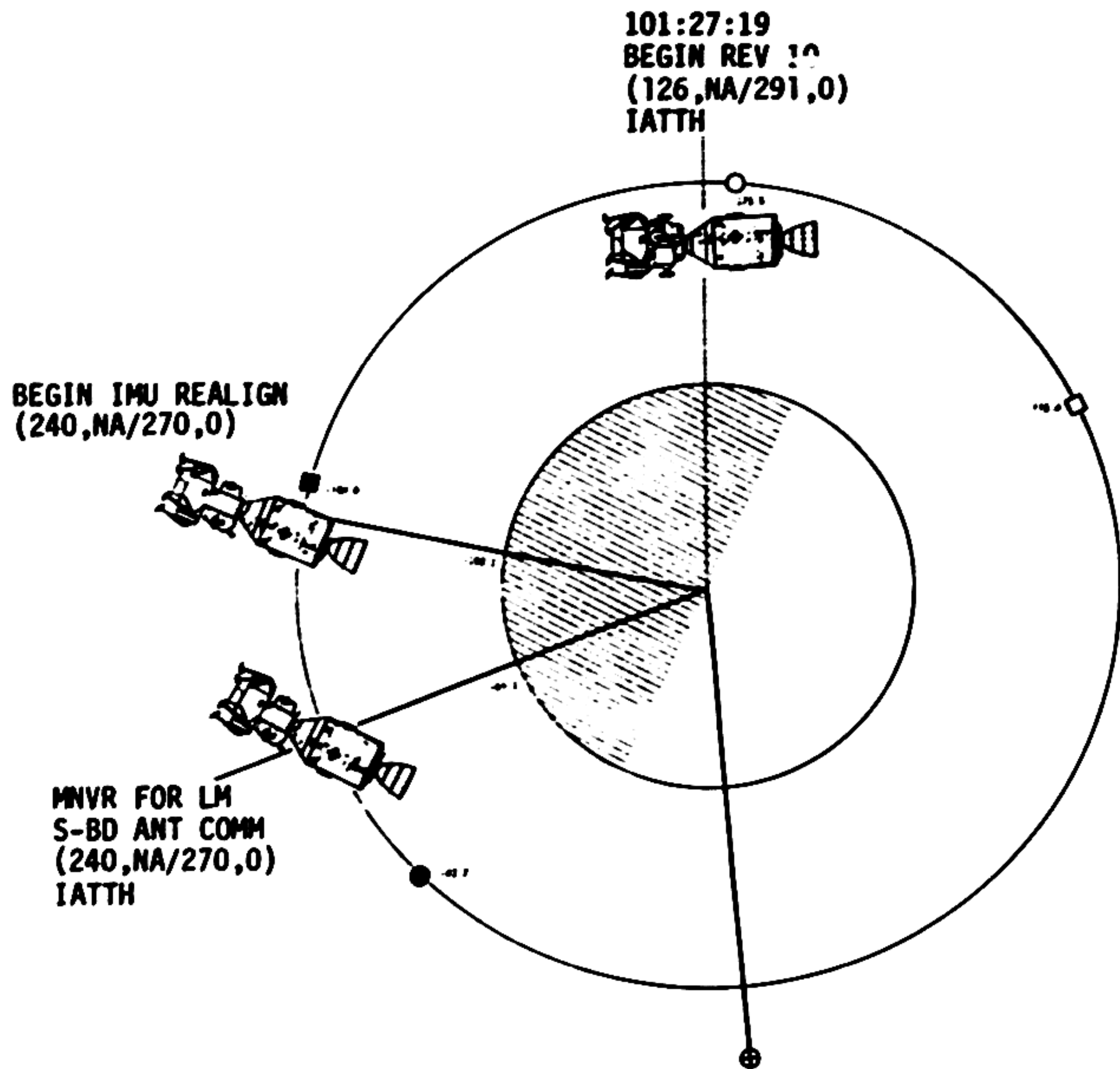


**FAO**

<b>APOLLO 12</b>	
<b>CMP SOLO BOOK</b>	
<b>PART NO</b>	<b>S/N</b>
<b>SKB32100081-353</b>	<b>1002</b>

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**LEGEND:**

□	■	MSFN AOS, LOS
○	●	S/C SUNRISE, SUNSET
⊕		SUBEARTH POINT

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD  
LATTH - LOCAL ATTITUDE HOLD

MCC-N

# FLIGHT PLAN

NOTES

1522 CST

101:00

:03

:15

REV 10

:29

101:30

:35

:45

:49

102:00

VERIFY DSE MOTION AT LOS

WASTE WATER DUMP  
O2 FUEL CELL PURGE  
EAT PERIOD

**POSTSLEEP CHECKLIST**

CREW STATUS REPORT  
 CONSUMABLES UPDATE  
 FLIGHT PLAN UPDATE  
 CYCLE H2, O2 FANS  
~~POT H2O HTR ON~~  
 NORMAL LUNAR COMM EXCEPT:  
 S BD ANT - HI GAIN  
 CREW MANAGES ANT OPS

**CSM CONSUMABLES UPDATE**

GET: \_\_\_\_\_ : \_\_\_\_\_

RCS TOTAL \_\_\_\_\_ %

QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %  
 C \_\_\_\_\_ % D \_\_\_\_\_ %

H<sub>2</sub> TOTAL \_\_\_\_\_ %

O<sub>2</sub> TOTAL \_\_\_\_\_ %

**CREW STATUS REPORT**

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

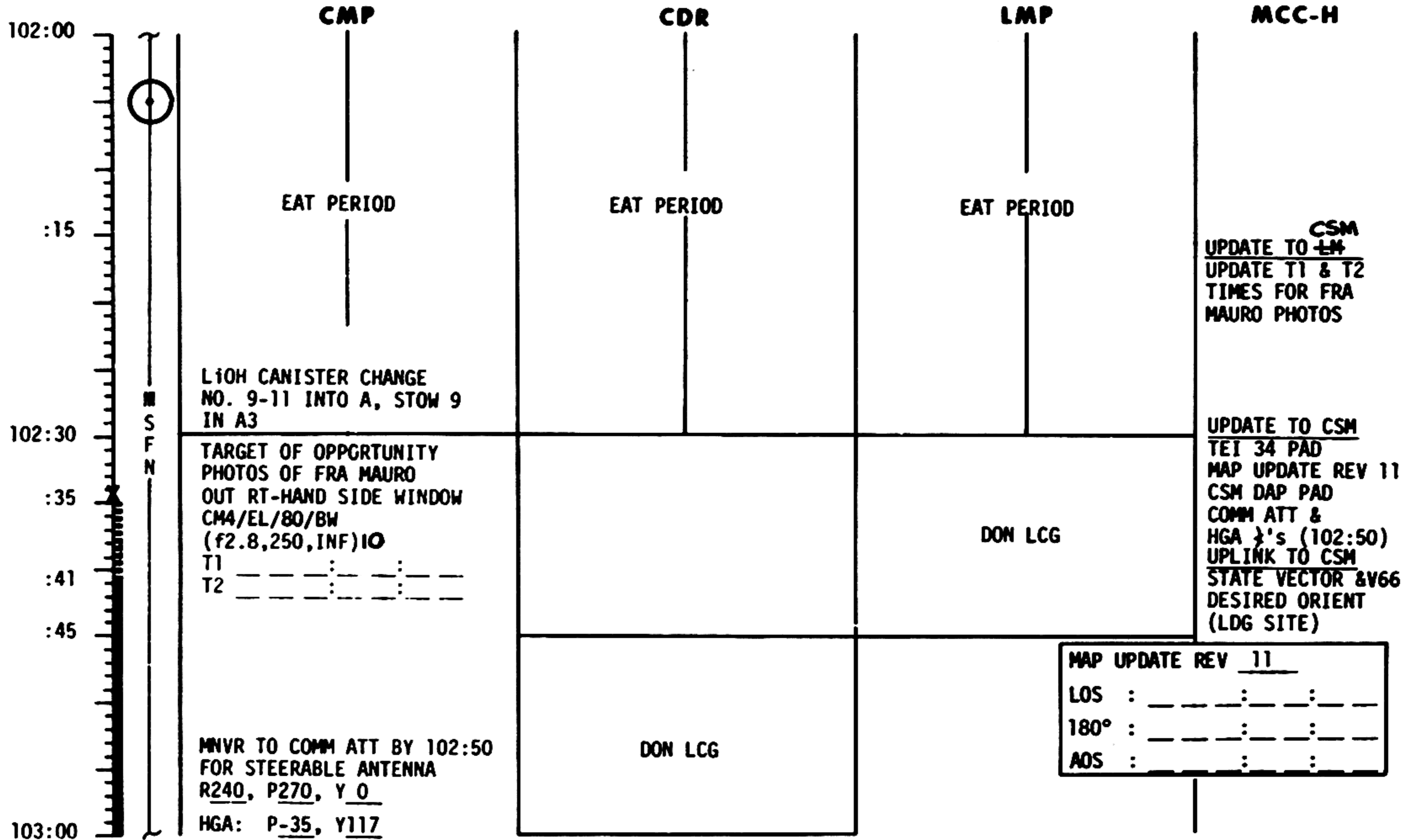
DUMP DSE

M  
S  
F  
N

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	101:00 - 102:00	5/9-10	3-77

1622 CST

# FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	102:00 - 103:00	5/10	3-78

1722 CST

# FLIGHT PLAN

103:00  
:01

**CMP**

**CDR**

**LMP**

**MCC-H**

P52 - IMU REALIGN  
OPTION 1 - (PREFERRED)

VERIFY DSE MOTION AT LOS

P52 (LDG SITE ORIENT)

N71: \_\_\_\_\_

N05: \_\_\_\_\_

N93: \_\_\_\_\_

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

GET \_\_\_\_\_

:15

DON PGA  
W/O HELMET & GLOVES

REV 11

:27

103:30

EQUALIZE CM/LM PRESSURE

:34

OPEN & STOW CM HATCH  
REMOVE & STOW PROBE & DROGUE

:45

:47

CHECK LATCHES  
REACQUIRE MSFN  
HGA: P-35, Y117

REPORT DOCKING TUNNEL  
INDEX ANGLE

MAP UPDATE REV 12

LOS : \_\_\_\_\_

180° : \_\_\_\_\_

AOS : \_\_\_\_\_

VERIFY DOCKING TUNNEL  
INDEX ANGLE

DUMP DSE

104:00

T  
M  
S  
F  
N

DON PGA W/O HELMET & GLOVES

OPEN LM HATCH

IVT TO LM

UPDATE TO CSM  
MAP UPDATE REV 12

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	103:00 - 104:00	5/10-11	3-79

1822 CST

# FLIGHT PLAN

104:00

:15

104:30

:33

:40

:45

:59

105:00



**CMP**  
CSM POWER TO LM  
OFF AT LMP'S REQUEST

CONFIGURE CAMERAS FOR  
UNDOCKING  
CM2/DAC/18/CEX-BRKT-MIR  
(f8,250,7) 6fps, 16 MIN  
CM4/TV-IN BRKT (f22)

CM2/EL/80/CEX  
(f8,250, 50 ) 10  
~~INHIBIT B38C4 CSM THRUSTERS~~

LM CLOCK SYNC: V06N65  
T EPHEM: V05N0E 1706E  
LM VHF CHECKOUT:  
VHF AM(B)-SIMPLEX  
VHF RCY ONLY-B DATA  
VHF AM(B)-OFF  
VHF AM(A)-SIMPLEX  
V06N20E  
(ON CDR'S MARK)  
MIN DB FOR LM ALIGN  
VERIFY DSE MOTION AT LOS  
RECORD LM PCM DATA

**CDR**

DON PGA  
W/O HELMET & GLOVES

DISCONNECT & STOW  
LM POWER UMBILICAL

IVT TO LM  
TRANSFER HELMET & GLOVES

ECS ACTIVATION & C/O  
CONNECT TO LM ECS

PGNCS TURN-ON & SELF TEST

LGC/CMC CLOCK SYNC  
T EPHEM UPDATE  
E MEMORY DUMP

DOCKED IMU COARSE ALIGN  
REPORT GIMBAL ANGLES  
& TIME TO MSFN

FWD OMNI - LBR  
SLEW STEERABLE ANT:  
P 68, Y 19

**LMP**

TRANSFER TO LM POWER  
LM FAMILIARIZATION &  
HOUSEKEEPING  
(IF NECESSARY)

EPS ACTIVATION  
S-BAND ACTIVATION  
MISSION TIMER ACTIVATION  
PRIMARY GLYCOL LOOP ACT

CAUTION/WARNING C/O  
CB ACTIVATION  
TB VERIFICATION

SEC S-BAND T/R &  
POWER AMPL CHECK

S-BAND STEERABLE ANTENNA  
ACT: P 68, Y 19

SUIT FAN/H<sub>2</sub>O SEP CHECK

GLYCOL PUMP CHECK

VHF CHECKOUT

IVT TO CSM

DON PGA

**MCC-H**

UPDATE TO CSM  
P22 LDMK  
TRACKING PAD

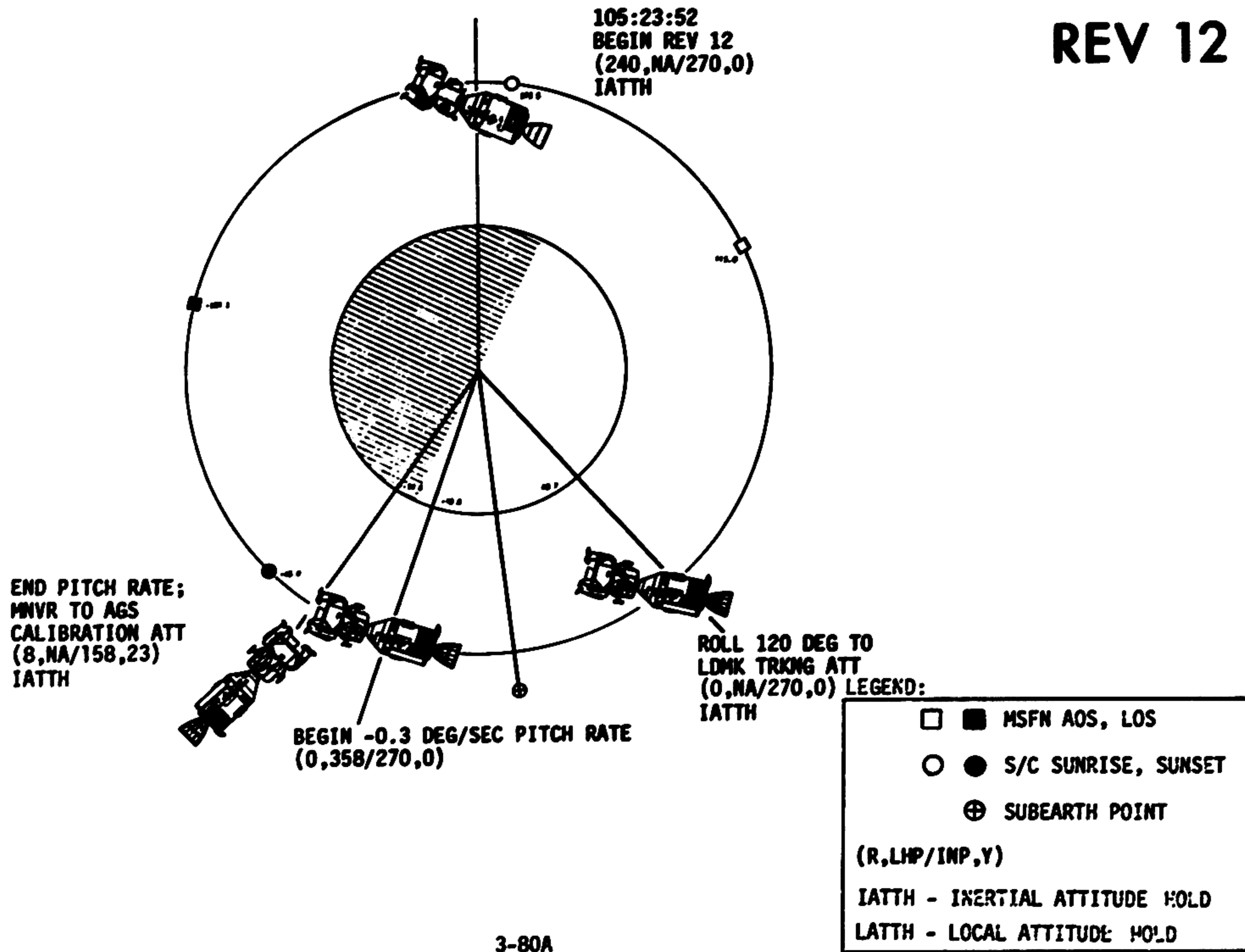
UPDATE TO LM  
STEERABLE ANT }'s  
BY 104:30  
(IF REQ'D)

UPDATE TO LM  
STEERABLE ANT }'s  
(105:49)  
(IF REQ'D)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	104:00 - 105:00	5/11	3-80

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# FLIGHT PLAN

**CSM**

1922 CST

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

105:00

DON PGA  
IN CSM

DON HELMET & GLOVES  
PGA PRESSURE INTEGRITY  
CHECK

:15

IVT TO LM  
TRANSFER HELMET & GLOVES

CONNECT TO LM ECS  
& COMM

**REV 12**

INHIBIT ROLL COMMANDS  
UNTIL LM/CM  $\Delta P > 3.5$  PSID

:26

VERIFY DROGUE  
& PROBE  
INSTALLATION

ASCENT BATTERY  
ACTIVATION  
AND C/O

INSTALL DROGUE & PROBE  
PRELOAD PROBE

105:30

RECORD ED BAT  
VOLTS

COCK LATCHES (12)

