 1 - MNA
- SCS ELEC PWR - ECA
- BMAG MODE (3) - RATE 1

C. Loss of BAT BUS A
- Prepare for two battery entry
- AUTO RCS SEL (desired thrusters) - MNB
- After CM/SM SEP
  - RCS TRNFR - CM (mom)
- At APEX COVER JETT
  - cb SCS CONTR/AUTO (2) - open

D. Loss of BAT BUS B
- Prepare for two battery entry
- AUTO RCS SEL (desired thrusters) - MNA

LOM 107 & SUBS
Basic Date April 15, 1969
Changed June 27, 1969

After CM/SM SEP
RCS TRNFR - CM (mom)
At APEX COVER JETT
cb SCS CONTR/AUTO (2) - open

E. Loss of AC BUS 1
AC INV 1 MNA - OFF
BMAG MODE (3) - RATE 2
FDAI SEL - 2
SUIT COMPR 2 - AC2
S BD NORM XPNDR - SEC
S BD NORM PWR AMP - SEC
ECS GLY PUMP 2 - AC 2
G&N PWR - AC2

F. Loss of AC BUS 2
AC INV 2 MNB - OFF
FC PUMP 2&3 - AC1
FDAI SEL - 1
BMAG MODE (3) - RATE 1
G/N PWR - AC1
S BD NORM XPNDR - PRI
S BD NORM PWR AMP - PRI

EMERGENCY SAFE OF APEX COVER JETT

If MSFN NO GO For Pyro Arm Indicates Apex Cover Jettison,
SECS LOGIC (2) - OFF
cb ELS (2) - open
SECS LOGIC (2) - ON
If MSFN GO, Go To Step A
If Still Apex Cover Jettison,
cb SECS LOGIC A - open
If MSFN GO, Go To Step B
If Still Apex Cover Jettison,
cb SECS LOGIC A - close
cb SECS LOGIC B - open
If MSFN GO, Go To Step C
If Still Apex Cover Jettison,
ELS - MAN
ELS LOGIC - OFF
SECS LOGIC (2) - OFF

CSM 107 & SUBS Basic Date APRIL 15, 1969
Changed JUNE 1969

cb SECS LOGIC (2) - open
cb SECS ARM (2) - open
CMP To LEB
cb SEQ A&B PYRO A&B (2) - open (Pnl 250)
Verify PYRO BUS A&B voltage = 0
Use Tool E, (5/32 allen head) to remove closeout panel located beneath panels 276 & 277 (approx 10 fasteners on panel). Remove, or cut all wires to, connector marked "cut" with white tag (P545). Tape ends of any wires cut. Replace closeout panel.
cb SEQ A&B PYRO A&B - close
Verify PYRO BUS A&B voltage >35 vdc
cb ELS (2) - close
cb SECS LOGIC (2) - close
cb SECS ARM (2) - open (verify)
DO NOT ARM PYRO BUSES

Continue Normal Entry Except,

Perform CM RCS pressurization & CM/SM Separation together at which time ARM PYRO's in the following manner:
SECS PYRO ARM (B) - SAFE (verify)
SECS PYRO ARM (A) - ARM

To Jettison Apex Cover At 24K':
SECS PYRO ARM (B) - ARM

STEP A
cb ELS (2) - open (verify), close at or after apex cover jettison at 24K'
Continue normal entry

STEP B
cb SECS LOGIC A - open (verify), close at or after apex cover jettison at 24K'
Continue normal entry

STEP C
cb SECS LOGIC B - open (verify), close
at or after apex cover jettison
at 24K'
Continue normal entry

FIRE/SMOKE IN CM DURING ENTRY
WARNING: CM water must not be used
to extinguish fire

1 CABIN FAN (2) - OFF (verify)

2 Monitor EPS indicators for excessive current.
Immediately remove power from affected bus.

3 ROT CONTR PWR DIRECT (2) - MNA/MNB
& maintain attitude if required.

4 If affected bus is:
MNA
AC INV 1 AC BUS 1 - OFF
AC INV 2 AC BUS 1 - on (up)
Set up for CM/RCS sys 2
AUTO RCS SEL A/C ROLL (4) - OFF
AUTO RCS SEL CM 1(6) - OFF
AUTO RCS SEL CM 2(6) - MNB
RCS dump is fuel rich
MNB
AC INV 2 AC BUS 2 - OFF
AC INV 1 AC BUS 2 - on (up)
RCS dump is oxidizer rich

5 CAB PRESS REL vlv (RH) - DUMP

6 Continue ENTRY

CSM 107 & SUBS
Basic Date April 15, 1969
Changed June 1, 1969

7. ENTRY EMERG

. EARTH/POST LDG

LUNAR ENTRY PAD

Basic Date ______
Changed ______

TIME	REMARKS

7. ENTRY EMERG

EARTH/POST LDG

LUNAR ENTRY PAD

TIME	REMARKS

Basic Date

Changed

Basic Date ______
Changed ______

TIME	REMARKS

7. ENTRY EMERG

. EARTH/POST LDG

LUNAR ENTRY PAD

TIME	REMARKS

Basic Date

Changed

Basic Date ______
Changed ______

TIME	REMARKS

7. ENTRY EMERG

EARTH/POST LDG

LUNAR ENTRY PAD

TIME	REMARKS

Basic Date

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Basic Date _____
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TIME	REMARKS

7. ENTRY EMERG

LUNAR ENTRY PAD

TIME	REMARKS

Basic Date
Changed

Basic Date

Basic Date _____
Changed _____

TIME	REMARKS

7. ENTRY EMERG

EARTH/POST LDG

LUNAR ENTRY PAD

TIME	REMARKS

Basic Date

Changed