

FAO

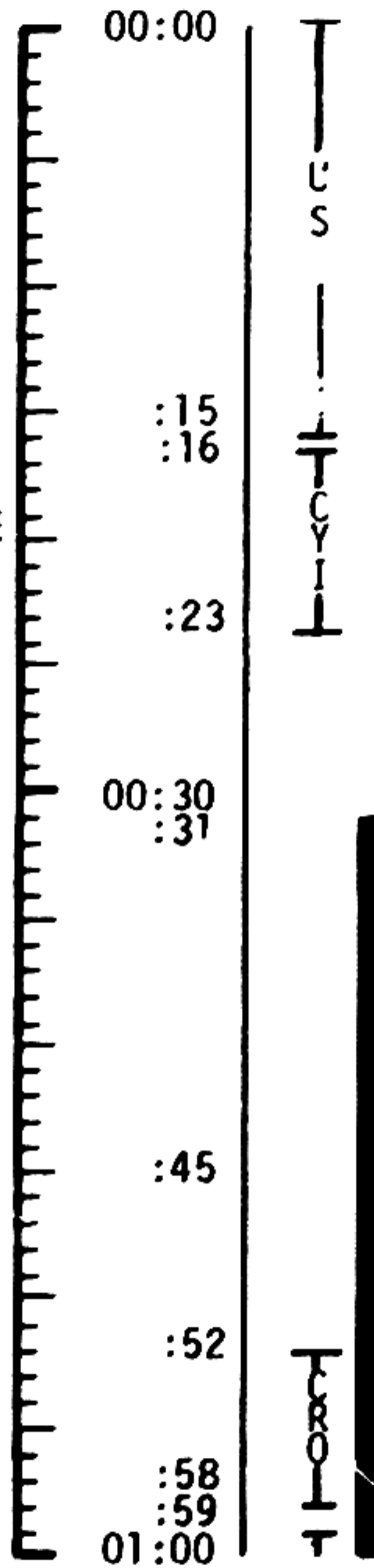
APOLLO 12	
FLIGHT PLAN	
PART NO	S/N
SKB32100081-350	1002

MCC-H

1022 CST

FLIGHT PLAN

NOTES



LIFTOFF 14 NOV 1969

SECO

INSERTION CK LIST

SYSTEMS MONITORING & CHECKING

PRE-TLI SYSTEM VERIFICATION AND MONITORING

SETUP CAMERA EQUIPMENT

IMU REALIGN - P52 (OPTION 3 - REFSMMAT)

REPORT GYRO TORQUING ANGLES GDC ALIGN TO IMU

LIFTOFF CREW POSITIONS
 LEFT COUCH - CDR
 CENTER COUCH - CMP
 RIGHT COUCH - LMP
 AT SECO+20 SEC, SIV-B
 MNVRS TO LH AND
 INITIALIZES ORB RATE
 (HEADS DOWN)

COOLANT CONTROL ATTEN-
 UATION PANEL NOT
 OPENED

UPDATE TO CSM
Z TORQUING ANGLE

DUMP DSE

P52 (PAD ORIENT)	
N71:	___'___
N05:	___'___
N93:	
Y	___'___
Y	___'___
Z	___'___
GET	___'___

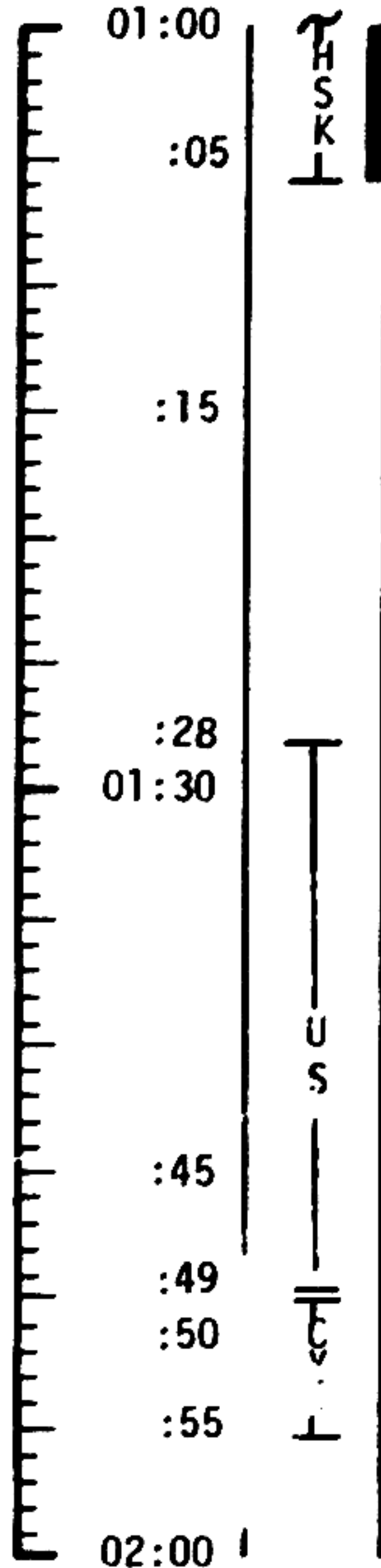
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	00:00 - 01:00	1/1	3-1

MCC-H

1122 CST

FLIGHT PLAN

NOTES



DUMP DSE

UPLINK TO CSM
STATE VECTOR & V66

UPDATE TO CSM
TLI PAD
TLI +90 MIN
ABORT PAD
P37 (L/O+8) PAD

GO/NO-GO FOR PYRO
ARM

SCS ATT REF COMPARISON CK
EXTEND DOCKING PROBE

SM RCS HOT FIRE
(MIN IMPULSE - ALL JETS)
GO/NO GO FOR PYRO ARM (CUE MSFN)
LOGIC-On
BEGIN TLI PREP

EMS ΔV TEST

AS A GENERAL RULE,
MSFN WILL ALWAYS
UPLINK THE STATE
VECTOR TO THE CSM
SLOT AND TRANSFER
IT VIA V66 TO THE
LM SLOT IN ORDER TO
HAVE REDUNDANT STATE
VECTORS ONBOARD

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	01:00 - 02:00	1/1-2	3-2

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

TLI
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC SHUTDOWN	+45° SHUTDOWN	BT + 6 SEC & V_f = PAD VALUE	NO TRIM

TABLE 3-1
3-3

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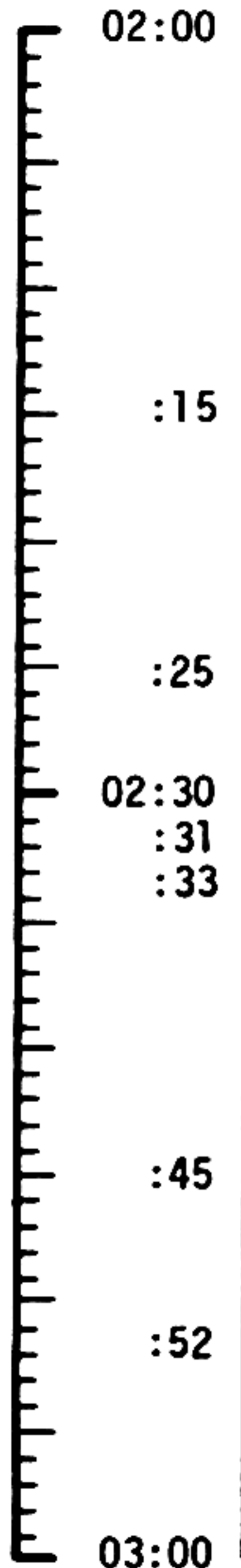
MCC-H

1222 CST

FLIGHT PLAN

NOTES

GO/NO GO



FORCH

RESUME

PYRO ARM

GDC ALIGN TO IMU

SET ORDEAL

GO/NO GO FOR TLI

TB-6 (02:37:41.8)

P47 - THRUST MONITOR

TLI

P00 - CMC IDLING

V66 - TRANS CSM SV TO LM SLOT

TLI BURN STATUS REPORT

CDR - TRANS TO CENTER COUCH, CMP - LEFT COUCH

LMP - RIGHT COUCH

TIG: 02:47:19.8
BT: 5:45.0
ΔV: 10,510 FPS

AT SECO: SIVB INERTIAL
 AT SECO+20 SEC: SIVB
 TO LOCAL HORIZONTAL
 ORB RATE, HEADS DOWN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	02:00 - 03:00	1/TLC	3-4

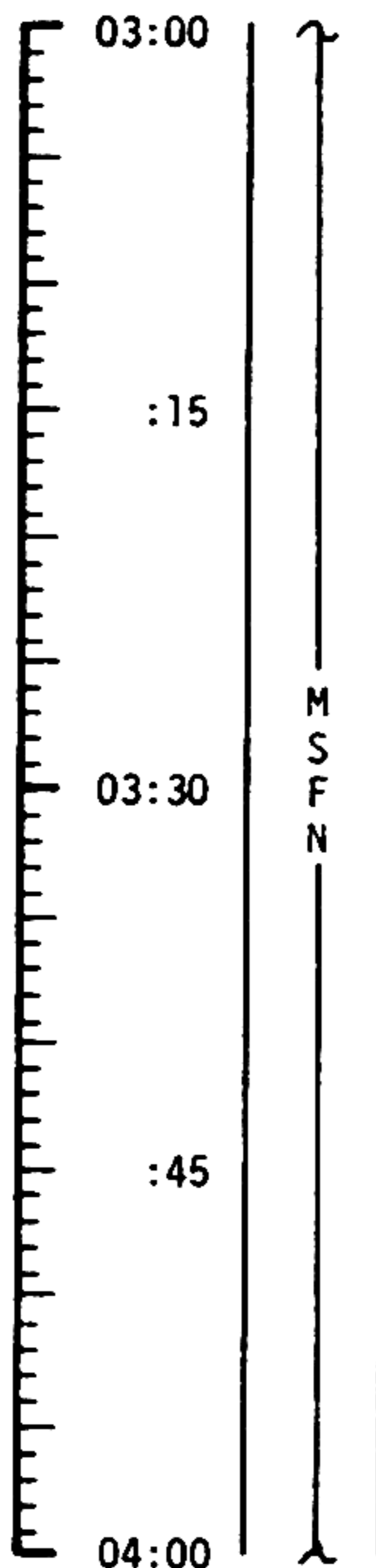
MCC-H

1322 CST

FLIGHT PLAN

NOTES

GO/NO GO FOR T&D



WASTE STOWAGE VENT - CLOSED
 DIRECT O₂ VLV-OPEN UNTIL CAB ~ 5.7 PSI, THEN CLOSE
 GDC ALIGN TO IMU
 SIVB MNVRS TO CSM/SIVB SEP ATT BY 03:11 R 356
 S-BAND ANT - OMNI P 92
 S-BAND ANT OMNI - B Y 332
 ACTIVATE AND LOAD DAP (11102, 01111)

LOAD DOCKING GIMBAL ANGLES
 CSM SEP PREPARATION R 304 HGA
 P 272 P-20
 Y 28 Y290

CSM/SIVB SEP GET: 03:23
 CSM MNVR TO DOCK ATT BY 03:28
 HGA TRACK - REACQ
 HGA BEAM - WIDE
 TV (GDS) 03:28 TO 04:30 CM4-IN, BRKT (f22)
 VISUALLY INSPECT AND PHOTOGRAPH SIVB AND LM

DOCK GET: 03:33

BEGIN CSM/LM CABIN PRESSURE EQUALIZATION

CDR: CONFIGURE FOR LM EJECTION
 TUNNEL PRESSURE INTEGRITY CHECK
 WASTE STOWAGE VENT VALVE - VENT
 REMOVE AND TEMPORARILY STOW TUNNEL HATCH
 CHECK DOCKING LATCHES
 VENT DOCKING PROBE
 LM UMBILICAL CONNECTION
 REINSTALL TUNNEL HATCH
 LM TUNNEL VENT VLV - LM/CM ΔP
 LEAVE TUNNEL EQUALIZATION VALVE CLOSED
 CYCLE O₂ & H₂ FANS

SWITCH TO OMNI C
 DURING THE MNVR
 TO THE DOCKING
 ATTITUDE

T & D MNVR
 +X 0.8 FPS, AFTER
 15 SEC -X 0.3 FPS.
 V49 AUTO MNVR TO DOCKING
 ATT. NULL TRANSLATION
 AND RATES, +X TO CLOSE
 AT 0.25 TO 0.5 FPS.

CAMERA SETTINGS FOR
 LM EJECTION:

CM 2/DAC/18/CEX - BRKT,
 MIR (f8,250,7) 12 fps,
 0.7 MAG (6MIN)

CM 4/EL/80/ CEX-
 (f8,250,30)5

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	03:00 - 04:00	1/TLC	3-5

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

REVISION A

MCC-H

1422 CST

FLIGHT PLAN

NOTES

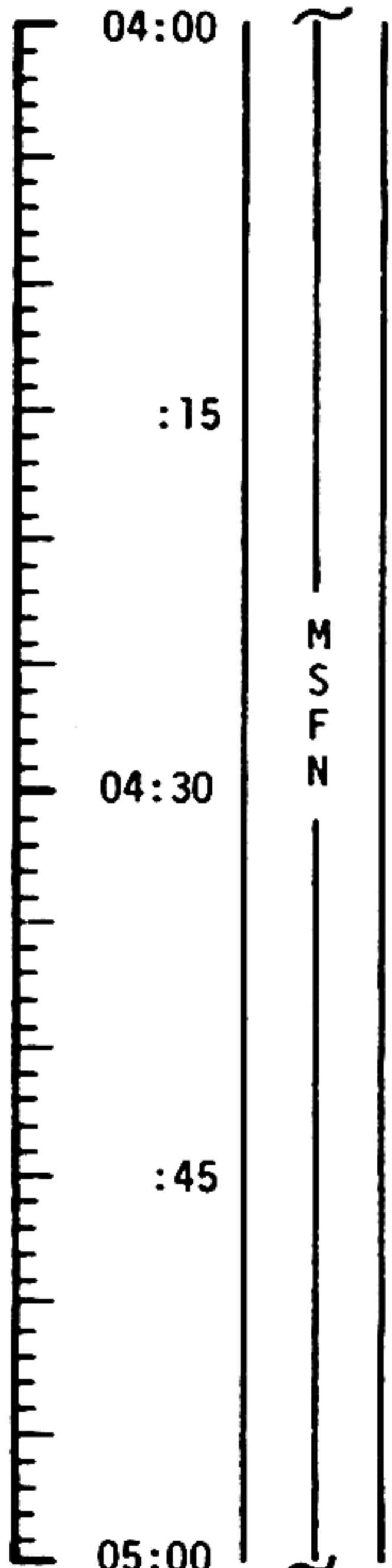
GO/NO GO FOR
PYRO ARM AND
CSM/LM EJECTION

(TLI CUTOFF +
1 HR 20 MIN)

UPDATE TO CSM
S-IVB EVASIVE
MNVR GO/NO GO

DUMP DSE

(TLI CUTOFF +
1 HR 53 MIN)



GO/NO-GO PYRO ARM (CUE MSFN)
 LOGIC ON
 LOAD DAP (21101, 11111)
 PYRO ARM
 P47 - THRUST MONITOR
 PHOTOGRAPH LM EJECTION

CSM/LM EJECTION
 MNVR TO ACQUIRE S-IVB IN HATCH
 WINDOW BY 04:18

R 96
 P 277
 Y 344

TIG: 04:13:19.8
 BT: 3 SEC
 ΔV: 0.4 FPS

OMNI D

S-IVB APS EVASIVE MNVR GET = 04:25

ΔV ≈ 9.6 FPS

BATTERY CHARGE, BATTERY B

CONTINUE TO MONITOR S-IVB THROUGH
 WINDOW UNTIL COMPLETION OF SLINGSHOT
 MANEUVER

S-IVB SLINGSHOT MNVR GET = 04:46

SPRING ACTUATOR
 ΔV ≈ 0.8 FPS. 4 JET
 RCS -X TRANSLATION
 0.4 FPS FOR A TOTAL
 ΔV ≈ 1.2 FPS.
 5 SEC AFTER EJECTION
 THERE IS AN RCS -X
 TRANSLATION FOR 3 SEC.

SLINGSHOT ΔV
 = 68.7 FPS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	04:00 - 05:00	1/TLC	3-6

MCC-H

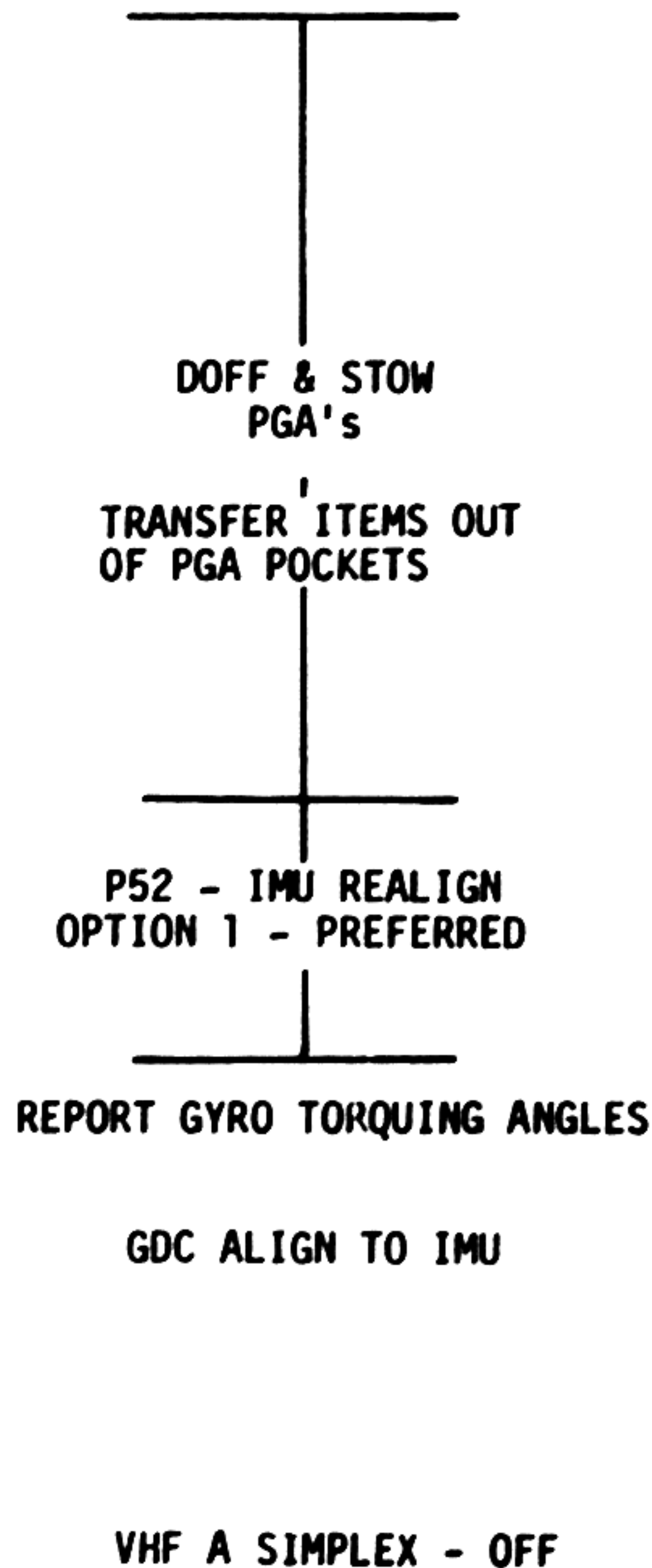
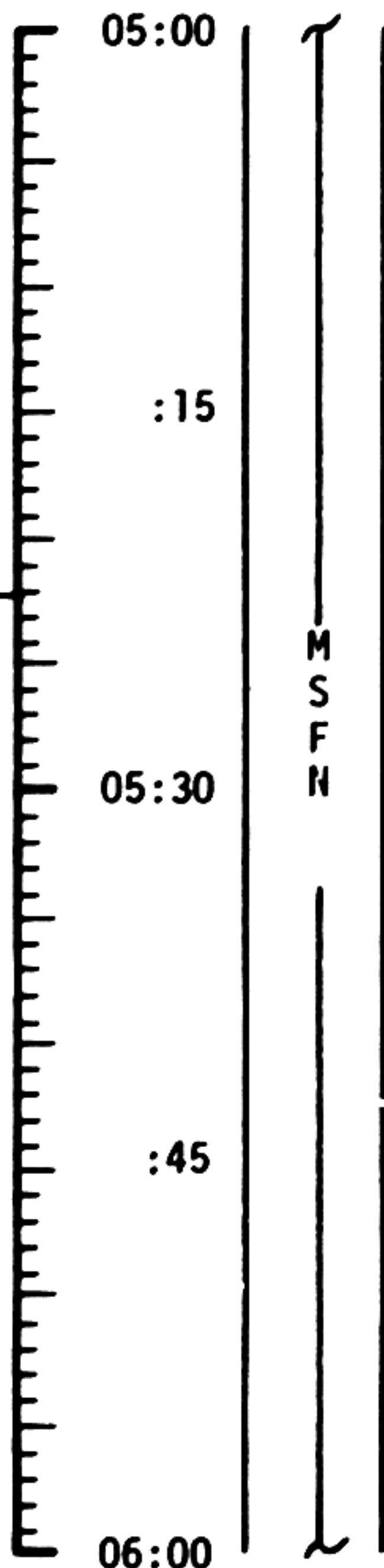
1522 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
DESIRED ORIENTATION
(PTC)
ZERO TRUNION BIAS

UPDATE TO CSM
P37 PAD (L/O+15)



P52 (PTC ORIENT)	
N71:	___'___
N05:	___'___
N93:	
X	___'___
Y	___'___
Z	___'___
GET	___:___:___

P 37 PAD ASSUMES
NO MCC-1

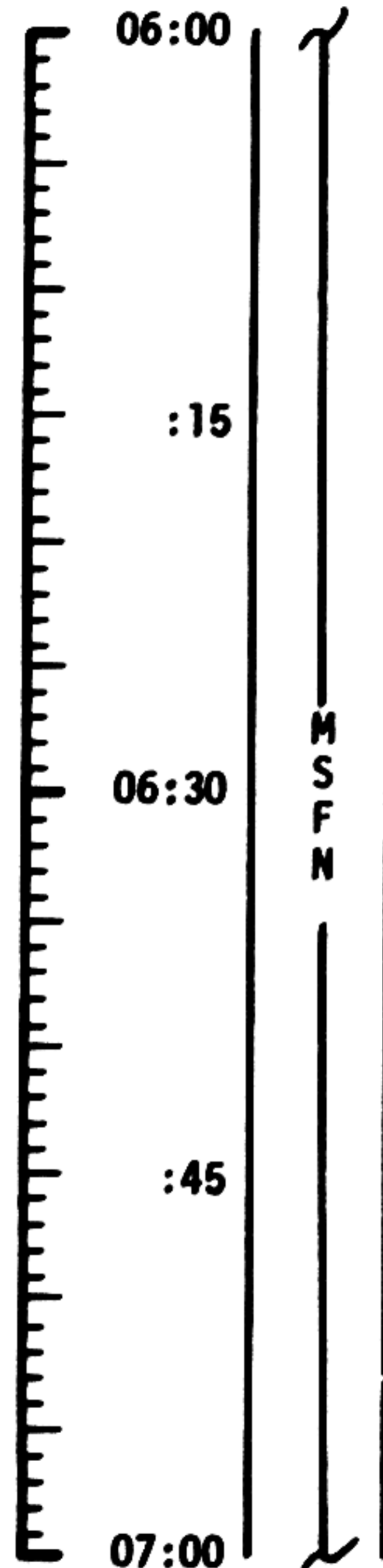
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	05:00 - 06:00	1/TLC	3-7

MCC-H

1622 CST

FLIGHT PLAN

NOTES



MNVR TO OPTICS CALIBRATION ATT
 P23 - CISELUNAR NAVIGATION
 OPTICS CALIBRATION
 STAR 1 5

R 204
 P 262
 Y 0

P00
 V49 - MNVR TO SIGHTING ATT
 STAR/EARTH HORIZON

R 159
 P 282
 Y 0

P23 - CISELUNAR NAVIGATION

LOAD W MATRIX (R1 + 8 0 0 0 0) (R2 + 0 0 0 7 0)
 1. STAR 2 3 E N H (R3 = 0 0 1 1 0)

3 MARKS ON EACH STAR

INCORPORATE P23
 MARK DATA AND
 UPDATE ONBOARD
 STATE VECTOR

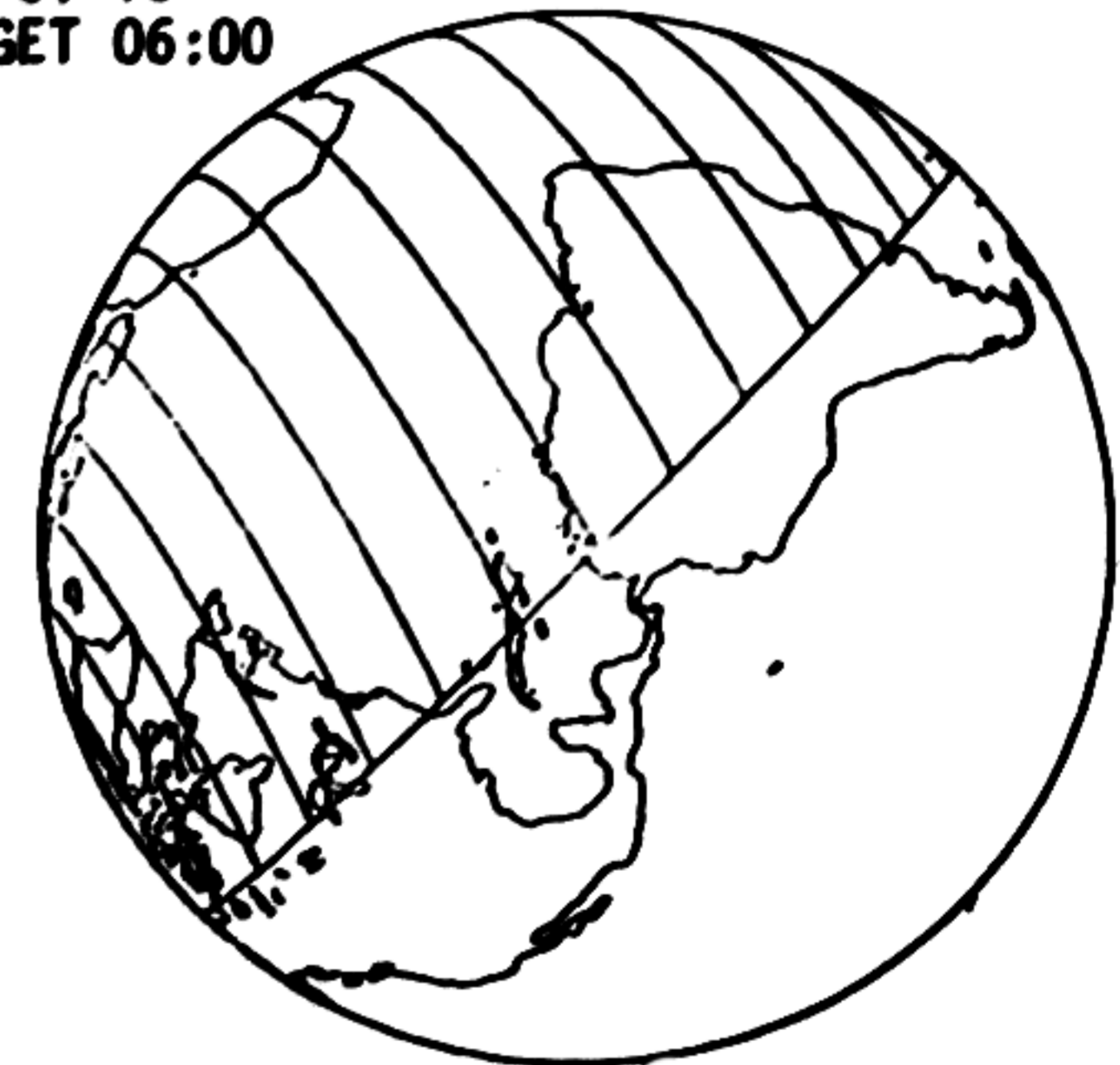
2. STAR 1 5 E F H (R3 = 0 0 1 2 0)

3. STAR 2 4 E N H (R3 = 0 0 1 1 0)

4. STAR 2 4 E N H (R3 = 0 0 1 1 0)

5 STAR 1 6 E F H (R3 = 0 0 1 2 0)

FOV 16°
 GET 06:00



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	06:00 - 07:00	1/TLC	3-8

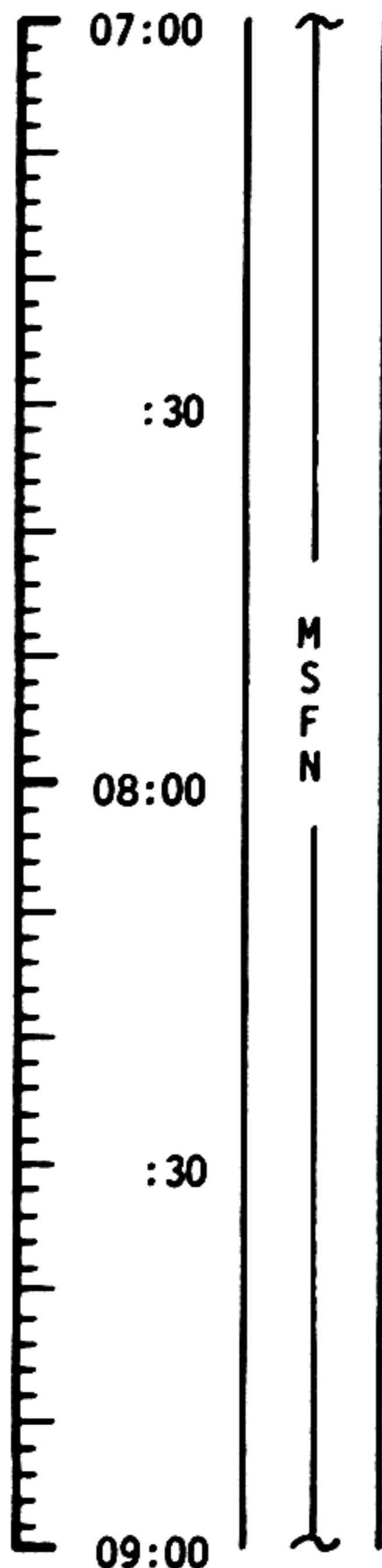
MCC-N

1722 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



MNVR TO PTC ATTITUDE

P	90
Y	0

ESTABLISH PTC

DEACTIVATE PRIMARY EVAPORATOR
 GLY EVAP H₂O FLOW - OFF ~~(GRT)~~ (CTR)
 GLY EVAP STM PRESS AUTO - MAN
 GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

SELECT NORMAL LUNAR COMM EXCEPT:
 S-BD AUX TAPE - OFF
 TAPE RCDR FWD - OFF

PTC

P	90	Y	0
---	----	---	---

MANEUVER TO PTC
 ATTITUDE-DISABLE TWO
 ADJACENT QUADS-NUL
 RATES IN +.5°DB FOR
 20 MINUTES-WIDEN DEAD
 BAND TO +30°, ENABLE
 ALL JETS AND ROLL VE-
 HICLE AT 0.3°/SEC,
 DISABLE JETS

L10H CANISTER CHANGE NO. 1
(3 INTO A, STOW 1 IN B5)

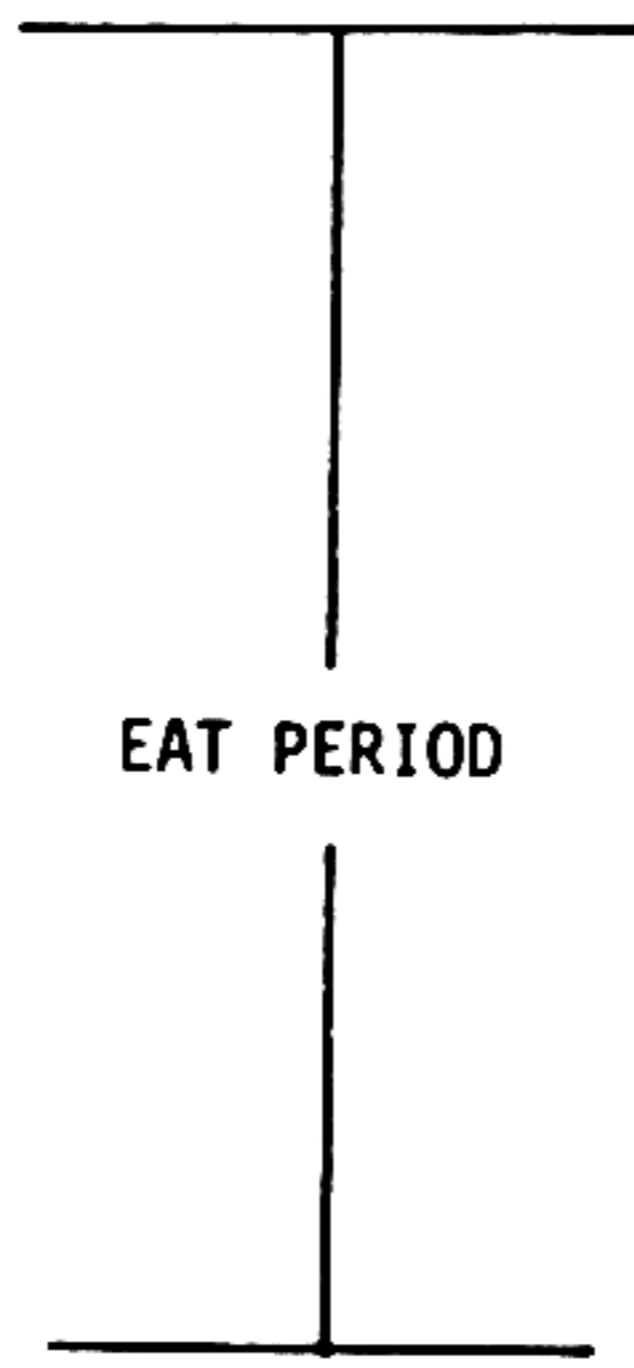
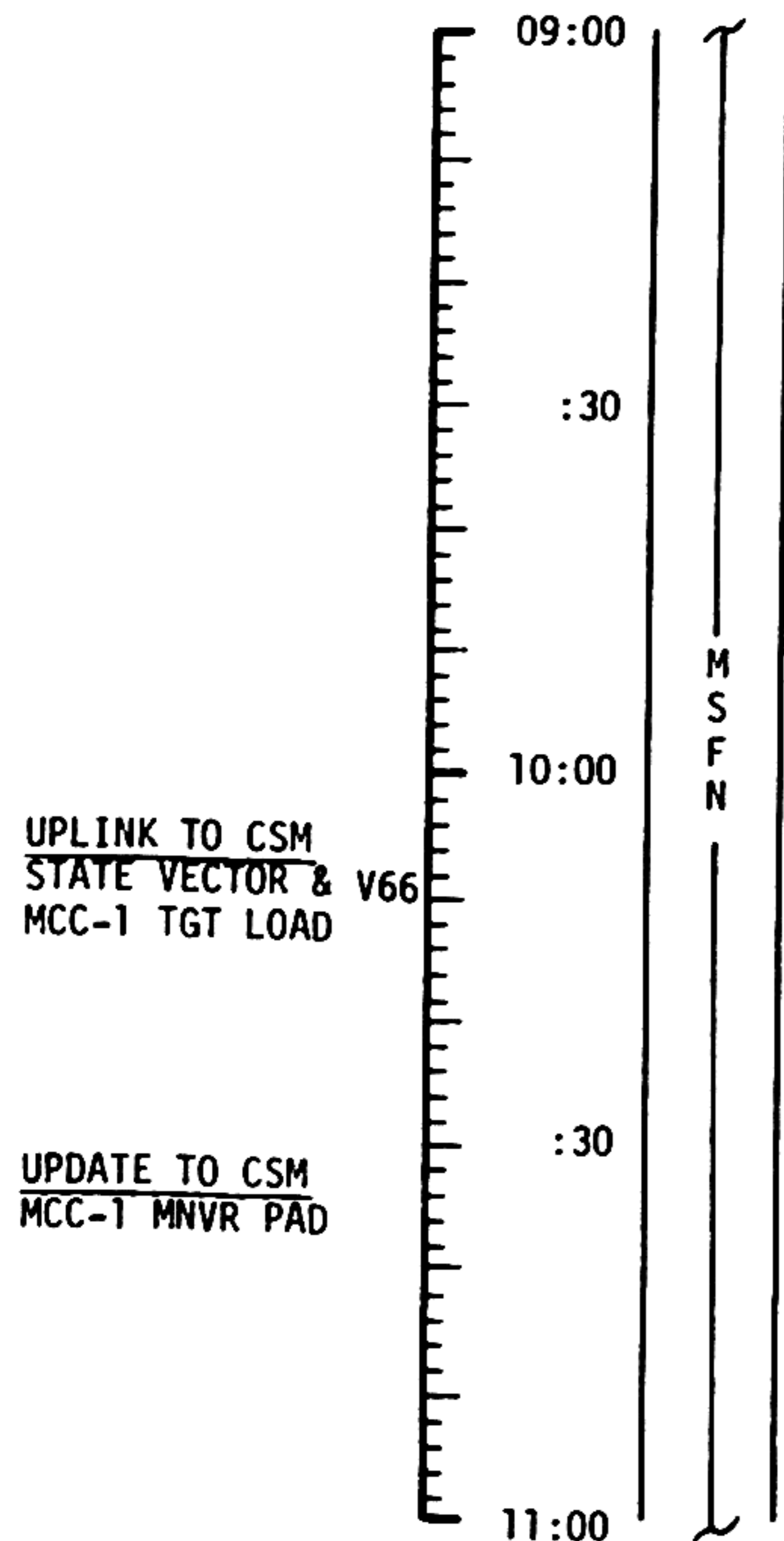
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	07:00 - 09:00	1/TLC	3-9

MCC-H

1922 CST

FLIGHT PLAN

NOTES



CONTINUE PTC IF MCC-1 IS NOT PERFORMED

P52 IMU REALIGN
OPTION 3 - REFSMMAT
REPORT GRYO TORQUING ANGLES

P52 (PTC ORIENT)

N71: ___'___

N05: ___'___

N93: ___'___

X ___'___

Y ___'___

Z ___'___

GET ___:___:___

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	09:00 - 11:00	1/TLC	3-10

FLIGHT PLAN

MCC-1 BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	IF < 2FPS, TRIM X AXIS TO 0.2FPS IF > 2FPS, NO TRIM

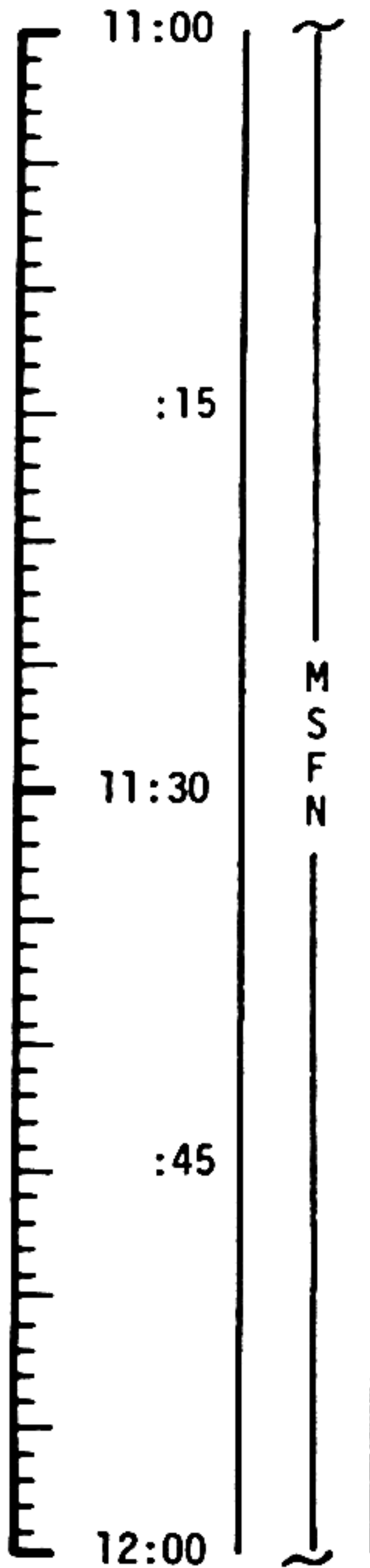
TABLE 3-2
3-11

MCC-H

2122 CST

FLIGHT PLAN

NOTES



P30 - EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK
 BATTERY CHARGE, BATTERY A
 O₂ FUEL CELL PURGE
 WASTE WATER DUMP
 P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-1

V66 - TRANSFER CSM SV TO LM SLOT
 MCC-1 BURN STATUS REPORT

TIG: 11:47:19.8
 ΔV : NOMINALLY ZERO

PTC

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V _{gx}
<input type="checkbox"/>			•	V _{gy}
<input type="checkbox"/>			•	V _{gz}
<input type="checkbox"/>			•	ΔV_c *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

* ITEMS TO BE REPORTED IN MSFN

MCC-1 WILL BE DELAYED TO MCC-2 IF PROPELLANT COST IS NOT PROHIBITIVE TLI + 9 HRS

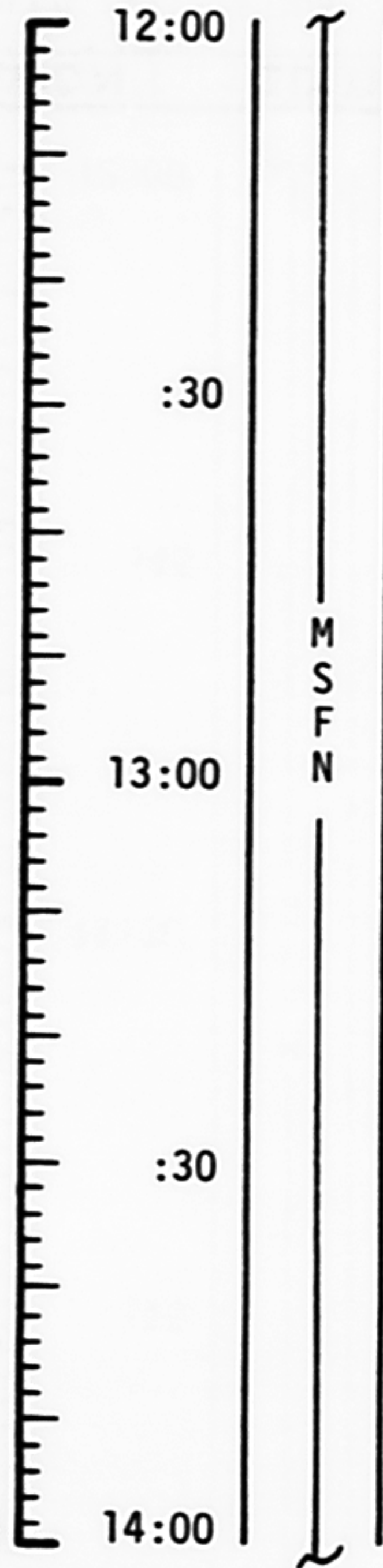
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	11:00 - 12:00	1/TLC	3-12

MCC-H

2222 CST

FLIGHT PLAN

NOTES



REPORT: LM/CM ΔP
 WASTE STOWAGE VENT VLV - CLOSE
 VENT BATTS UNTIL SYSTEM TEST METER (4A) = 0

MNVR TO PTC ATT P 90
 Y 0

PTC
 P 90 Y 0

DECISION TO
 CABIN PURGE REINITIATE
 WILL BE MADE APPROX
 REAL TIME A
 3 HRS GET

UPDATE TO CSM
 P37 PADS (L/O +
 25, 35, 45 & 60)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	12:00 - 14:00	1/TL	-13

MSC Form 29 (May 69)

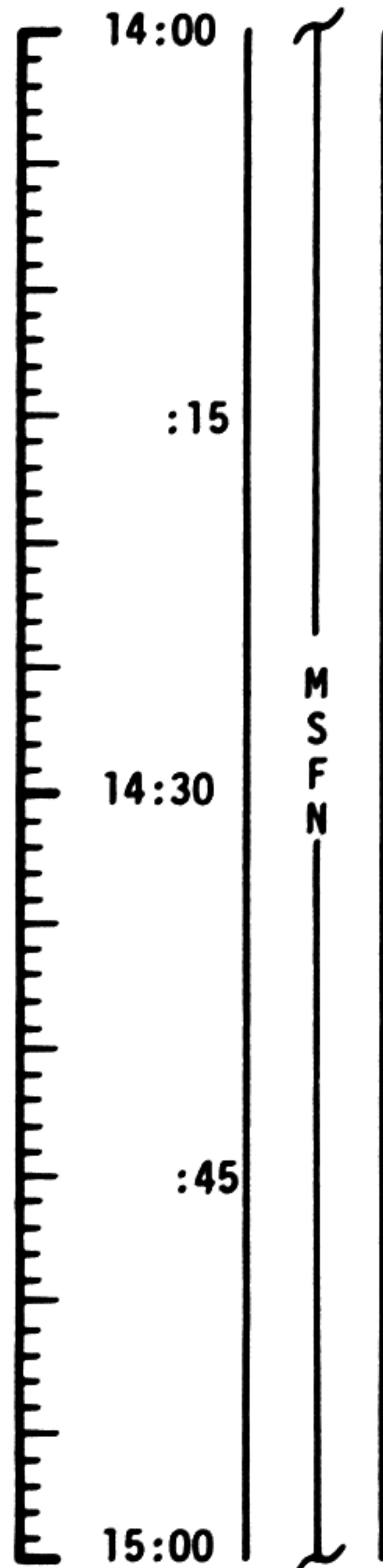
FLIGHT PLANNING BRANCH

MCC-H

0022 CST

FLIGHT PLAN

NOTES



P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (OPTIONAL)

PTC
 P 90 Y 0

P52 (PTC ORIENT)	
N71:	___'___
N05:	___'___
N93:	
X	___'___
Y	___'___
Z	___'___
GET	___:___:___

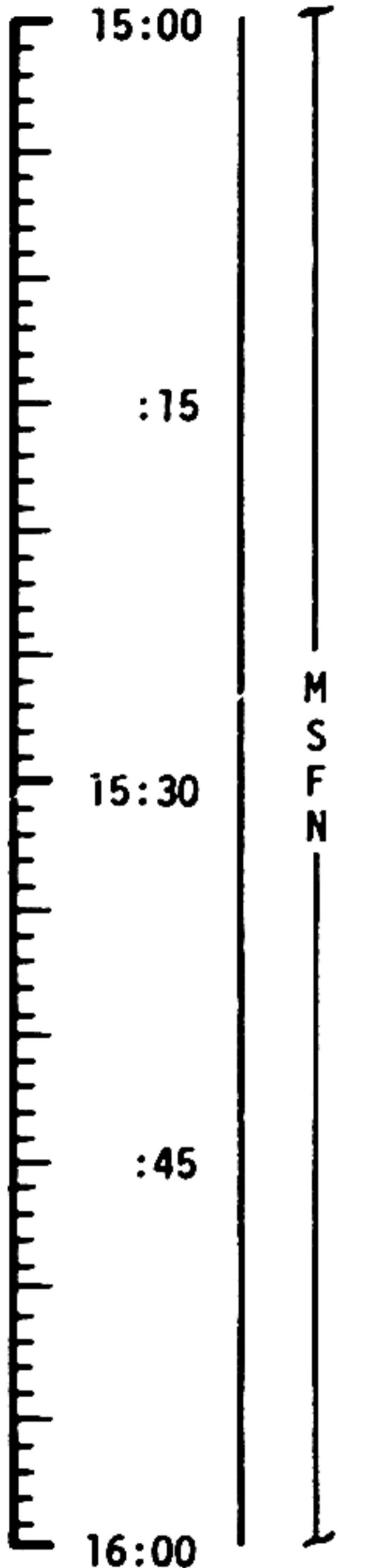
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	14:00 - 15:00	1/TLC	3-14

MCC-H

0122 CST

FLIGHT PLAN

NOTES



REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU

MNVR TO OPTICS CALIBRATION ATT R 204
 P23 - CISELUNAR NAVIGATION P 262
 OPTICS CALIBRATION Y 0
 STAR 1 5

P00

V49 - MNVR TO SIGHTING ATT R 145
 STAR/EARTH HORIZON P 293
 P23 - CISELUNAR NAVIGATION Y 0

LOAD W MATRIX (R1 + 1 4 0 0 0) (R2 + 0 0 0 0 2)

1. STAR 2 4 ENH (R3 = 0 0 1 1 0)

2. STAR 1 6 EFH (R3 = 0 0 1 2 0)

3. STAR 2 6 ENH (R3 = 0 0 1 1 0)

3 MARKS EACH STAR

INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	15:00 - 16:00	1/TLC	3-15

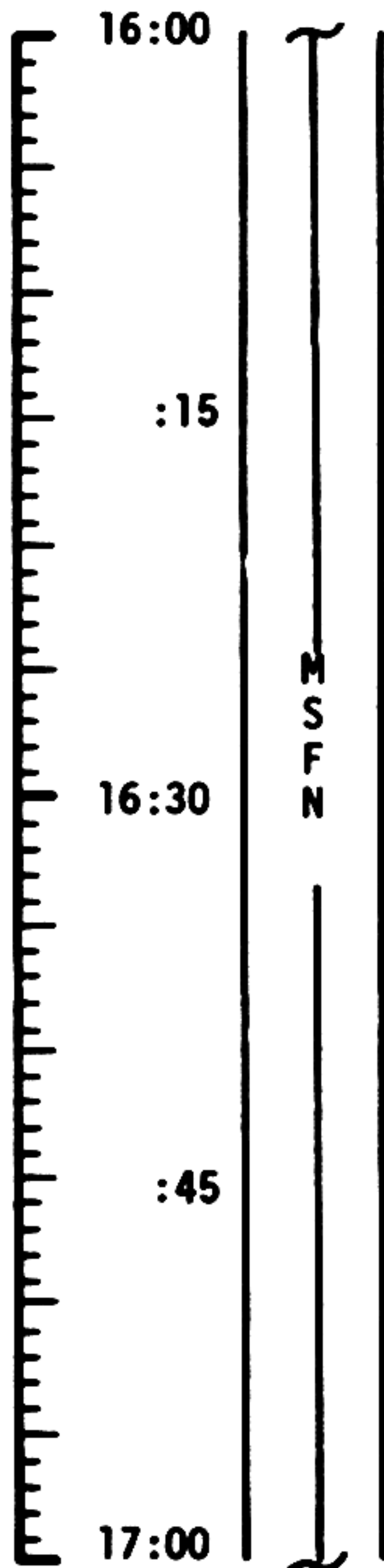
MCC-N

0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



4. STAR 2 1 E F H (R3 = 0 0 1 2 0)

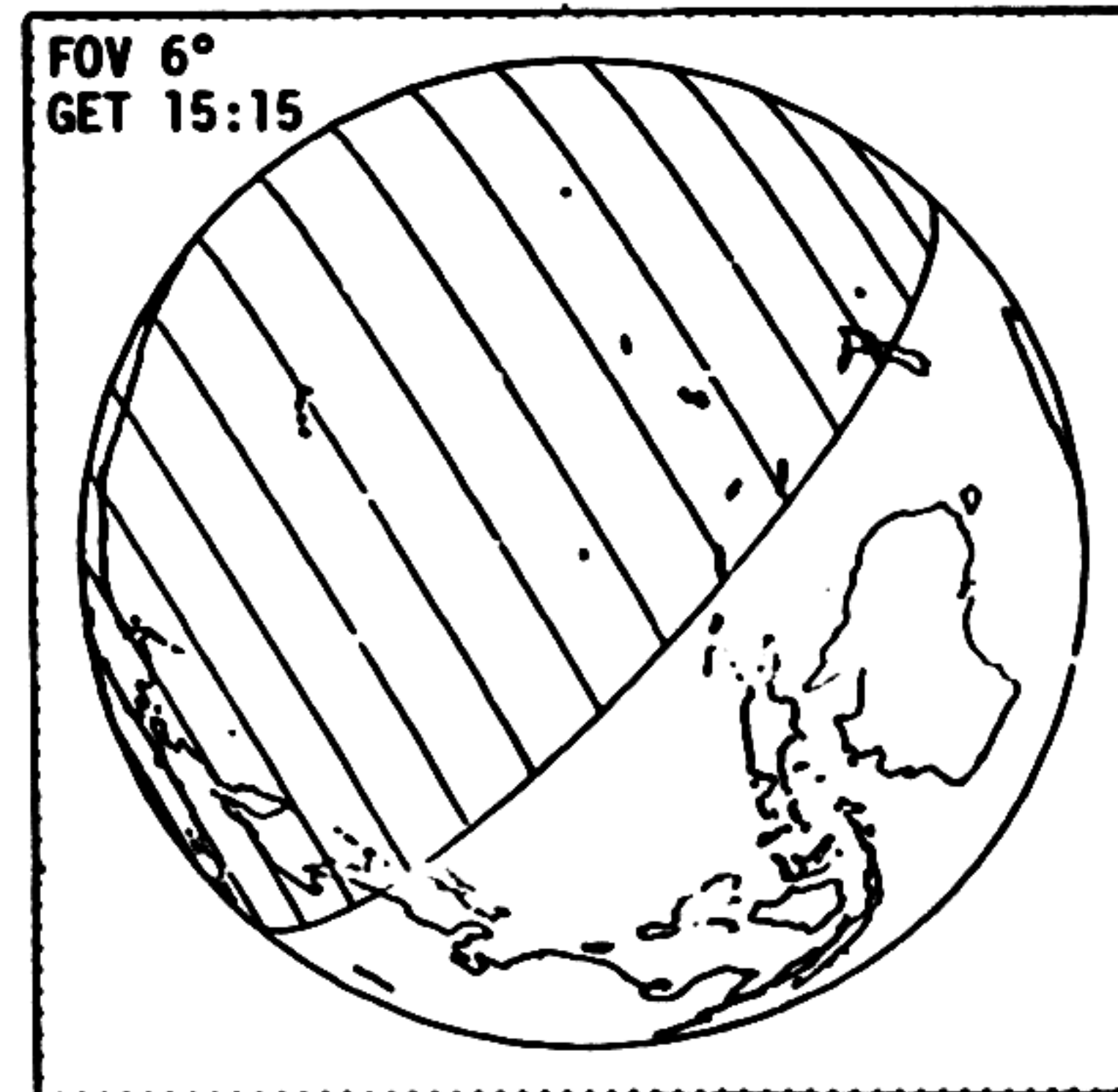
5. STAR 2 3 E N H (R3 = 0 0 1 1 0)

MNVR TO PTC ATTITUDE P 90
START PTC Y 0

EAT PERIOD

PTC

P 90 Y 0



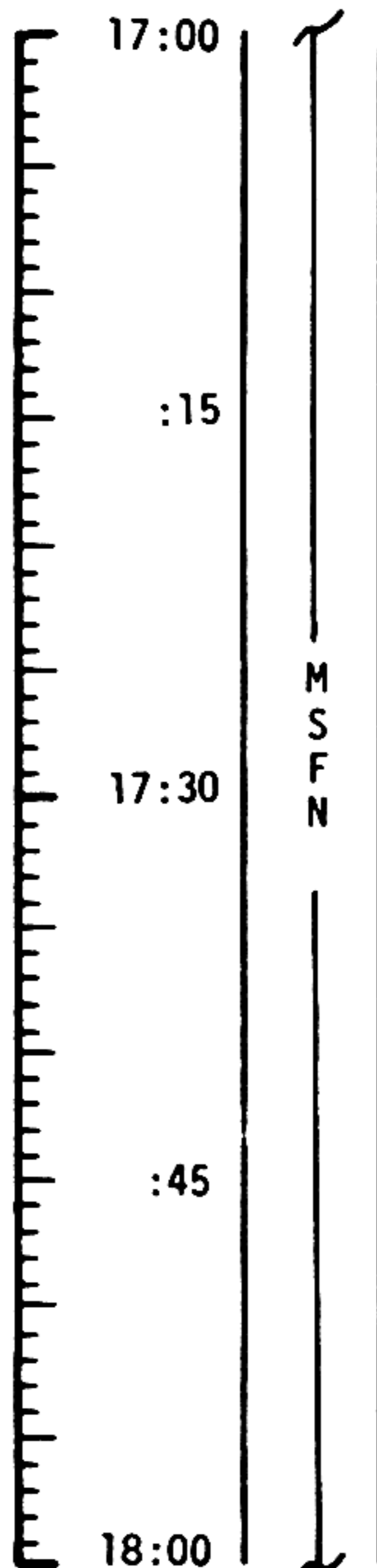
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	16:00 - 17:00	1/TLC	3-16

MCC-H

0322 CST

FLIGHT PLAN

NOTES



M
S
F
N

EAT PERIOD

LiOH CANISTER CHANGE NO.2
(4 INTO B, STOW 2 IN B5)

PRESLEEP CHECKLIST:
 CREW STATUS REPORT (MED)
 ONBOARD READOUTS
 CYCLE O2 & H2 FANS
 CHLORINATE POTABLE WATER
 VERIFY:
 WASTE MNGT OVBD DRAIN - OFF
 WASTE STOW VENT VLV - CLOSED
 EMER CABIN PRESS VLV - BOTH
 SURGE TK O2 VLV - ON
 REPRESS O2 VLV - OFF
 LM TUNNEL VENT - LM/CM ΔP
 "E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
 S-BD NORMAL MODE VOICE - OFF
 S-BD SQUELCH - ENABLE
 S-BD AUX TAPE - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B
 TAPE RCDR FWD - OFF

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

PTC
P 90 Y 0

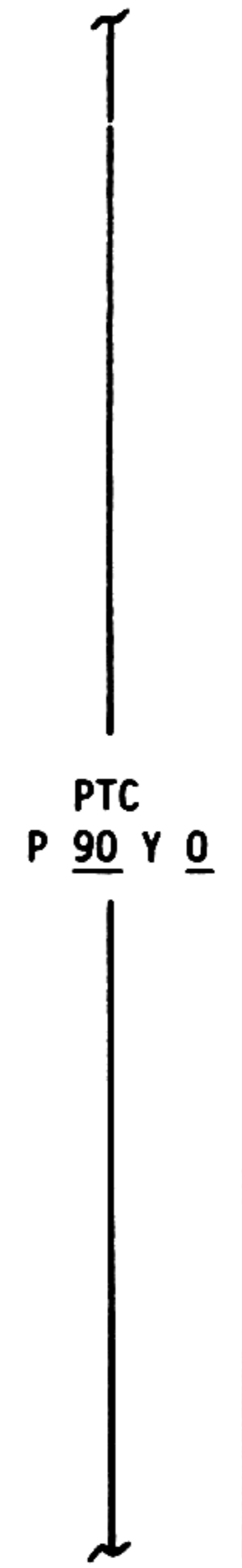
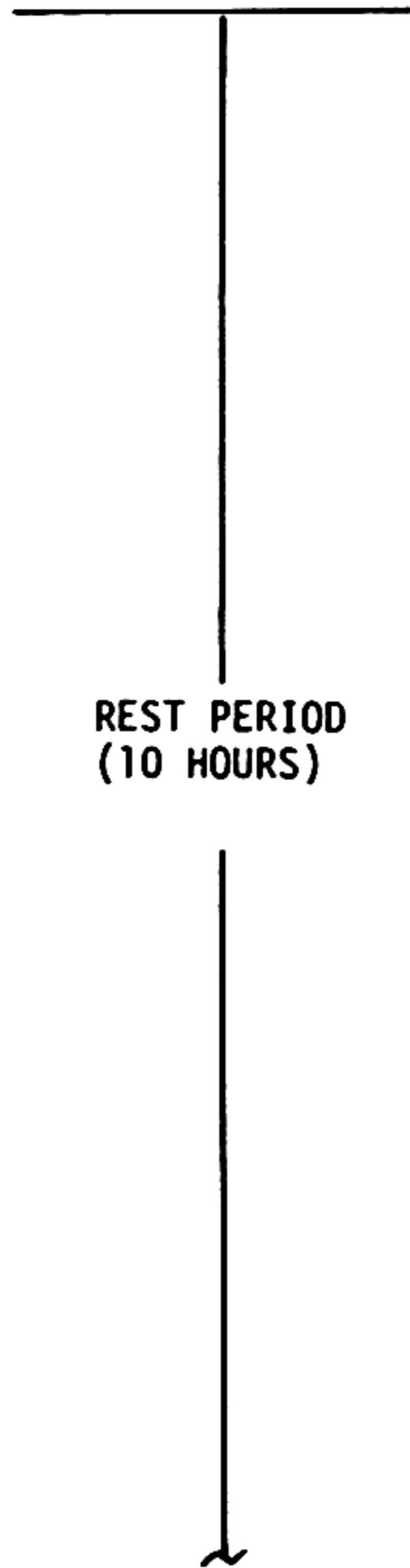
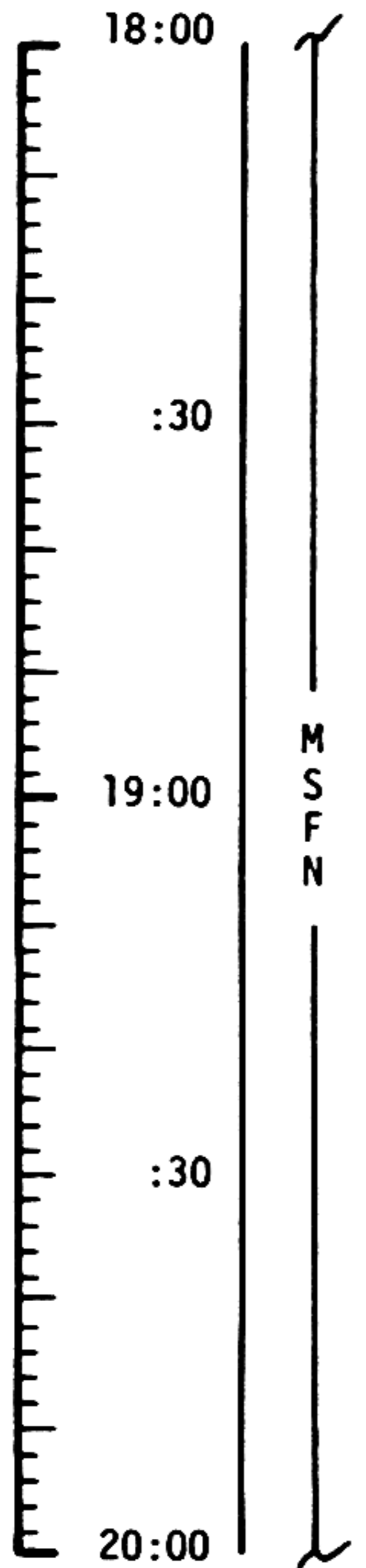
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	17:00 - 18:00	1/TLC	3-17

MCC-H

0422 CST

FLIGHT PLAN

NOTES



DURING REST PERIOD
TWO CREWMEN IN
COUCHES AND ONE
IN REST STATION

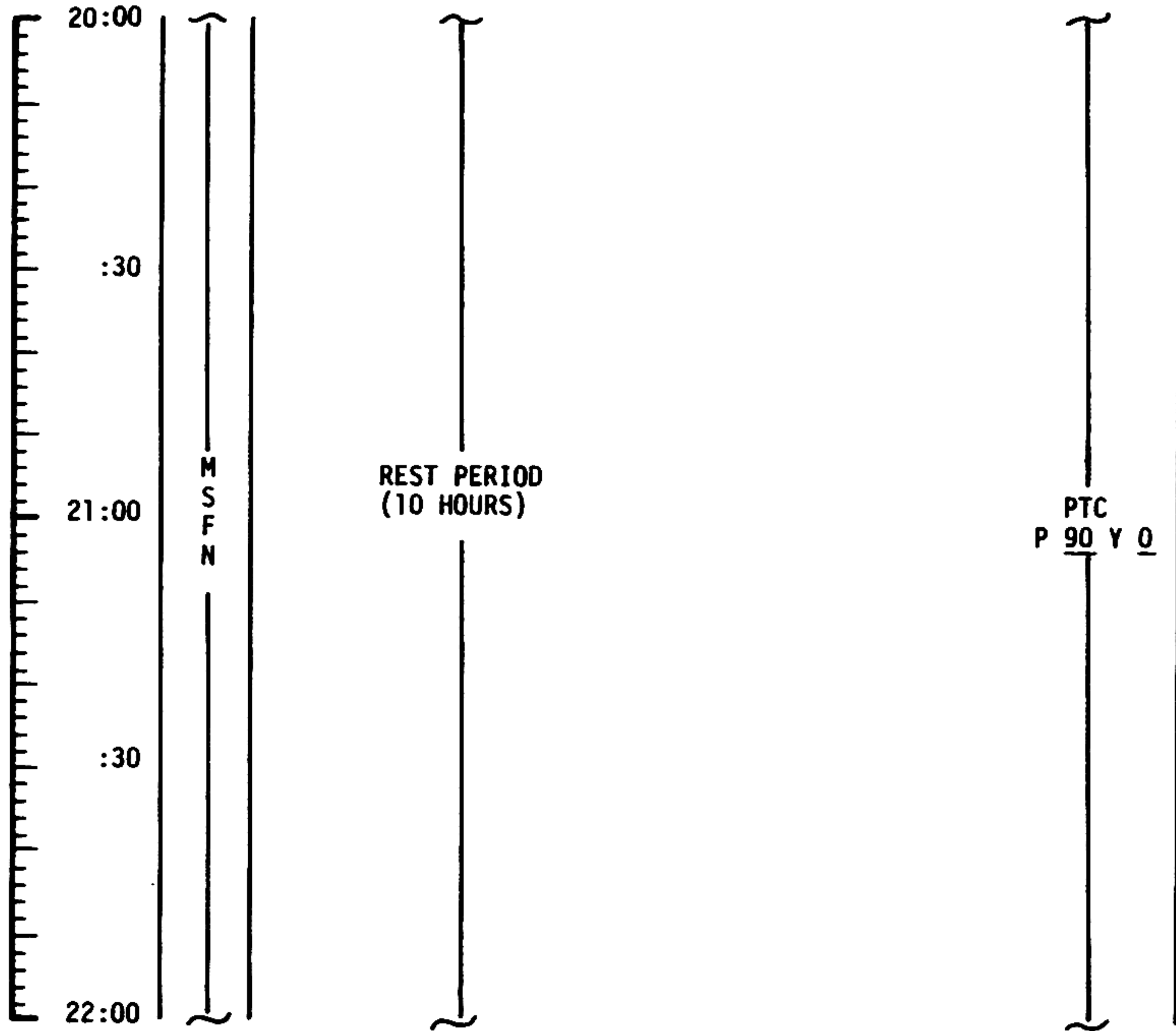
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	18:00 - 20:00	1/TLC	3-18

MCC-H

0622 CST

FLIGHT PLAN

NOTES



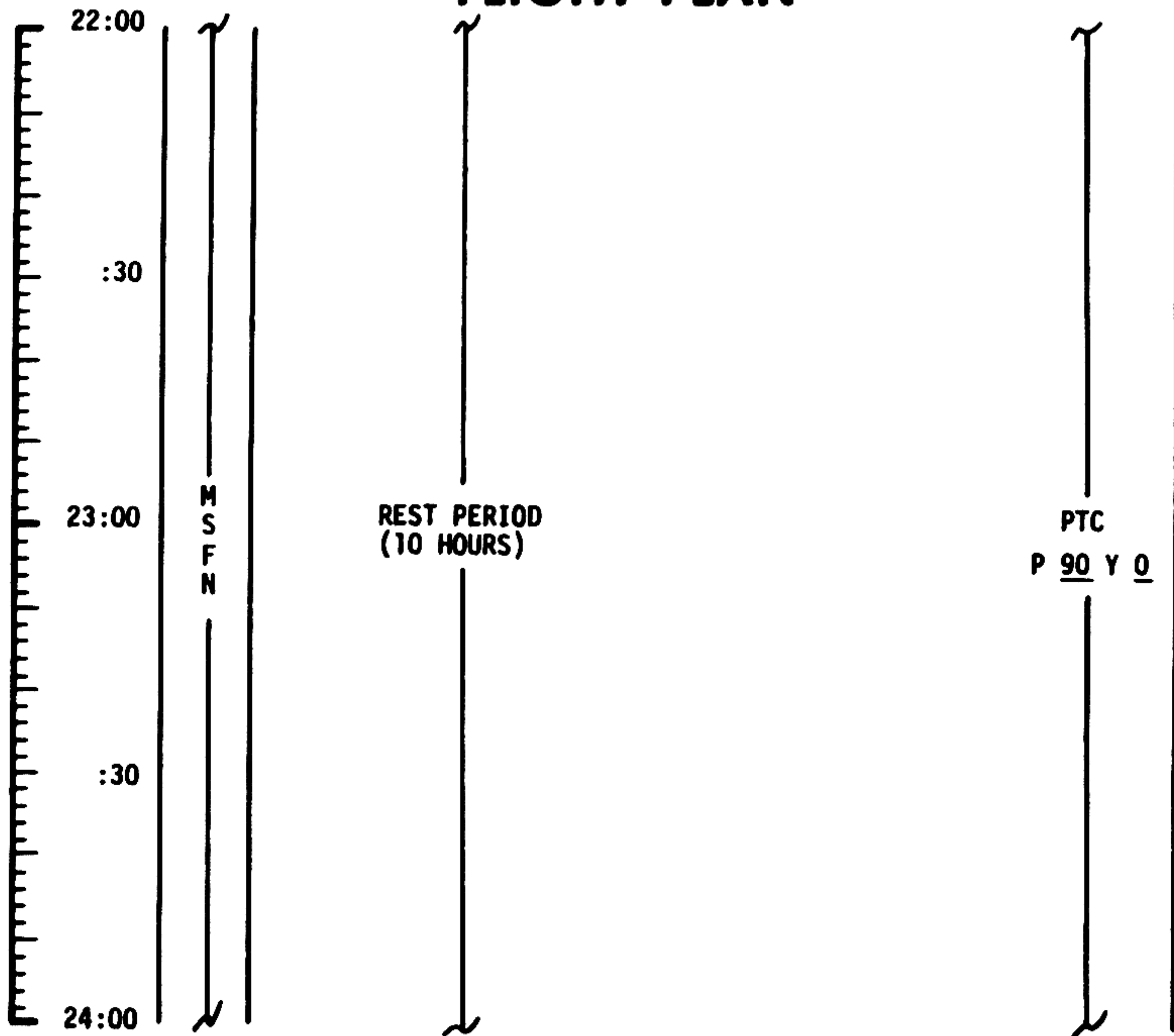
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	20:00 - 22:00	1/TLC	3-19

MCC-H

0822 CST

FLIGHT PLAN

NOTES



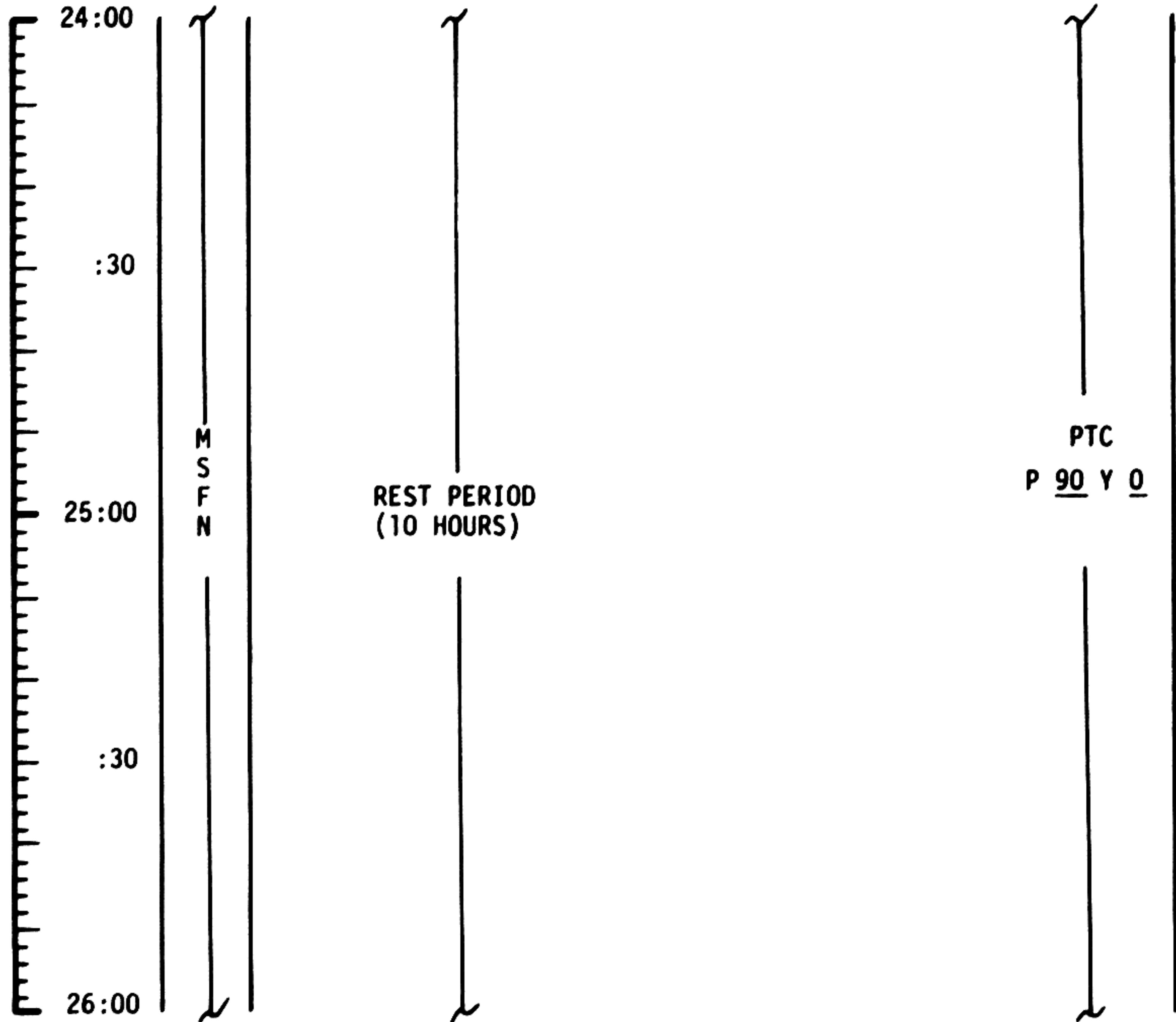
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	22:00 - 24:00	1/TLC	3-20

MCC-H

1022 CST

FLIGHT PLAN

NOTES



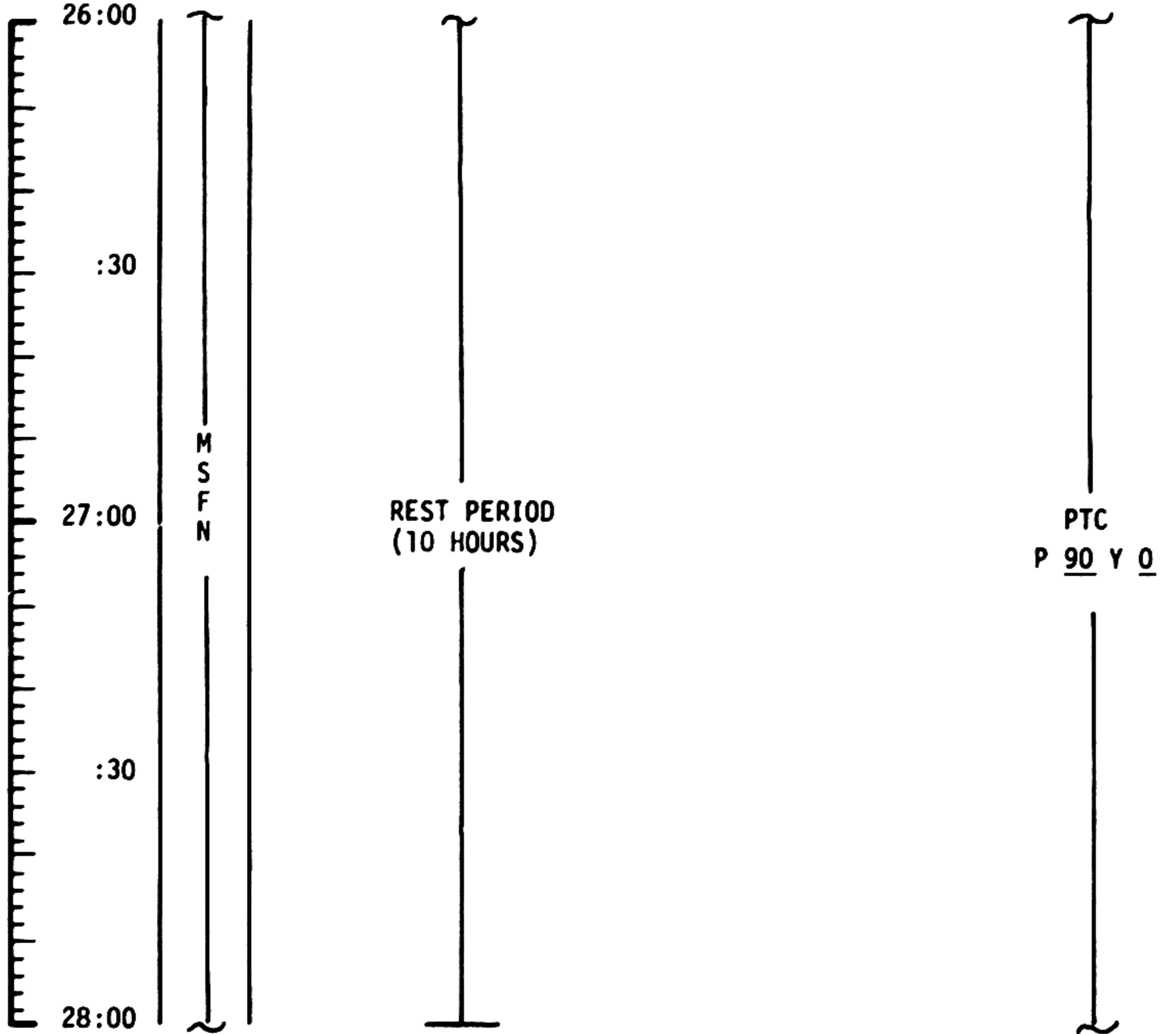
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	24:00 - 26:00	1/TLC	3-21

MCC-H

1222 CST

FLIGHT PLAN

NOTES



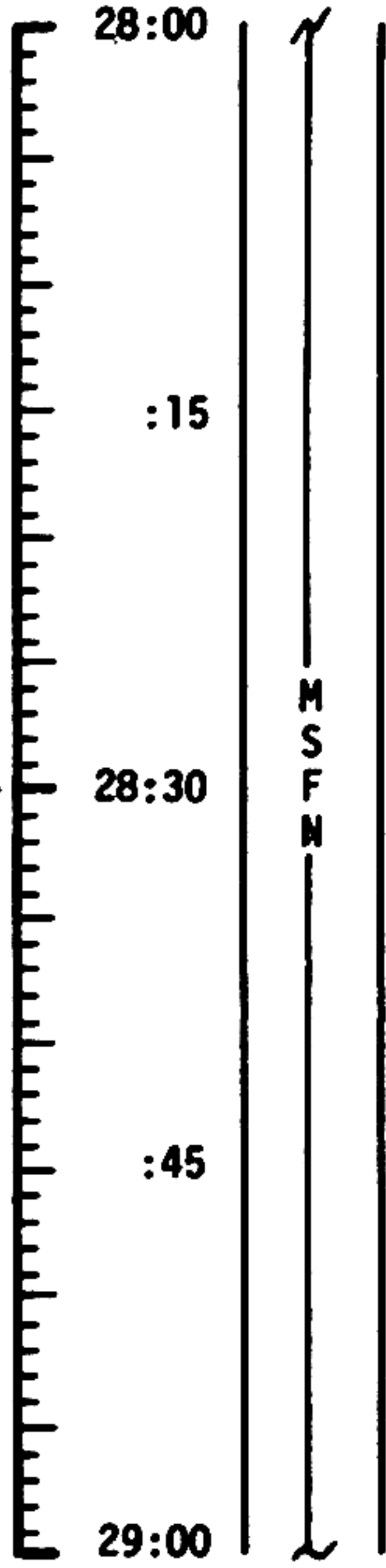
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	26:00 - 28:00	1/TLC	3-22

MCC-N

1422 CST

FLIGHT PLAN

NOTES



POSTSLEEP CHECKLIST:
 CREW STATUS REPORT
 CONSUMABLES UPDATE
 CYCLE H2 & O2 FANS
 FLIGHT PLAN UPDATE
 NORMAL LUNAR COMM EXCEPT:
 S-BD AUX TAPE - OFF
 TAPE RCDR FWD - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B

UPDATE TO CSM
 CONSUMABLES
 FLIGHT PLAN

EAT PERIOD

PTC
 P 90 Y 0

CSM CONSUMABLES UPDATE
 GET: ____ : ____
 RCS TOTAL _____ %
 QUAD A ____ % B ____ %
 C ____ % D ____ %
 H₂ TOTAL _____ %
 O₂ TOTAL _____ %

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	28:00 - 29:00	2/TLC	3-23

**LOG SHEET
FOR
LIGHT FLASHES & RADIO SIGNALS BEHIND MOON**

G.E.T.

REMARKS

FLIGHT PLAN

DATE 10/5/69

**LIGHT FLASH
& RADIO LOG**

**LOG SHEET
FOR
LIGHT FLASHES & RADIO SIGNALS BEHIND MOON**

G.E.T.