:32

AGS ACT & SELF TEST

INSTALL HATCH  
VENT TUNNEL  
HATCH INTEGRITY  
CHECK

CLOSE AND SECURE  
HATCH

CONFIGURE PANEL 10  
FOR CSM RELAY

:45

STEERABLE ANTENNA:  
P 68, Y 19

DUMP DSE

REACQUIRE MSFN  
HGA: P-35, Y 117

DEPLOY LANDING GEAR

UPLINK TO CSM  
CSM STATE VECTOR & V66  
UPDATE TO LM  
DAP DATA  
GYRO TORQUING }'s

V06N20E  
DOFF HELMET & GLOVES

POO & DATA FOR UPLINK  
DOCKED IMU FINE ALIGN  
V06 N20E ON MARK

BIOMED SW - LEFT

V47-AGS INITIALIZATION

106:00

MSFN

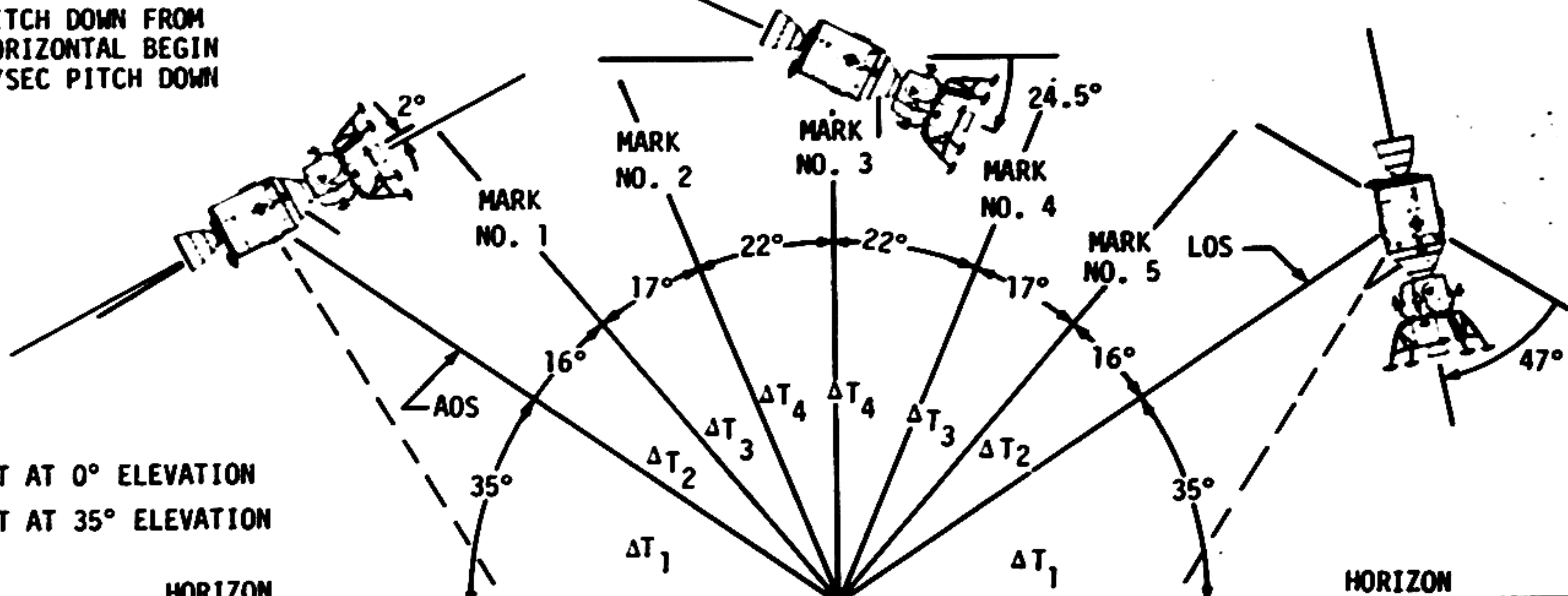
MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	105:00 - 106:00	5/11-12	3-81

# DOCKED LANDMARK TRACKING PROFILE

2 DEG PITCH DOWN FROM LOCAL HORIZONTAL BEGIN  
0.3 DEG/SEC PITCH DOWN AT AOS.

T1 GET AT 0° ELEVATION  
T2 GET AT 35° ELEVATION



HORIZON

HORIZON

LANDMARK

CENTER OF MOON

RADIUS OF MOON

ΔT<sub>1</sub> = 300 SEC  
ΔT<sub>2</sub> = 40 SEC  
ΔT<sub>3</sub> = 25 SEC  
ΔT<sub>4</sub> = 25 SEC

AOS to LOS = 3 MIN

P22	<del>MAN</del> AUTO	ACQ	P	dn	2°	R0°	Y0°
T <sub>1</sub>	---	---	---	---	---	---	---
T <sub>2</sub>	---	---	---	---	---	---	193
R	---	°P	---	°Y	---	---	---
N or S	NM	---	SA	---	TA	---	---
			N89				
LAT	-3.437°						
LONG/2	-11.614°						
ALT	-1.37 NI						

FIGURE 3-1

# FLIGHT PLAN

**CSM**

2022 CST

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

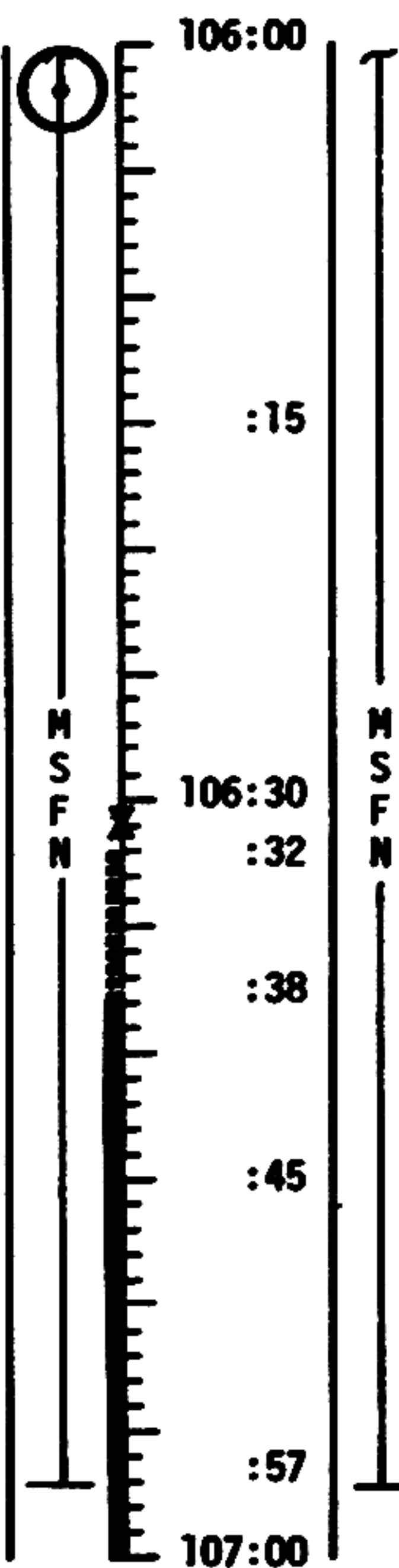
SELECT OMNI D  
ROLL 120° TO TRACKING  
ATT AT 106:10  
R 0 , P270, Y 0

V06N20E  
VERIFY DSE MOTION  
P22-ORBITAL NAVIGATION  
ESTABLISH 0.3°/SEC  
PITCH RATE AT LDMK AOS

TRACK LOG SITE LDMK 193  
DO NOT PROCEED ON N89  
25 SEC BETWEEN MARKS,  
5 MARKS

STOP AGS CAL PITCHOPJ58  
BY 106:35 HGA: P-47, Y168  
V06 N20E  
MNVR TO AGS CAL  
ATT BY 106:45  
R 8 , P 158, Y 23  
HGA: P-41 , Y 139

V06N20E  
SC CONTROL-SCS  
~~MIN/MAX DB, LOW/HIGH~~  
RATE (AT CDR'S REQUEST)  
CMC FREE FOR RCS  
HOT FIRE  
VERIFY DSE MOTION AT LOS  
RECORD LM PCM DATA  
INHIBIT THRUSTER B3  
FOR LM RR SELF TEST



DAP SET - GIMBAL & THROTTLE TEST LOAD DAP - 32022	
RATE GYRO TEST V06N20 ON MARK  RCS PRESSURIZATION	
V06 N20E ON MARK	
V06N20E ON MARK	
RCS CHECKOUT	RCS CHECKOUT
	FWD OMNI-LBR SLEW STEERABLE S-BD ANT: P 132, Y 24

LOAD AGS PAD

SELECT OMNI-FWD

SLEW STEERABLE ANT:  
P 104, Y 01  
FOR AGS CAL PITCH ATT  
RCS PRESSURIZATION

UPLINK TO LM  
LS REFSMAT  
LM SV & V66  
LGC/CMC CLOCK SYNC  
PIPA BIAS  
LGC ABORT CONSTANT  
E-MEMORY UPDATE  
(IF REQ'D)  
UPDATE TO CSM  
SEP TIME &  
UNDOCK TIME  
UPDATE TO LM  
AGS K FACTOR  
AGS ABORT  
CONSTANTS  
STEERABLE ANT }'s  
(IF REQ'D)  
UPDATE TO CSM  
MAP UPDATE REV 13

MAP UPDATE REV 13		
LOS	:	_____
180°	:	_____
AOS	:	_____

UPDATE TO LM  
STEERABLE ANT }'s  
(107:47)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	106:00 - 107:00	5/12	3-83

CSM

2122 CST

LM

MCC-H

CMP

CDR

LMP

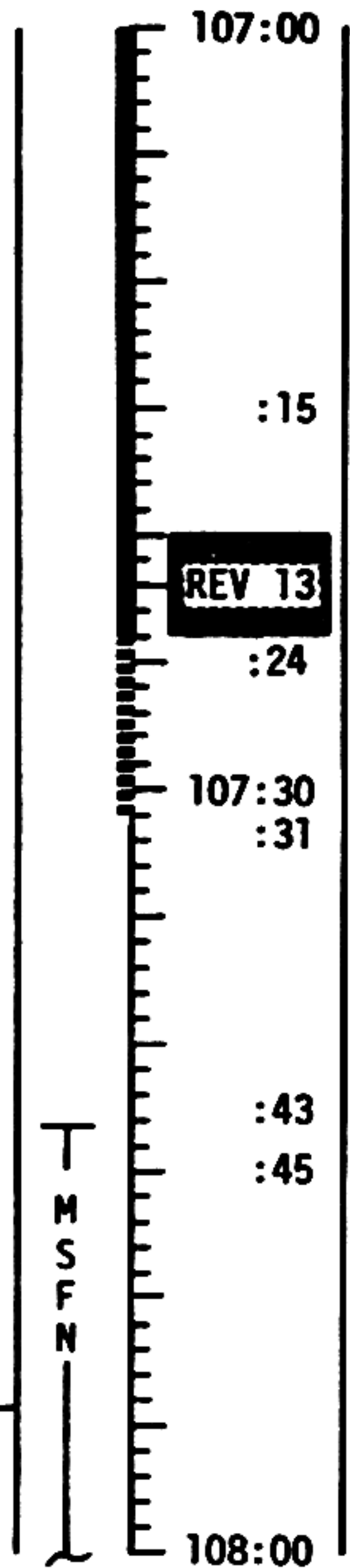
RATE <0.1°/SEC  
 DISABLE THRUSTERS FOR  
 32 SEC(AT LMP'S REQUEST)  
 ENABLE THRUSTERS &  
 MAINTAIN RATE <0.1°/SEC  
 FOR 6 MIN  
 RE-ENABLE B3  
 VERIFY TUNNEL VENT  
 VALVE - OFF

RR TRANSPONDER ACT  
 & SELF TEST

P30/P41 TO MANEUVER  
 TO UNDOCKING ATT  
 BY 107:40  
 R 180, P 285, Y 0  
 HGA: P -76, Y 218  
 GDC ALIGN TO IMU  
 START CAMERAS  
 TV(GDS) 107:50 - 108:30  
 GO/NO-GO  
 LOAD DAP-CSM ONLY  
 R1=11102, R2=11111  
 S/C CONTROL - SCS

SOFT UNDOCK

S/C CONTROL - CMC  
 STATION KEEP @ 40'  
 RE-ENABLE B3&G4 JETS



RR ACT & SELF TEST	AGS ACCELEROMETER & GYRO CALIBRATION
DON HELMET & GLOVES	DON HELMET & GLOVES
ARS/PGA PRESSURE INTEGRITY CHECK	
CABIN REGULATOR CHECK	CABIN REGULATOR CHECK
DPS PRESS & C/O	V47-AGS UPDATE & ALIGN
GO/NO-GO PREPARE FOR UNDOCKING P47-THRUST MONITOR	STEERABLE ANT: P 132, Y 24 REACQUIRE MSFN PCM-HI PREPARE FOR UNDOCKING
YAW LEFT 60° PITCH UP 90° R 180, P 195, Y 0	STEERABLE ANT: P 71, Y -52

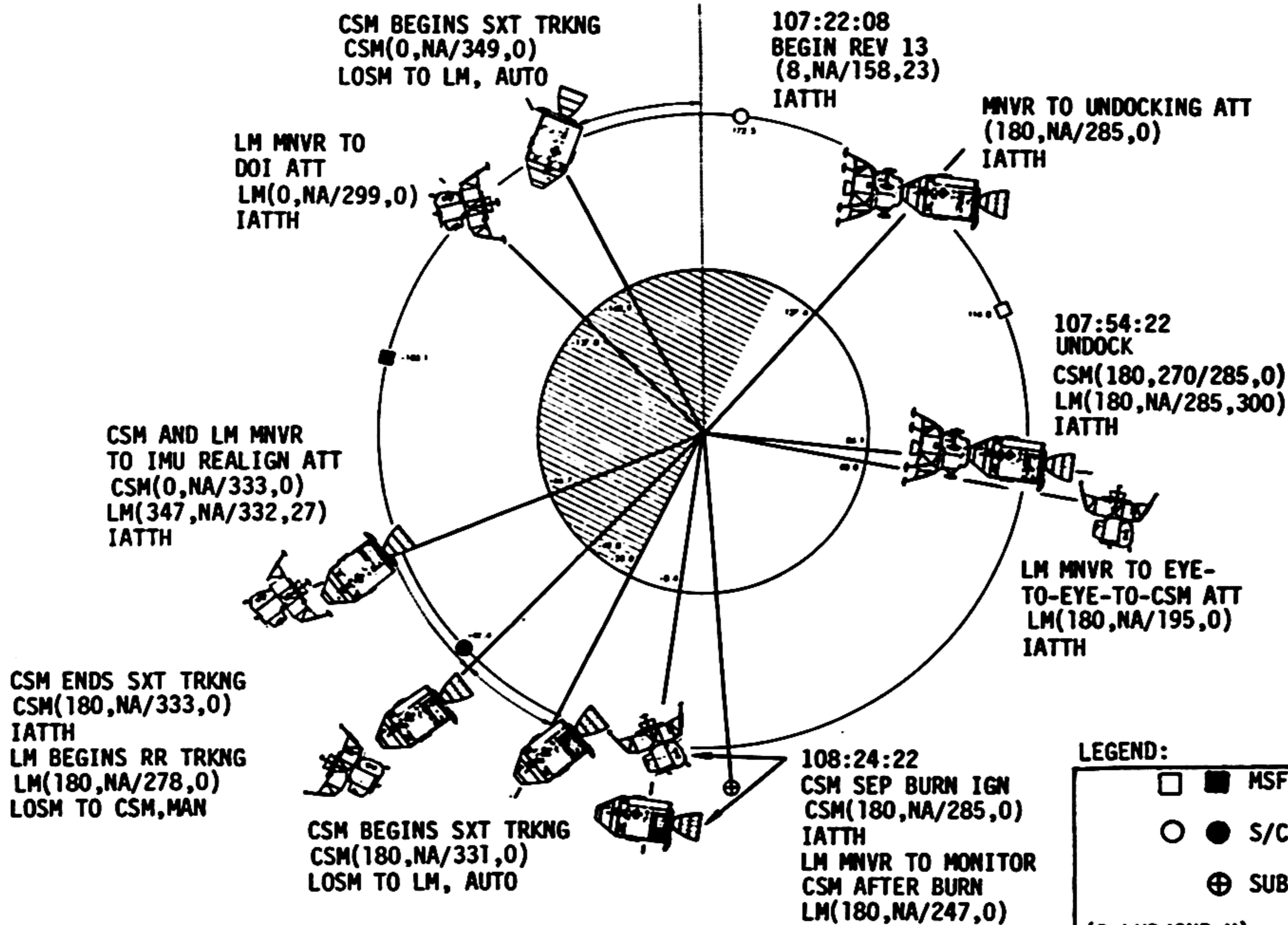
DUMP DSE  
 GO/NO-GO FOR UNDOCKING

SOFT UNDOCK 107:54:22

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	107:00 - 108:00	5/12-13	3-84

FLIGHT PLANNING BRANCH

REVISION A



**LEGEND:**

□	■	MSFN AOS, LOS
○	●	S/C SUNRISE, SUNSET
⊕		SUBEARTH POINT
(R,LHP/INP,Y)		
IATTH - INERTIAL ATTITUDE HOLD		
LATTH - LOCAL ATTITUDE HOLD		

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Flight Pages not in place

undock  
07:54:00

CSM SEP PAD

33	00	00	000	0 42
81	+	0002.5	+ 0000.0	+ 0000.0
22	XXX	182	XXX 288	XXX 003

DOI PAD

33				
84				

NO PDI ONE + 12 PAD

33				
84				

"CSM RESCUE" PAD

PDI TIGN	00	000	0	.
TPI (PDI < 10) 37	00	000	0	.
TPI (PDI > 10) 37	00	000	0	.
(T2)	00	000	0	.
TPI (T2) 37	00	000	0	.
(T3)	00	000	0	.

"CSM RESCUE UPDATE" PAD

TPI (PDI < 14.5) 37	00	000	0	.
(T2)	00	000	0	.
TPI (T2) 37	00	000	0	.

RESCUE TWO PAD

37			00000.	
48				
33	00	000	0	.
81				
22	XXX	XXX	XXX	
37C	X			
11	00	000	0	.
37	00	000	0	.
N				

CSI ONE

11		000	0	.
81				
N				

P22 PAD

T1					(HOR)
T2					(LMK)
89					
	LAT	LONG/2	ALT		

NOMINAL LM IGNITION TIMES

CSI 11	00	000	0	.
PC 33	00	000	0	.
TPI 37	00	000	0	.

CSI TWO

11	00	000	0	.
81				
N				

CSI THREE

11	00	000	0	.
81				
N				

CSI FOUR

11	00	000	0	.
81				
N				

CSM

13	00	000	0	.
81				

TPI

37	00	000	0	.
81				
59				
LOS BT	XX	XX	XX	



1822 CST

# FLIGHT PLAN

104:00

:15

104:30

:33

:40

:45

:59

105:00



**CMP**  
CSM POWER TO LM  
OFF AT LMP'S REQUEST

CONFIGURE CAMERAS FOR  
UNDOCKING  
CM2/DAC/18/CEX-BRKT-MIR  
(f8,250,7) 6fps, 16 MIN  
CM4/TV-IN BRKT (f22)

CM2/EL/80/CEX  
(f8,250, 50 ) 10  
~~INHIBIT B28C4 CSM THRUSTERS~~

LM CLOCK SYNC: V06N65  
T EPHEM: V05N01E 1706E  
LM VHF CHECKOUT:  
VHF AM(B)-SIMPLEX  
VHF RCV ONLY-B DATA  
VHF AM(B)-OFF  
VHF AM(A)-SIMPLEX  
V06N20E  
(ON CDR'S MARK)  
MIN DB FOR LM ALIGN  
VERIFY DSE MOTION AT LOS  
RECORD LM PCM DATA

**CDR**

DON PGA  
W/O HELMET & GLOVES

DISCONNECT & STOW  
LM POWER UMBILICAL

IVT TO LM  
TRANSFER HELMET & GLOVES

ECS ACTIVATION & C/O  
CONNECT TO LM ECS

PGNCS TURN-ON & SELF TEST

LGC/CMC CLOCK SYNC  
T EPHEM UPDATE  
E MEMORY DUMP

DOCKED IMU COARSE ALIGN  
REPORT GIMBAL ANGLES  
& TIME TO MSFN

FWD OMNI - LBR  
SLEW STEERABLE ANT:  
P 68, Y 19

**LMP**

TRANSFER TO LM POWER  
LM FAMILIARIZATION &  
HOUSEKEEPING  
(IF NECESSARY)

EPS ACTIVATION  
S-BAND ACTIVATION  
MISSION TIMER ACTIVATION  
PRIMARY GLYCOL LOOP ACT

CAUTION/WARNING C/O  
CB ACTIVATION  
TB VERIFICATION

SEC S-BAND T/R &  
POWER AMPL CHECK

S-BAND STEERABLE ANTENNA  
ACT: P 68, Y 19

SUIT FAN/H<sub>2</sub>O SEP CHECK

GLYCOL PUMP CHECK

VHF CHECKOUT

IVT TO CSM

DON PGA

**MCC-H**

UPDATE TO CSM  
P22 LDMK  
TRACKING PAD

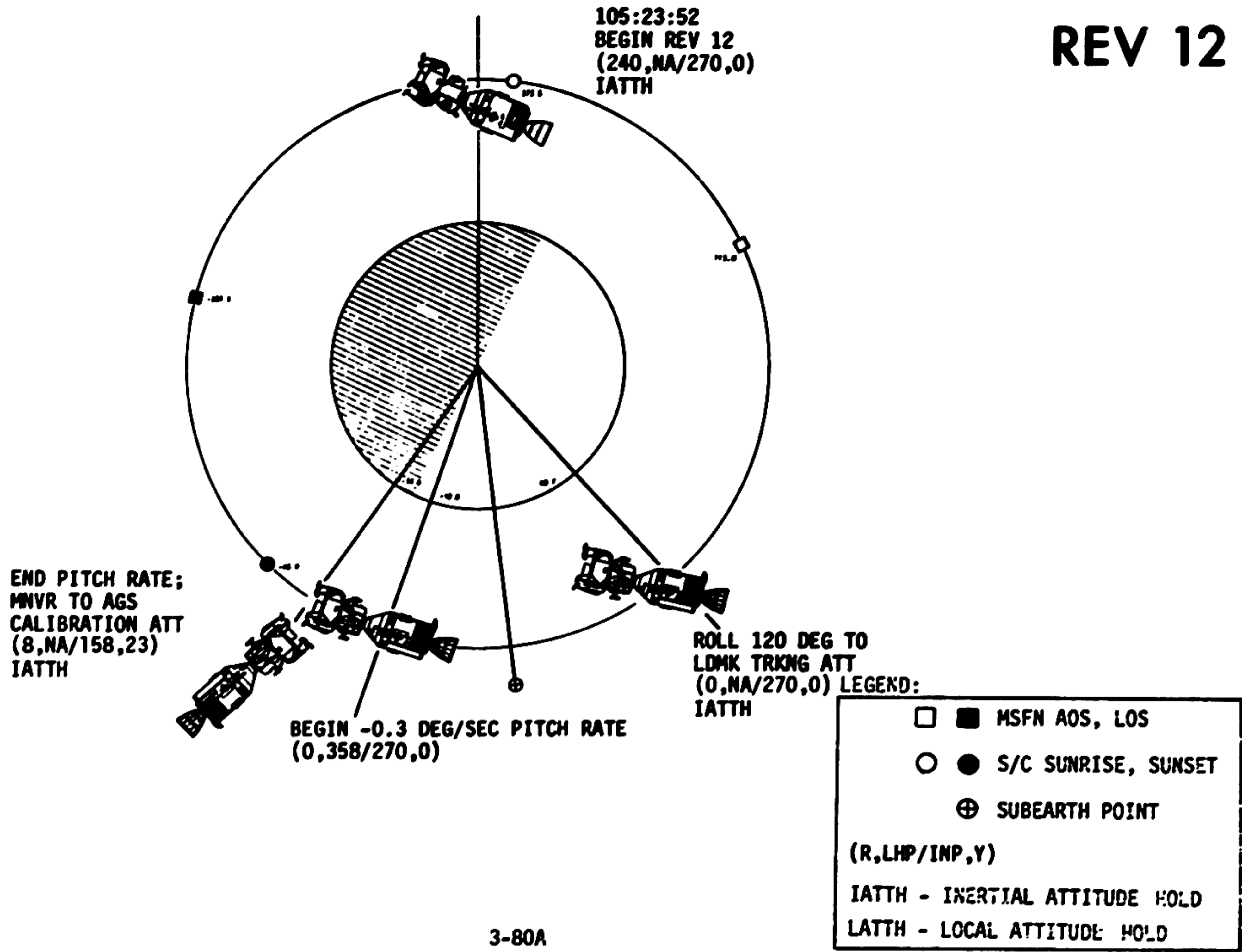
UPDATE TO LM  
STEERABLE ANT }'s  
BY 104:30  
(IF REQ'D)

UPDATE TO LM  
STEERABLE ANT }'s  
(105:49)  
(IF REQ'D)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	104:00 - 105:00	5/11	3-80

SC Form 8458 (Jan 69)

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3-80A

REVISION B

# FLIGHT PLAN

**CSM  
CMP**

1922 CST

**LM**

**MCC-H**

**CDR**

**LMP**

105:00

DON PGA  
IN CSM

DON HELMET & GLOVES  
PGA PRESSURE INTEGRITY  
CHECK

:15

IVT TO LM  
TRANSFER HELMET & GLOVES

CONNECT TO LM ECS  
& COMM

**REV 12**

INHIBIT ROLL COMMANDS  
UNTIL LM/CM  $\Delta P > 3.5$  PSID  
INSTALL DROGUE & PROBE  
PRELOAD PROBE  
COCK LATCHES (12)  
INSTALL HATCH  
VENT TUNNEL  
HATCH INTEGRITY  
CHECK  
CONFIGURE PANEL 10  
FOR CSM RELAY

:26

VERIFY DROGUE  
& PROBE  
INSTALLATION

ASCENT BATTERY  
ACTIVATION  
AND C/O

RECORD ED BAT  
VOLTS

AGS ACT & SELF TEST

105:30

:32

CLOSE AND SECURE  
HATCH

:45

REACQUIRE MSFN  
HGA: P-35, Y 117

DEPLOY LANDING GEAR

STEERABLE ANTENNA:  
P 68, Y 19

DUMP DSE

V06N20E  
DOFF HELMET & GLOVES

POD & DATA FOR UPLINK  
DOCKED IMU FINE ALIGN  
V06 N20E ON MARK

BIOMED SW - LEFT

UPLINK TO CSM  
CSM STATE VECTOR & V66  
UPDATE TO LM  
DAP DATA  
GYRO TORQUING  $\beta$ 's

106:00

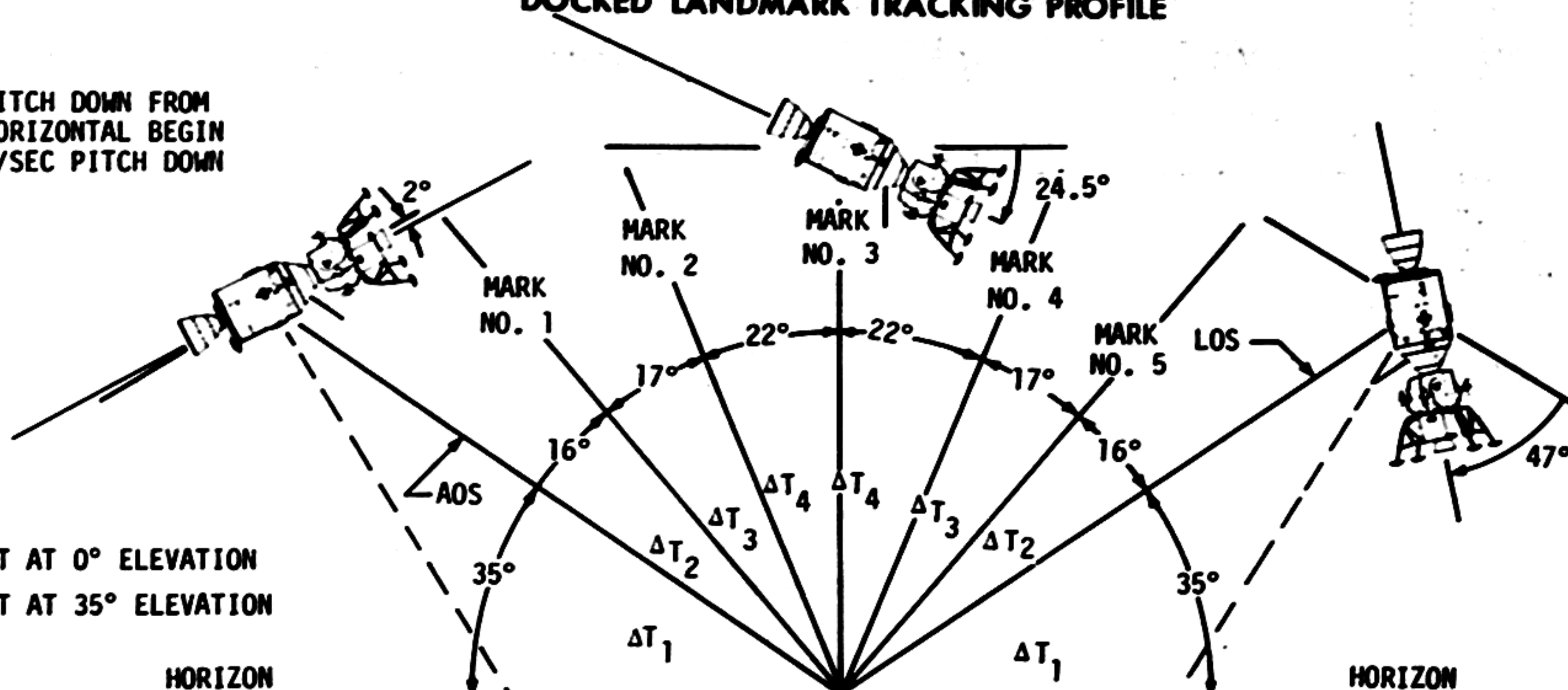
V47-AGS INITIALIZATION

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	105:00 - 106:00	5/11-12	3-81

# DOCKED LANDMARK TRACKING PROFILE

2 DEG PITCH DOWN FROM LOCAL HORIZONTAL BEGIN  
0.3 DEG/SEC PITCH DOWN AT AOS.

T1 GET AT 0° ELEVATION  
T2 GET AT 35° ELEVATION



P22	<del>MAN</del> AUTO	ACQ	P	dn	2°	RO°	YO°
T <sub>1</sub>	---	•	---	•	---		
T <sub>2</sub>	---	•	---	•	---		193
R	---	°P	---	°Y	---		
N or S	NM	---	SA	---	TA		
							N89
LAT	-3.437°						
LONG/2	-11.614°						
ALT	-1.37 NI						

ΔT<sub>1</sub> = 300 SEC  
ΔT<sub>2</sub> = 40 SEC  
ΔT<sub>3</sub> = 25 SEC  
ΔT<sub>4</sub> = 25 SEC

AOS to LOS = 3 MIN

CENTER OF MOON

FIGURE 3-1

# FLIGHT PLAN

CSM

2022 CST

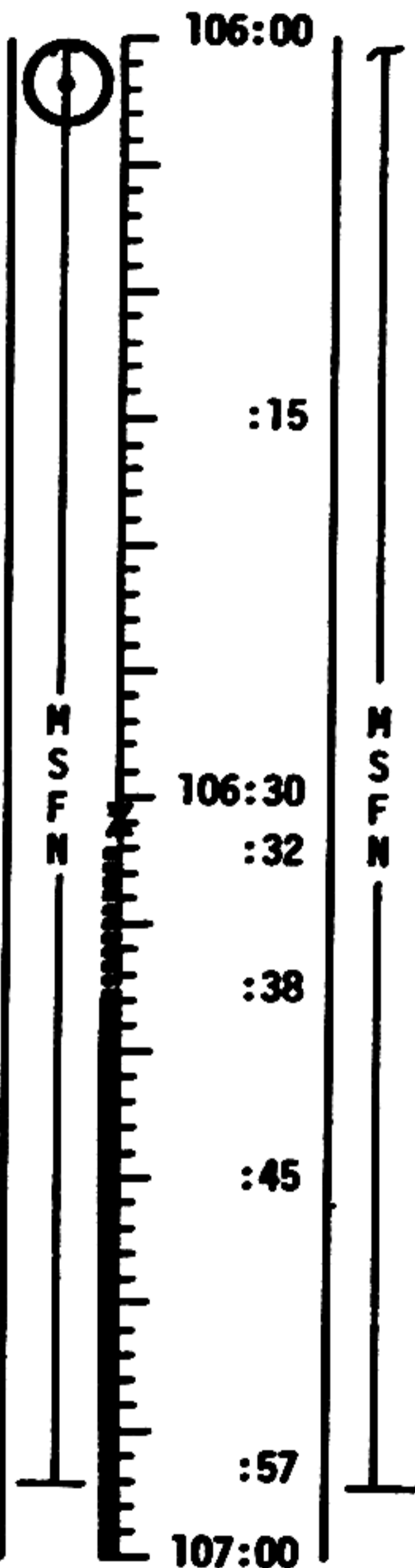
LM

MCC-H

CMP

CDR

LMP



DAP SET - GIMBAL & THROTTLE TEST LOAD DAP - 32022	LOAD AGS PAD
RATE GYRO TEST V06N20 ON MARK RCS PRESSURIZATION	SELECT OMNI-FWD SLEW STEERABLE ANT: P 104, Y 01 FOR AGS CAL PITCH ATT RCS PRESSURIZATION
V06 N20E ON MARK	
V06N20E ON MARK	
RCS CHECKOUT	RCS CHECKOUT
	FWD OMNI-LBR SLEW STEERABLE S-BD ANT: P 132, Y 24

UPLINK TO LM  
 LS REFSMAT  
 LM SV & V66  
 LGC/CMC CLOCK SYNC  
 PIPA BIAS  
 LGC ABORT CONSTANT  
 E-MEMORY UPDATE  
 (IF REQ'D)  
 UPDATE TO CSM  
 SEP TIME &  
 UNDOCK TIME  
 UPDATE TO LM  
 AGS K FACTOR  
 AGS ABORT  
 CONSTANTS  
 STEERABLE ANT }'s  
 (IF REQ'D)  
 UPDATE TO CSM  
 MAP UPDATE REV 13

MAP UPDATE REV 13		
LOS	:	---
180°	:	---
ADS	:	---

UPDATE TO LM  
 STEERABLE ANT }'s  
 (107:47)

SELECT OMNI D  
 ROLL 120° TO TRACKING  
 ATT AT 106:10  
 R 0, P270, Y 0

V06N20E  
 VERIFY DSE MOTION  
 P22-ORBITAL NAVIGATION  
 ESTABLISH 0.3°/SEC  
 PITCH RATE AT LDMK AOS

TRACK LDG SITE LDMK 193  
 DO NOT PROCEED ON N89  
 25 SEC BETWEEN MARKS,  
 5 MARKS

STOP AGS CAL PITCH P158  
 BY 106:35 HGA: P-47, Y168  
 V06 N20E  
 MNVR TO AGS CAL  
 ATT BY 106:45  
 R 8, P 158, Y 23  
 HGA: P-41, Y 139