REMARKS

FLIGHT PLAN

DATE 10/5/69

LIGHT FLASH & RADIO LOG

MCC-H

1522 CST

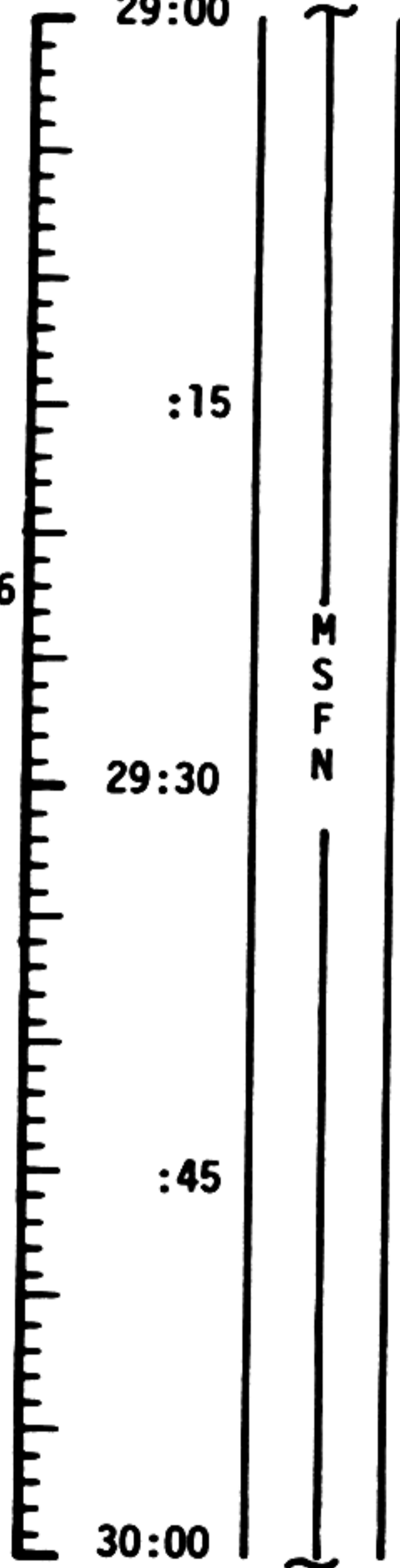
FLIGHT PLAN

NOTES

UPLINK TO CSM
STATE VECTOR &
MCC-2 TGT LOAD

V66

UPDATE TO CSM
GO/NO-GO MCC-2
MCC-2 MNVR PAD



M
S
F
N

EAT PERIOD

REPORT LM/CM ΔP

P52 - IMU REALIGN
OPTION 3 - REFSMMAT

REPORT GYRO TORQUING ANGLES

LIOH CANISTER CHANGE NO 3
(5 INTO A, STOW 3 IN B5)

PTC
P 90 Y 0

P52 (PTC ORIENT)

N71: _ _ . _ _

N05: _ _ . _ _

N93:

X _ _ . _ _

Y _ _ . _ _

Z _ _ . _ _

GET _ _ : _ _ : _ _

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	29:00 - 30:00	2/TLC	3-24

FLIGHT PLAN

MCC-2
BURN TABLE

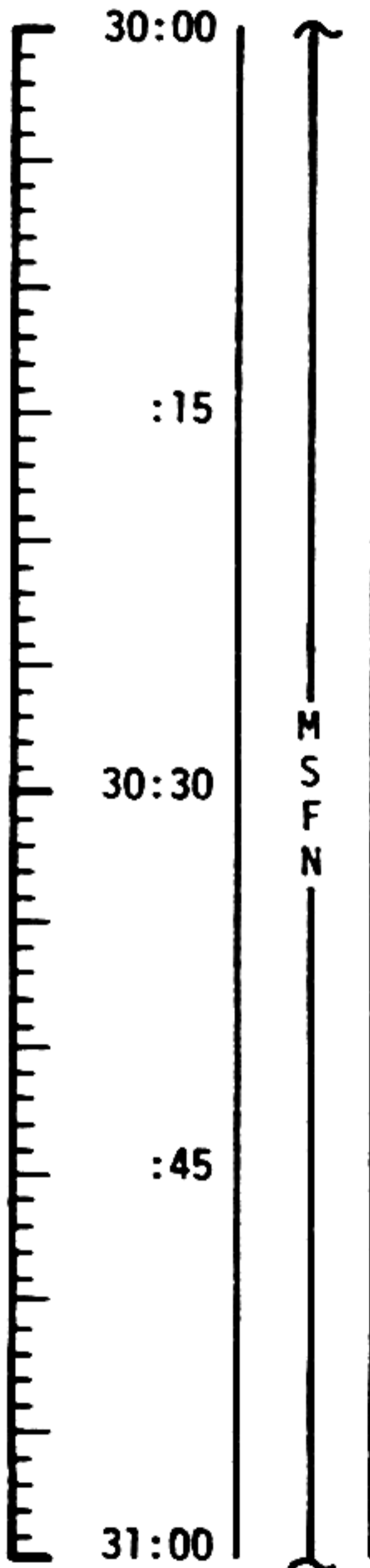
P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	IF < 2FPS, TRIM X AXIS TO 0.2FPS IF > 2FPS, NO TRIM

TABLE 3-3
3-25

MCC-H

1622 CST

FLIGHT PLAN



P30 EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK

TV (GDS) 30:25 TO 31:00
CM4/TV-IN (f5.6)

O₂ FUEL CELL PURGE
WASTE WATER DUMP

P40 - SPS THRUST

GDC ALIGN TO IMU

MCC-2

V66 - TRANSFER CSM SV TO LM SLOT
MCC-2 BURN STATUS REPORT

R _____ HGA
 P _____ P _____
 Y _____ Y _____

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V _{gx}
<input type="checkbox"/>			•	V _{gy}
<input type="checkbox"/>			•	V _{gz}
<input type="checkbox"/>			•	ΔV _c *
X	X	X		FUEL*
X	X	X		OX*
X	X	X		UNBAL

*ITEMS TO BE REPORTED TO MSFN

TIG: 30:52:43.7
 BT: 10.0SEC
 ΔV: 68.8 FPS
 ULLAGE - NONE

ATTITUDE FOR MCC-2
 BURN IS CONSTRAINED
 IN ROLL FOR HGA
 ACQUISITION FOR TV
 AND BY SXT STAR CHECK

TLI + 28 HRS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	30:00 - 31:00	2/TLC	3-26

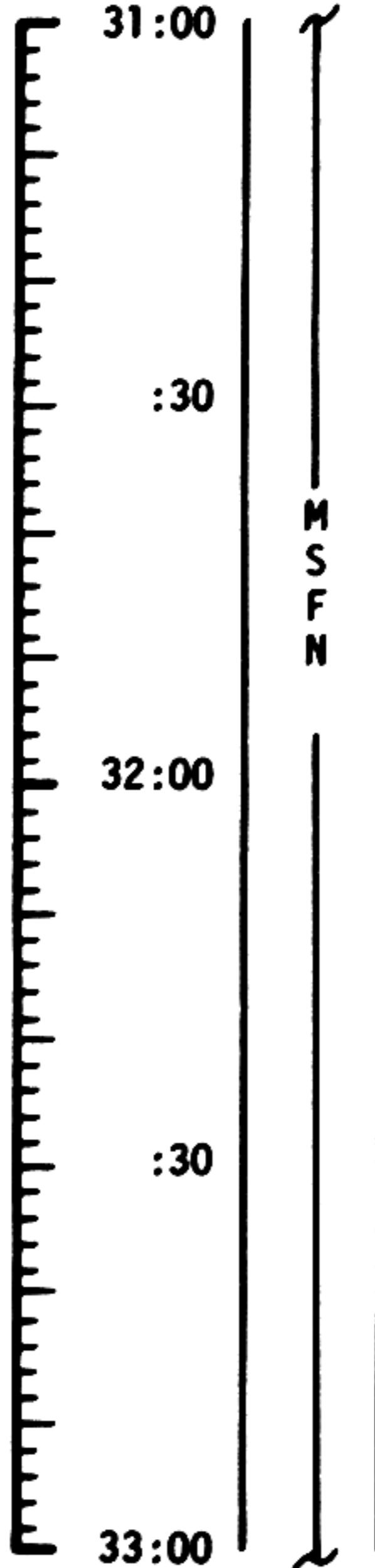
MCC-H

1722 CST

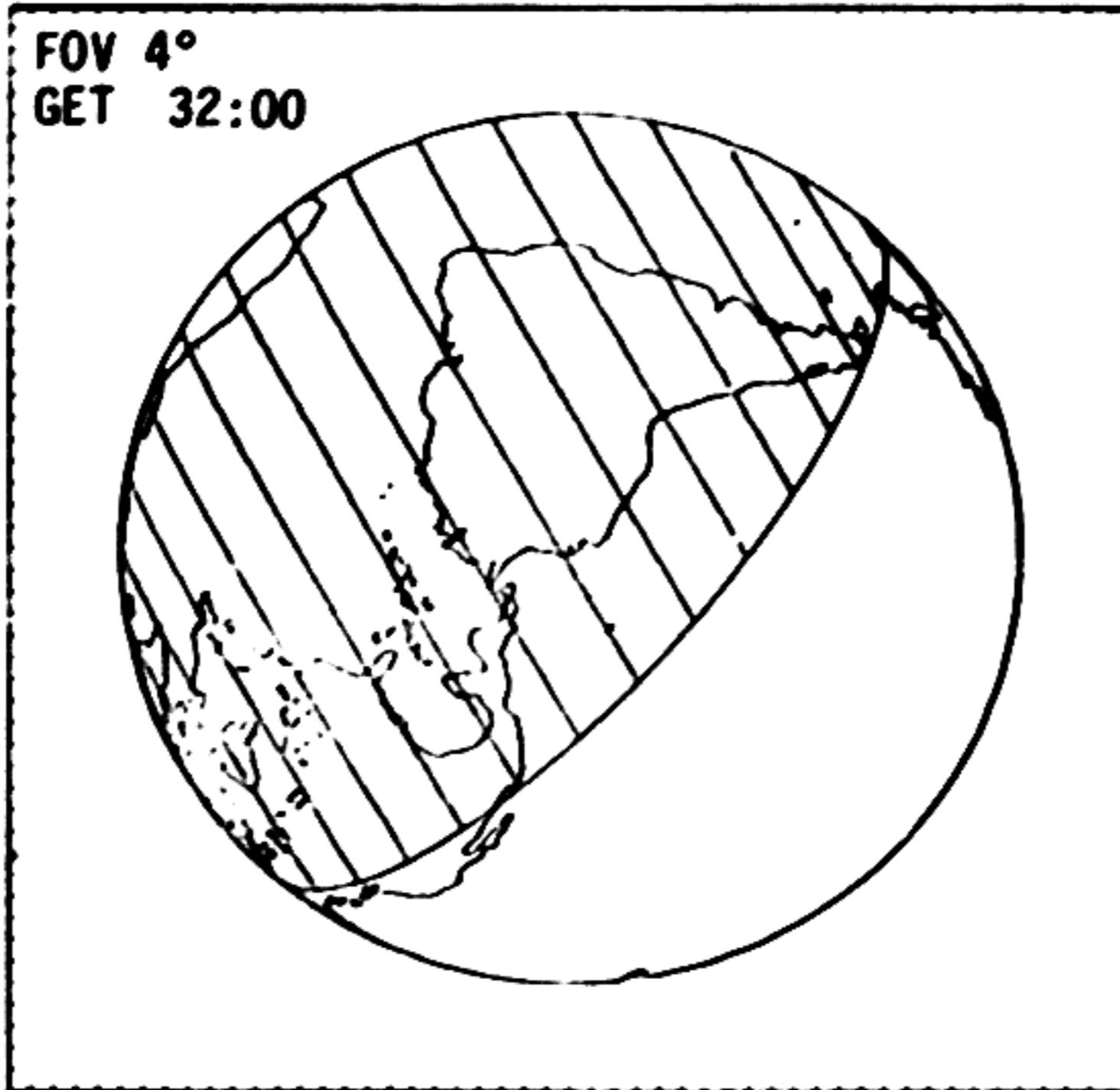
FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



MANEUVER TO PTC ATTITUDE P 90
 START PTC Y 0
 S-BAND ANT - OMNI
 SECURE HGA
 HGA TRACK - MAN
 HGA PITCH -52°
 HGA YAW 270°
 CHECK BAT VENT (TEST METER 4A)



PTC
 P 90 Y 0

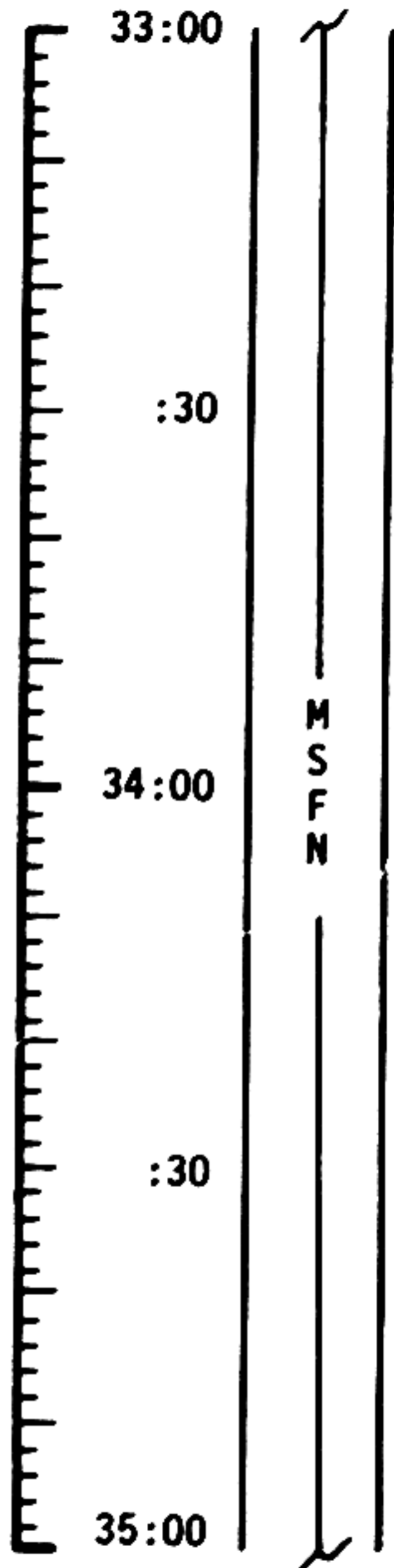
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	31:00 - 33:00	2/TLC	3-27

MCC-N

1922 CST

FLIGHT PLAN

NOTES



PTC
P 90 Y 0

LOI-1 MINUS 5 HR
ABORT IS
CIRCUMLUNAR
TRAJECTORY TO THE
PRI MPL AND
WITH A PERILUNE
BETWEEN 60 AND
1500 NM.

UPDATE TO CSM
LOI-1 MINUS 5 HR
ABORT PAD

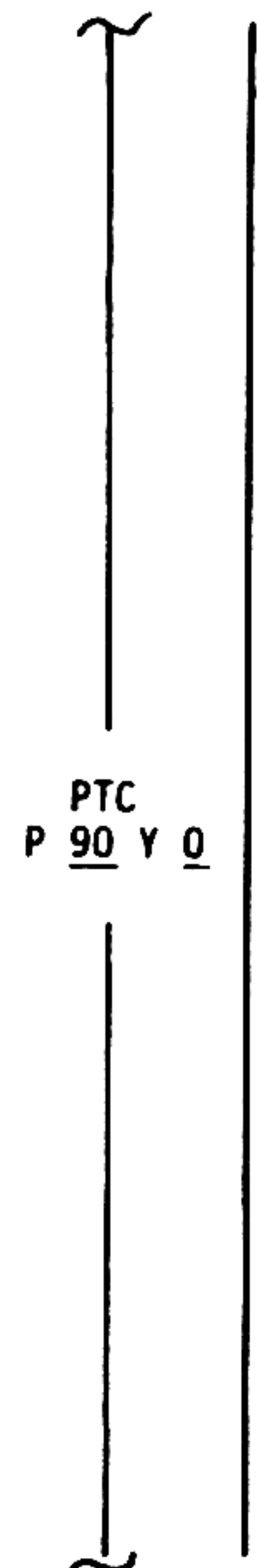
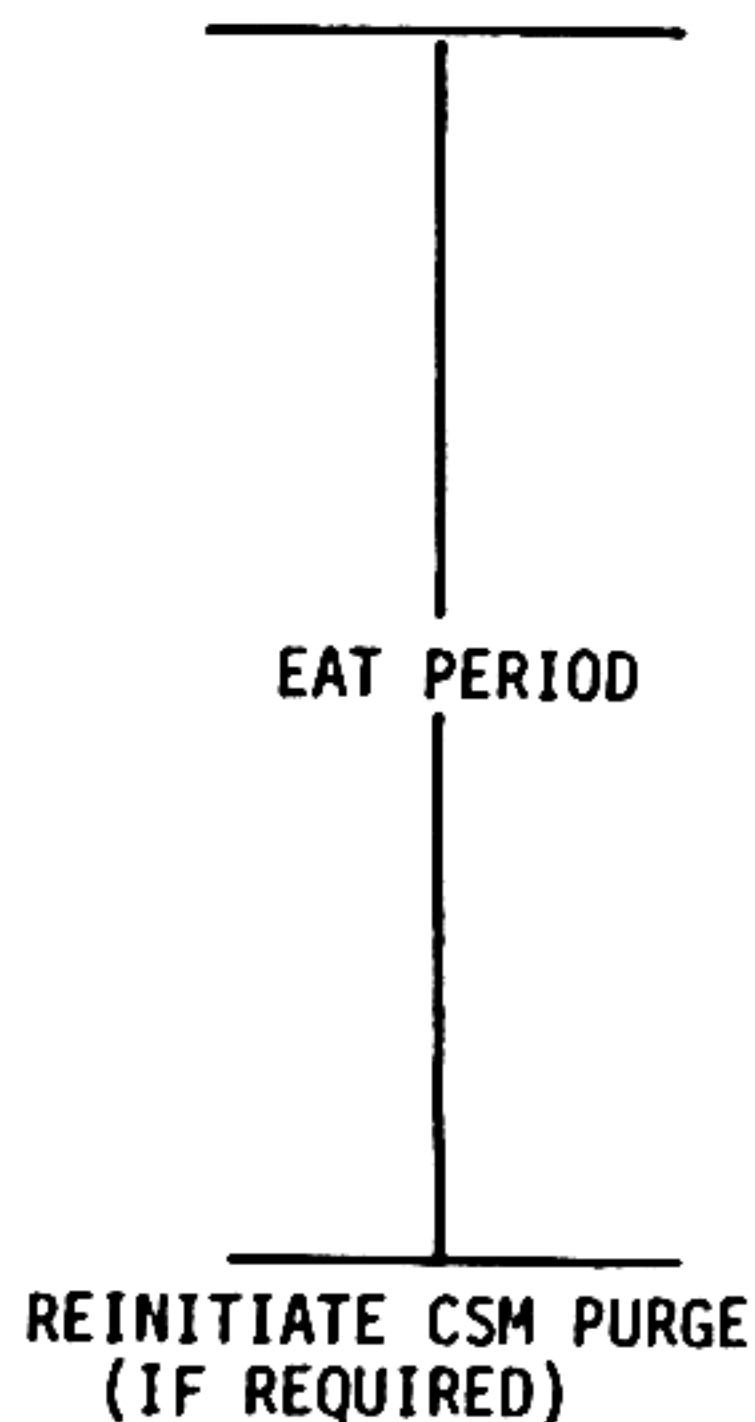
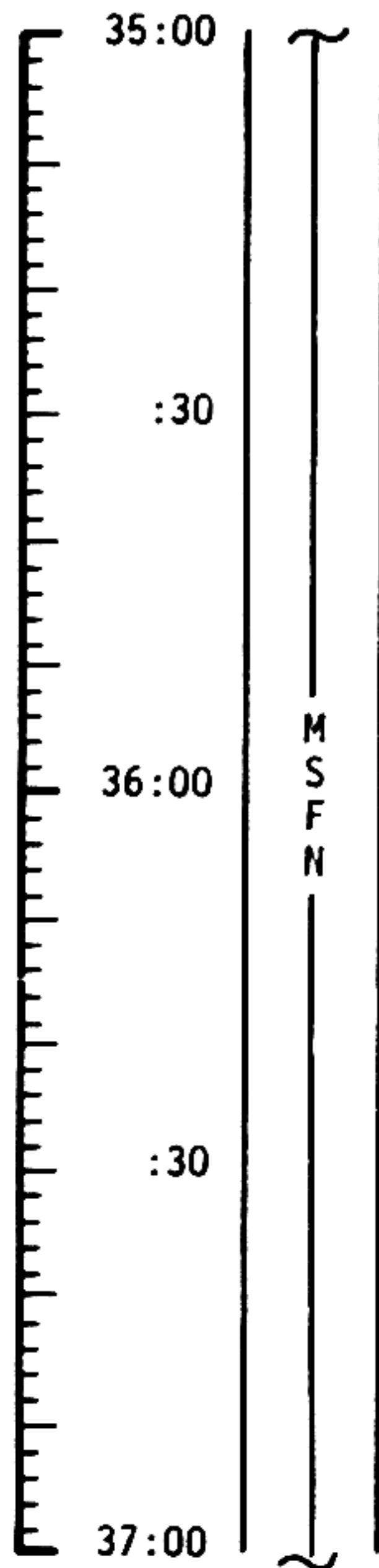
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	33:00 - 35:00	2/TLC	3-28

MCC-H

2122 CST

FLIGHT PLAN

NOTES



THE LENGTH OF THE SECOND CSM CABIN PURGE WILL BE DETERMINED REAL TIME BASED ON THE LM LEAK RATE INSURING LM O₂ PURITY REQUIREMENTS ON THE LUNAR SURFACE

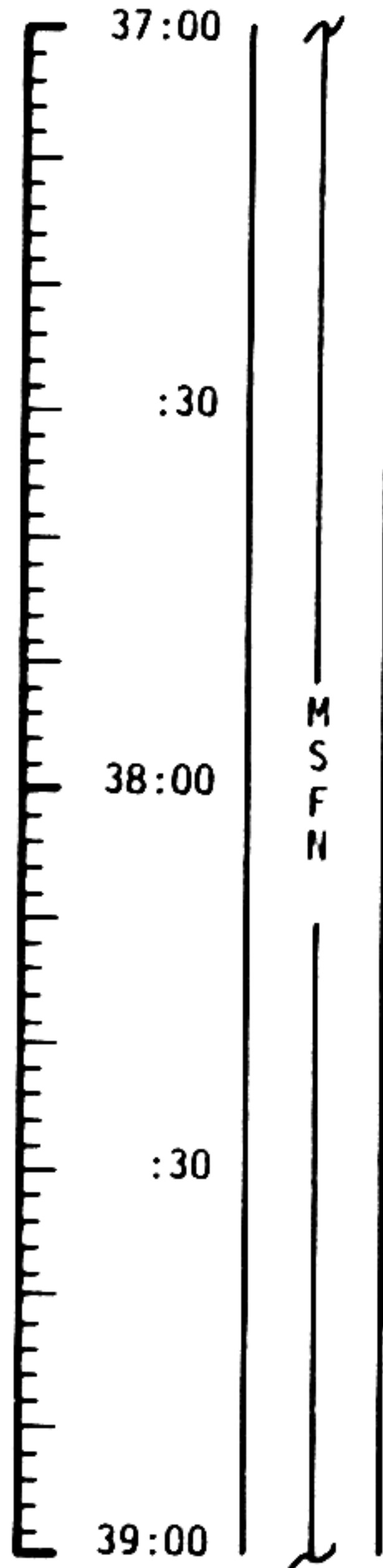
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	35:00 - 37:00	2/TLC	3-29

MCC-H

2322 CST

FLIGHT PLAN

NOTES



PTC
P 90 Y 0

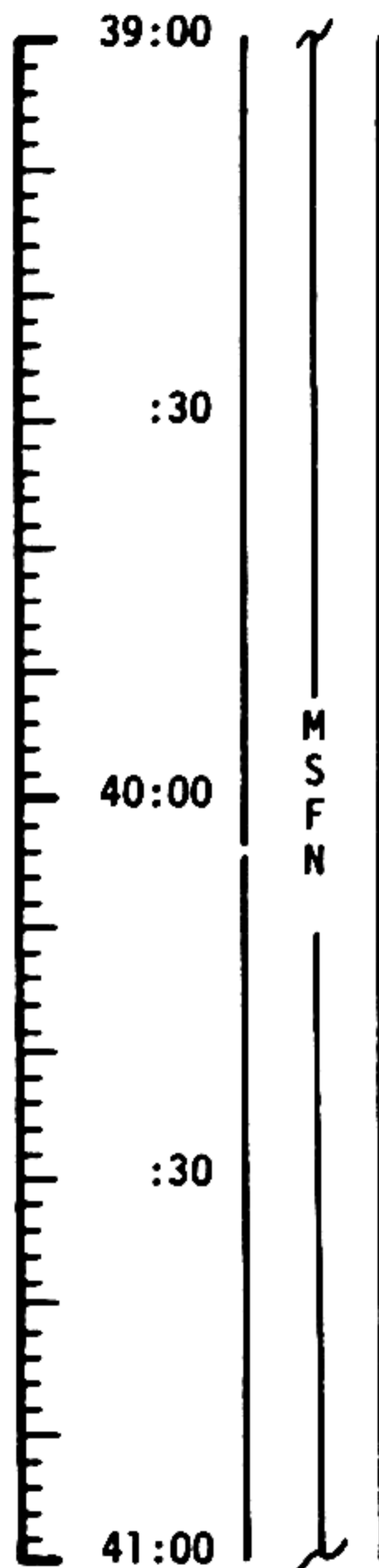
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	37:00 - 39:00	2/TLC	3-30

MCC-N

0122 CST

FLIGHT PLAN

NOTES



M
S
F
N

REPORT LM/CM ΔP

PTC
P 90 Y 0

H₂ PURGE LINE HTRS - ON

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	39:00 - 41:00	2/TLC	3-31

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

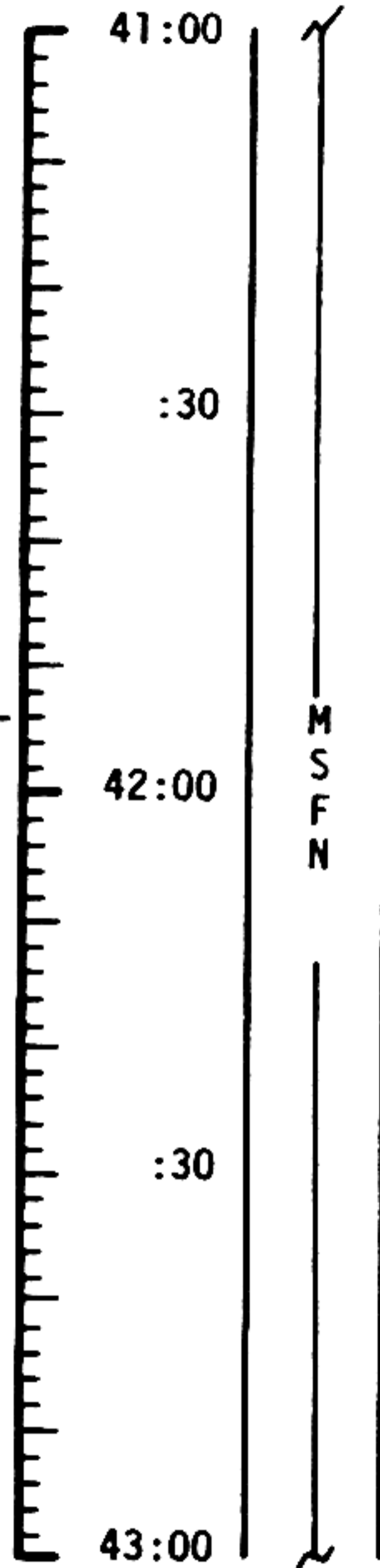
MCC-H

0322 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
STATE VECTOR & V66



M
S
F
N

WASTE WATER DUMP
 H₂ & O₂ FUEL CELL PURGE
 LiOH CANISTER CHANGE NO. 4
 (6 INTO B, STOW 4 IN B5)

EAT PERIOD

PRESLEEP CHECKLIST:
 CREW STATUS REPORT (MED)
 ONBOARD READOUTS
 CYCLE O₂ & H₂ FANS
 CHLORINATE POTABLE WATER
 VERIFY:
 WASTE MNGT OVBD DRAIN - OFF
 WASTE STOW VENT VLV - CLOSED
 EMER CABIN PRESS VLV - BOTH
 SURGE TK O₂ VLV - ON
 REPRESS O₂ VLV - OFF
 LM TUNNEL VENT - LM/CM ΔP
 "E" MEMORY DUMP
 NORMAL LUNAR COMM EXCEPT:
 S-BD NORMAL MODE VOICE - OFF
 S-BD SQUELCH - ENABLE
 S-BD AUX TAPE - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B
 TAPE RCDR FWD - OFF

PTC
P 90 Y 0

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

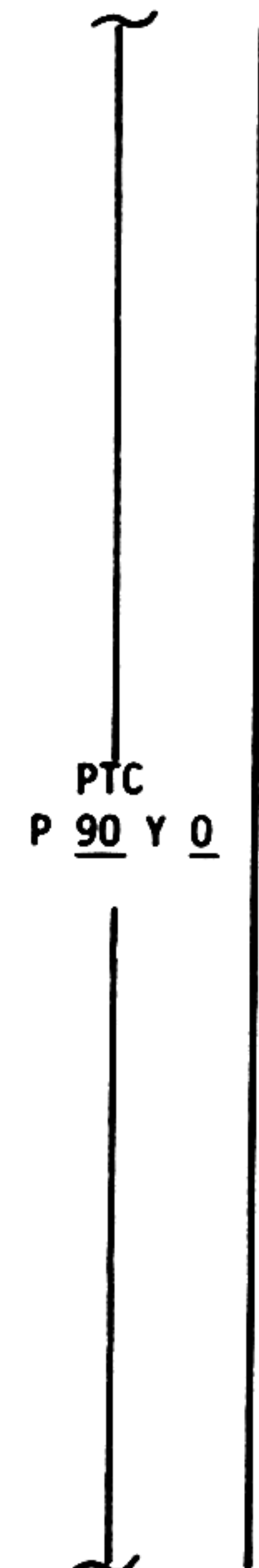
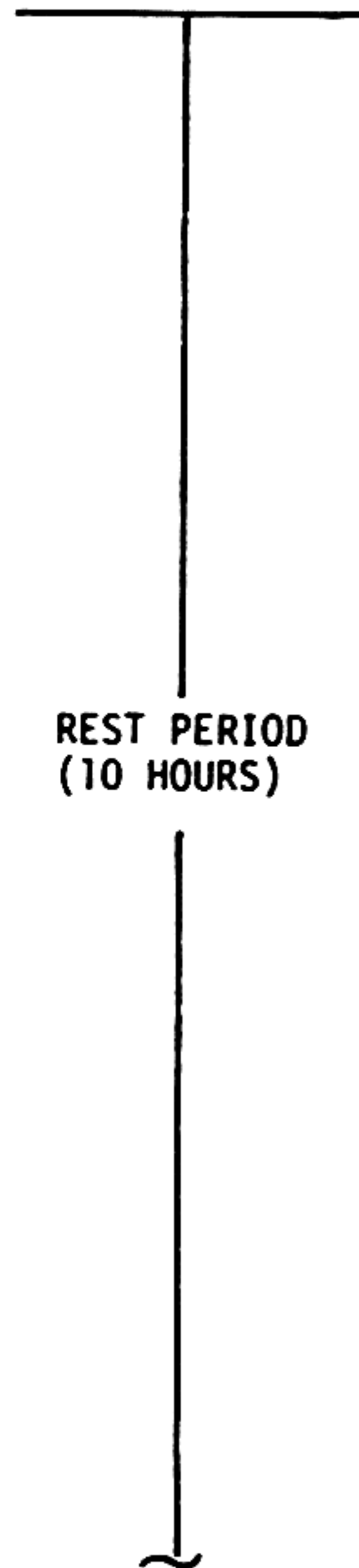
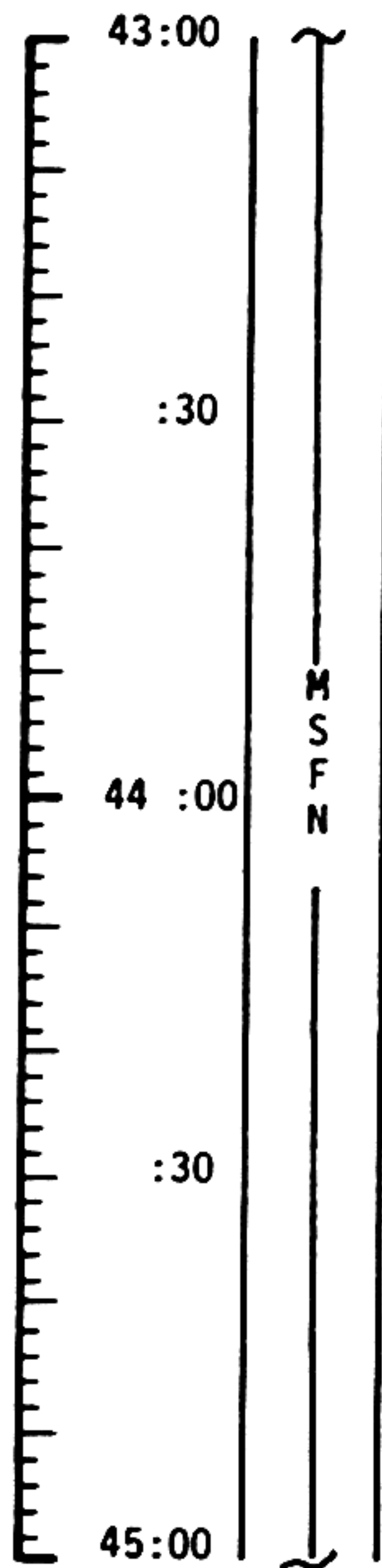
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	41:00 - 43:00	2/TLC	3-32

MCC-H

0522 CST

FLIGHT PLAN

NOTES



DURING REST PERIOD
TWO CREWMEN IN
COUCHES AND ONE
IN REST STATION

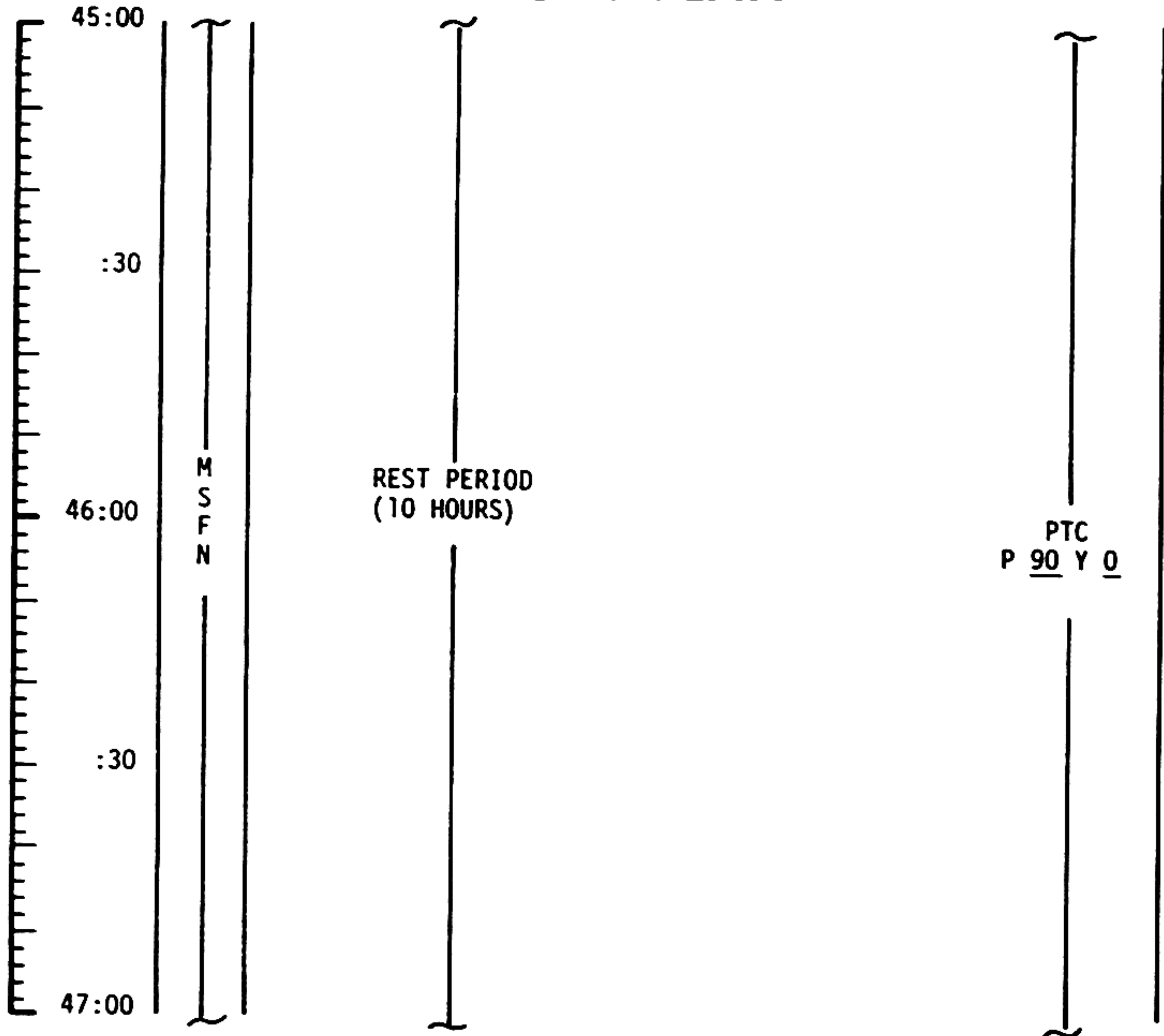
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	43:00 - 45:00	2/TLC	3-33

MCC-H

0722 CST

FLIGHT PLAN

NOTES



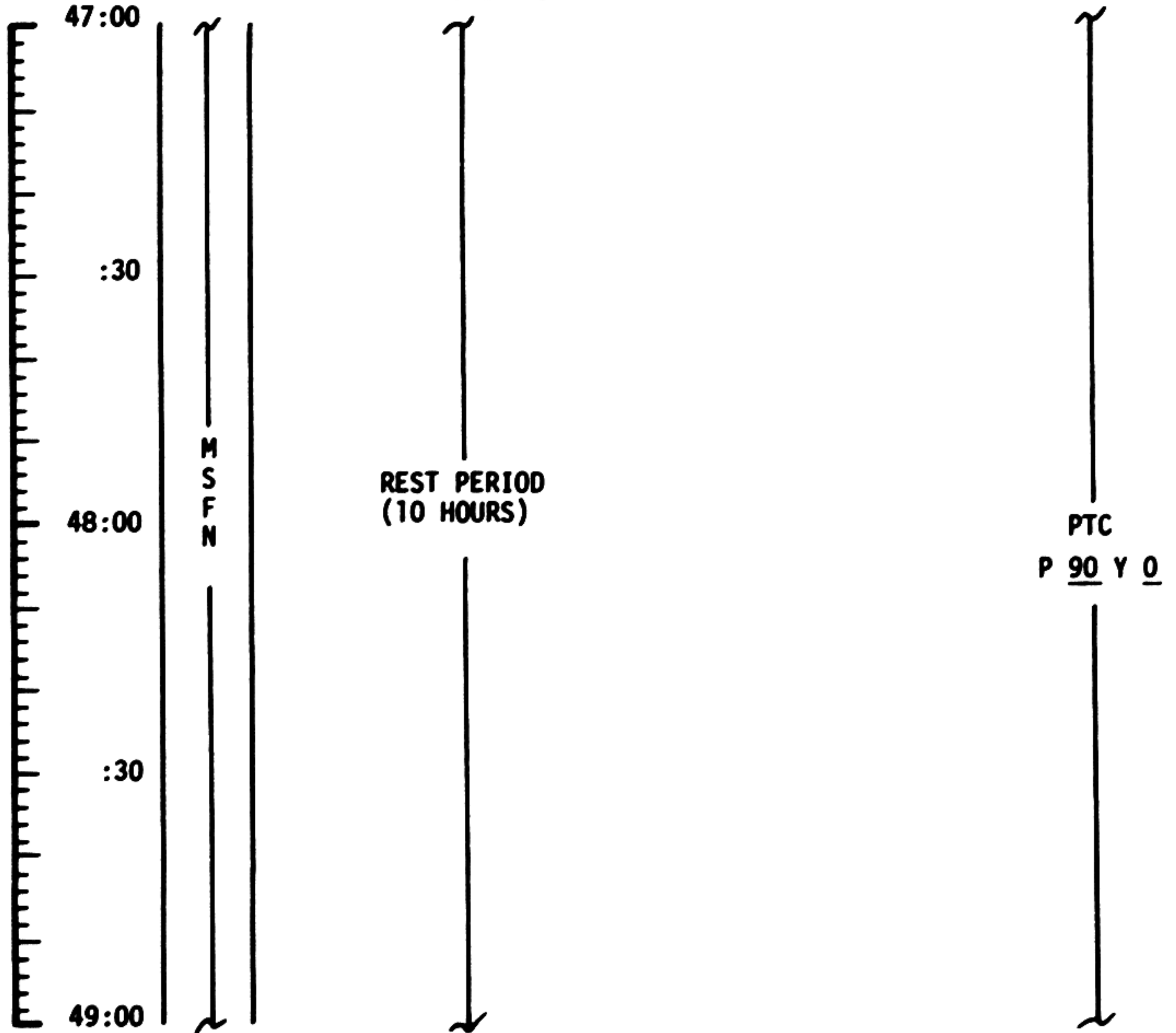
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	45:00 - 47:00	2/TLC	3-34

MCC-N

0922 CST

FLIGHT PLAN

NOTES



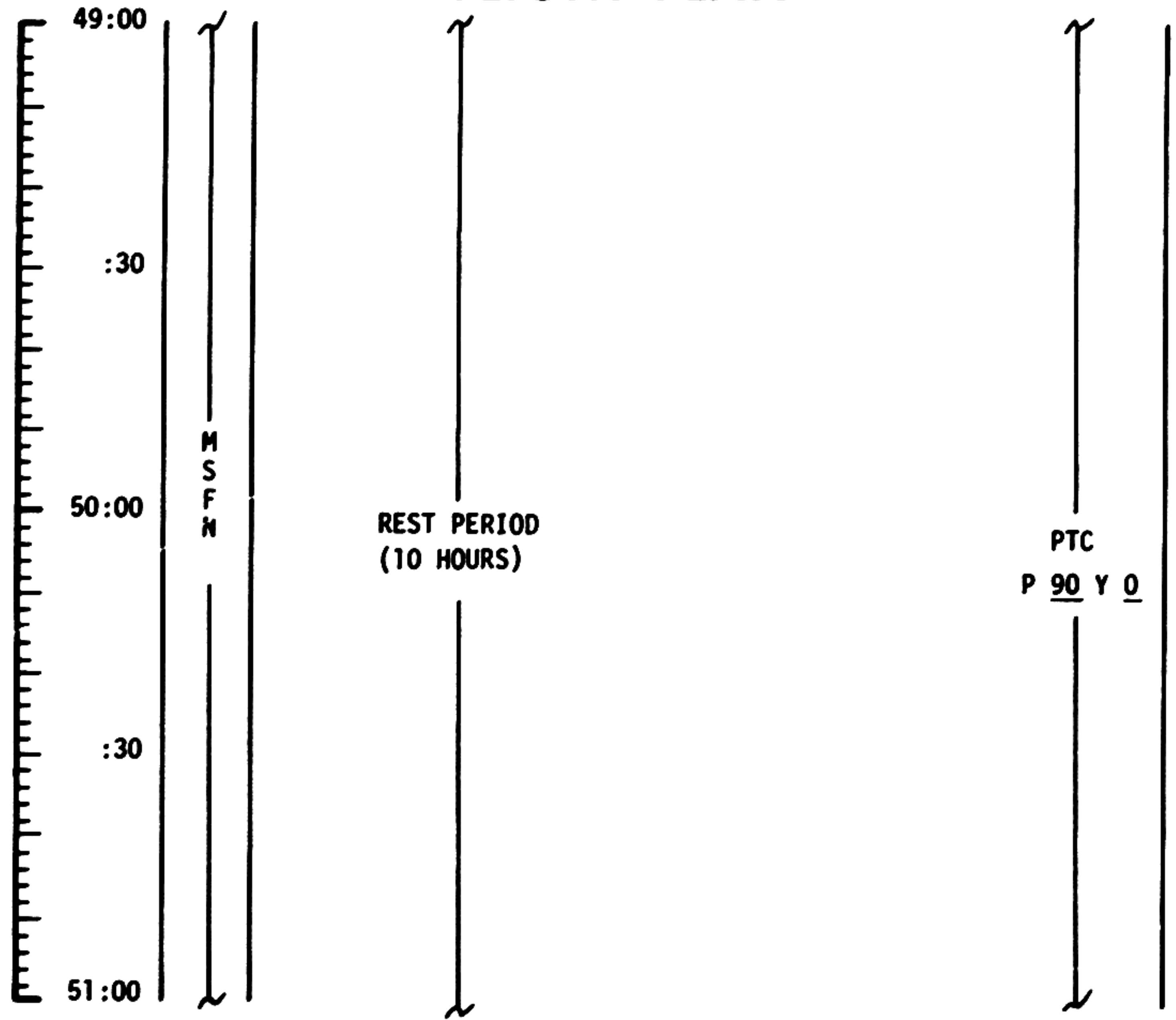
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	47:00 - 49:00	2/TLC	3-35

MCC-H

1122 CST

FLIGHT PLAN

NOTES



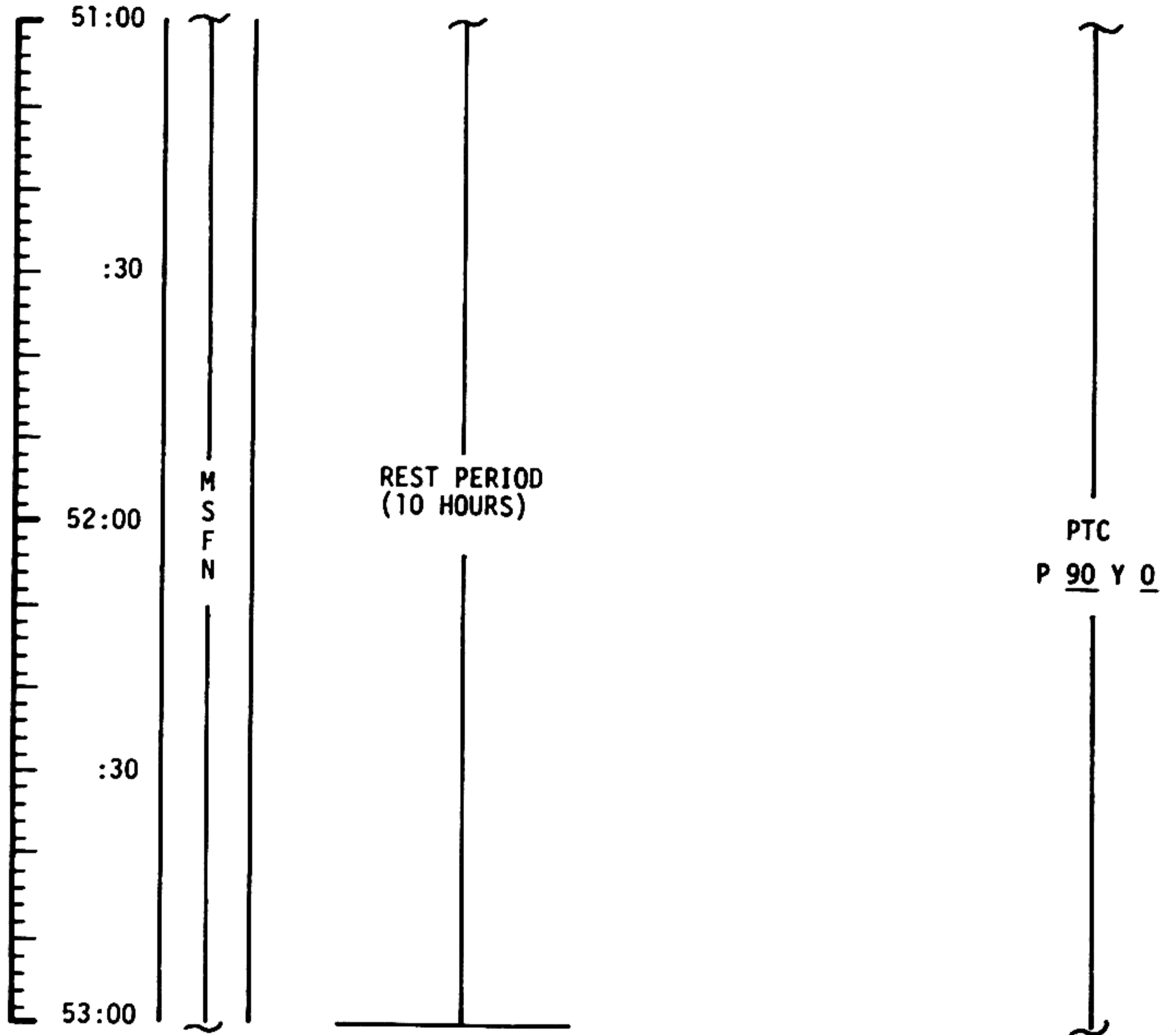
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	49:00 - 51:00	2/TLC	3-36

MCC-H

1322 CST

FLIGHT PLAN

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	51:00 - 53:00	2/TLC	3-37

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

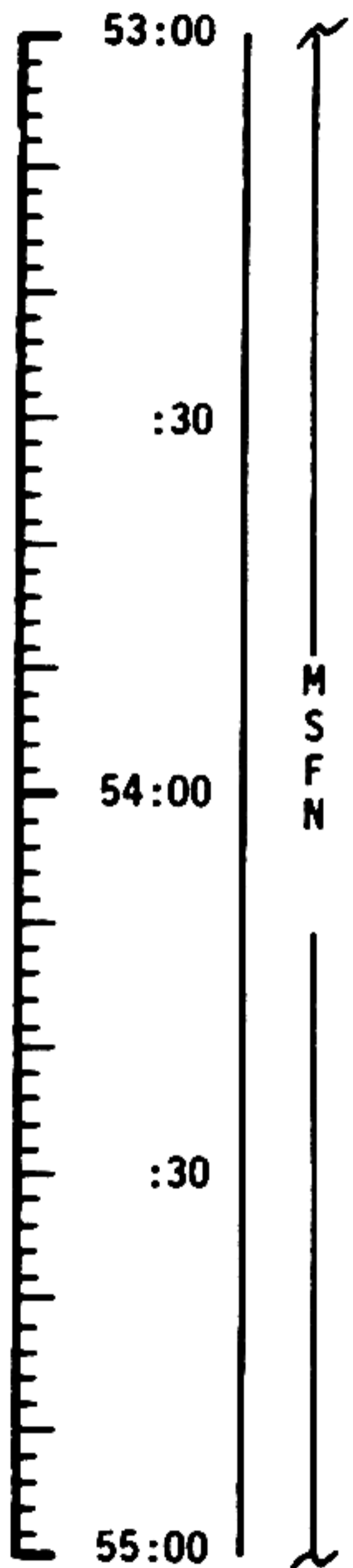
MCC-H

1522 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN



M
S
F
N

EAT PERIOD

POSTSLEEP CHECKLIST:
 CREW STATUS REPORT
 CONSUMABLES UPDATE
 CYCLE H2 & O2 FANS
 FLIGHT PLAN UPDATE
 NORMAL LUNAR COMM EXCEPT:
 S-BD AUX TAPE - OFF
 TAPE RCDR FWD - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B

CSM CONSUMABLES UPDATE
 GET: _____ : _____
 RCS TOTAL _____ %
 QUAD A _____ % B _____ %
 C _____ % D _____ %
 H₂ TOTAL _____ %
 O₂ TOTAL _____ %

PTC
P 90 Y 0

L10H CANISTER CHANGE
NO. 5 (7 INTO A, STOW
5 IN B6)

REPORT LM/CM ΔP

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

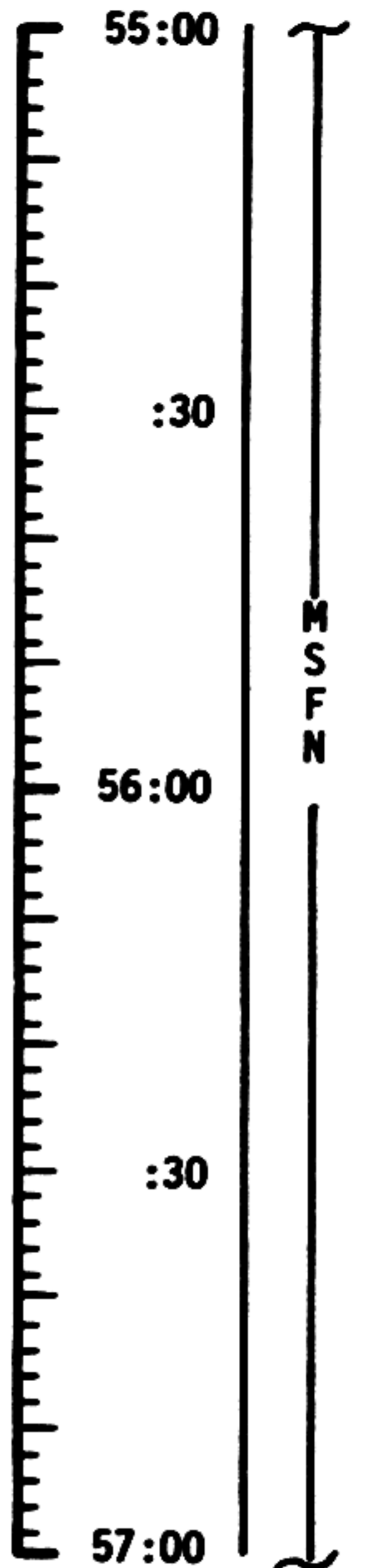
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	53:00 - 55:00	3/TLC	3-38

MCC-N

1722 CST

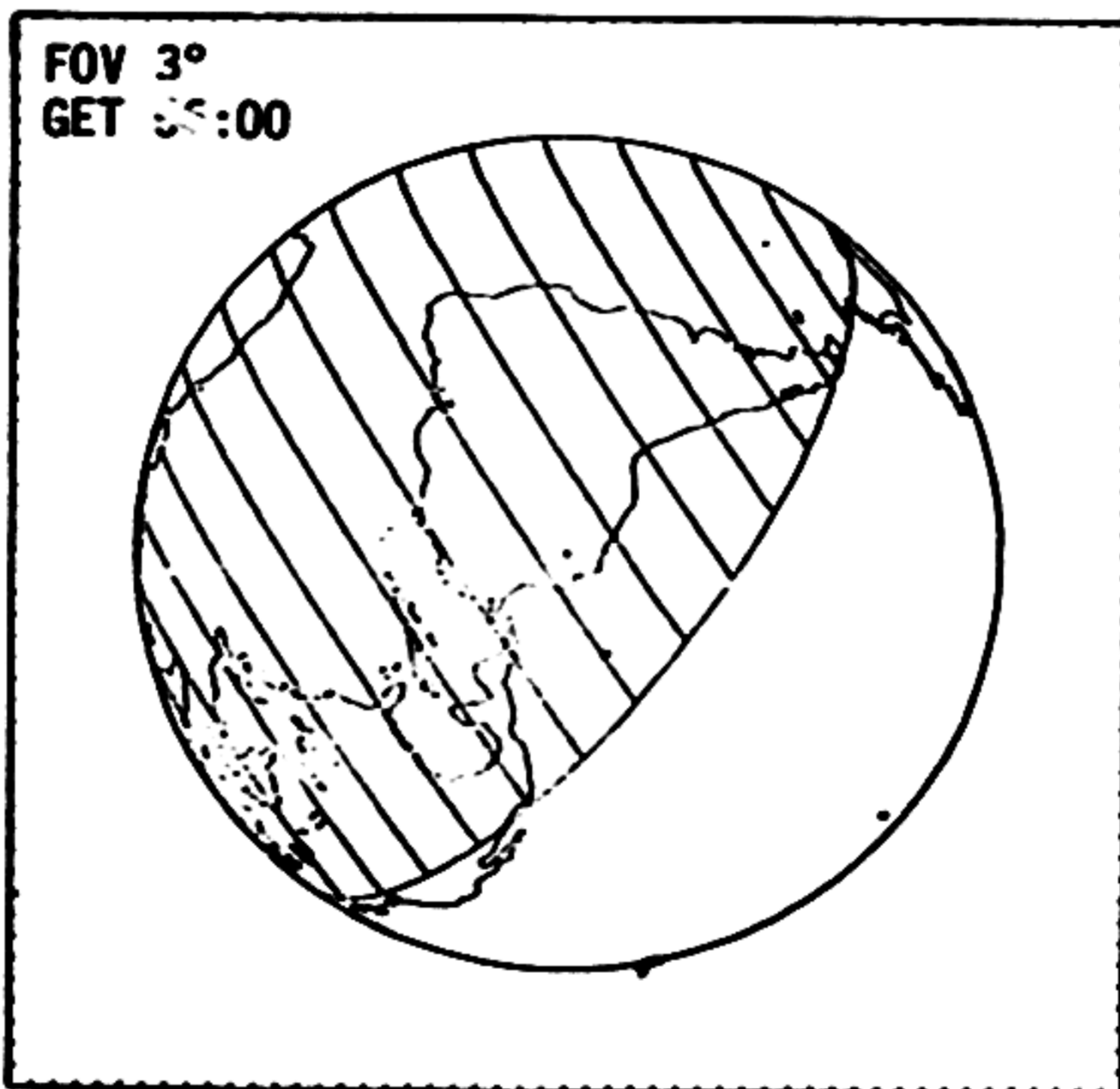
FLIGHT PLAN

NOTES



P52 IMU REALIGN
OPTION 3 REFSMAT
(OPTIONAL)

REPORT GYRO TORQUING ANGLES



P52 (PTC ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

ΔH DETERMINED FROM STAR/EARTH HORIZON SIGHTINGS WILL BE UPLINKED IF IT DIFFERS FROM ΔH IN E-MEMORY BY MORE THAN 5.0 KM

PTC
P 90 Y 0

UPLINK TO CSM
ΔH (IF REQUIRED)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	55:00 - 57:00	3/TLC	3-39

MSC Form 29 (May 69)

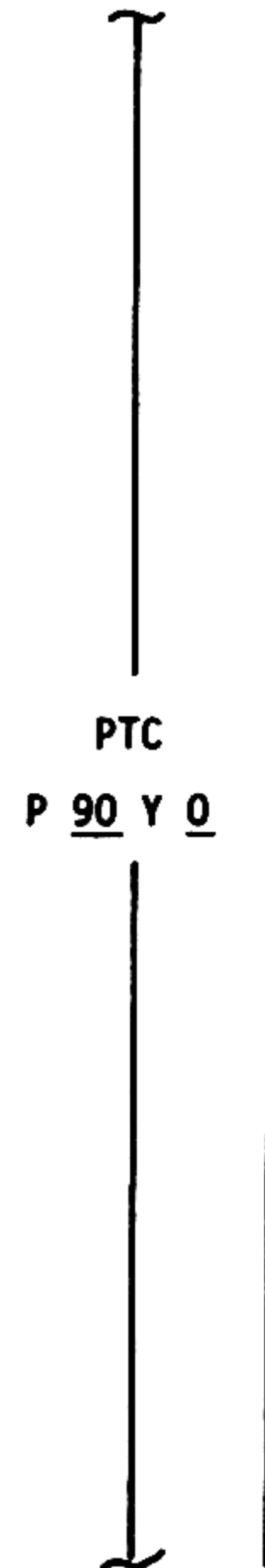
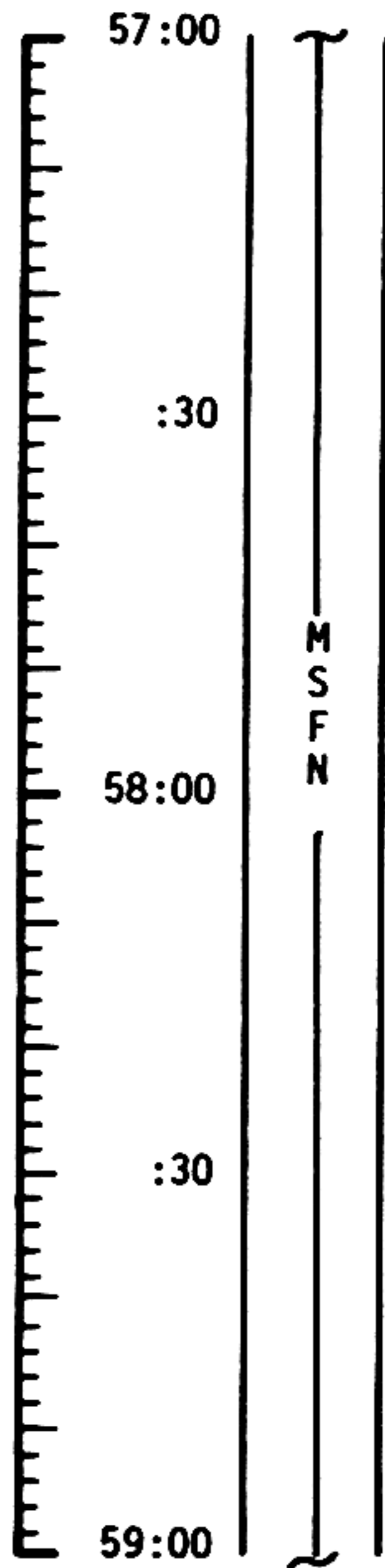
FLIGHT PLANNING BRANCH

MCC-N

1922 CST

FLIGHT PLAN

NOTES



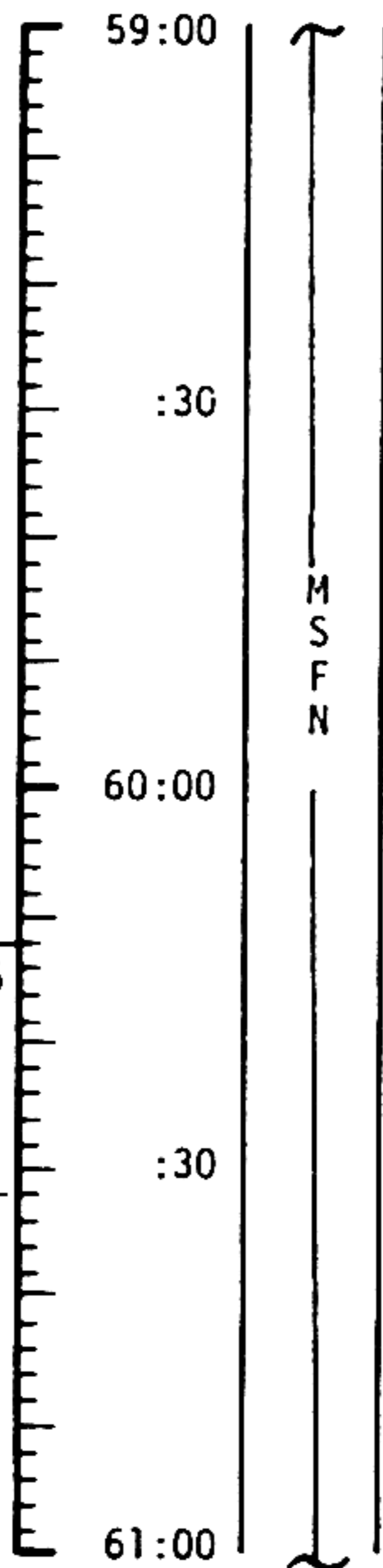
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	57:00 - 59:00	3/TLC	3-40

MCC-M

2122 CST

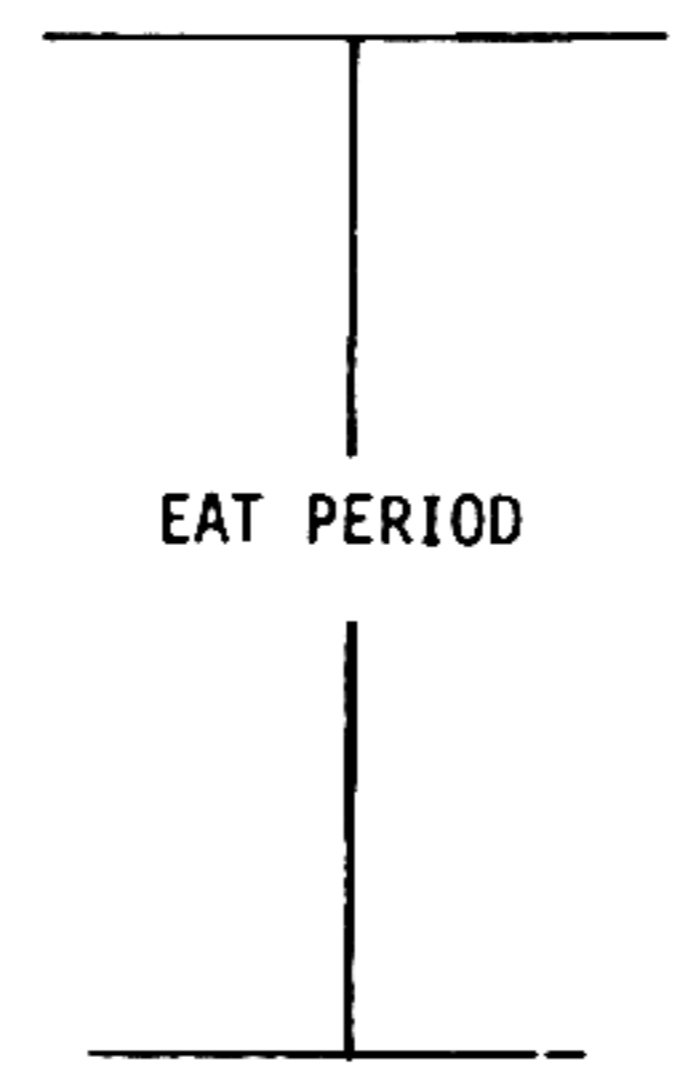
FLIGHT PLAN

NOTES



UPLINK TO CSM
STATE VECTOR & V66
MCC-3 TGT LOAD

UPDATE TO CSM
GO/NO-GO MCC-3
MCC-3 MNVR PAD



~~H2 PURGE LINE HTRS - ON~~

CONTINUE PTC IF MCC-3 IS NOT PERFORMED

P52 - IMU REALIGN
OPTION 3 - REFSMMAT

REPORT GYRO TORQUING ANGLES

PTC
P 90 Y 0

P52 (PTC ORIENT)	
N71:	___ . ___
N05:	___ . ___
N93:	___ . ___
X	___ . ___
Y	___ . ___
Z	___ . ___
GET	___ : ___ : ___

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	59:00 - 61:00	3/TLC	3-41

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FLIGHT PLAN

MCC-3 BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	IF <2FPS, TRIM X AXIS TO 0.2FPS IF >2FPS, NO TRIM

TABLE 3-4
3-42

2322 CST

FLIGHT PLAN

NOTES

MCC-H

61:00

P30 - EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK
O2 FUEL CELL PURGE
WASTE WATER DUMP
P40/P41 - SPS/RCS THRUST

MCC-3 WILL BE
DELAYED TO MCC-4
IF PROPELLANT
COST IS NOT
PROHIBITIVE

:15

MSFN

GDC ALIGN TO IMU

TIG: 61:25:18.2
 ΔV : NOMINALLY
ZERO

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V_{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V_{gx}
<input type="checkbox"/>			•	V_{gy}
<input type="checkbox"/>			•	V_{gz}
<input type="checkbox"/>			•	ΔV_c *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

(LOI₁ - 22 HRS)

61:30

MCC-3

V66 - TRANSFER CSM SV TO LM SLOT
MCC-3 BURN STATUS REPORT

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

:45

MNVR TO PTC ATTITUDE

P 90
Y 0

START PTC

62:00

* ITEMS TO BE
REPORTED TO MSFN

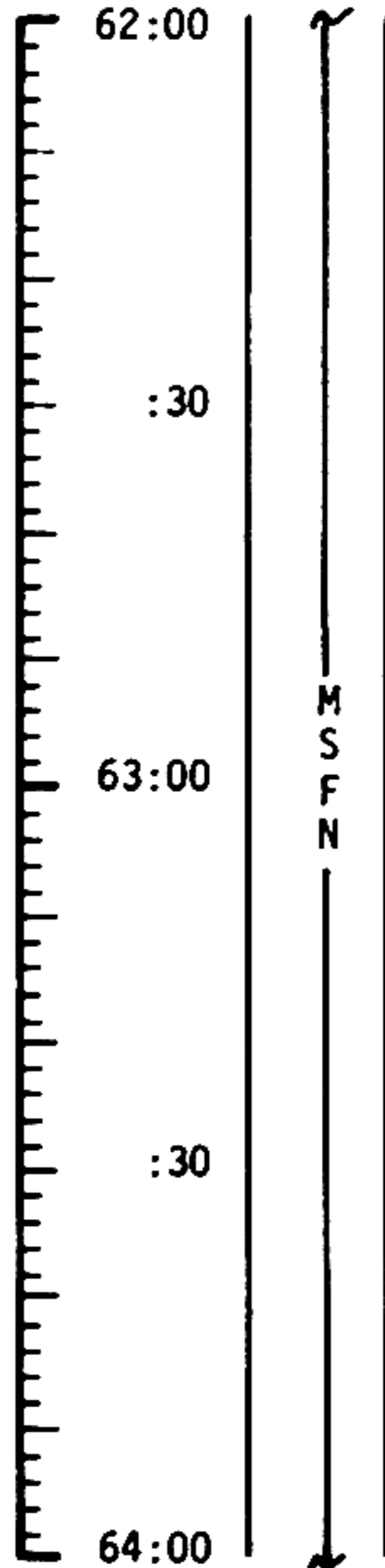
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	61:00 - 62:00	3/TLC	3-43

MCC-N

0022 CST

FLIGHT PLAN

NOTES



BATTERY CHARGE, BATTERY B

PRESSURIZE CSM TO 5.7 PSIA THEN:
PRESSURIZE LM

STOP PTC AT TV ATTITUDE

TV(GDS) 63:30 to 64:20
CM4/TV - IN(f5.6)

HGA: R _____
P _____ Y _____

PTC
P 90 Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	62:00 - 64:00	3/TLC	3-44

FLIGHT PLAN

CSM

0222 CST

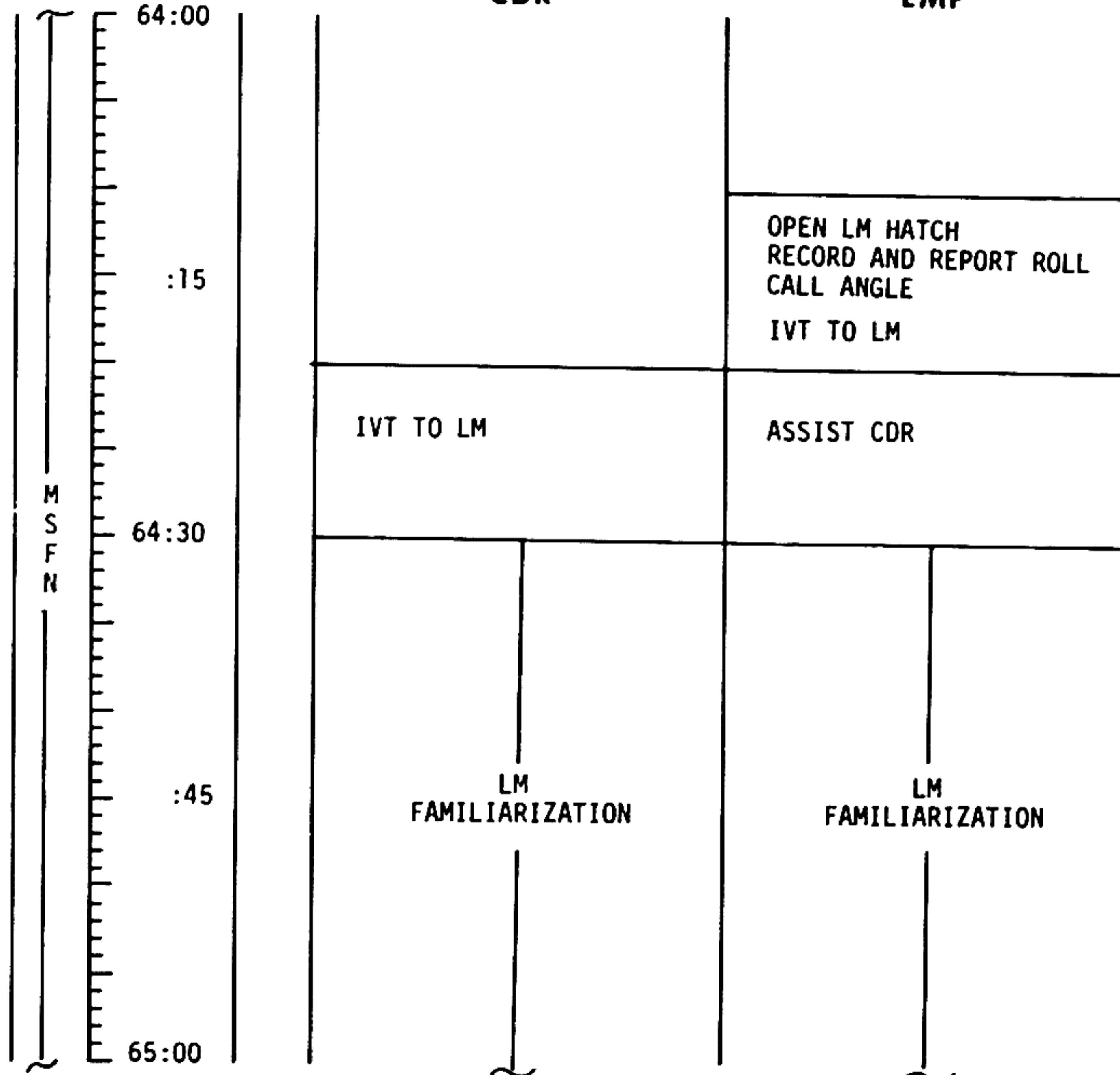
LM

MCC-H

CMP

CLEAR TUNNEL OF
CM HATCH
INSPECT TUNNEL &
DOCKING LATCHES
REMOVE PROBE & DROGUE

TEMPORARILY STOW
PROBE & DROGUE



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	64:00 - 65:00	3/TLC	3-45

FLIGHT PLANNING BRANCH

CSM

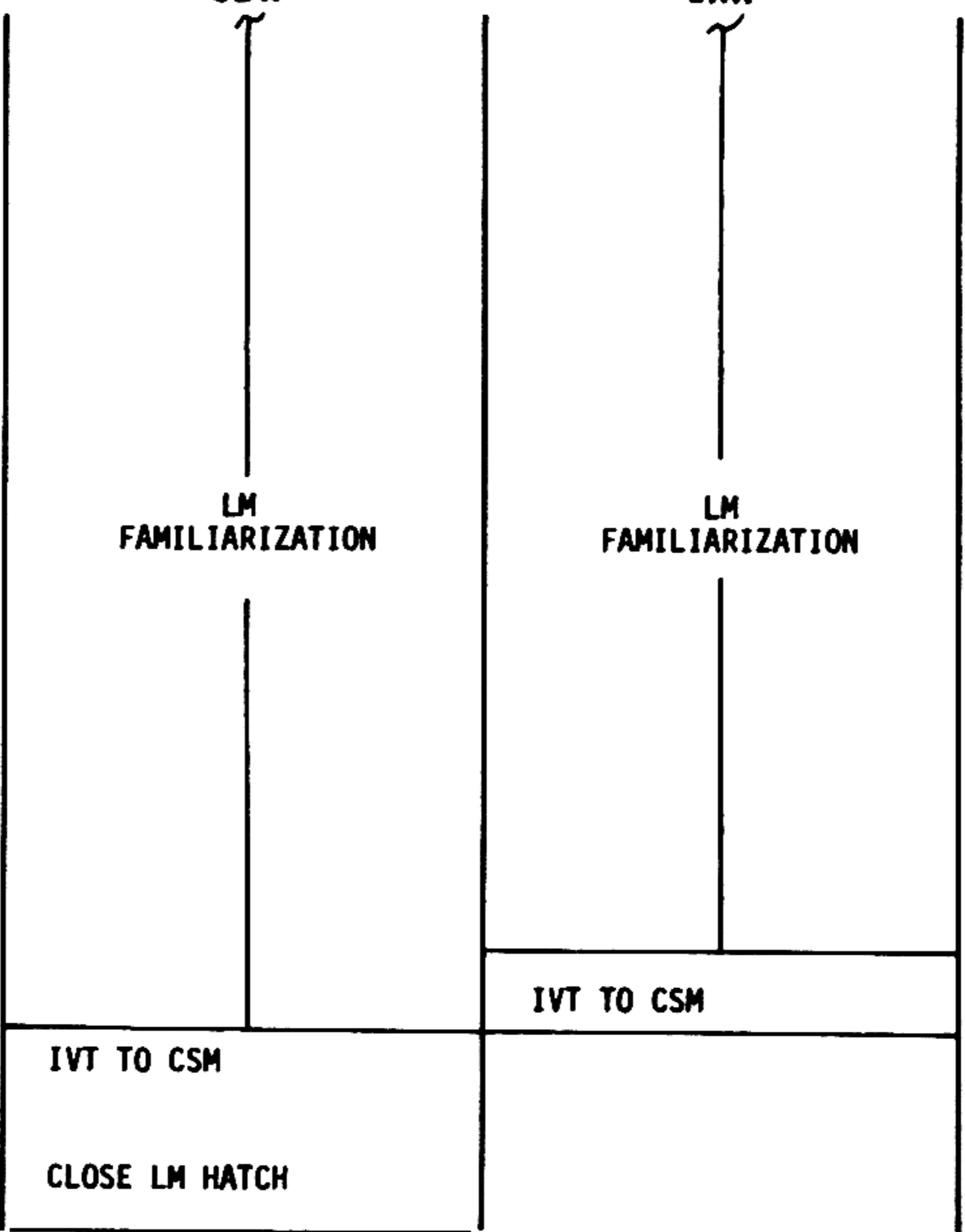
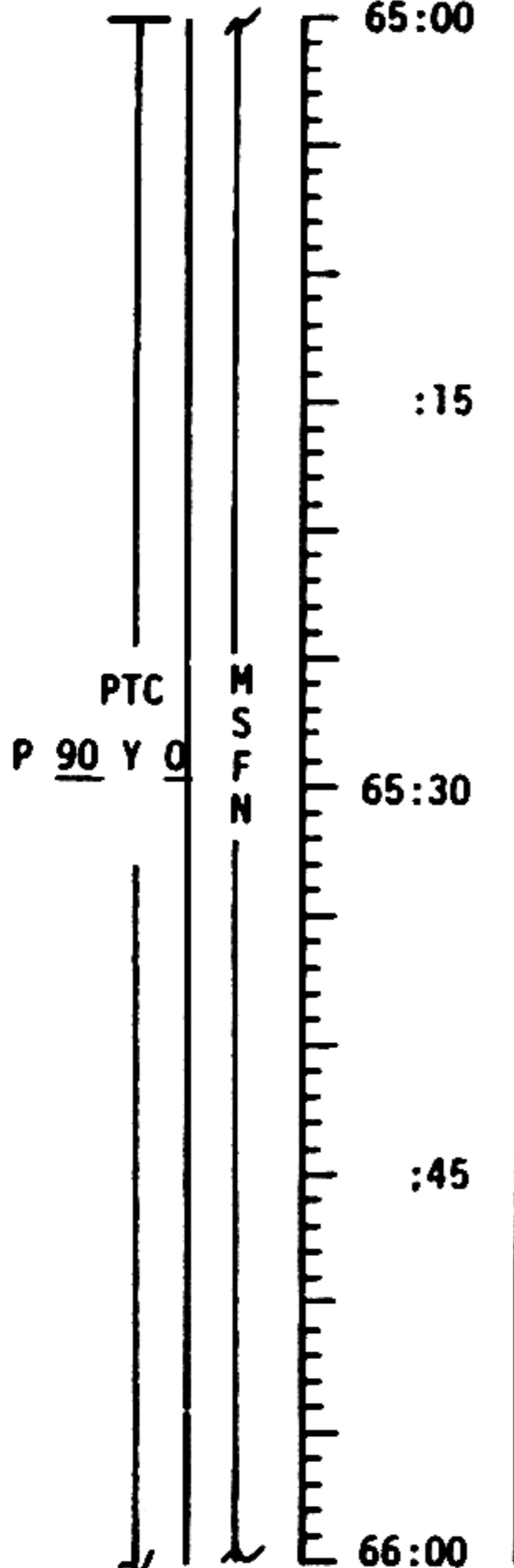
CMP

0322 CST

LM

MCC-H

START PTC



UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	65:00 - 66:00	3/TLC	3-46

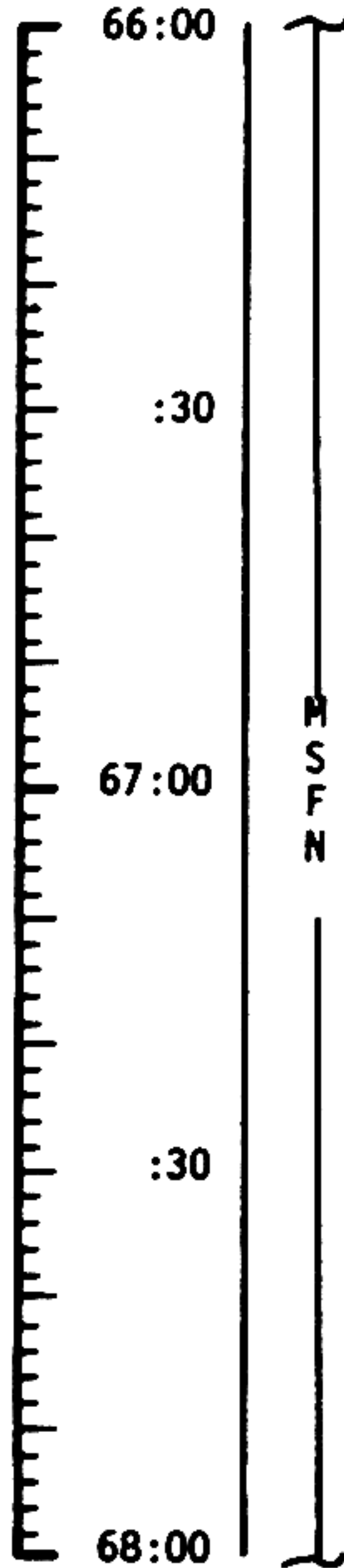
FLIGHT PLANNING BRANCH

MCC-H

0422 CST

FLIGHT PLAN

NOTES



CMP: INSTALL PROBE AND DROGUE
 INSTALL CM HATCH
 LM TUNNEL VENT VALVE - LM/CM ΔP

LiOH CANISTER CHANGE
 NO. 6 (8 INTO B, STOW
 6 IN B6)

EAT PERIOD

PRESLEEP CHECKLIST:
 CREW STATUS REPORT (MED)
 ONBOARD READOUTS
 CYCLE O2 & H2 FANS
 CHLORINATE POTABLE WATER
 VERIFY:
 WASTE MNGT OVBD DRAIN - OFF
 WASTE STOW VENT VLV - CLOSED
 EMERG CABIN PRESS VLV - BOTH
 SURGE TK O2 VLV - ON
 REPRESS O2 VLV - OFF
 LM TUNNEL VENT - LM/CM ΔP
 "E" MEMORY DUMP
 NORMAL LUNAR COMM EXCEPT:
 S-BD NORMAL MODE VOICE - OFF
 S-BD SQUELCH - ENABLE
 S-BD AUX TAPE - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B
 TAPE RCDR FWD - OFF

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

PTC
 P 90 Y Q

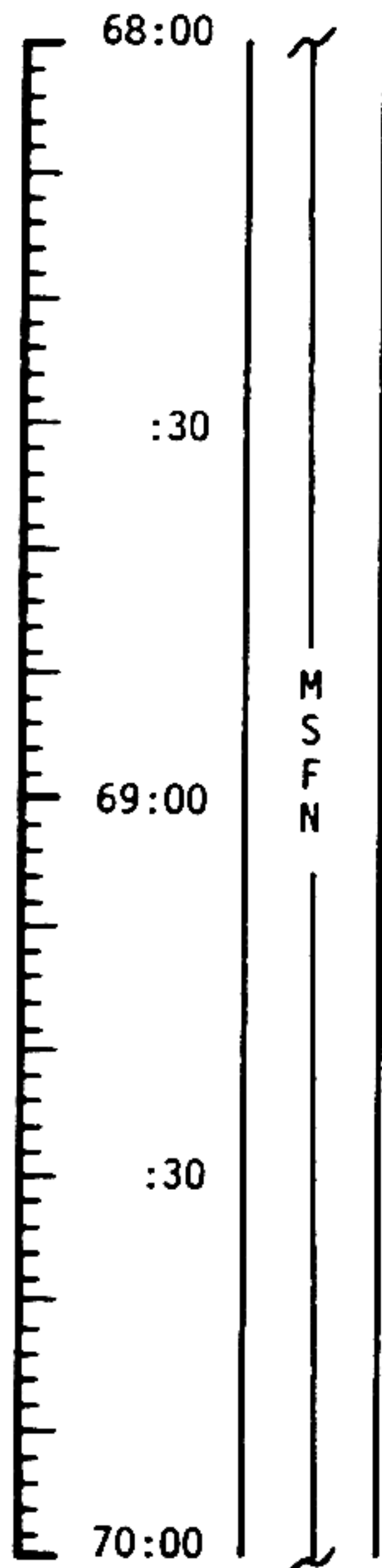
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	66:00 - 68:00	3/TLC	3-47

MCC-H

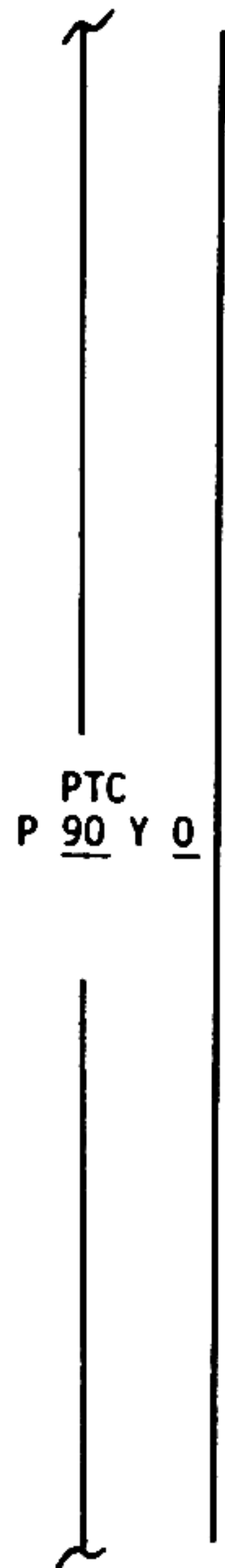
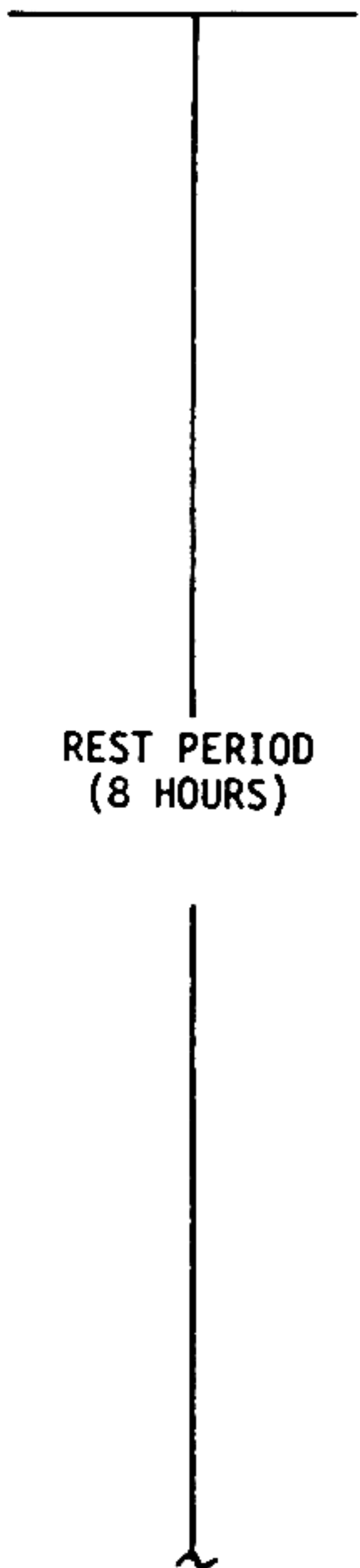
0622 CST