V06N20E  
 SC CONTROL-SCS  
~~MIN/MAX DB, LOW/HIGH~~  
 RATE (AT CDR'S REQUEST)  
 CMC FREE FOR RCS  
 HOT FIRE  
 VERIFY DSE MOTION AT LOS  
 RECORD LM PCM DATA  
 INHIBIT THRUSTER B3  
 FOR LM RR SELF TEST

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	106:00 - 107:00	5/12	3-83

FLIGHT PLANNING BRANCH

REVISION A

CSM

2122 CST

LM

MCC-H

CMP

CDR

LMP

RATE <0.1°/SEC  
 DISABLE THRUSTERS FOR  
 32 SEC(AT LMP'S REQUEST)  
 ENABLE THRUSTERS &  
 MAINTAIN RATE <0.1°/SEC  
 FOR 6 MIN  
 RE-ENABLE B3  
 VERIFY TUNNEL VENT  
 VALVE - OFF

RR TRANSPONDER ACT  
 & SELF TEST

P30/P41 TO MANEUVER  
 TO UNDOCKING ATT  
 BY 107:40

R 180, P 285, Y 0  
 HGA: P -76, Y 218

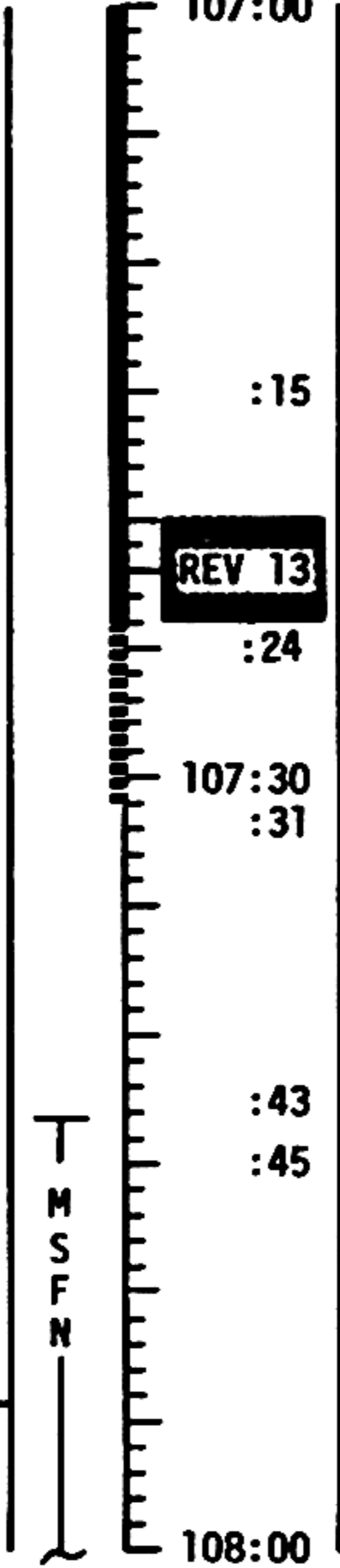
GDC ALIGN TO IMU  
 START CAMERAS

TV(GDS) 107:50 - 108:30  
 GO/NO-GO

LOAD DAP-CSM ONLY  
 R1=11102, R2=11111  
 S/C CONTROL - SCS

SOFT UNDOCK

S/C CONTROL - CMC  
 STATION KEEP @ 40'  
 RE-ENABLE B3&G4 JETS



RR ACT & SELF TEST	AGS ACCELEROMETER & GYRO CALIBRATION
DON HELMET & GLOVES	DON HELMET & GLOVES
ARS/PGA PRESSURE INTEGRITY CHECK	
CABIN REGULATOR CHECK	CABIN REGULATOR CHECK
DPS PRESS & C/O	V47-AGS UPDATE & ALIGN
GO/NO-GO PREPARE FOR UNDOCKING P47-THRUST MONITOR	STEERABLE ANT: P 132, Y 24 REACQUIRE MSFN PCM-HI PREPARE FOR UNDOCKING
YAW LEFT 60° PITCH UP 90° R 180, P 195, Y 0	STEERABLE ANT: P 71, Y -52

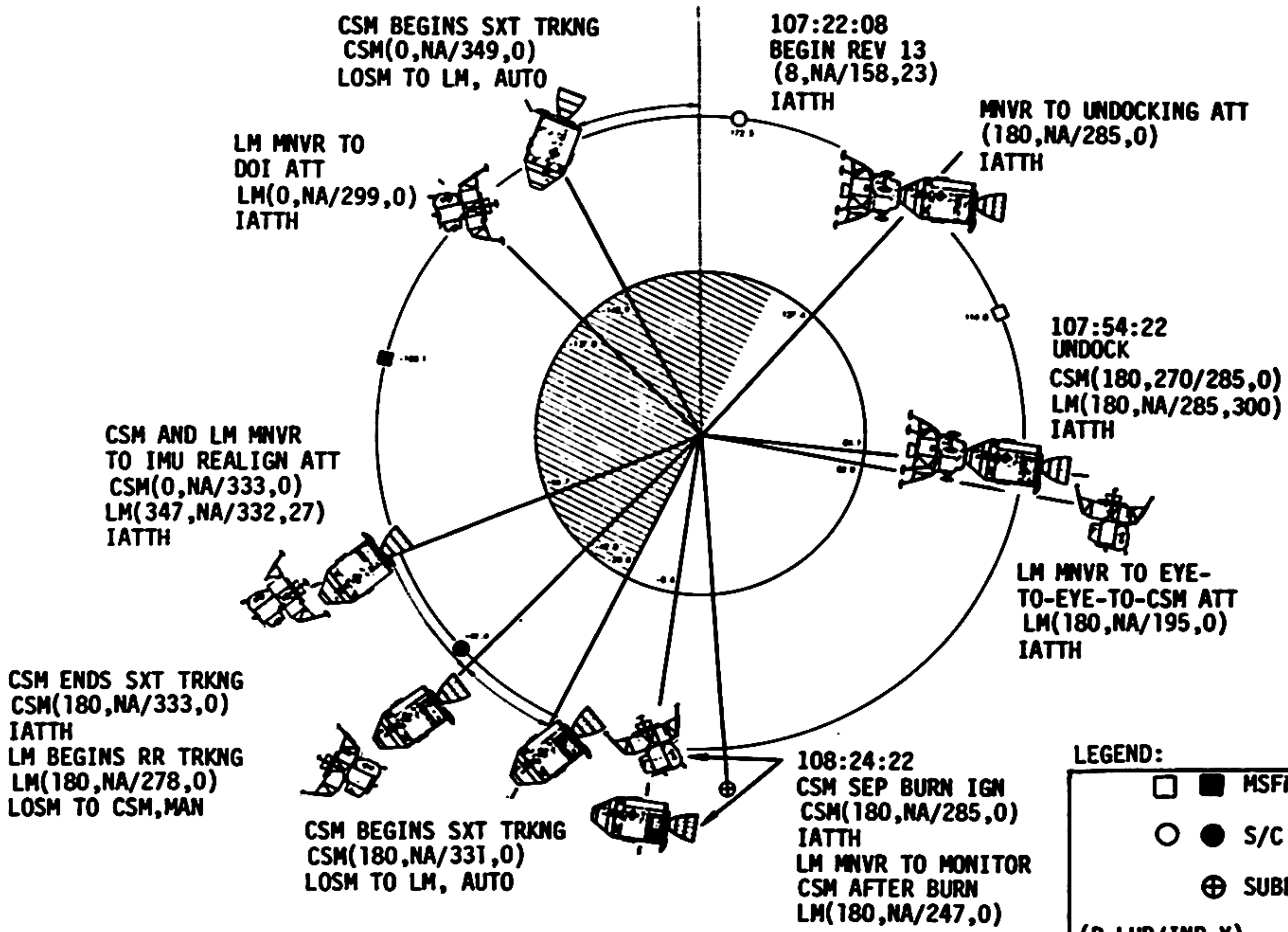
DUMP DSE  
 GO/NO-GO FOR  
 UNDOCKING

SOFT UNDOCK 107:54:22

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	107:00 - 108:00	5/12-13	3-84

FLIGHT PLANNING BRANCH

REVISION A



**LEGEND:**

□	■	MSFN AOS, LOS
○	●	S/C SUNRISE, SUNSET
⊕		SUBEARTH POINT

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD



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SOURCE MOSEL  
DATE OCT. 23, 1969

CMP S/OLO BOOK

Flight pages not in line

undock  
07:54:00

CSM SEP PAD

33	00	00	000	0	42	
81	+	0002.5	+	0000.0	+	0000.0
22	XXX	182	XXX	288	XXX	003

DOI PAD

33					
84					

NO PDI ONE + 12 PAD

33					
84					

"CSM RESCUE" PAD

PDI TIGN	00		000		0	.
TPI (PDI < 10) 37	00		000		0	.
TPI (PDI > 10) 37	00		000		0	.
(T2)	00		000		0	.
TPI (T2) 37	00		000		0	.
(T3)	00		000		0	.

"CSM RESCUE UPDATE" PAD

TPI (PDI < 14.5) 37	00		000		0	.
(T2)	00		000		0	.
TPI (T2) 37	00		000		0	.

RESCUE TWO PAD

37				00000.		
48						
33	00		000		0	.
81						
22	XXX		XXX		XXX	
37	X					
11	00		000		0	.
37	00		000		0	.
N						

CSI ONE

11				000		0	.
81							.
N							

P22 PAD

T1								(HOR)
T2								(LMK)
89								
	LAT		LONG/2				ALT	

NOMINAL LM IGNITION TIMES

CSI 11	00		000		0	.
PC 33	00		000		0	.
TPI 37	00		000		0	.

CSI TWO

11	00		000		0	.
81						.
N						

CSI THREE

11	00		000		0	.
81						.
N						

CSI FOUR

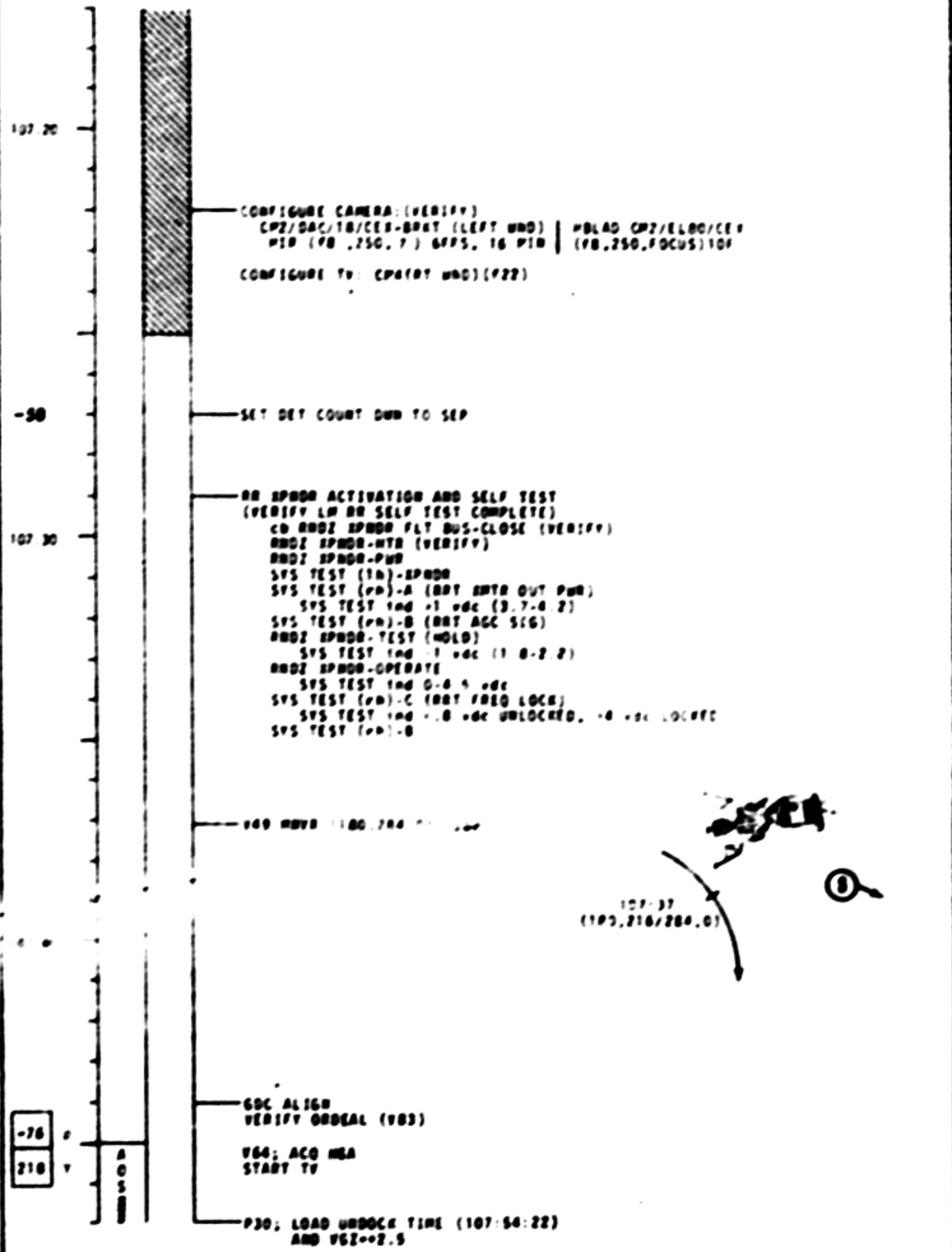
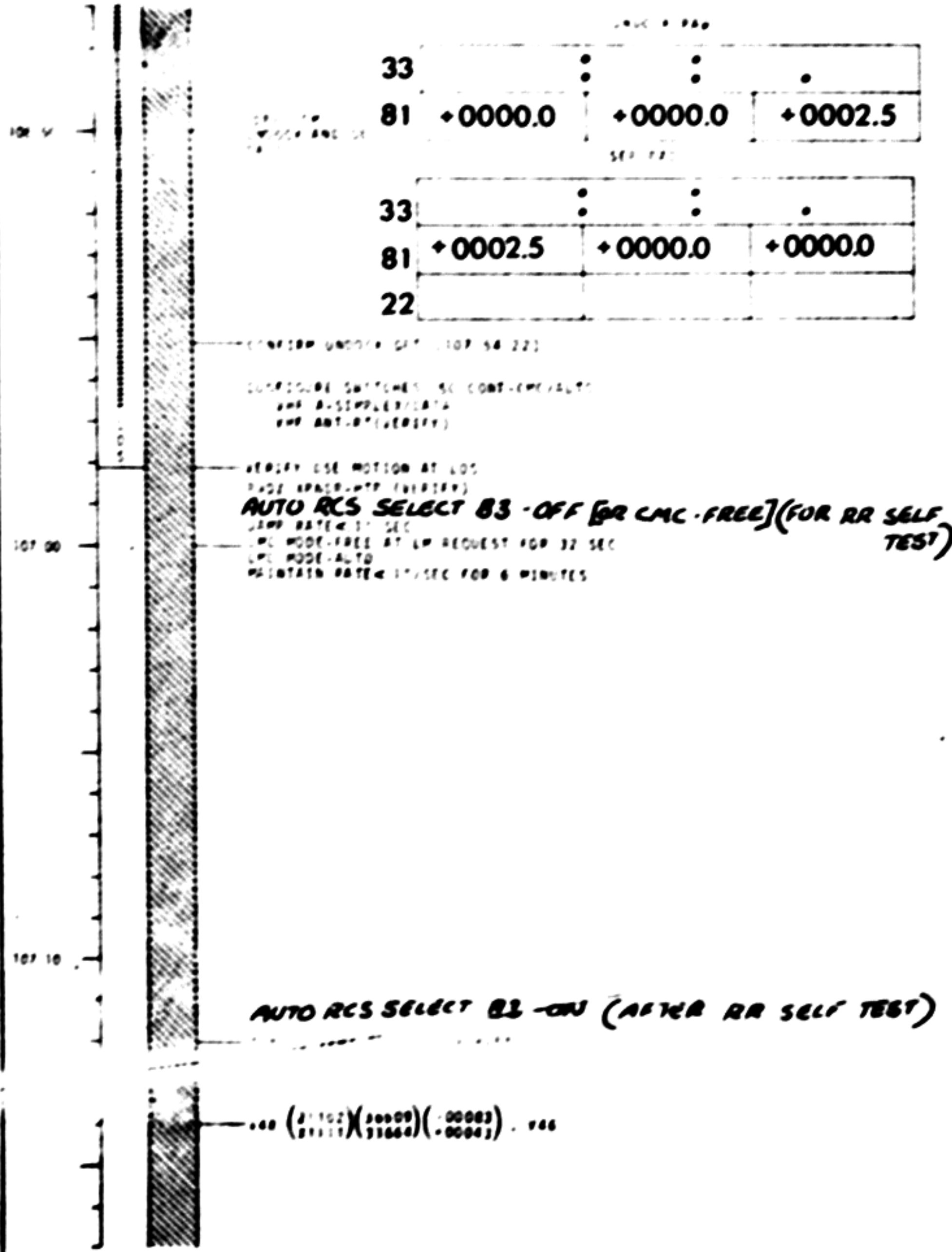
11	00		000		0	.
81						.
N						

COM

13	00		000		0	.
81						.

TPI

37	00		000		0	.
81						.
59						.
LOS BT	XX		XX		XX	.



11/8/69  
OCT. 23, 1969

**107:54**

P30, LOAD UNDOCK TIME (107:54:22)  
AND VGR+2.5

P41 (TRIM) (180,270/284,0)

START TARM CAMERA

P00, MAG-ATT, RATE 2  
SC CONT-SEC, VAR (11111) - VAR

**UNDOCKING (107:54:22)(180,270/284,0)**

CONFIGURE SWITCHES:  
DV CG-CSP  
RR SPNR-PWR (VERIFY)  
SC CONT-CMC

**UNDOCK**  
107:54:22  
(180,270/284,0)

COPY DOI P76  
NO PDI, +12 P76, CSI AND TPI

PDI TIGN  
PDI ABORT TPI TIGN  
T2 AND T3 TIGN

**MAP UPDATE REV 13**

LOS : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
180° : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
AOS : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

DAC-OFF

P30, LOAD SEP  
TIGN(108:24:22)  
AND VGR+2.5

LM DOI P76 (+20)

33	:	:	:
84	.	.	.
	(-71.3)	(0.0)	(+18.6)

LM NO PDI ONE +12 P76 (+34)

33	:	:	:
84	.	.	.
	(+118.3)	(0.0)	(+128.2)

**108:20**

P41 (TRIM)  
(180,336/284,0)

LM NO PDI ONE +12 CSI AND TPI

11	:	:	:
37	:	:	:
N	+00001		

PDI CHECKLIST

**(108:24:22)**

**CSM SEP (+0.0,+0.0,+2.5)**

(THRUST UP)  
(BURN VGR TO +2.5, TRIM VGR ONLY)

**(180,0/284,0)**

COLOR TV-OFF

P20 (63°) (180,67/331,0)  
VHF 8-DUPLEX/RANGING  
COMPARE EPS VHF AND V83 RANGE  
MONITOR LP RR CHECKS FROM 108:37 TO 108:45

**PDI TIGN**

	:	:	:
--	---	---	---

P00, PCC-H UPLINK CSM AND  
LM VECTORS

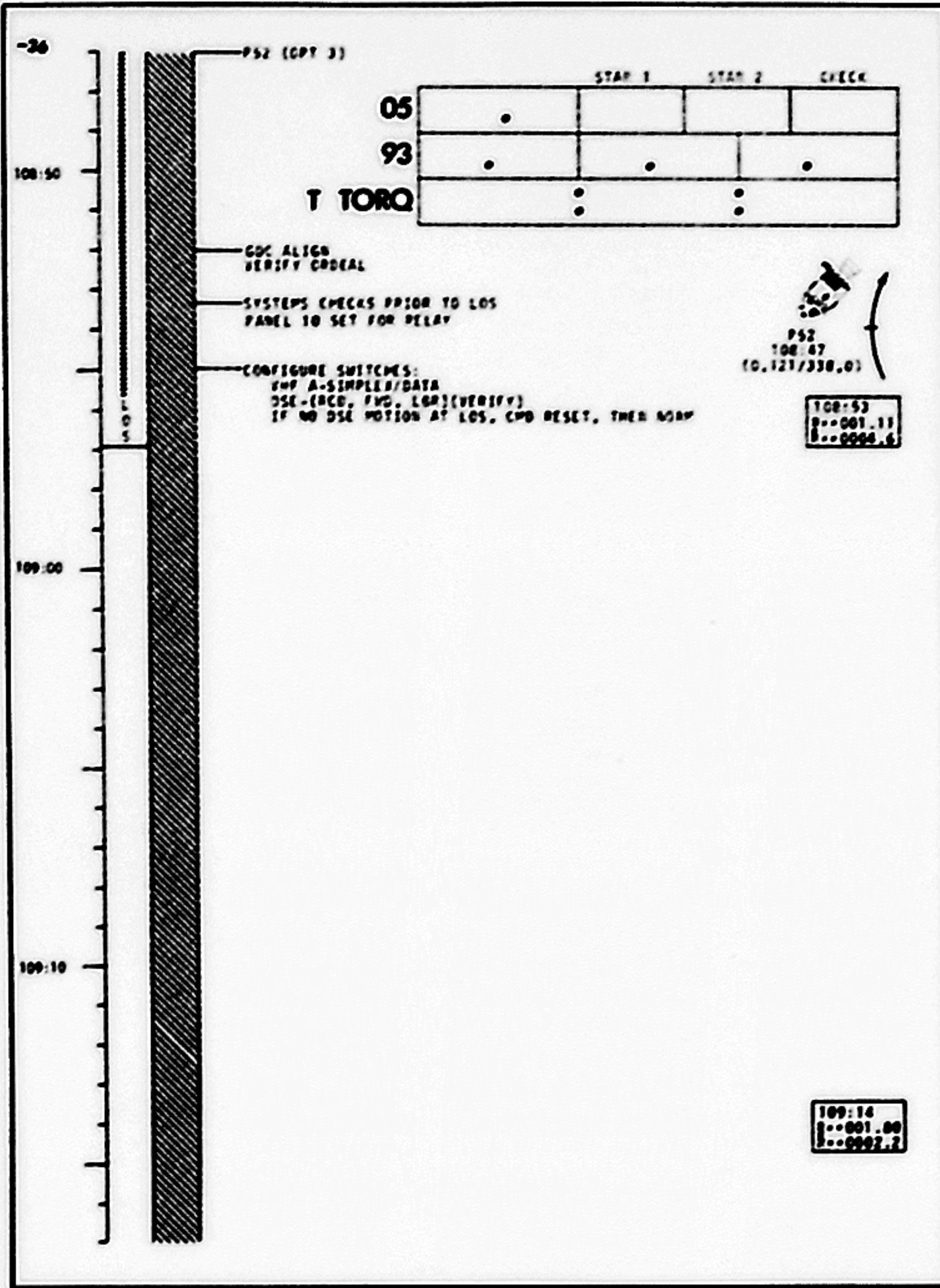
37	:	:	:
(CSM TPI TIGN - PDI ONE +10)			

37	:	:	:
(CSM TPI TIGN - PDI ONE +10)			

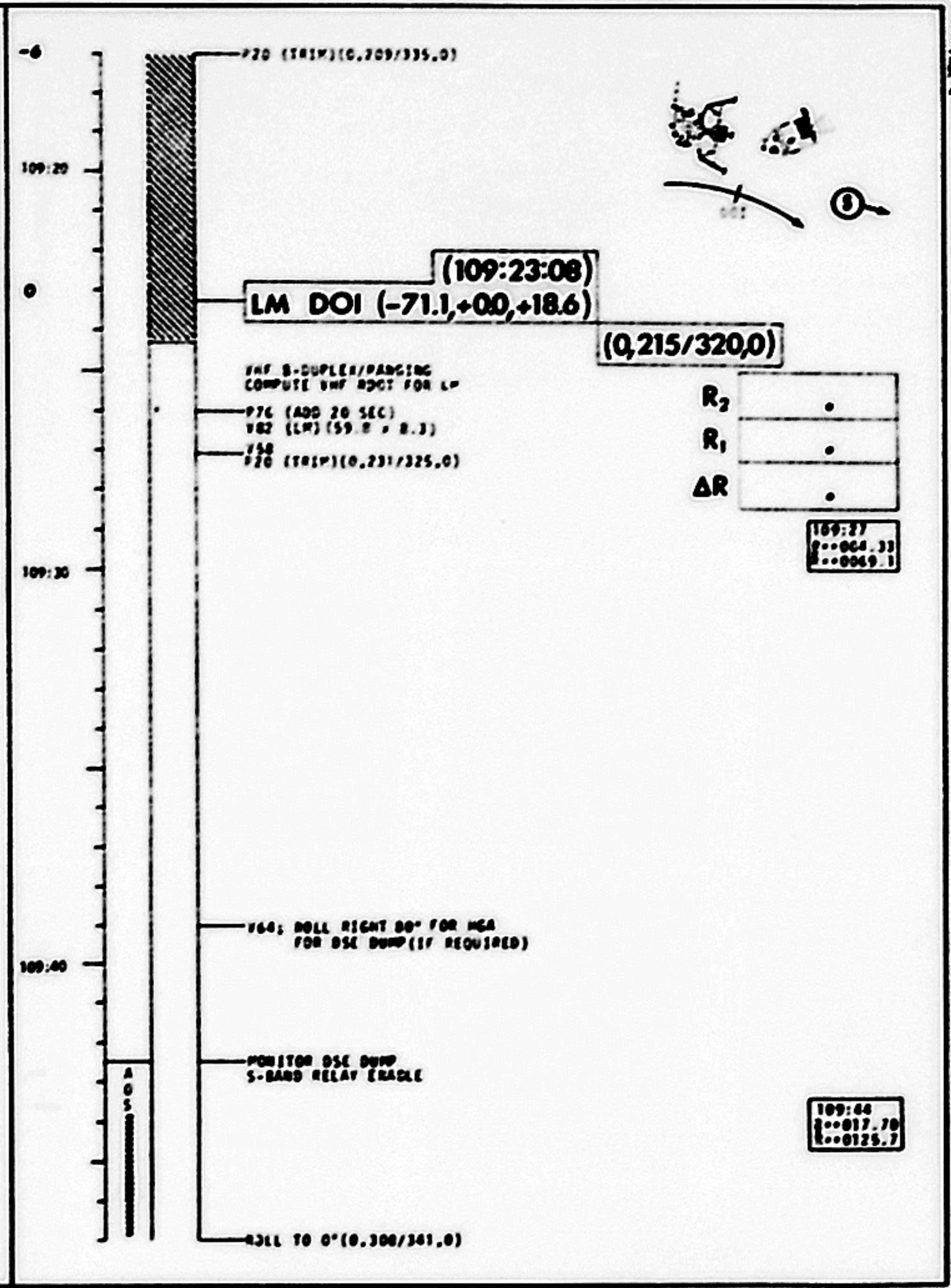
(AFTER LM  
RR CHECKS)  
POLL TO 0°  
(0,115/338,0)

T2	:	:	:
37	:	:	:
(CSM TPI TIGN FOR T2)			
T3	:	:	:

**108:37**  
+0000.37  
+0000.5



SOURCE NO. 11

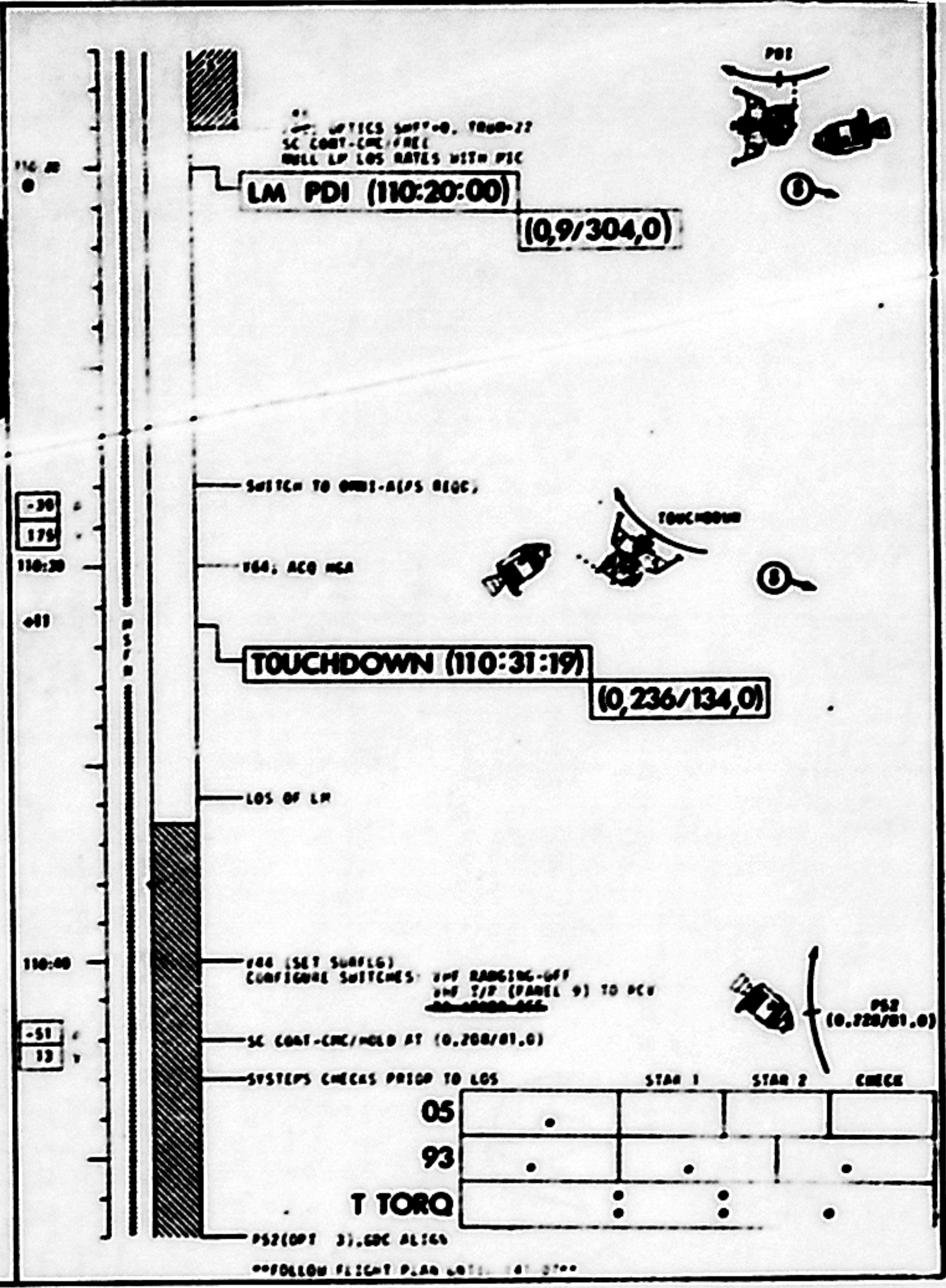
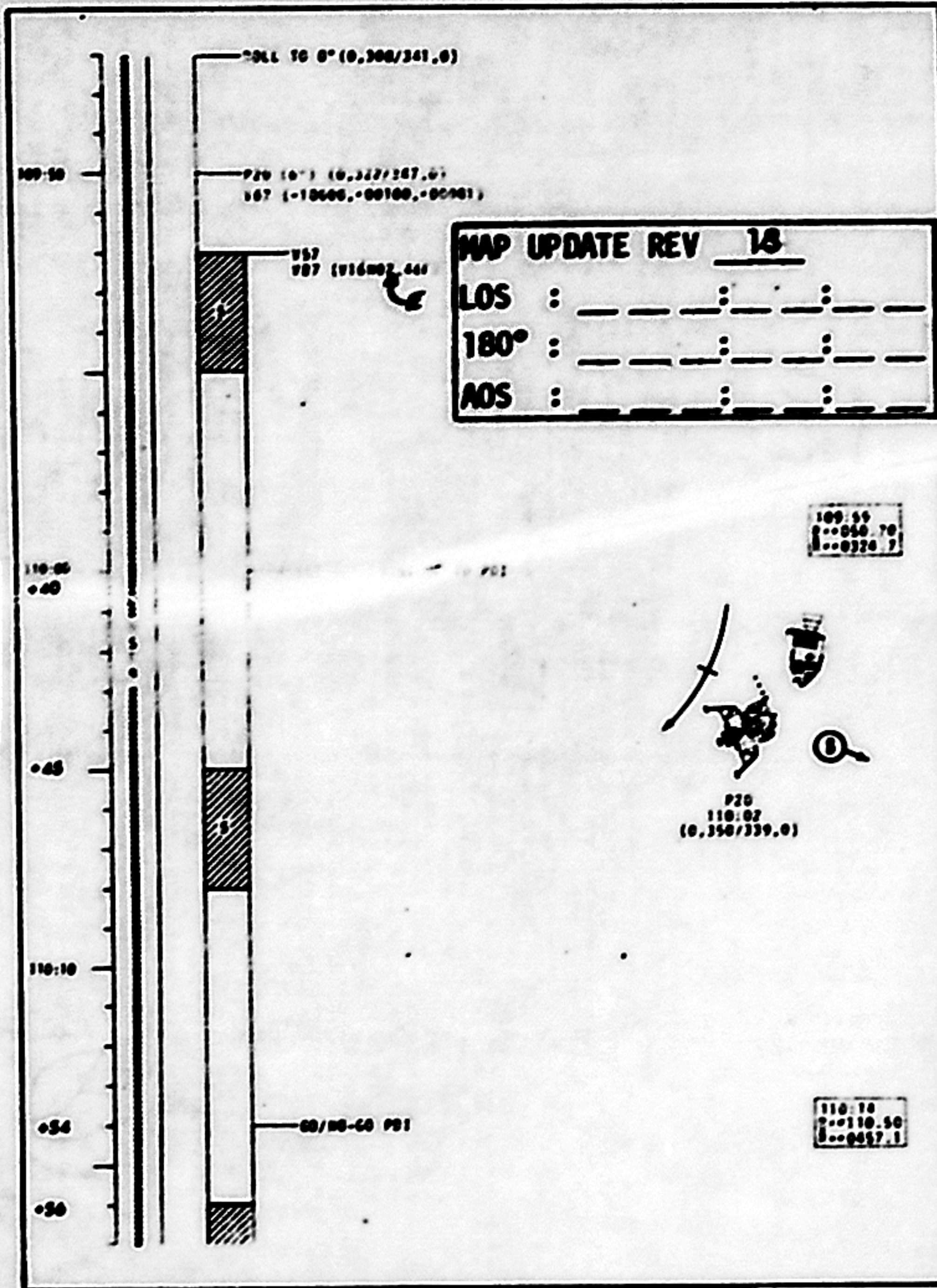


OCT. 23, 1969

Flight pages not like this

SOURCE MODEL

11/16/69  
OCT. 23, 1969



141:10

CONFIGURE DOCKING CAMERAS  
CM2/CAC/DOCKED-ORNT,PIB  
(70.750,7) @ 195. 10 MIN  
CM2/EL/DO/CEB  
(70.750,FOCUS)104  
TV-CM(OT MDP)(427)

144: AC3 MGA

CCOV PADS

L/O	:	:	:
11	:	:	:
55	+00001	+208.30	+130.00
37	:	:	:
T <sub>1</sub>	:	:	:
T <sub>2</sub>	:	:	:
NM(N OR S)	.		
89	.	.	.
	LAT	LONG/2	ALT