FLIGHT PLAN

NOTES



M
S
F
N



DURING REST PERIOD
TWO CREWMEN IN
COUCHES AND ONE
IN REST STATION

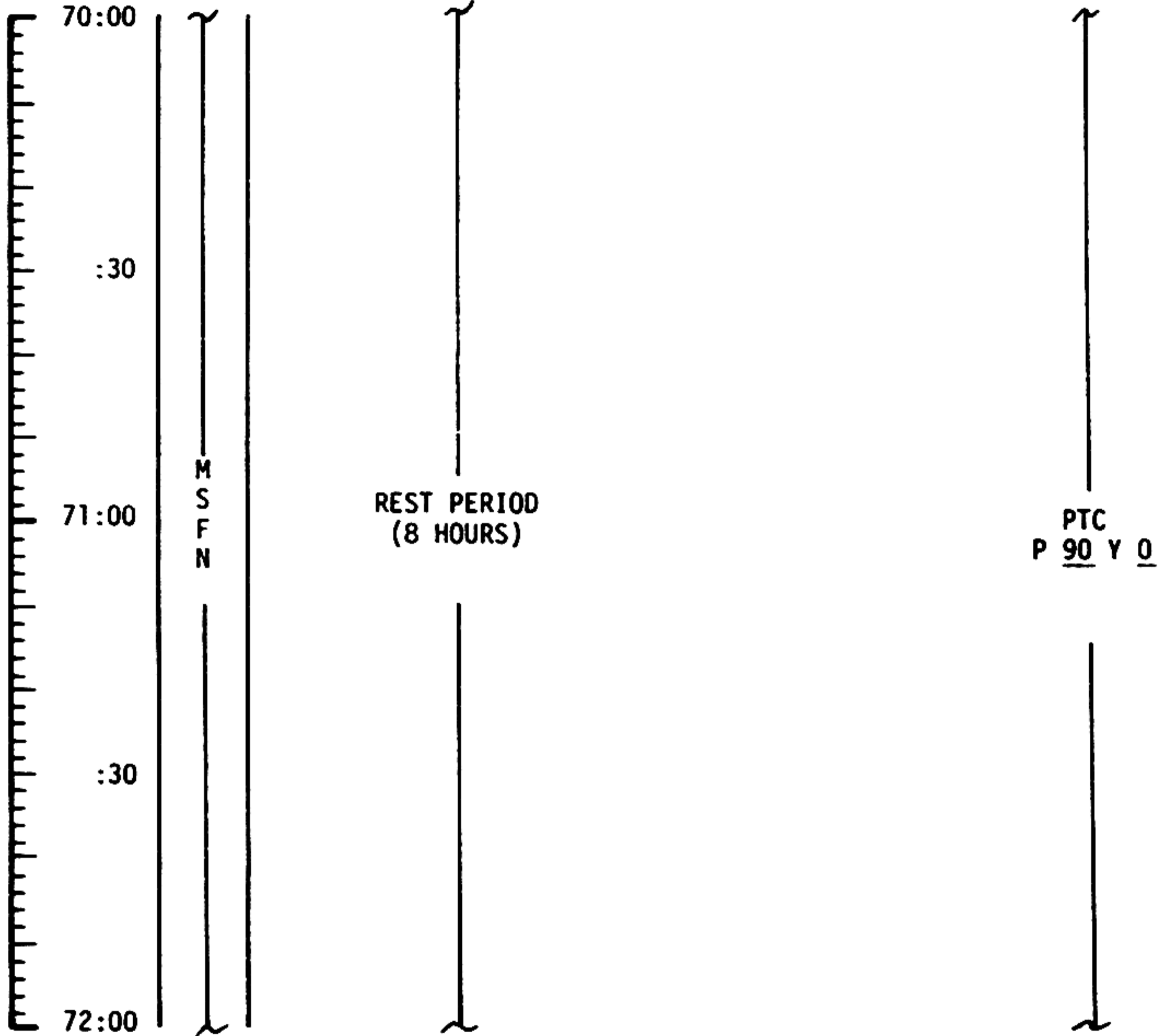
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	68:00 - 70:00	3/TLC	3-48

MCC-H

0822 CST

FLIGHT PLAN

NOTES



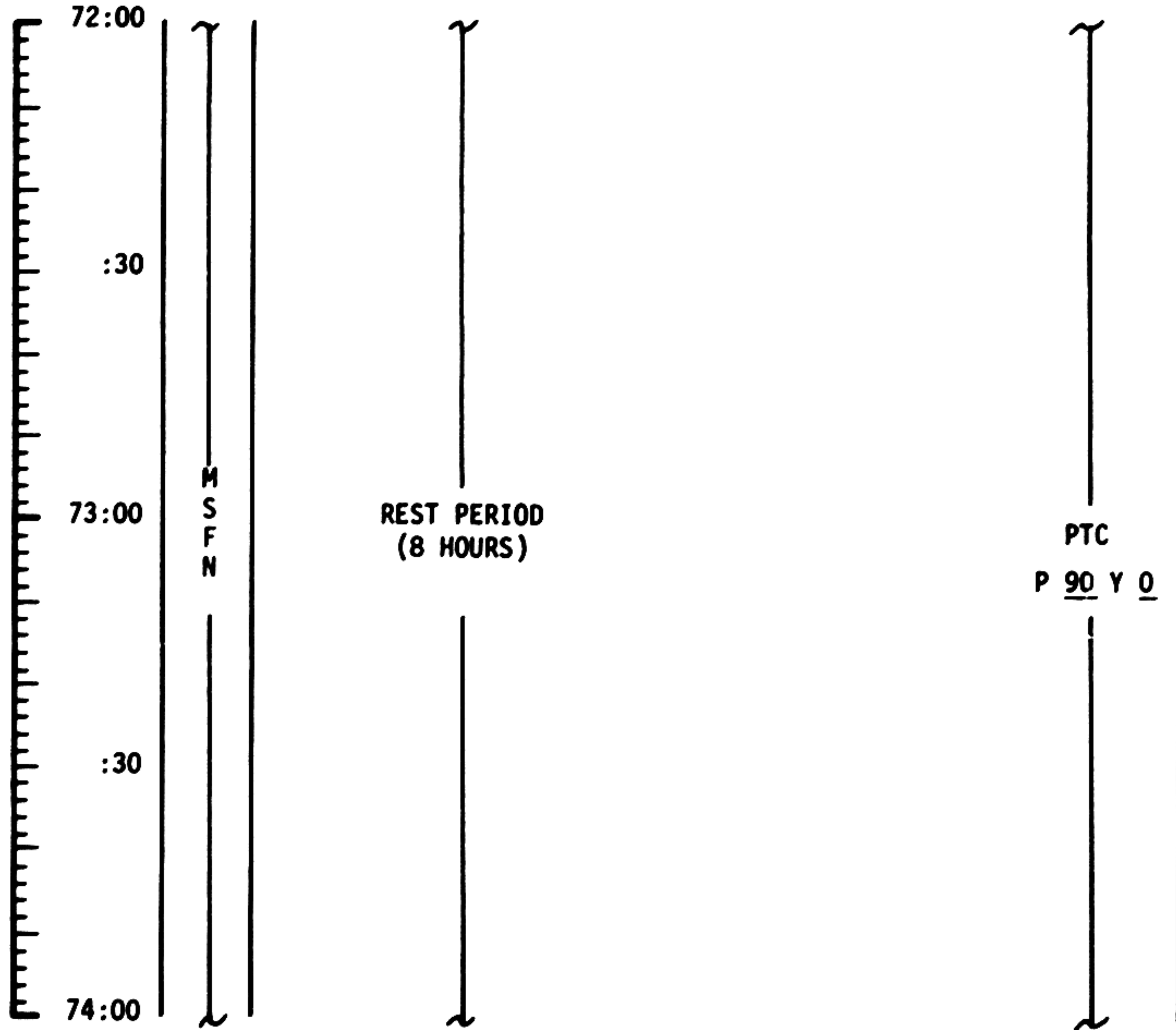
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	70:00 - 72:00	3/TLC	3-49

MCC-H

1022 CST

FLIGHT PLAN

NOTES



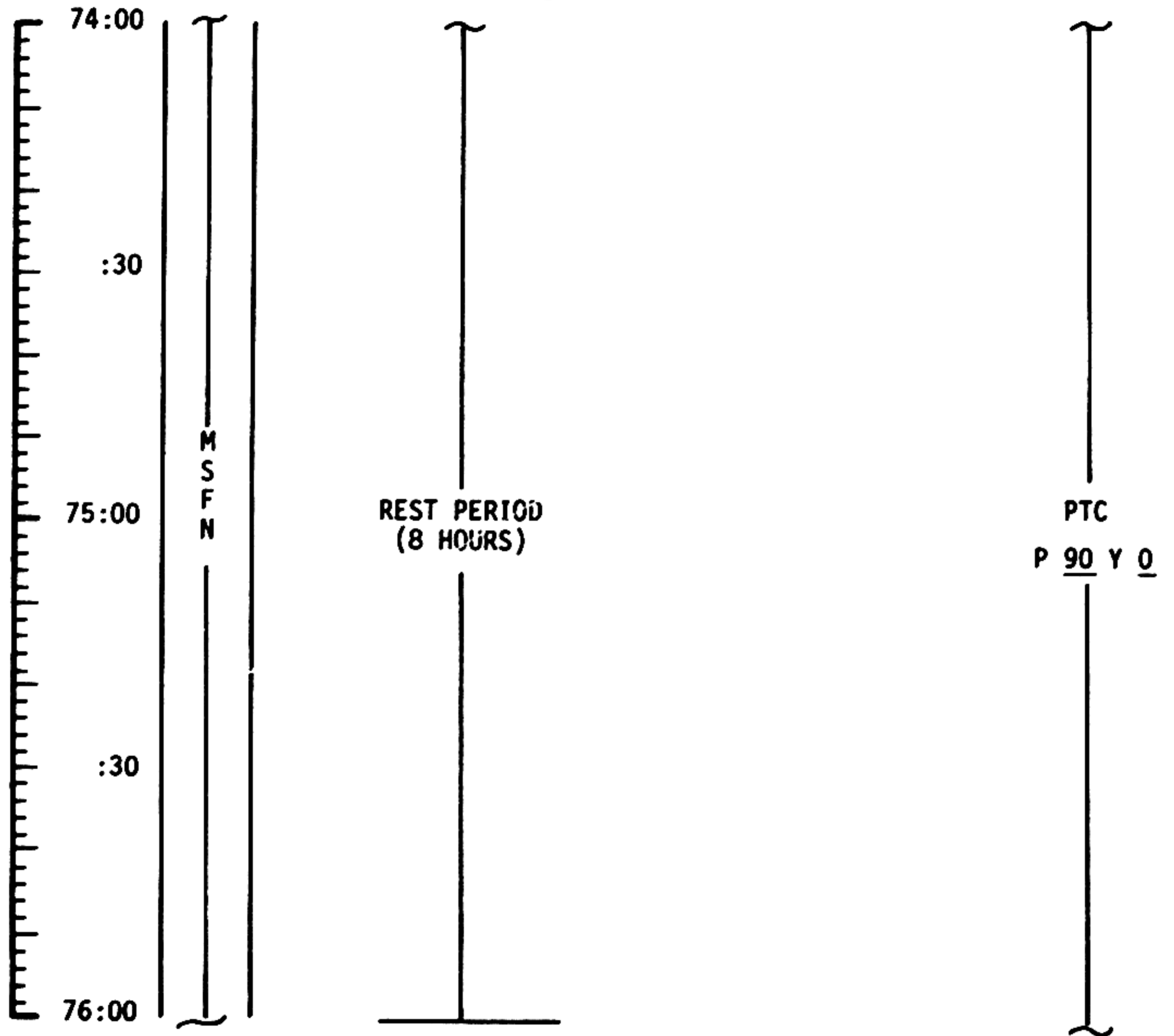
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	72:00 - 74:00	3/TLC	3-50

MCC-H

1222 CST

FLIGHT PLAN

NOTES



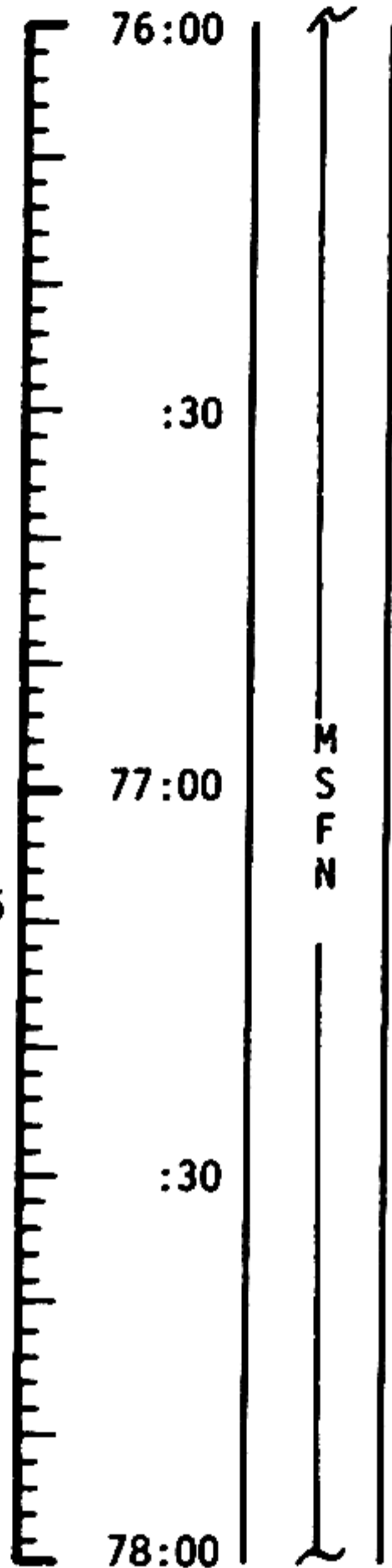
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	74:00 - 76:00	3/TLC	3-51

MCC-H

1422 CST

FLIGHT PLAN

NOTES



UPLINK TO CSM
STATE VECTOR &
MCC-4 TGT LOAD
DESIRED ORIENT
(LDG SITE) V66

UPDATE TO CSM
MCC-4 MNVR PAD
CONSUMABLES
FLIGHT PLAN
PERICYNTHION +2
ABORT PAD

BATTERY CHARGE,
BATTERY A

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & O2 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B

IF MCC-4 IS NOT
PERFORMED SEE:
NO MCC-4 ALTERNATE
TIMELINE

EAT PERIOD

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____ %

QUAD A _____ % B _____ %

 C _____ % D _____ %

H₂ TOTAL _____ %

O₂ TOTAL _____ %

PTC
P 90 Y 0

PERICYNTHION + 2
ABORT PAD
TARGETED FOR A
FAST RETURN TO MPL

L10H CANISTER CHANGE
NO. 7 (9 INTO A, STOW
7 IN B6)

P52 IMU REALIGN
OPTION 1 - PREFERRED
REPORT GYRO TORQUING ANGLES

P52 (LDG SITE ORIENT)
OPTION 1 - PREFERRED

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____ : _____

P30 - EXTERNAL ΔV

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	76:00 - 78:00	A/TLC	3-52

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FLIGHT PLAN

MCC-4
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	TRIM X AXIS ONLY TO 1.0 FPS

TABLE 3-5
3-53

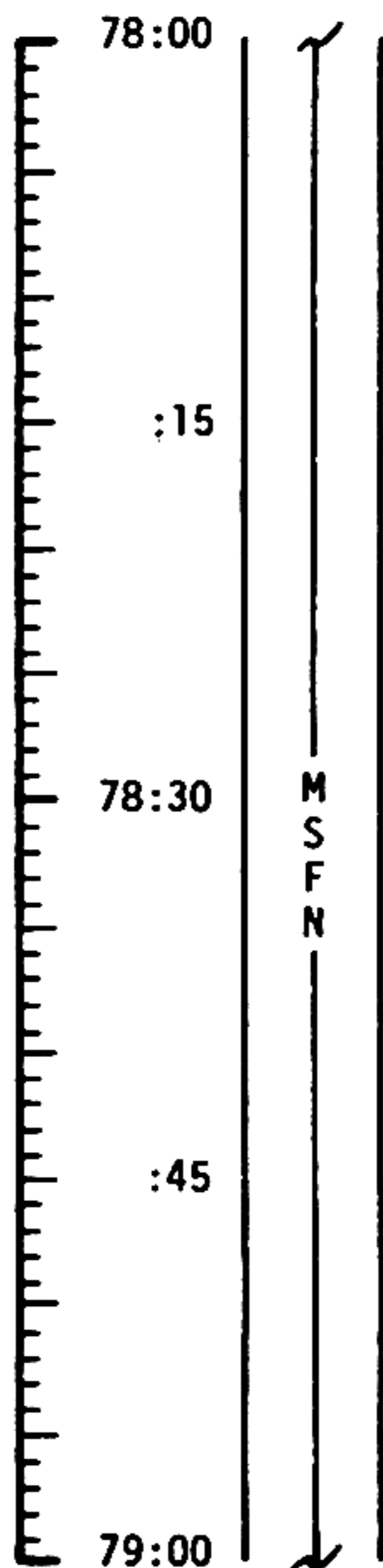
MCC-N

1622 CST

FLIGHT PLAN

NOTES

(LOI-1 - 5 HRS)



V49 - MNVR TO BURN ATT

SXT STAR CHECK

P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-4

V66 - TRANSFER CSM SV TO LM SLOT

MCC-4 BURN STATUS REPORT

REPORT LM/CM ΔP

TIG: 78:25:18.2
ΔV: NOMINALLY ZERO

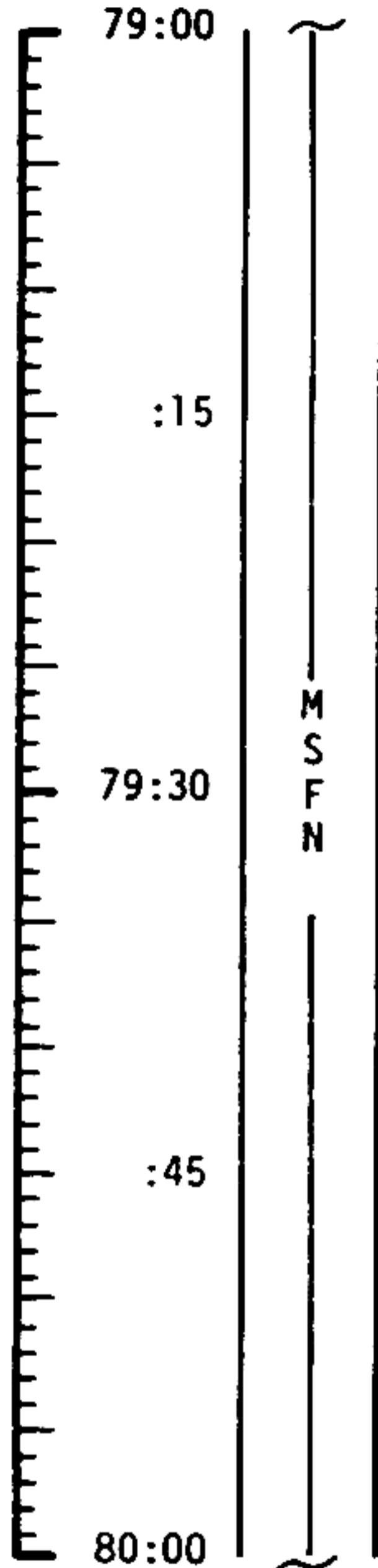
MCC-4 WILL BE EXECUTED WITH THE SPS IF THE BURN TIME >3 SEC

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V _{gx}
<input type="checkbox"/>			•	V _{gy}
<input type="checkbox"/>			•	V _{gz}
<input type="checkbox"/>			•	ΔV _c *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

* ITEMS TO BE REPORTED TO MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	78:00 - 79:00	4/TLC	3-54

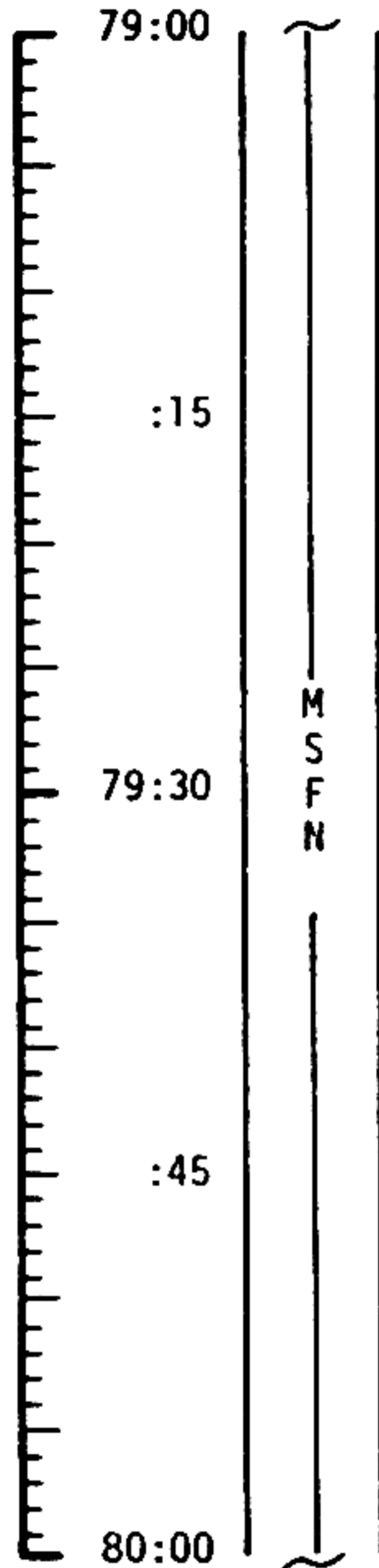
FLIGHT PLAN



PRE LOI SEC LOOP CHECK
 ECS IND SW - SEC
 SEC GLY TO RAD VLV - NORM
 SEC COOL LOOP PUMP - AC 1
 GLY DISCHARGE SEC PRESS-39-51 PSIA
 ACCUM SEC QTY IND-30-55%
 SEC EVAP TEMP OUT - DECREASE
 (VERIFY FLOW)
 SEC COOL LOOP PUMP - OFF (CTR)
 SEC GLY TO RAD VLV - BYPASS
 ECS IND SW - PRIMARY

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	79:00 - 80:00	4/TLC	3-55

FLIGHT PLAN



PRE LOI SEC LOOP CHECK
 ECS IND SW - SEC
 SEC GLY TO RAD VLV - NORM
 SEC COOL LOOP PUMP - AC 1
 GLY DISCHARGE SEC PRESS-39-51 PSIA
 ACCUM SEC QTY IND-30-55%
 SEC EVAP TEMP OUT - DECREASE
 (VERIFY FLOW)
 SEC COOL LOOP PUMP - OFF (CTR)
 SEC GLY TO RAD VLV - BYPASS
 ECS IND SW - PRIMARY

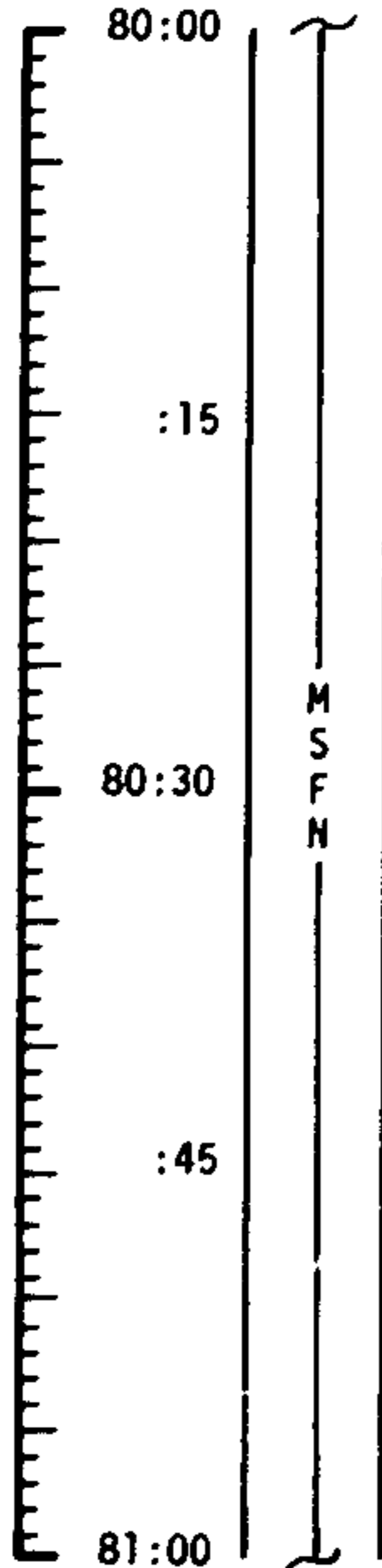
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	79:00 - 80:00	4/TLC	3-55

MCC-N

1822 CST

FLIGHT PLAN

NOTES



PRESSURIZE CSM TO 5.4 PSIA THEN:
 PRESSURIZE LM
 (IN CASE OF LOI ABORT)

LM TUNNEL VENT VLV - CM/LM ΔP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	80:00 - 81:00	4/TLC	3-56

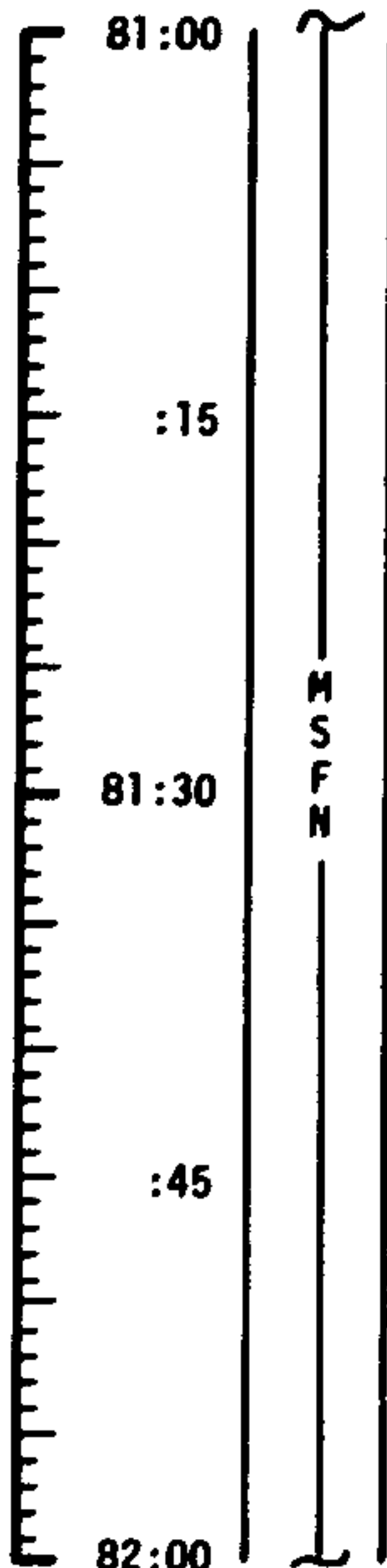
MCC-N

1922 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
 STATE VECTOR & V66
 (PRELIMINARY)
 LOI-1 TGT LOAD
 (PRELIMINARY)
 UPDATE TO CSM
 LOI-1 MNVR PAD
 (PRELIMINARY)
 TEI 1 & 4 PAD



MNVR TO MOON VIEW ATT BY 81:10
 AND GO INERTIAL R 187 HGA
 P 186 P 4
 Y 20 Y 207

P52 - IMU REALIGN
 OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES

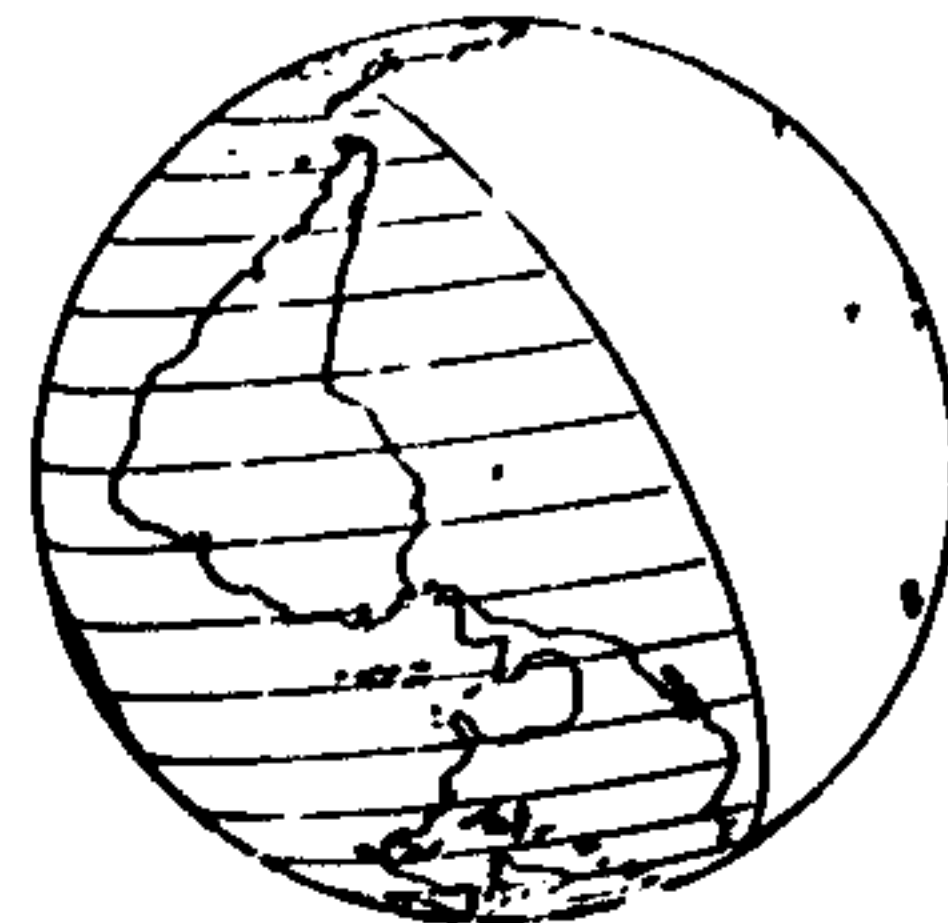
TV (GDS) 81:30 TO 81:50
 CM4/TV-IN (f22)

MNVR TO BURN ATT BY 81:55
 EXCEPT FOR ROLL R 124 HGA
 P 26T P -18
 Y 19 Y 25T

P52 (LDG SITE ORIENT)
 N71: _____
 N05: _____
 N93: _____
 X _____
 Y _____
 Z _____
 GET _____:_____:_____

TEI 1 & 4 PADS
 ASSUME NO LOI-2

FOV 3°
 GET 81:10



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	81:00 - 82:00	4/TLC	3-57

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

REVISION A



NO MCC-4 ALTERNATE TIMELINE

The guidelines used for developing a "No MCC-4" alternate timeline are as follows:

- The crew rest period is extended two more hours making a total of ten hours for rest.
- A P52 IMU Realign to REFSMMAT to the PTC orientation is performed just after wake up for a drift check.
- A second P52 IMU Realign is performed to the landing site orientation and is used for the LOI₁ burn.

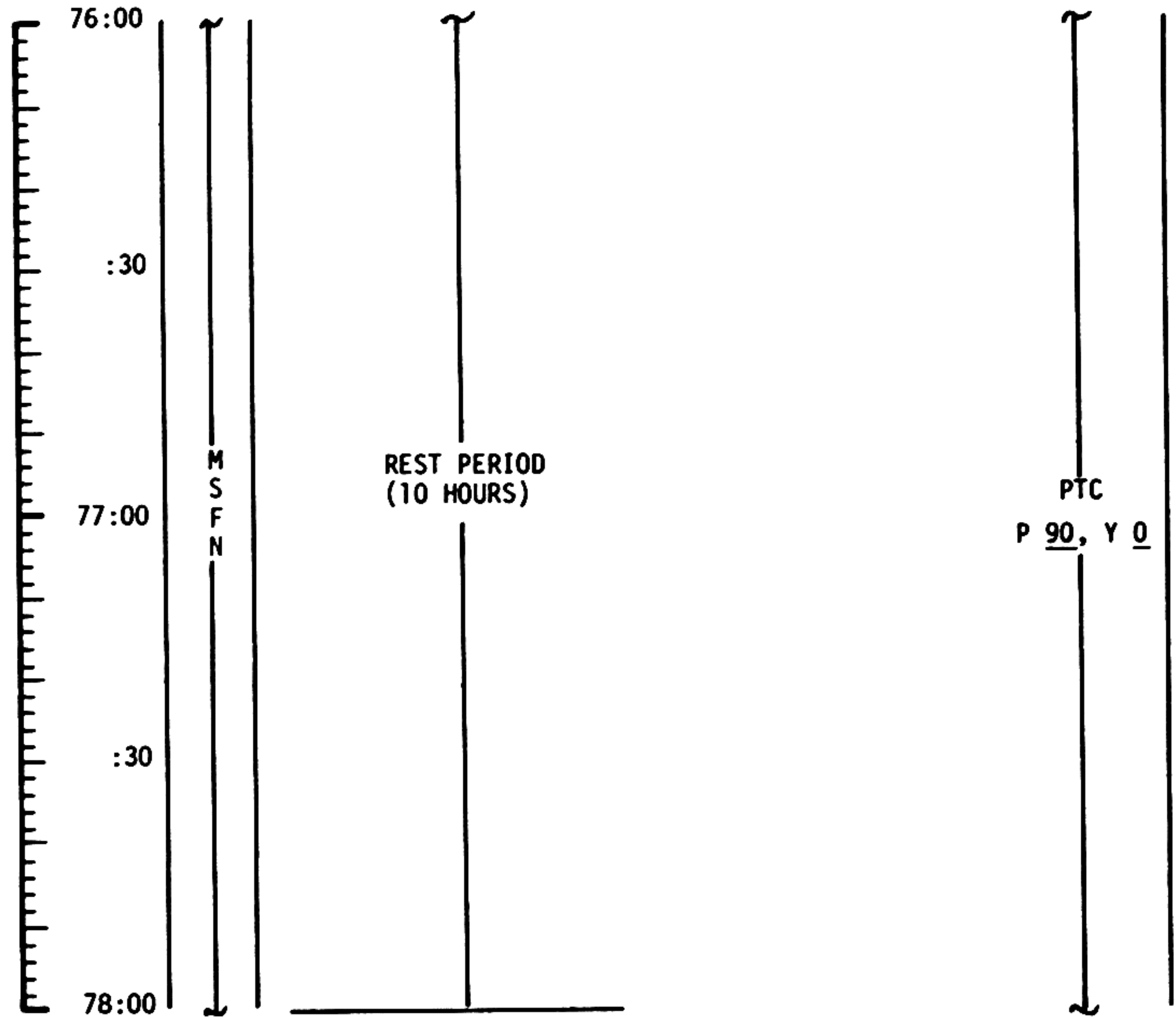
TLC WITHOUT
MCC 4

MCC-H

1422 CST

FLIGHT PLAN

NOTES



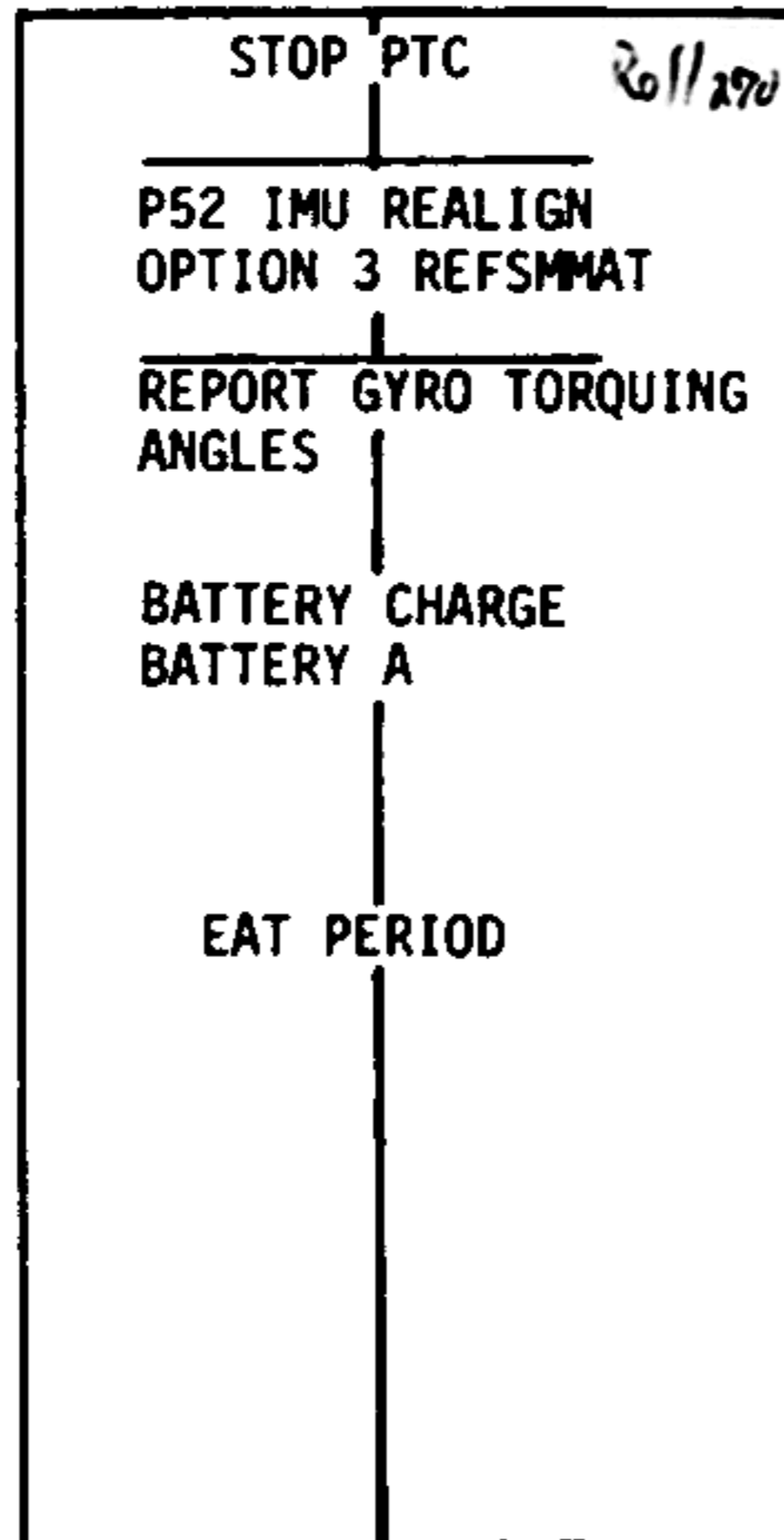
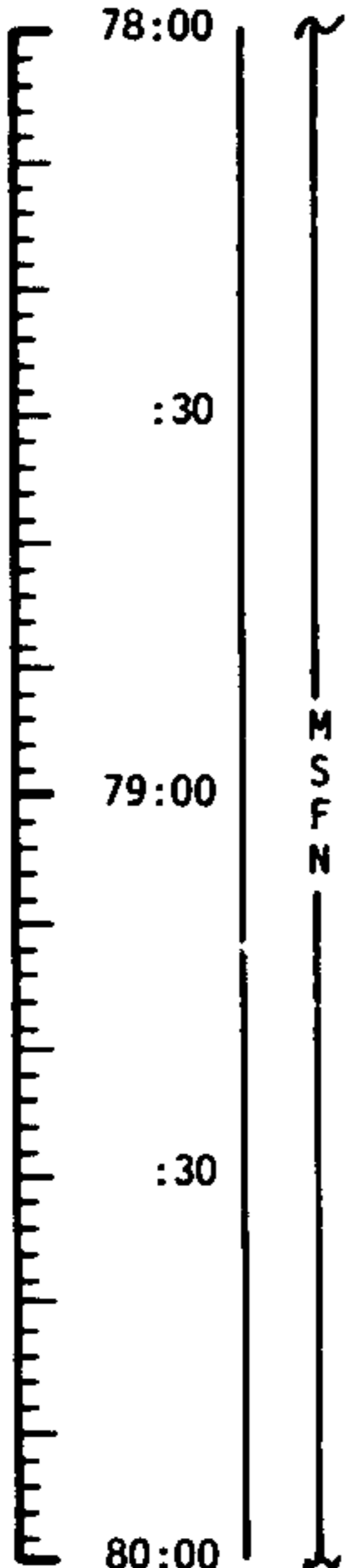
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	76:00 - 78:00	4/TLC	6-6

MCC-11

1622 CST

FLIGHT PLAN

NOTES



POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & O2 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____ %

QUAD A _____ % B _____ %

 C _____ % D _____ %

H₂ TOTAL _____ %

O₂ TOTAL _____ %

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

P52 (PTC ORIENT)
OPTION 3 - REFSMMAT

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____

PERICYNTHION +2 ABORT
PAD TARGETED FOR A
FAST RETURN TO MPL

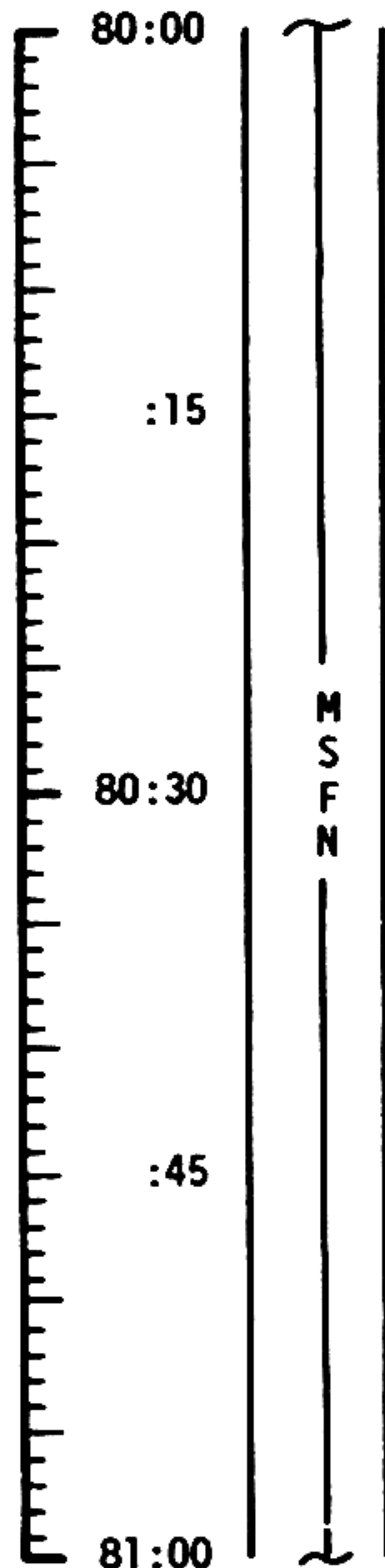
UPLINK TO CSM
STATE VECTOR & V66

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN
PERICYNTHION +2
ABORT PAD

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	78:00 - 80:00	4/TLC	6-7

1822 CST

FLIGHT PLAN



LiOH CANISTER CHANGE NO.7 (9 INTO A,
STOW 7 INTO B6)

PRESSURIZE CSM TO 5.4 PSIA THEN:
PRESSURIZE LM
(IN CASE OF LOI ABORT)

PRE LOI SEC LOOP CHECK
ECS IND SW - SEC
SEC GLY TO RAD VLV - NORM
SEC COOL LOOP PUMP - AC 1
GLY DISCHARGE SEC PRESS-39-51 PSIA
ACCUM SEC QTY IND-30-55%
SEC EVAP TEMP OUT - DECREASE
(VERIFY FLOW)
SEC COOL LOOP PUMP - OFF (CTR)
SEC GLY TO RAD VLV - BYPASS
ECS IND SW - PRIMARY

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	80:00 - 81:00	4/TLC	6-8

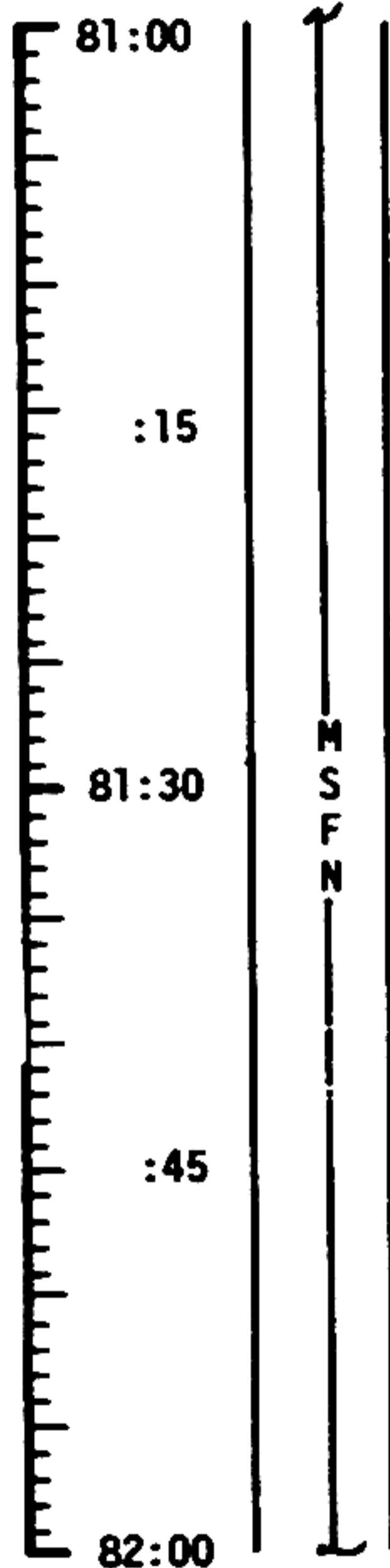
MCC-N

1922 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
STATE VECTOR & V66
(PRELIMINARY)
LOI₁ TGT LOAD
(PRELIMINARY)
DESIRED ORIENT
(LDG SITE)
UPDATE TO CSM
LOI₁ MNVR PAD
(PRELIMINARY)
TEI 1 & 4 PAD



MNVR TO MOON VIEW ATT BY 81:10
AND GO INERTIAL R 300 HGA

P 154 P 4
Y 20 Y 207

P52 - IMU REALIGN
OPTION 1 - PREFERRED

REPORT GYRO TORQUING ANGLES

TV (GDS) 81:30 TO 81:50

MNVR TO BURN ATT BY 81:55
EXCEPT FOR ROLL R 124 HGA

P 261 P -18
Y 19 Y 251

P52 (LDG SITE ORIENT)

N71: _ _ . _ _

N05: _ _ . _ _

N93: _ _ . _ _

X _ _ . _ _

Y _ _ . _ _

Z _ _ . _ _

GET _ _ : _ _ : _ _

M
S
F
N

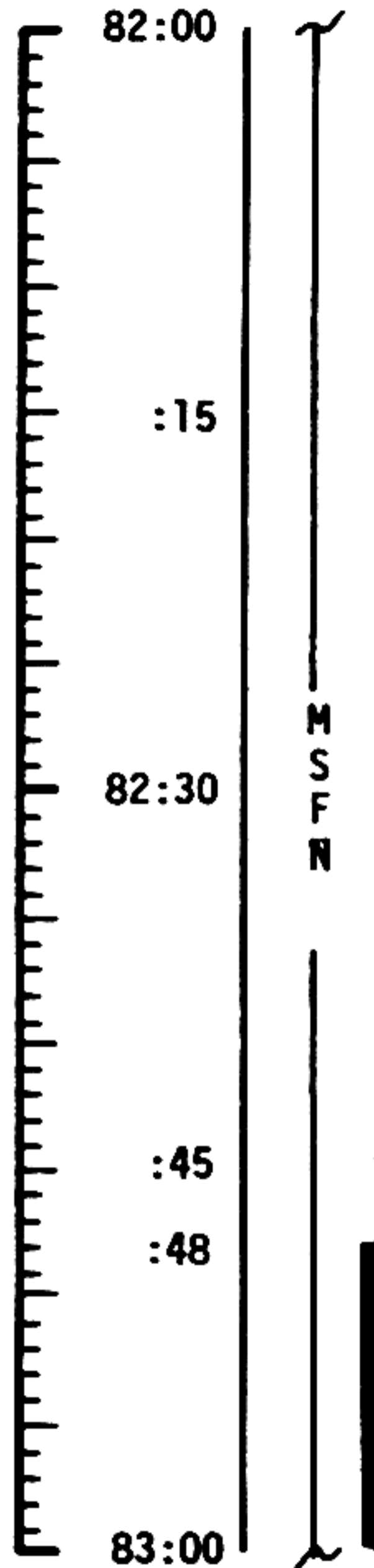
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	81:00 - 82:00	4/TLC	6-9

MCC-H

2022 CST

FLIGHT PLAN

NOTES



UPDATE TO CSM
MAP UPDATE REV 1
LOI-1 MNVR PAD

UPLINK TO CSM
STATE VECTOR & V66
LOI-1 TGT LOAD

MAP UPDATE REV	<u>1</u>
LOS	____ : ____ : ____
180°	____ : ____ : ____
AOS WITH LOI	____ : ____ : ____
AOS WITHOUT LOI	____ : ____ : ____

PRE LOI-1 SYSTEMS CHECKS:
C&W CHECK
CM RCS CHECK
SM RCS CHECK
SPS PERIODIC MONITOR
ECS PERIODIC MONITOR

P30 - EXTERNAL ΔV

P40 - SPS THRUST

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	82:00 - 83:00	4/TLC	3-58

FLIGHT PLAN

LOI-1
BURN TABLE
TABLE 3-6

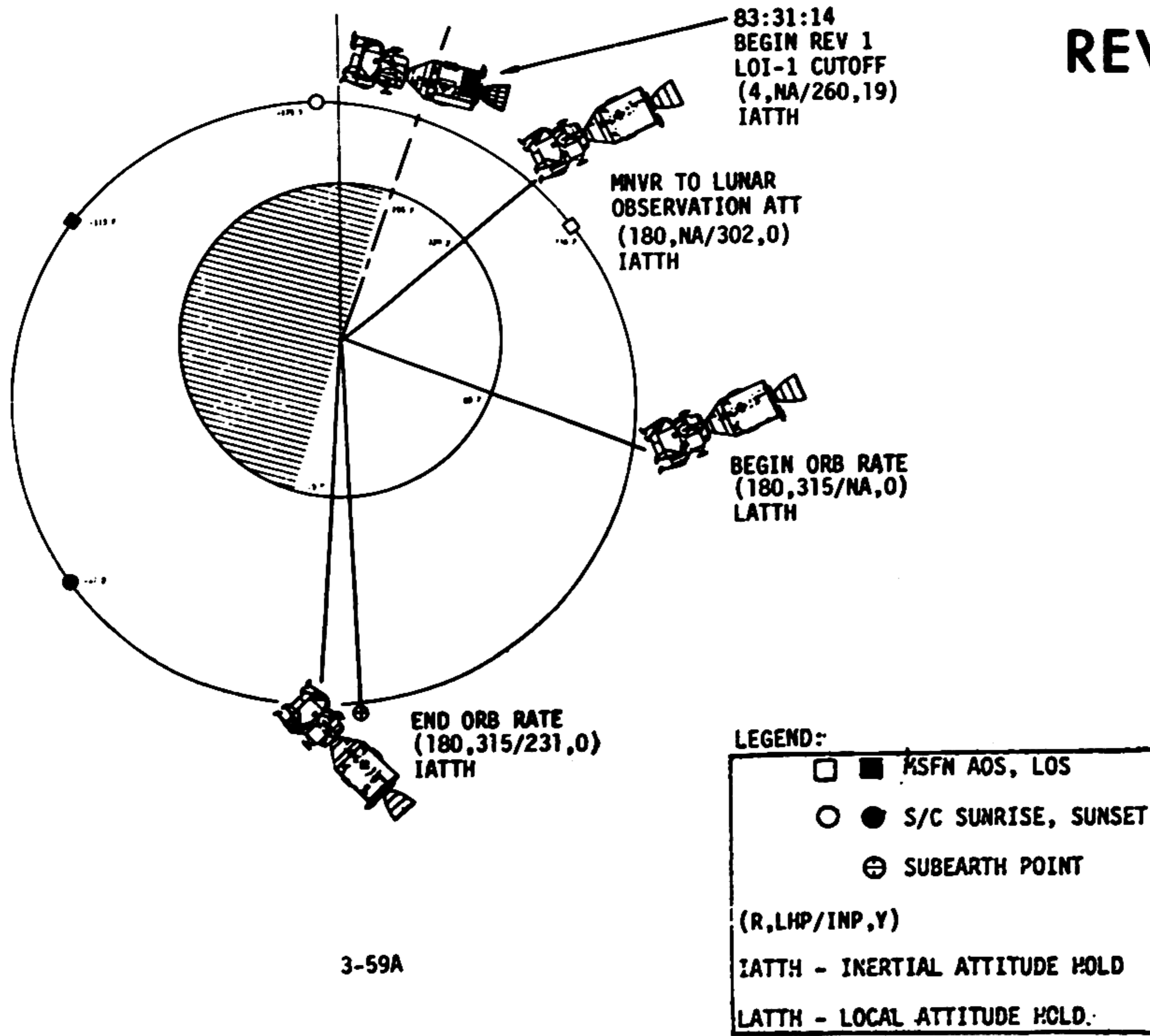
P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 10 SEC	DO NOT TRIM

LOI-1 ABORT TABLE
TABLE 3-7

MODE I (DPS ONLY)	MODE IA (DPS+APS)	MODE IIA (DPS APS)	MODE II (DPS ONLY)	MODE III (DPS ONLY)
0-20 SEC. BT	20-40 SEC. BT	40SEC-1MIN 30 SEC	1MIN 30SEC-2MIN 24SEC	2MIN 24SEC - 2MIN 50SEC
ΔV_m 0-135 (Tight)	ΔV_m 135- 280 ²⁹⁰ (Tight)	ΔV_m 280 ²⁹⁰ -650 (Tight)	ΔV_m 650- 750 ¹⁰⁶⁰ (Loose)	ΔV_m 750-1250 ¹⁰⁶⁰⁻¹²⁷⁰ (Loose)
LOI + 2HR.	LOI + 0.5HR.	DPS ? LOI+1/2HR.	DPS ₁ @ LOI + 2HR DPS ₂ @ LOI + 1REV	DPS ₁ @ LOI + 2HR DPS ₂ @ LOI + 1REV
MCC-H TGT.	CREW CHART TGT	CREW CHART TGT	MCC-H TGT.	MCC-H TGT.
		*APS @ LOI+ 2 1/2 HR. MCC-H TGT	APS ASAP AFTER DPS ₂	
		*SPS BACKUP	MCC-H TGT (CONT. OF DPS ₂)	
				ΔV_m 1600-Cutoff (Tight)
				DPS @ LOI + 1REV.
				MCC-H TGT

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REV 1



3-59A

REVISION B

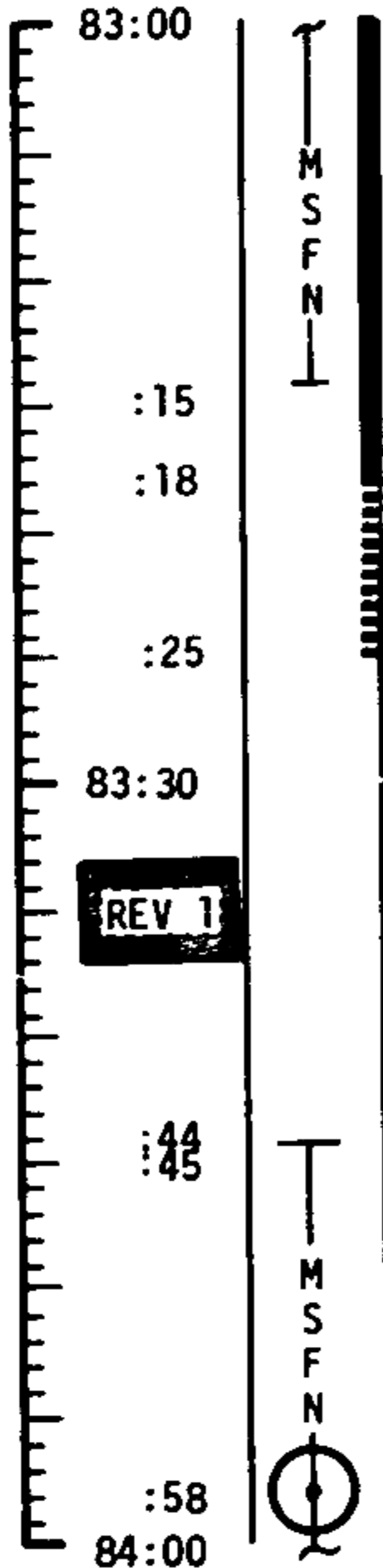
MCC-M

2122 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
GO/NO-GO LOI-1



ROLL TO BURN ATT R 4 OMNI D
P 261

SXT STAR CHECK Y 19
VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU

LOI-1

TIG: 83:25:18.2
BT: 5 MIN 55.4 SEC
 ΔV_R : 2889.9 FPS
ULLAGE: NONE
ORBIT: 58.7 x 168.9 NM

V66 - TRANSFER CSM STATE VECTOR TO LM SLOT

MNVR TO COMM ATT AND
GO INERTIAL BY 83:40

ACQUIRE MSFN R 180 HGA:
P 302 P -68
Y 0 Y 339

LOI-1 BURN STATUS REPORT
LUNAR SURFACE OBSERVATION ATTITUDE
(HATCH WINDOW) - HEADS DOWN
GO ORB RATE BY 84:00

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	Δ TIG **
X	X		•	BT **
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V _{gx} ***
<input type="checkbox"/>			•	V _{gy} ***
<input type="checkbox"/>			•	V _{gz} ***
<input type="checkbox"/>			•	ΔV_C *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

* ITEMS TO BE REPORTED TO MSFN
** REPORT IF OFF MORE THAN ONE SECOND
*** REPORT IF >0.2 FPS
LOI-1 WILL BE STARTED WITH THE SPS PU VALVE IN INCREASE

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	83:00 - 84:00	4/1	3-60

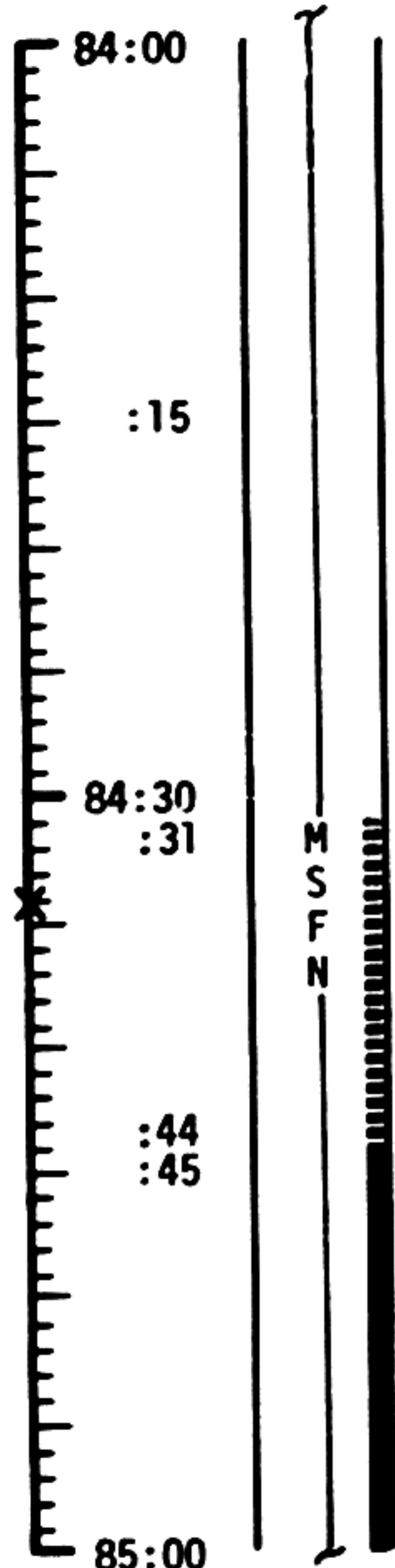
MCC-H

2222 CST

FLIGHT PLAN

NOTES

TV (GDS) 84:00 TO 84:30
CM 4/TV - IN(f22)



STOP ORB RATE PITCH AT 231 AND GO INERTIAL
BY 84:27

R	180	HGA
P	<u>231</u>	P <u>-38</u>
Y	<u>0</u>	Y <u>189</u>

UPDATE TO CSM
MAP UPDATE REV 2

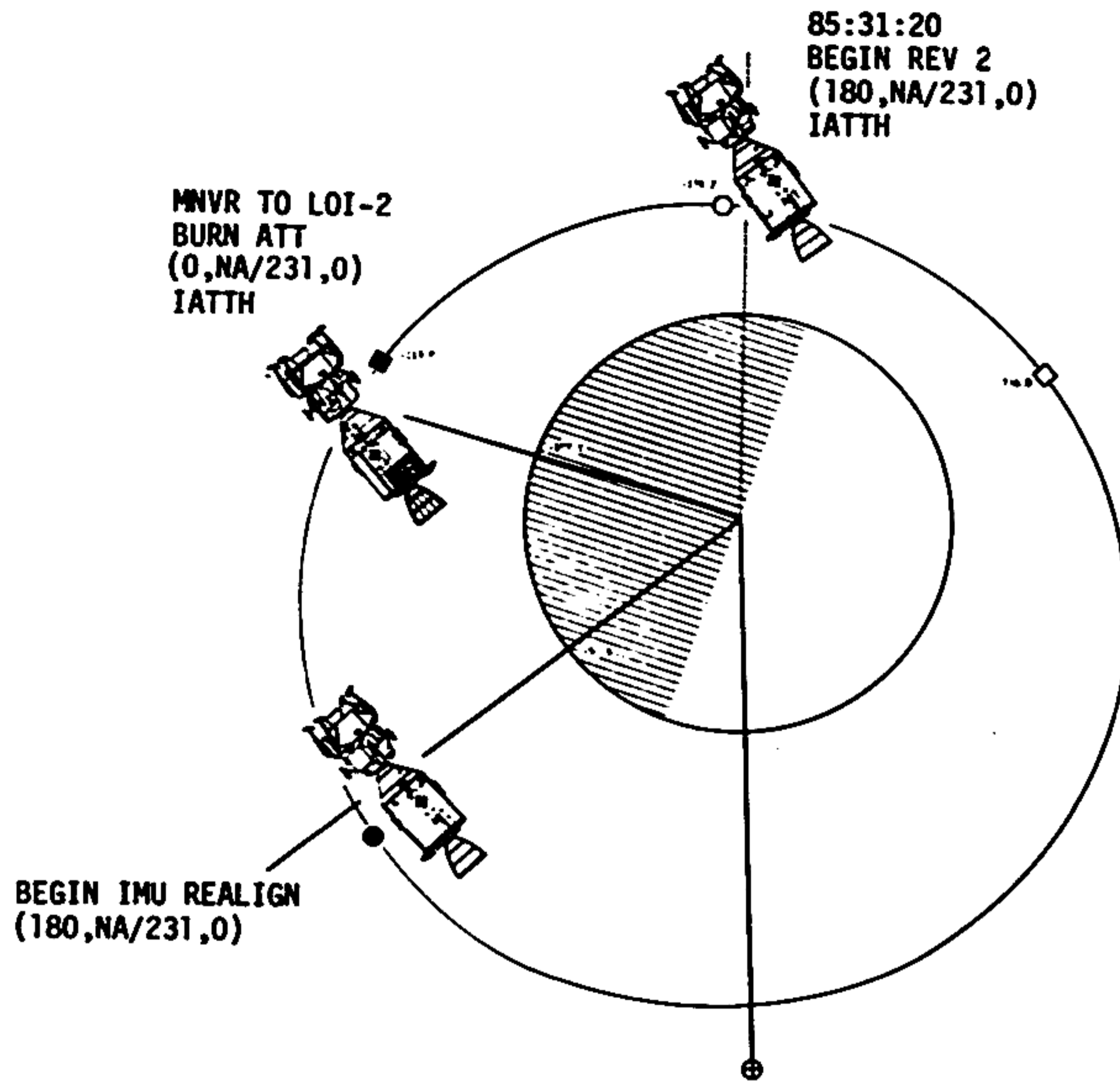
M
S
F
N

EAT PERIOD

MAP UPDATE REV <u>2</u>		
LOS	:	___:___:___
180°	:	___:___:___
AOS	:	___:___:___

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
Apollo 12	FINAL (NOV 14)	OCTOBER 15, 1969	84:00 - 85:00	4/1	3-61

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LEGEND:

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

3-61A

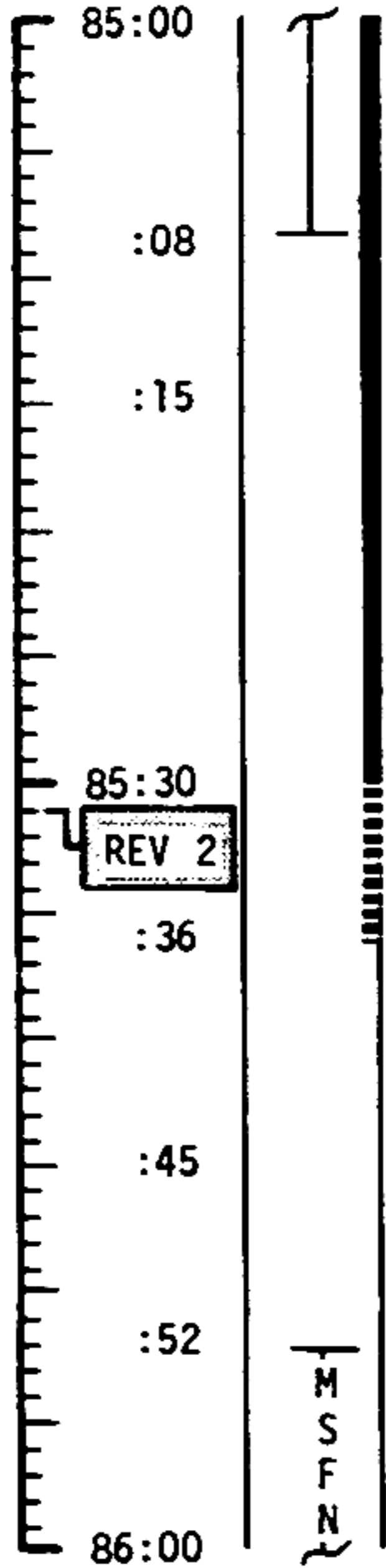
REVISION B

MCC-H

2322 CST

FLIGHT PLAN

NOTES



H₂ PURGE LINE HTRS - ON
 VERIFY DSE MOTION AT LOS
 EAT PERIOD

H₂ AND O₂ FUEL CELL PURGE
 WASTE WATER DUMP

REACQUIRE MSFN
 HGA P -38 Y 189

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	85:00 - 86:00	4/1	3-62

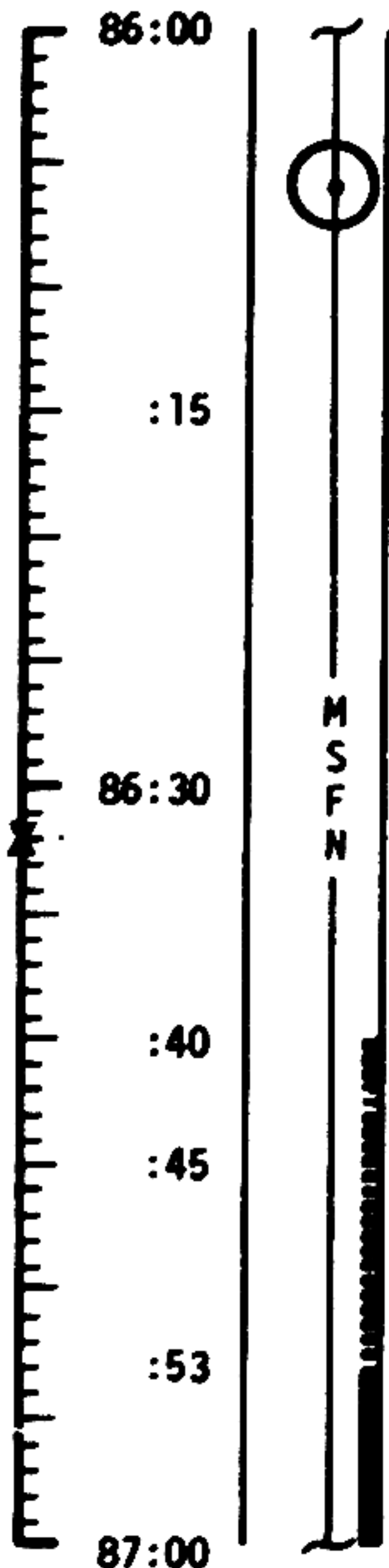
MCC-N

0022 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
 CSM STATE VECTOR
 & V66
 LOI-2 TARGET LOAD
 UPDATE TO CSM
 LOI-2 MNR PAD
 TEI 5 PAD
 MAP UPDATE REV 3



CMP - PRE LOI -2 SYSTEMS CHECKS
 C&W CHECK
 CM RCS CHECK
 SPS PERIODIC MONITOR CHECK
 ECS PERIODIC MONITOR CHECK

P52 IMU REALIGN
 OPTION 3 REFSMAT

TEI 5 BLOCK DATA
 ASSUMES LOI-1 & LOI-2
 ACCOMPLISHED

MAP UPDATE REV	3
LOS	: : :
180°	: : :
AOS	: : :

P52 (LDG SITE ORIENT)	
N71:	— — ' — —
N05:	— — — —
N93:	
X	— — — —
Y	— — — —
Z	— — — —
GET	— — — —

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	86:00 - 87:00	4/2	3-63

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

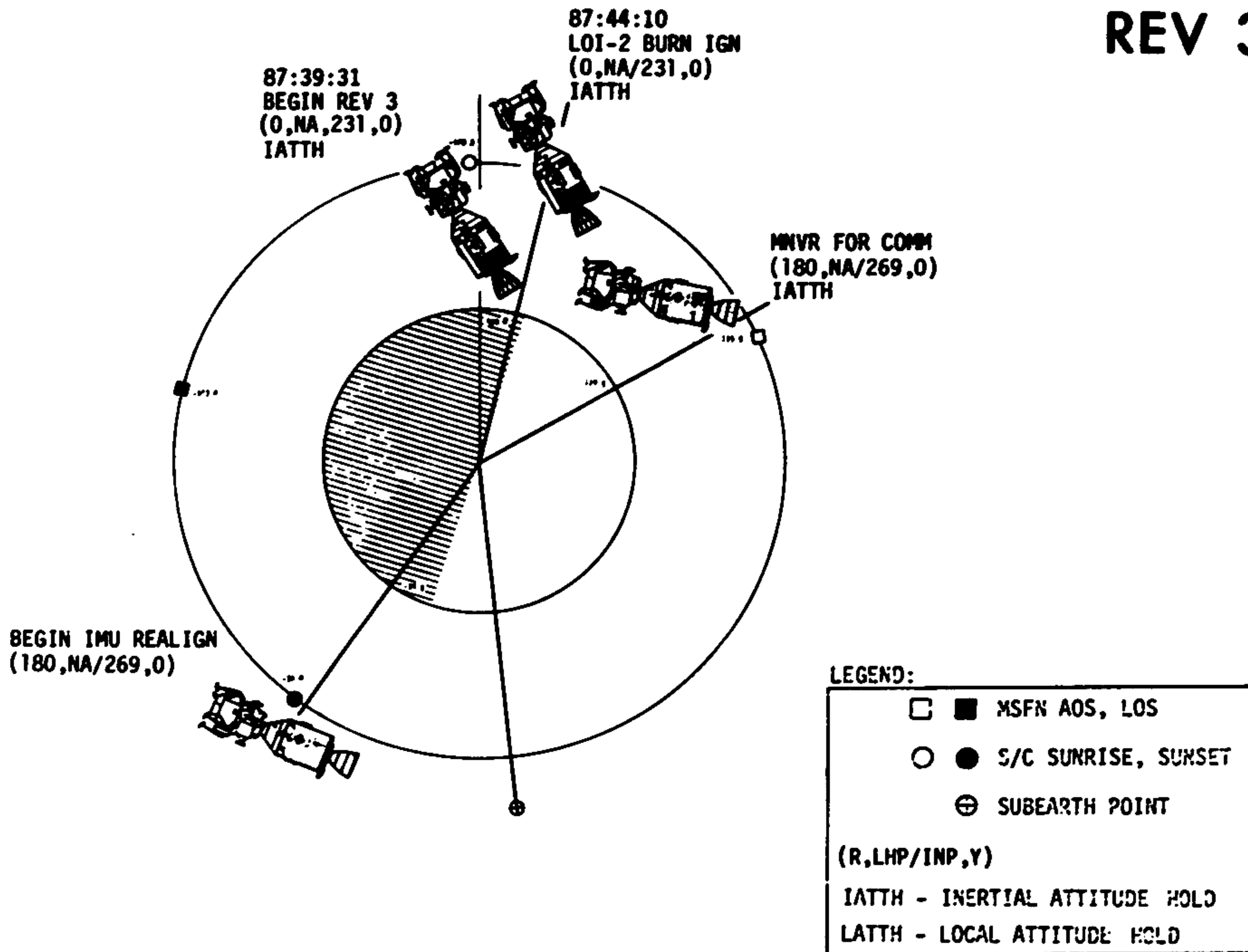
REVISION A

FLIGHT PLAN

LOI-2 BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	TRIM X AXIS TO 1 FPS

TABLE 3-8
3-64



3-64A

REVISION B

MCC-M

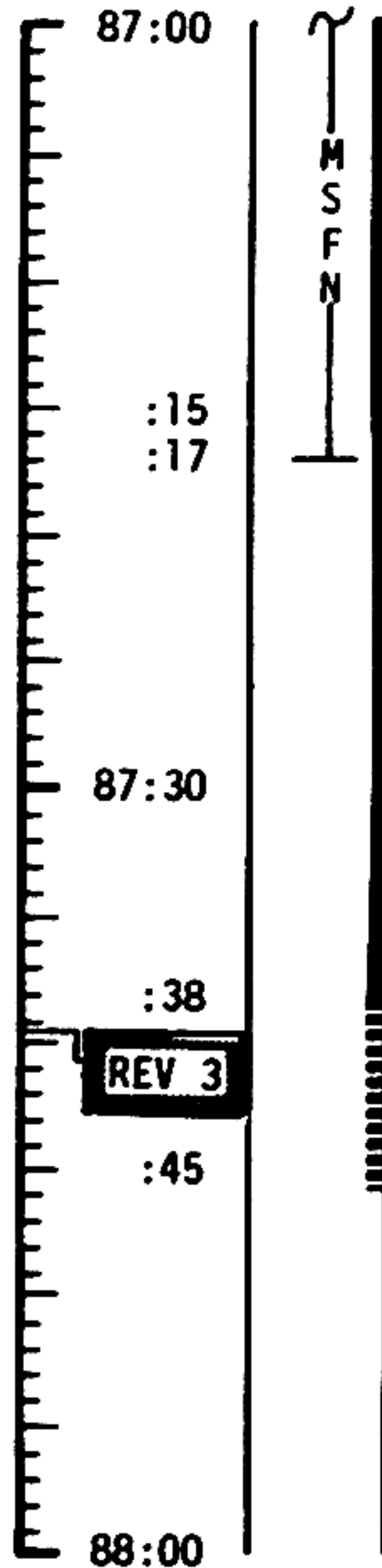
0122 CST

FLIGHT PLAN

NOTES

PIPA BIAS CHECK

GO/NO GO FOR
LOI-2



DRIFT CHECK

REPORT GYRO TORQUING ANGLES

P30 EXTERNAL ΔV

LOAD DAP FOR 2 JET ULLAGE (20101) (11111)

V49 MNVR TO LOI-2 BURN ATT BY 87:15

SXT STAR CHECK R 0 OMNI 0

P40 - SPS THRUST P 231

VERIFY DSE MOTION AT LOS v 0

TIG: 87:44:10.0
 BT: 17.6 SEC
 ΔVR: 169.6 FPS
 ULLAGE: 2 JET 19.0 SEC
 RETROGRAGE
 ORBIT: 64.9X53.0
 TRIM X AXIS TO 1 FPS

GDC ALIGN TO IMU

LOI-2

V66 TRANSFER CSM STATE VECTOR TO LM SLOT

P52 (LDG SITE ORIENT)

N71: _____

N05: _____

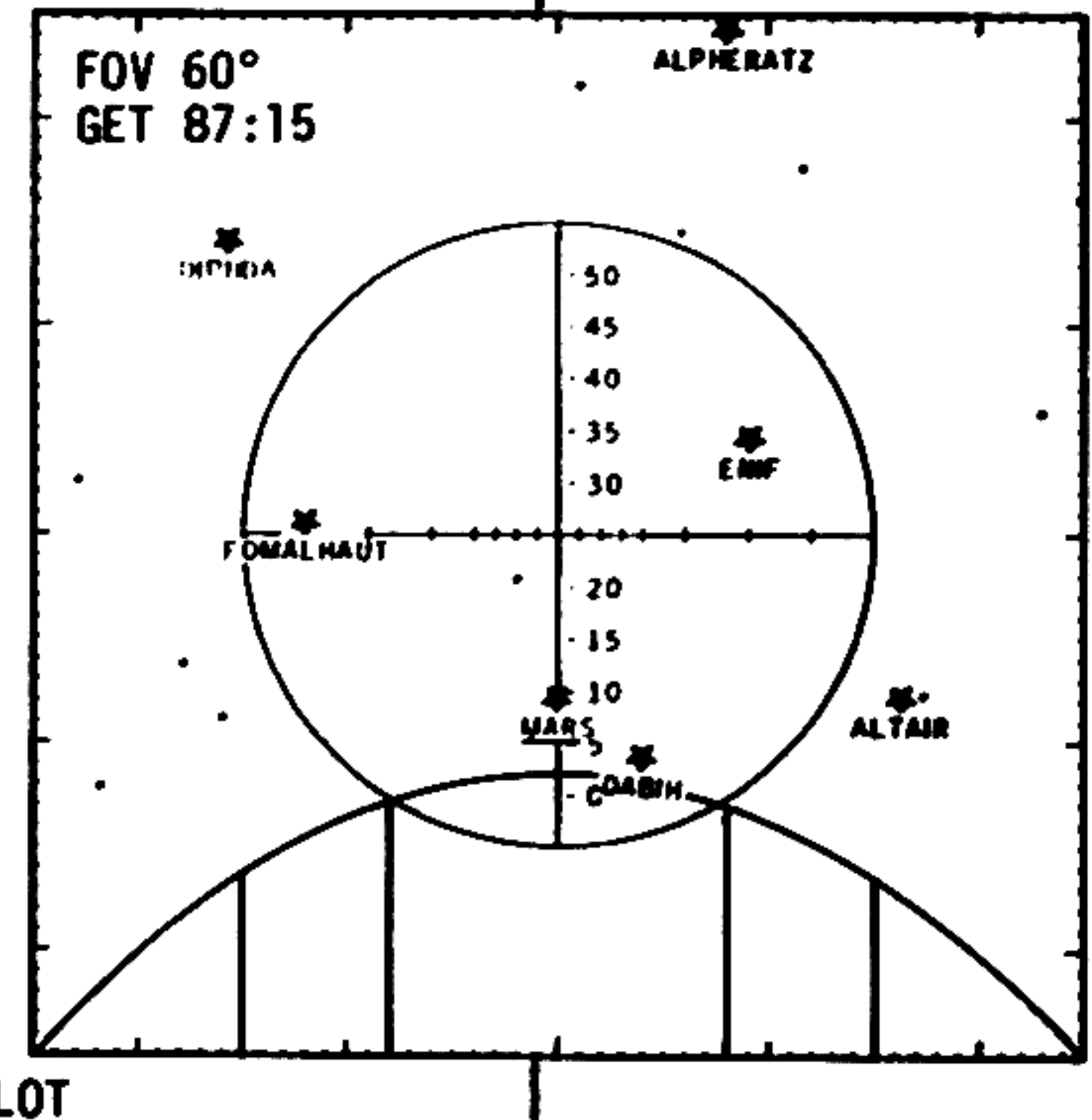
N93: _____

X _____

Y _____

Z _____

GET _____



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	87:00 - 88:00	4/2-3	3-65

MCC-H

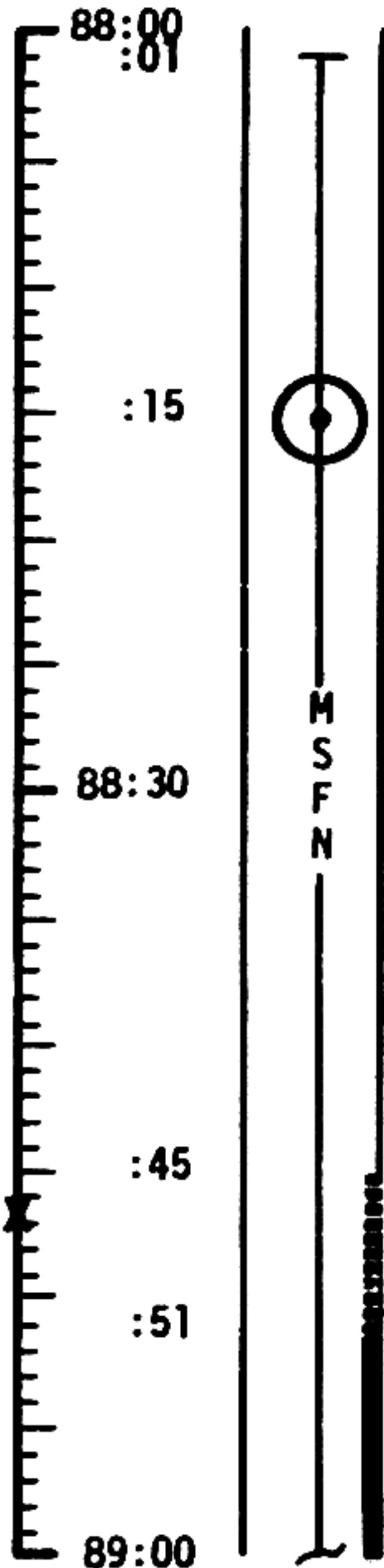
0222 CST

FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM
LDMK TRACK PAD
MAP UPDATE REV 4



MNVR TO COMM ATTITUDE AND
GO INERTIAL R 180 HGA
BY 88:00 P 269 P -71
Y 0 Y 206

BATTERY CHARGE, BATTERY B

LOI -2 BURN STATUS REPORT

EQUALIZE CM/LM PRESSURE
TUNNEL VENT VALVE - LM PRESS

LiOH CANISTER CHANGE NO. 8
10 INTO B, STOW 8 IN B6

P52 IMU REALIGN
OPTION 3 REFSMAT

P52 (LDG SITE ORIENT)

N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____:_____:_____

BURN STATUS REPORT

X	X	<input type="checkbox"/>	●	ΔTIG**
X	X		●	BT**
<input type="checkbox"/>			●	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			●	V _{gx} ***
<input type="checkbox"/>			●	V _{gy} ***
<input type="checkbox"/>			●	V _{gz} ***
<input type="checkbox"/>			●	ΔV _c *
X	X	X		FUEL*
X	X	X		OX*
X	X	X		UNBAL

MAP UPDATE REV <u>4</u>			
LOS	:	_____	:_____
180°	:	_____	:_____
AOS	:	_____	:_____

*ITEMS TO BE REPORTED TO MSFN
**REPORT IF OFF MORE THAN 1 SEC
***REPORT IF >0.2 FPS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	88:00 - 89:00	4/3	3-66

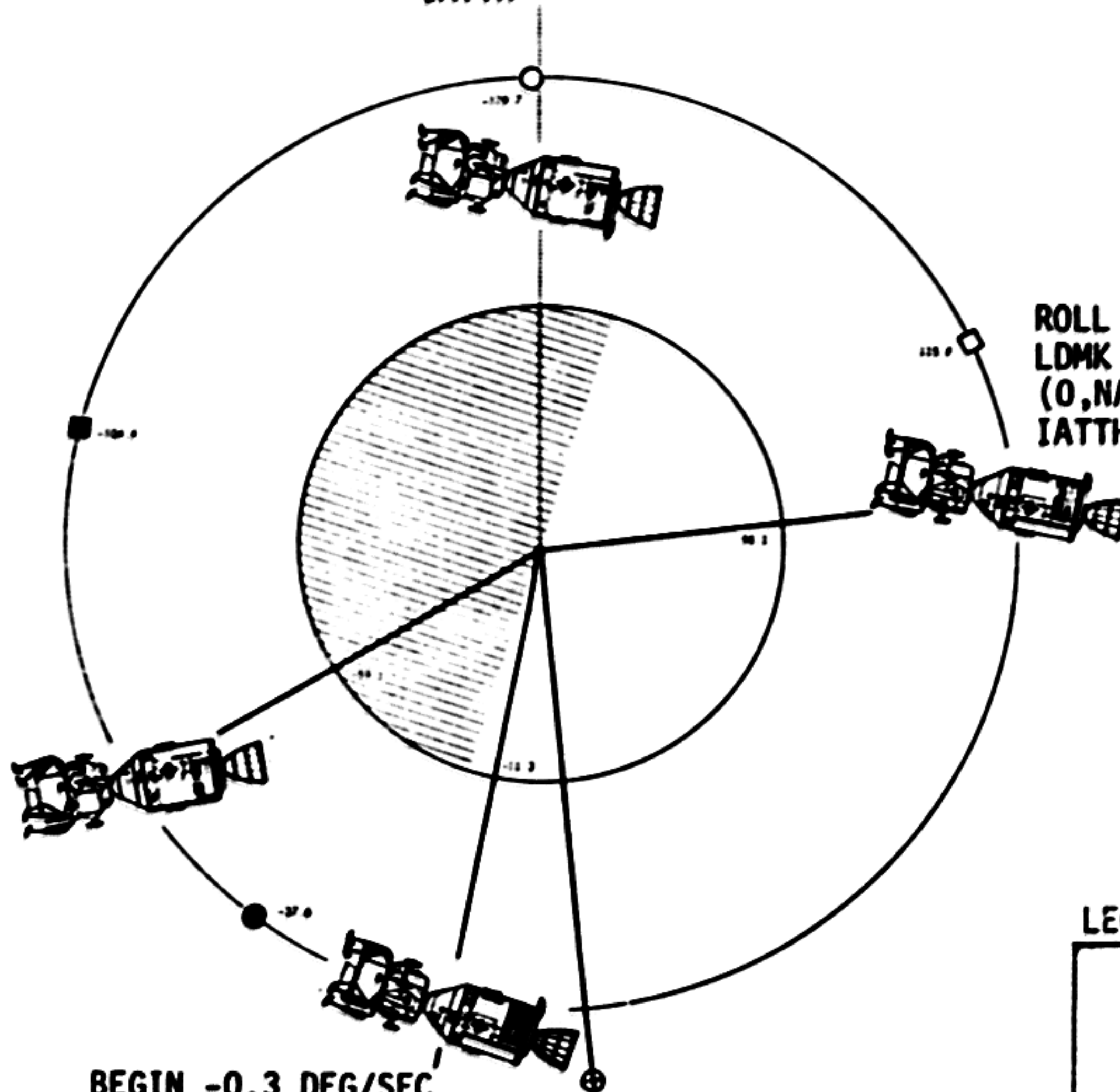
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89:37:41
 BEGIN REV 4
 (180,NA/269,0)
 IATTH

END PITCH RATE;
 ROLL TO SLEEP ATT
 (126,NA/291,0)
 IATTH

BEGIN -0.3 DEG/SEC
 PITCH RATE
 (0,358/269,0)

ROLL 180 DEG TO
 LDMK TRKNG ATT
 (0,NA/269,0)
 IATTH



LEGEND:

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

3-66A

REVISION B

FLIGHT PLAN

CSM

LM

M. C-H

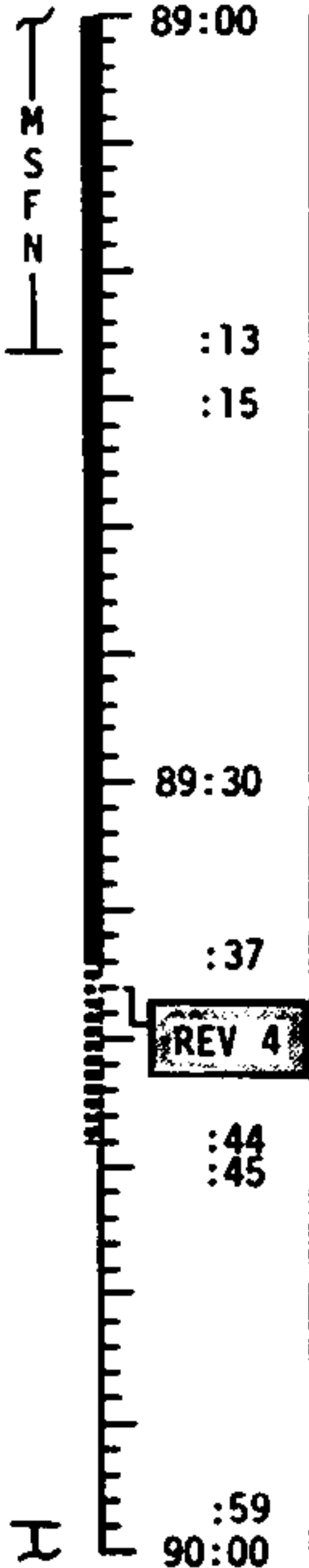
CMP

CDR

LMP

0322 CST

REPORT GYRO TORQUING ANGLES
 GDC ALIGN TO IMU
 PREPARE FOR LM INGRESS
 VERIFY TUNNEL PRESS
 REMOVE HATCH & STOW
 INSPECT DOCKING LATCHES
 REMOVE & STOW PROBE AND
 DROGUE
 VERIFY DOCKING ANGLE
 VERIFY DSE MOTION AT LOS



		OPEN LM HATCH IVT TO LM	
		LM ENTRY STATUS CHECKS	
IVT TO LM		PERFORM HOUSEKEEPING CHORES 1. STOW HELMET STORAGE BAGS. UNSNAP BOTH HSB'S 2. UNSTOW 70MM & 16MM FILM BAGS 3. PUT UP SNAP STRAPS	
AID LMP AS REQUIRED			

REACQUIRE MSFN
 HGA P -71 Y 206

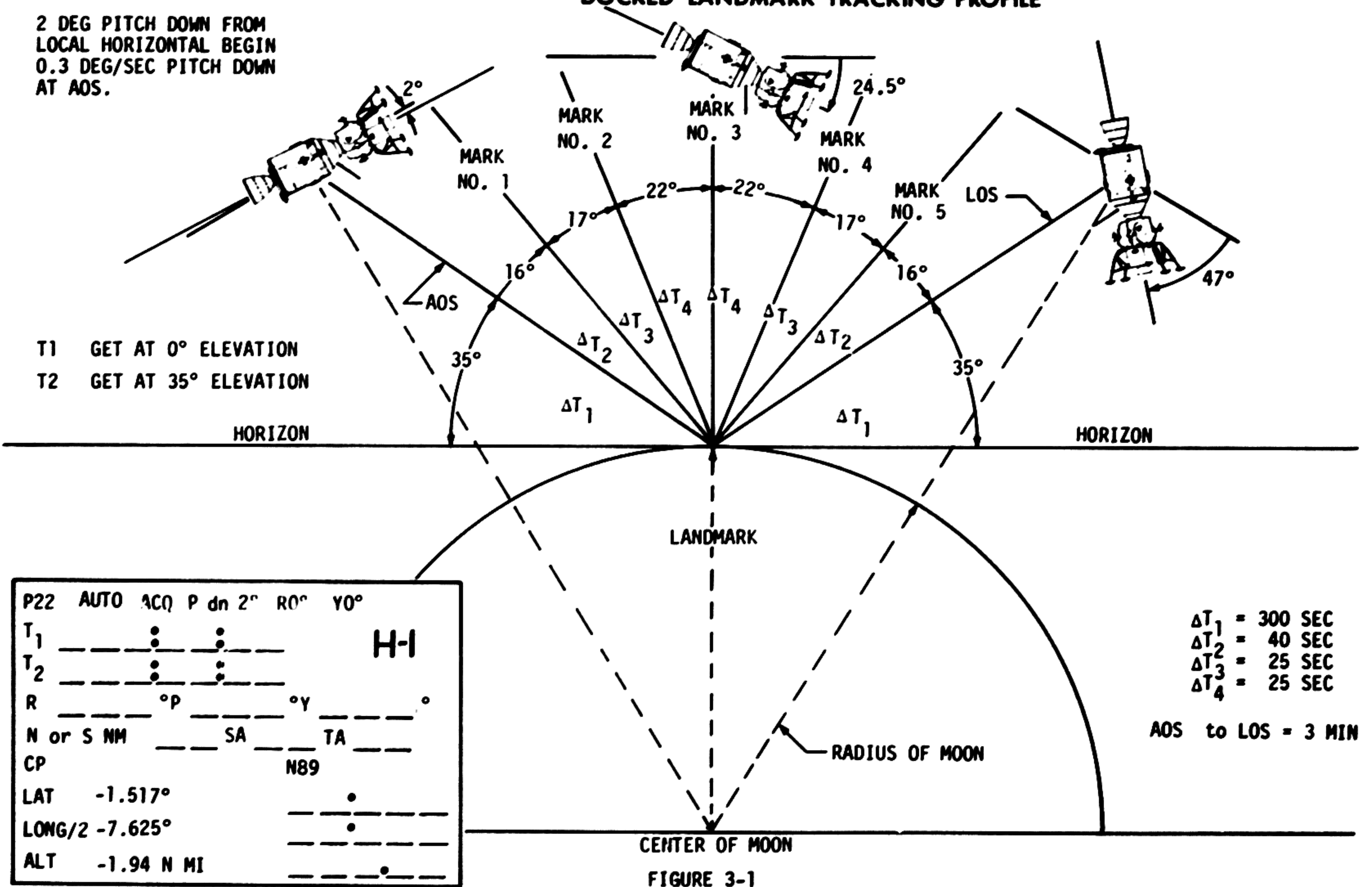
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	89:00 - 90:00	4/3-4	3-67

FLIGHT PLANNING BRANCH

REVISION B

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	AUTO	ACQ	P dn 2°	RO°	YO°
T ₁	---	•	---	---	H-I
T ₂	---	•	---	---	
R	---	°p	---	°y	---
N or S	NM	---	SA	---	TA
CP	---	---	N89	---	---
LAT	-1.517°	---	---	---	---
LONG/2	-7.625°	---	---	---	---
ALT	-1.94 N MI	---	---	---	---

ΔT_1 = 300 SEC
 ΔT_2 = 40 SEC
 ΔT_3 = 25 SEC
 ΔT_4 = 25 SEC
 AOS to LOS = 3 MIN

FIGURE 3-1
3-68

FLIGHT PLAN

CSM

CMP

ROLL 180 DEG TO
LDMK TRACK
ATTITUDE BY 90:06
R 0
P 269
Y 0

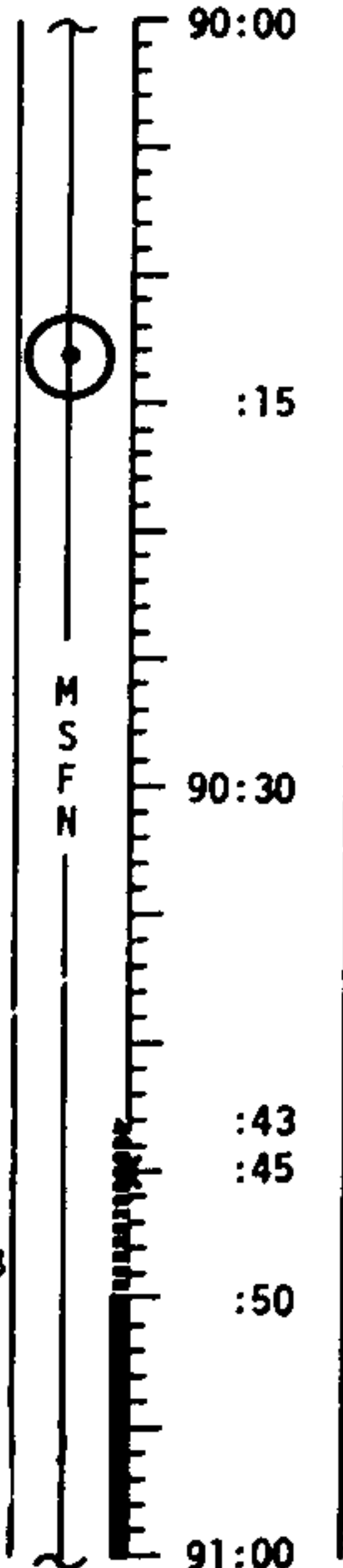
GO INERTIAL
SELECT OMNI D

P22 ORBITAL NAV
ESTABLISH 0.3°/SEC
PITCH DOWN @ T2

TRACK LDMK H-1
DO NOT PRO ON
FINAL N89,
25 SEC BETWEEN MARKS
5 MARKS

STOP PITCH RATE
ROLL TO REST ATT BY 90:58
R 126 HGA
P 291 P -29
Y 0 Y 275
GO INERTIAL

0422 CST



CDR

AID LMP AS REQUIRED

LM

LMP

MCC-H

TRANSFER TO LMP POWER

COMM ACTIVATION

S-BAND/VHF SIMPLEX

VOICE & TM TEST

REPORT OPS SOURCE
PRESSURE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	90:00 - 91:00	4/4	3-69

FLIGHT PLAN

CSM

0522 CST

LM

MCC-H

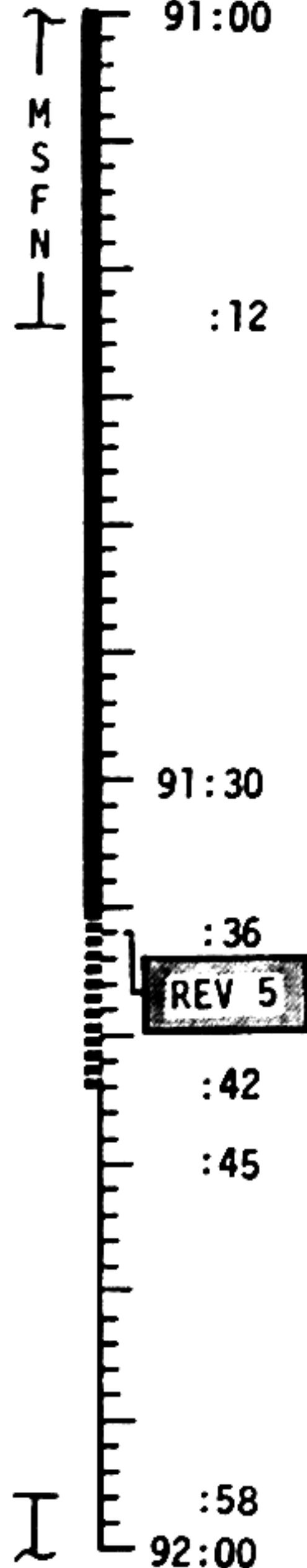
CMP

LOAD DAP R1(21110)R2(11111)
V21 N01
3255E
1616E
CSM POWER TO LM-ON
(AT LMP REQUEST)

VERIFY DSE MOTION
AT LOS
INSTALL DROGUE & PROBE

INSTALL CM HATCH

EAT PERIOD



CDR

AID LMP AS REQUIRED

IVT TO CSM

LMP

COMM DEACTIVATION

TRANSFER TO CSM POWER

LMP IVT TO CSM
CLOSE LM HATCH

UPDATE TO CSM
TEI TT PAD
MAP UPDATE REV 5

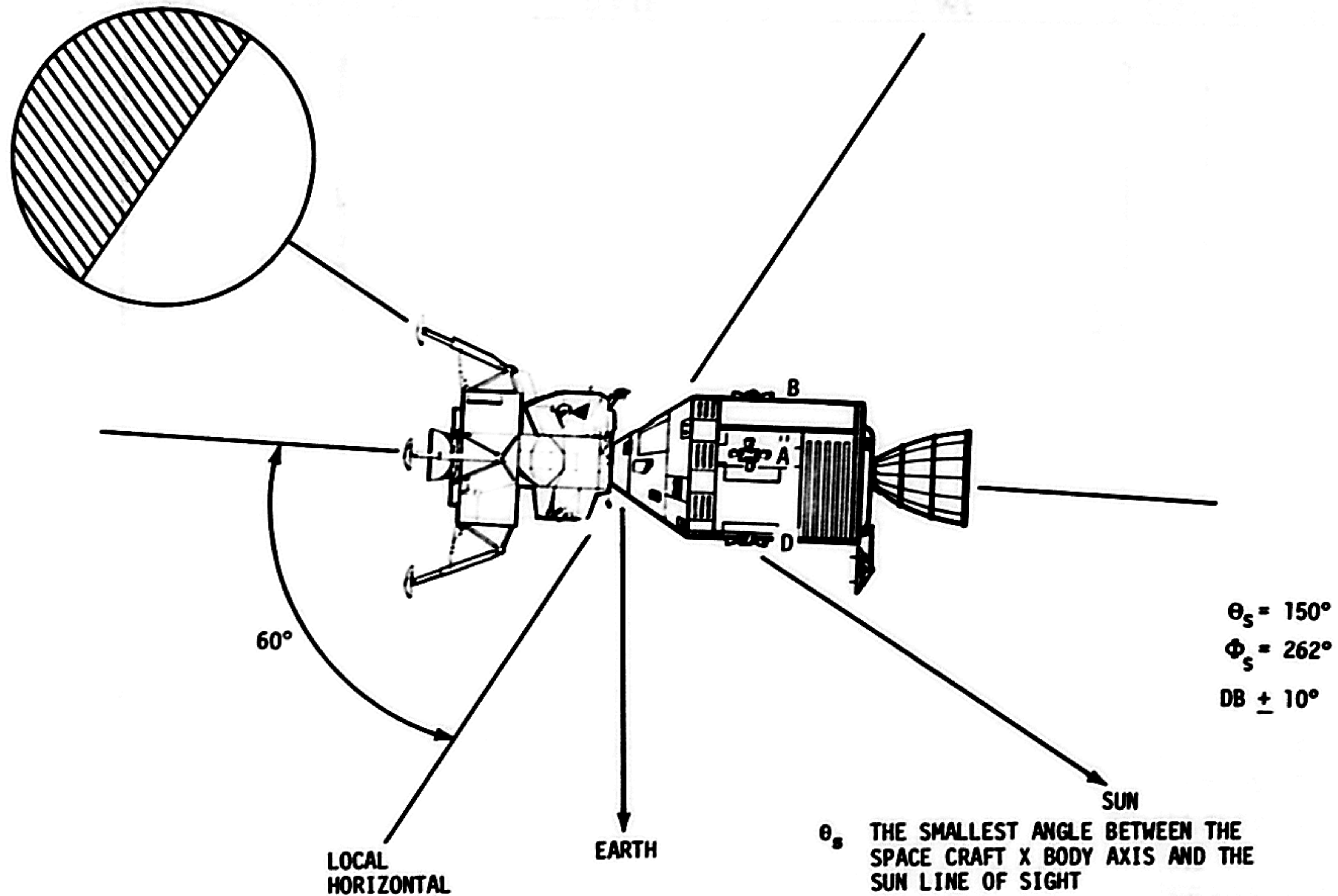
UPLINK TO CSM
STATE VECTOR & V66

MAP UPDATE REV <u>5</u>		
LOS	:	---
180°	:	---
AOS	:	---

- 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 - LM PRESS
 - NORMAL LUNAR COMM EXCEPT
 - S BD SQUELCH - ENABLE
 - HI GAIN ANTENNA TRACK - REACQ
 - HI GAIN ANTENNA BEAM - NARROW
 - S BD ANT - HI GAIN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	91:00-92:00	4/4-5	3-70

LUNAR ORBIT REST PERIOD ATTITUDE



θ_s THE SMALLEST ANGLE BETWEEN THE SPACE CRAFT X BODY AXIS AND THE SUN LINE OF SIGHT

ϕ_s THE ANGLE WHICH IS MEASURED FROM THE MINUS Z SPACECRAFT BODY AXIS POSITIVELY ABOUT THE X BODY AXIS TO THE SUN LINE OF SIGHT VECTOR PROJECTION IN THE Y - Z AXIS PLANE

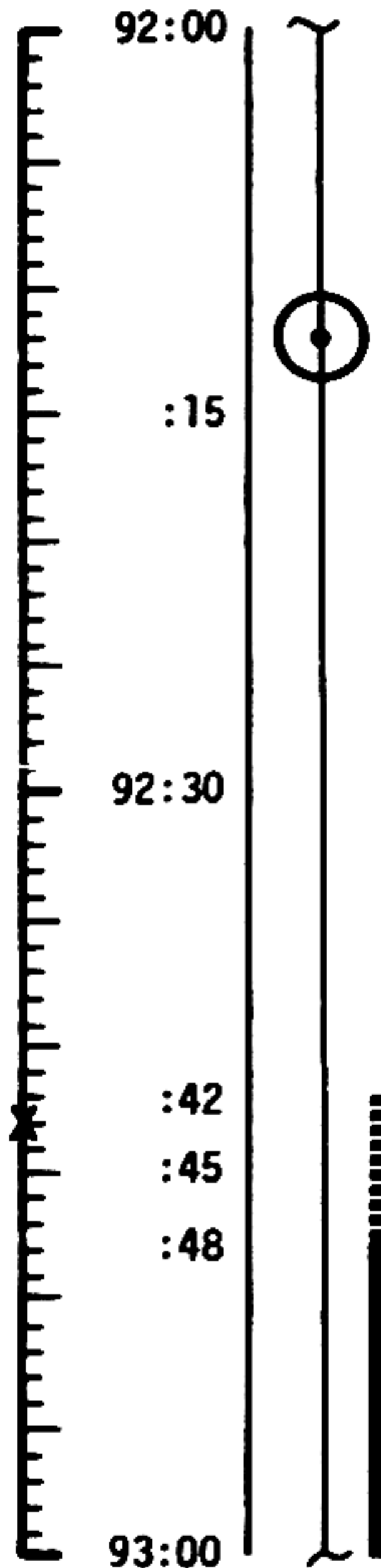
FIGURE 3-2
3-71

MCC-M
DUMP DSE

0622 CST

FLIGHT PLAN

NOTES



EAT PERIOD

REST PERIOD
(8.5 HOURS)

REST
ATT

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	92:00 - 93:00	4/5	3-72

MCC-H

0722 CST

FLIGHT PLAN

NOTES

93:00

:10

:30

:34

:41

REV 6

:56

94:00

:30

:41

:47

95:00

DUMP DSE

REST PERIOD
(8.5 HOURS)

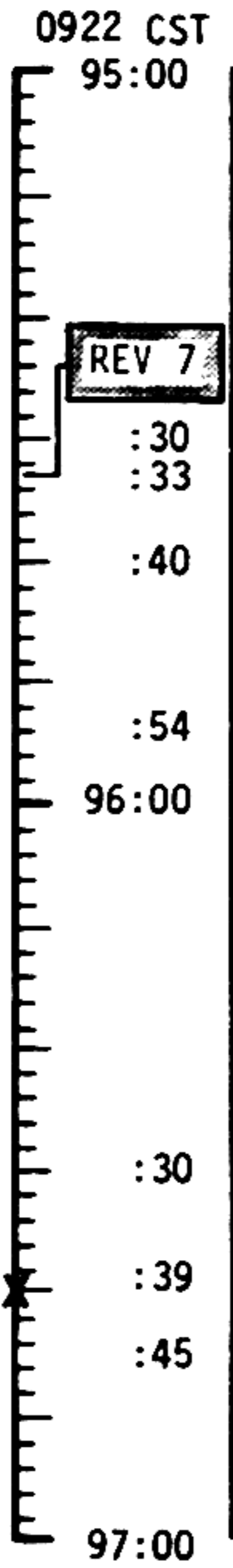
REST
ATT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	93:00-95:00	4/5-6	3-73

MCC-M

FLIGHT PLAN

NOTES



DUMP DSE



REST PERIOD
(8.5 HOURS)

REST
ATT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	95:00 - 97:00	4/6-7	3-74

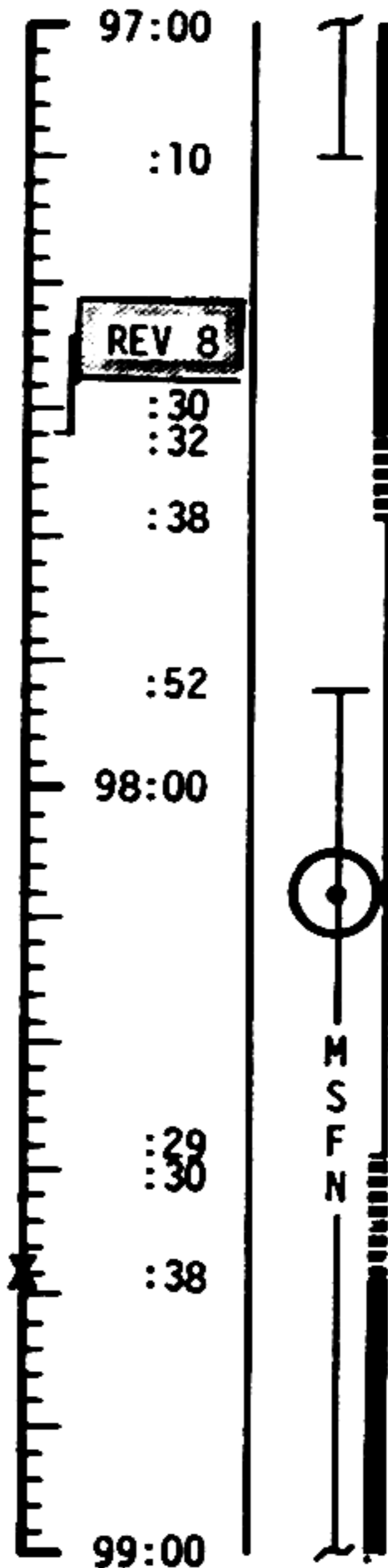
MCC-H

1122 CST

FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD
(8.5 HOURS)

REST
ATT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	97:00 - 99:00	4/7-8	3-75

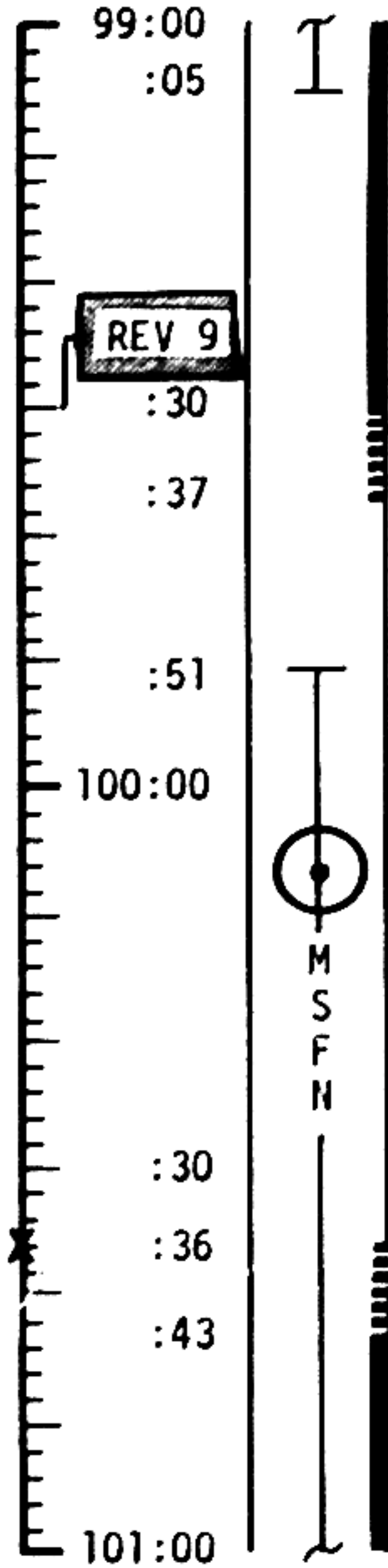
MCC-H

1322 CST

FLIGHT PLAN

NOTES

DUMP DSE

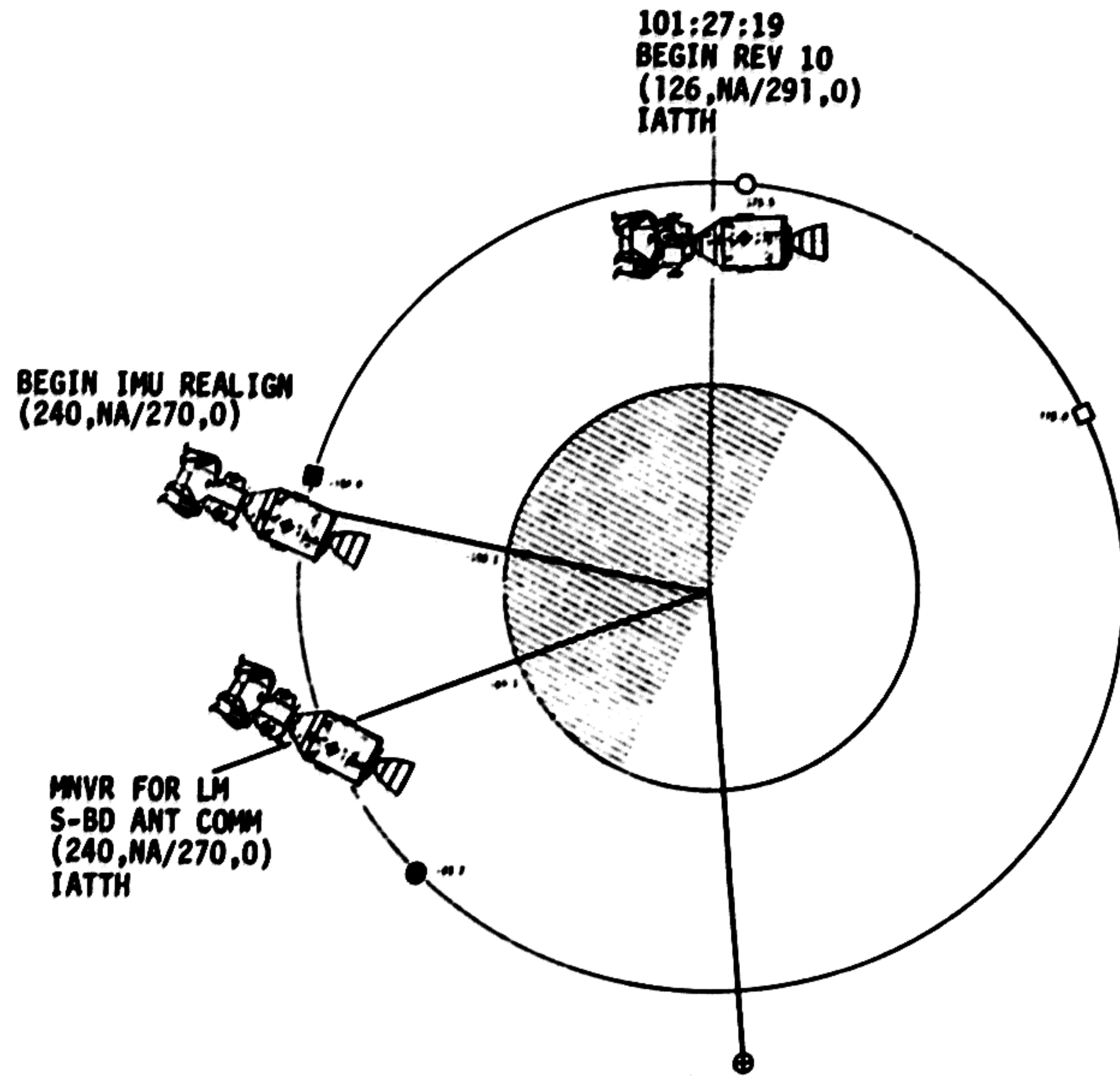


REST PERIOD
(8.5 HOURS)

REST
ATT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	99:00 - 101:00	4/8-9	3-76

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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

3-76A

REVISION B

MCC-M

FLIGHT PLAN

NOTES

1522 CST

101:00

:03

:15

REV 10

:01:29
:01:30

: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 _____ %
H₂ TOTAL _____ %
O₂ 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

102:00
:15
102:30
:35
:41
:45
103:00



CMP

CDR

LMP

MCC-H

EAT PERIOD

EAT PERIOD

EAT PERIOD

LiOH CANISTER CHANGE
NO. 9-11 INTO A, STOW 9
IN A3

TARGET OF OPPORTUNITY
PHOTOS OF FRA MAURO
OUT RT-HAND SIDE WINDOW
CM4/EL/80/BW
(f2.8,250,INF)10
T1 _____ : _____ : _____
T2 _____ : _____ : _____

MNVR TO COMM ATT BY 102:50
FOR STEERABLE ANTENNA
R240, P270, Y 0
HGA: P-35, Y117

^{CSM}
UPDATE TO ~~HM~~
UPDATE T1 & T2
TIMES FOR FRA
MAURO PHOTOS

UPDATE TO CSM
TEI 34 PAD
MAP UPDATE REV 11
CSM DAP PAD
COMM ATT &
HGA }'s (102:50)
UPLINK TO CSM
STATE VECTOR &V66
DESIRED ORIENT
(LDG SITE)

DON LCG

DON LCG

MAP UPDATE REV 11		
LOS	:	_____ : _____ : _____
180°	:	_____ : _____ : _____
AOS	:	_____ : _____ : _____

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

:15

DON PGA
W/O HELMET & GLOVES

P52 (LDG SITE ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____:_____:_____

REV 11

:27

103:30

EQUALIZE CM/LM PRESSURE

:34

OPEN & STOW CM HATCH
REMOVE & STOW PROBE & DROGUE

CHECK LATCHES
REACQUIRE MSFN
HGA: P-35, Y117

:45

:47

REPORT DOCKING TUNNEL
INDEX ANGLE

VERIFY DOCKING TUNNEL
INDEX ANGLE

MAP UPDATE REV 12

LOS : _____:_____:_____

180° : _____:_____:_____

AOS : _____:_____:_____

DUMP DSE

104:00

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

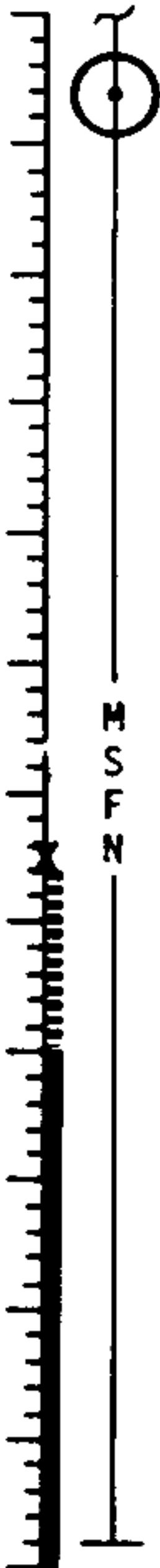
1822 CST

FLIGHT PLAN

104:00

104:30

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 838C4 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/H₂O SEP CHECK

GLYCOL PUMP CHECK

VHF CHECKOUT

IVT TO CSM

DON PGA

MCC-H

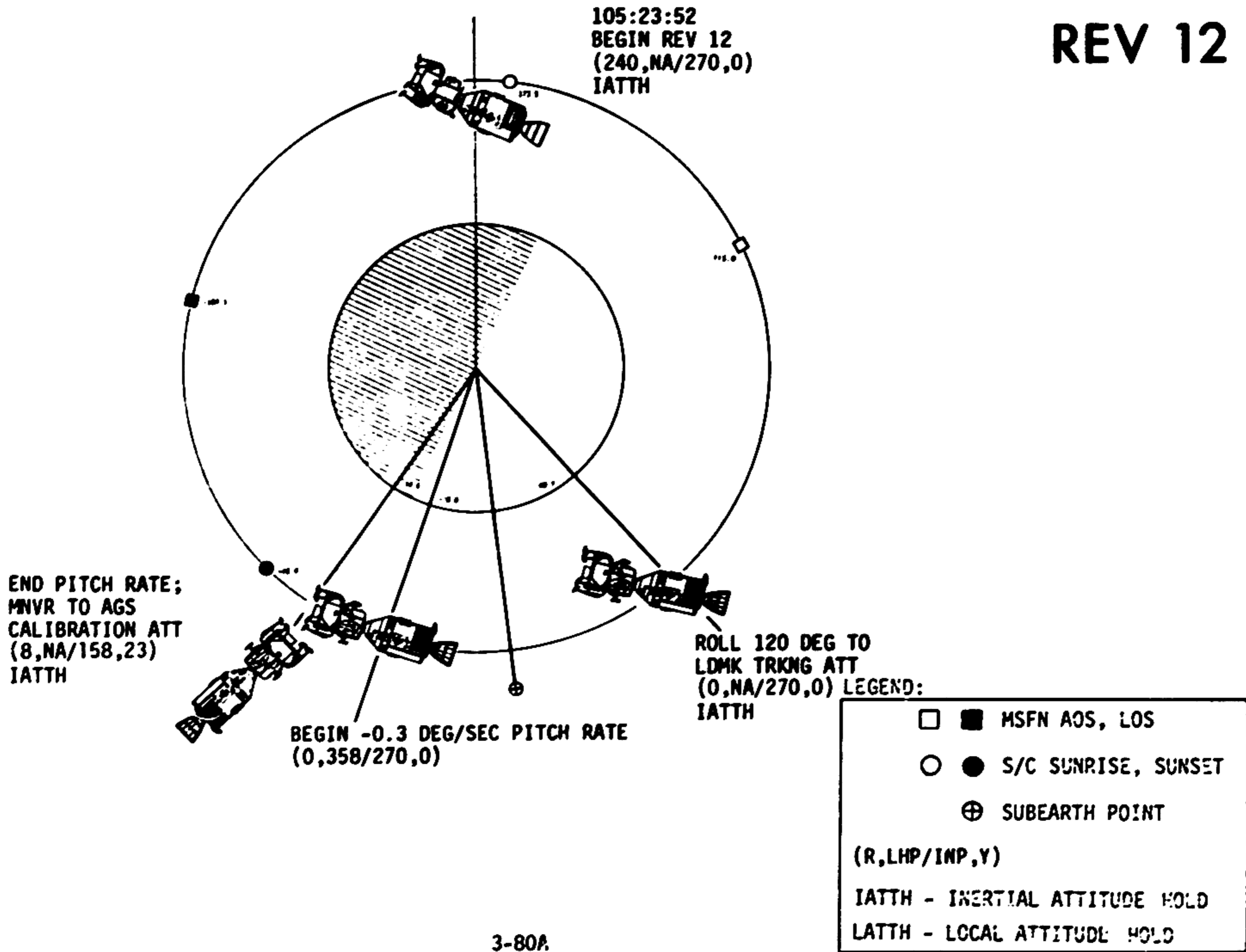
UPDATE TO CSM
 P22 LDMK
 TRACKING PAD

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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3-80A

REVISION B

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

:26

VERIFY DROGUE
& PROBE
INSTALLATION

ASCENT BATTERY
ACTIVATION
AND C/O

RECORD ED BAT
VOLTS

AGS ACT & SELF TEST

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

105:30

INSTALL DROGUE & PROBE
PRELOAD PROBE

:32

COCK LATCHES (12)
INSTALL HATCH

VENT TUNNEL
HATCH INTEGRITY
CHECK

CONFIGURE PANEL 10
FOR CSM RELAY

CLOSE AND SECURE
HATCH

:45

REACQUIRE MSFN

HGA: P-35, Y 117

V06N20E
DOFF HELMET & GLOVES

DEPLOY LANDING GEAR

STEERABLE ANTENNA:
P 68, Y 19

DUMP DSE

POO & 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 }'s

V47-AGS INITIALIZATION

106:00

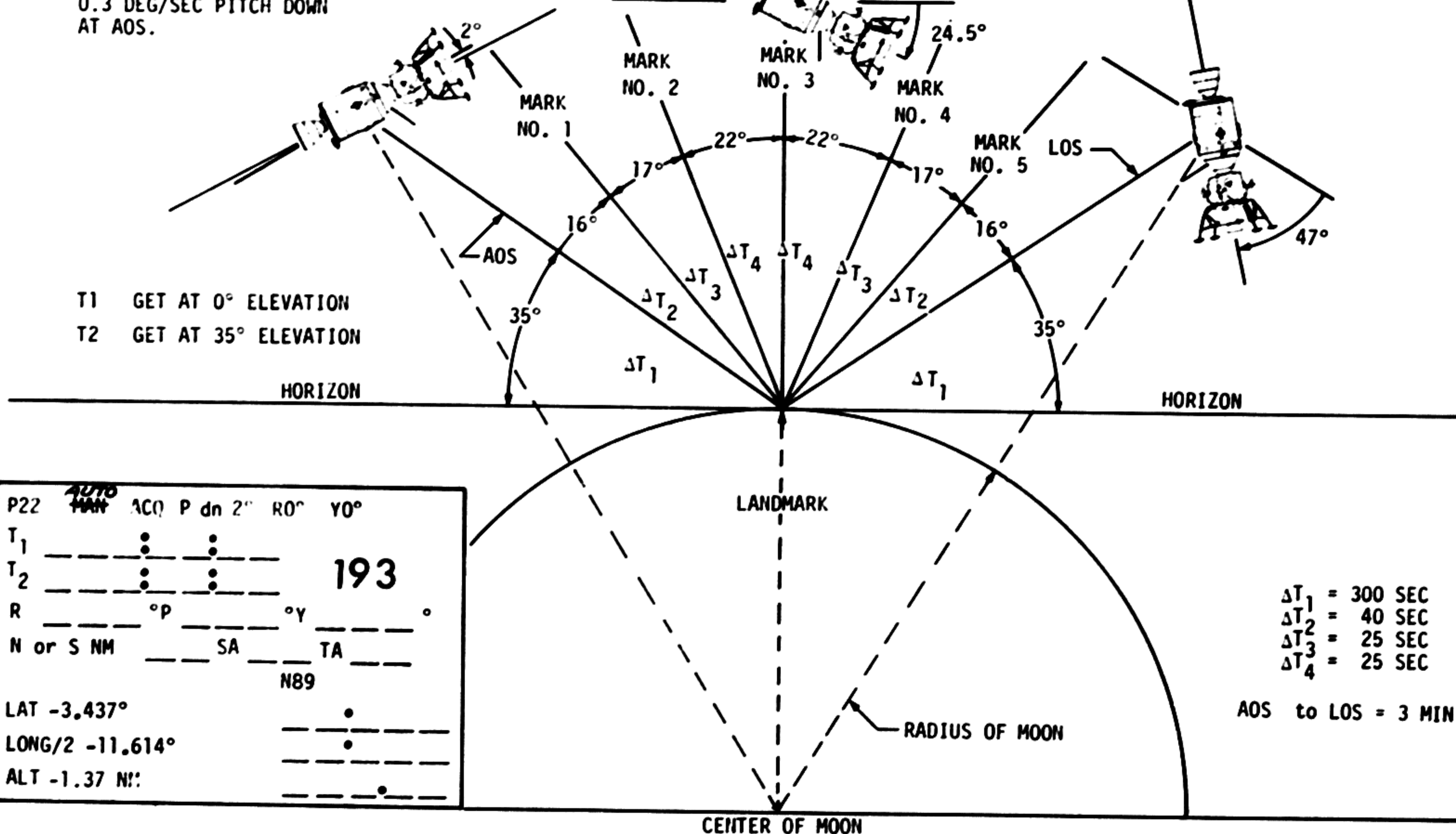
M
S
F
N

M
S
F
N

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

$\Delta T_1 = 300$ SEC
 $\Delta T_2 = 40$ SEC
 $\Delta T_3 = 25$ SEC
 $\Delta T_4 = 25$ SEC

AOS to LOS = 3 MIN

P22	MAN ^{AUTO}	ACQ	P dn 2"	R0°	Y0°
T ₁	---	---	---	---	---
T ₂	---	---	---	---	193
R	---	°P	---	°Y	---
N or S	NM	---	SA	---	TA
			N89		
LAT	-3.437°				
LONG/2	-11.614°				
ALT	-1.37 N!				

FIGURE 3-1

FLIGHT PLAN

CSM

2022 CST

LM

MCC-H

CMP

CDR

LMP

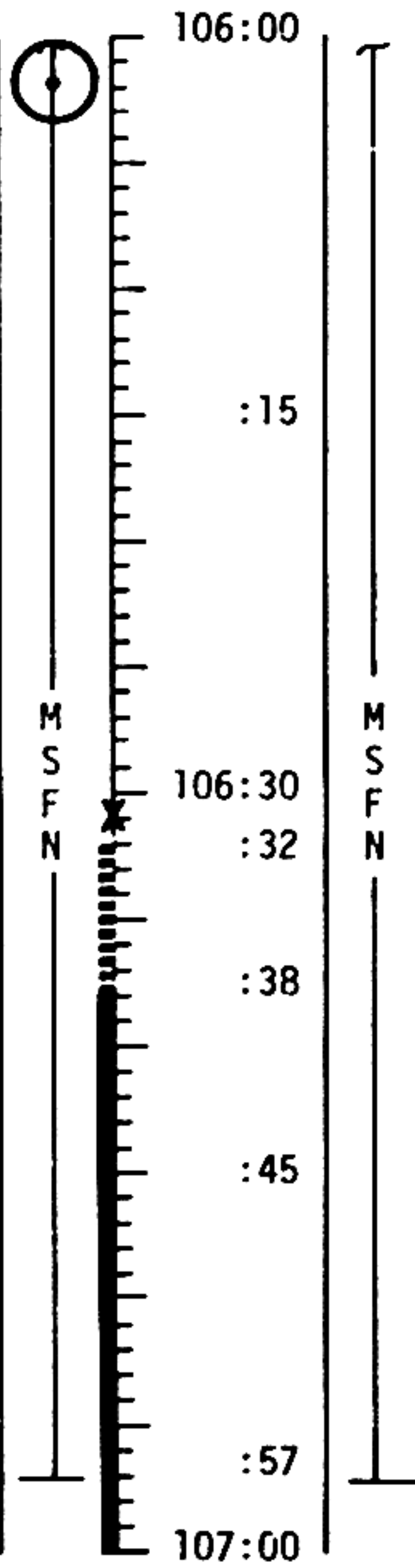
SELECT OMNI D
ROLL 120° TO TRACKING
ATT AT 106:10
R 0, P270, Y 0

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

TRACK 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



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 <u>104</u> , Y <u>01</u> FOR AGS CAL PITCH ATT RCS PRESSURIZATION
V06 N20E ON MARK	V06 N20E ON MARK
V06N20E ON MARK	V06N20E ON MARK
RCS CHECKOUT	RCS CHECKOUT
FWD OMNI-LBR SLEW STEERABLE S-BD ANT: P <u>132</u> , Y <u>24</u>	FWD OMNI-LBR SLEW STEERABLE S-BD ANT: P <u>132</u> , Y <u>24</u>

UPLINK TO LM
LS REFSMMAT
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

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

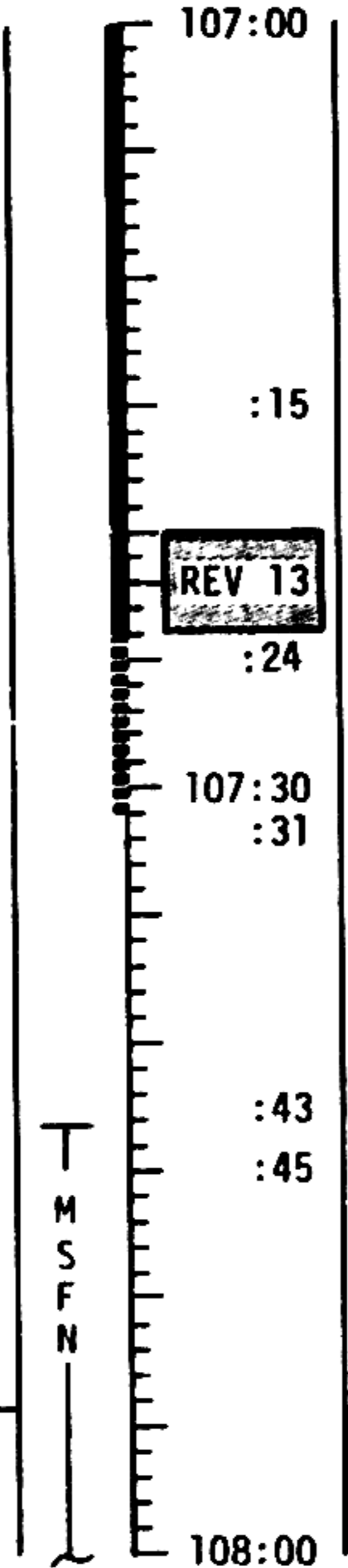
RR TRANSPONDER ACT
 & SELF TEST

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 - CMC

SOFT UNDOCK

S/C CONTROL - CMC
 STATION KEEP @ 40'

~~RE-ENABLE B3&G4 JETS~~



CDR

LMP

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

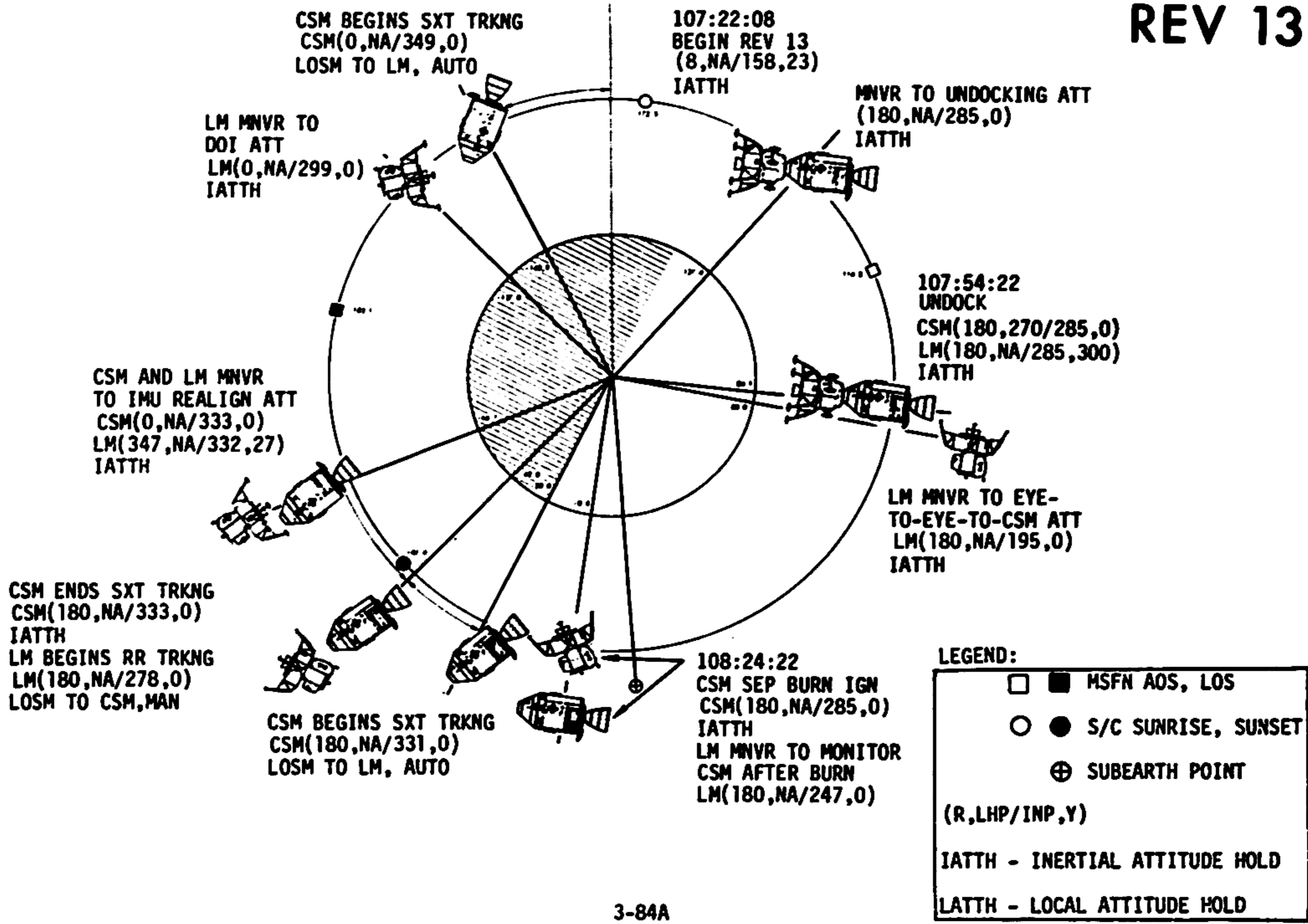
DUMP DSE
 GO/NO-GO FOR UNDOCKING

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



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FLIGHT PLAN

CSM

CMP

SEQ CAMERA - OFF

P30/P41

CSM SEPARATION
TIG: 108:24:22
BT: 15.8 SEC
 ΔV_T : 2.5 fps
+Z THRUSTERS
ORBIT: 63.6X55.1

P20-RNDZ NAVIGATION
MNR TO TRACK ATT
SXT TRACKING &
VHF RANGING
ROLL TO 0° BY 108:44

MAP UPDATE REV 14

LOS : _____ : _____ : _____
180° : _____ : _____ : _____
AOS : _____ : _____ : _____

P52-IMU REALIGN
OPT3-REFSMAT
(LDG SITE ORIENT)

VHF A-SIMPLEX/DATA
VERIFY DSE MOTION AT LOS

2222 CST

108:00

:15

108:30

:37

:45

:55

109:00

MSFN

MSFN

LM

CDR

V83 - SET ORDEAL

LR ACTIVATION
& SELF TEST

DOFF HELMETS & GLOVES

SEPARATION

P00 & DATA

P30-EXT ΔV
P40-DPS THRUST
(UNTIL MSFN GO)
RR & VHF RANGING
AND CHECKOUT

P52-IMU ALIGN
OPT 3 - REFSMMAT
(LDG SITE ORIENT)
LPD CALIBRATION
GO/NO-GO FOR DOI

LMP

BIOMED SW - RIGHT

V47-AGS UPDATE & ALIGN
LOAD AGS EXT ΔV

DESIGNATE RR TO
CLEAR AOT IF REQ'D

P52-OBSERVE THRU AOT
SLEW STEERABLE
ANT: P 12 , Y 0
OMNI FWD-PCM LBR
VHF A VOICE, B DATA

MCC-H

UPLINK TO LM
LM STATE VECTOR
(DOI-10)
DOI TARGET LOAD
PIPA BIAS
DESCENT TARGET
UPDATE TO LM
DOI PAD
NO PDI + 12 PAD
PDI PAD
PDI ABORT <10 MIN
PDI ABORT >10 MIN
T2 & T3 PADS
P22 ACQ TIME 28° EL
GYRO TORQUING }'s

UPDATE TO CSM
MAP UPDATE REV 14
UPLINK TO LM
CSM STATE VECTOR
(DOI-10)
UPLINK TO CSM
CSM STATE VECTOR
(DOI-10)
LM STATE VECTOR
(DOI-10)
PIPA BIAS
UPDATE TO LM
STEERABLE ANT }'s
FOR PDI ATTITUDE
(IF REQ'D)
GO/NO-GO

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	108:00 - 109:00	5/13	3-85

FLIGHT PLAN

CSM

CMP

GDC ALIGN TO IMU
V83-VERIFY ORDEAL

P20-AUTO MNVR TO
SXT TRACK ATT

CONFIRM DOI
P76-LOAD TARGET ΔV'S

P20-AUTO MNVR
SXT & VHF
TRACKING OF LM

V64-ACQUIRE MSFN

2322 CST
109:00

REV 14

:23

:29
109:30

:41

:43

:45

110:00

MSFN



LM

CDR

LMP

SYSTEMS CHECKS	SYSTEMS CHECKS
P40-DPS THRUST MNVR TO BURN ATT R <u>0</u> , P <u>299</u> , Y <u>0</u>	V47-AGS UPDATE & ALIGN
RR-ON P20-MAN LOCK-ON V63-COMPARE RR & CSM VHF RANGE RR-OFF	VHF A - VOICE/RNG VHF B - OFF
P30-EXT ΔV LOAD PDI+12 ABORT	SET CAMERA LM/UAC/HCEX(4,500,INF)6FPS
MNVR TO PDI ATT BY 109:38 R <u>0</u> , P <u>109</u> , Y <u>0</u> VERIFY COMM DOI POST BURN REPORT COAS TO OVHD WINDOW P63-CHECK TIG	SLEW STEERABLE ANT P <u>12</u> , Y <u>0</u> S-BD RANGING-RANGE BIOMED SW-LEFT
RR-ON P20-MODE II LOCK-ON	DON HELMETS & GLOVES BATTERY 5&6 - ON SYSTEMS CHECK: DPS, APS, RCS, EPS, CWEA S-BD RANGING-OFF/RESET

DOI

TIG: 109:23:00
BT: 28.2 SEC
ΔV: 72.1 FPS
ULL: 2JETS, 7.5 SEC
ORBIT: 59.3X8.3

ENABLE MSFN RELAY

DUMP USE

UPDATE TO CSM
MAP UPDATE REV 15

MAP UPDATE REV 15			
LOS	:	:	:
180°	:	:	:
AOS	:	:	:

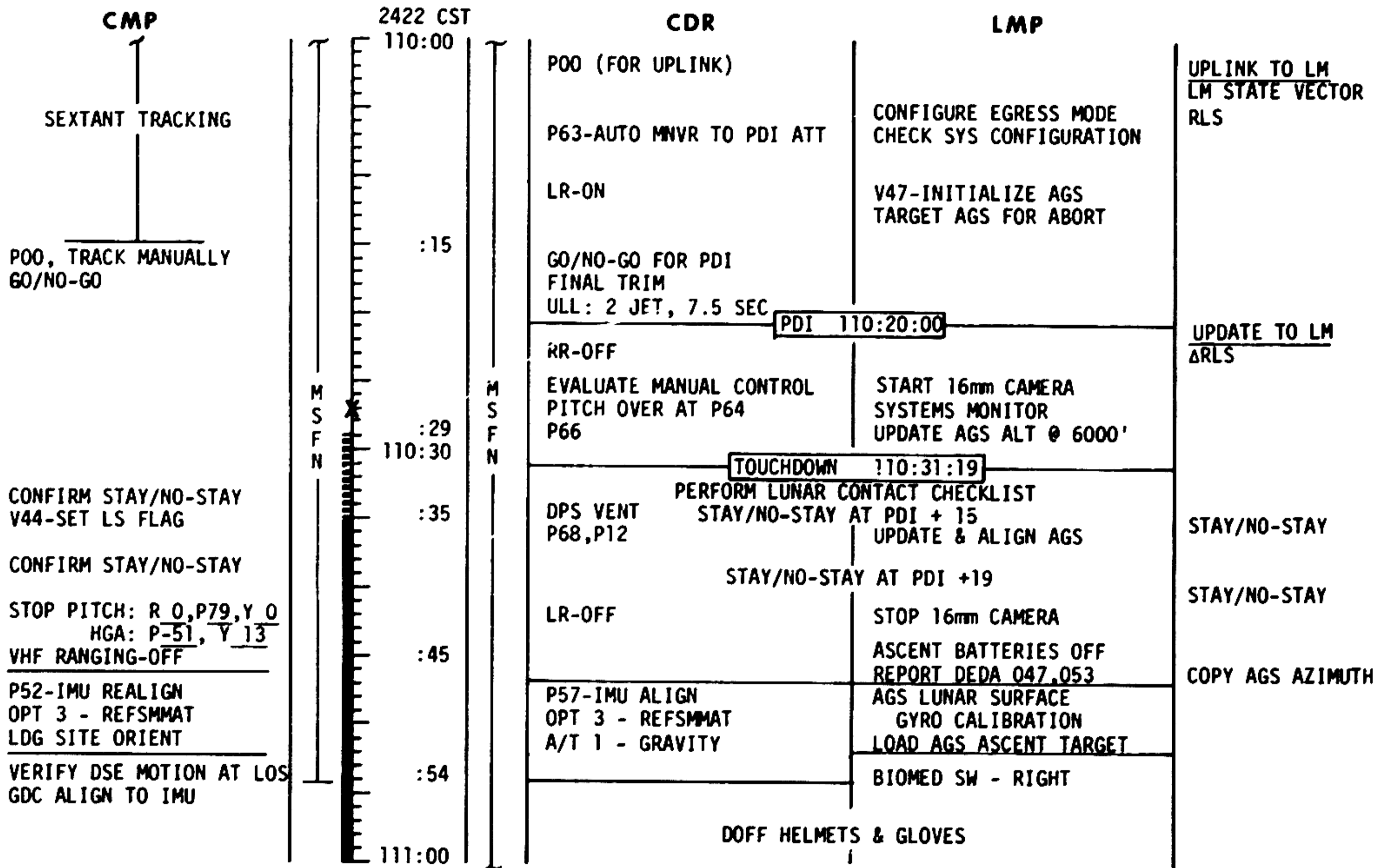
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	109:00 - 110:00	5/13-14	3-86

FLIGHT PLAN

CSM

LM

MCC-H



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	110:00 - 111:00	5/14	3-87

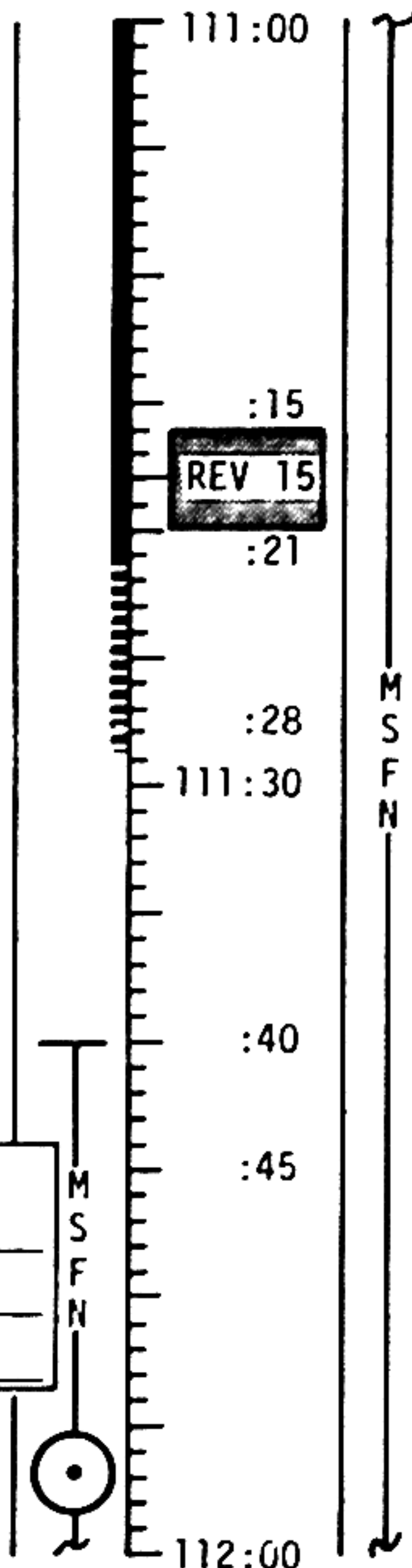
CSM

CMP

0122 CST

LM

MCC-H



CDR	LMP
INSTALL WINDOW SHADES	TERMINATE AGS GYRO CALIBRATION
P57 - IMU ALIGN OPT 3 - REFSMMAT A/T 2 - TWO CELESTIAL BODIES	P57 - OBSERVE THRU AOT
P57 - IMU ALIGN OPT 3 - REFSMMAT A/T 2 - TWO CELESTIAL BODIES	P57 - OBSERVE THRU AOT
STOW WINDOW SHADES	ALIGN AGS TO PGNC
CONFIGURE FOR PARTIAL POWER DOWN	
DESCRIBE & PHOTOGRAPH LUNAR SURFACE REPORT FEATURES SEEN DURING DESCENT AND DETERMINE LM LOCATION WITH MSFN REPORT ANGLE OF +Z WRT WEST	
EAT PERIOD	

UPLINK TO LM
RLS
CSM STATE VECTOR
STAY/NO-STAY FOR POWER DOWN
UPLINK TO CSM
CSM STATE VECTOR
DUMP DSE
UPDATE TO CSM
P22 - TRACKING PAD
MAP UPDATE REV 16
UPDATE TO LM
LM CONSUMABLES

REACQUIRE MSFN
HGA P-51 Y 13

MAP UPDATE REV 16

LOS : _____ : _____ : _____

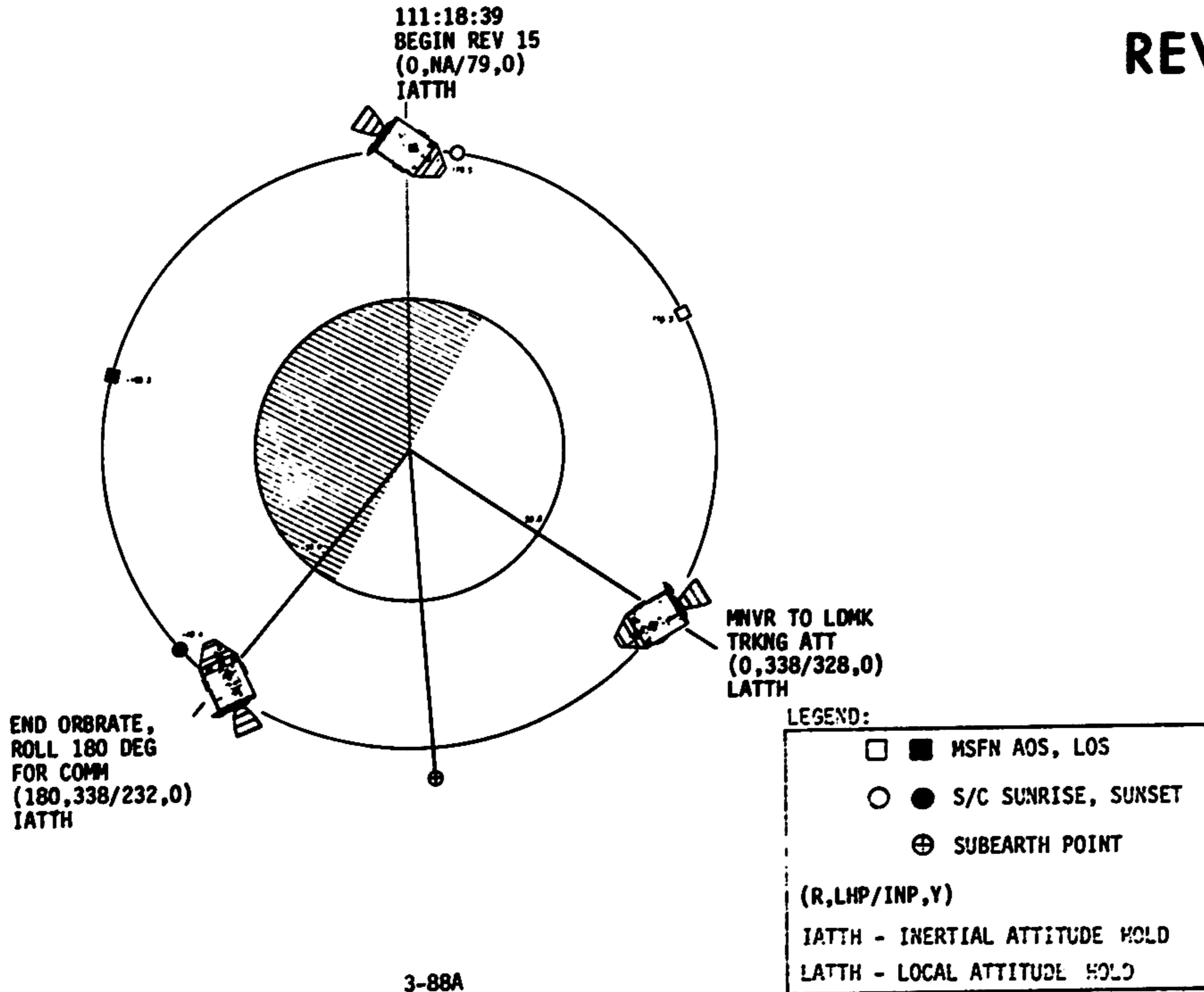
180° : _____ : _____ : _____

AOS : _____ : _____ : _____

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	111:00 - 112:00	5/14-15	3-88

FI GHT PLANNING BRANCH

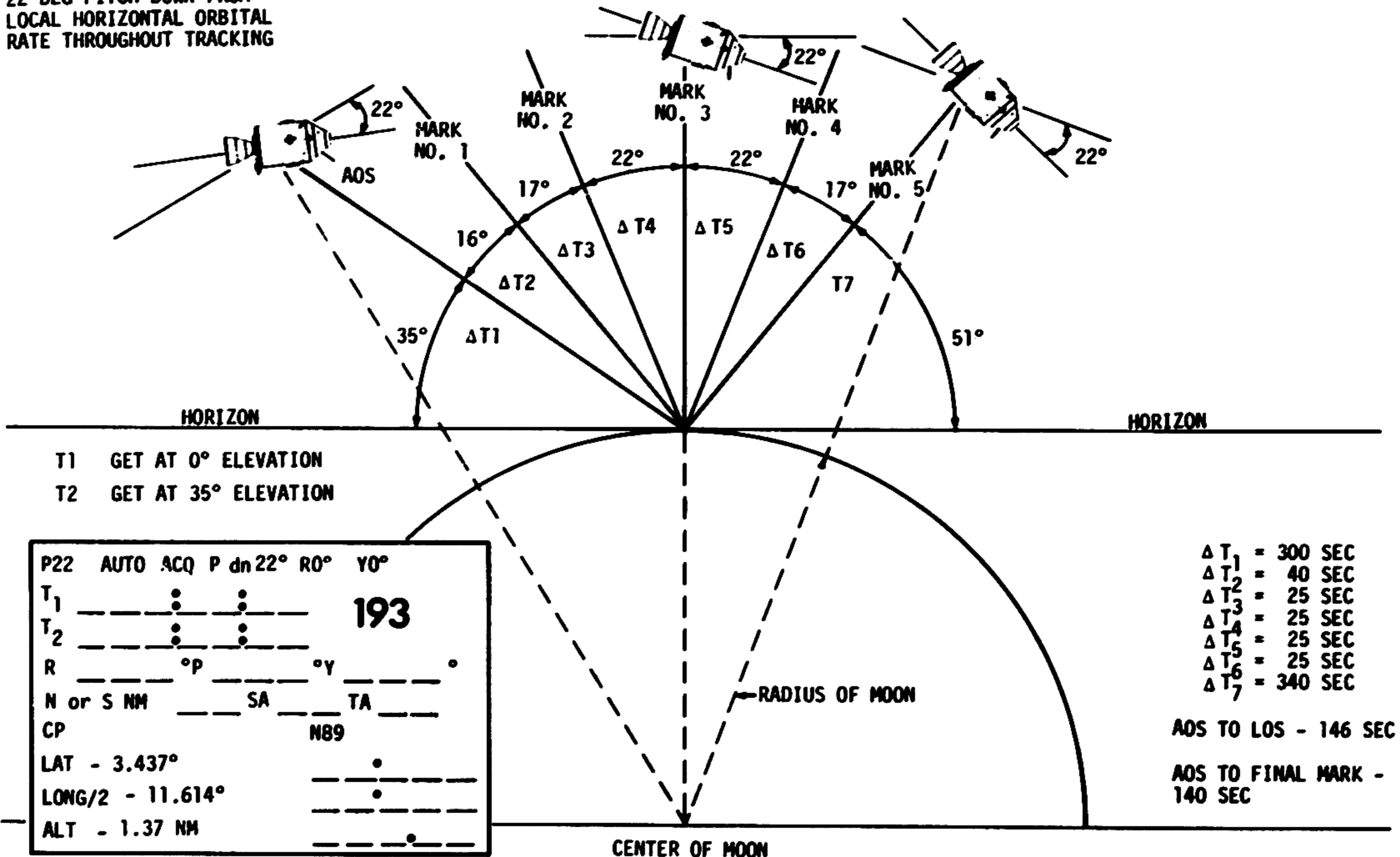


3-88A

REVISION B

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING



FLIGHT PLAN

CSM

CMP

MNVR TO TRACKING
ATTITUDE BY 112:00
R 0, P338/N/A, Y 0
GO ORB RATE
SELECT OMNI D
P22 ORBITAL NAVIGATION
VERIFY DSE MOTION

TRACK LDG SITE LDMK 193
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS
5 MARKS

RR TRANSPONDER - OFF
STOP ORB RATE @ P232, MNVR
TO ACQ MSFN, GO INERTIAL
R 180, P232, Y 0
HGA P-23, Y 189

EAT PERIOD

VERIFY DSE MOTION @ LOS

0222 CST
112:00

MSFN

:15

:28

112:30

:34

:45

:52

113:00

CDR

LM

LMP

MCC-H

EAT PERIOD

RR-ON

P22 - LUNAR SURFACE NAVIGATION

TERMINATE P22 - LUNAR SURFACE NAVIGATION
DESIGNATE THEN PWR DWN RR
E MEMORY DUMP

POWER DOWN IMU
LGC TO STANDBY

CREW STATUS REPORT (DOSIMETER, MEDICATION)

CABIN PREP FOR EVA

STOW ALL LOOSE ITEMS NOT REQUIRED FOR EVA
UNSTOW EVA 1 PREP & POST CARD
REMOVE CB EVA CONFIG & ONE MAN EVA PAGE & INSTALL

STOW LUNAR CHECKLIST

UPDATE TO LM
DAP LOAD
LIFT OFF TIME FOR
REV 16 THRU 19

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	112:00 - 113:00	5/15	3-90

FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

LMP

0322 CST
113:00

EAT PERIOD

CABIN PREP FOR EVA (CONT)

-1:20

EQUIPMENT PREP
SET DET FOR CABIN DEPRESS
UNSTOW LMP'S PLSS FROM LM FLOOR
PREPARE SEQ CAMERA
DEPLOY EVA ANTENNA
UNSTOW & DON LUNAR BOOTS (BOTH)
UNSTOW & CHECK BOTH OPS'S

-1:10

:15
REV 16
:20

:27

113:30

M
S
F
N

-1:00

PLSS DONNING

CONFIGURE LMP'S PLSS/OPS FOR DONNING
UNSTOW RCU'S
LMP DON PLSS/OPS
CONFIGURE CDR'S PLSS/OPS FOR DONNING
CDR DON PLSS/OPS
VERIFY RCU CONTROLS AND CONNECT
TO PLSS/PGA

DUMP USE

-:50

UPDATE TO CSM
P22 - TRACKING PAD
MAP UPDATE REV 17

REACQUIRE MSFN
HGA P -23 , Y 189

:38

MAP UPDATE REV 17

LOS : : :
180°W: : :
AOS : : :

M
S
F
N

:45

-:40

PLSS COMM CHECK

AUDIO SWITCHES CK, ACTIVATE PLSS COMM SYSTEMS&C/U
(TV CB - CLOSE THEN OPEN)

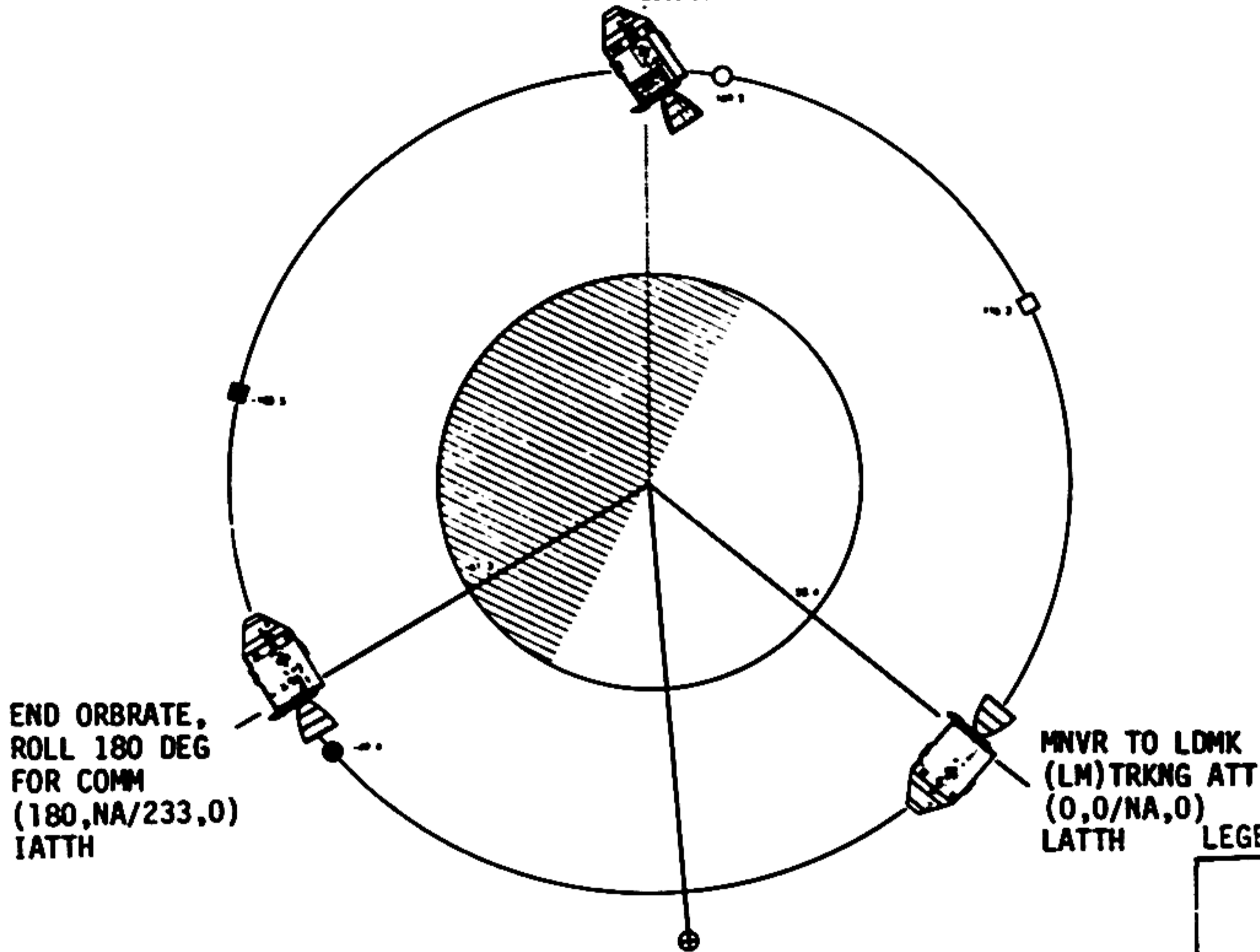
FINAL SYSTEMS PREP

-:30

114:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	113:00 - 114:00	5/15-16	3-91

113:16:56
 BEGIN REV 16
 (180,NA/232,0)
 IATTH



END ORBRATE,
 ROLL 180 DEG
 FOR COMM
 (180,NA/233,0)
 IATTH

MNVR TO LDMK
 (LM)TRKNG ATT
 (0,0/NA,0)
 LATTH

LEGEND:

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

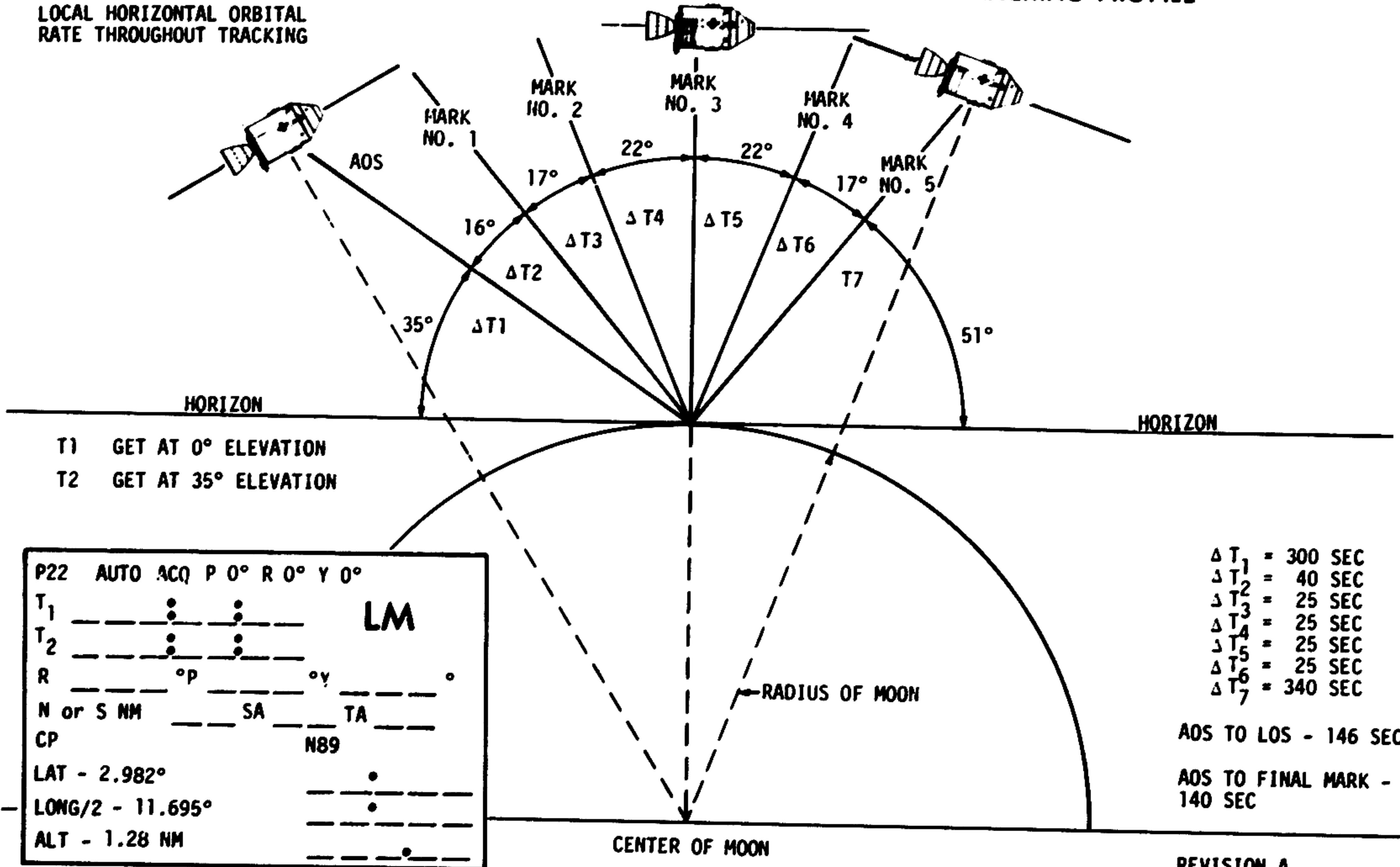
(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

CSM LANDMARK TRACKING PROFILE

LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



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

P22	AUTO	ACQ	P 0°	R 0°	Y 0°
T ₁	_____	_____	_____	_____	_____
T ₂	_____	_____	_____	_____	_____
R	_____	°p	_____	°y	_____
N or S	NM	_____	SA	_____	TA
CP	_____	_____	N89	_____	_____
LAT	- 2.982°	_____	_____	_____	_____
LONG/2	- 11.695°	_____	_____	_____	_____
ALT	- 1.28 NM	_____	_____	_____	_____

- Δ T₁ = 300 SEC
- Δ T₂ = 40 SEC
- Δ T₃ = 25 SEC
- Δ T₄ = 25 SEC
- Δ T₅ = 25 SEC
- Δ T₆ = 25 SEC
- Δ T₇ = 340 SEC

AOS TO LOS - 146 SEC
 AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3
3-92