149 MVR  
(0.103,0)

CDC ALIGN

VERIFY ORDEAL (V03)

SET DET COUNTDOWN TO L/O

CONFIGURE SWITCHES  
VHF B-DUPLEX/PAGING  
VHF AM-T/R  
MODE 1P404-PUB(VERIFY)

141:20

141:30  
-31

141.00  
-21

141:50

142:00

-00  
172

922  
SC CONT-CPC/AUTO(VERIFY)  
VERIFY LOCAL HORIZONTAL(0.330/303.0)  
V79 (-0.0507  
+000.50  
+11111)

T1 (HORIZON)

L.O. 6 MIN - MSFN RELAY DISABLED

LIFTOFF

T2 (SIGHT LP, SHFT=0°, TRIM=40°)

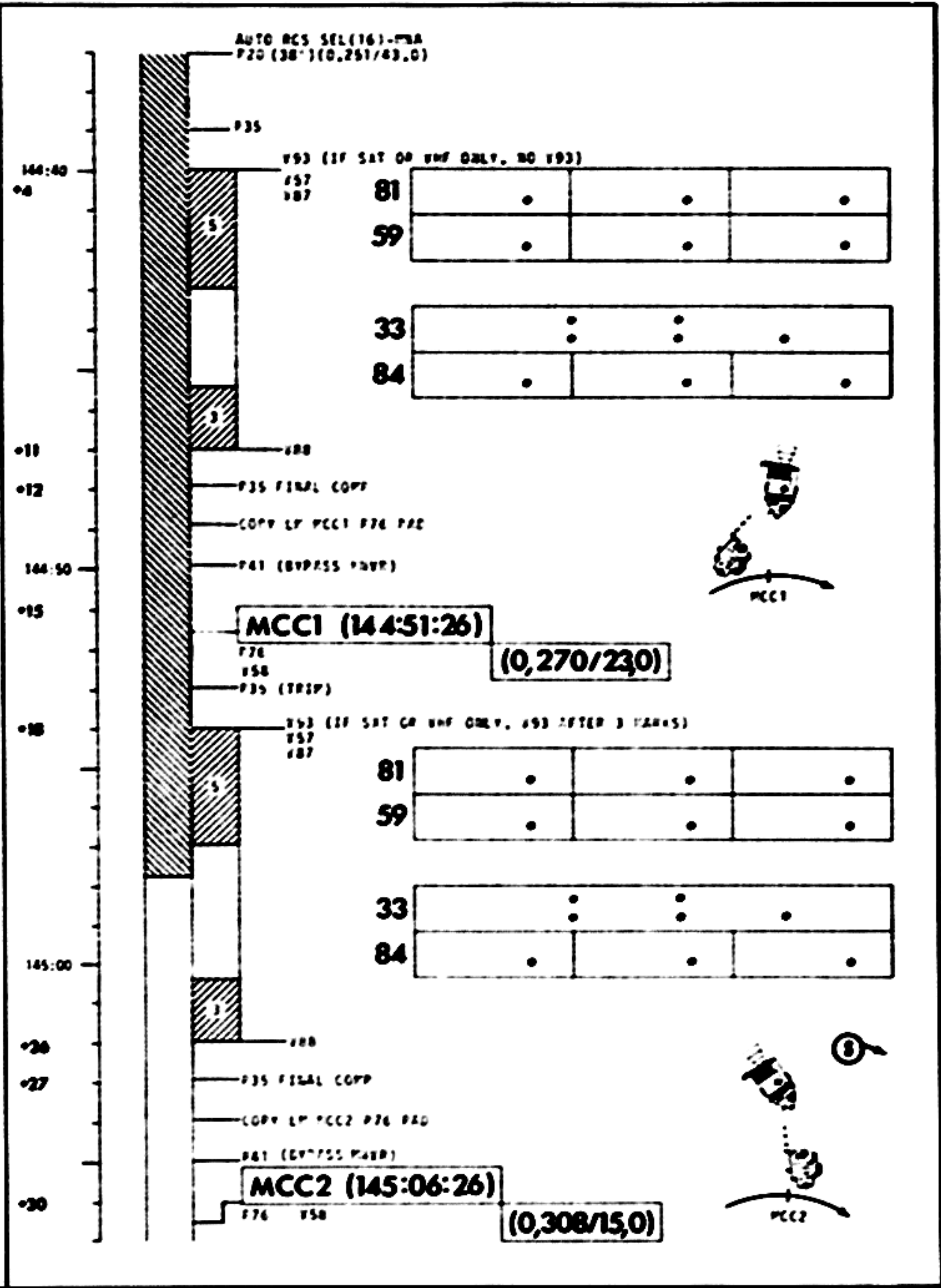
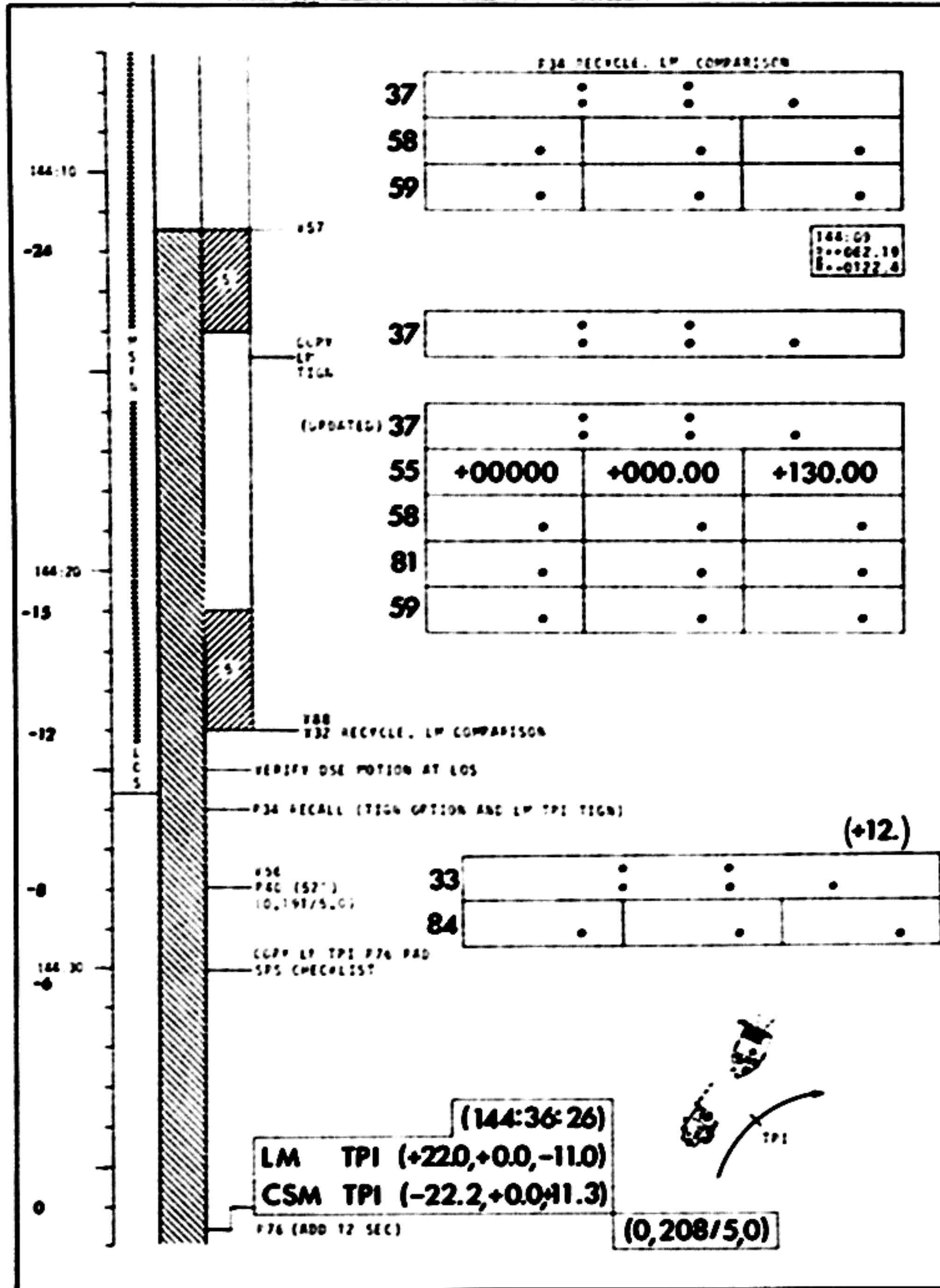
WHEN TRIM=22°, POO  
SC CONT-CPC  
SC CONT-RATES WITH HSC

LIFTOFF (142:01:18)

(0,259/165,0)

INSERTION

TPI COMPARISON LIMIT +2.0, +5.0, +10.0  
 EOPN LCC IF LCC-CMC  
 LCC IF LCC-AGS AND RR-107  
 24 AGS IF AGS-CMC





145:10

V77: P20 (35)(10.281/340.0)  
V23/24R/LT OR COMPARISONS  
AUTO RCS SEL (16)-TLA

VERIFY CAMERA SETTINGS

ROLL 60° RIGHT

SPARKING GATES				
R(RPS)	R(FT)	R(W)	RETICLE ANGLE (DEG)	
30	6000	1.0	.13	
20	3000	.5	.26	
10	1500	.25	.54	
5	500	.08	1.6	
	300	.05	2.7	
	200	.03	4.0	
	100	.02	8.5	

V64: ACC MGR  
TV-05

V47  
AT R=1.25 D.T.

V83  
V83  
KEY DEL

LT PHOTOS

145:18:17 TPF

FLY FORMATION  
LT PHOTOS  
EXT RNDZ LT-OFF

WUP TO (160.336.0)

PRE-DOCK CHECKLIST

MAB ATT(3)-RATE CMC	AUTO RCS SELECT(16)-MBA OR MBB
LIP CYCLE-OFF	CB DOCK PROBE(2)-CLOSE
ATT DB-PIN	PROBE RETR(2)-OFF(VERIFY)
RATE-LO	PROBE EXT/REL-RETR
TRANS CONTR PWR-ON(UP)	PROBE EXT/REL TB(2)-GRAY(VERIFY)
ROT CONTR PWR DIR(BOTH)-MBA/MBB	CB SECS ARP(2)-CLOSE
SC CONT-CMC	SECS LOGIC(BOTH)-CM(UP)
CYC TCDE-AUT3	EXT RUN/EVA LT-ON(UP)VERIFY
BPAG MODE(3)-ATT 1/RATE 2	COAS PWR-ON(UP)

WSPN CONFIRM GO FOR PYRO ARM  
SECS PYRO ARM (2)-ARM

START 16 HR CAMERA

145:30

TRANSLATE TO CAPTURE LATCH

145:20

145:10

145:10  
R--003.05  
S--0039.5

145:00

**CSM ACTIVE DOCKING (145:37:00)**

AT CAPTURE

PROBE EXT/REL TB(2)-BP  
CONFIRM CAPTURE LATCH TO LP  
SC CONT-CMC/FREE  
ALLOW PROBE TO DAMP SC MOTION (10 SEC)  
WHEN WITHIN 2" OF DOCKING ATTITUDE  
PROBE RETRACT PRIM-2 (SEC-1 IF REQD)

AT DOCK LATCH

PROBE EXT/REL TB-GRAY(5 SEC)

AFTER HARD DOCK

SECS PYRO ARM(2)-SAFE  
SECS LOGIC (2) - OFF  
CB SECS ARM (2) - OPEN  
CB DOCK PROBE (2) - OPEN  
BPAG MODE (3) - RATE 2  
EXT/REL-OFF  
PROBE RETRACT (2) - OFF  
EXT RUN/EVA LT - OFF  
EXT RNDZ LIGHT - OFF  
COAS PWR - OFF  
RADZ APRSR - OFF  
LIMIT CYCLE - ON  
ATT DB - MAX  
BPAG MODE (3) - ATT 1/RATE 2  
SC CONT - SC5  
V48 (11102) : V46  
(11111)

CPC MODE - HOLD  
SC CONT - CPC

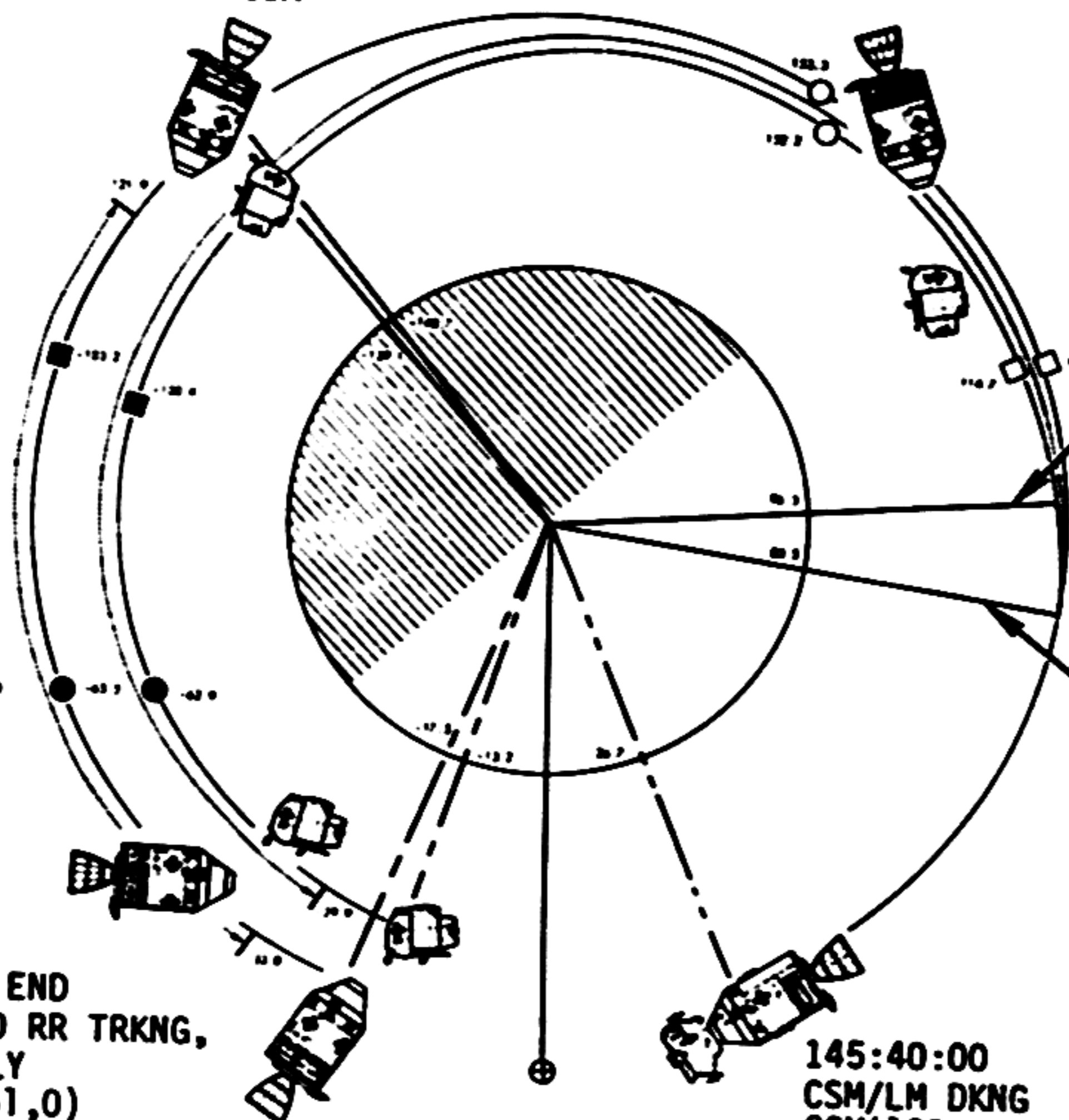
FOLLOW FLIGHT PLAN FOR  
POST-DOCKING CHECKLIST

145:50

146:00

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144:36:50  
 TPI BURN IGN  
 CSM(0,NA/4,0)  
 IATTH  
 LM(0,NA/273,0)  
 LOSM TO CSM



CSM AND LM BEGIN  
 VHF RNG AND RR TRKNG,  
 RESPECTIVELY  
 CSM(0,NA/129,0)  
 LOSM TO LM  
 LM(0,NA/4,0)  
 LOSM TO CSM

145:17:39  
 FIRST LM BRAKING  
 BURN  
 CSM(60,NA/9,0)  
 LOSM TO LM  
 LM(0,NA/238,0)  
 LOSM TO CSM

145:21:51  
 FINAL LM BRAKING  
 BURN  
 CSM(0,NA/334,0)  
 LOSM TO LM ALONG  
 X-AXIS  
 LM(0,NA/244,0)  
 LOSM TO CSM

CSM AND LM END  
 VHF RNG AND RR TRKNG,  
 RESPECTIVELY  
 CSM(0,NA/161,0)  
 IATTH  
 LM(0,NA/36,0)  
 IATTH

145:40:00  
 CSM/LM DKNQ  
 CSM(180,NA/336,0)  
 IATTH  
 LM(180,NA/336,300)  
 IATTH

LEGEND:

□	■	MSFN ACS, LOS
○	●	S/C SUNRISE, SUNSET
⊙		SUBEARTH POINT
(R,LHP/INP,Y)		
IATTH - INERTIAL ATTITUDE HOLD		
LATTH - LOCAL ATTITUDE HOLD		