REVISION A

FLIGHT PLAN

CSM

CMP

MNVR TO TRACKING
ATTITUDE BY 114:00

R 0, P 0 /N/A, Y 0
GO ORB RATE
SELECT OMNI D
P22 ORBITAL NAVIGATION

VERIFY DSE MOTION

TRACK LM
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS
5 MARKS

STOP ORB RATE @ P233, MNVR
TO ACQ MSFN, GO INERTIAL
R 180, P 233, Y 0
HGA P -23, Y 190

VERIFY DSE MOTION @ LOS

0422 CST
114:00



:15

:26

114:30

:33

:45

:50

115:00

LM

CDR

LMP

CONNECT OPS O₂ HOSES
DON HELMETS
CONNECT PLSS H₂O HOSES
LCG PUMP CB-OPEN
DON GLOVES

VERIFY CB & VALVE CONFIGURATION

PRESSURE INTEGRITY CHECK
PLSS O₂ ON

CABIN DEPRESS

CONFIRM "GO" FOR EVA
DEPRESS CABIN TO 3.5 PSIA

SET ~~DET~~ CHRONOMETER

FWD DUMP VALVE - OPEN
OPEN FWD HATCH

FINAL PREP FOR EGRESS
PLSS H₂O ON, FINAL SYSTEMS CHECK,
TURN TV ON, VERIFY CB CONFIGURATION

CDR EGRESS
MOVE THROUGH HATCH
DEPLOY LEC & MESA
DESCEND TO SURFACE

ASSIST & MONITOR CDR

ACTIVATE 16MM SEQ CAMERA

ENVIRONMENTAL FAM
CK BALANCE, CK LM STABILITY

MONITOR & PHOTO CDR
WITH 70 MM CAMERA

CONT. SAMPLE COLLECTION
COLLECT & STOW SAMPLE

PERFORM FINAL LM & EMU CK

ETB TRANSFER
DEPLOY MESA & ETB

CONFIRM "GO" FOR EVA

:30

:20

:10

START EVA
0:00

0:10

0:20

0:30

MCC-H

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	114:00 - 115:00	5/16	3-93

CSM

CMP

LM

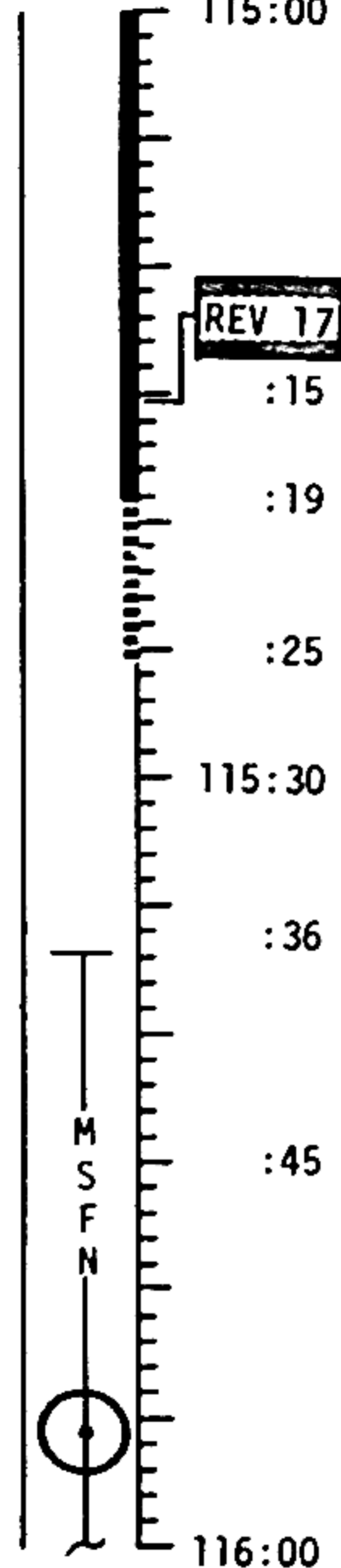
MCC-H

0522 CST
115:00

CDR

LMP

EVA GO
0:30



REV 17

STOW PLSS BATTS & LiOH CAN,
& CONT SAMPLE IN ETB
TRANSFER ETB TO LM
REST
TRANSFER ETB TO SURFACE

ASSIST CDR WITH ETB
TRANSFER

LMP AND CONT PHOTOS
PHOTOGRAPH LMP EGRESS
TAKE CONTINGENCY PHOTOS
PHOTOGRAPH COLOR CHART

LMP EGRESS
MOVE THROUGH HATCH
DESCEND TO SURFACE

ENVIRONMENTAL FAM
CHECK BALANCE & STABILITY

S-BD ERECT. ANT DEPLOYMENT
UNSTOW S-BAND ANT
CARRY ANT TO DEPLOY SITE
ERECT ANTENNA
CONNECT ANTENNA CABLE
ALIGN ANTENNA

TV DEPLOYMENT
DEPLOY TRIPOD & TV CAMR
TV PANORAMA, POSITION TV
TO VIEW S-BD ERECT./MESA

SWC DEPLOYMENT
DEPLOY SWC IN SUN
PHOTO SWC & LM/EARTH

FLAG DEPLOY

FLAG DEPLOY

PANORAMA & CLOSE-UP PHOTOS
UNSTOW ALSCC & PLACE IN SUN
TAKE PANORAMA & SURFACE
CLOSE-UP PHOTO'S

LM INSPECTION/PHOTO
POSITION TV FOR SEQ BAY
INSPECT & PHOTO LM PADS/
SURFACE

ALSEP OFFLOAD
OFFLOAD ALSEP PKG #1
POSITION PKG #1 CLEAR OF
SEQ BAY

ALSEP OFFLOAD
OPEN SEQ BAY DOORS
OFFLOAD ALSEP PKG #2
DEPLOY HTC

REMOVE SIDE SUBPALLET
FROM PKG #2

DEPLOY FUEL CASK
EXTRACT FUEL ELEMENT
FUEL RTG

REACQUIRE MSFN
HGA P -23, Y 190

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	115:00 - 116:00	5/16-17	3-94

FLIGHT PLAN

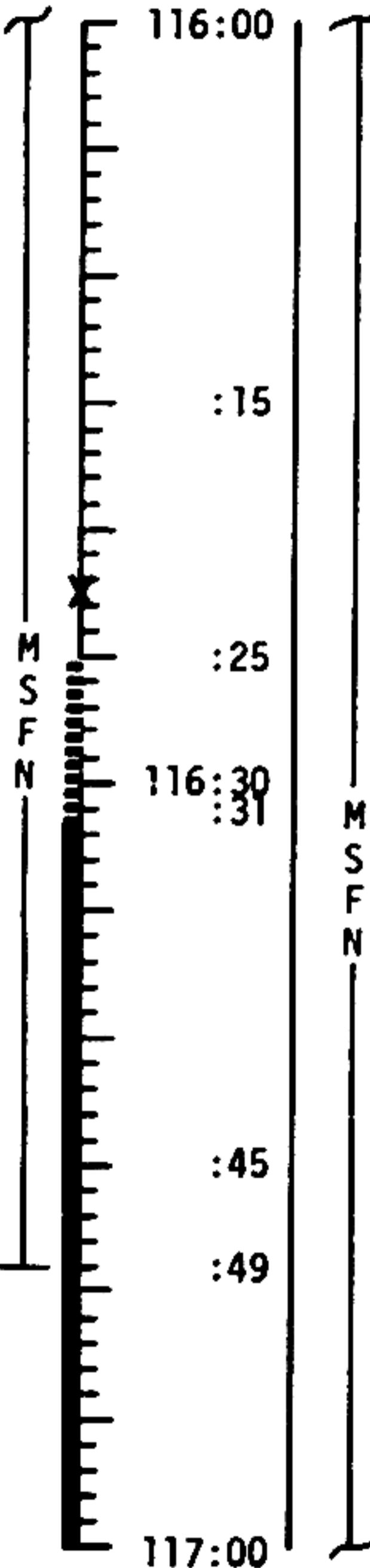
CSM
CMP

LM

MCC-H

0622 CST
116:00

MAP UPDATE REV 18		
LOS	:	:
180°	:	:
AOS	:	:



CDR	LMP
CLOSE SEQ BAY DOORS CARRY HTC TO MESA PICK UP TONGS	CONNECT PKG #2 TO CARRY BAR
<u>ALSEP TRAVERSE</u> CARRY SUBPALLET TO TV ORIENT TV FOR ALSEP CARRY SUBPALLET TO DEPLOYMENT SITE	<u>ALSEP TRAVERSE</u> CARRY ALSEP PKG's TO DEPLOYMENT SITE REST ENROUTE
<u>ALSEP SYSTEM INTERCONNECT</u> UNSTOW SIDE FROM SUBPALLET CONNECT TO CENTRAL STATION UNSTOW & POSITION PSE STOOL	<u>ALSEP SYSTEM INTERCONNECT</u> POSITION PKGS UNSTOW RTG CABLE AND CONNECT TO CENTRAL STATION
<u>SWE DEPLOYMENT</u> DEPLOY SWE, ALIGN & PHOTOGRAPH	<u>PSE DEPLOYMENT</u> UNSTOW PSE & PLACE ON PSE STOOL, DEPLOY THERMAL SKIRT LEVEL & PHOTOGRAPH PSE
<u>LSM OFFLOAD</u> UNSTOW LSM	<u>LSM DEPLOYMENT</u> CARRY LSM TO DEPLOY SITE DEPLOY LSM, & LEVEL & ALIGN PHOTOGRAPH LSM
<u>SUNSHIELD DEPLOYMENT</u> RELEASE PERIMETER, ANT, CABLE, & INNER BOLTS, RAISE SUNSHIELD, & CK. CURTAINS	<u>SIDE DEPLOYMENT</u> CARRY SIDE TO DEPLOY SITE DEPLOY GROUND SCREEN DEPLOY CCIG LEVEL & ALIGN SIDE PHOTOGRAPH SIDE
<u>ANTENNA INSTALLATION</u> INSTALL ANT MAST INSTALL ANT ON MAST SET AZIMUTH & ELEVATION OFFSETS LEVEL & ALIGN ANTENNA	<u>ALSEP SITE PHOTOGRAPHY</u> PHOTO DEPLOYMENT SITE
<u>ALSEP ACTIVATION</u> VERIFY EXPERIMENTS DEPLOYED ACTIVATE ALSEP	

1:30

1:40

1:50
UPDATE TO CSM
MAP UPDATE REV 18

2:00

2:10

2:20

2:30

VERIFY DSE MOTION @ LOS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	116:00 - 117:00	5/17	3-95

CSM

CMP

LM

MCC-H

0722 CST

117:00

CDR

LMP

2:30

GO/NO GO FOR
EVA EXTENSION
2:40

2:50

3:00

DUMP DSE

3:10

UPDATE TO CSM
MAP UPDATE REV 19

3:20

3:30

117:30

:35

:45

119:00

MSFN

MSFN



RETURN TRAVERSE
TRAVERSE TO LM COLLECTING
SAMPLES
REST ENROUTE

SRC #1 PACKING
STOW 70 MM CAM IN ETB
STOW TOOLS
UNSTOW & UNPACK SRC #1
SEAL ORGANIC CONTROL SAMPLE
REMOVE LMP SADDLE BAG &
FINISH FILLING
PACK SAMPLES IN SRC & SEAL

LEC TRANSFERS
STOW 70MM CAM IN ETB,
CLOSE ETB & TRANSFER
INTO LM
REST/CHECK EMU
ATTACH LEC TO SRC
TRANSFER SRC INTO LM

EVA TERMINATION
PLACE SRC #2 ON +Y PAD
CLEAN EMU
ASCEND TO PLATFORM
STOW LEC & INGRESS

JETTISON EQUIPMENT & CLOSE HATCH
REPRESS CABIN

RETURN TRAVERSE
TRAVERSE TO LM COLLECT-
ING SAMPLES
REST ENROUTE
RETURN TV TO LM AREA
& POSITION TO VIEW MESA/
LADDER
PHOTOGRAPH ALSEP SITE

CORE TUBE SAMPLE COLLECTION
COLLECT CORE & STOW IN SRC
REMOVE CDR SADDLE BAG

EVA TERMINATION
STOW 70MM CAM IN ETB
CLEAN EMU & CHECK CDR
INGRESS
CHECK EMU & LM SYSTEMS
S-BD ANT-LUNAR STAY
ASSIST CDR
REMOVE ETB FROM LEC & STOW

ASSIST CDR

REMOVE SRC FROM LEC
STOW SRC ON ENG COVER

PASS LEC TO CDR

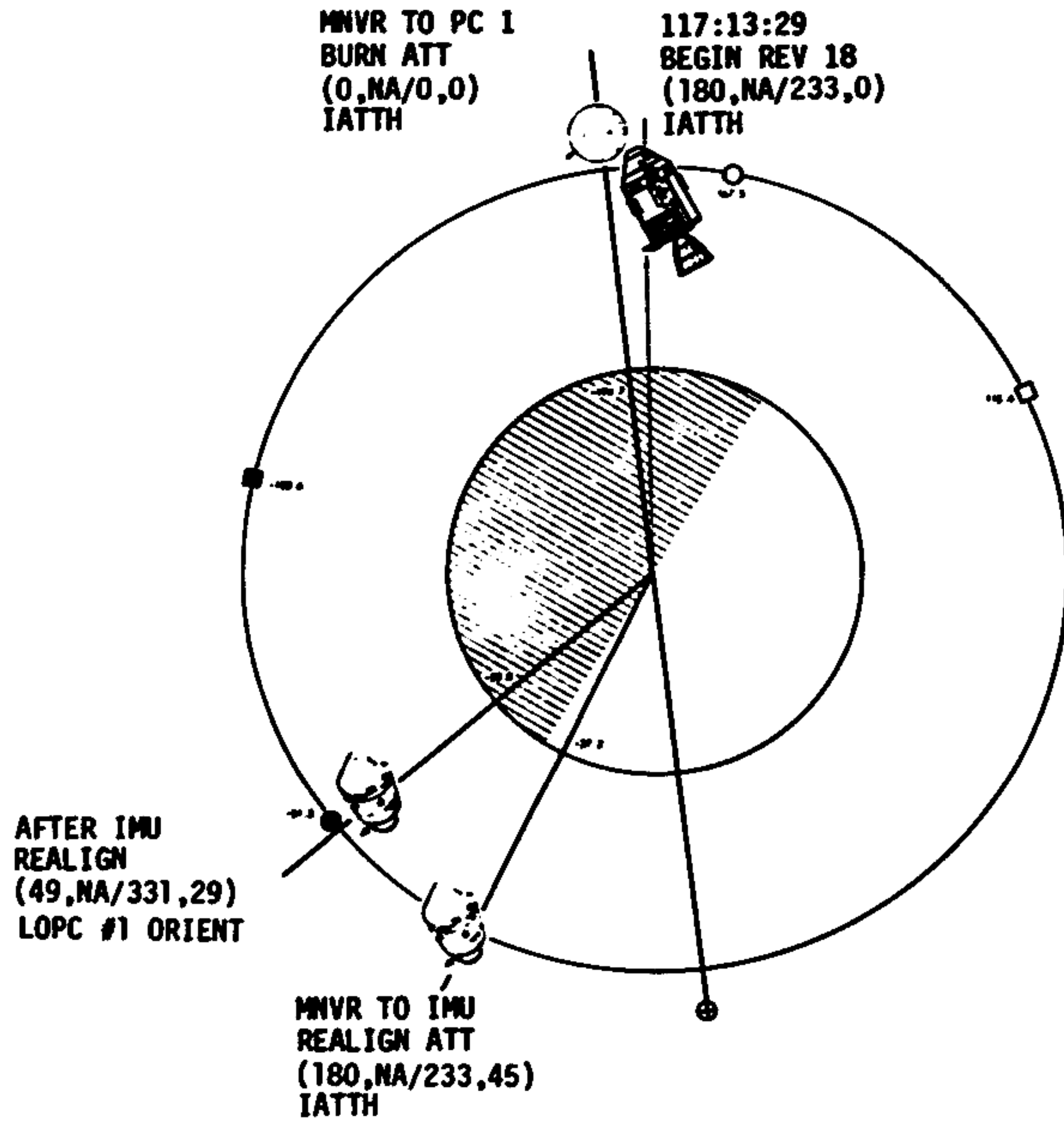
EAT PERIOD

REACQUIRE MSFN
HGA P -23, Y 190

MAP UPDATE REV 19		
LOS :	---	---
180°W:	---	---
AOS :	---	---

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	117:00 - 118:00	5/17-18	3-96

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LEGEND:

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

3-96A

REVISION B

FLIGHT PLAN

CSM

LM

MC-H

CMP

0822 CST

CDR

LMP

3:30

EAT PERIOD

118:00

POST EVA SYSTEMS CONFIGURATION
CONFIGURE VALVES AND CIRCUIT BREAKERS

UPDATE TO CSM
MNVN PAD
(PLANE CHANGE)

MNVR TO P52 ATT BY 118:22

:15

TV-OFF
DOFF HELMETS & GLOVES
DISCONNECT OPS O2 & PLSS H₂O HOSES & CONNECT LM O2 & H₂O HOSES, LCG PUMP CB-CLOSE
SWITCH TO LM COMM SYSTEM, BIO MED-LEFT

UPLINK TO CSM
CSM STATE VECTOR
PLANE CHANGE TGT
LOAD
DESIRED ORIENT
(PLANE CHANGE)

R 180, P 233, Y 45
HGA P -22, Y 234

M
S
F
N

:24

PLSS O2 RECHARGE
CONNECT LMP'S PLSS TO LM O2 SUPPLY & FILL (2 MIN))
CONNECT CDR'S PLSS TO LM O2 SUPPLY & FILL (2 MIN))

118:30

M
S
F
N

PLSS/OPS DOFFING
REMOVE RCU'S, DOFF PLSS/OPS
REPLACE CDR'S PLSS BATT & LiOH CARTRIDGE
REMOVE OPS & STOW ON ENG COVER
STOW PLSS (RECHARGE STATION)
REPLACE LMP'S PLSS BATT & LiOH CARTRIDGE
REMOVE OPS & STOW PLSS (FLOOR)
OPS CHECK (BOTH)
STOW LMP OPS ON FLOOR

P52 - IMU REALIGN
OPTION 1 - PREFERRED
(PLANE CHANGE ORIENT)

POST EVA CABIN CONFIGURATION

STOW SRC IN LOWER & CDR OPS IN TOP OPS COMPARTMENT
CONFIGURE SEQ CAMERA
VERIFY CB CONFIGURATION

GDC ALIGN TO IMU

:45

VERIFY DSE MOTION @ LOS

:47

LCG PUMP CB - OPEN
UNSTOW LUNAR SURFACE CHECKLIST
STOW EVA1 PREP & POSTCARD

EAT PERIOD

EAT PERIOD

119:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	118:00 - 119:00	5/18	3-97

FLIGHT PLAN

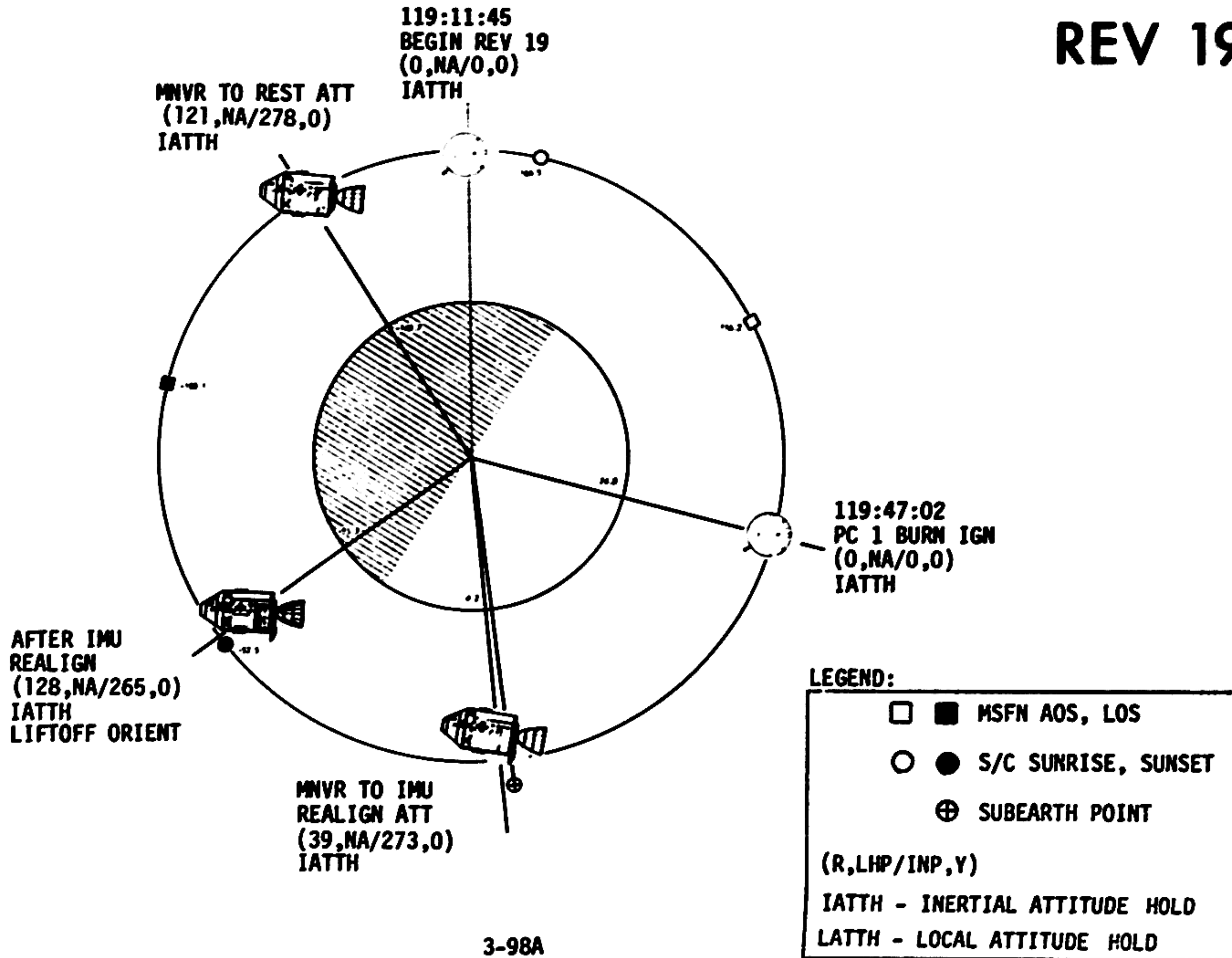
CSM PLANE CHANGE #1 BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	NO TRIM

TABLE 3-9
3-98

REVISION B

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FLIGHT PLAN

CSM

CMP

P30 - EXT ΔV
 V49 - MNVR TO BURN
 ATTITUDE BY 119:10

R 0, P 0, Y 0
 HGA P 20, Y 276
 SEXTANT STAR CHECK

P40 - SPS THRUSTING
 REACQUIRE MSFN

GDC ALIGN TO IMU
 SPS PLANE CHANGE #1
 TIG: 119:47:01.9
 BT: 19.4 SEC
 ΔVR: 372.4 FPS
 ULLAGE: 2 JETS, 15 SEC
 ORBIT: 61.5 X 55.6

0922 CST

119:00

REV 19

:15
 :16

:23

119:30

:33

:45

120:00

MSFN



LM

CDR

EAT PERIOD

LMP

EAT PERIOD

PLSS RECHARGE

MCC-H

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X	<input type="checkbox"/>	•	BT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•	V _{gx}
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•	V _{gy}
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•	V _{gz}
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•	ΔV _c *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

*ITEMS TO BE REPORTED TO MSFN

UPDATE TO LM
 LIFT OFF TIME FOR
 REV 20 THRU 24
 (ASSUMES NOM PLANE
 CHANGE)

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	119:00 - 120:00	5/18-19	3-99

CSM

CMP

MNVR TO P52 ATT BY 120:10

R 39, P 273, Y 0

HGA P 30, Y 245

MAP UPDATE REV 20

LOS : _____ : _____ : _____

180°W: _____ : _____ : _____

AOS : _____ : _____ : _____

P52 - IMU REALIGN
OPTION 1 - PREFERRED
(LIFT OFF ORIENT)

GDC ALIGN TO IMU

VERIFY DSE MOTION @ LOS
L10H CANISTER CHANGE NO. 10
12 INTO B, STOW 10 IN A3

O₂ FUEL CELL PURGE
WASTE WATER DUMP

M
S
F
N

1022 CST

120:00

:15

:23

:29
120:30

:45

121:00

M
S
F
N

LM

CDR

LMP

PLSS FEEDWATER COLLECTION (BOTH)

REPORT PLSS FEEDWATER QUANTITIES

CONNECT LM O₂ SUPPLY TO PLSS & FILL (10 MIN)

CONNECT LM H₂O SUPPLY TO PLSS & FILL (3 MIN)

CONNECT LM O₂ SUPPLY TO 2ND PLSS & FILL (10 MIN)

CONNECT LM H₂O SUPPLY TO 2ND PLSS & FILL (3 MIN)

EVA DEBRIEFING
VOICE - DN VOICE BU, S-BD PWR AMPL - OFF
CREW STATUS (RADIATION, MEDICATION)

CONFIGURE SLEEP STATIONS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

UPLINK TO CSM
DESIRED ORIENT
(LIFT OFF)

UPDATE TO CSM
REV 20 MAP UPDATE

P52 (LIFT-OFF ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

GO/NO-GO FOR
SECOND EVA
EXTENSION

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	120:00 - 121:00	5/19	3-100

FLIGHT PLAN

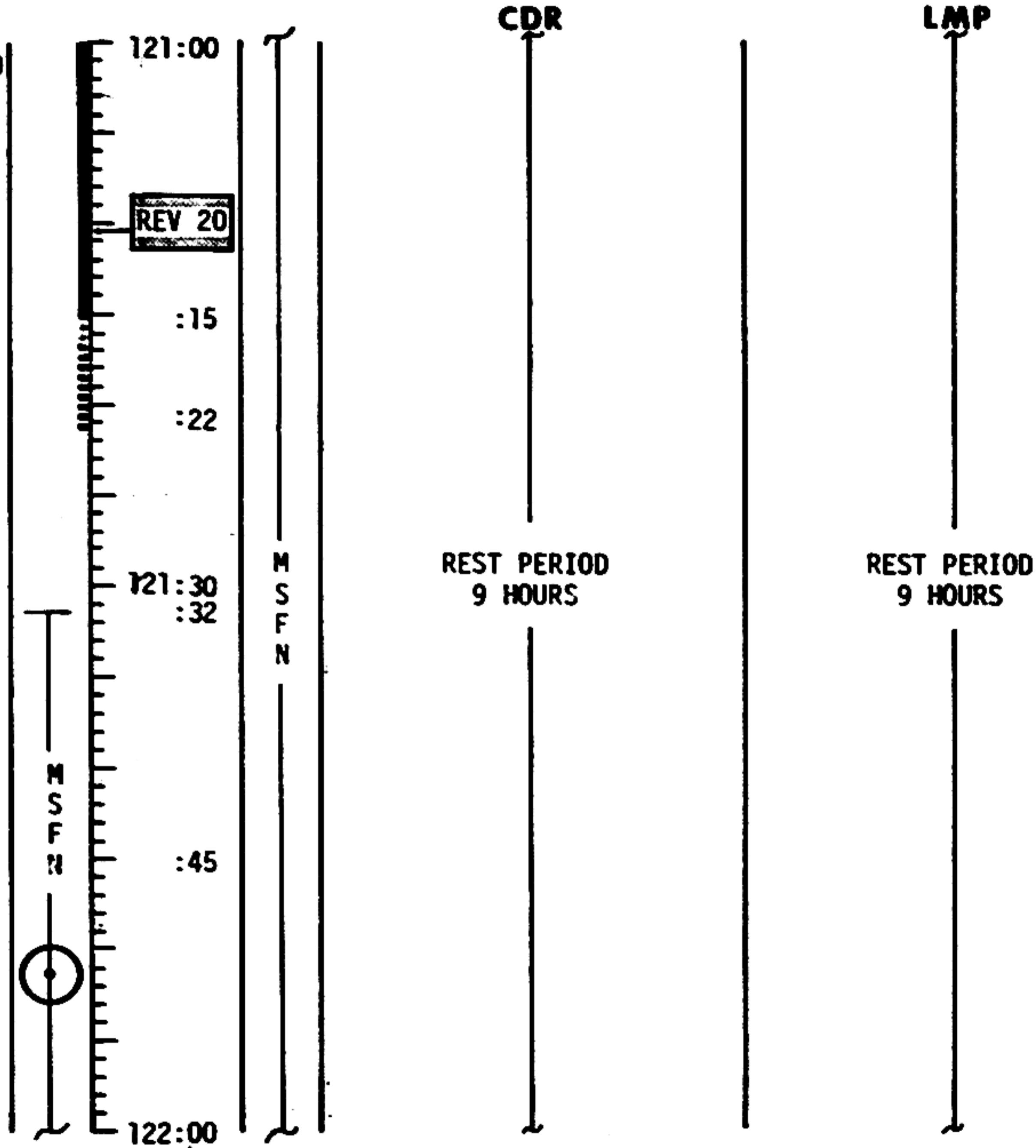
CSM

CMP

MNVR TO REST ATT BY 121:00
 R 121, P 278, Y 0
 HGA P-25, Y 261
 GO INERTIAL
 LOAD DAP (11110) (11111)
 V21 NOTE, 3255E, 1616E

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

1122 CST



LM

MCC-H

CSM PRESLEEP CHECKLIST
 E-MEMORY DUMP
 CREW STATUS REPORT
 (medication)
 ONBOARD READOUTS to MSFN
 CYCLE H2, O2, FANS
 CHLORINATE WATER
 VERIFY:
 WASTE MNGT OVBD DRAIN - 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
 VHF AM B - DUPLEX
 DSE DUMP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969.	121:00 - 122:00	5/19-20	3-101

FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

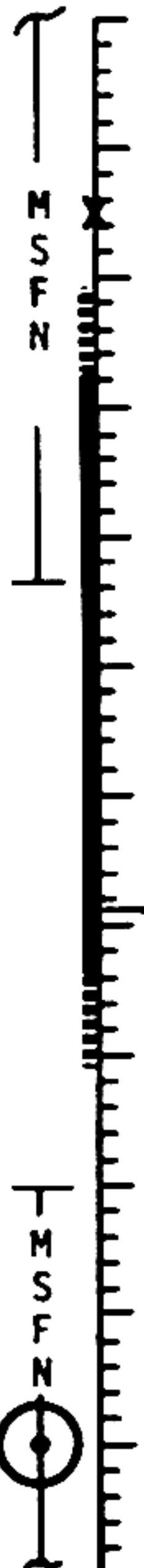
LMP

1222 CST
122:00

REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS



:21

:28

:30

:44

123:00

REV 21

:14

:20

:30

124:00

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1968	122:00 - 124:00	5/20-21	3-102

FLIGHT PLAN

CSM

LM

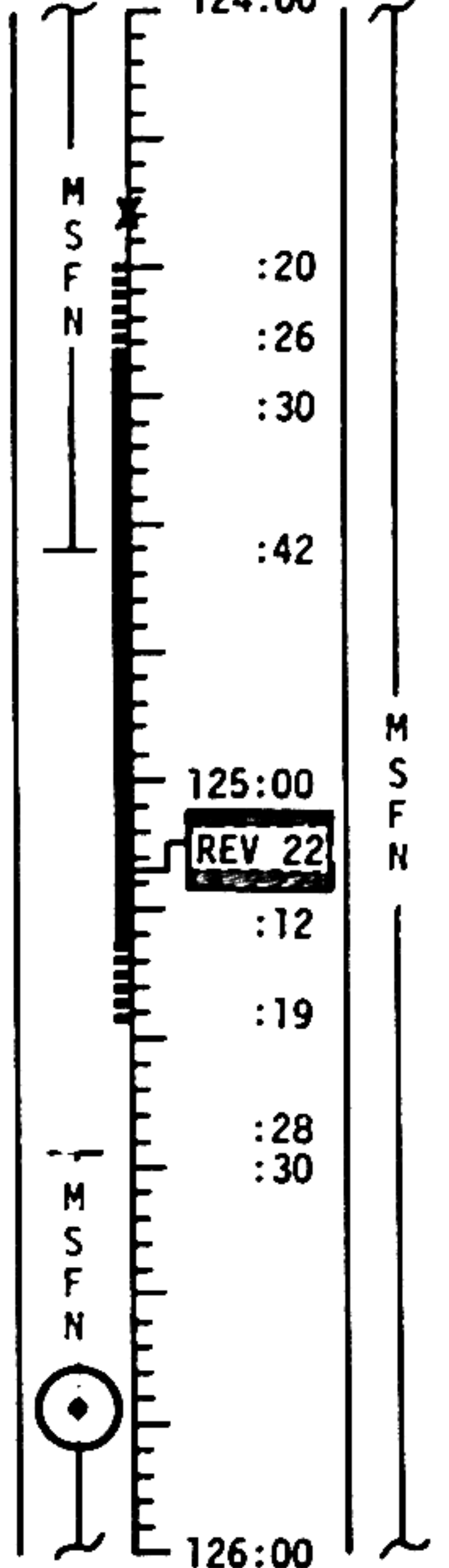
MCC-H

CMP

CDR

LMP

1422 CST
124:00



REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	124:00 - 126:00	5/21-22	3-103

FLIGHT PLAN

CSM
CMP

LM

MCC-H

1622 CST
126:00

CDR

LMP

M
S
F
N

:18

:25

:30

:40

127:00

REV 23

M
S
F
N

:11

:17

:26

:30

M
S
F
N

128:00

REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

DUMP DSE

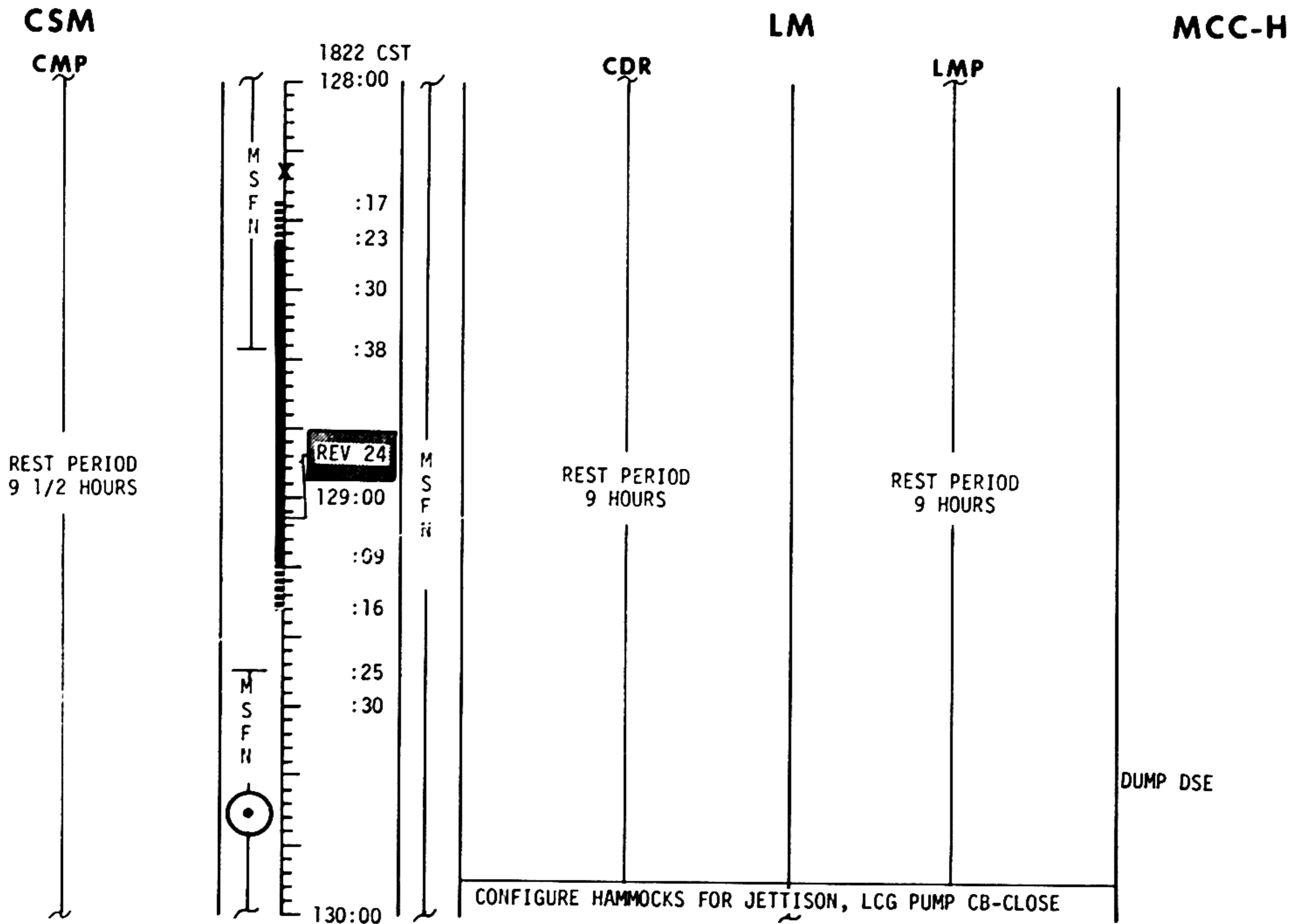
FWB

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	126:00 - 128:00	5/22-23	3-104

Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	128:00 - 130:00	5/23-24	3-105

CSM

LM

MCC-H

CMP

2022 CST

130:00

CDR

LMP

S-BD PWR AMPL - PRIM, VOICE - VOICE
CHANGE LM LiOH CARTRIDGE, LGC TO OPERATE TO
UPDATE LGC CLOCK THEN BACK TO STANDBY

M
S
F
N

:15

:22

130:30

M
S
F
N

:37

:45

131:00

STAY/NO STAY FOR EVA PREP
CREW STATUS REPORT (SLEEP, DOSIMETER)

EAT PERIOD

EAT PERIOD

UPDATE LM
LM CONSUMABLES
LIFT OFF TIME FOR
REV 25 THRU 28
STAY/NO STAY

REST PERIOD
9 1/2 HOURS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	130:00 - 131:00	6/24	3-106

FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

LMP

2122 CST
131:00

REV 25

EAT PERIOD

EAT PERIOD

REST PERIOD
9 1/2 HOURS

:08

EVA PLANNING PERIOD

:15

CABIN PREP FOR EVA

STOW ALL LOOSE ITEMS NOT REQ'D FOR EVA
UNSTOW EVA 2 PREP & POST CARD
STOW LUNAR SURFACE CHECKLIST

:23

DUMP DSE

BATTERY CHARGE, BATTERY A
HGA P-24, Y254

131:30

CREW STATUS REPORT	
CMP	
SLEEP?	_____
PRD	_____

POSTSLEEP CHECKLIST

CREW STATUS REPORT
CONSUMABLES UPDATE
FLIGHT PLAN UPDATE
CYCLE H2, O2 FANS

NORMAL LUNAR COMM EXCEPT:
S BD ANT - HI GAIN
CREW MANAGES ANT OPS

VHF AM B - DUPLEX

M
S
F
N

M
S
F
N

:45

EQUIPMENT PREP

SET DET FOR CABIN DEPRESS

PREPARE CAMERAS
COLLECT ITEMS FOR JETTISON
UNSTOW AND CHECK BOTH OPS

UPDATE TO CSM
CONSUMABLES

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____ %

QUAD A _____ % B _____ %

 C _____ % D _____ %

H₂ TOTAL _____ %

O₂ TOTAL _____ %

132:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	131:00 - 132:00	6/24-25	3-107

CSM

LM

MCC-H

CMP

CDR

LMP

2222 CST

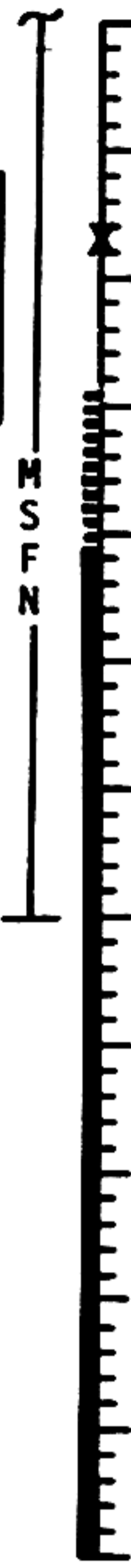
132:00

MAP UPDATE REV 26

LOS : _____ : _____ : _____

180° : _____ : _____ : _____

AOS : _____ : _____ : _____



:14
:15

:21

132:30

:35

:45

133:00

EQUIPMENT PREP (CONT)

PLSS DONNING

CONFIGURE LMP'S PLSS/OPS FOR DONNING
UNSTOW RCU'S
LMP DON PLSS/OPS
UNSTOW CDRS PLSS/OPS FOR DONNING
CDR DON PLSS/OPS
VERIFY RCU CONTROLS AND CONNECT TO PLSS/PGA

PLSS COMM CHECK

AUDIO SWITCHES CHECK, ACTIVATE PLSS COMM SYSTEMS
S-BD PWR AMPL-PRIM (TV CB - CLOSE THEN OPEN)

FINAL SYSTEMS PREP

CONNECT OPS O₂ HOSES
DON HELMETS
CONNECT PLSS H₂O HOSES
LCG PUMP CB-OPEN
DON GLOVES
VERIFY ITEMS PREPARED FOR JETTISON
VERIFY EVA CB CONFIGURATION

PRESSURE INTEGRITY CHECK

PLSS O₂ ON
CABIN DEPRESS
CONFIRM "GO" FOR EVA
DEPRESS CABIN TO 3.5 PSIA

UPLINK TO CSM
CSM STATE VECTOR
-1:00
UPDATE TO CSM
MAP UPDATE REV 26

--:50

--:40

P52 (LIFT-OFF ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

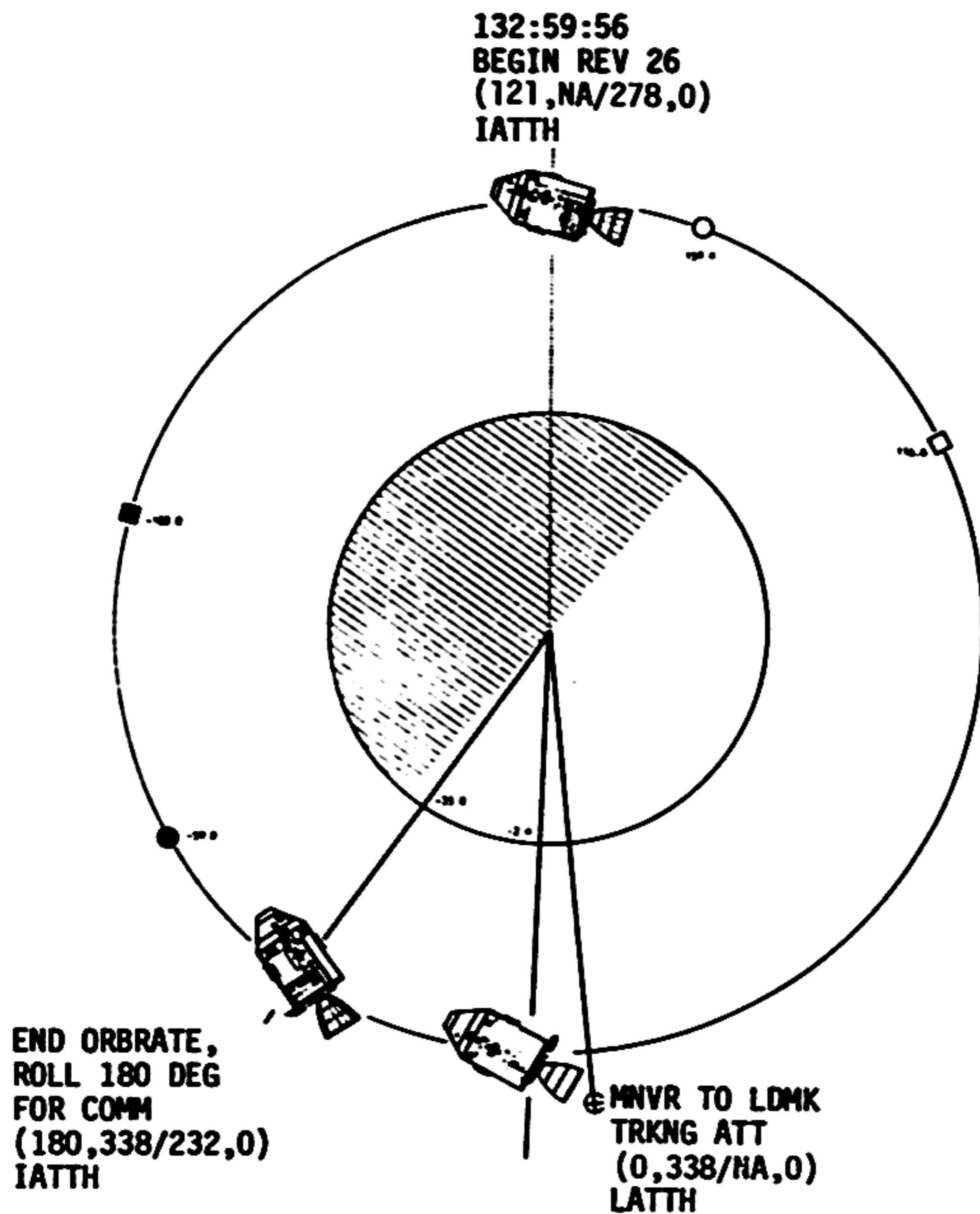
EAT PERIOD

VERIFY DSE MOTION @ LOS

P52 - IMU REALIGN
OPTION 3 - REFSMMAT
(LIFT OFF ORIENTATION)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	132:00 - 133:00	6/25	3-108

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3-108A

LEGEND:

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

REVISION B

FLIGHT PLAN

CSM

CMP

P52 - IMU REALIGN (CONT)

UNSTOW S-158

REACQUIRE MSFN

HGA P -24, Y 254

SET UP DAC FOR LDMK TRACKING PHOTOS THRU SXT

CM/DAC/SXT/CEX, (SEE LDMK TRACK PAD) 1FPS (5MIN)

MAP UPDATE REV 27

LOS : _____ : _____ : _____

180° : _____ : _____ : _____

AOS : _____ : _____ : _____

VERIFY DSE MOTION
MNR TO TRACK ATT
BY 134:00

R 0, P 338N/A, Y 0

OMNI D
GO ORB RATE

2322 CST

133:00

REV 26

:07

:13

:15

:21

133:30

:45

134:00

M
S
F
N

M
S
F
N

CDR

LM

LMP

MCC-H

SET ~~DET~~ & CHRONOMETER
FWD DUMP VALVE - OPEN

OPEN FWD HATCH

FINAL PREP FOR EGRESS

PLSS H₂O ON, FINAL SYSTEMS CHECK, TURN TV ON
VERIFY CB CONFIGURATION, JETTISON BAG & LHSSC

CDR EGRESS

ETB TRANSFER
TRANSFER ETB TO SURFACE

ASSIST CDR

GEOLOGY TRAVERSE PREP
STOW TOOLS & EQUIP ON HTC
RETRIEVE & OPEN SRC #2
ATTACH SADDLE BAG TO LMP
UNSTOW SRC #2
SEAL ORGANIC CONT SAMPLE

LMP EGRESS
DESCEND TO SURFACE
ATTACH PARTS BAG TO CDR
~~PUT COLOR MAG IN SADDLE BAG~~
CONTRAST CHART PHOTOS
POSITION TV FOR GEOLOGY TRAVERSE

GEOLOGY TRAVERSE

COLLECT DOCUMENTED SAMPLES
NOTE: 1ST DOCUMENTED SAMPLE POLARIZED
COLLECT CORE TUBE SAMPLES
TRENCH SITE SAMPLING
COLLECT GAS ANALYSIS SAMPLES
MAKE GENERAL OBSERVATIONS

START EVA
0:00

0:10

DUMP DSE
0:20

0:30

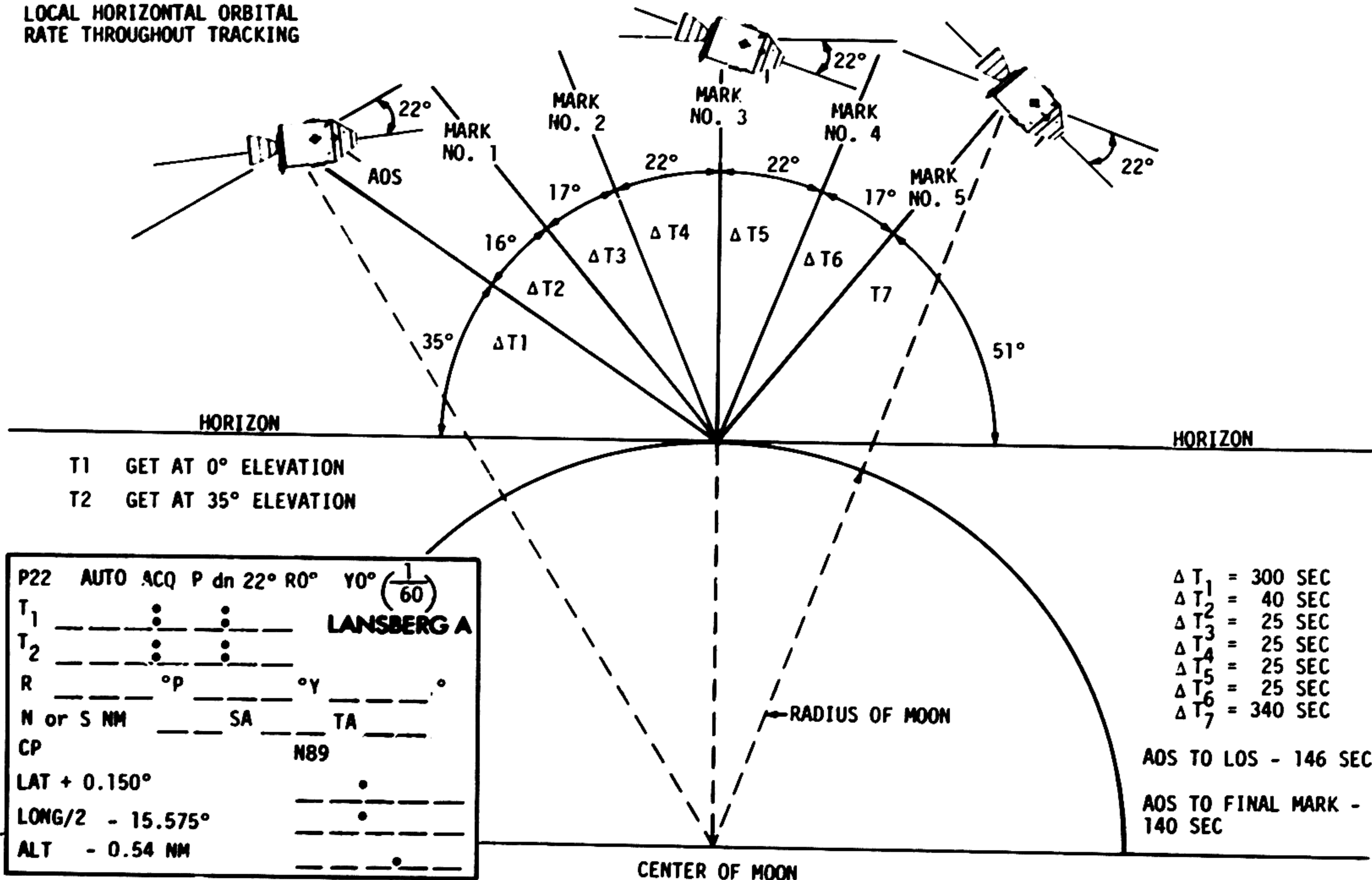
UPDATE TO CSM
MAP UPDATE REV 27
P22 TRACKING PAD
0:40

0:50

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV.14)	OCTOBER 15, 1969	133:00 - 134:00	6/26	3-109

22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING

CSM LANDMARK TRACKING PROFILE



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

P22	AUTO	ACQ	P	dn	22°	R0°	Y0°	($\frac{1}{60}$)
T1	---	---	---	---	---	---	---	LANSBERG A
T2	---	---	---	---	---	---	---	---
R	---	°P	---	---	°Y	---	---	---
N or S	NM	---	SA	---	TA	---	---	---
CP	---	---	---	---	N89	---	---	---
LAT	+ 0.150°	---	---	---	---	---	---	---
LONG/2	- 15.575°	---	---	---	---	---	---	---
ALT	- 0.54 NM	---	---	---	---	---	---	---

- $\Delta T_1 = 300$ SEC
- $\Delta T_2 = 40$ SEC
- $\Delta T_3 = 25$ SEC
- $\Delta T_4 = 25$ SEC
- $\Delta T_5 = 25$ SEC
- $\Delta T_6 = 25$ SEC
- $\Delta T_7 = 340$ SEC

AOS TO LOS - 146 SEC
AOS TO FINAL MARK - 140 SEC

CENTER OF MOON
FIGURE 3-3
3-110

FLIGHT PLAN

CSM
CMP

LM

MCC-H

0022 CST

CDR

LMP

134:00

START DAC T2(-) 1 MIN

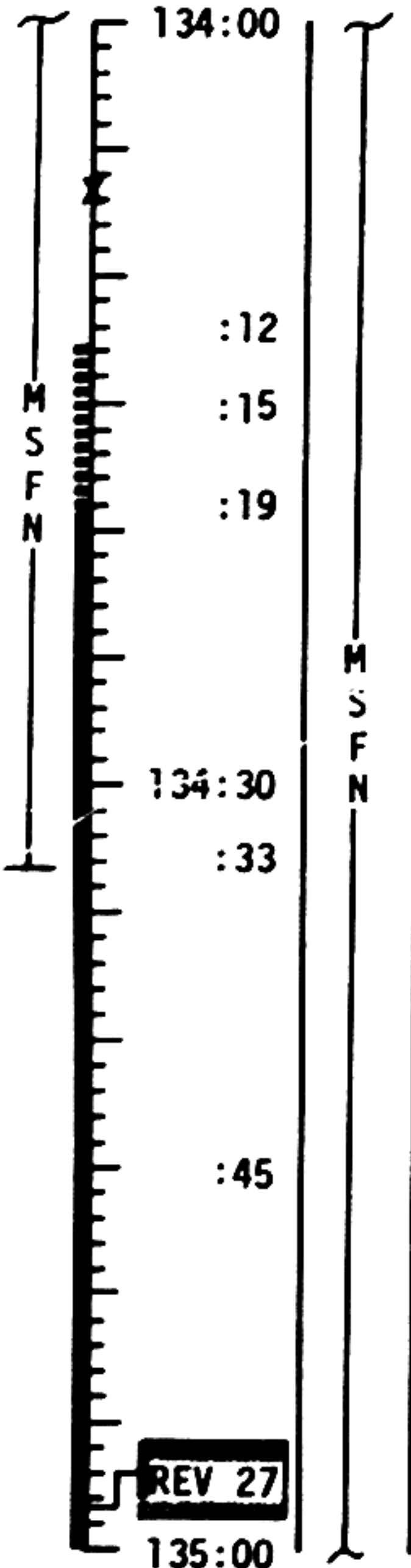
TRACK LANSBERG A
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS
5 MARKS

STOP DAC AFTER MARK 5

STOP ORB RATE @ P 232
MNVR TO ACO MSFN,
GO INERTIAL

R 180, P 232, Y 0
HGA P -26 Y 186

VERIFY DSE MOTION @ LOS



COLLECT DOCUMENTED SAMPLES
COLLECT CORE TUBE SAMPLES
TRENCH SITE SAMPLING
COLLECT GAS ANALYSIS SAMPLES
MAKE GENERAL OBSERVATIONS

1:00

UPDATE TO CSM
S-158 PAD (REV 27)

1:10

1:20

1:30

1:40

1:50

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	134:00 - 135:00	6/26-27	3-111

S-158 REV 27

BLUE, GREEN, BLACK - (f5.6) _____, RED (f4.0) _____

T₁ START BLUE, GREEN & RED CAMERAS @ 135:19:00 (_____:_____:_____)
START BLACK CAMERA @ T₁ + 5 MIN

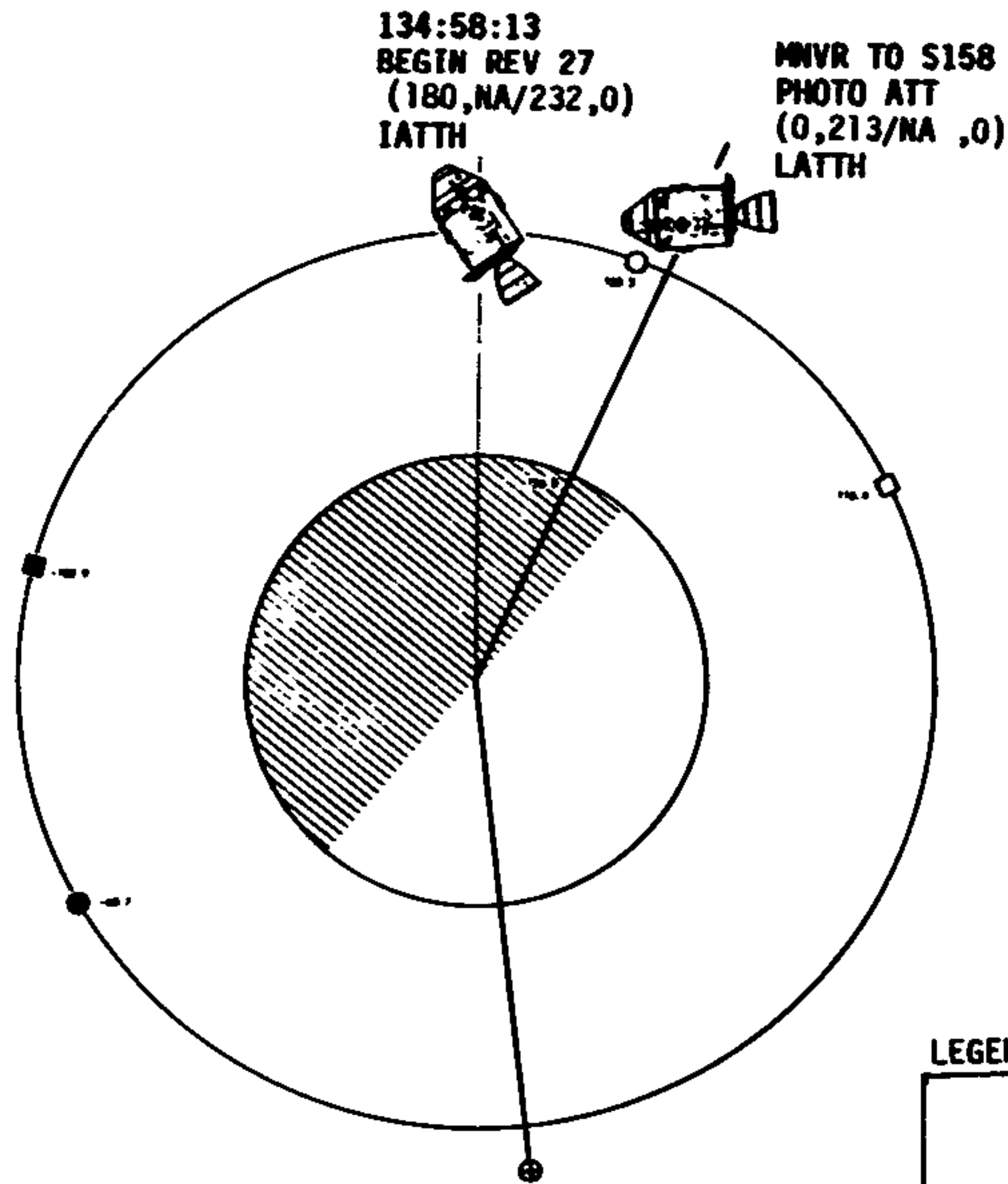
T₂ STOP ALL CAMERAS @ 135:30:00 (_____:_____:_____)

T₃ START BLUE, GREEN & RED CAMERAS @ 135:40:00 (_____:_____:_____)
START BLACK CAMERA @ T₃ + 7 MIN

T₄ STOP ALL 4 CAMERAS @ 136:02:00 (_____:_____:_____)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	135:00 - 136:00	6/27	3-112

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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		

3-112A

REVISION B

FLIG'T PLAN

CSM
CMP

MWR TO S158 ATT
BY 135:06
R 0, P 213/N/A, Y 0
OMNI D
GO ORB RATE

START BLU, GRN&RED CAMERAS

S-158 PHOTOGRAPHY

START BLK CAMERA

STOP ALL CAMERAS

SW TO OMNI A
@ 135:36

START BLU, GRN&RED CAMERAS

ACQUIRE MSFN @ 135:42
HGA P -13, Y 174

START BLK CAMERA

S-158 PHOTOGRAPHY

0122
~~0222~~ CST

135:00

:05

:11

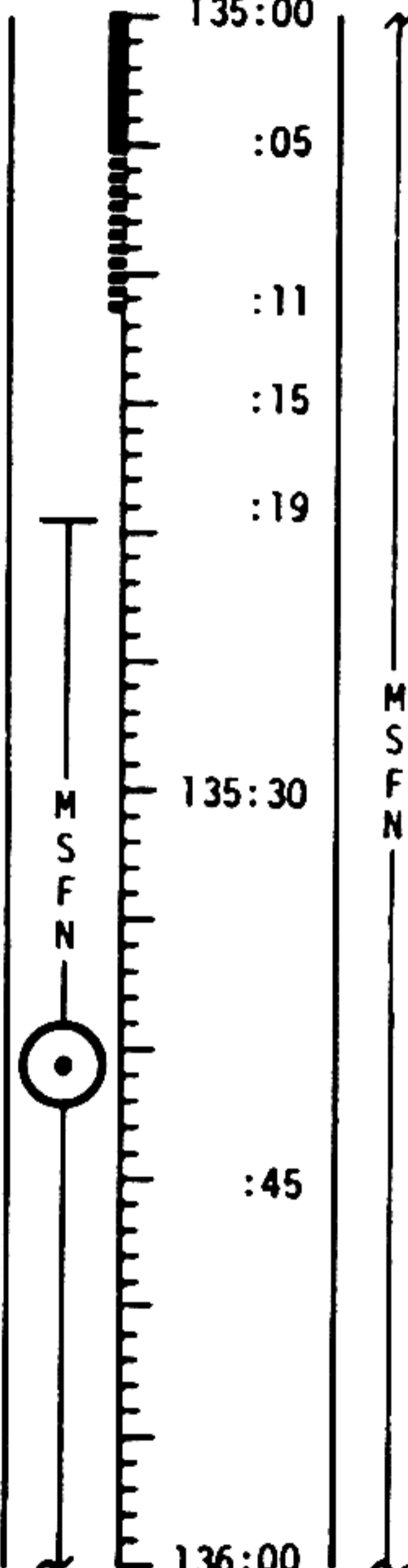
:15

:19

135:30

:45

136:00



CDR

LM

LMP

MCC-H

SURVEYOR SITE ACTIVITIES

PHOTOGRAPH AND COLLECT SAMPLES
PHOTOGRAPH SURVEYOR
COLLECT GLASS SAMPLES

COLLECT WITH LMP ASSISTANCE:

STERILE CABLE SAMPLE
ALUMINUM TUBE SAMPLE
TV CAMERA

GEOLOGY RETURN TRAVERSE

GEOLOGY RETURN TRAVERSE

SRC 2 PACKING
PLACE 70MM CAM IN ETB
RETRIEVE SWC FOIL
PACK SAMPLES IN SRC

POSITION TV TO VIEW LM
PLACE SURVEYOR PARTS
IN +Z PAD
RETRIEVE ALSSC&TAKE PHOTOS
OF SURFACE
PUT ALSSC FILM IN ETB

2:00

2:10

2:20

2:30

DUMP DSE

2:40

2:50

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	135:00 - 136:00	6/27	3-113

FLIGHT PLAN

CSM

LM

MCC-H

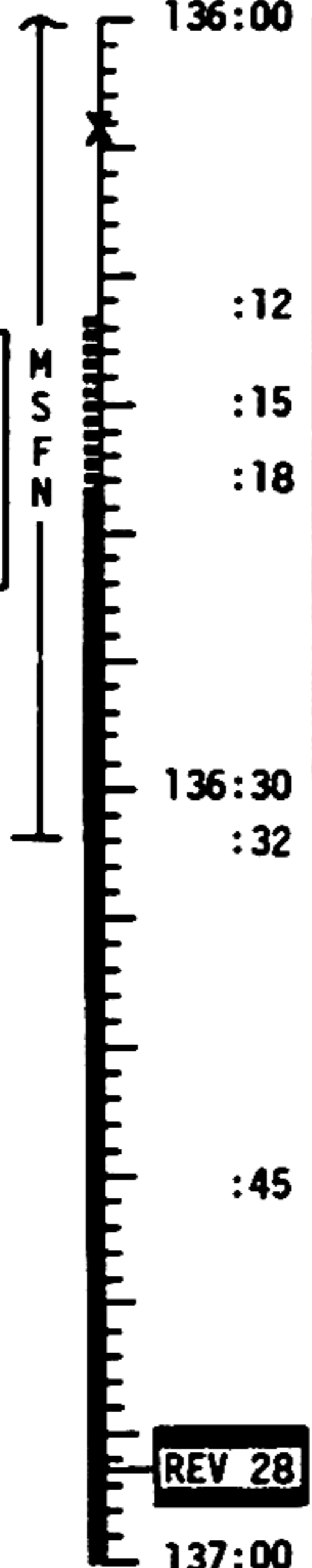
CMP
 STOP ALL CAMERAS
 CONTINUE ORB RATE

0222 CST

CDR

LMP

MAP UPDATE REV <u>28</u>	
LOS :	_____ : _____ : _____
180° :	_____ : _____ : _____
AOS :	_____ : _____ : _____



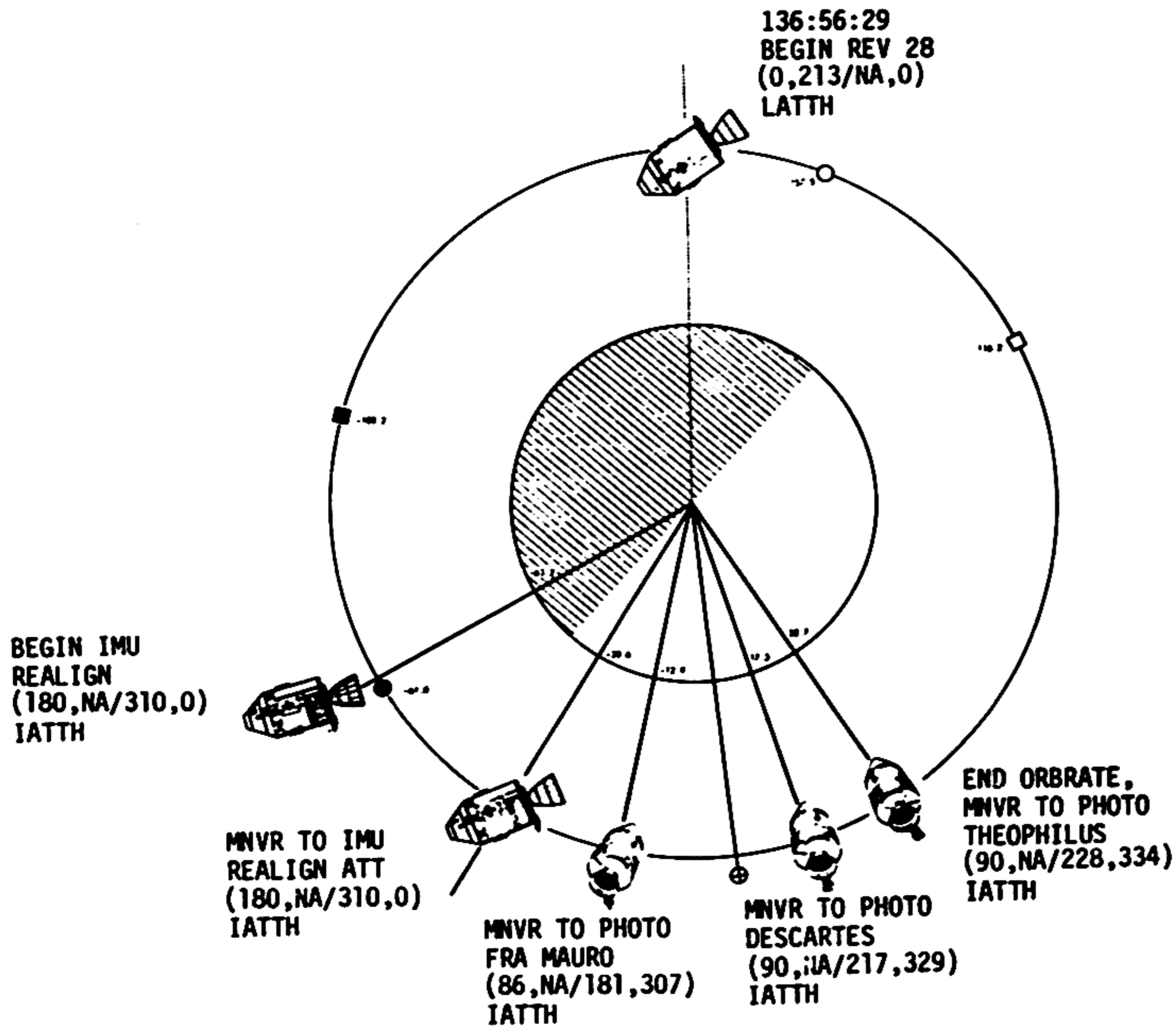
136:00	CHECK & CLEAN LMP EMU CLOSE & SEAL SRC	EVA TERMINATION STOW 70MM CAMERA IN ETB CLEAN EMU ASCEND TO PLATFORM, INGRESS CHECK EMU & LM SYSTEMS
:12	LEC TRANSFERS CHECK 70MM(2) IN ETB CLOSE & TRANSFER ETB REST/CHECK EMU ATTACH LEC TO SRC TRANSFER SRC INTO LM REST/CHECK EMU	ASSIST CDR WITH TRANSFERS
:15	TRANSFER SURVEYOR PARTS BAG	DISCARD LEC
:18	EVA TERMINATION CLEAN EMU, ASCEND TO PLATFORM INGRESS	
136:30	CLOSE HATCH & REPRESS CABIN	
:32	POST EVA SYSTEMS CONFIGURATION CONFIGURE VALVES AND CIRCUIT BREAKERS	
:45	DOFF GLOVES DISCONNECT OPS O2 HOSES & CONNECT LM O2 HOSES DISCONNECT PLSS H2O HOSES & CONNECT LM H2O HOSES LCG PUMP CB-CLOSE SWITCH TO LM COMM SYSTEM	
	PLSS/OPS DOFFING REMOVE RCU'S DISCONNECT PLSS O2 HOSES	
	DOFF PLSS/OPS REMOVE OPS & CHECKOUT	

3:00
 UPDATE TO CSM
 MAP UPDATE REV 28
 S-158 PAD (REV 28)
 3:10
 3:20
 3:30

VERIFY DSE MOTION @ LOS

REV 28

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	136:00 - 137:00	6/27-28	3-114



LEGEND:

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

S-158 REV 28

BLUE, GREEN, BLACK (f8.0) _____, RED (f5.6) _____
T₁ START ALL CAMERAS @ 137:27:00 (_____:_____:_____))
T₂ STOP ALL CAMERAS @ 137:40:00 (_____:_____:_____))

SELECTED TARGETS

NORTH WALL OF THEOPHILUS

R _____, P _____, Y _____
BLUE, GREEN, BLACK (f5.6) _____, RED(f4.0) _____
T₁ START ALL CAMERAS @ 137:47:00 (_____:_____:_____))
T₂ STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

DESCARTES

R _____, P _____, Y _____
NO CHANGE IN f STOPS
T₁ START ALL CAMERAS @ 137:51:00 (_____:_____:_____))
T₂ STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

FRA MAURO

R _____, P _____, Y _____
ALL CAMERAS (f2.8) _____
T₁ START ALL CAMERAS @ 138:01:00 (_____:_____:_____))
T₂ STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	137:00 - 138:00	6/28	3-115

FLIGHT PLAN

CSM

LM

MCC-H

CMP

VERIFY ORB RATE
R 0, P 213/N/A, Y 0
OMNI D

0322 CST

CDR

LMP

137:00

:04

:10

:15

:18

BATTERY CHARGE, BATTERY B

START ALL CAMERAS

S-158 PHOTOGRAPHY

STOP ALL CAMERAS
STOP ORB RATE, V49-MNVR
BY 137:45

R 90, P 228, Y 334

S-158 THEOPHILUS

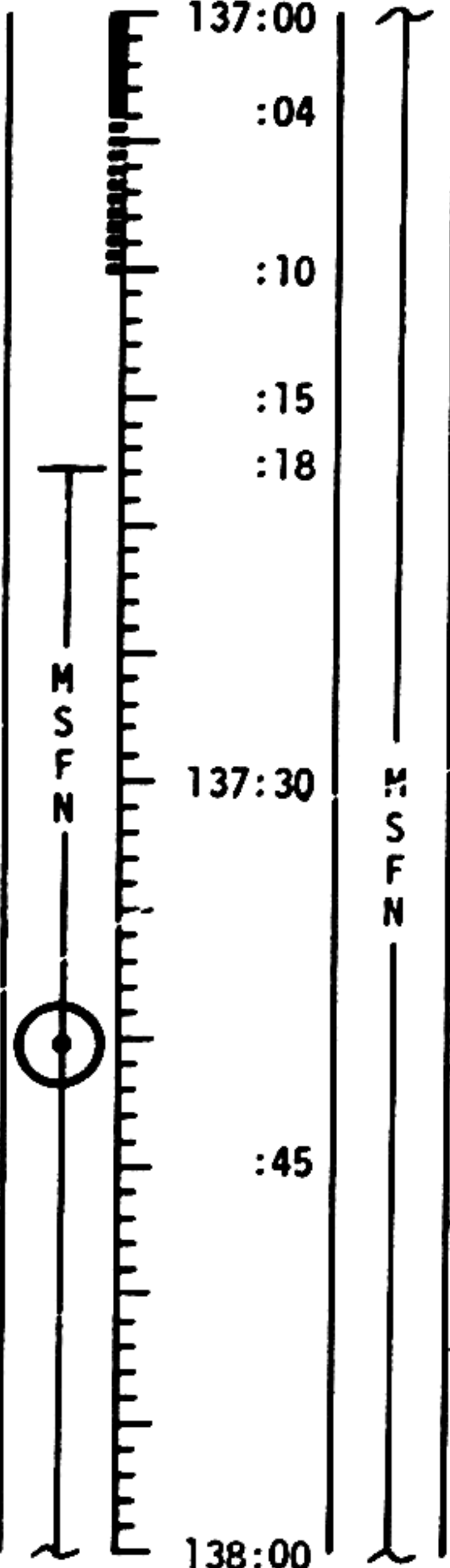
V49-MNVR BY 137:50

R 90, P 217, Y 329

S-158 DESCARTES

V49-MNVR BY 138:00

R 86, P 181, Y 307



STOW OPS ON ENGINE COVER
STOW BOTH PLSS ON FLOOR
VERIFY CB CONFIGURATION
RR OPR HTR - ON
DOFF LUNAR BOOTS

PREP FOR EQUIPMENT JETTISON
UNSTOW 70MM CAM FROM ETB
PHOTO LUNAR SURFACE
CONFIGURE 16MM SEQ CAMERA
STOW EQUIPMENT IN LHSCC
PLSS FEEDWATER COLLECTION (BOTH)
REPORT PLSS FEEDWATER QUANTITIES
POSITION LHSCC, JETT BAG, AND PLSS'S FOR JETTISON
DON EV GLOVES

UPDATE TO CSM
MAP UPDATE REV 29

MAP UPDATE REV <u>29</u>			
LOS	:	---	---
180°	:	---	---
AOS	:	---	---

PRESSURE INTEGRITY CHECK
CHECK VALVE POSITIONS
VERIFY GAGE READINGS

CABIN DEPRESS
OPEN DUMP VALVE

HATCH OPENING
OPEN HATCH
JETTISON EQUIPMENT

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	137:00 - 138:00	6/28	3-116

CSM

LM

MCC-H

CMP

0422 CST

CDR

LMP

S-158 FRA MAURO
MNVR TO P52 ATT BY 138:06

R180, P310, Y 0
HGA P-74, Y337
GO INERTIAL
RR TRANSPONDER ACTIVATION
AND SELF TEST

P52 - IMU REALIGN
OPTION 3 - REFSMMAT
(LIFT-OFF ORIENT)

VERIFY DSE MOTION @ LOS

STOW S-158

EAT PERIOD

M
S
F
N

138:00

:10

:15

:16

138:30

M
S
F
N

:45

REV 29

139:00

CABIN REPRESS
DUMP VALVES - AUTO, REPRESS CABIN
VERIFY MASTER ALARM & WARNING LIGHTS ON
DOFF GLOVES, HELMETS, & VISORS

POST EVA CLEAN UP
SECURE OPS'S ON FLOOR
STOW EQUIPMENT
STOW SRC #2
STOW SURVEYOR BAG
STOW ALL EVA ON BOARD DATA
IN FLT DATA FILE

EVA DEBRIEFING

CREW STATUS REPORT (MEDICATION, DOSIMETER)

EAT PERIOD

EAT PERIOD

DUMP DSE

P52 (LIFT OFF-ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

UPDATE TO LM
LIFTOFF TIME FOR
REV 29 & 30
P22 ACQ TIME 28° EL
LM CONSUMABLE PAD

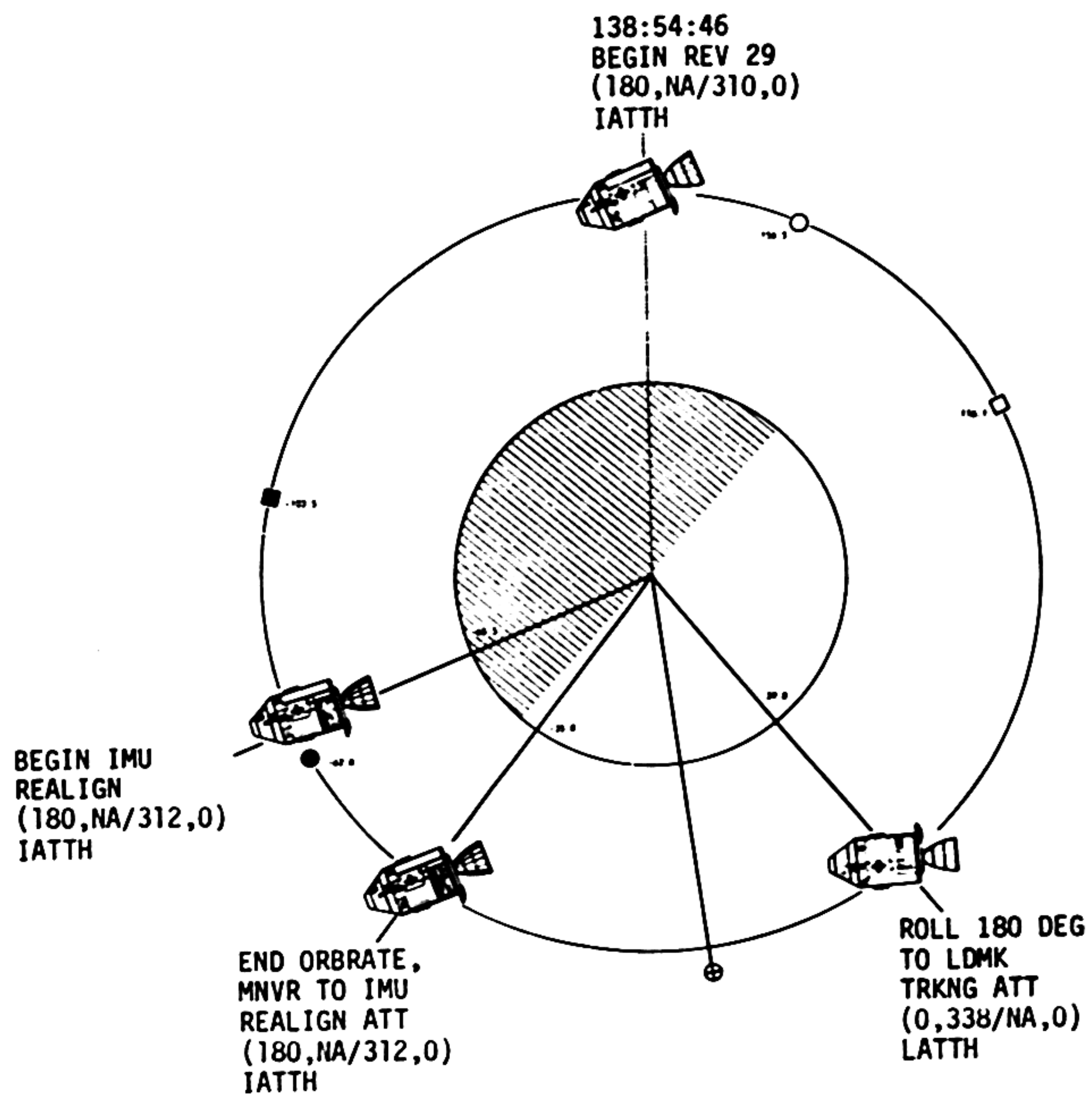
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	138:00 - 139:00	6/28-29	3-117

MSC Form 1674 (OT)(June 69)

FLIGHT PLANNING BRANCH

REVISION A

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LEGEND:

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

(R,LHP/INP,Y)

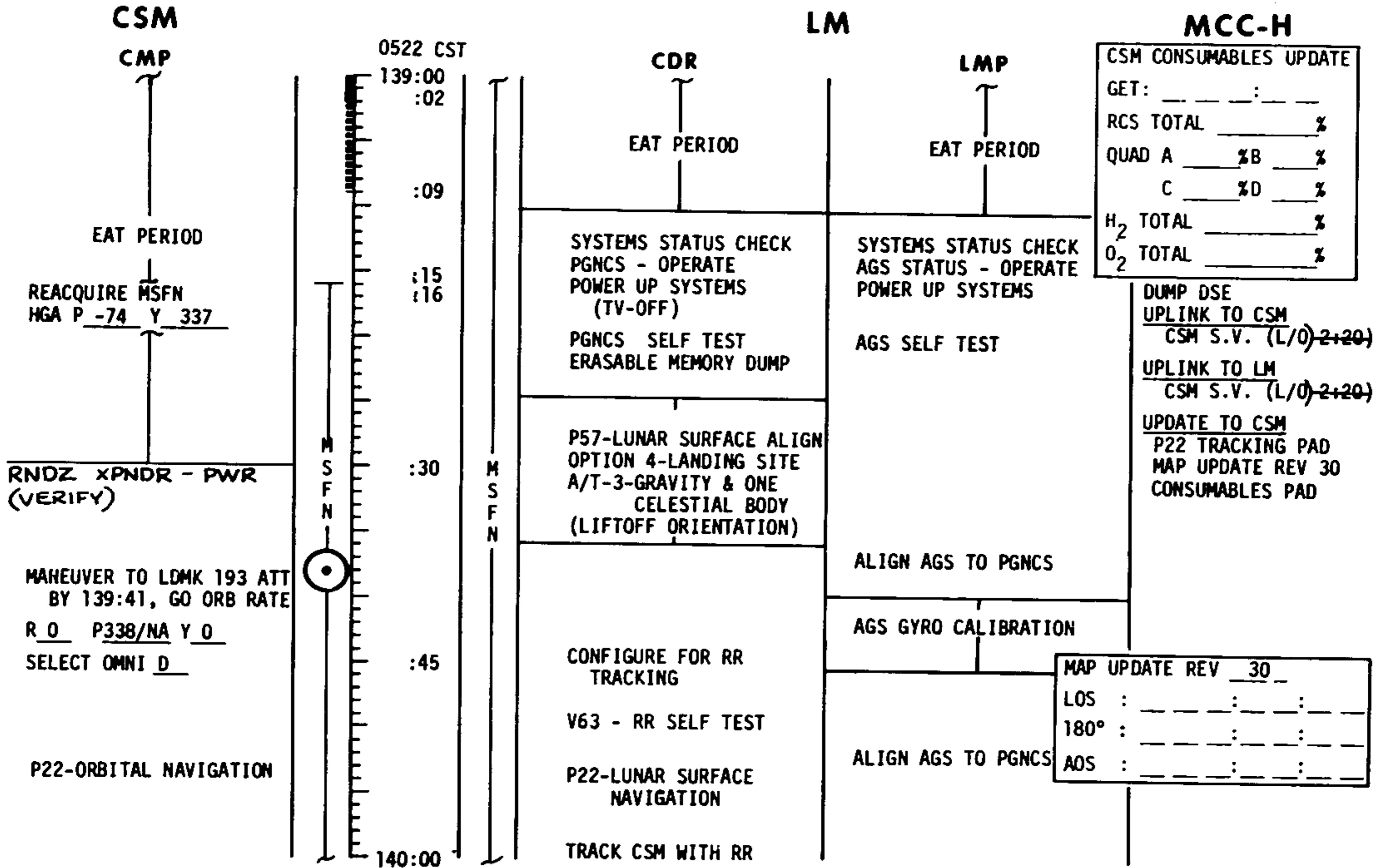
IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-117A

REVISION B

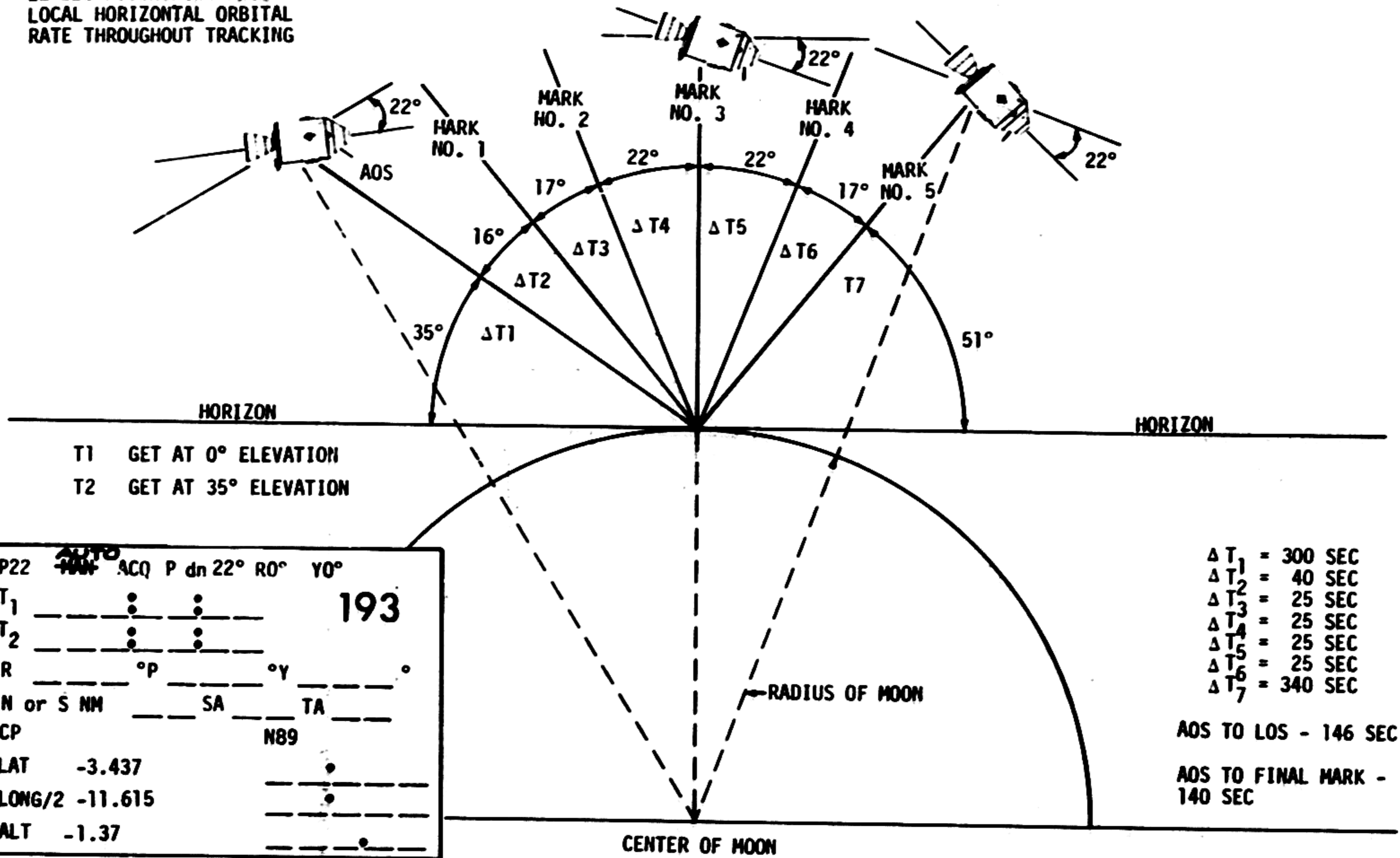
FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	139:00 - 140:00	6/29	3-118

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



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

P22	MAN AUTO	ACQ	P	dn	22°	RO°	Y0°
T ₁	_____	_____	_____	_____	_____	_____	193
T ₂	_____	_____	_____	_____	_____	_____	_____
R	_____	°p	_____	_____	_____	_____	_____
N or S	NM	_____	SA	_____	TA	_____	_____
CP	_____	_____	_____	_____	_____	_____	N89
LAT	-3.437	_____	_____	_____	_____	_____	_____
LONG/2	-11.615	_____	_____	_____	_____	_____	_____
ALT	-1.37	_____	_____	_____	_____	_____	_____

- ΔT₁ = 300 SEC
- ΔT₂ = 40 SEC
- ΔT₃ = 25 SEC
- ΔT₄ = 25 SEC
- ΔT₅ = 25 SEC
- ΔT₆ = 25 SEC
- ΔT₇ = 340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3

3-118a

FLIGHT LAN

CSM

CMP

TRACK LANDMARK 193
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS
5 MARKS

STOP PITCH AND MANEUVER
TO P52 ATTITUDE BY
140:06

R 180 P 312 Y 0
HGA P -73 Y 338

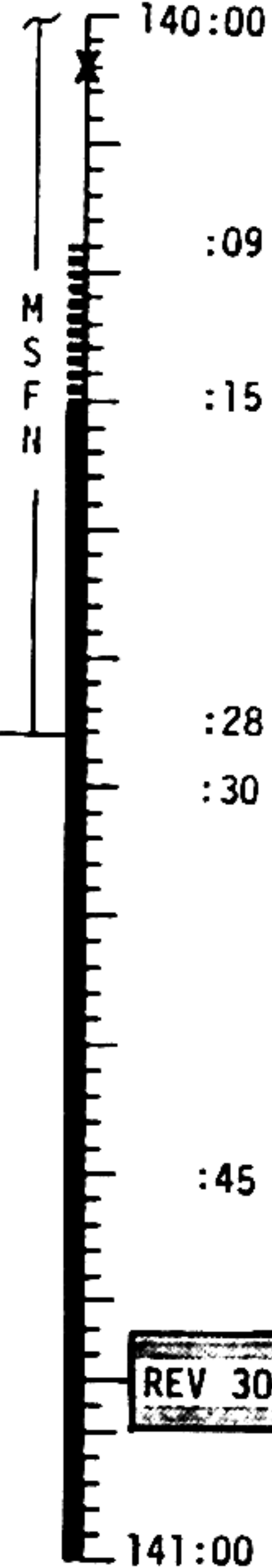
P52 - IMU REALIGN
OPTION 3- REFSMMAT
(LIFTOFF ORIENTATION)

REPORT GYRO TORQUE ANGLES
GDC ALIGN TO IMU
VERIFY DSE MOTION
AT LOS

H₂ PURGE LINE HTR-ON

O₂ & H₂ FUEL CELL PURGE
WASTE WATER DUMP

0622 CST



LM

CDR

TRACK CSM WITH RR

RATE GYRO CHECK

RCS CHECKOUT

LMP

V47-AGS INITIALIZATION

LOAD AGS ASCENT TGT:
H = 60,000 FT
H DOT = 9 FT/SEC

MCC-H

UPLINK TO CSM
RESET SURFACE FLAG
LM S.V. (INS + 18)

UPLINK TO LM
LGC GYRO COMPENSATION
UPDATE TO LM
ASCENT PAD
CSI PAD
AGS K FACTOR
LM & CSM DAP WEIGHTS

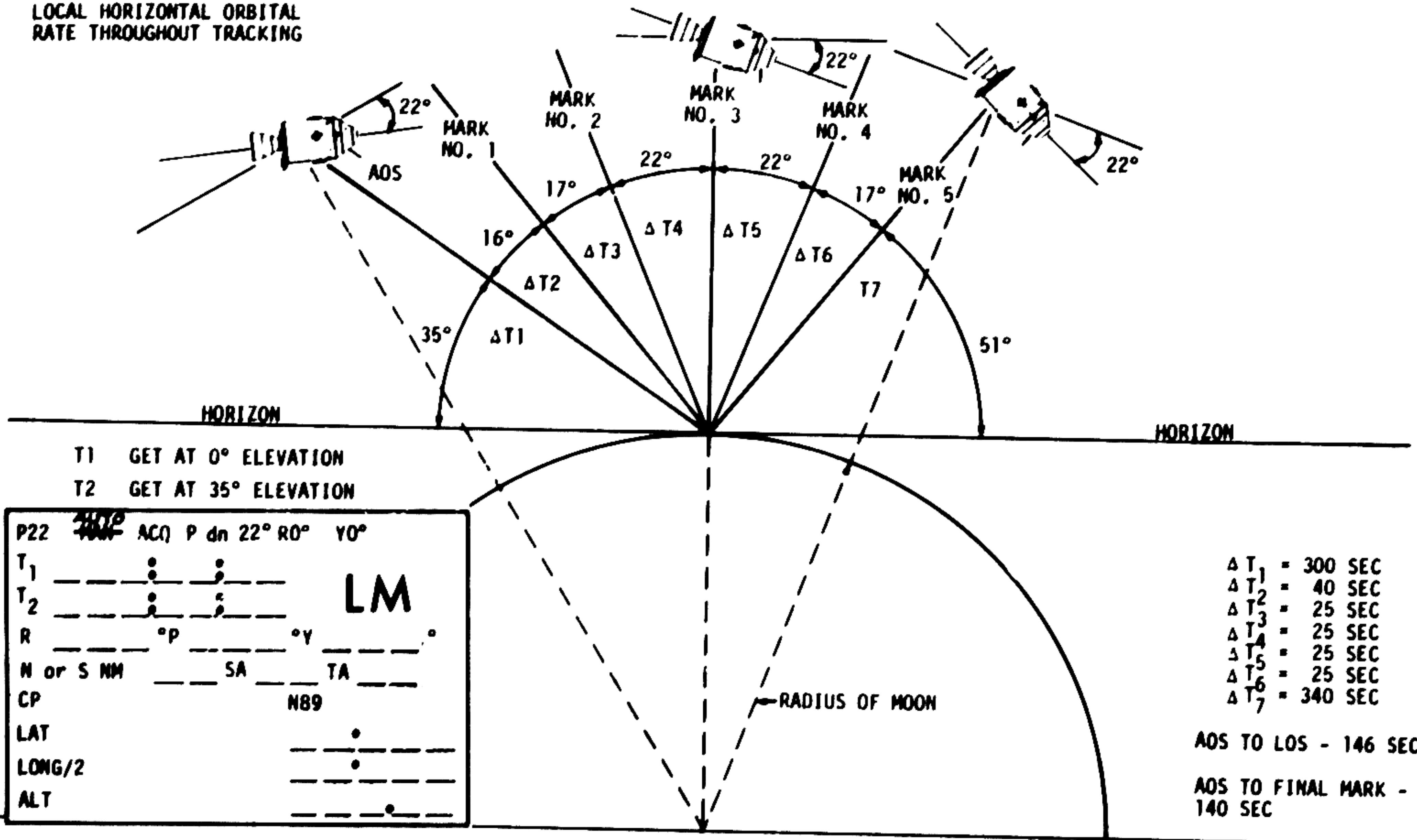
P52 (LIFT-OFF ORIENT)

N71: _ _ _ _
N05: _ _ _ _
N93:
X _ _ _ . _ _ _
Y _ _ _ . _ _ _
Z _ _ _ . _ _ _
GET _ _ _ : _ _ _

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	140:00 - 141:00	6/29-30	3-119

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



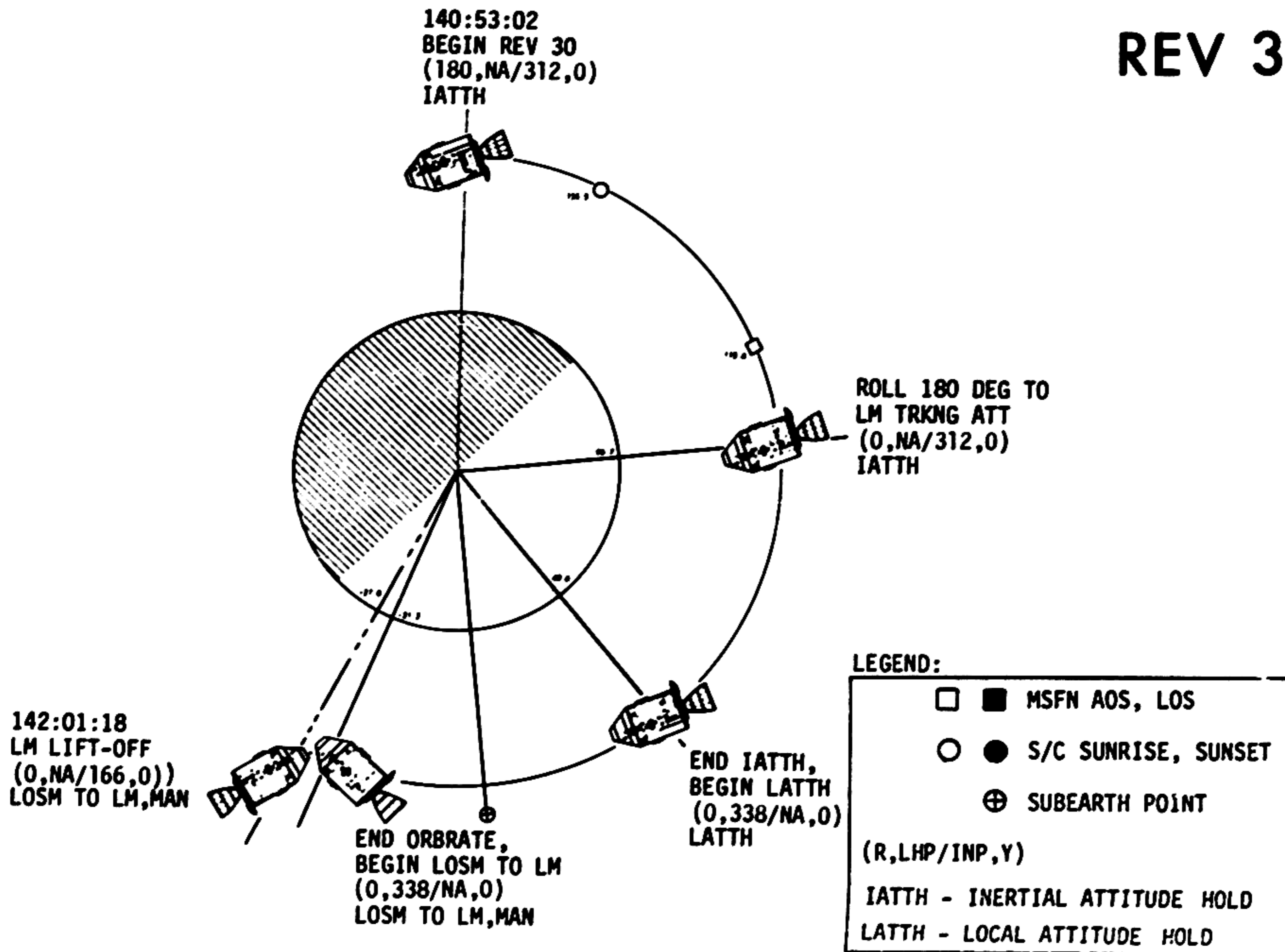
T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

P22	4170	ACQ	P	dn	22°	RO°	Y0°	
T ₁	---	•	---	•	---			
T ₂	---	•	---	•	---			LM
R	---	°P	---	°Y	---			
N or S	NM	---	SA	---	TA	---		
CP					N89			
LAT					•			
LONG/2					•			
ALT					•			

NOTE: Coordinates of LM to be updated Real time

CENTER OF MOON
FIGURE 3-3

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3-120A

REVISION B

FLIGHT PLAN

CSM

CMP

SET UP CAMERAS FOR DOCKING
 CM2/DAC/18/CEX-
 BRKT, MIR(f8,250,7)
 6 FPS, 1 MAG, 16 MIN
 CM2/EL/80/CEX
 (f8,250,FOCUS), 10
 CM4/TV-IN BRKT (f22)
 REACQUIRE MSFN
 HGA: P -73, Y 338

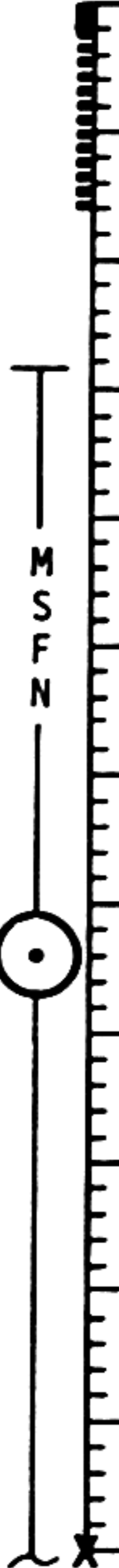
V49-MNVR TO LM TRACK
 ATT BY 141:21
 R 0 P 312 Y 0
 OMNI D

P22-ORBITAL NAVIGATION
 GO ORB RATE @ 141:39
 R 0 P 338/NA Y 0

TRACK LM @ AOS

0722 CST

141:00
:01



:08

:14

:15

:30

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

CDR

LM

LMP

MCC-1.

P57-LUNAR SURFACE ALIGN
 OPTION 4-LANDING SITE
 A/T-3-GRAVITY & ONE
 CELESTIAL BODY
 (LIFTOFF ORIENTATION)

DON HELMET & GLOVES
 LOAD DAP N46-12002
 PI2-POWERED ASCENT
 GO/NO-GO FOR LIFTOFF
 PRELAUNCH SWITCH CHECKS
 VENT DPS & She

VERIFY CB STATUS
 CHECK APS BURN CARD

CHECK APS, RCS, EPS, ECS

ALIGN AGS TO PGNCs
 DON HELMET & GLOVES
 SET CAMERA FOR ASCENT:
 LM3/DAC/10/CEX(f2.8,500,30)
 12 FPS, 1 MAG, 8 MIN
 ASCENT BATS-ON, DES 1&3-OFF
 ENTER AGS LUNAR ALIGN
 PRELAUNCH SWITCH CHECKS

V47-AGS INITIALIZATION
 LIFTOFF COMM
 DES BATS 2&4 - OFF
 DEADFACE DES BATS
 VERIFY CB STATUS
 CHECK APS BURN CARD

CHECK APS, RCS, EPS, ECS
 SEQ CAMERA - ON

MAP UPDATE REV <u>31</u>		
LOS	: _ _ _ _	: _ _ _ _
180°	: _ _ _ _	: _ _ _ _
AOS	: _ _ _ _	: _ _ _ _

UPDATE TO CSM
 LM TRACKING PAD
~~MAP UPDATE REV 31~~
 UPLINK TO CSM (IF REQ)
 LM S.V. (INS + 18)
 CSM S.V. (INS + 18)
 UPLINK TO LM (IF REQ)
 CSM S.V. (INS + 18)
 RLS
 GO/NO-GO FOR LIFTOFF
 FOR REV 30

L/O - 6 MINUTES:
 DISABLE MSFN RELAY

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	141:00 - 142:00	6/30	3-121

FLIGHT PLANNING BRANCH

REVISION A

CSM

LM

MCC-H

0822 CST

CMP

CMC FREE @ TRUN ANGLE=22°
NULL LM LOS RATES WITH
MINIMUM IMPULSE CONTROL

CONFIRM INSERTION
V64 ACQUIRE MSFN
VHF RANGING

P52-IMU REALIGN
OPTION 3-REFSMAT
(LIFTOFF ORIENTATION)
REPORT GYRO TORQUE ANGLES
VERIFY DSE MOTION @ LOS
P20 - RNDZ NAVIGATION
P32-TARGET CSI
SXT & VHF TRACKING

FINAL CSI COMP

P40-SPS THRUSTING
SPS CHECKLIST

BACKUP CSI
CONFIRM LM CSI

M
S
F
N

M
S
F
N

M
S
F
N

M
S
F
N

M
S
F
N

M
S
F
N

M
S
F
N

142:00
:07
:12
:14
:15
:26
:27
:30
:45
143:00

REV 31

CDR

LMP

ABORT STAGE
YAW RIGHT 20° FOR COMM

APS LIFTOFF

NULL RESIDUALS
LOAD DAP, N46-11002

INSERTION

STOP 16 MM CAMERA
ECS CHECK

P52-IMU REALIGN
OPTION 3 - REFSMMAT
(LIFTOFF ORIENTATION)

V48-LOAD DAP, N46 - 11012
P32 - TARGET CSI
RNDZ RADAR TRACKING

RR-ON
P20-RENDEZVOUS NAVIGATION
PCM-LO, OMNI - AFT
BIOMED - OFF

CHECK RCS, EPS, ECS

FINAL CSI COMPUTATION
P41-RCS THRUSTING

LOAD AGS CSI EXT ΔV

NULL RESIDUALS

RCS CSI

TIG: 142:01:17.9
BT: 7:10
ΔVR: 6046.2 FT/SEC
ORBIT: 44.7x8.3
GET: 142:08:27.9

DUMP DSE
UPLINK TO CSM
LM STATE VECTOR

TIG: 142:58:05.2
BT: 45.3 SEC
ΔVR: 50.3 FT/SEC
ORBIT: 45.6x44.6

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	142:00 - 143:00	6/30-31	3-122

FLIGHT PLANNING BRANCH

REVISION B

FLIGHT PLAN

CSM

LM

MCC-H

CMP

0922 CST
143:00

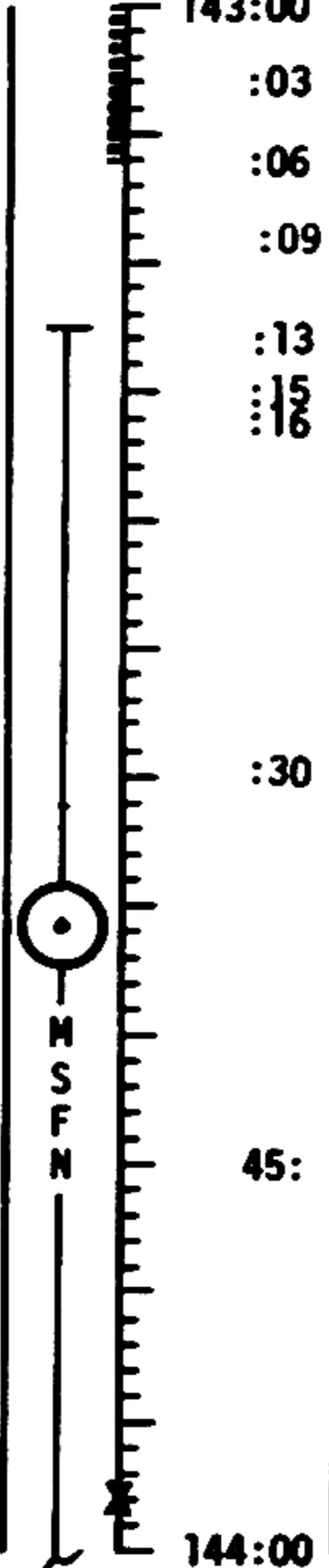
P20 AUTO MNVR TO
TRACK ATTITUDE
SXT & VHF TRACKING

OMNI D

CONFIRM LM PC
P33 - TARGET CDH
SXT & VHF TRACKING

FINAL CDH COMP
P41 - RCS THRUSTING
RCS CHECKLIST

CDH BACKUP
CONFIRM LM CDH
P20-AUTO MNVR TO TRACK ATT



CDR

LMP

P33-TARGET CDH
RNDZ RADAR TRACKING

P30-TARGET PLANE CHANGE
(IF PLANE CHANGE NOT REQUIRED, CONTINUE TRACKING FOR CDH)

OMNI-FWD, BIOMED-RIGHT
PCM-H1
LOAD AGS PC EXT ΔV
CSI BURN STATUS
REPORT

P41-RCS THRUSTING

RCS PLANE CHANGE

GET: 143:26:27.5
ΔV_R: NOM ZERO

P33 TARGET CDH
RNDZ RADAR TRACKING

CHECK RCS, EPS, ECS

FINAL CDH COMPUTATION
(IF CDH NOT REQUIRED, TERMINATE TRACKING AND P33)

P41-RCS THRUSTING

LOAD AGS CDH EXT ΔV

RCS CDH

GET: 143:56:27.5
ΔV_R: NOM ZERO

NULL RESIDUALS
P34-TARGET TPI

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	143:00 - 144:00	6/31	3-123

FLIGHT PLANNING BRANCH

REVISION A

CSM

1022 CST

LM

MCC-H

CMP

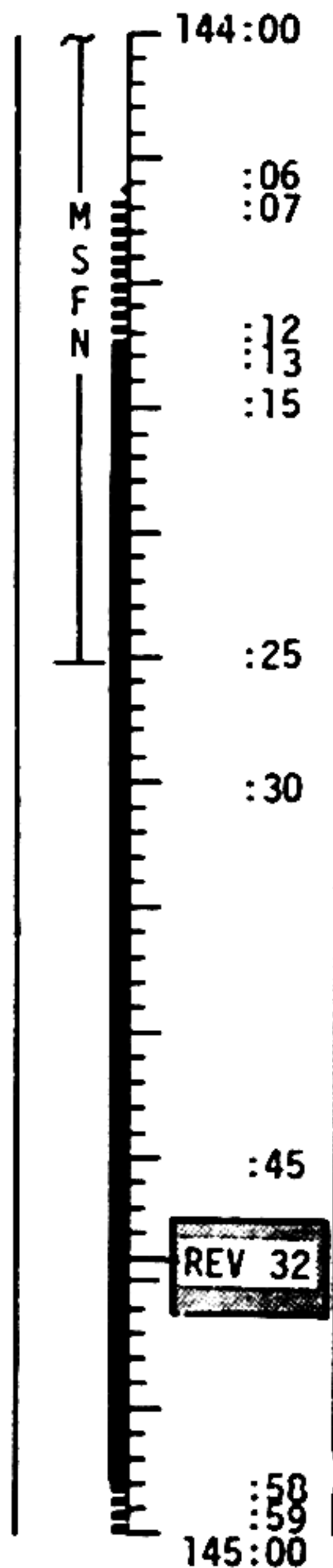
P34-TARGET TPI
SXT & VHF TRACKING

FINAL TPI COMP
VERIFY DSE MOTION @ LOS
P40-SPS THRUSTING
SPS CHECKLIST

TPI BACKUP
CONFIRM LM TPI
P35-TARGET MCC-1
SXT & VHF TRACKING

FINAL MCC-1 COMP
P41-RCS THRUSTING
MCC-1 BACKUP
CONFIRM LM MCC-1

P35-TARGET MCC-2
SXT & VHF TRACKING



CDR

RNDZ RADAR TRACKING

FINAL TPI COMPUTATION

P41-RCS THRUSTING

NULL RESIDUALS
P35-TPM TARGETING(MCC-1)
RNDZ RADAR TRACKING

P41-RCS THRUSTING

NULL RESIDUALS
P35-TPM TARGETING(MCC-2)
RNDZ RADAR TRACKING

LMP

CHECK RCS, EPS, ECS

OMNI-AFT, BIOMED-OFF
PCM-LO

LOAD AGS TPI EXT ΔV

LOAD AGS MCC-1 EXT ΔV

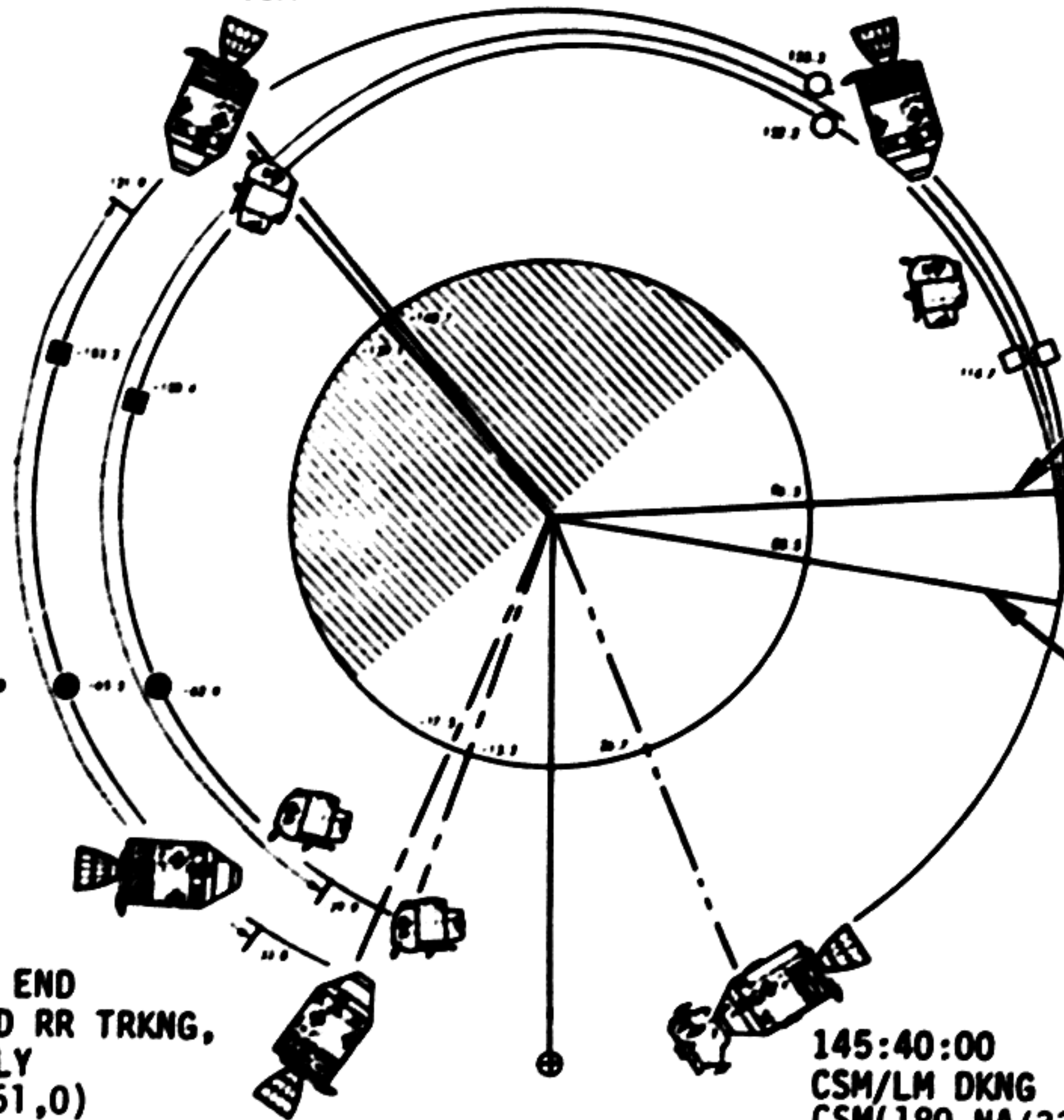
TIG: 144:36:25.7
BT: 22.1 SEC
ΔV_R: 24.6 FT/SEC
ORBIT: 61.9x44.2

GET: 144:51:25.7

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	144:00 - 145:00	6/31-32	3-124

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144:36:50
 TPI BURN IGN
 CSM(0,NA/4,0)
 IATTH
 LM(0,NA/273,0)
 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 BEGIN
 VHF RNG AND RR TRKNG,
 RESPECTIVELY
 CSM(0,NA/129,0)
 LOSM TO LM
 LM(0,NA/4,0)
 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 DKNG
 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

FLIGHT PLAN

CSM

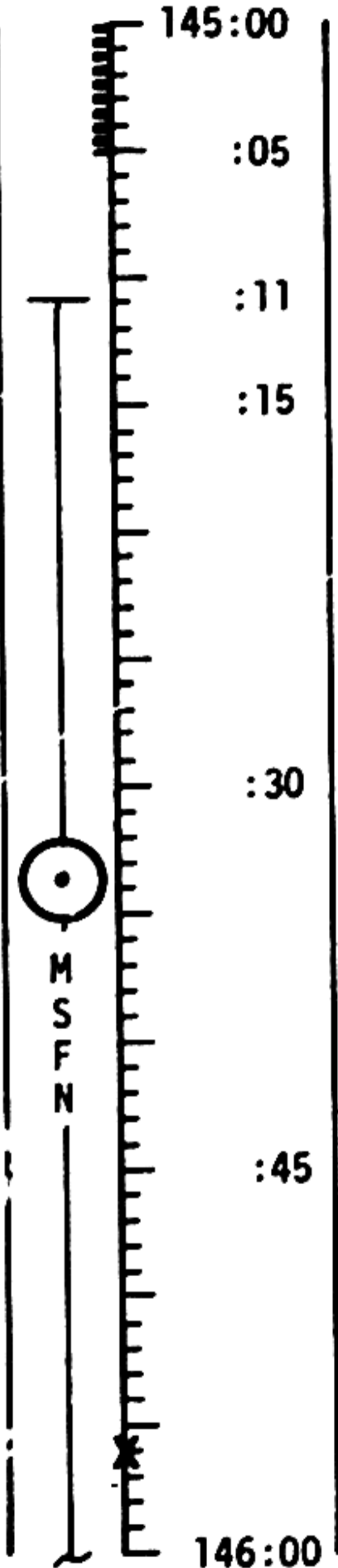
LM

MCC-H

CMP

1122 CST

FINAL MCC-1 COMP
 P41 - RCS THRUSTING
 CONFIRM LM MCC-2
 POO (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 O₂ 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

LOAD AGS MCC-2 EXT ΔV

RCS MCC-2

TIG: 145:06:25.7

NULL RESIDUALS
 POO (TERMINATE P20)
 V48 - LOAD DAP, N46-11002
 V63 - RR SELF TEST

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

RR-OFF

DOCKING ATTITUDE
 R 180 P 336 Y 300

STEERABLE ANGLES
 P 181
 Y 61

GO/NO GO FOR PYRO
 ARM

DOCKING

GET: 145:40

CONFIGURE PGNCS & AGS
 V48 LOAD DAP, N46-12021
 PREP FOR TRANSFER

DUMP DSE

DOFF HELMET & GLOVES
 OPEN HATCH
 REMOVE & STOW DROGUE
 RECEIVE & STOW PROBE

DOFF HELMET & GLOVES
 ASSIST CDR

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

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

STOW LM EQUIPMENT

VERIFY DSE MOTION @ LOS

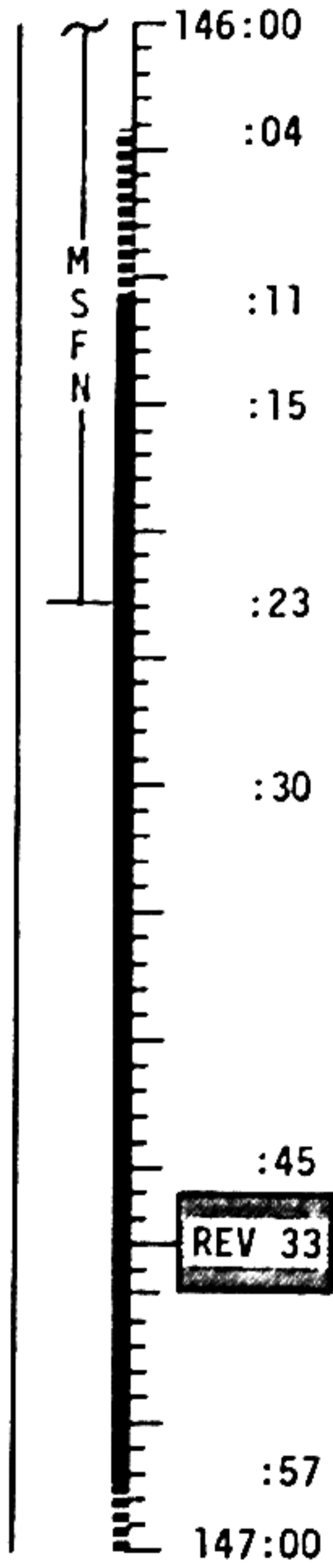
TRANSFER B5 AND B6 CONTAINERS TO LM

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 CUR (DECONTAMINATION)

MCC-H

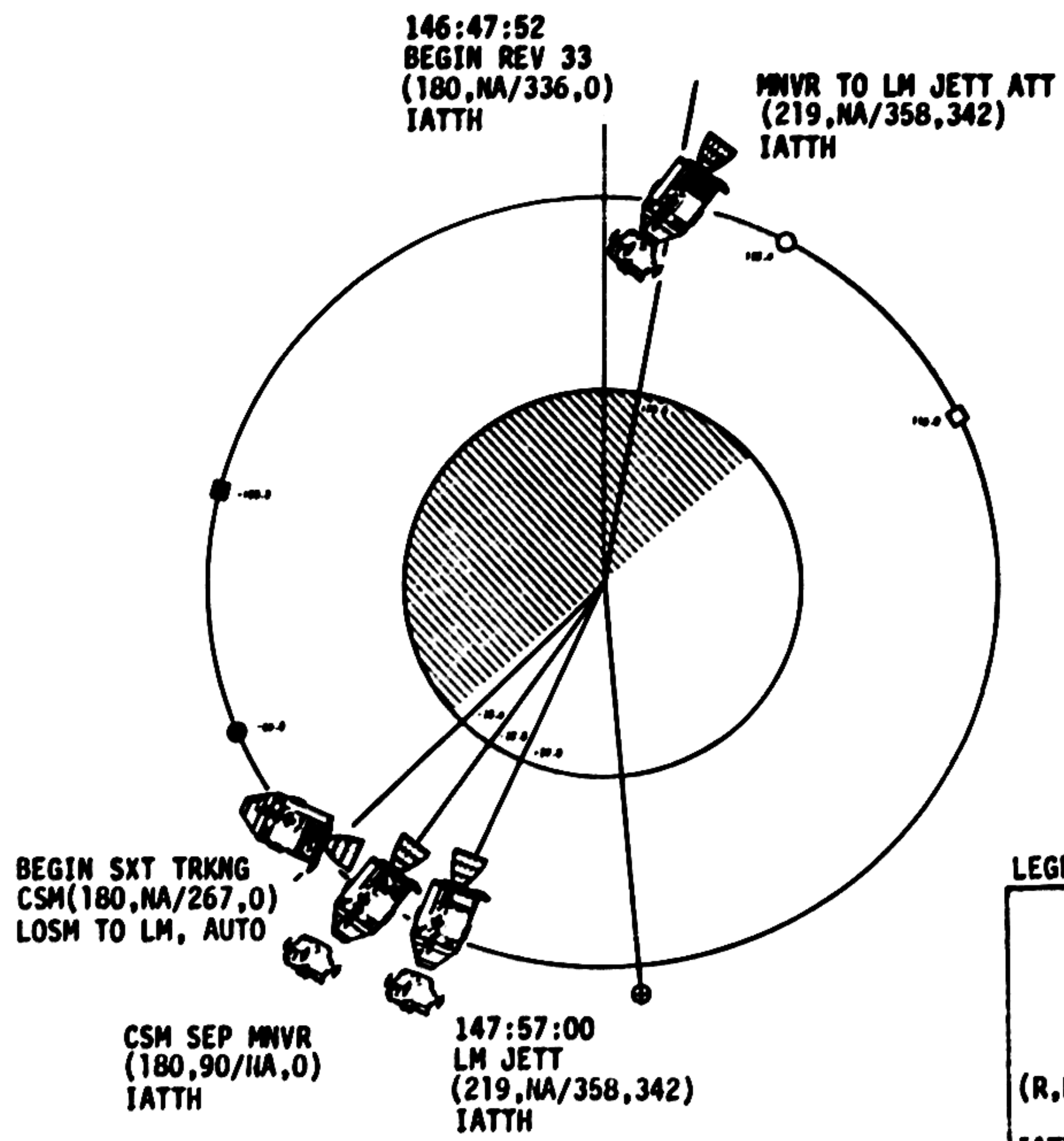
UPDATE TO CSM
 MAP UPDATE REV33
 SEP BURN PAD
 LM JETT ATT
 LM JETT TIME
 UPLINK TO CSM
 CSM S.V. (TIG-10)*
 LM S.V. (TIG-10)*
 UPLINK TO LM
 LM S.V. (TIG-10)*
 P30 TARGET LOAD
 UPDATE TO LM
 DEORBIT BURN PAD

*TIG OF LM DEORBIT BURN

MAP UPDATE REV 33			
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/INP,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
HGA P-41 Y 5

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

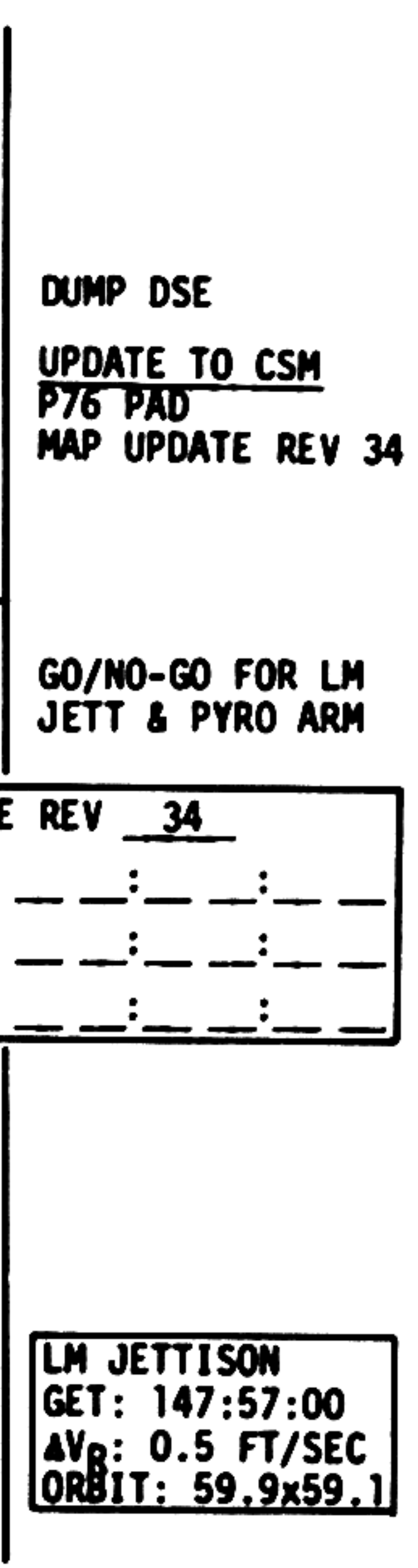
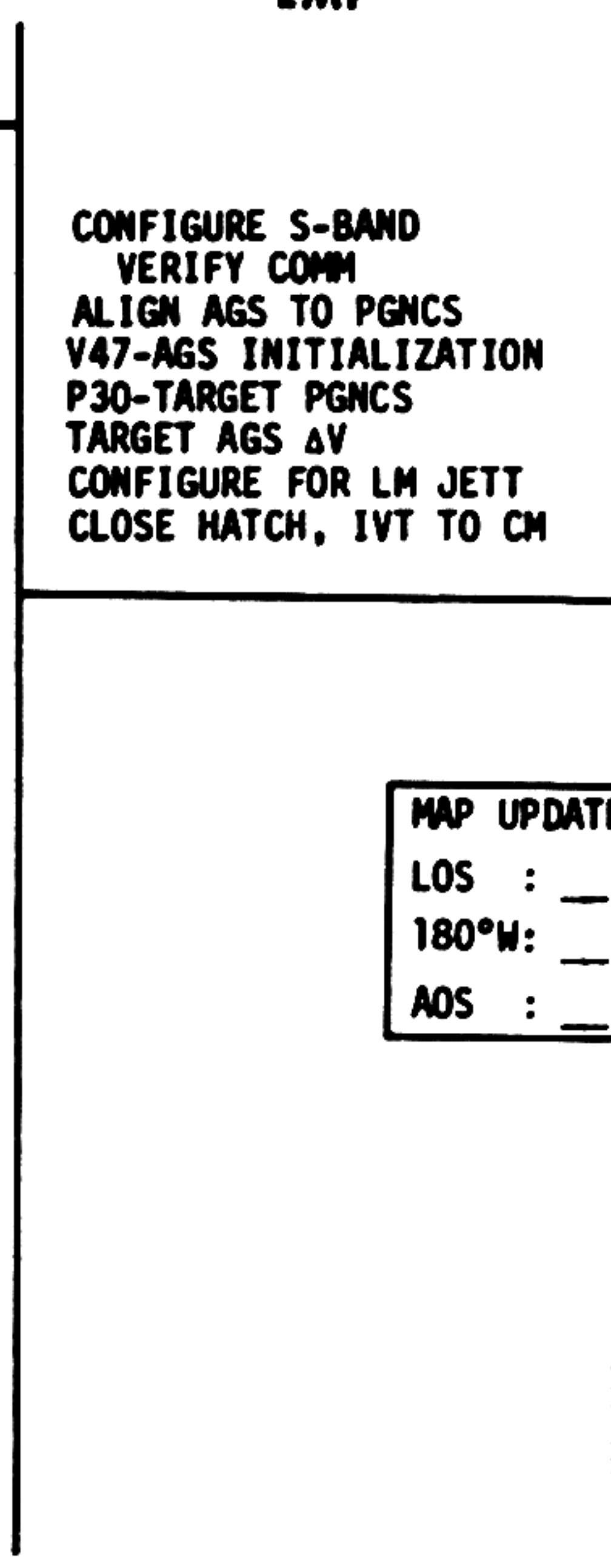
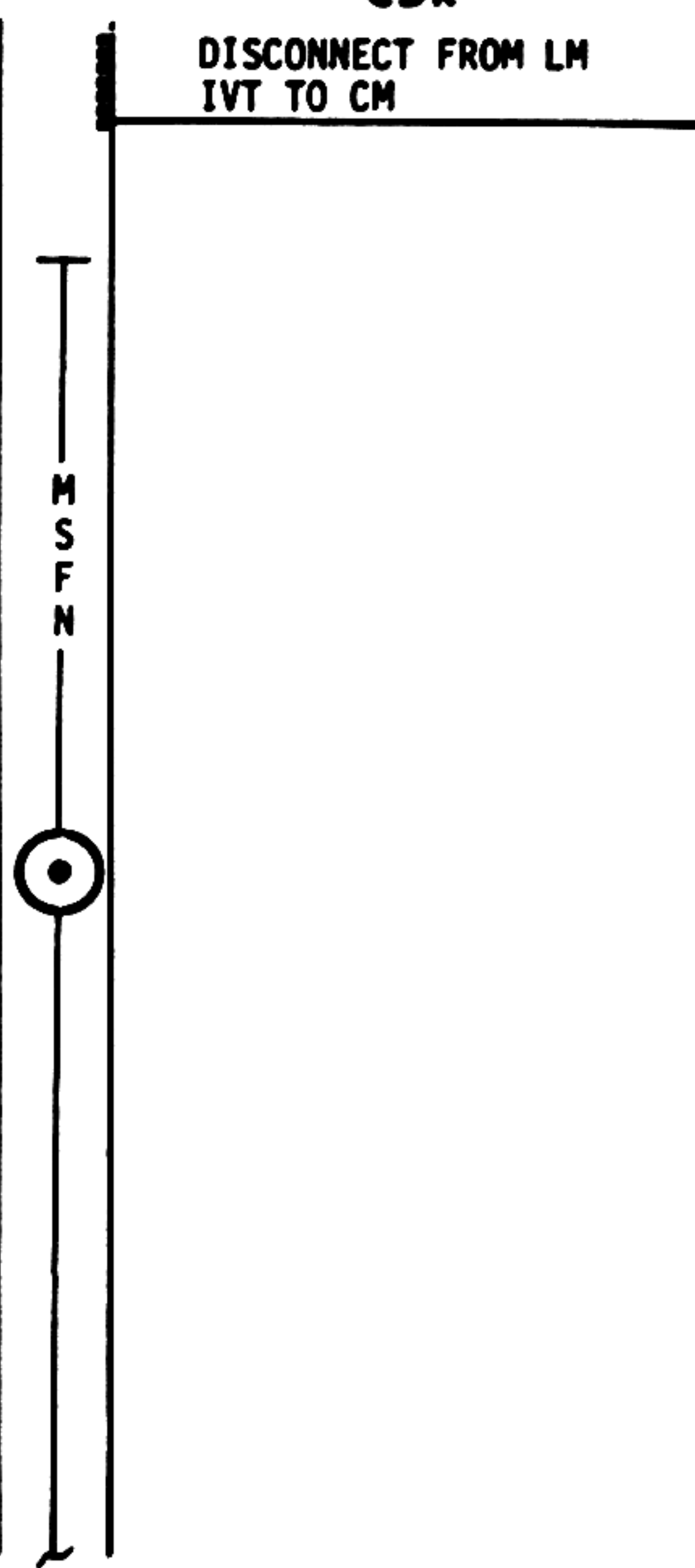
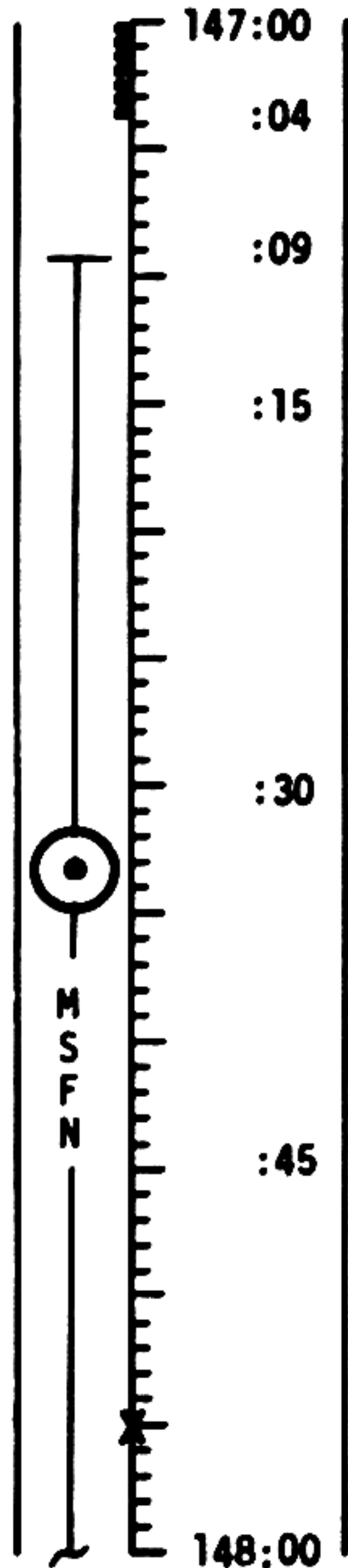
CONFIGURE CSM FOR JETT
SET UP CAMERA FOR JETT
CM4/DAC/18/CEX-BRKT,
MIR(f8,250,7)12FPS,
0.5 MAG, 4 MIN

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

P47-THRUST MONITOR

LM JETTISON

SET ORDEAL



MAP UPDATE REV <u>34</u>		
LOS	: -- : -- : --	: -- : -- : --
180°W:	: -- : -- : --	: -- : -- : --
AOS	: -- : -- : --	: -- : -- : --

LM JETTISON	
GET:	147:57:00
ΔV _B :	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

FLIGHT PLANNING BRANCH

REVISION A

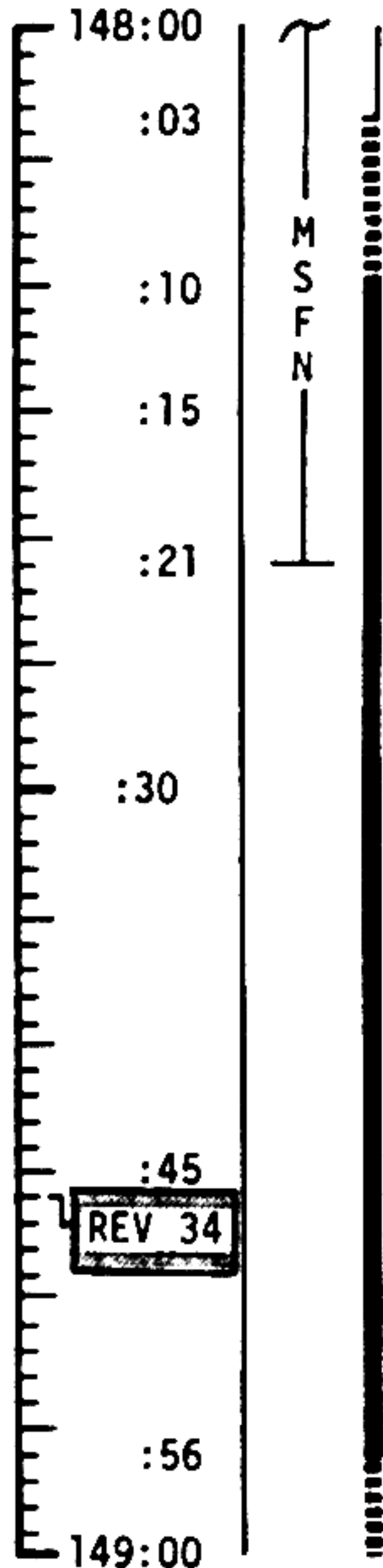
MCC-M

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

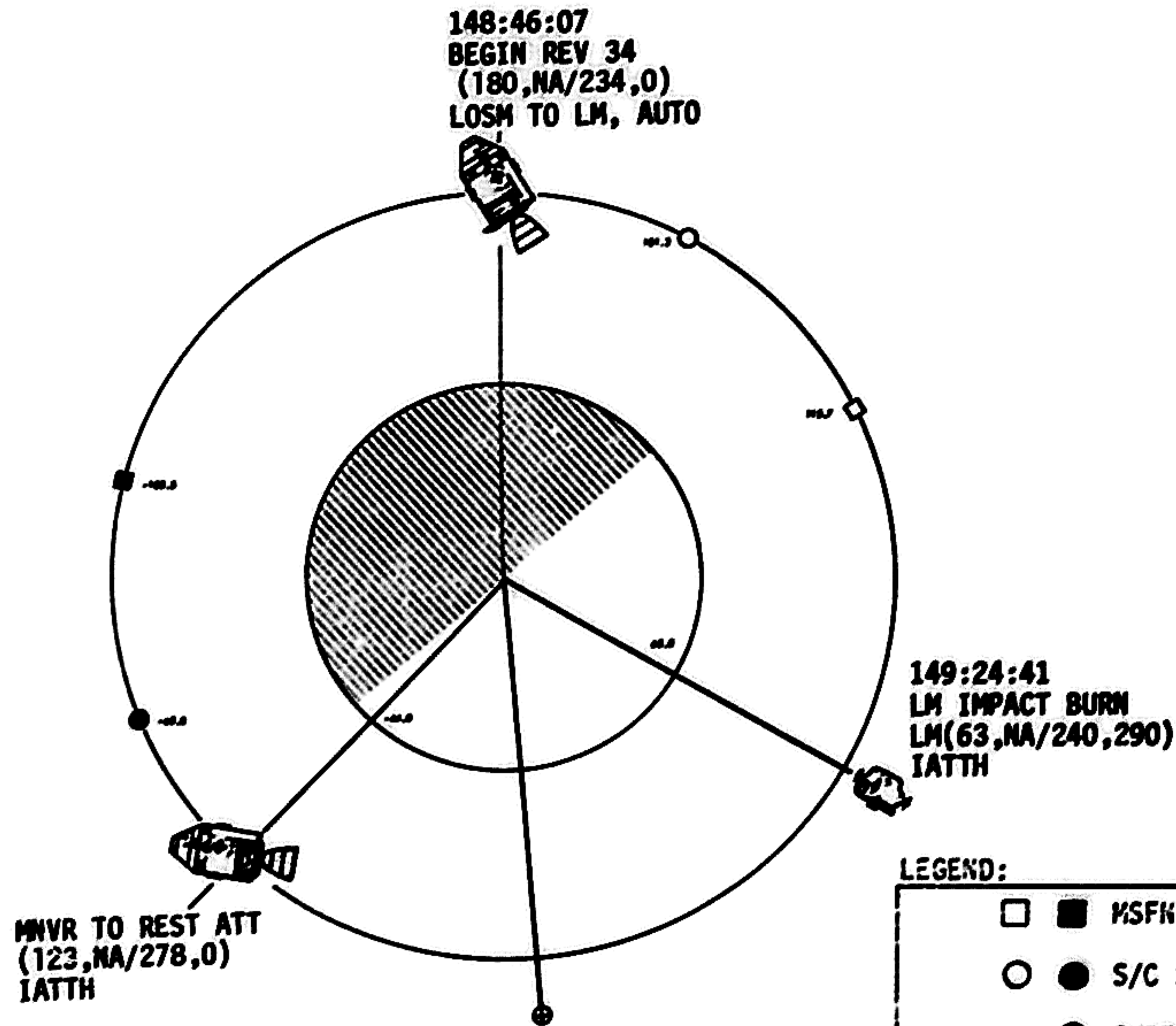
EAT PERIOD

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
 ΔVR: 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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LEGEND:

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

(R,LHP/INP,Y)
 IATTH - INERTIAL ATTITUDE HOLD
 LATTH - LOCAL ATTITUDE HOLD

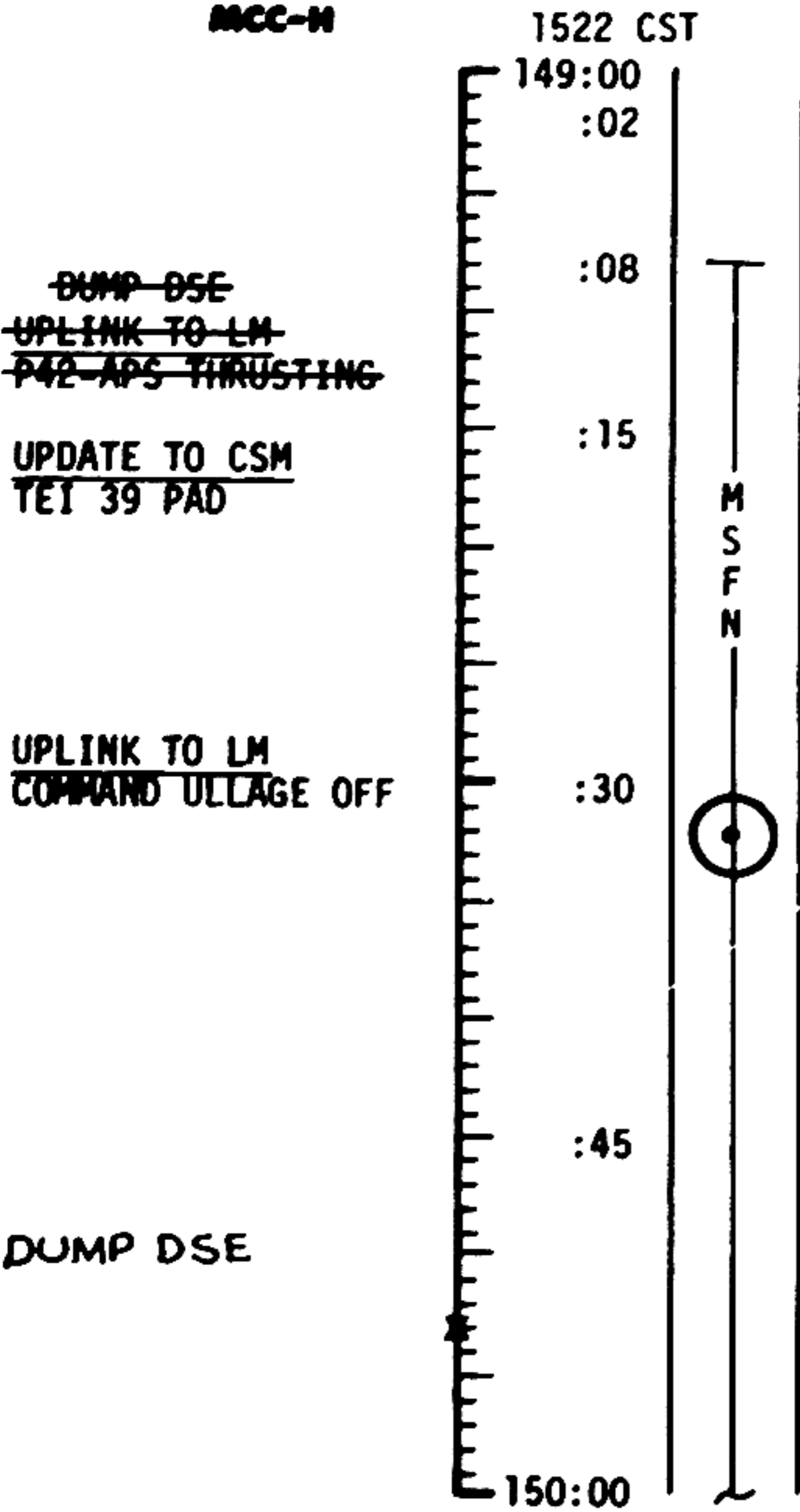
3-128A

REVISION B

MCC-H

FLIGHT PLAN

NOTES



OMNI D

EAT PERIOD

P76 - TARGET ΔV

PHOTOGRAPH LM THROUGH SEXTANT

MNVR TO REST ATT BY 150:00
 R123, P278, Y0, GO INERTIAL
 HGA P-24 Y243
 LOAD DAP, R1(11112)R2(X1111)
 V21 N01
 3255E, 1616E

LM DEORBIT BURN
 TIG: 149:24:41.2
 BT: 83.8 SEC
 ΔV_R : 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	

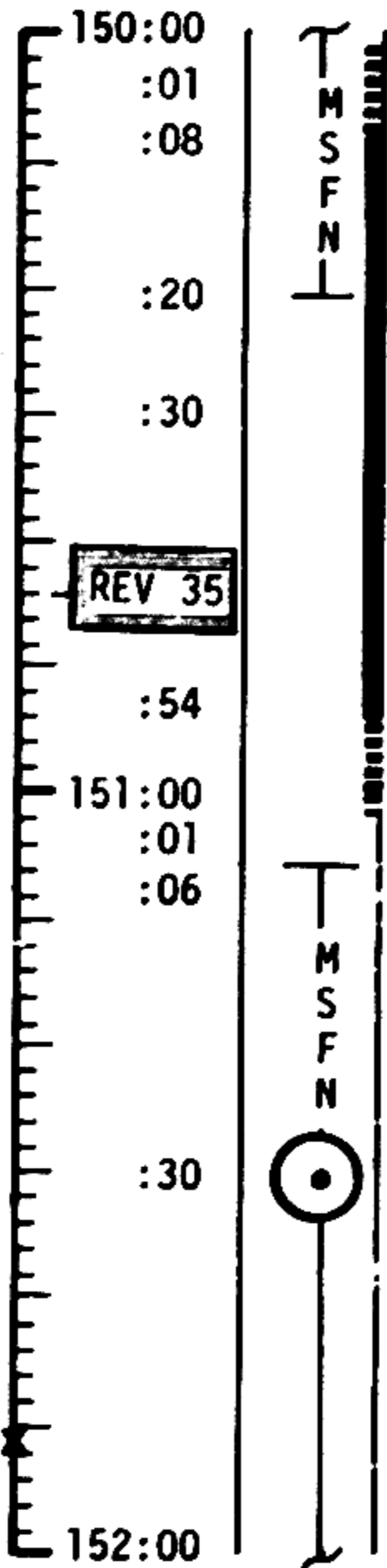
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	149:00 - 150:00	6/34	3-129

MCC-H

1622 CST

FLIGHT PLAN

NOTES



REST PERIOD
(7.5 HOURS)

REST
ATT

DUMP DSE

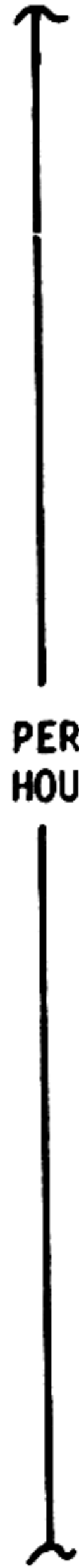
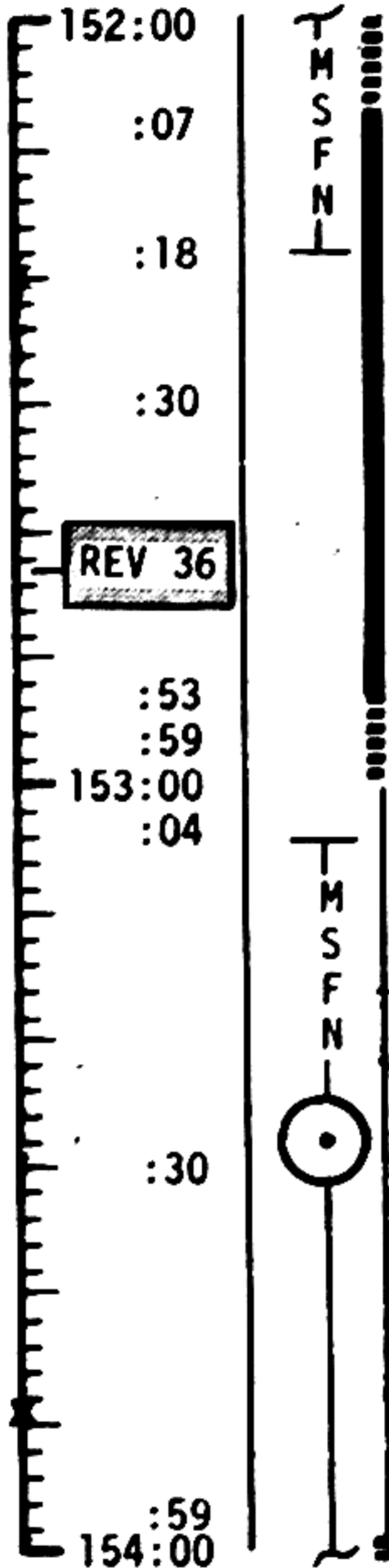
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	150:00 - 152:00	6/34-35	3-130

MCC-H

1822 CST

FLIGHT PLAN

NOTES



REST PERIOD
(7.5 HOURS)



REST
ATT

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	152:00 - 154:00	6/35-36	3-131

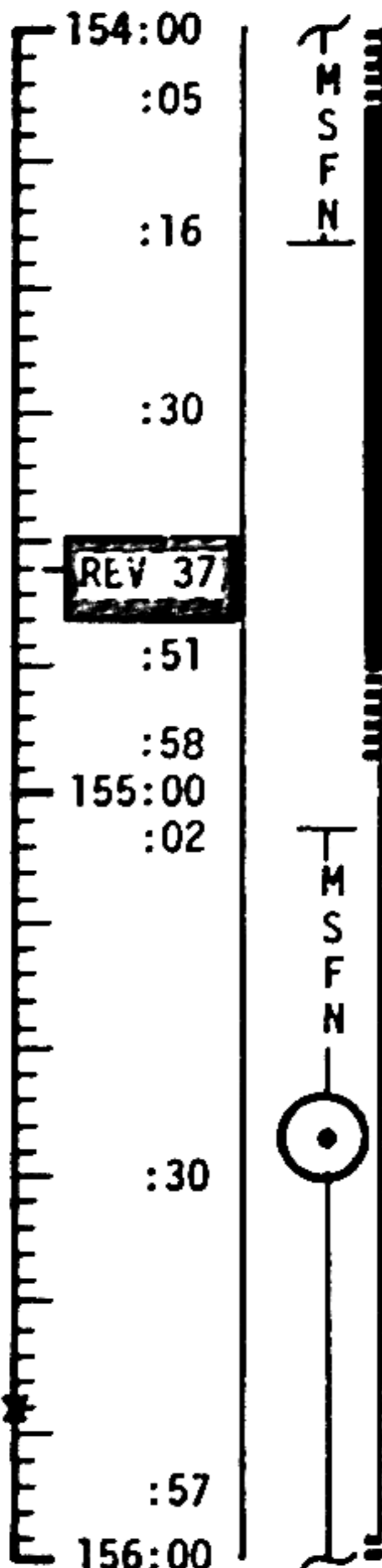
MCC-M

2022 CST

FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD
(7.5 HOURS)

REST
ATT

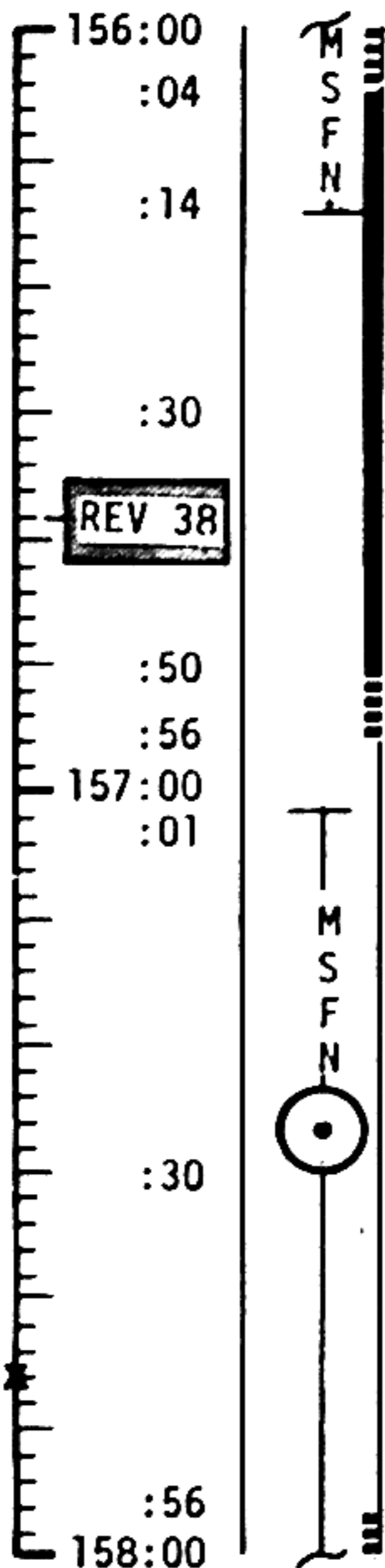
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	154:00 - 156:00	6/36-37	3-132

MCC-H

2222 CST

FLIGHT PLAN

NOTES



REST PERIOD
(7.5 HOURS)

REST
ATT

DUMP DSE

UPDATE TO CSM
 PLANE CHANGE MNR
 CONSUMABLES
 FLIGHT PLAN
 MAP UPDATE REV 39
 TE1 41 PAD
 UPLINK TO CSM
 STATE VECTOR & V66
 PC TARGET LOAD
 DESIRED ORIENT (PC)

HGA P-22 Y239

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	156:00 - 158:00	6/37-38	3-133

0022 CST

FLIGHT PLAN

NOTES

158:00
:02
:12
:15
158:30
158:45
:48
:54
:59
159:00

T
M
S
F
N
I

MNVR TO P52 ATT BY 158:06
R 180 HGA
P 278 P -60
Y 45 Y 239

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN
OPTION 1 PREFERRED

P30 - EXTERNAL zV

V49 - MNVR TO BURN
ATT BY 158:35 R 0 HGA
P 0 P -10
Y 0 Y 274

SXT STAR CHECK
P 40 - SPS THRUST
SETUP DAC IN LH RNDZ WINDOW
(OBLIQUE PHOTOGRAPHY)
CM2/DAC/18/BW-BRKT. & MIR,
(f8,125,∞), 6FPS (0.5 MAG, 8 MIN)
SETUP EL CAMERA IN RH RNDZ
WINDOW
(HI RESOLUTION PHOTOGRAPHY)
CM4/EL/500/BW-BRKT, CONT,
(f8,125,∞), 20-40
GDC TO IMU ALIGN

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

MAP UPDATE REV 39

LOS : _____ : _____ : _____
180° : _____ : _____ : _____
AOS : _____ : _____ : _____

TEI 41 ASSUMES
PLANE CHANGE 2

CSM CONSUMABLES UPDATE

GET: _____ : _____
RCS TOTAL _____ %
QUAD A _____ % B _____ %
C _____ % D _____ %
H₂ TOTAL _____ %
O₂ TOTAL _____ %

P52 (PLANE CHANGE ORIENT)

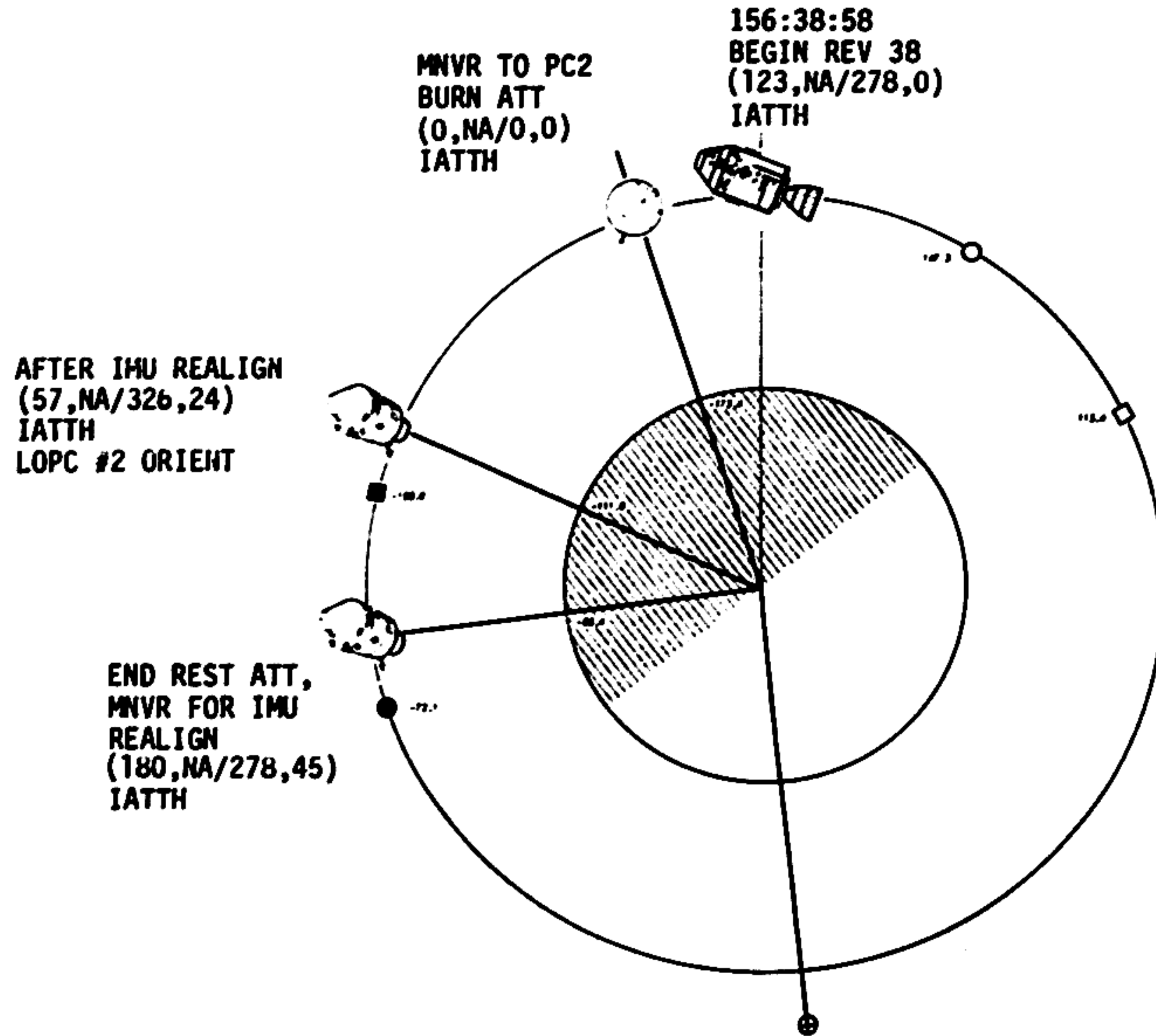
N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____ : _____ : _____

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

REV 39

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	158:00 - 159:00	7/38-39	3-134



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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HIGH RESOLUTION PHOTOGRAPHY
REV 39

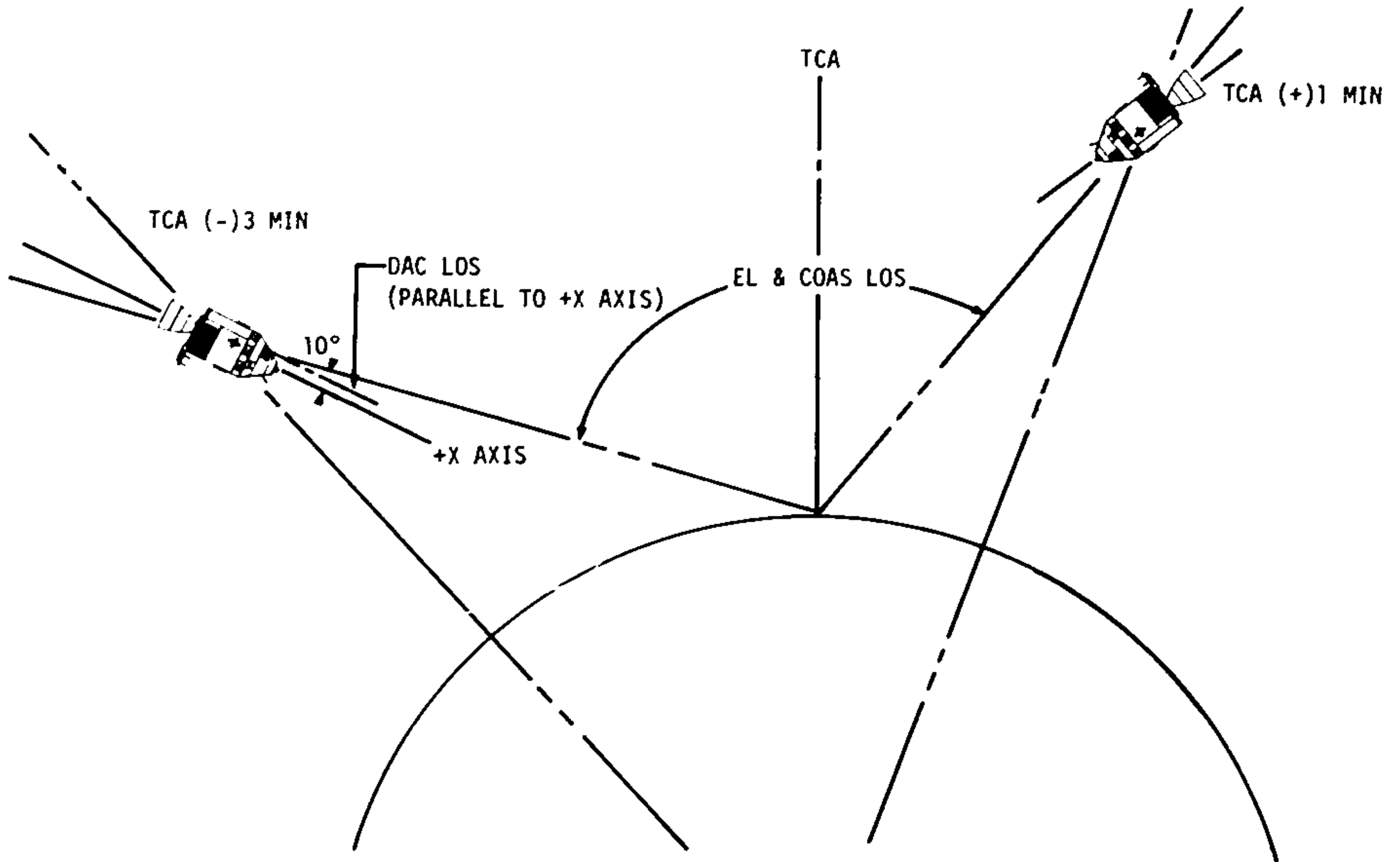


FIGURE 3-4
3-135

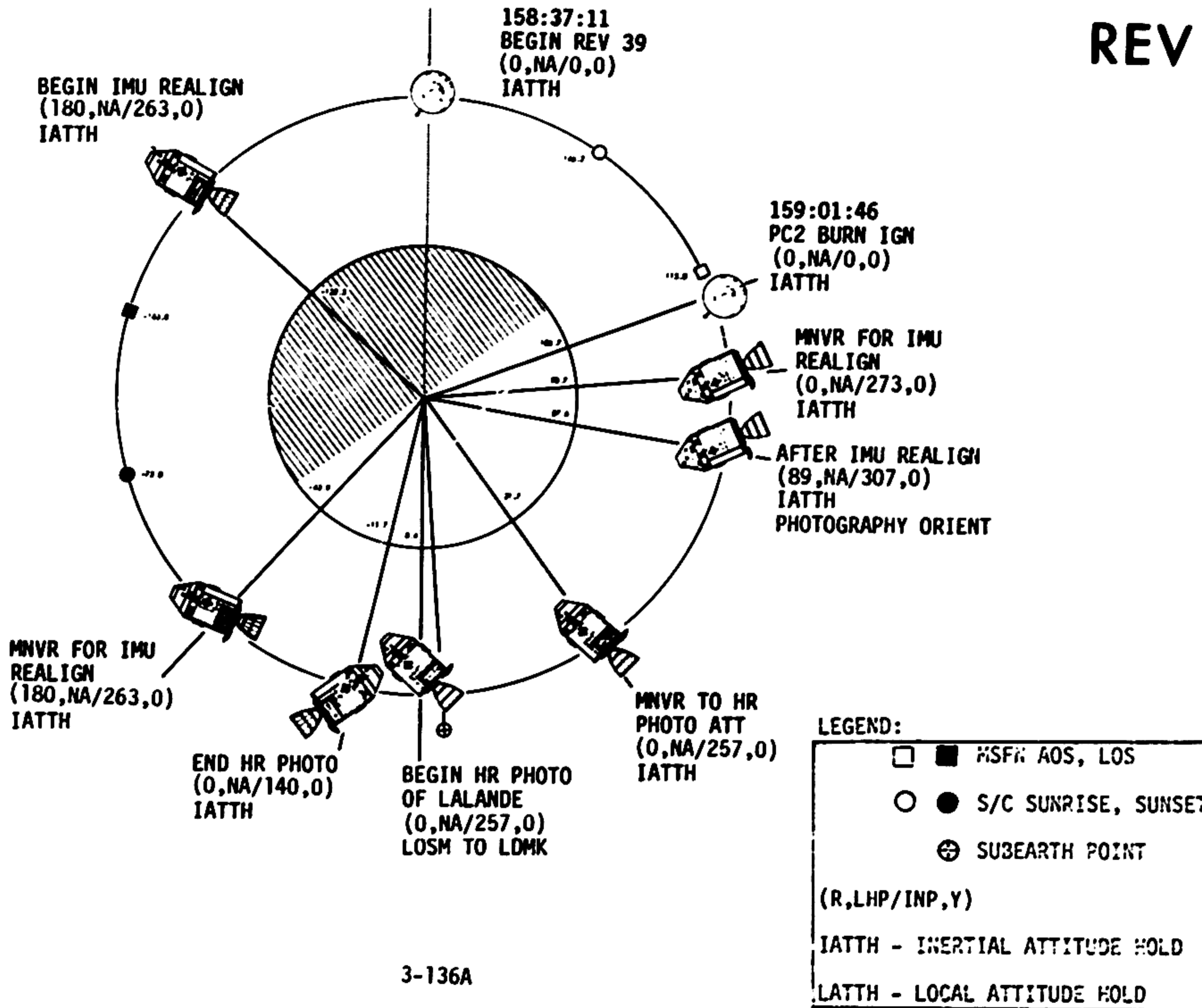
FLIGHT PLAN

CSM PLANE CHANGE #2
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	NO TRIM

TABLE 3-10
3-136

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3-136A

REVISION B

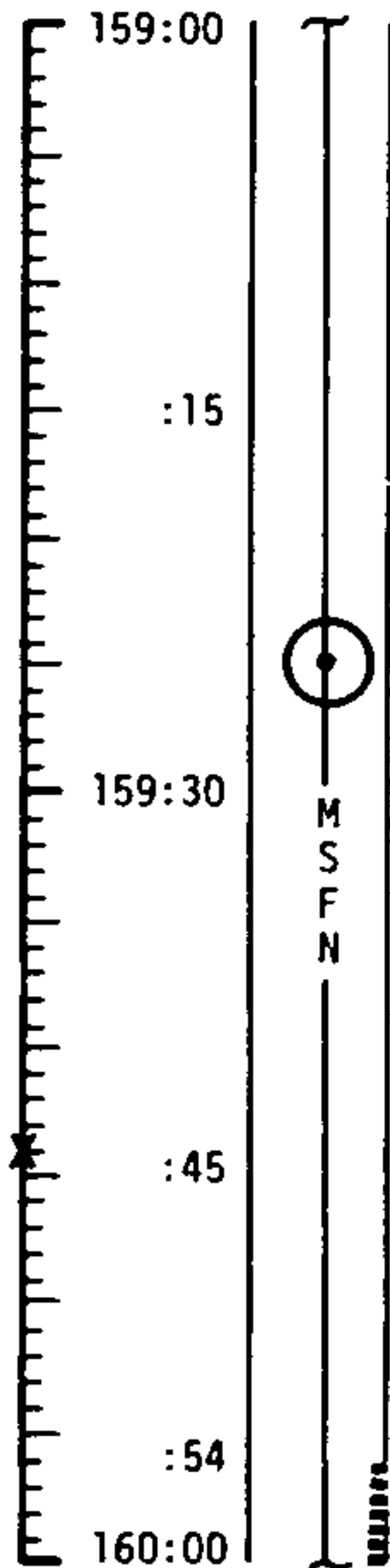
MCC-N

0122 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
 DESIRED ORIENT
 (PHOTOGRAPHY)
 DUMP DSE
 UPDATE TO CSM
 TIME-HI RESOLUTION
 PHOTO