3-124A

REVISION B

# FLIGHT PLAN

**CSM**

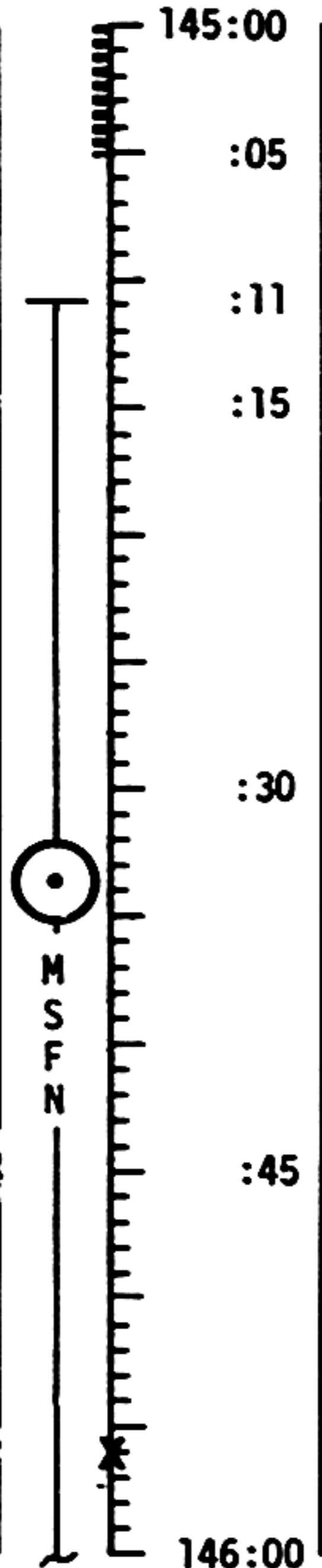
**LM**

**MCC-H**

**CMP**

1122 CST

FINAL MCC-1 COMP  
 P41 - RCS THRUSTING  
 CONFIRM LM MCC-2  
 P00 (TERMINATE P20)  
 V64 - ACQUIRE MSFN  
 TV (MAD) 145:15 TO 145:45  
 CONFIGURE FOR DOCKING  
 GO/NO-GO FOR PYRO ARM  
 (CUE MSFN)  
 LOGIC-ON  
 START 16MM CAMERA  
 (16 MINUTES)  
 DOCKING ATTITUDE  
 R 180 P 336 Y 0  
 HGA P -51 Y 350  
 PYRO ARM  
**CSM ACTIVE DOCKING**  
 POST DOCKING CHECKLIST  
 V48-LOAD DAP, R1(61102)  
 R2(11111)  
 PRESSURIZE CM TO 5.5PSIA  
 ADJUST O<sub>2</sub> FLOW TO 0.6#/HR  
 PRESS TUNNEL TO 3 PSID  
 FOR LEAK CHECK, THEN  
 EQUALIZE CM/LM ΔP  
 REMOVE AND STOW HATCH  
 VERIFY LATCHES  
 COLLAPSE PROBE AND  
 PASS TO CDR



**CDR**

**LMP**

P41 - RCS THRUSTING  
 NULL RESIDUALS  
 P00 (TERMINATE P20)  
 V48 - LOAD DAP, N46-11002  
 V63 - RR SELF TEST  
 RR-OFF  
 MSFN  
 DOCKING  
 CONFIGURE PGNCs & AGS  
 V48 LOAD DAP, N46-12021  
 PREP FOR TRANSFER  
 DOFF HELMET & GLOVES  
 OPEN HATCH  
 REMOVE & STOW DROGUE  
 RECEIVE & STOW PROBE

LOAD AGS MCC-2 EXT ΔV

**RCS MCC-2**

OMNI-AFT, BIOMED-~~LEFT~~<sup>RIGHT</sup>  
 PCM-HI  
 V64-ACQUIRE MSFN  
 SET UP CAMERA FOR DOCKING  
 LM/DC/60/HCEX  
 (f11,250, FOCUS) 5

DOCKING ATTITUDE  
 R 180 P 336 Y 300

STEERABLE ANGLES  
 P 181  
 Y 61

**DOCKING**

DOFF HELMET & GLOVES  
 ASSIST CDR

**TIG: 145:06:25.7**

GO/NO GO FOR PYRO ARM

**GET: 145:40**

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	145:00 - 146:00	6/32	3-125

**CSM**

**CMP**

TRANSFER BAGS, VACUUM BRUSH, AND HOSE TO LM

L10H CANNISTER CHANGE NO 11 - 13 INTO A, STOW 11 IN A3

STOW LM EQUIPMENT

VERIFY DSE MOTION @ LOS

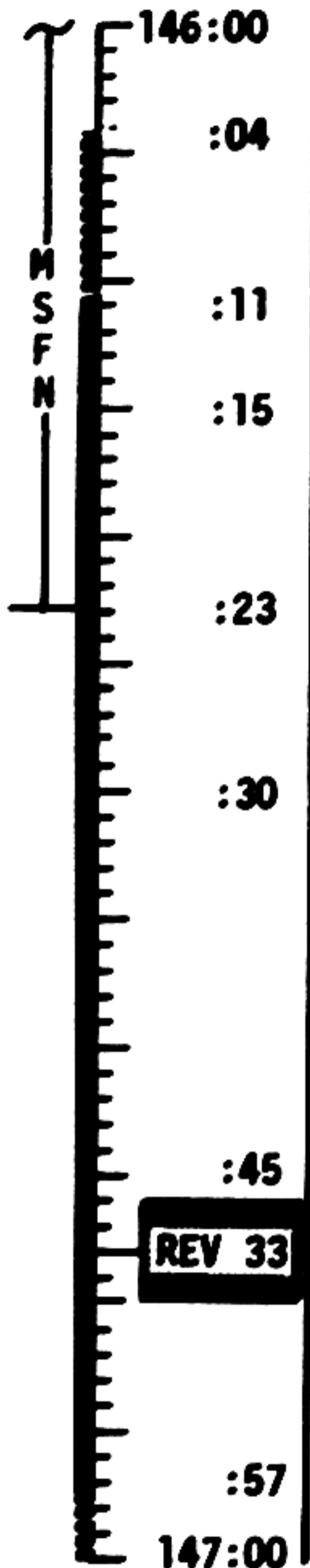
TRANSFER B5 AND B6 CONTAINERS TO LM

MANEUVER TO LM JETTISON ATTITUDE BY 146:51

R 219 P 358 Y 342

HGA P -41 Y +5

1222 CST



**CDR**

CONFIGURE SUIT LOOP FOR VACUUMING

UNSTOW SRC'S, VACUUM & BAG, AND PASS TO CSM

VACUUM, BAG, & TRANSFER TO THE CSM:  
 CSRC  
 CSC CASSETTE  
 70MM MAGS(2)  
 GLOVES (4)  
 HELMETS(2)  
 LUNAR BOOTS  
 SURVEYOR TOOLS AND HARDWARE

VACUUM PGA'S

STOW VACUUM BRUSH AND HOSE

RECEIVE B5 & B6 FROM CMP AND STOW LM JETTISON ATTITUDE  
 R 63 P 240 Y 290  
 STEERABLE ANGLES  
 P 201 Y 73

**LM**

**LMP**

ASSIST CDR (DECONTAMINATION)

**MCC-H**

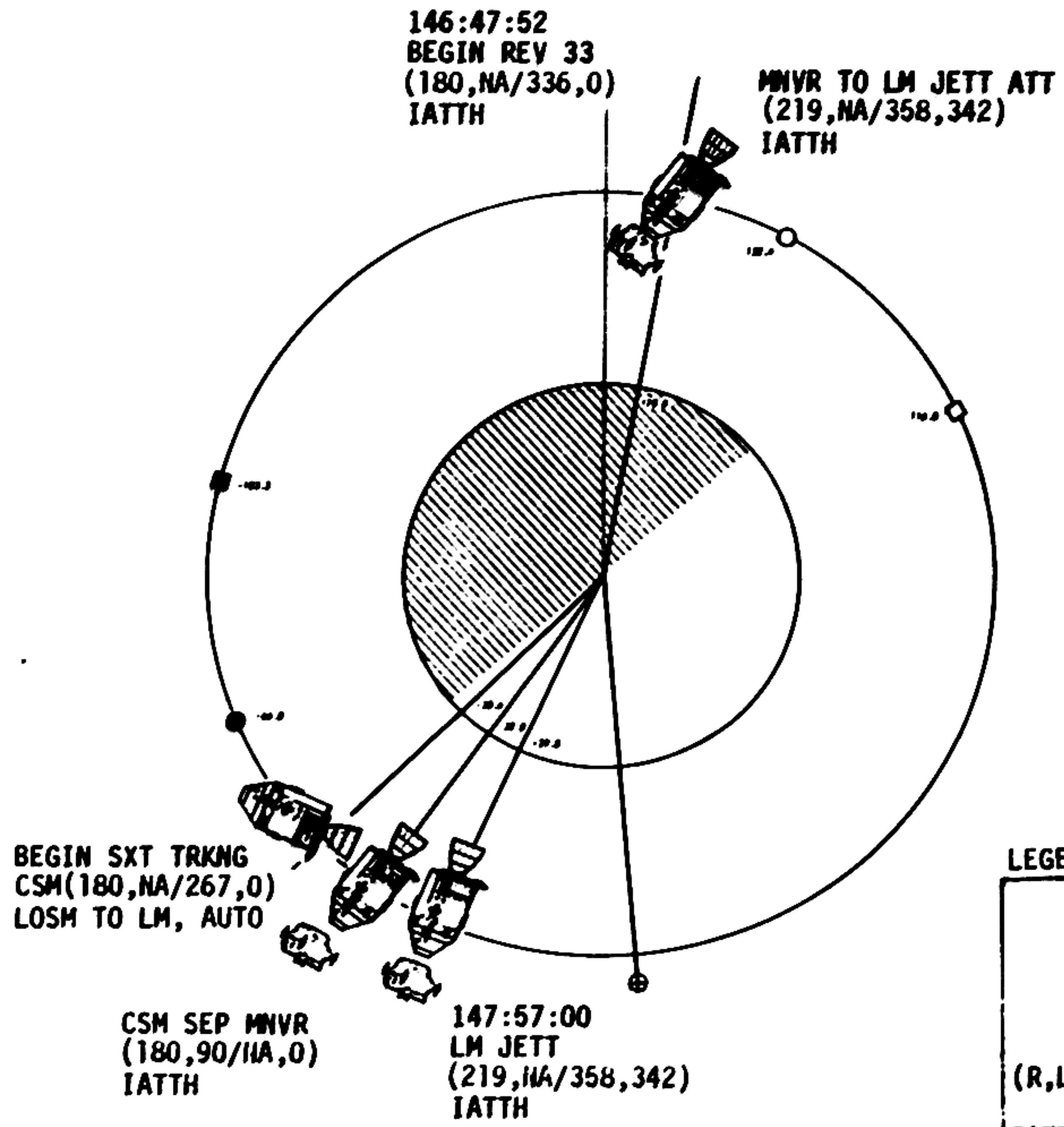
UPDATE TO CSM  
 MAP UPDATE REV33  
 SEP BURN PAD  
 LM JETT ATT  
 LM JETT TIME  
 UPLINK TO CSM  
 CSM S.V. (TIG-10)\*  
 LM S.V. (TIG-10)\*  
 UPLINK TO LM  
 LM S.V. (TIG-10)\*  
 P30 TARGET LOAD  
 UPDATE TO LM  
 DEORBIT BURN PAD

\*TIG OF LM DEORBIT BURN

MAP UPDATE REV <u>33</u>		
LOS	:	---:---:---
180°W:	:	---:---:---
AOS	:	---:---:---

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	146:00 - 147:00	6/32-33	3-126

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**LEGEND:**

□	■	MSFN AOS, LOS
○	●	S/C SUNRISE, SUNSET
⊕		SUBEARTH POINT
(R,LHP/IHP,Y)		
IATTH - INERTIAL ATTITUDE HOLD		
LATTH - LOCAL ATTITUDE HOLD		

3-126A

REVISION B

# FLIGHT PLAN

**CSM  
CMP**

1322 CST

**LM**

**MCC-H**

**CDR**

**LMP**

REACQUIRE MSFN  
NGA P-41 Y 5

UNSTOW & INSTALL HATCH  
HATCH INTEGRITY CHECK  
GO/NO-GO FOR PYRO ARM  
(CUE MSFN)  
LOGIC-ON  
DEPRESS TUNNEL

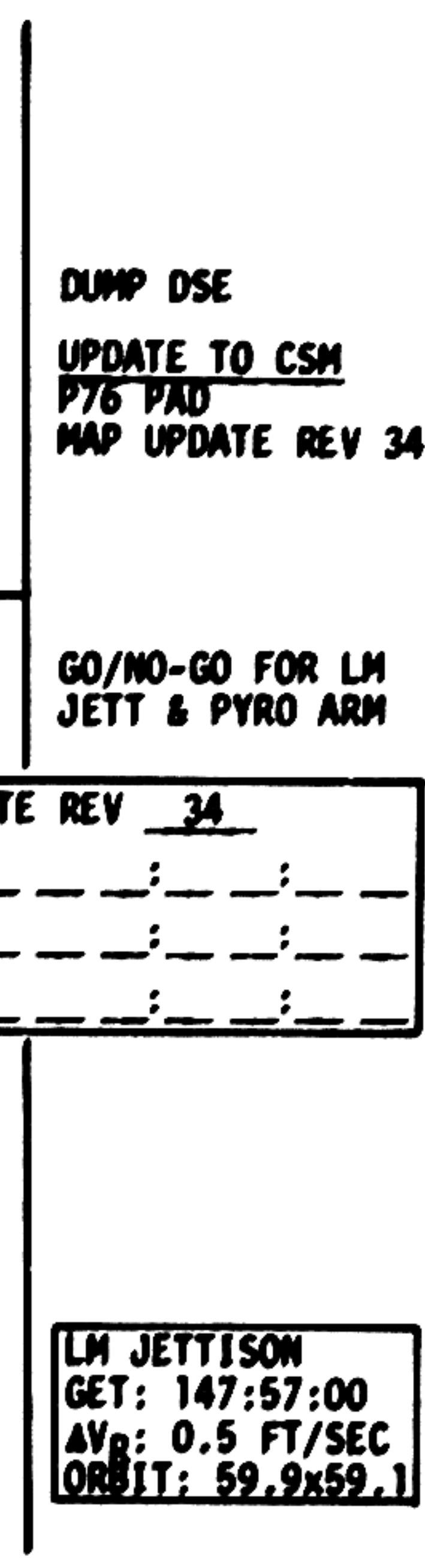
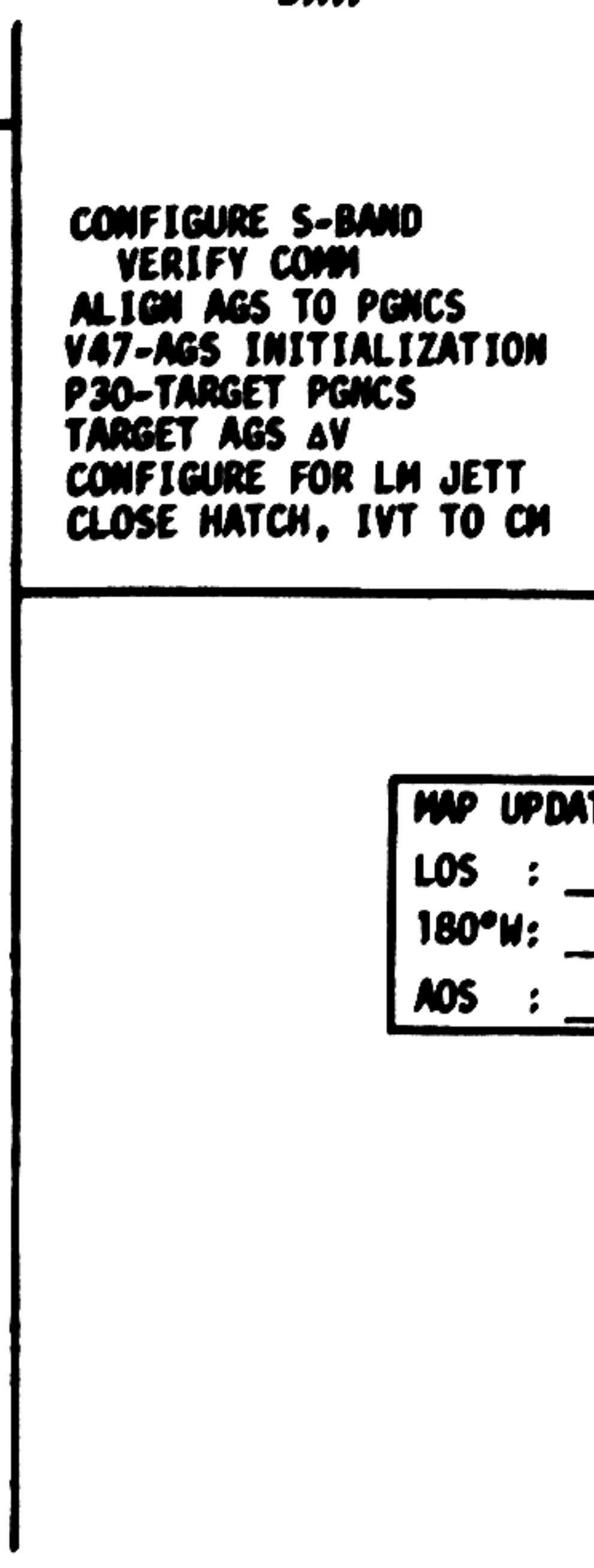
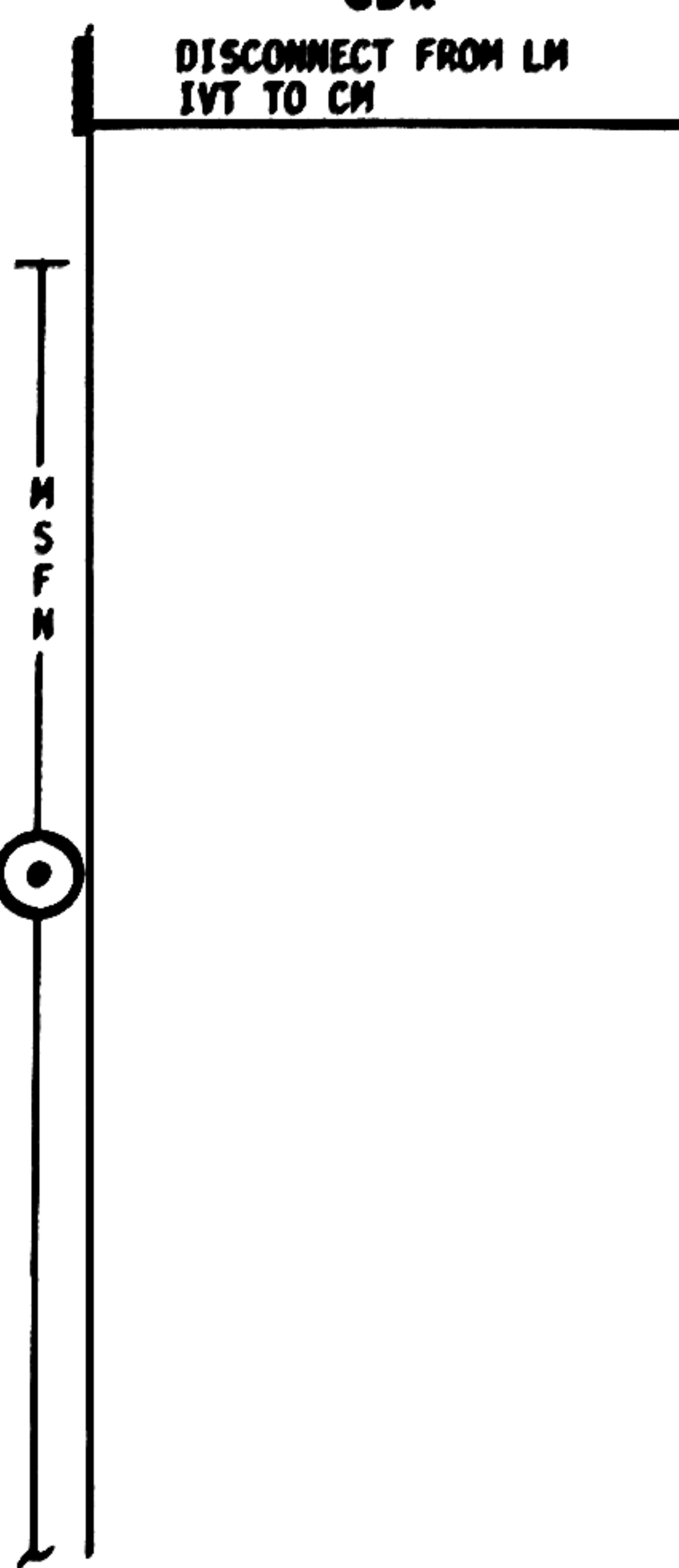
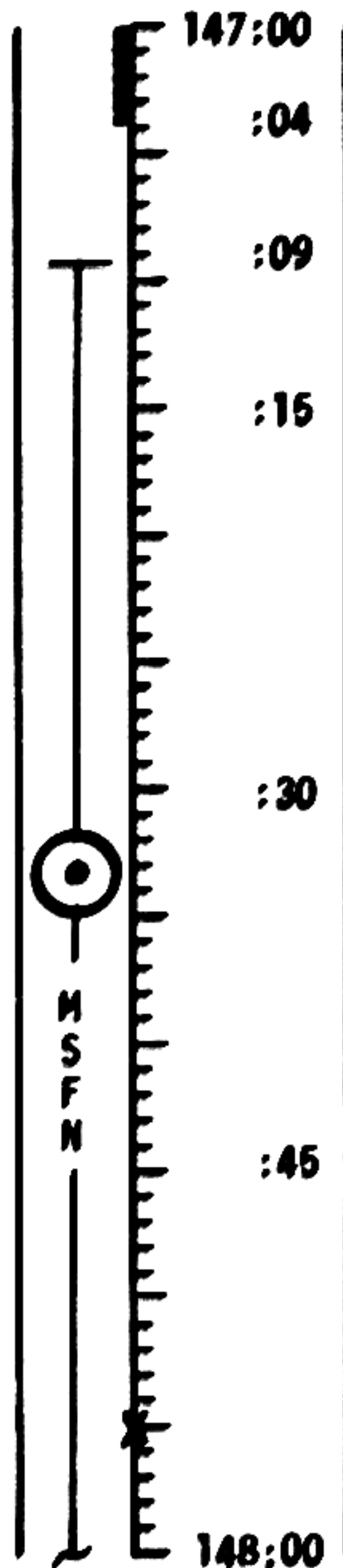
CONFIGURE CSM FOR JETT  
SET UP CAMERA FOR JETT  
CAM/DAC/18/CEX-BRKT,  
MIR(18,250,7)12FPS,  
0.5 MAG, 4 MIN