CSM PLANE CHANGE #2

TIG: 159:01:46.0
 BT : 18.0 SEC
 ΔV_R : 360.0 FPS
 ULLAGE: 4 JET 11 SEC
 ORBIT: 58.6 X 56.5 NM

T1 IS 3 MINUTES
 PRIOR TO TCA
 T2 IS 1 MINUTE
 AFTER TCA
 EL CAM TO BE MANUALLY
 ACTUATED AT APPROX.
 20 SECOND INTERVALS

MNVR TO P52 ATT BY 159:07 R 0
 P52 IMU REALIGN P 273
 OPTION 1 PREFERRED Y 0
 GYRO TORQUE HGA P 3, Y 281

BURN STATUS REPORT
 REPORT GYRO TORQUING ANGLES (P52 @158:15)
 V66 TRANSFER CSM TO LM SLOT
 SET COAS FOR (+) 10 DEG LOS
 LiOH CANISTER CHANGE NO 12
 14 INTO B, STOW 12 IN A3
 START EAT PERIOD
 MNVR TO ATT FOR LALANDE PHOTOGRAPHY
 BY 159:26 (FOR T1) R 0 OMNI D
 P 257
 Y 0

HI RESOLUTION PHOTO
 LALANDE
 T1 _____ : _____ : _____
 T2 _____ : _____ : _____
 R _____, P _____, Y _____

TRACK LALANDE THRU COAS AND START
 CAMERAS AT T1. STOP CAMERAS AT T2

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	Δ TIG
X	X		•	BT
<input type="checkbox"/>			•	V_{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V_{gx}
<input type="checkbox"/>			•	V_{gy}
<input type="checkbox"/>			•	V_{gz}
<input type="checkbox"/>			•	ΔV_C^*
X	X	X		FUEL*
X	X	X		OX*
X	X	X		UNBAL

MNVR TO P52 ATT BY 159:51
 R 180 HGA P -56
 P 263 Y 0 Y 186

*ITEMS TO BE REPORTED TO MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (REV 14)	OCTOBER 15, 1969	159:00 - 160:00	7/39	3-137

STEREO STRIP PHOTOGRAPHY
REV 40

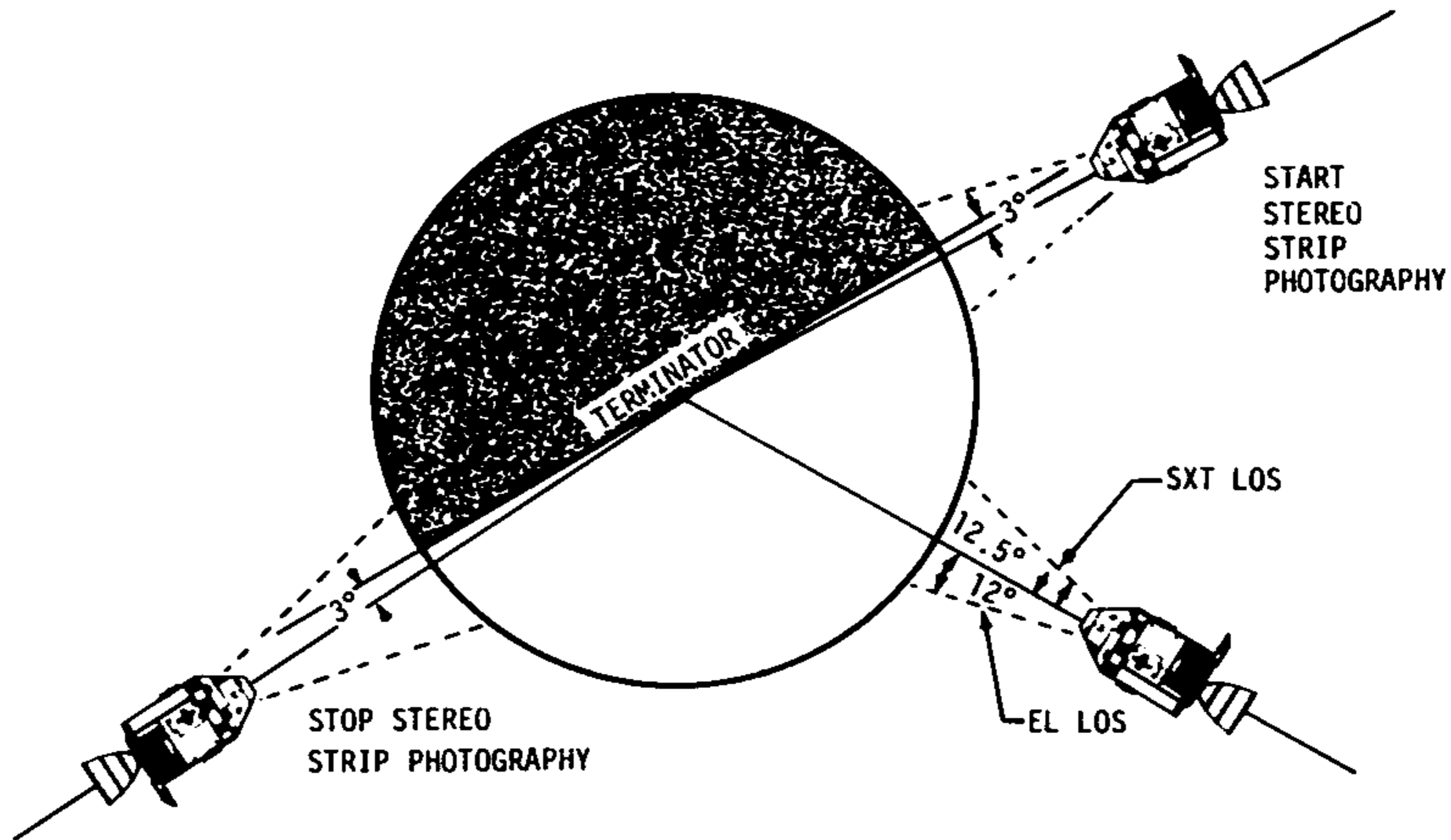


FIGURE 3-5
3-138

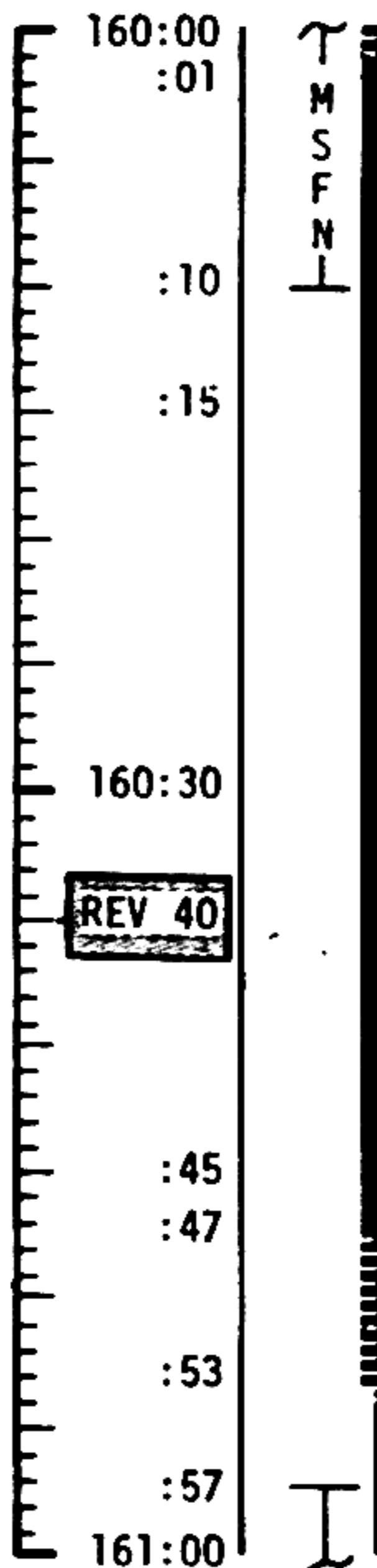
MCC-H

0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
STEREO PHOTO TIME
MAP UPDATE REV 40



SETUP EL CAMERA FOR STEREO SCOPIC STRIP PHOTOGRAPHY (RH RNDZ WINDOW)
CM4/EL/80/BW-BRKT, INTR, (f4,250,∞),180
VERIFY DSE AT LOS

SET UP DAC FOR SXT/DAC PHOTOGRAPHY
CM/DAC/SXT/CEX, (FIXED,60, FIXED), 1FPS (IMAG=93MIN)

P52 IMU REALIGN
OPTION 3 REFSMMAT

GDC ALIGN TO IMU

ZERO OPTICS & MANUALLY SET SA=0°, TR=45°

V83E ALIGN FDAI #1
ORDEAL R 0, P270/ NA, Y 0
V79E R1 = -0.0507
R2 = +000.50
R3 = +11111

SELECT OMNI D
V06N65 AT GROUND TERMINATOR
BEGIN PHOTOGRAPHY AT GROUND TERMINATOR (+) 1 MIN(T1)
RECORD START TIME _____ : _____ : _____ GET
V16N91 AT GROUND TERMINATOR (+) 2 MINUTES

STEREO PHOTO
T1 _____ : _____ : _____
T2 _____ : _____ : _____

MAP UPDATE REV 40
LOS : _____ : _____ : _____
180° : _____ : _____ : _____
AOS : _____ : _____ : _____

P52 (PHOTOGRAPHY ORIENT)
N71: _____ : _____ : _____
N05: _____ : _____ : _____
N93: _____ : _____ : _____
X _____ : _____ : _____
Y _____ : _____ : _____
Z _____ : _____ : _____
GET _____ : _____ : _____

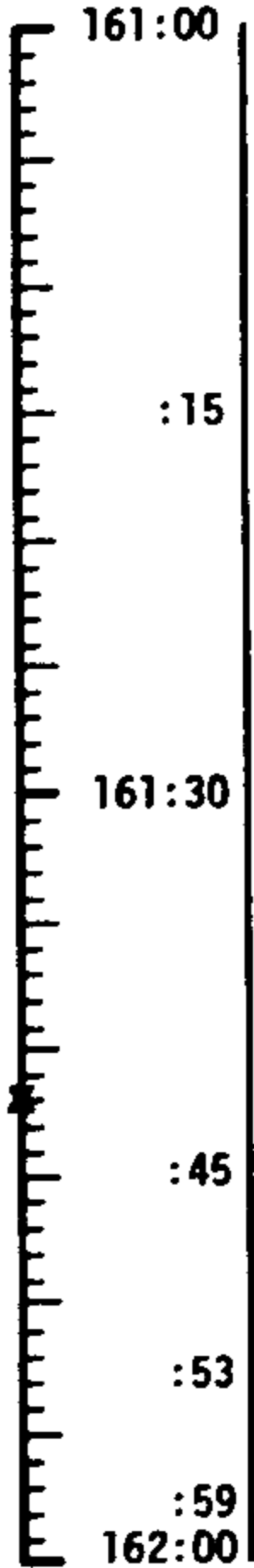
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	160:00 - 161:00	7/39-40	3-139

MCC-N

0322 CST

FLIGHT PLAN

NOTES



DAC SHUTTER SPEED 125 GET 161:06
(GET ___:___)

DAC SHUTTER SPEED 250 GET 161:16
(GET ___:___)

STEREO STRIP
PHOTOGRAPHY

DAC SHUTTER SPEED 125 GET 161:34 OMNI B
(GET ___:___)
DAC SHUTTER SPEED 60 GET 161:38
(GET ___:___)

V06N65 AT GROUND TERMINATOR (-) 90 SECONDS
END STRIP PHOTOGRAPHY AT GROUND TERMINATOR(-) 1 MINUTE (T2)

GO INERTIAL R 0, P 143, Y 0
HGA P -64, Y 173
RECORD STOP TIME ___:___:___ GET

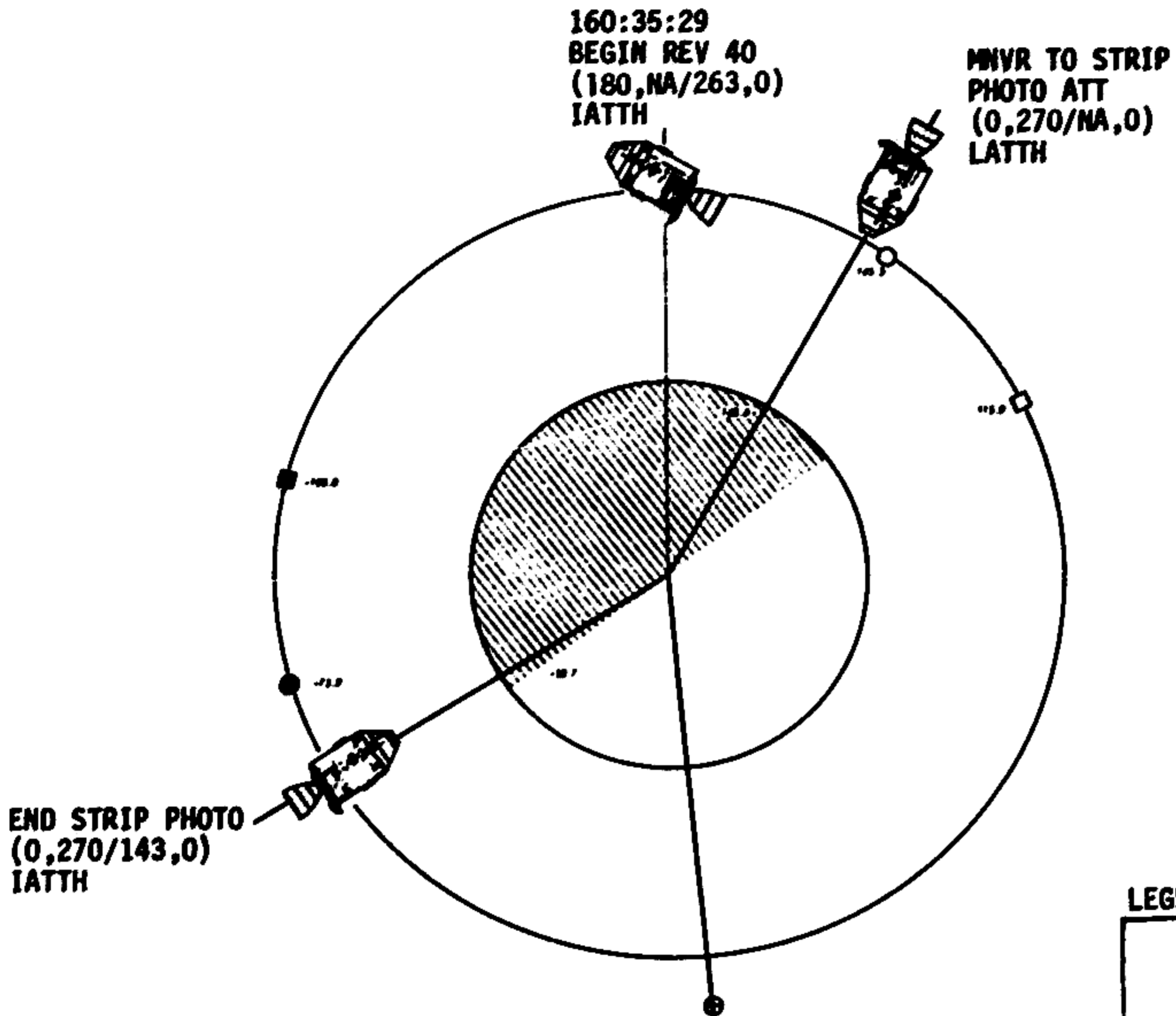
MAP UPDATE REV	<u>41</u>
LOS	: ___:___:___
180°	: ___:___:___
AOS	: ___:___:___

UPDATE TO CSM
MAP UPDATE REV41
TEI 43 PAD

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	161:00 - 162:00	7/40	3-140

REV 40



LEGEND:

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

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-140A

REVISION B

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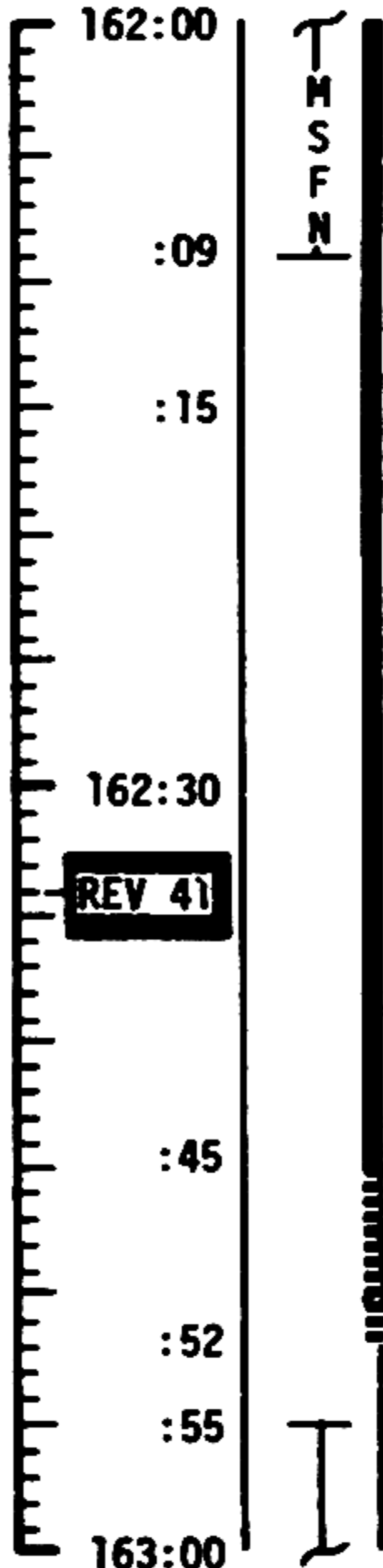
ACC-N

0422 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
TIME - HIGH
RESOLUTION PHOTOS



REPORT GYRO TORQUING ANGLES

VERIFY DSE MOTION AT LOS

SETUP DAC IN LH RNDZ WINDOW (OBLIQUE PHOTOGRAPHY)
CM2/DAC/18/BW-BRKT,MIR,(f8, 125,∞),6FPS
(1.5 MAG-24 MIN.)

SETUP COAS (LH RNDZ WINDOW) FOR (+) 10 DEGREES

SETUP EL CAMERA IN RH RNDZ WINDOW
(HIGH RESOLUTION PHOTOGRAPHY)
CM4/EL/500/BW-BRKT,CONT,(f8,125,∞),150-120

REACQUIRE MSFN
HGA P -64, Y 173

HI RESOLUTION PHOTO
DESCARTES

T1 _____ : _____ : _____
T2 _____ : _____ : _____
R _____, P _____, Y _____

HI RESOLUTION PHOTO
FRA MAURO

T1 _____ : _____ : _____
T2 _____ : _____ : _____
R _____, P _____, Y _____

T1 IS 3 MINUTES
BEFORE TCA

T2 IS 1 MINUTE
AFTER TCA

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	162:00 - 163:00	7/40-41	3-141

HIGH RESOLUTION PHOTOGRAPHY
REV 41

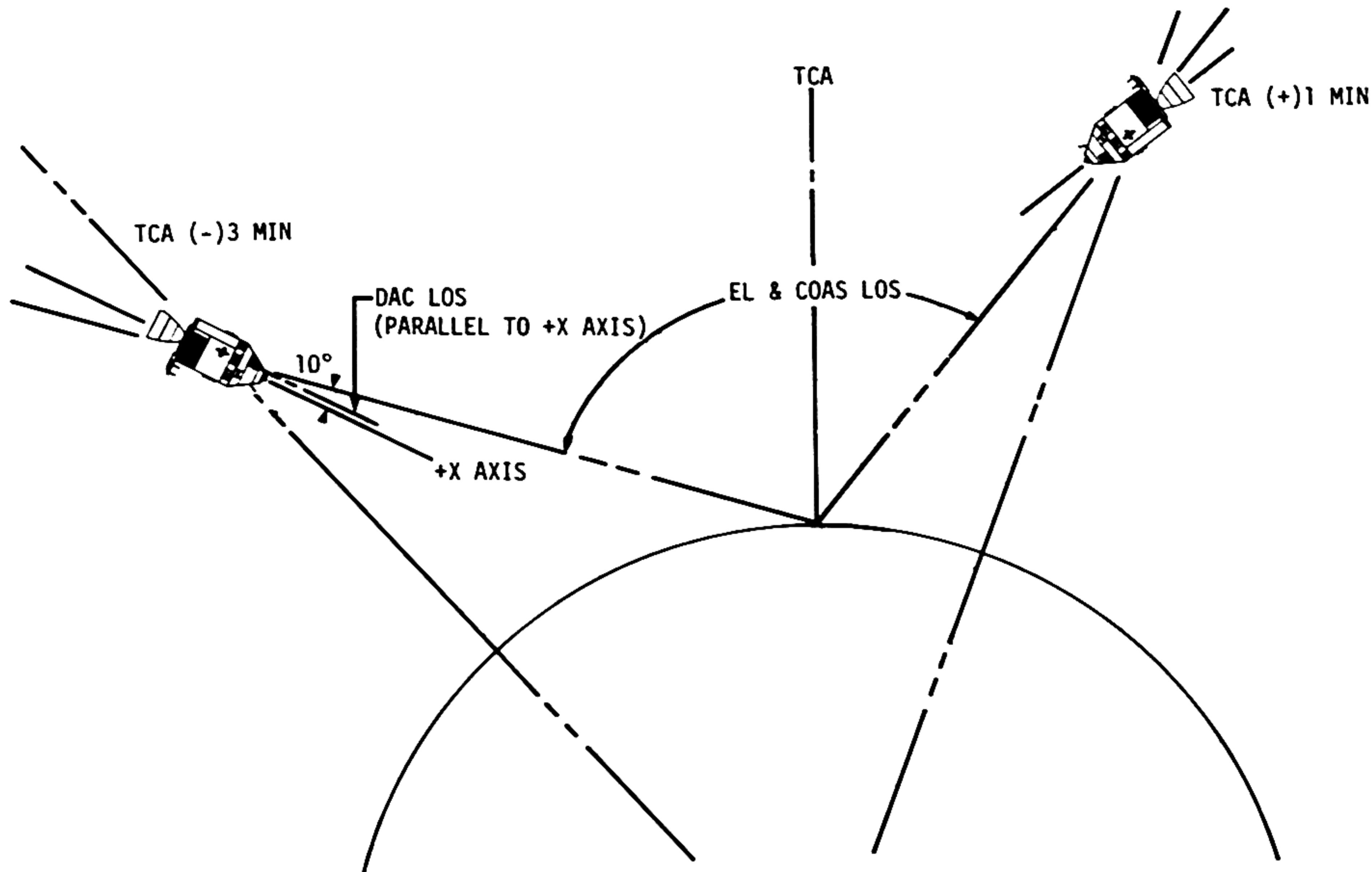
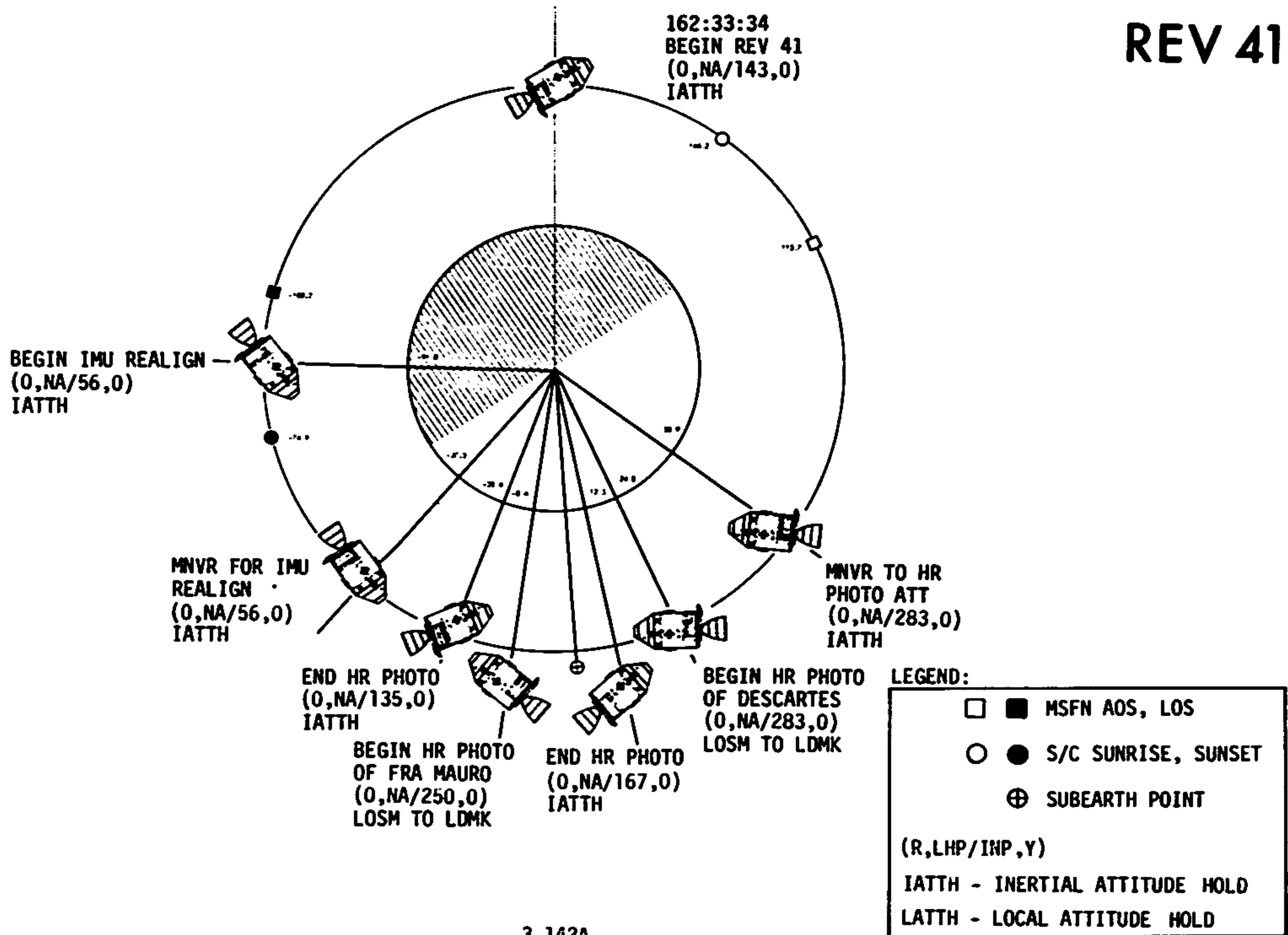


FIGURE 3-4
3-142

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MCC-H

0522 CST

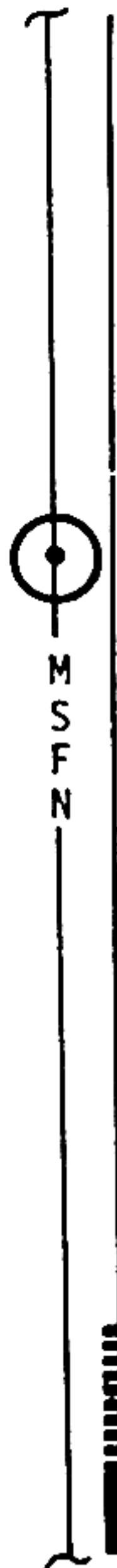
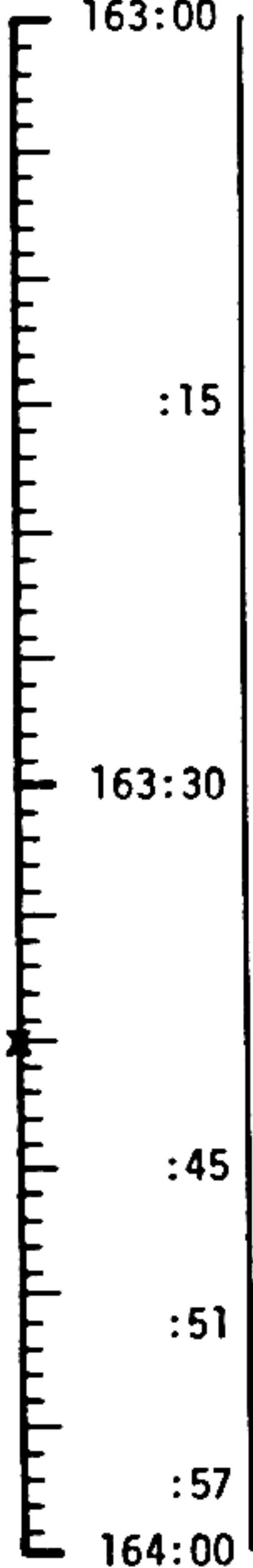
FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM
MAP UPDATE REV 42

~~PCM-LBR~~



MNVR-TO ATT FOR DESCARTES PHOTOGRAPHY BY 163:16

OMNI D R 0
 P 283
 Y 0

TRACK DESCARTES THRU COAS AND START
 CAMERA AT T1, STOP CAMERAS AT T2
 MNVR TO ATTITUDE FOR FRA MAURO PHOTO BY 163:33

R 0, P250, Y 0 OMNI D

TRACK FRA MAURO THRU COAS AND
 START CAMERA AT T1, STOP CAMERA
 AT T2

V64 ACQUIRE MSFN @ PITCH = 135°
 MNVR TO P52 ATT BY 163:45

R 0
 P 56
 Y 0

UPDATE TO CSM
LDMK TRACK PAD

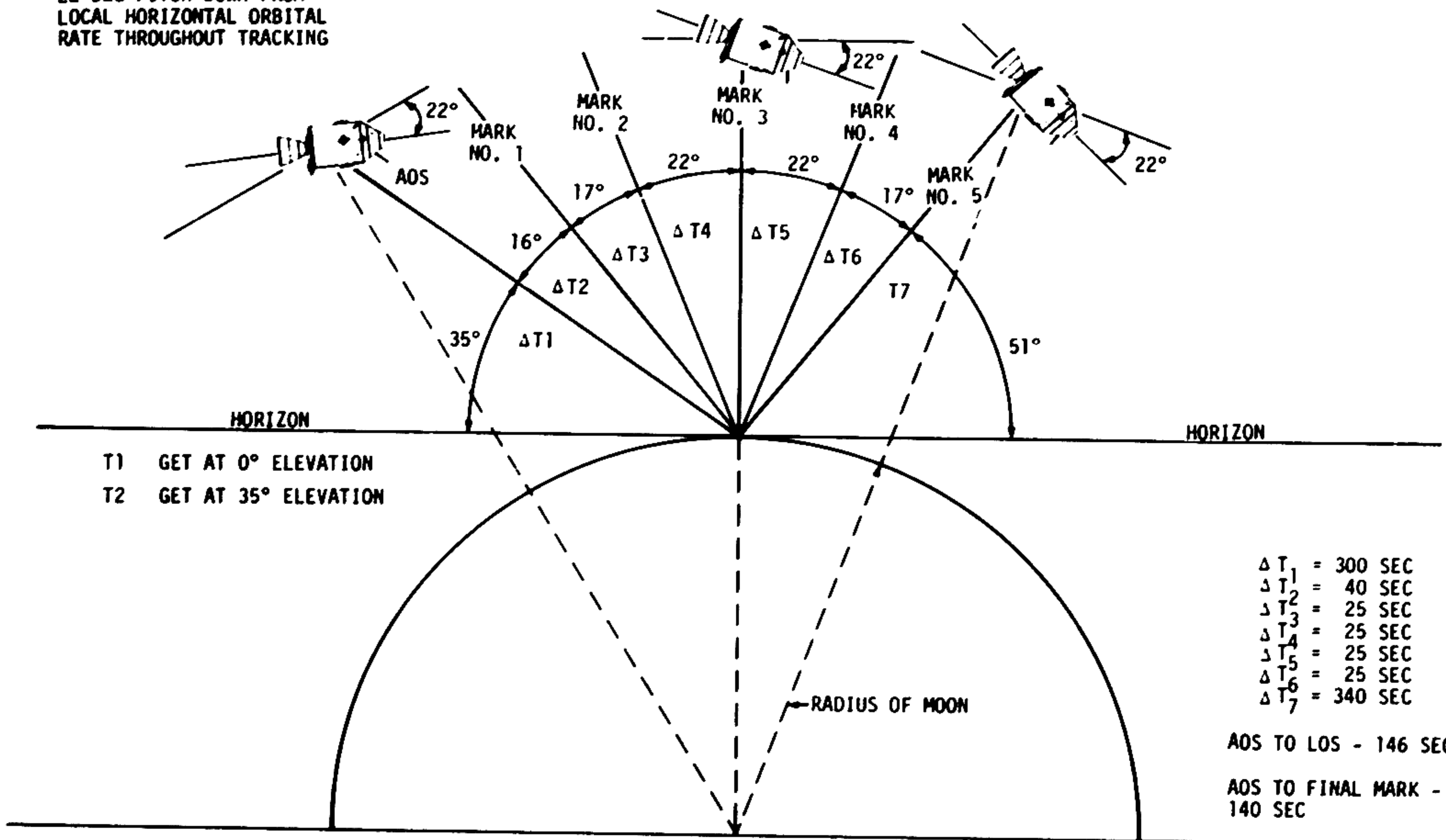
UPLINK TO CSM
CSM STATE VECTOR
& V66

MAP UPDATE REV	<u>42</u>
LOS	: _____ : _____ : _____
180°	: _____ : _____ : _____
AOS	: _____ : _____ : _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	163:00 - 164:00	7/41	3-143

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING



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

Δ T ₁	=	300 SEC
Δ T ₂	=	40 SEC
Δ T ₃	=	25 SEC
Δ T ₄	=	25 SEC
Δ T ₅	=	25 SEC
Δ T ₆	=	25 SEC
Δ T ₇	=	340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON
FIGURE 3-3
3-144

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P22 ~~MAN~~ ^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{60}$)

T₁ _____ : _____ : _____ **CP-1**

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -5.667° _____ .

LONG/2 +56.000° _____ .

ALT +0.00 NM _____ .

P22 ~~MAN~~ ^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{125}$)

T₁ _____ : _____ : _____ **CP-2**

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -10.250° _____ .

LONG/2 +28.091° _____ .

ALT -0.81NM _____ .

P22 ~~MAN~~ ^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{250}$)

T₁ _____ : _____ : _____ **DE-1**

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -8.883° _____ .

LONG/2 +7.775° _____ .

ALT -1.70NM _____ .

P22 ~~MAN~~ ^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{60}$)

T₁ _____ : _____ : _____ **FM-1**

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

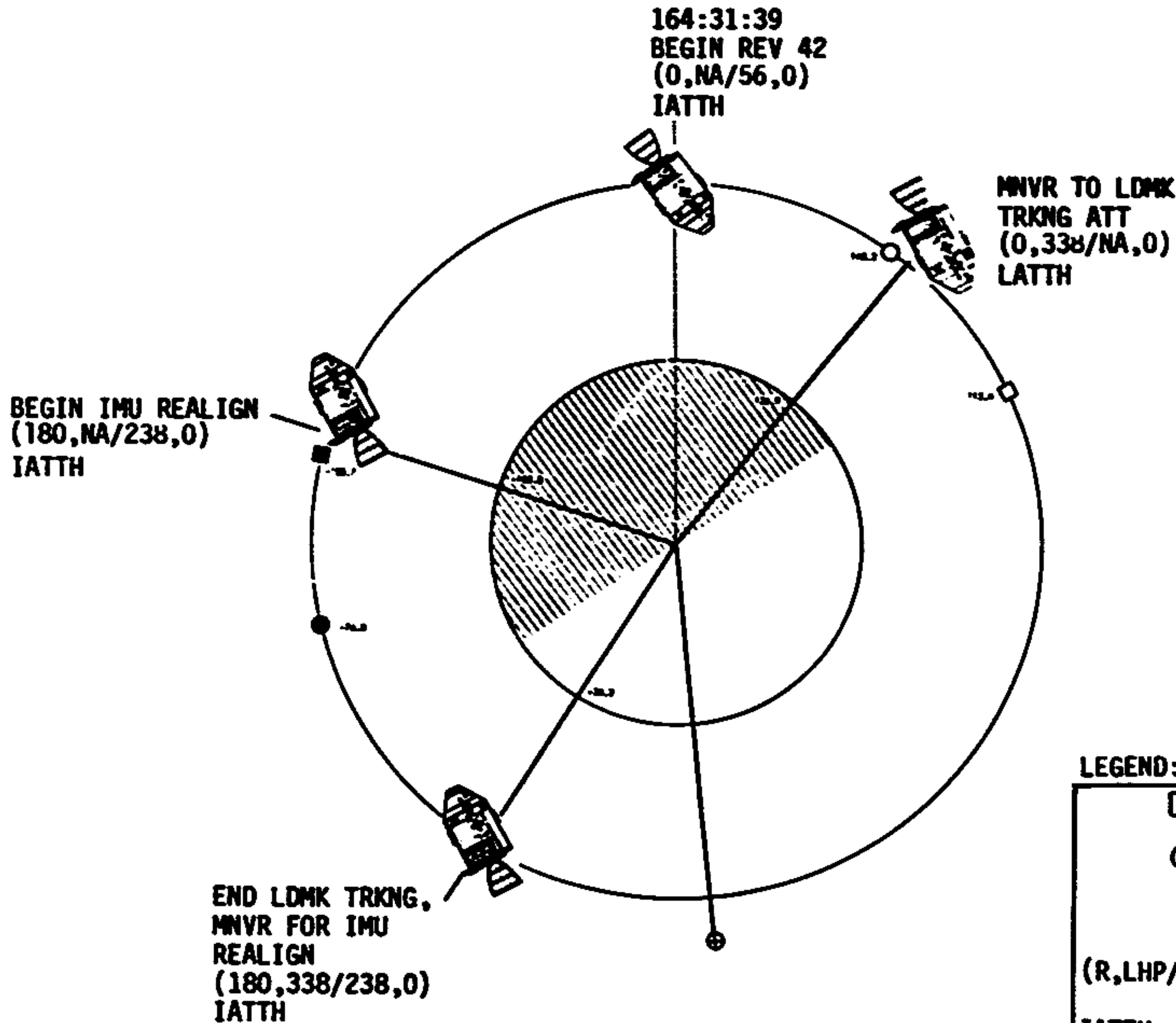
LAT -3.228° _____ .

LONG/2 -8.665° _____ .

ALT -1.56NM _____ .

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	164:00 - 165:00	7/41-42	3-145

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LEGEND:

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

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

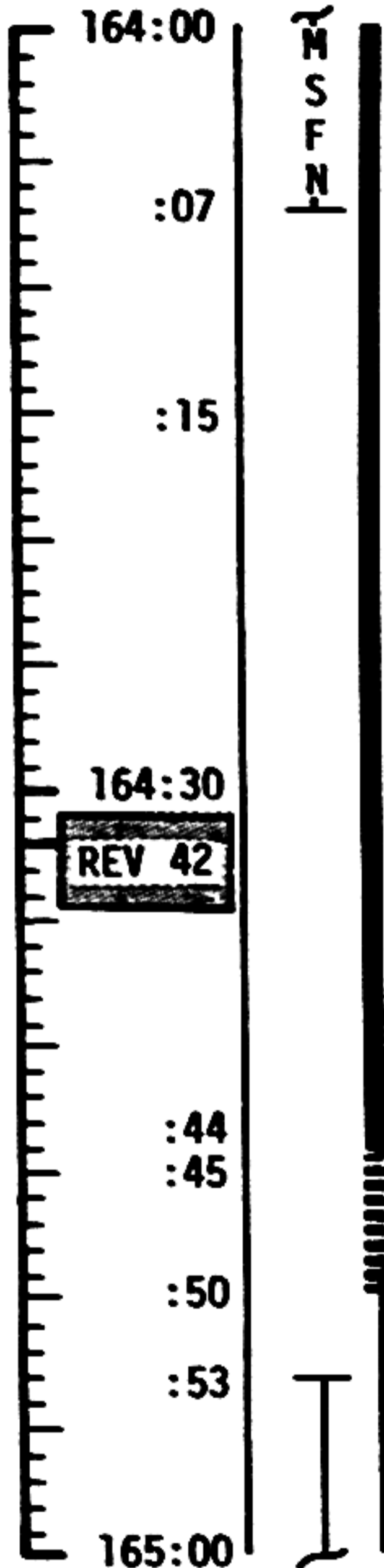
LATTH - LOCAL ATTITUDE HOLD

MCC-N

0622 CST

FLIGHT PLAN

NOTES



P52 IMU REALIGN
OPTION 3 REFSMMAT

VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU
O2 FUEL CELL PURGE

WASTE WATER DUMP

SET UP DAC FOR LDMK TRACKING PHOTOS THRU SXT
CM/DAC/SXT/CEX, (SEE LDMK TRACK PAD) 1 FPS (1MAG-88MIN)

P52 (PHOTOGRAPHY ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____:_____:_____

SELECT OMNI D

MNVR TO LDMK TRACK ATT BY 164:46
GO ORB RATE-

R 0
P 338/NA
Y 0

TRACK LDMK CP-1
DO NOT PRO ON FINAL
N39
25 SECONDS BETWEEN MARKS
5 MARKS

START DAC @ T2 (-) 1 MIN

LDMK IS AT ~14.5°
SUN ANGLE
STOP DAC AFTER MARK 5

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	164:00 - 165:00	7/41-42	3-146

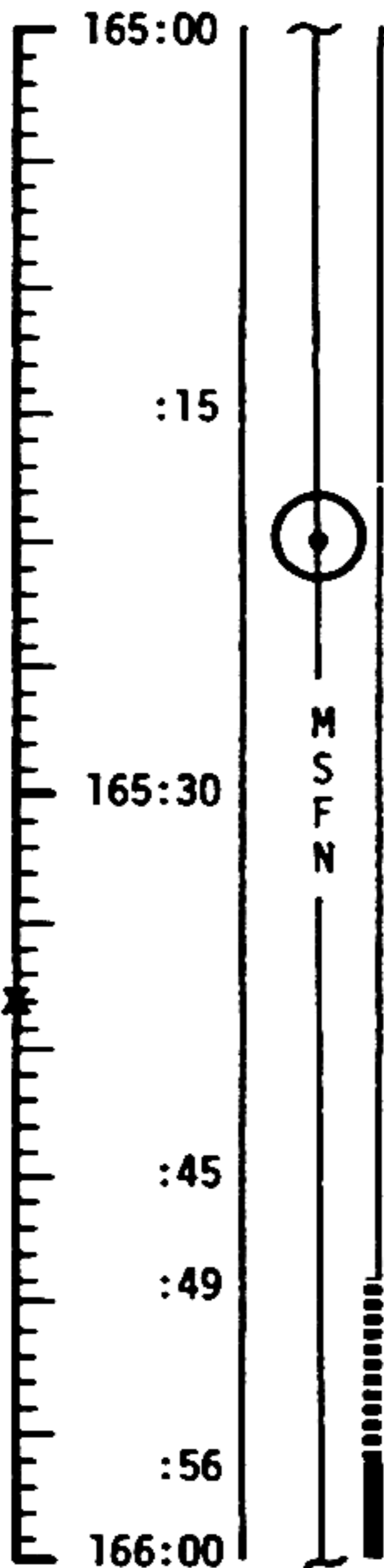
MCC-N

0722 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV 43
TEI 45 PAD



DUMP DSE
UPDATE TO CSM
CREW DEBRIEFING-
LDMK TRACKING
TECHNIQUES
LDMK TRACK PAD

TRACK LDMK CP-2
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

CP-2 LDMK IS
AT ~66° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK DE-1
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

DESCARTES LDMK IS
AT ~71.5° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK FM-1
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

FRA MAURO LDMK
IS AT ~39.5 SUN ANGLE
STOP DAC AFTER MARK 5

STOP PITCH
MNVR TO P52 ATT BY 165:42

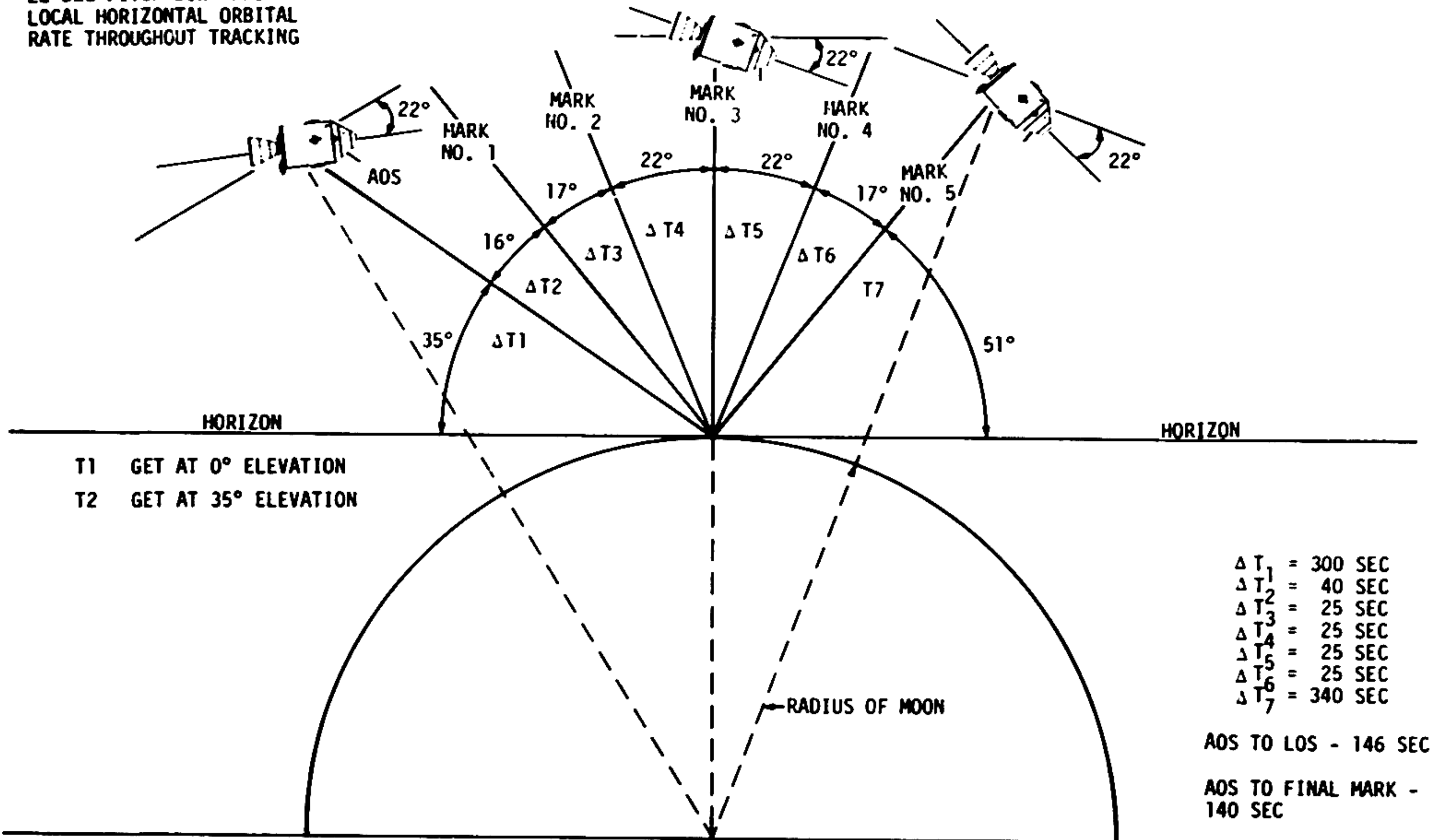
R	180	HGA
P	<u>238</u>	P <u>-27</u>
Y	<u>0</u>	Y <u>183</u>

MAP UPDATE REV <u>43</u>		
LOS	:	_____ : _____ : _____
180°	:	_____ : _____ : _____
AOS	:	_____ : _____ : _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	165:00 - 166:00	7/42	3-147

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



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

ΔT_1	=	300 SEC
ΔT_2	=	40 SEC
ΔT_3	=	25 SEC
ΔT_4	=	25 SEC
ΔT_5	=	25 SEC
ΔT_6	=	25 SEC
ΔT_7	=	340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3

P22 ~~MAN~~^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{60}$)

T₁ _____ : _____ : _____

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -5.667° _____

LONG/2 +56.000° _____

ALT +0.00 NM _____

CP-1

P22 ~~MAN~~^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{125}$)

T₁ _____ : _____ : _____

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -10.250° _____

LONG/2 +28.091° _____

ALT -0.81NM _____

CP-2

P22 ~~MAN~~^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{250}$)

T₁ _____ : _____ : _____

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -8.883° _____

LONG/2 +7.775° _____

ALT -1.70NM _____

DE-1

P22 ~~MAN~~^{AUTO} ACQ P dn 22° R0° Y0° ($\frac{1}{60}$)

T₁ _____ : _____ : _____

T₂ _____ : _____ : _____

R _____ °P _____ °Y _____ °

N or S NM _____ SA _____ TA _____

CP _____ N89

LAT -3.228° _____

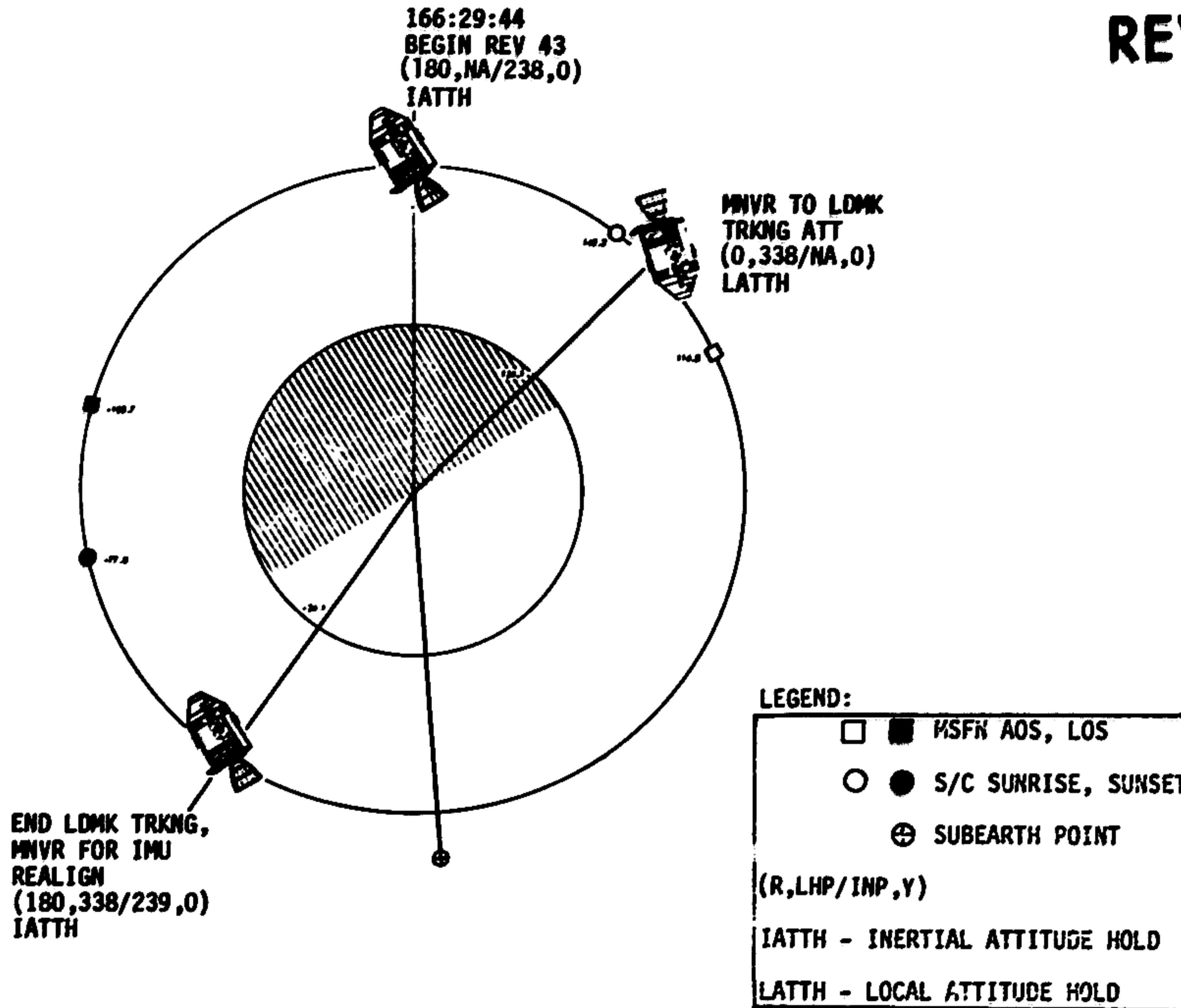
LONG/2 -8.665° _____

ALT -1.56NM _____

FM-1

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	166:00 - 167:00	7/42-43	3-149

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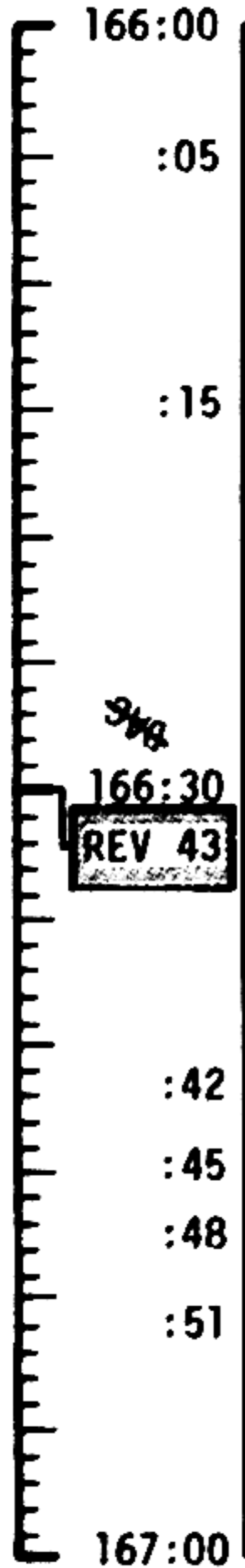
MCC-N

0822 CST

FLIGHT PLAN

NOTES

UPLINK CSM
STATE VECTOR
& V66



VERIFY DSE MOTION AT LOS

P52 IMU REALIGN
OPTION 3 REFSMMAT

GDC ALIGN TO IMU

EAT PERIOD

SXT UP DAC FOR LDMK TRACKING PHOTO'S THRU SXT
CM/DAC/SXT/CEX (SEE LDMK TRACK PAD) 1FPS

SELECT OMNI D

MNVR TO LDMK TRACK ATT BY 166:45
GO ORB RATE

R 0
P 338/NA
Y 0

TRACK LDMK CP-1
DO NOT PRO ON FINAL
N89, 25 SEC BETWEEN
MARKS
5 MARKS

START DAC @ T2 (-) 1 MIN

CP1 LDMK IS
AT ~ 15.5° SUN ANGLE
STOP DAC AFTER MARK 5

P52 (LDG SITE ORIENT)

N171: _____
 N05: _____
 N93: _____
 X _____
 Y _____
 Z _____
 GET _____:_____:_____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	166:00 - 167:00	7/42-43	3-150

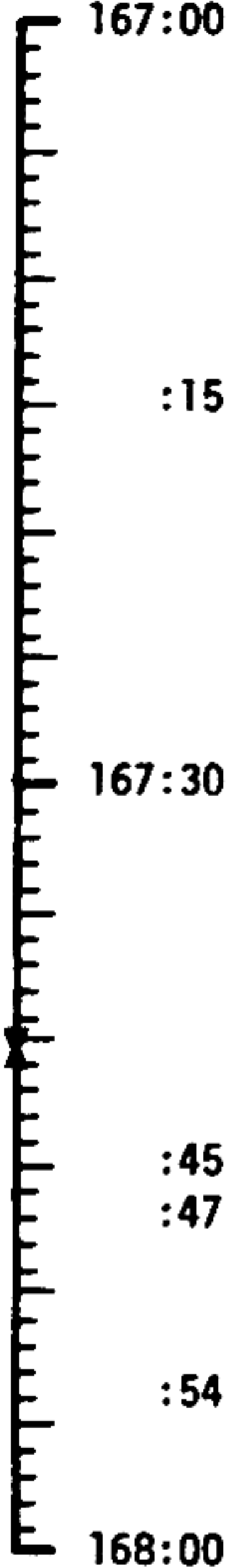
MCC-N

0922 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV 44



REPORT GYRO TORQUING ANGLES

TRACK LDMK CP-2
DO NOT PRO ON FINAL
N89
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

CP 2 LDMK IS
AT ~67° SUN ANGLE

STOP DAC AFTER MARK 5

TRACK LDMK DE-1
DO NOT PRO ON FINAL
N89
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

DESCARTES LDMK
AT ~72.5 SUN ANGLE

STOP DAC AFTER MARK 5

TRACK LDMK FM-1
DO NOT PRO ON FINAL
N89
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN

FR. MAURO LDMK
AT ~40.5 SUN ANGLE

STOP DAC AFTER MARK 5

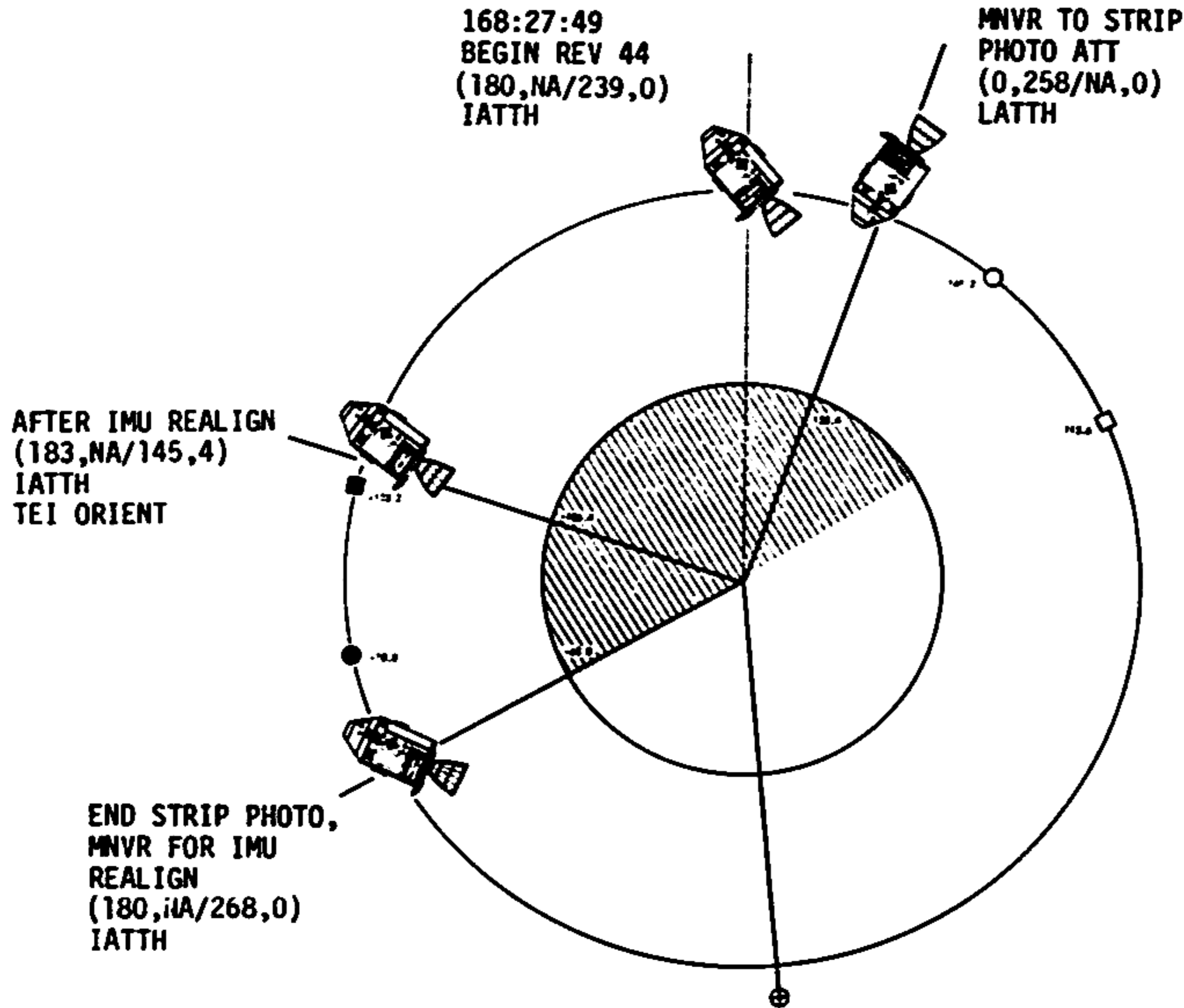
STOP PITCH AND MNVR TO ACQUIRE MSFN BY 167:40

R	<u>180</u>	HGA:	
P	<u>239</u>	P	<u>-29</u>
Y	<u>0</u>	Y	<u>184</u>

MAP UPDATE REV <u>44</u>		
LOS	:	---
180°	:	---
AOS	:	---

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	167:00 - 168:00	7/43	3-151



LEGEND:

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

STEREO STRIP PHOTOGRAPHY
REV 44

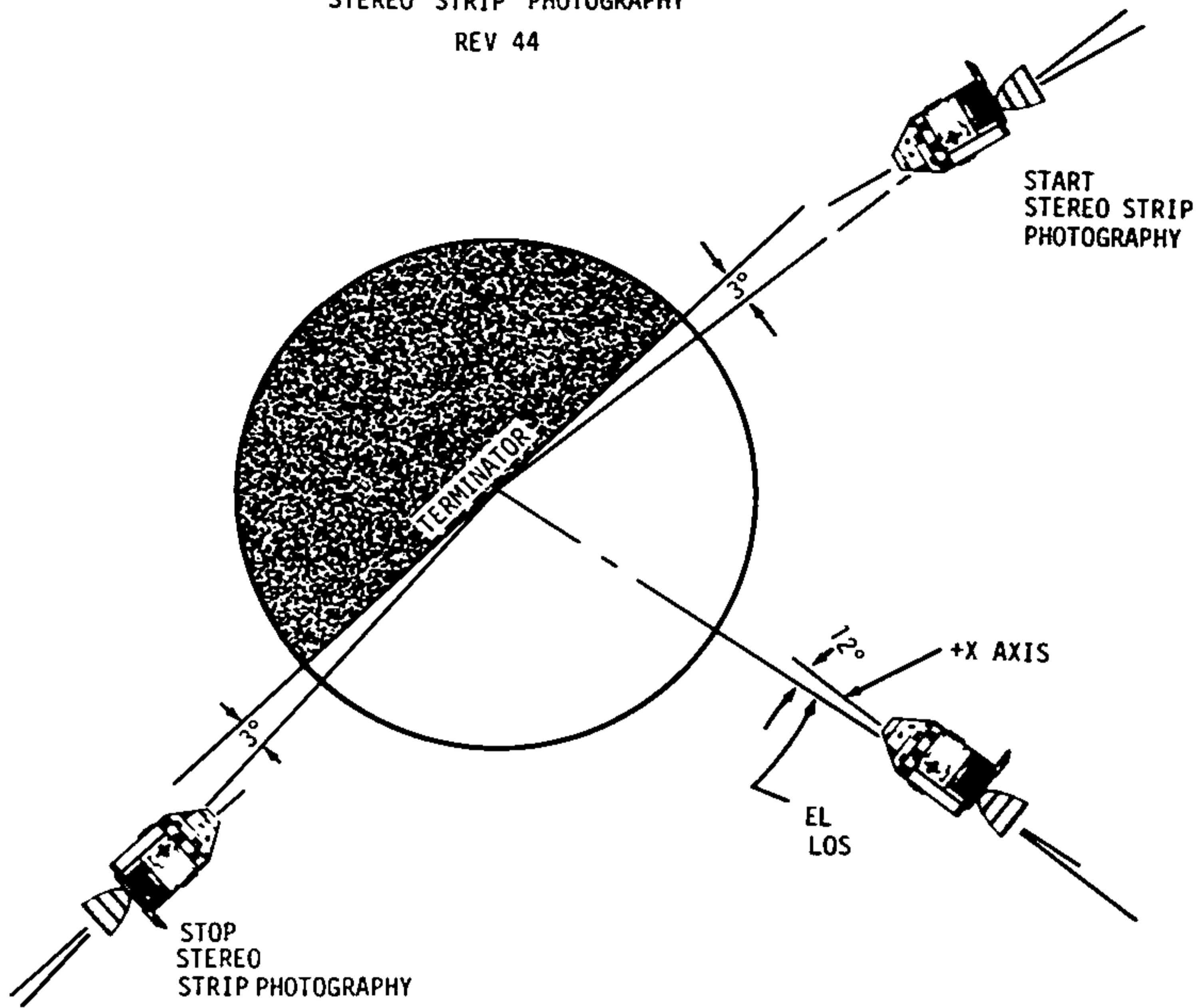


FIGURE 3-5
3-152

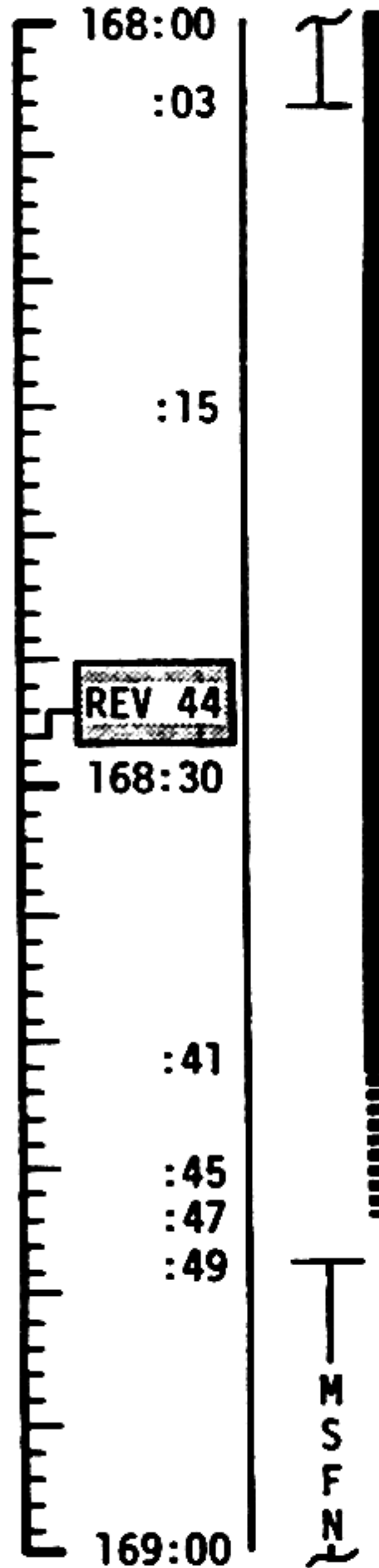
MCC-N

UPDATE TO CSM
STEREO PHOTO TIME
~~PCM-LBR~~

1022 CST

FLIGHT PLAN

NOTES



VERIFY DSE MOTION AT LOS

SETUP EL CAMERA FOR STEREO STRIP
PHOTOGRAPHY (RH RNDZ WINDOW)
CM4/EL/80/BW-BRKT, INTR(F4, 250, ∞), 180

MNVR TO PHOTOGRAPHIC ATTITUDE BY 168:36

R 0
P 258/NA
Y 0

V83E
ALIGN FDAI #1
ESTABLISH ORB RATE
V79E R1 = -0.0507
R2 = +000.50
R3 = +11111

SELECT OMNI D

V06N65 AT GROUND TERMINATOR
BEGIN PHOTOGRAPHY AT GROUND TERMINATOR (+) 1 MIN T1

RECORD START TIME _____ : _____ : _____ GET

STEREO PHOTO	
T1: _____ : _____ : _____	GET
T2: _____ : _____ : _____	GET

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	168:00 - 169:00	7/43-44	3-153

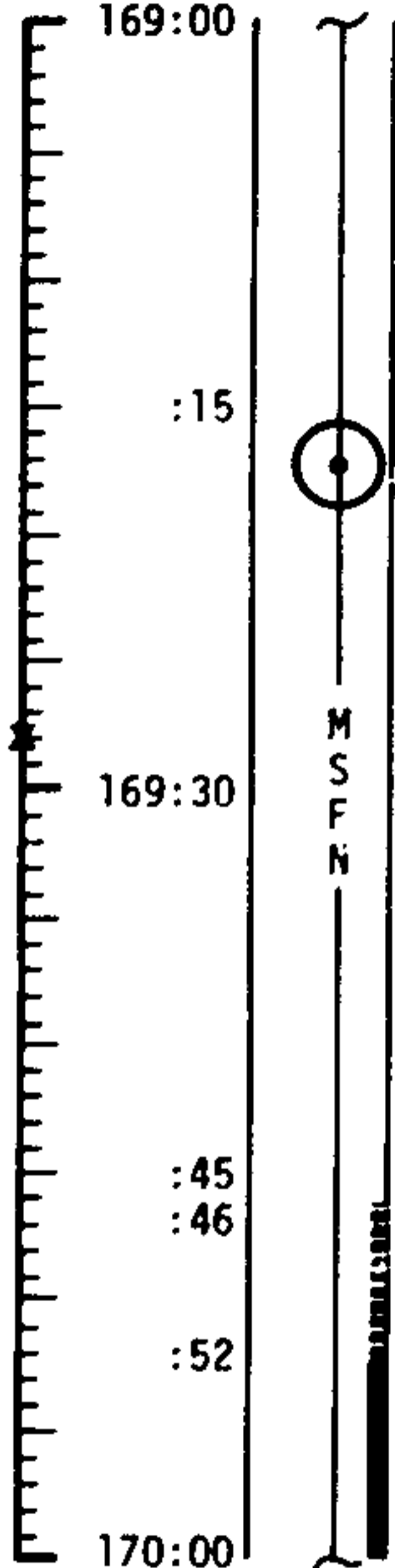
MCC-H

1122 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV 45
TEI 45 PAD
(PRELIMINARY)



STEREO STRIP
PHOTOGRAPHY

N65 AT GROUND TERMINATOR (-)90 SEC
END STEREO STRIP PHOTOGRAPHY AT GROUND TERMINATOR
(-)1 MINUTE-T2

RECORD STOP TIME _____ : _____ : _____ GET

STOP PITCH
MNVR TO P52 ATT BY 169:47
R 180 HGA
P 268 P -55
Y 0 Y 186

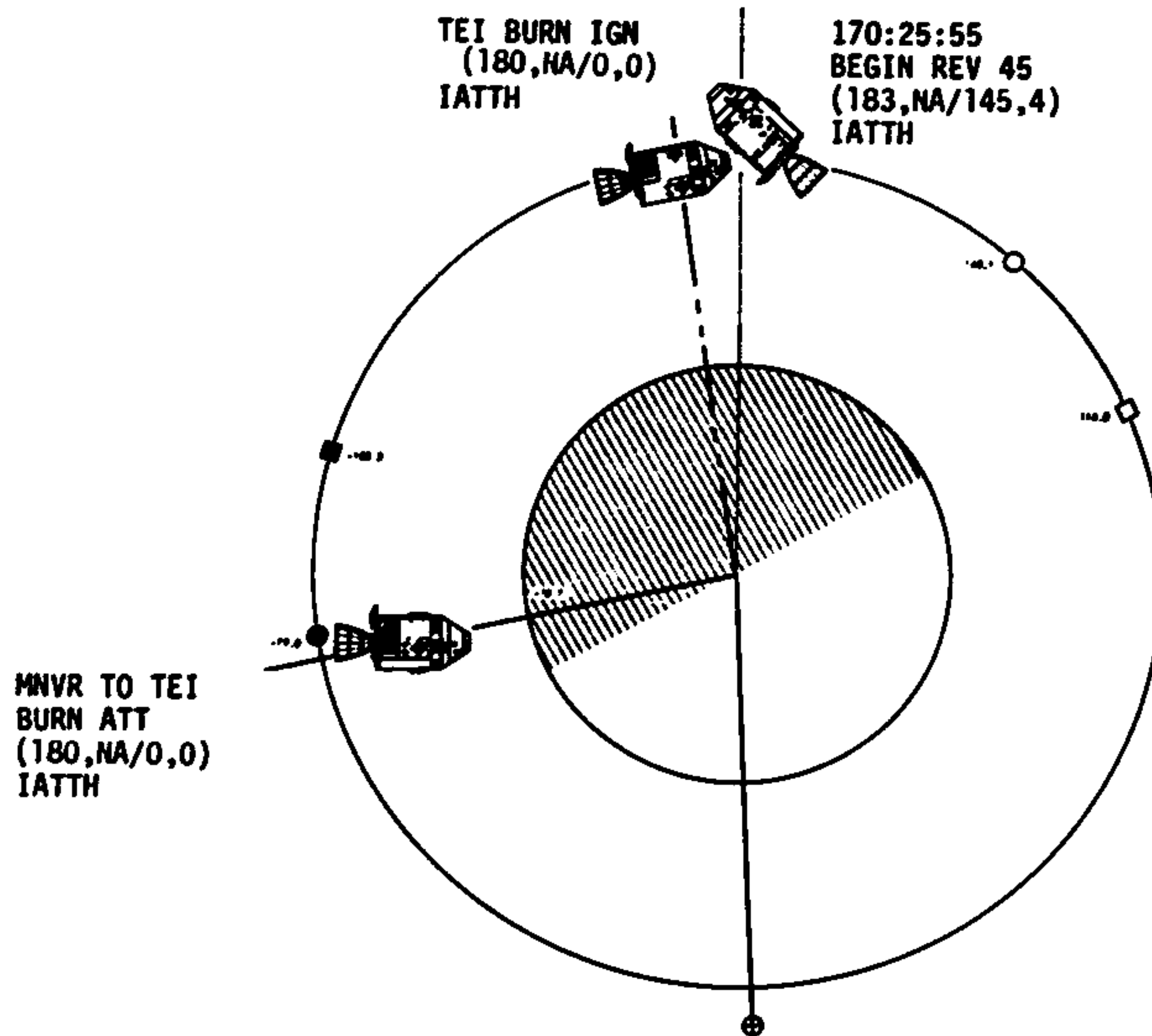
DUMP DSE

CSM
UPLINK TO ~~+~~
TEI DESIRED
ORIENT

MAP UPDATE REV <u>45</u>		
LOS	:	_____ : _____ : _____
180°	:	_____ : _____ : _____
AOS	:	_____ : _____ : _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	169:00 - 170:00	7/44	3-154

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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		

3-154A

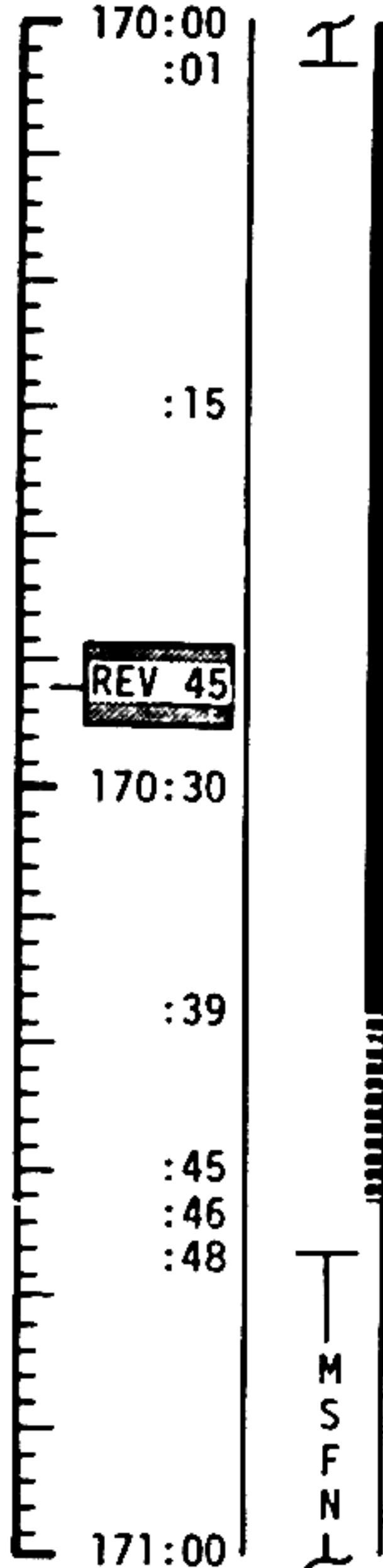
REVISION B

MCC-H

1222 CST

FLIGHT PLAN

NOTES



I

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN
OPTION 1 PREFERRED

GDC ALIGN TO IMU

REV 45

170:30

:39

:45

:46

:48

171:00

M
S
F
N
L

REACQUIRE MSFN
HGA: P -55 Y 186
REPORT GYRO TORQUING ANGLES

P52 (TEI ORIENT)

N71: _ _ . _ _

N05: _ _ . _ _

N93:

X _ _ . _ _

Y _ _ . _ _

Z _ _ . _ _

GET _ _ : _ _ : _ _

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	170:00 - 171:00	7/44-45	3-155

MCC-H

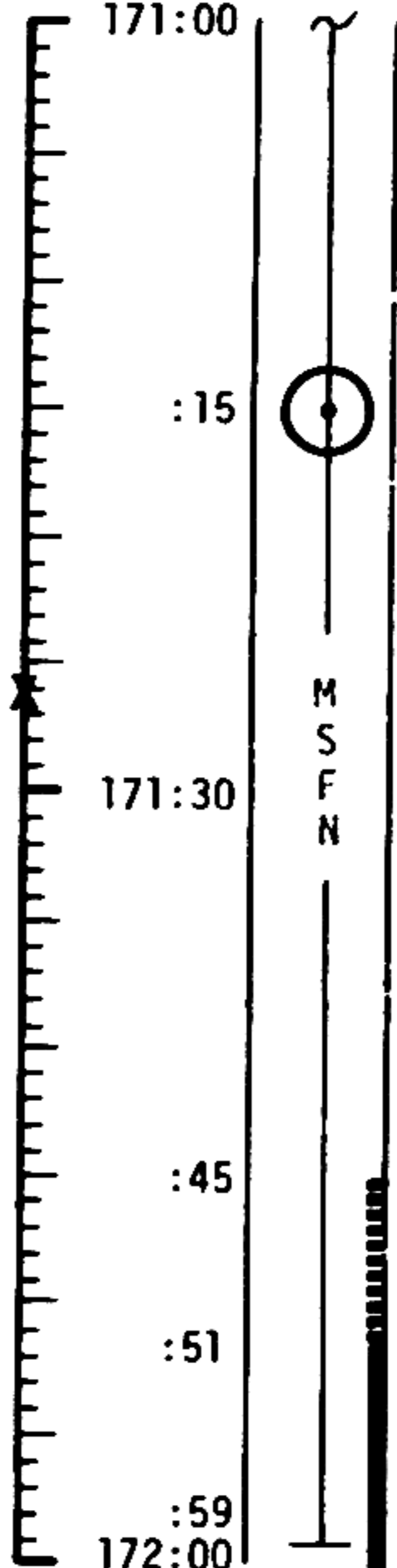
1322 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV 46
TEI 45 MNVR PAD
(NOMINAL)
TEI 46 MNVR PAD

UPLINK TO CSM
STATE VECTOR & V66
TEI 45 TARGET LOAD



PRE TEI SYSTEMS CHECKS
C & W CHECK
CM RCS MONITOR CHECK
SM RCS MONITOR CHECK
ECS MONITOR CHECK

P30-EXTERNAL ΔV

V49-MNVR TO BURN ATT BY 171:51

R	180
P	0
Y	0

OMNI C

SXT STAR CHECK

P40-SPS THRUST
VERIFY DSE MOTION AT LOS

MAP UPDATE REV	46
LOS	---
180°	---
AOS WITH TEI	---
AOS WITHOUT TEI	---

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	171:00 - 172:00	7/45	3-156

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FLIGHT PLAN

TEI BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME		RESIDUALS
		UNDERBURN	OVERBURN	
10°/SEC TAKEOVER	+10° TAKEOVER	FOR G&N C/O >3 SEC EARLY & ΔVC >+50 FPS SWITCH TO SCS AUTO & RESTART SPS	BT + 2 SEC & ΔVC = -40 FPS	TRIM X AND Z AXIS TO 0.2 FPS

TABLE 3-11
3-157

REVISION B

MCC-H

1422 CST

FLIGHT PLAN

NOTES

172:00

:03

GDC ALIGN TO IMU

:15

TIG:	172:21:14.7
BT:	02:08.9 SEC
ΔV_R :	3035.9 FPS
ULLAGE:	4 JETS, 12 SEC

TEI

V66 TRANSFER CSM SV TO LM SLOT

172:30

:34

BURN STATUS REPORT			
X	X	<input type="checkbox"/>	•
X	X	<input type="checkbox"/>	•
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•
TRIM			
X	X	X	
X	X	X	
X	X	X	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	•
X	X	X	
X	X	X	
X	X	X	

Δ TIG **
 BT **
 V_{gx}
 R
 P
 Y
 V_{gx} ***
 V_{gy} ***
 V_{gz} ***
 ΔV_c *
 FUEL *
 OX *
 UNBAL

* ITEMS TO BE REPORTED TO MSFN
 ** REPORT IF OFF MORE THAN ONE SECOND
 *** REPORT IF > 0.2 FPS

UPLINK TO CSM
DESIRED ORIENT
(PTC)

M
S
F
N

MNVR TO TV ATT BY 172:46
 TV (MAD) 172:55 TO 173:15
 CMA/TV-IN (f22)
 (RH RNDZ WINDOW, HEADS DOWN)
 TEI BURN STATUS REPORT
 L10H CANISTER CHANGE NO. 13
 (15 INTO A, STOW 13 IN A4)

R 187 HGA
 P 200 P -71
 P 4 Y TT

173:00

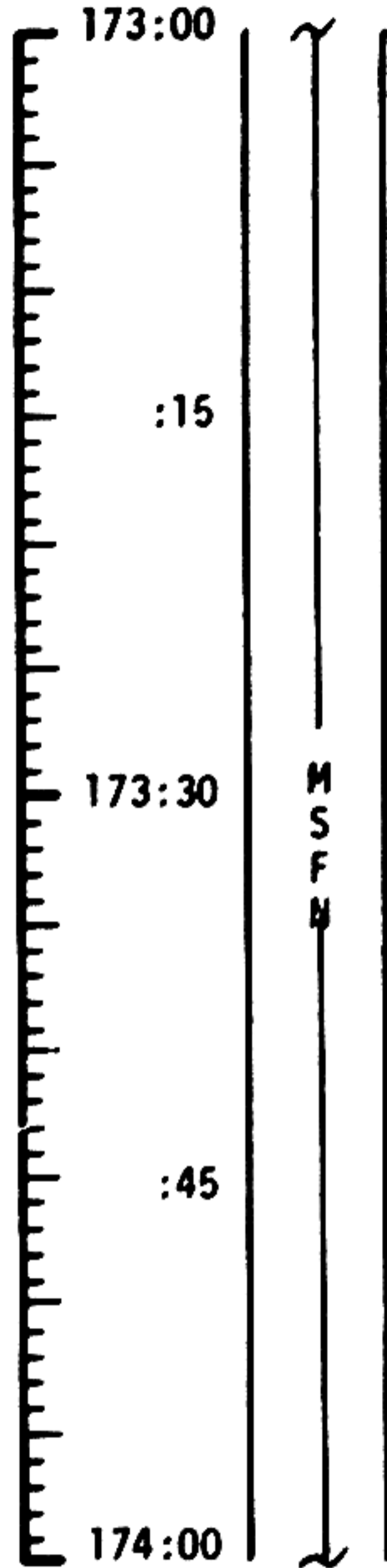
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	172:00 - 173:00	7/45-TEC	3-158