PYRO ARM  
V48-LOAD DAP,N46-  
R1(11102)  
R2(01111)

P47-THRUST MONITOR

**LM JETTISON**

SET ORDEAL



MAP UPDATE REV 34  
LOS : \_\_\_ : \_\_\_ : \_\_\_  
180°W: \_\_\_ : \_\_\_ : \_\_\_  
AOS : \_\_\_ : \_\_\_ : \_\_\_

**LM JETTISON**  
GET: 147:57:00  
ΔV: 0.5 FT/SEC  
ORBIT: 59.9x59.1

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	147:00 - 148:00	6/33	3-127



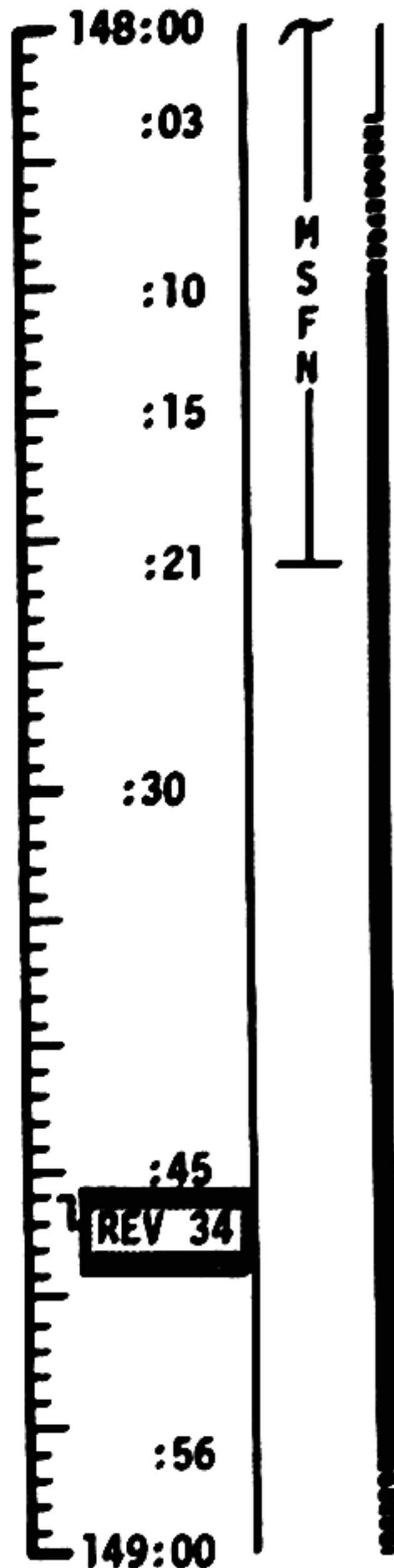
MCC-N

1422 CST

# FLIGHT PLAN

NOTES

UPLINK TO LM  
P42-APS THRUSTING



## CSM SEPARATION

CSM SEP ATTITUDE  
 R180 P90/NA Y 0  
 HGA P-36 Y352

SET ORDEAL

P20-RENDEZVOUS NAVIGATION  
 AUTO MNVR TO LM TRACK ATT  
 SET UP CAMERA FOR LM IMPACT

CM/DAC/SXT/CEX  
 (FIXED,250,FIXED) 1 FPS,0.5MAG,46 MIN  
 TRACK LM AND PHOTOGRAPH THROUGH SEXTANT  
 VERIFY DSE MOTION @ LOS

VACUUM, DOFF, BAG, AND STOW PGA'S

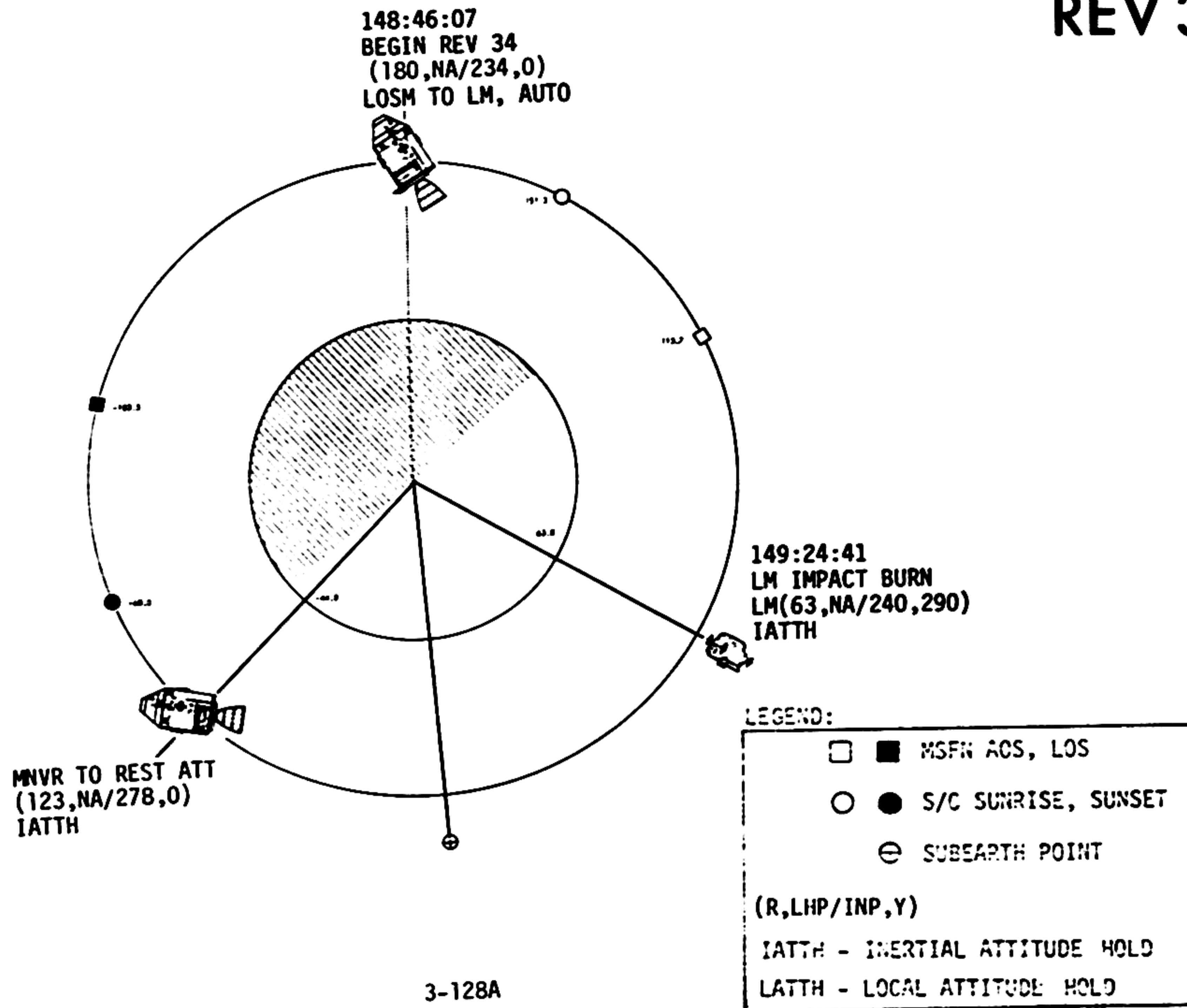
## PRESLEEP CHECKLIST

E-MEMORY DUMP  
 CREW STATUS REPORT (medication)  
 ONBOARD READOUTS to MSFN  
 CYCLE H2, O2 FANS  
 CHLORINATE WATER  
 VERIFY  
 WASTE MNGT OVBD DRAIN vlv - OFF  
 WASTE STOW VENT vlv - CLOSED  
 EMER CABIN PRESS vlv - BOTH  
 SURGE TK O2 vlv - ON  
 REPRESS O2 vlv - OFF  
 LM TUNNEL VENT vlv - OFF  
 NORMAL LUNAR COMM EXCEPT  
 S BD SQUELCH - ENABLE  
 HI GAIN ANTENNA TRACK - REACQ  
 HI GAIN ANTENNA BEAM - NARROW  
 S BD ANT - HI GAIN

CSM SEPARATION  
 BT: ~~2.7~~ SEC 5.5 SEC  
 ΔV: 1.0 FT/SEC  
 ORBIT: 59.7x58.6  
 SM RCS Z-AXIS BURN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	148:00 - 149:00	6/33-34	3-128

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3-128A

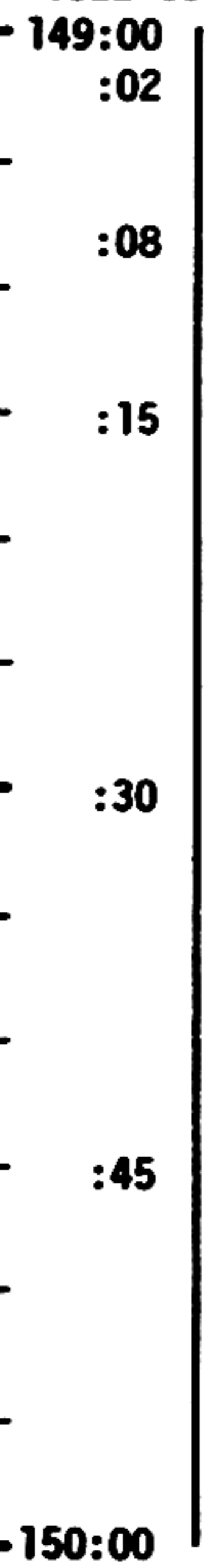
REVISION B

MCC-M

# FLIGHT PLAN

## NOTES

1522 CST



~~DUMP DSE~~  
~~UPLINK TO LM~~  
~~P42 APS THRUSTING~~

UPDATE TO CSM  
 TEI 39 PAD

UPLINK TO LM  
 COMMAND ULLAGE OFF

DUMP DSE



OMNI D  
 EAT PERIOD  
 P76 - TARGET ΔV

PHOTOGRAPH LM  
 THROUGH SEXTANT

MNVR TO REST ATT BY 150:00  
 R123, P278, Y 0, GO INERTIAL  
 HGA P-24 Y243  
 LOAD DAP, RT(11112)R2(X1111)  
 V21 N01  
 3255E, 1616E

LM DEORBIT BURN  
 TIG: 149:24:41.2  
 BT: 83.8 SEC  
 ΔVR: 189.7 FT/SEC

LM LUNAR IMPACT  
 GET: 149:52:50.5  
 LAT: 3°17'S  
 LONG: 23°23'W

LM IS TARGETED FOR APS  
 IMPULSE BURN. THRUST  
 IS RCS ULLAGE ONLY.

TEI 39 PAD ASSUMES  
 NO PLANE CHANGE 2

ONBOARD READOUT	
BAT C	_____
PYRO BAT A	_____
PYRO BAT B	_____
RCS A	_____
B	_____
C	_____
D	_____
DC IND SEL - MNA OR B	

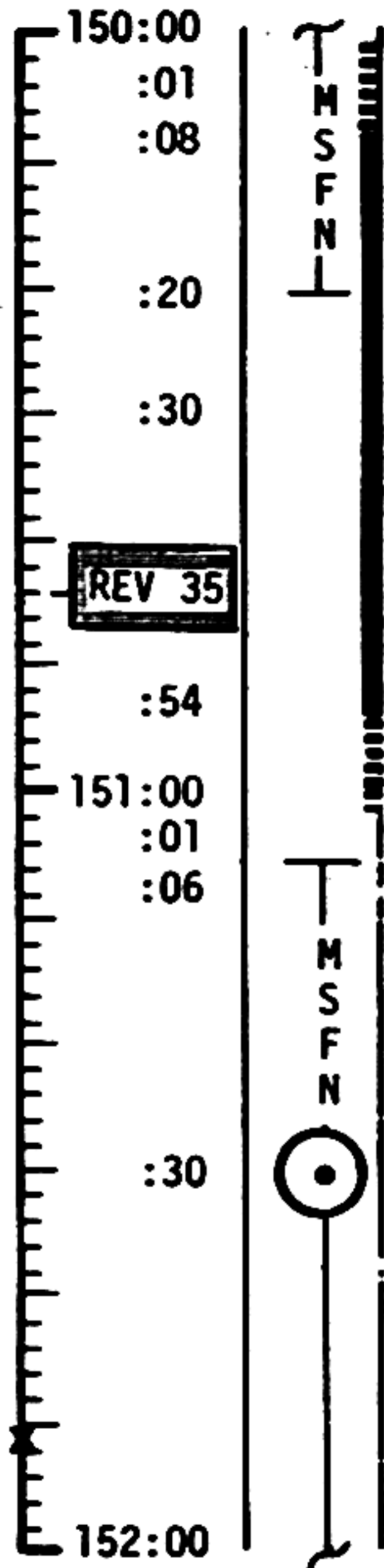
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	149:00 - 150:00	6/34	3-129

MCC-N

1622 CST

# FLIGHT PLAN

NOTES



DUMP DSE

REST PERIOD  
(7.5 HOURS)

REST  
ATT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	150:00 - 152:00	6/34-35	3-130