MCC-M

1522 CST

FLIGHT PLAN

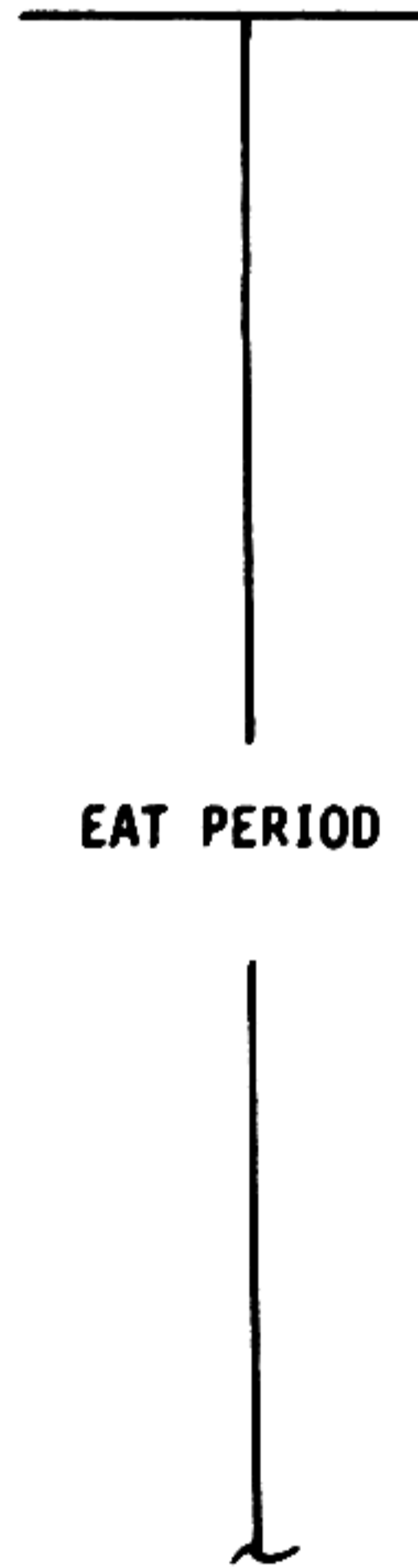
NOTES



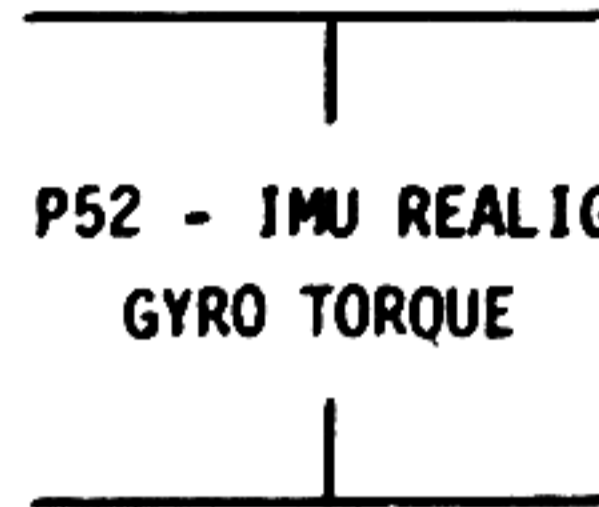
WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL

DUMP DSE

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



EAT PERIOD



P52 - IMU REALIGN
GYRO TORQUE

REPORT GYRO TORQUING ANGLES

MNVR TO PTC ATTITUDE
START PTC

P270
Y 0

PTC
P 270 Y 0

P52 (PTC ORIENT)	
N71:	___'___
N05:	___'___
N93:	
X	___'___
Y	___'___
Z	___'___
GET	___:___:___

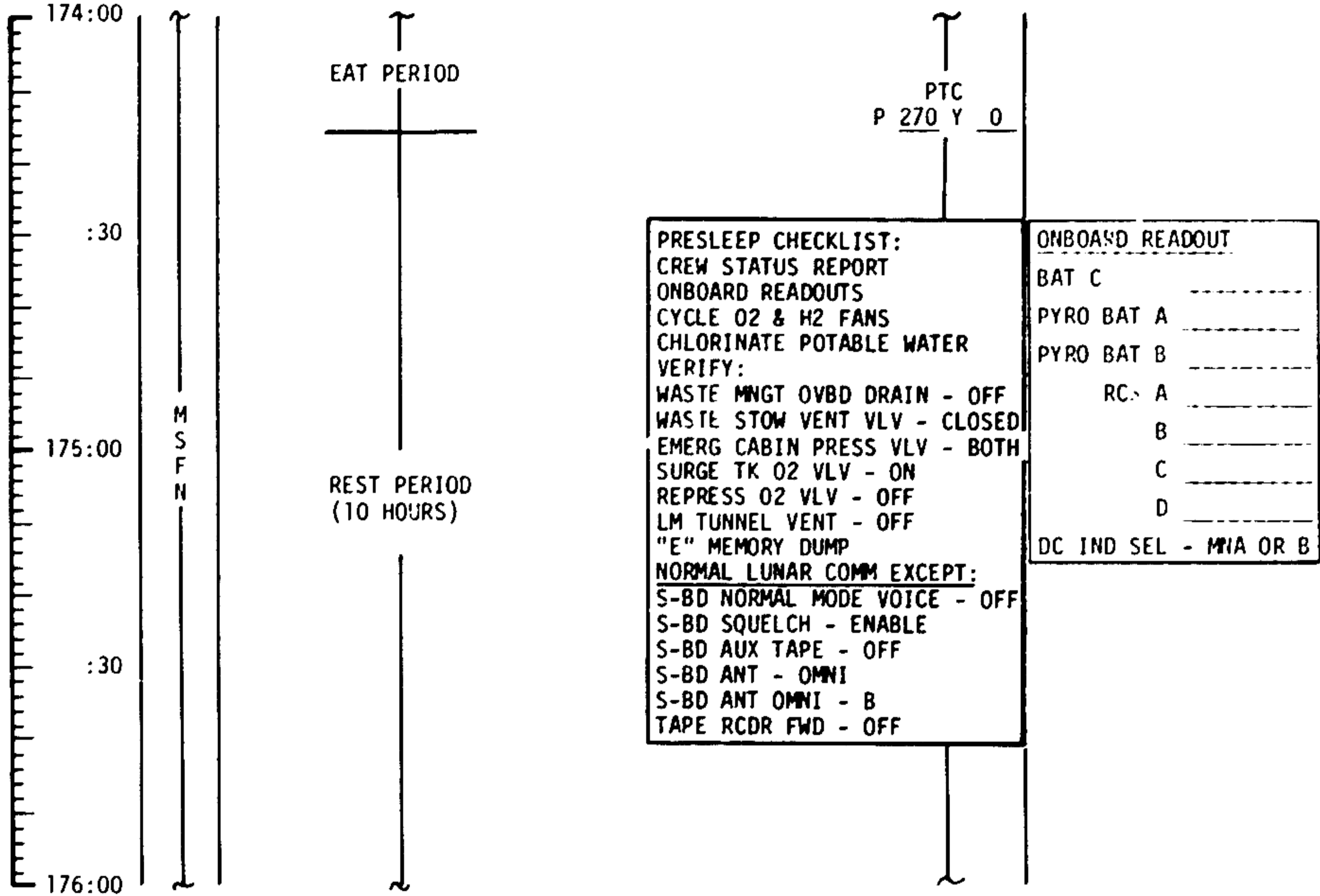
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	173:00 - 174:00	7/TEC	3-159

MCC-H

1622 CST

FLIGHT PLAN

NOTES



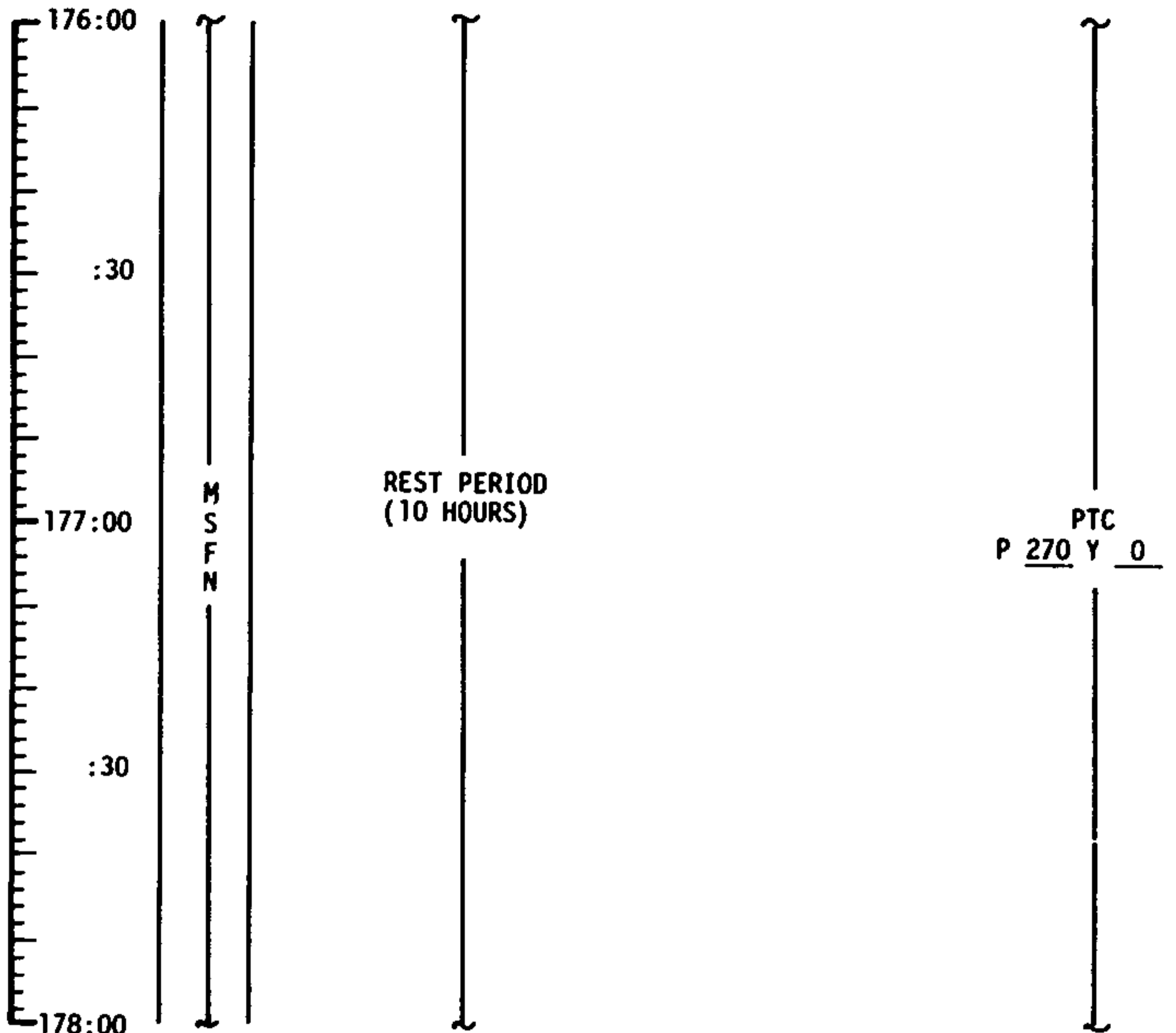
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	174:00 - 176:00	7/TEC	3-160

MCC-M

1822 CST

FLIGHT PLAN

NOTES



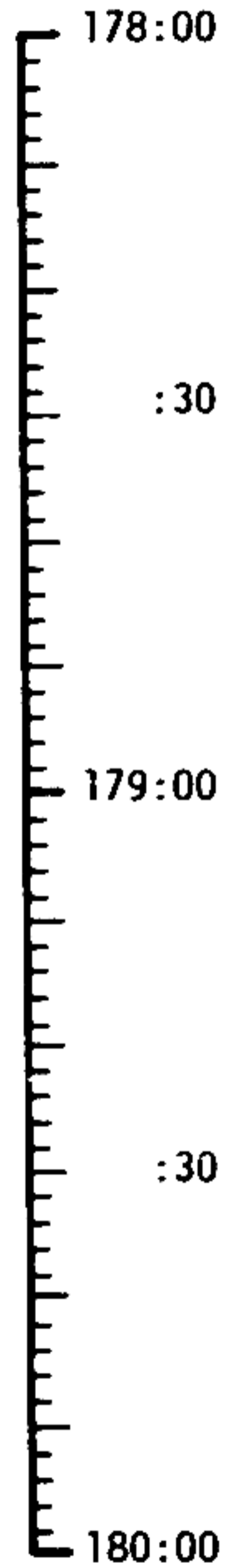
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	176:00 - 178:00	7/TEC	3-161

MCC-H

2022 CST

FLIGHT PLAN

NOTES



M
S
F
N

REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

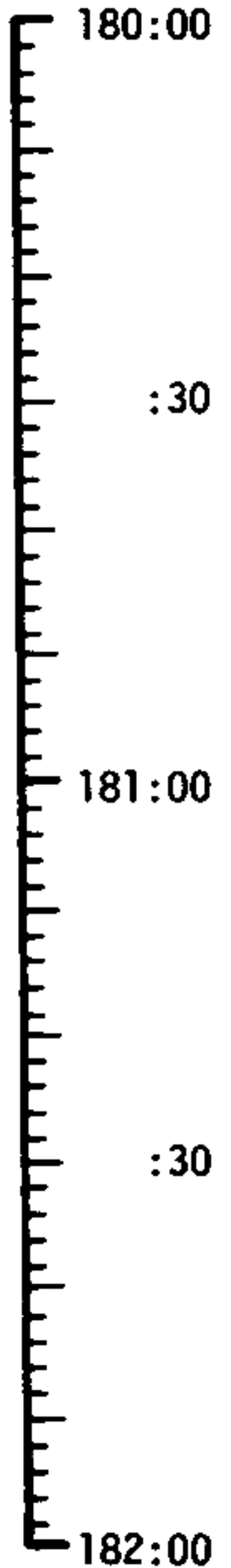
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	178:00 - 180:00	7/TEC	3-162

MCC-H

2222 CST

FLIGHT PLAN

NOTES



M
S
T
N

REST PERIOD
(10 HOURS)

PTC
P 270, Y 0

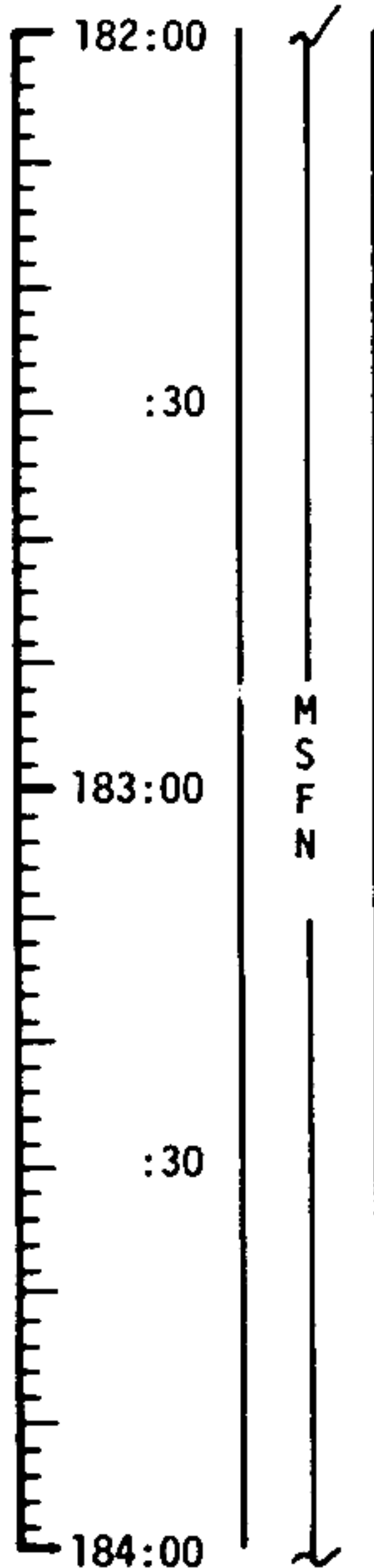
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	180:00 - 182:00	7/TEC	3-163

MCC-H

0022 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270, Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	182:00 - 184:00	7/TEC	3-164

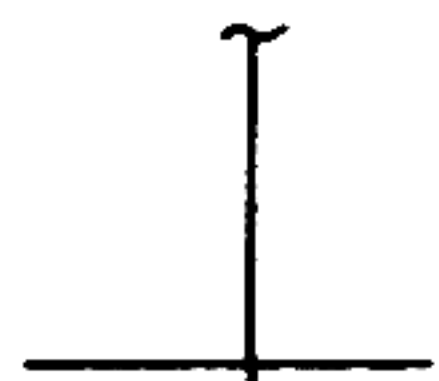
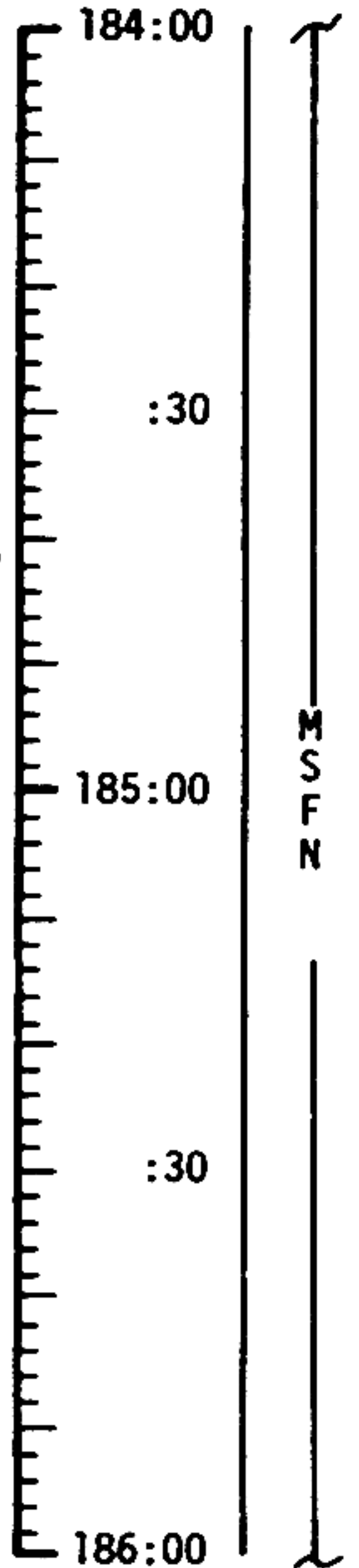
MCC-11

0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
 CONSUMABLES
 MCC-5 MNVR PAD
 FLIGHT PLAN
 UPLINK TO CSM
 STATE VECTOR & V66
 MCC-5 TGT LOAD



POSTSLEEP CHECKLIST:
 CREW STATUS REPORT
 CONSUMABLES UPDATE
 CYCLE H2 & O2 FANS
 FLIGHT PLAN UPDATE
 NORMAL LUNAR COMM EXCEPT:
 S-BD AUX TAPE - OFF
 TAPE RCDR FWD - OFF
 OMNI OPS
 S-BD ANT - OMNI
 S-BD ANT OMNI - B
 HGA OPS
 S-BD ANT-HI GAIN
 CREW MANAGES ANT
 OPS

EAT PERIOD

WIPE EXCESSIVE MOISTURE FROM TUNNEL HATCH AREA

LiOH CANISTER CHANGE NO. 14 (16 INTO B, STOW 14 IN A4)

CONTINUE PTC IF MCC-5 IS NOT PERFORMED

P52 - IMU REALIGN
 OPTION 3 - REFSMMAT
 REPORT GYRO TORQUING ANGLES

CREW STATUS REPORT			
	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

CSM CONSUMABLES UPDATE			
GET:	_____	:	_____
RCS TOTAL	_____	%	
QUAD A	_____	%	B _____ %
	C _____	%	D _____ %
H ₂ TOTAL	_____	%	
O ₂ TOTAL	_____	%	

PTC 270, Y 0

P52 (PTC ORIENT)	
N71:	_____
N05:	_____
N93:	_____
X	_____
Y	_____
Z	_____
GET	_____ : _____ :

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	184:00 - 186:00	8/TEC	3-165

Flight Med. not like this

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FLIGHT PLAN

MCC-5 BURN TABLE

P. OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BI + 1 SEC	TRIM X AXIS ONLY TO 0.2 FPS

TABLE 3-12
3-106

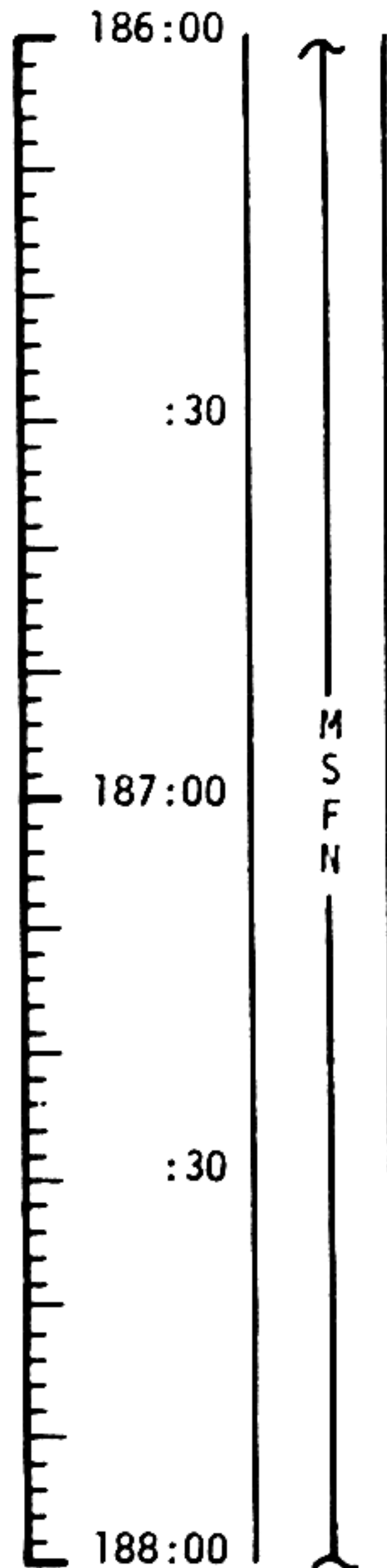
MCC-H

0422 CST

FLIGHT PLAN

NOTES

BATTERY CHARGE, BATTERY B



H₂ PURGE LINE HTRS - ON
 P30 - EXTERNAL ΔV
 V49 - MNVR TO BURN ATT
 SXT STAR CHECK
 H2 & O2 FUEL CELL PURGE
 WASTE WATER DUMP
 P40/41 - SPS/RCS THRUST
 GDC ALIGN TO IMU

MCC-5

V66 TRANSFER CSM SV TO LM SLOT
 MCC-5 BURN STATUS REPORT

TIG: 187:21:14.7
 ΔV: NOMINALLY ZERO

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		F
X	X	X		Y
<input type="checkbox"/>			•	V _{gx}
<input type="checkbox"/>			•	V _{gy}
<input type="checkbox"/>			•	V _{gz}
<input type="checkbox"/>			•	ΔV _c *
X	X	X		FUEL *
X	X	X		OX *
X	X	X		UNBAL

* ITEMS TO BE REPORTED TO MSFN

PTC
 P 270, Y 0

(TEI + 15 HRS)

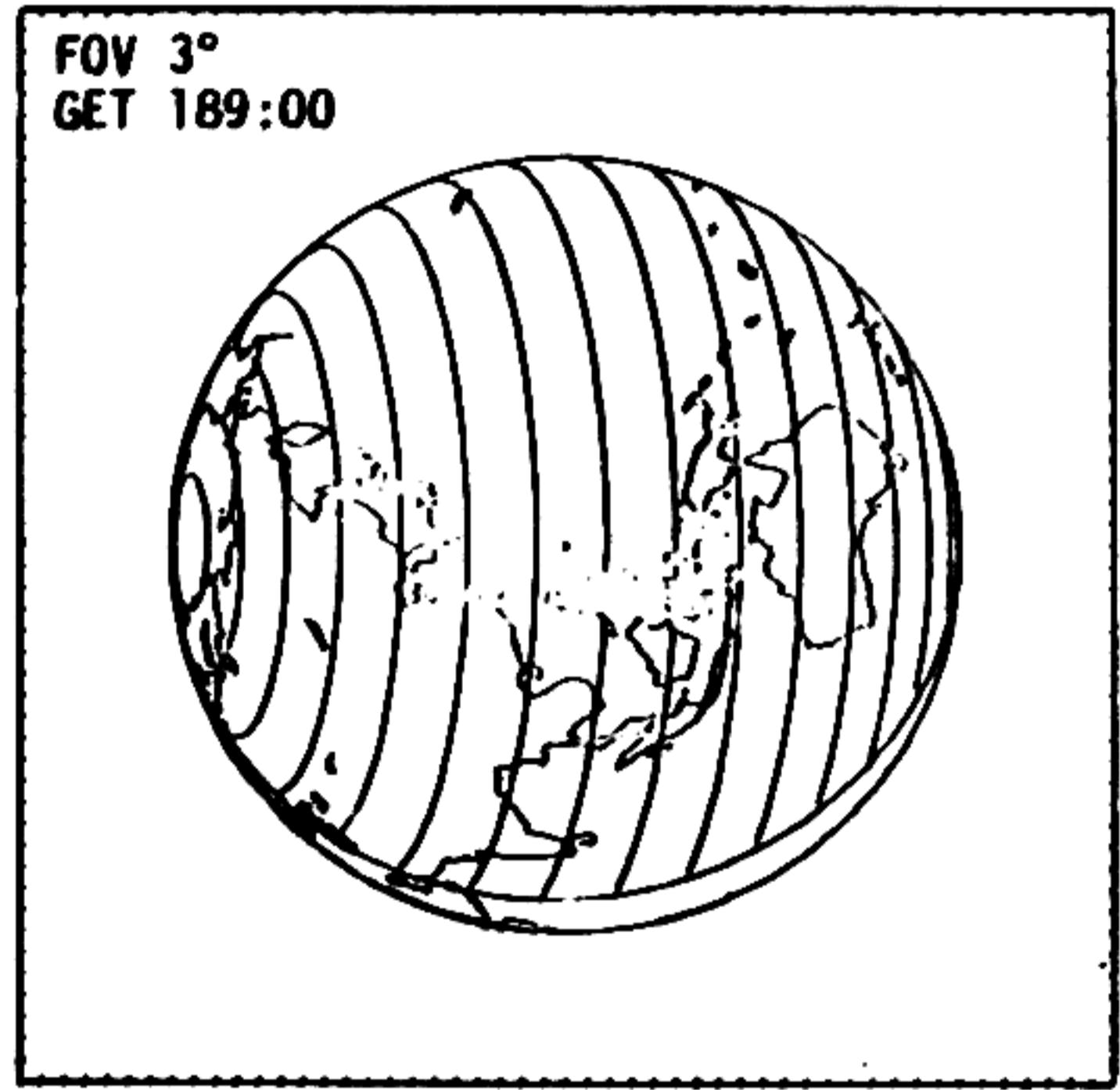
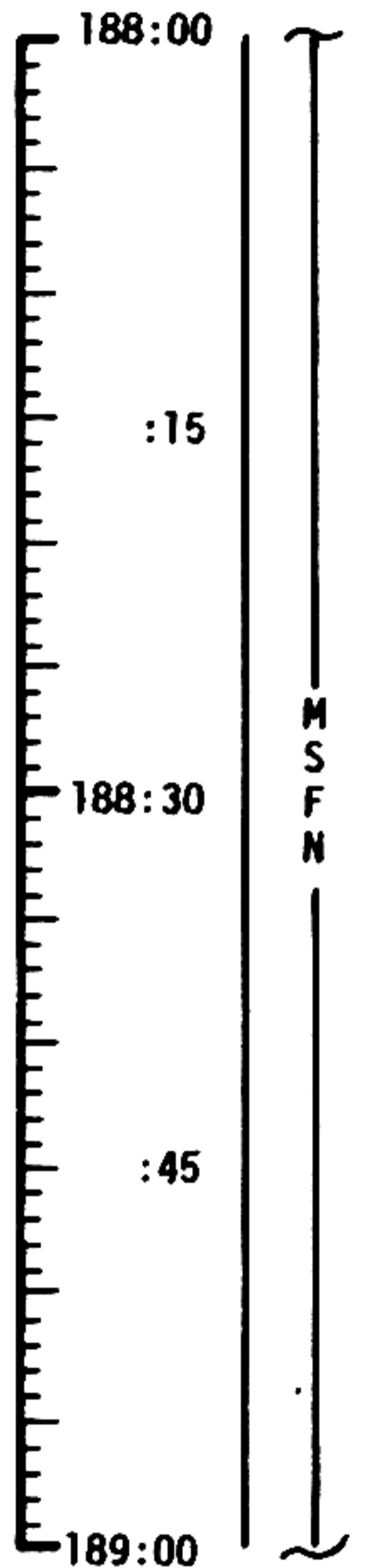
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	186:00 - 188:00	8/TEC	3-167

MCC-N

0622 CST

FLIGHT PLAN

NOTES



PTC
P 270, Y 0

STOP PTC AT ROLL 235°

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	188:00 - 189:00	8/TEC	3-168

MCC-N

0722 CST

FLIGHT PLAN

NOTES

189:00

:15

189:30

:45

190:00

M
S
F
N

MNVR TO OPTICS CALIBRATION ATT R 235
 P23 - CISLUNAR NAVIGATION P 272
 OPTICS CALIBRATION Y 0
 STAR 1 2

P00
 V49 - MNVR TO SIGHTING ATT R 90
 STAR/EARTH HORIZON P ~~339~~ 341
 P23 - CISLUNAR NAVIGATION Y ~~332~~ 333
 LOAD W MATRIX (R1 +4 5 0 0 0)(R2 +0 0 0 0 6)
 1. STAR 2 3 2 EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -6 3 5 0 5)(R2 = -0 1 8 8 3)(R3 = -7 7 2 2 4)

2. STAR 1 7 4 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -5 5 9 9 2)(R2 = -8 2 0 7 3)(R3 = +1 1 3 5 3)

3. STAR 1 7 2 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -6 4 9 4 7)(R2 = -7 4 3 1 2)(R3 = -1 6 1 1 4)

4. STAR 2 4 EFH (R3 = 0 0 1 2 0)

5. STAR 2 6 EFH (R3 = 0 0 1 2 0)

3 MARKS ON EACH STAR

INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	189:00 - 190:00	8/TEC	3-169

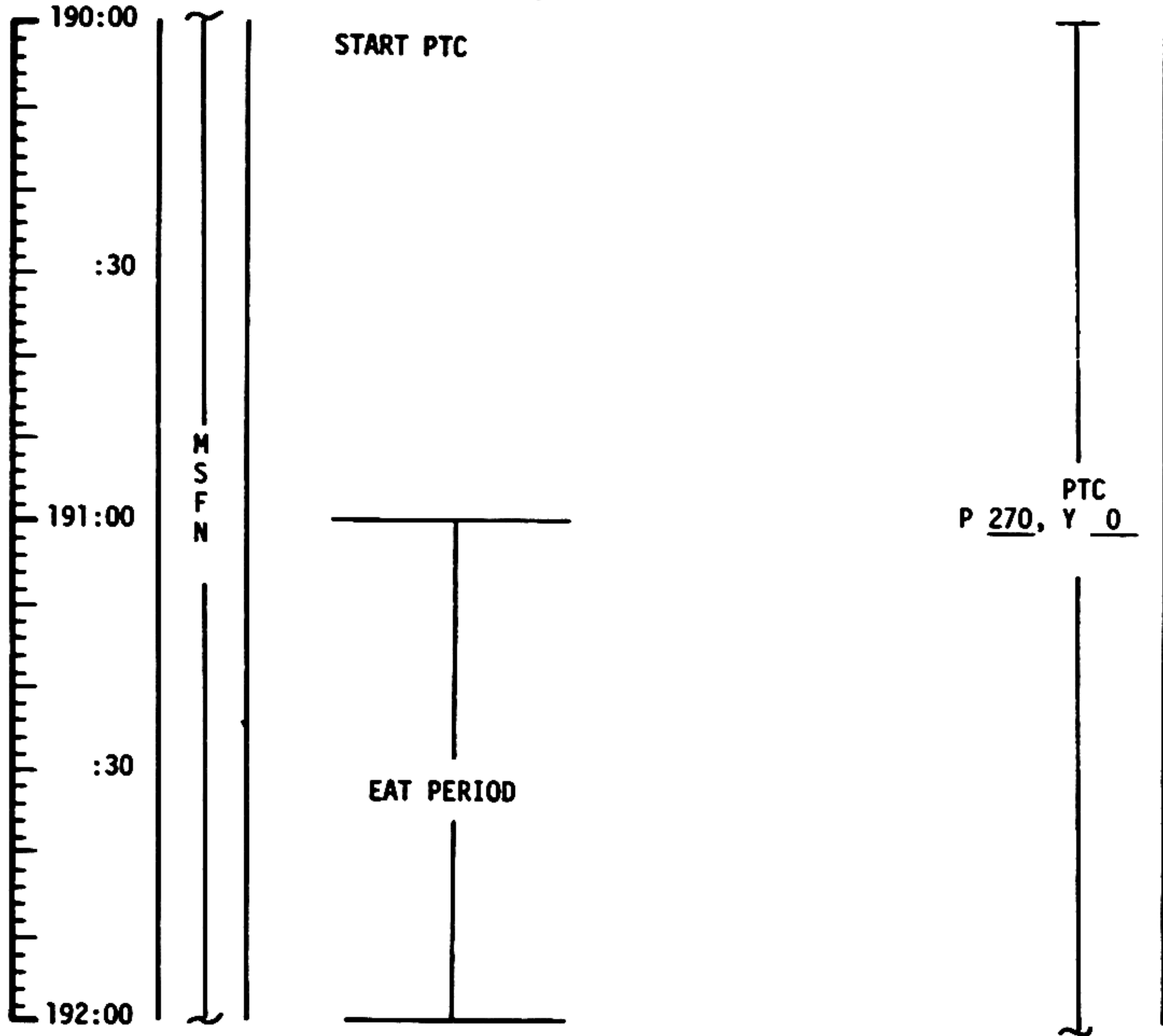
MCC-N

0822 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

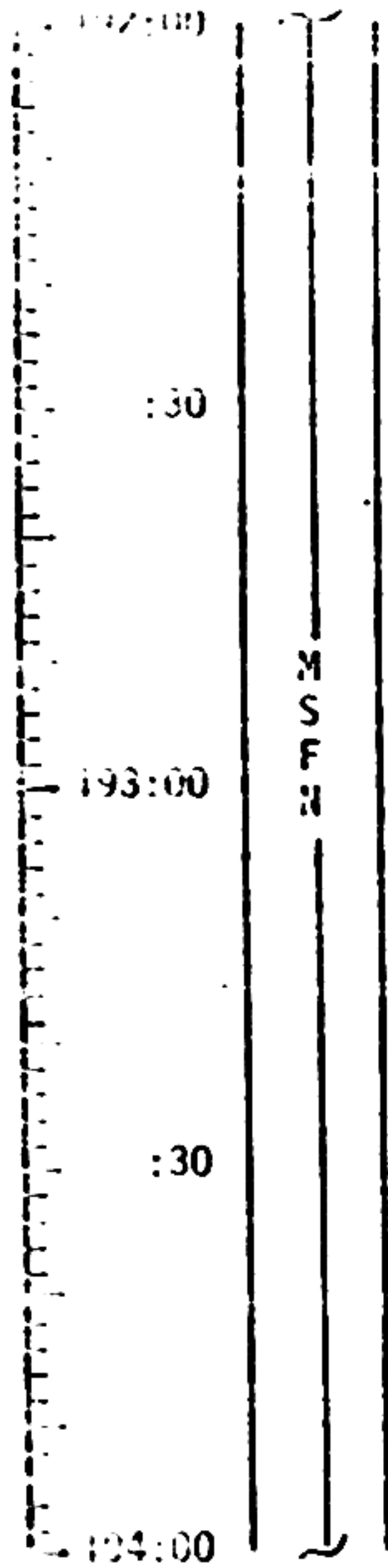


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	190:00 - 192:00	8/TEC	3-170

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



PTC
P 270, 1 0

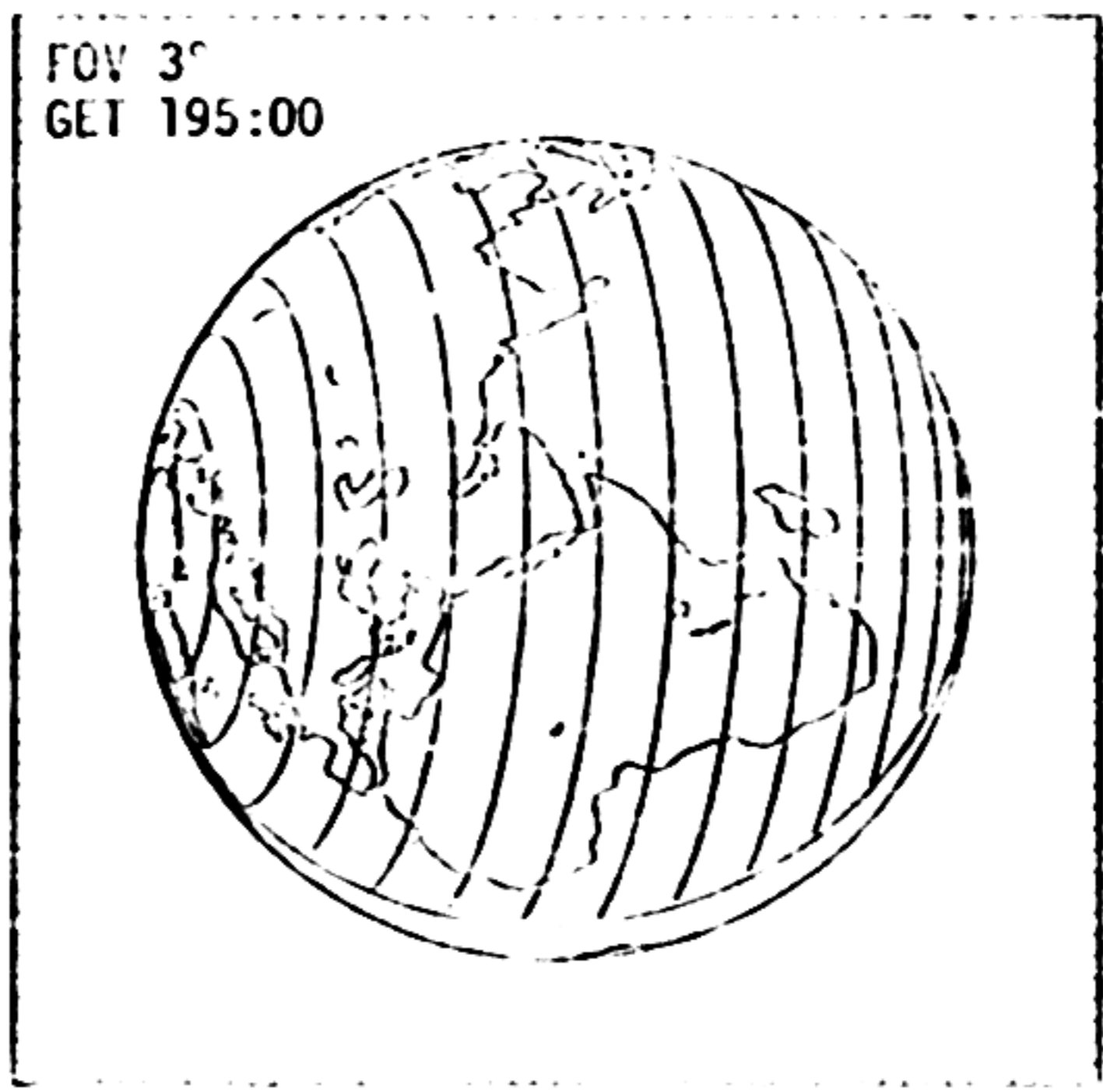
BATTERY CHARGE, BATTERY A

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
FIELD 12	FINAL (NOV 14)	OCTOBER 15, 1969	192:00 - 194:00	07-FC	3-171

FLIGHT PLAN

194:00
:15
194:30
:45
195:00

M
S
T
E



PTC
P 270, Y 0

STG 100 TO PPL 200

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
ASST 12	100 (100)	OCTOBER 15, 1969	194:00 - 195:00	8/TEC	3-1/2

12-22-51 (100)

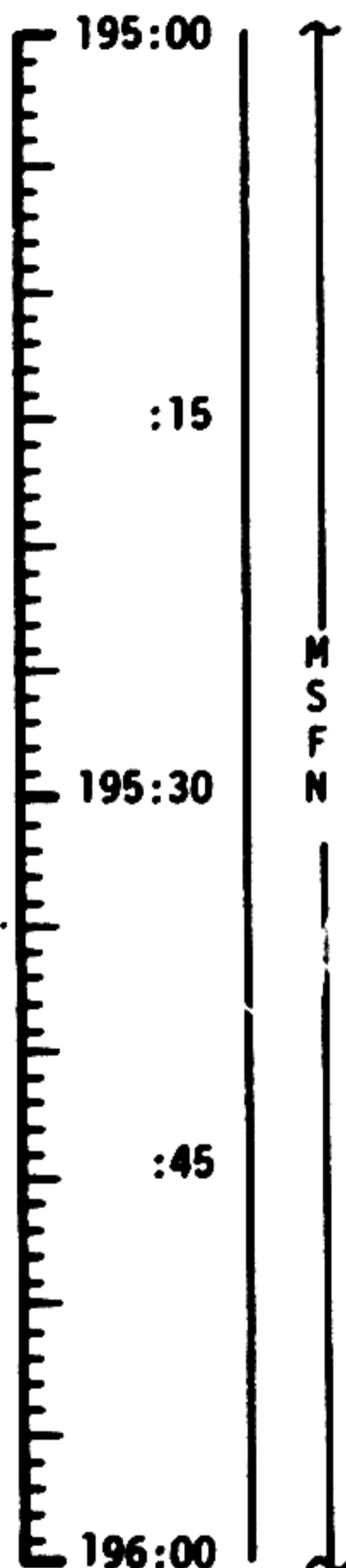
FLIGHT PLANNING DIVISION

MCC-M

1322 CST

FLIGHT PLAN

NOTES



MNVR TO OPTICS CALIBRATION ATT
 P23 - CISLUNAR NAVIGATION
 OPTICS CALIBRATION
 STAR 1 2

R 235
 P 272
 Y 0

P00
 V49 - MNVR TO SIGHTING ATT
 STAR/EARTH HORIZON
 P23 - CISLUNAR NAVIGATION

R 90
 P 329
 Y 332

1. VENUS ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -7 0 4 9 6)(R2 = -6 5 8 7 4)(R3 = -2 6 2 9 2)
 DO NOT PROCEED ON F 06 49

2. STAR 2 6 EFH (R3 = 0 0 1 2 0)

3. STAR 1 6 0 EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -9 4 7 0 3)(R2 = -2 5 6 7 8)(R3 = +1 9 2 8 6)

4. STAR 1 7 1 ENH (R3 = 0 0 1 1 0)

N88: (R1 = -5 2 4 7 3)(R2 = -5 0 9 2 0)(R3 = -6 8 2 1 8)

5. STAR 1 6 3 EFH (R3 = 0 0 1 2 0)

N88: (R1 = -8 3 4 6 4)(R2 = -4 4 9 6 6)(R3 = +3 1 8 0 9)

6. STAR 2 0 4 ENH (R3 = 0 0 1 1 0)

N88: (R1 = -2 1 3 8 9)(R2 = -9 3 8 6 8)(R3 = -2 7 0 4 2)

3 MARKS ON EACH STAR

INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	195:00 - 196:00	8/TEC	3-173

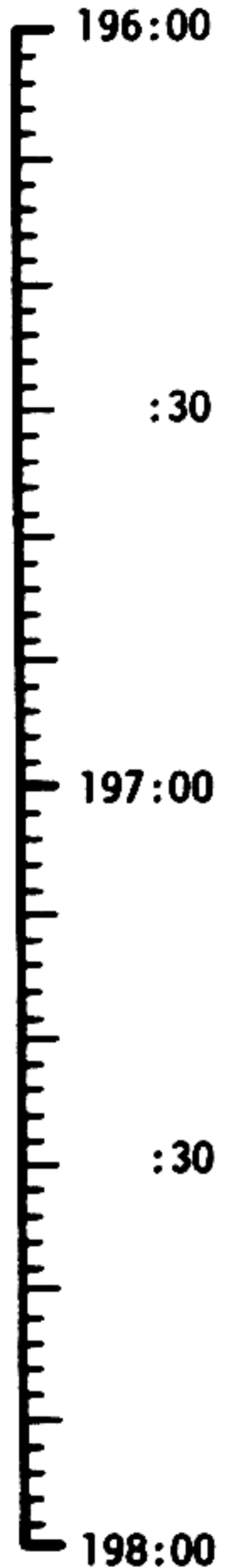
MCC-H

1422 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



M
S
F
N

START PTC

WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL
L10H CANISTER CHANGE NO. 15
(17 INTO A, STOW 15 IN A4)

PTC
P 270, Y 0

EAT PERIOD

PRESLEEP CHECKLIST:
 CREW STATUS REPORT (MED)
 ONBOARD READOUTS
 CYCLE O2 & H2 FANS
 CHLORINATE POTABLE WATER
 VERIFY:
 WASTE MNGT OVBD DRAIN - OFF
 WASTE STOW VENT VLV - CLOSED
 EMERG CABIN PRESS VLV - BOTH
 SURGE TK O2 VLV - ON
 REPRESS O2 VLV - OFF
 LM TUNNEL VENT - OFF
 "E" MEMORY DUMP
 NORMAL LUNAR COMM EXCEPT:
 S-BD NORMAL MODE VOICE - OFF
 S-BD SQUELCH - ENABLE
 S-BD AUX TAPE - OFF
 S-BD ANT - OMNI
 S-BD ANT OMNI - B
 TAPE RCDR FWD - OFF

ONBOARD READOUT

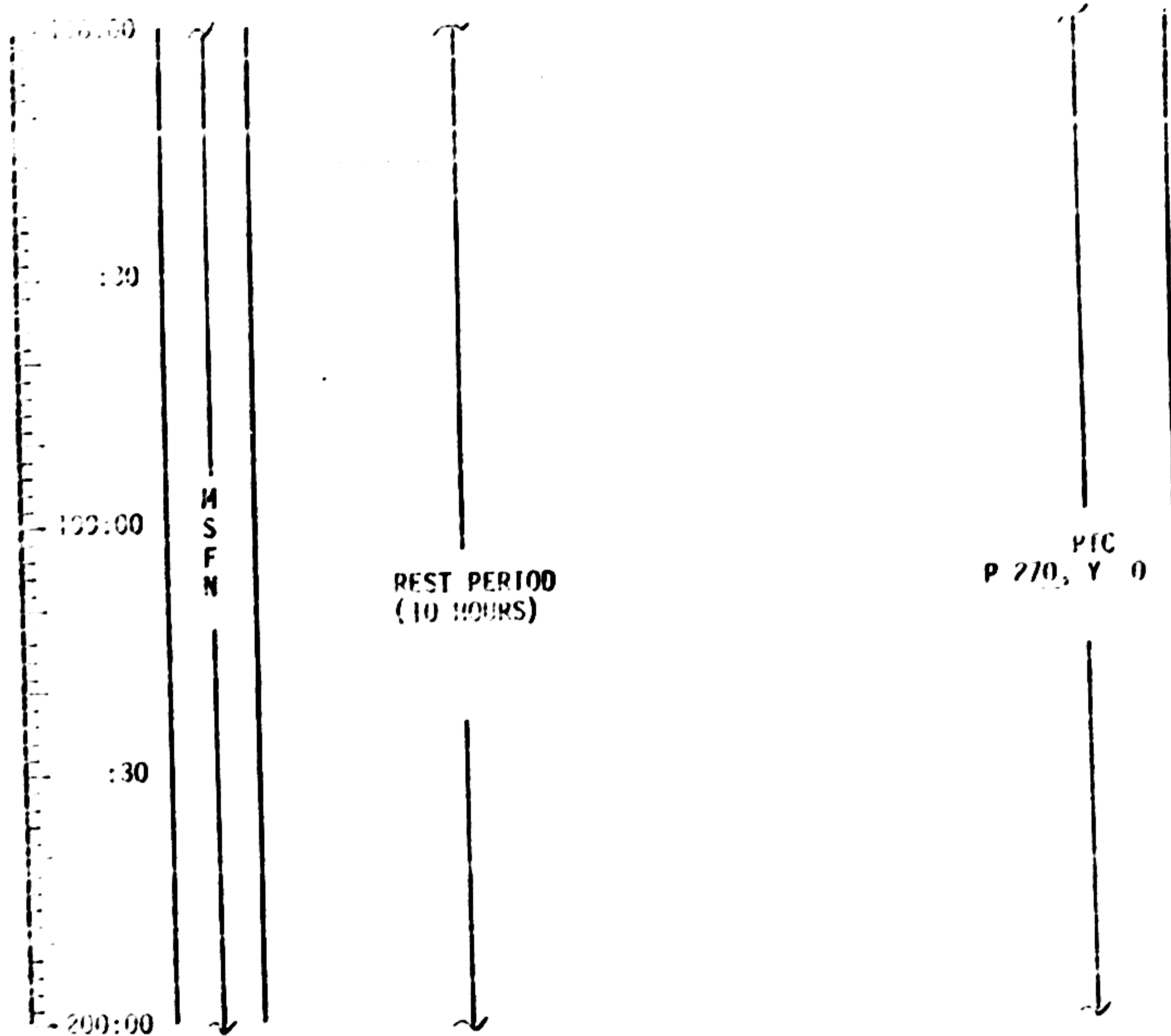
BAT C _____
 PYRO BAT A _____
 PYRO BAT B _____
 RCS A _____
 B _____
 C _____
 D _____
 DC IND SEL - MNA OR B

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	196:00 - 198:00	8/TEC	3-174

1872 CST

FLIGHT PLAN

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
0110 12	FINAL (NOV 14)	OCTOBER 15, 1969	198:00 - 200:00	B/TEC	3-175

MSC-11

1627 CST

FLIGHT PLAN

NOTES

20:00
 :30
 20:00
 :30
 20:00

M
S
F
H

REST PERIOD
(10 HOURS)

PIC
P 270, Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
MSC-11	FINAL (NOV 14)	OCTOBER 15, 1969	200:00 - 202:00	8/TEC	3/10

MSC-11 (NOV 14)

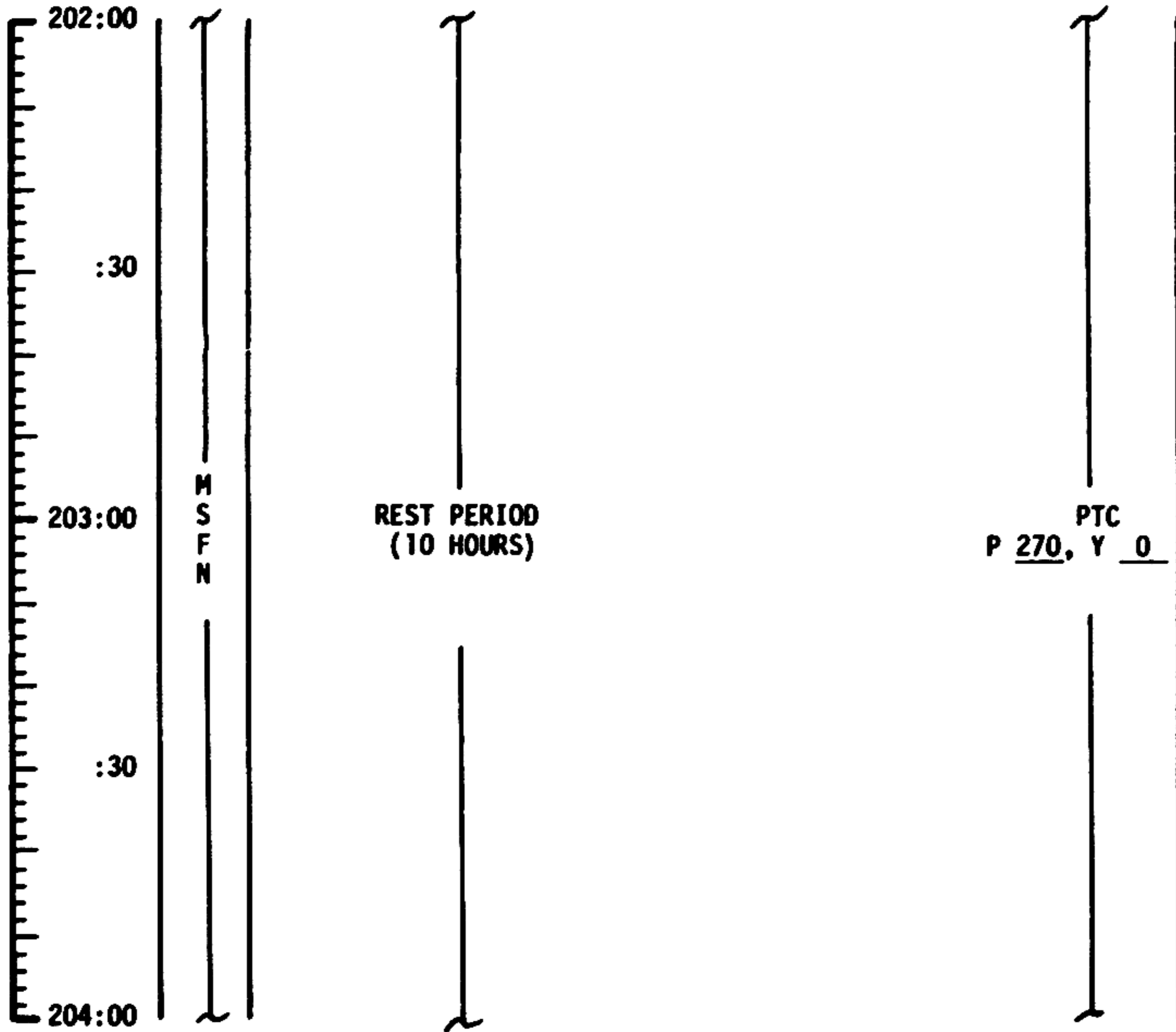
FLIGHT PLANNING BRANCH

MCC-N

2022 CST

FLIGHT PLAN

NOTES



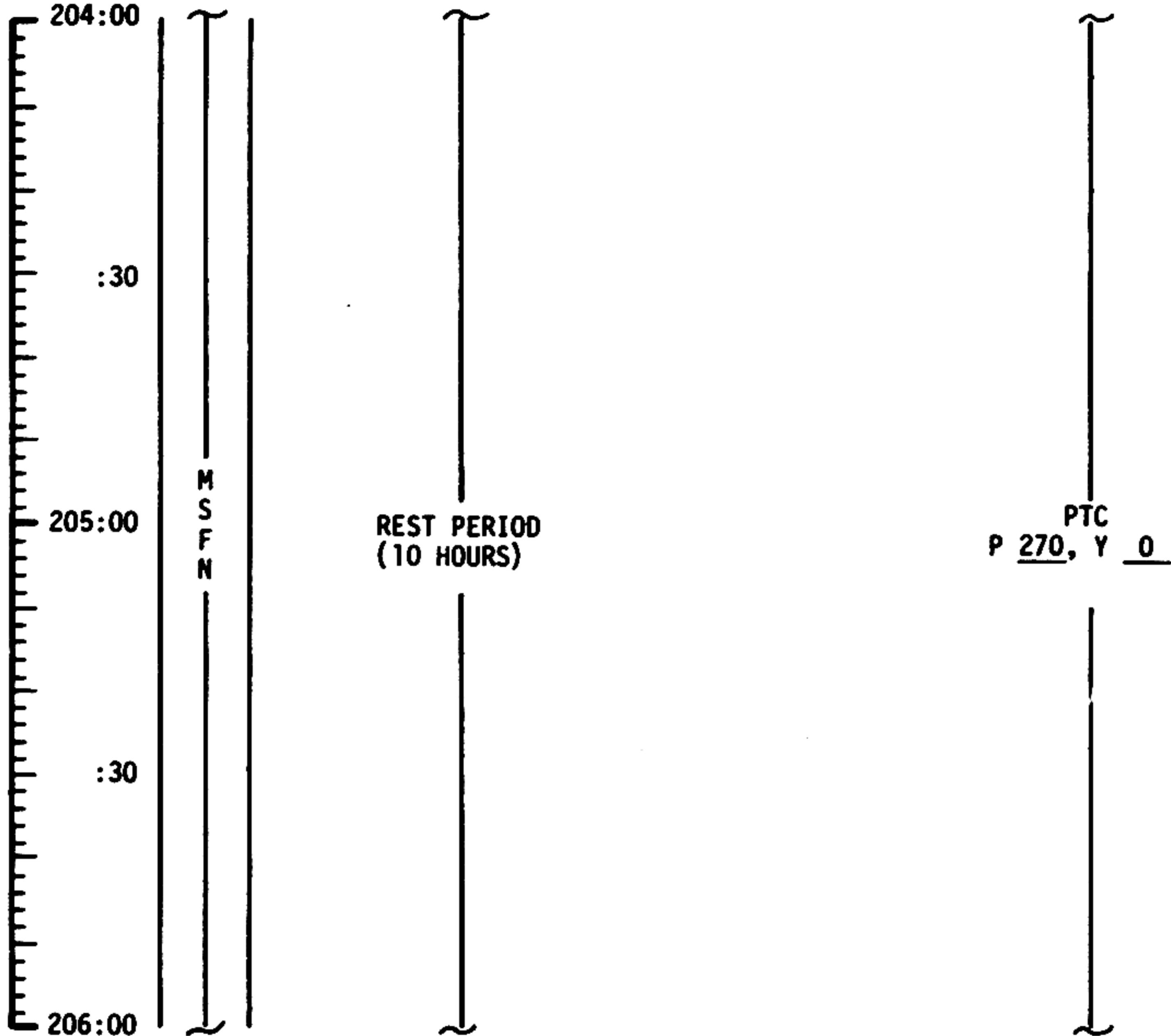
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	202:00 - 204:00	8/TEC	3-177

MCC-N

2222 CST

FLIGHT PLAN

NOTES



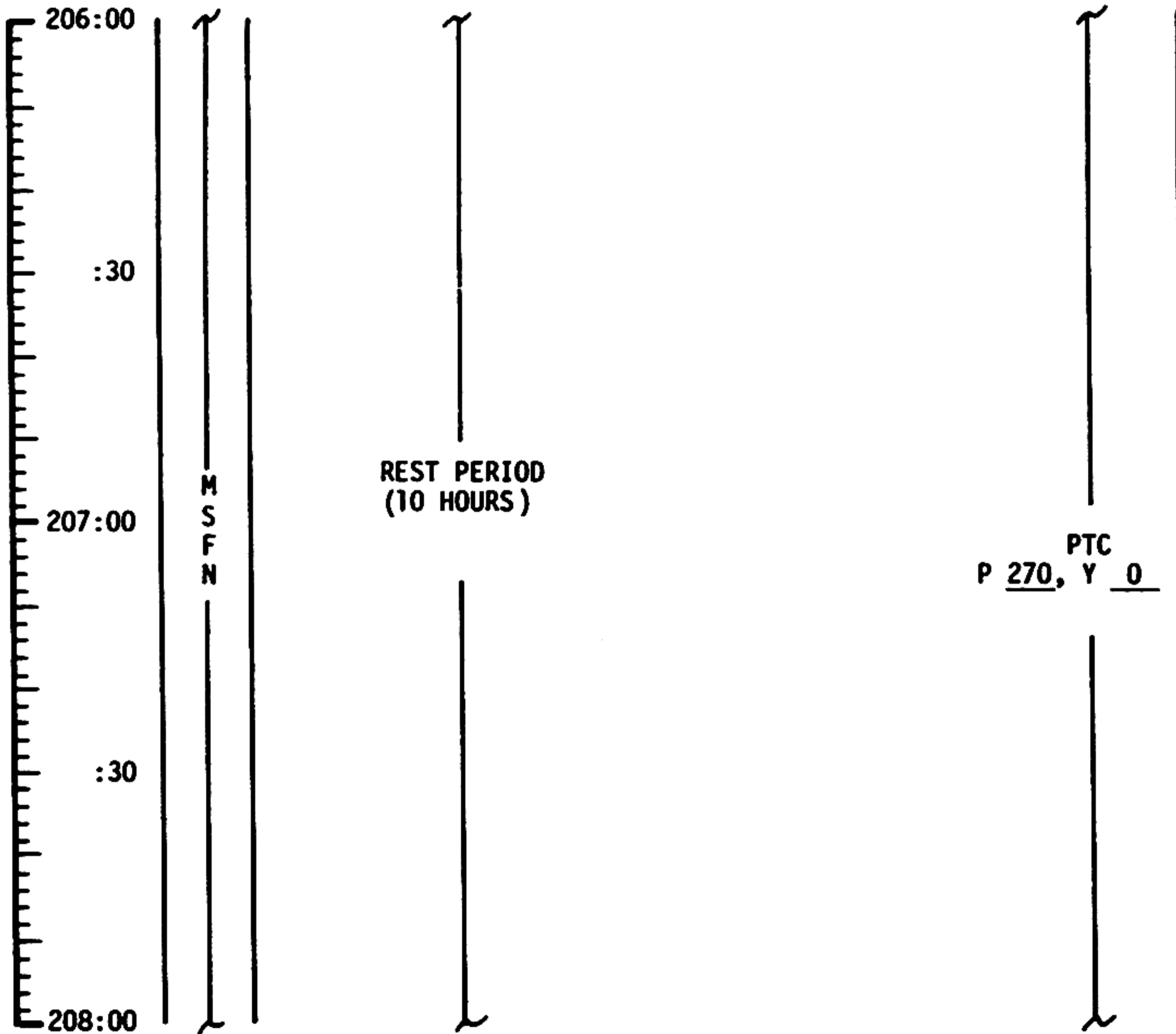
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	204:00 - 206:00	8/TEC	3-178

MCC-N

0022 CST

FLIGHT PLAN

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	206:00 - 208:00	8/TEC	3-179

MCC-N

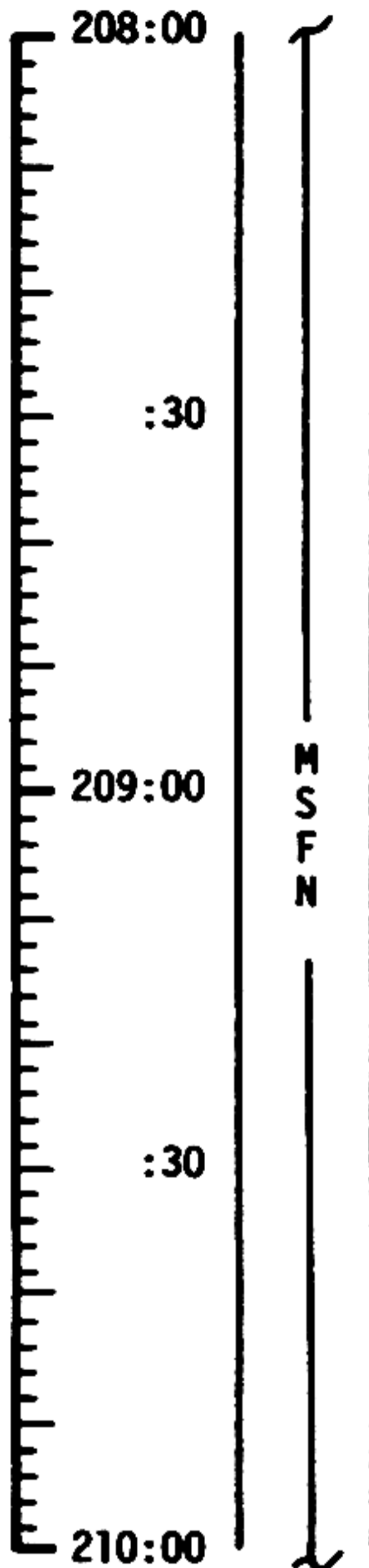
0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

UPLINK TO CSM
STATE VECTOR & V66



O₂ FUEL CELL PURGE
WASTE WATER DUMP
LiOH CANISTER CHANGE NO 16
(18 INTO B, STOW 16 IN A4)

EAT PERIOD

EMS ENTRY CHECK

M
S
F
N

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H₂ & O₂ FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
OMNI OPS
S-BD ANT - OMNI
S-BD ANT OMNI - B
HGA OPS
S-BD ANT - HI GAIN
CREW MANAGES ANT
OPS

CREW STATUS REPORT			
	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

PTC
P 270, Y 0

CSM CONSUMABLES UPDATE			
GET:	_____	:	_____
RCS TOTAL	_____	%	
QUAD A	_____	%	B _____ %
	C _____	%	D _____ %
H ₂ TOTAL	_____	%	
O ₂ TOTAL	_____	%	

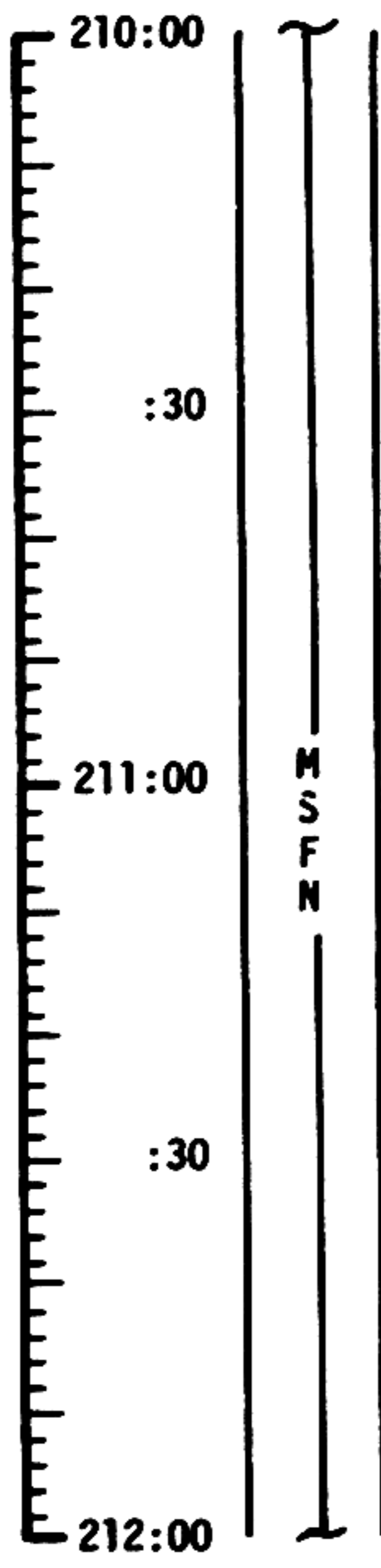
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	208:00 - 210:00	9/TEC	3-180

MCC-N

0422 CST

FLIGHT PLAN

NOTES



P52-IMU REALIGN
 OPTION 3 REFSMAT
 (OPTIONAL)
 REPORT GYRO TORQUING ANGLES

P52 (PTC ORIENT)	
N71:	___'___
N05:	___'___
N93:	
X	___'___
Y	___'___
Z	___'___
GET	___:___:___

PTC
 P 270, Y 0

M
S
F
N

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	210:00 - 212:00	9/TEC	3-181

MCC-H

0622 CST

FLIGHT PLAN

NOTES

212:00

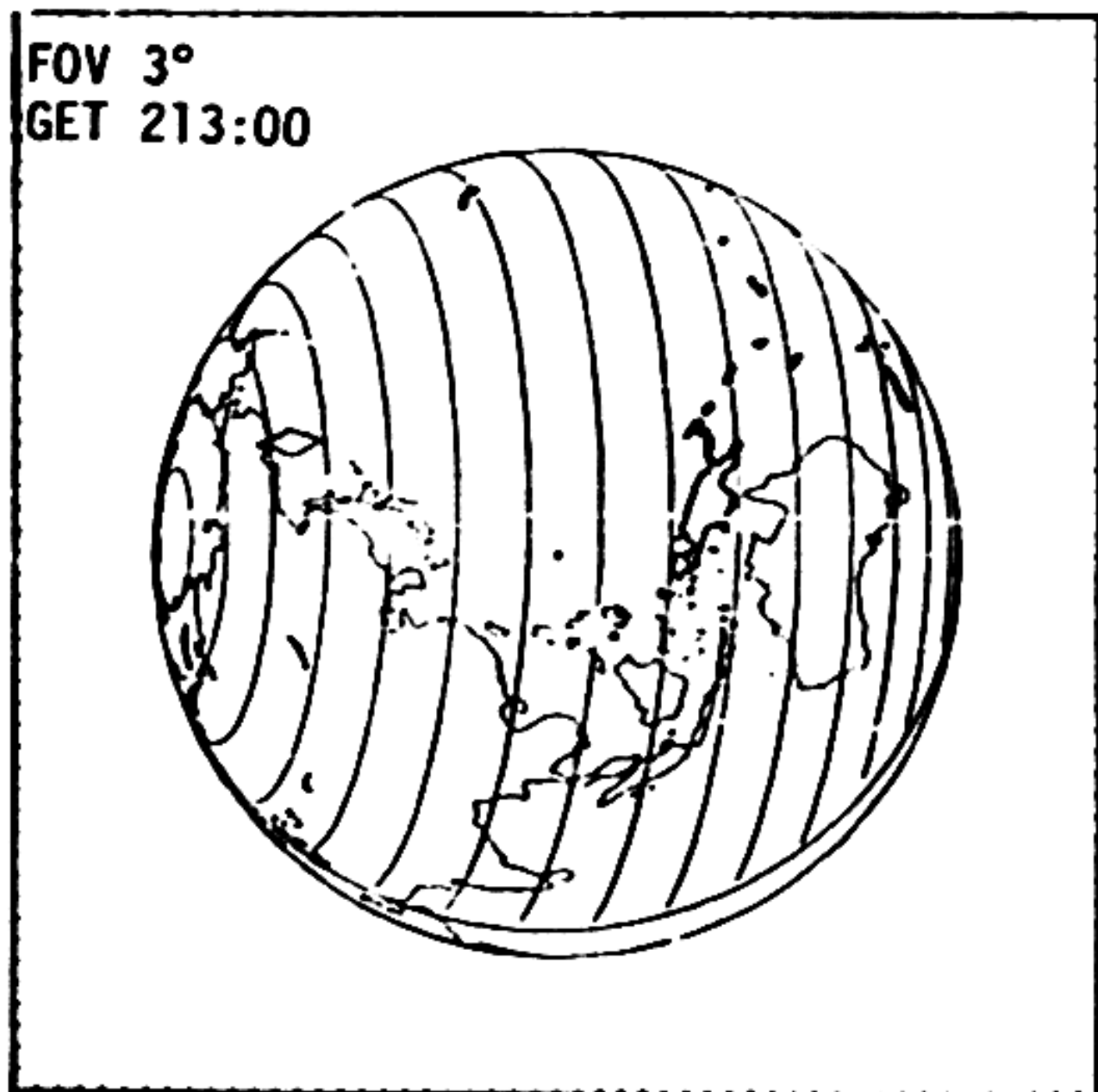
:15

212:30

:45

213:00

M
S
F
N



PTC

P 270, Y 0

STOP PTC AT ROLL 235°

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	212:00 - 213:00	9/TEC	3-182

MCC-H

0722

FLIGHT PLAN

NOTES

213:00

:15

213:30

:45

214:00

M
S
F
N

MNVR TO OPTICS CALIBRATION ATT R 235
P23 - CISLUNAR NAVIGATION P 272
OPTICS CALIBRATION Y 0
STAR 1 2

P00
V49 - MNVR TO SIGHTING ATT R 90
STAR/EARTH HORIZON P ~~155~~ 99
P23 - CISLUNAR NAVIGATION Y ~~328~~ 327

LOAD W MATRIX (R1 +4 5 0 0 0)(R2 +0 0 0 0 6)
1. VENUS ENH (R3 = 0 0 1 1 0)
N88: (R1 = -6 9 2 0 2)(R2 = -6 7 0 1 8)(R3 = -2 6 8 3 2)
DO NOT PROCEED ON F 06 49

2. STAR 2 0 4 ENH (R3 = 0 0 1 1 0)
N88: (R1 = -2 1 3 8 9)(R2 = -9 3 8 6 8)(R3 = -2 7 0 4 2)

3. STAR 2 6 EFH (R3 = 0 0 1 2 0)

4. STAR 1 6 0 EFH (R3 = 0 0 1 2 0)
N88: (R1 = -9 4 7 0 3)(R2 = -2 5 6 7 8)(R3 = +1 9 2 8 6)

5. STAR 1 6 5 ENH (R3 = 0 0 1 1 0)
N88: (R1 = -5 8 2 1 6)(R2 = -4 6 1 3 9)(R3 = -6 6 9 4 8)

6. STAR 3 1 EFH (R3 = 0 0 1 2 0)

3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	213:00 - 214:00	8/TEC	3-183

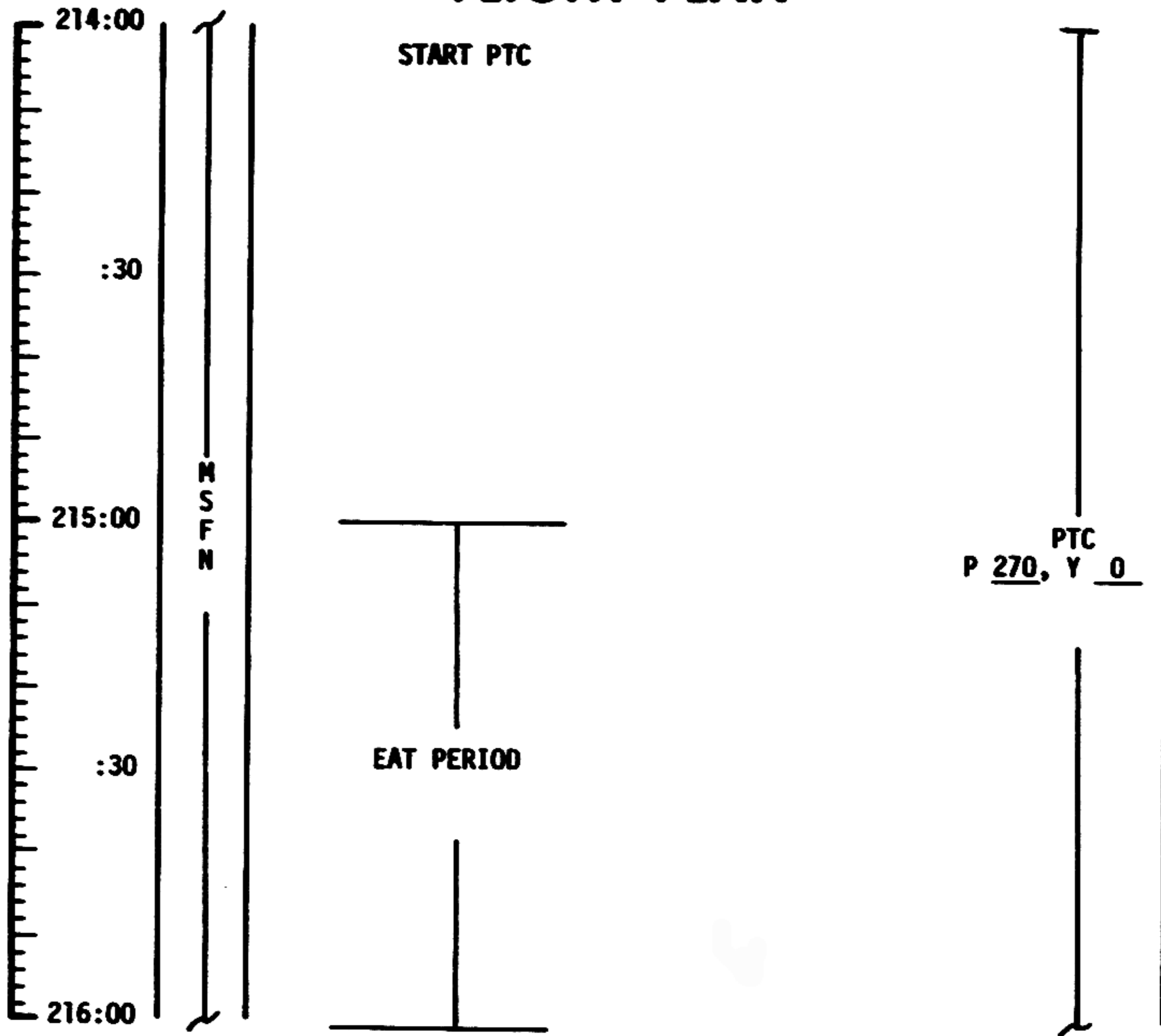
MCC-11

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

0822 CST

FLIGHT PLAN

NOTES



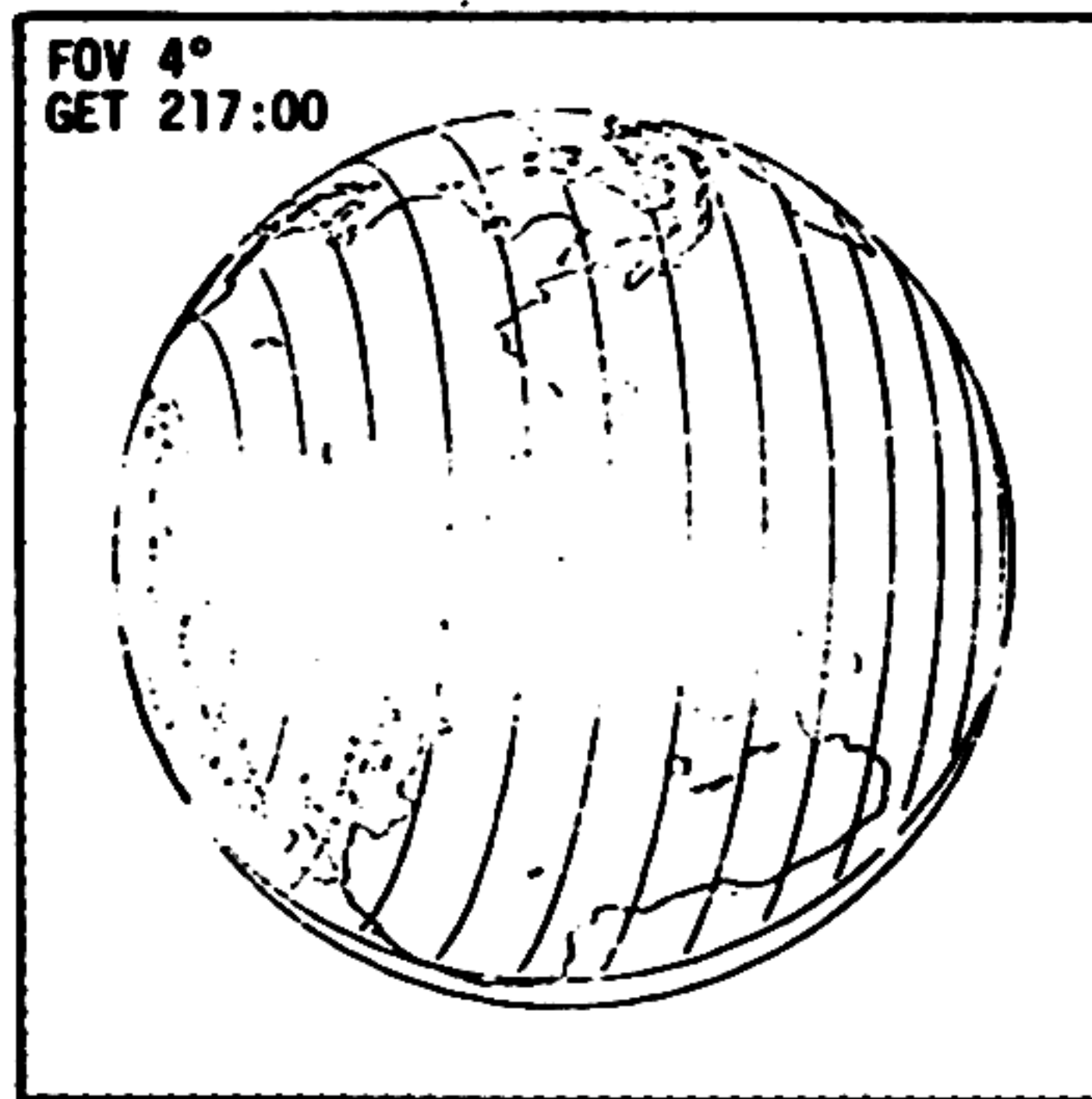
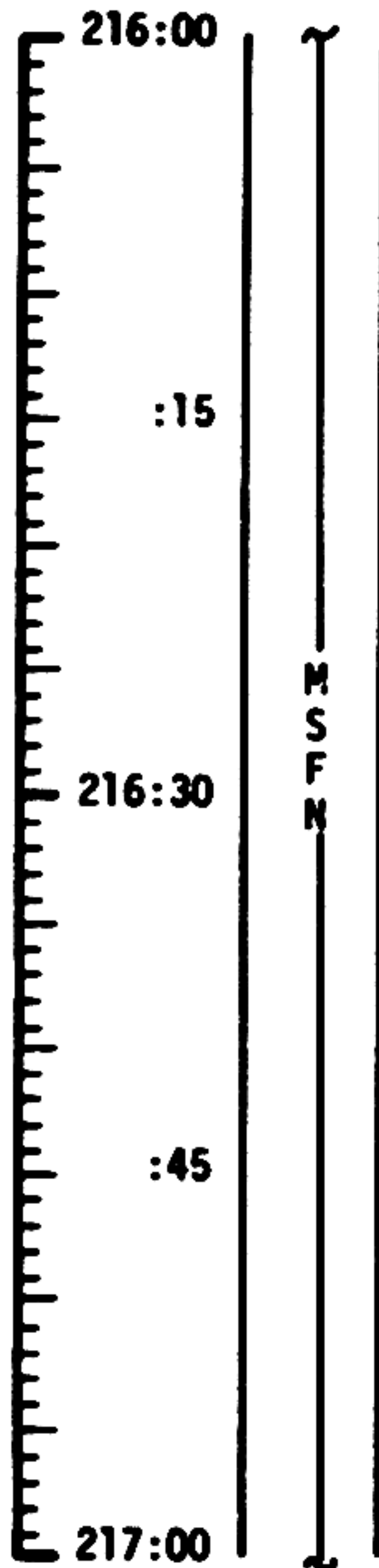
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (MOV. 14)	OCTOBER 15, 1969	214:00 - 216:00	9/TEC	3-184

MCC-11

1022 CST

FLIGHT PLAN

NOTES



PTC
P 270, Y 0

STOP PTC AT ROLL 235°

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	216:00 - 217:00	9/TEC	3-185

MCC-H

1122 CST

FLIGHT PLAN

NOTES

217:00

:15

217:30

:45

218:00

M
S
F
N

MNVR TO OPTICS CALIBRATION ATT
 P23 - CISLUNAR NAVIGATION
 OPTICS CALIBRATION
 STAR 1 2

R 235
 P 272
 Y 0

P00
 V49 - MNVR TO SIGHTING ATT
 STAR/EARTH HORIZON
 P23 - CISLUNAR NAVIGATION

R 90
 P ~~735~~ 180
 Y ~~329~~ 328

1. STAR 1 7 2 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -6 4 9 4 7)(R2 = -7 4 3 1 2)(R3 = -1 6 1 1 4)

2. STAR 2 4 EFH (R3 = 0 0 1 2 0)

3. STAR 2 0 4 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -2 1 3 8 9)(R2 = -9 3 8 6 8)(R3 = -2 7 0 4 2)

4. JUPITER EFH (R3 = 0 0 1 2 0)

N88: (R1 = -8 9 9 7 6)(R2 = -4 0 7 8 2)(R3 = -1 5 5 3 8)

DO NOT PROCEED ON F 06 49

5. STAR 3 1 EFH (R3 = 0 0 1 2 0)

6. STAR 1 6 6 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -5 2 0 0 3)(R2 = -4 3 6 0 7)(R3 = -7 3 4 4 5)

3 MARKS ON EACH STAR

INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

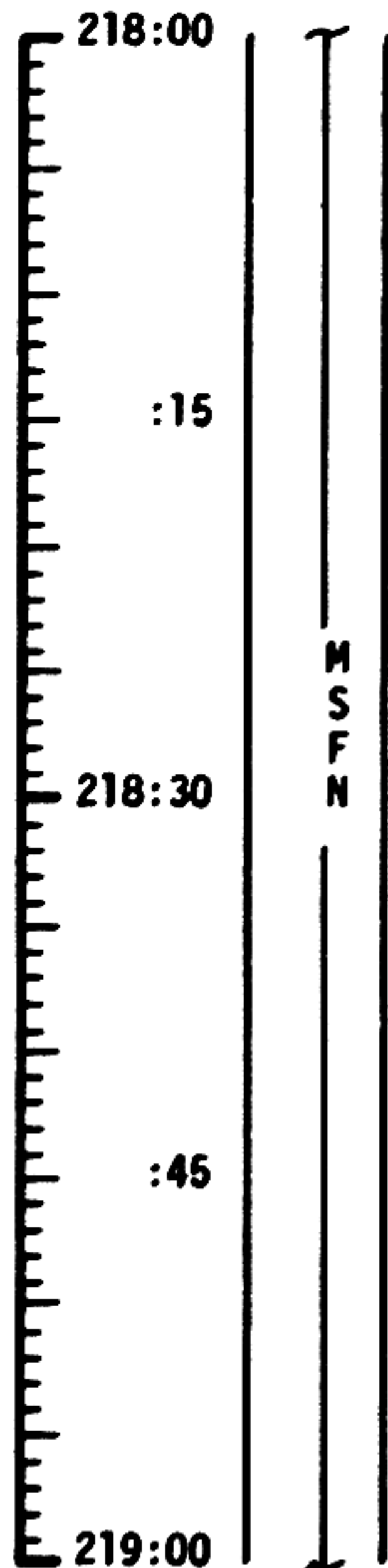
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	217:00 - 218:00	9/TEC	3-186

MCC-N

1222 CST

FLIGHT PLAN

NOTES



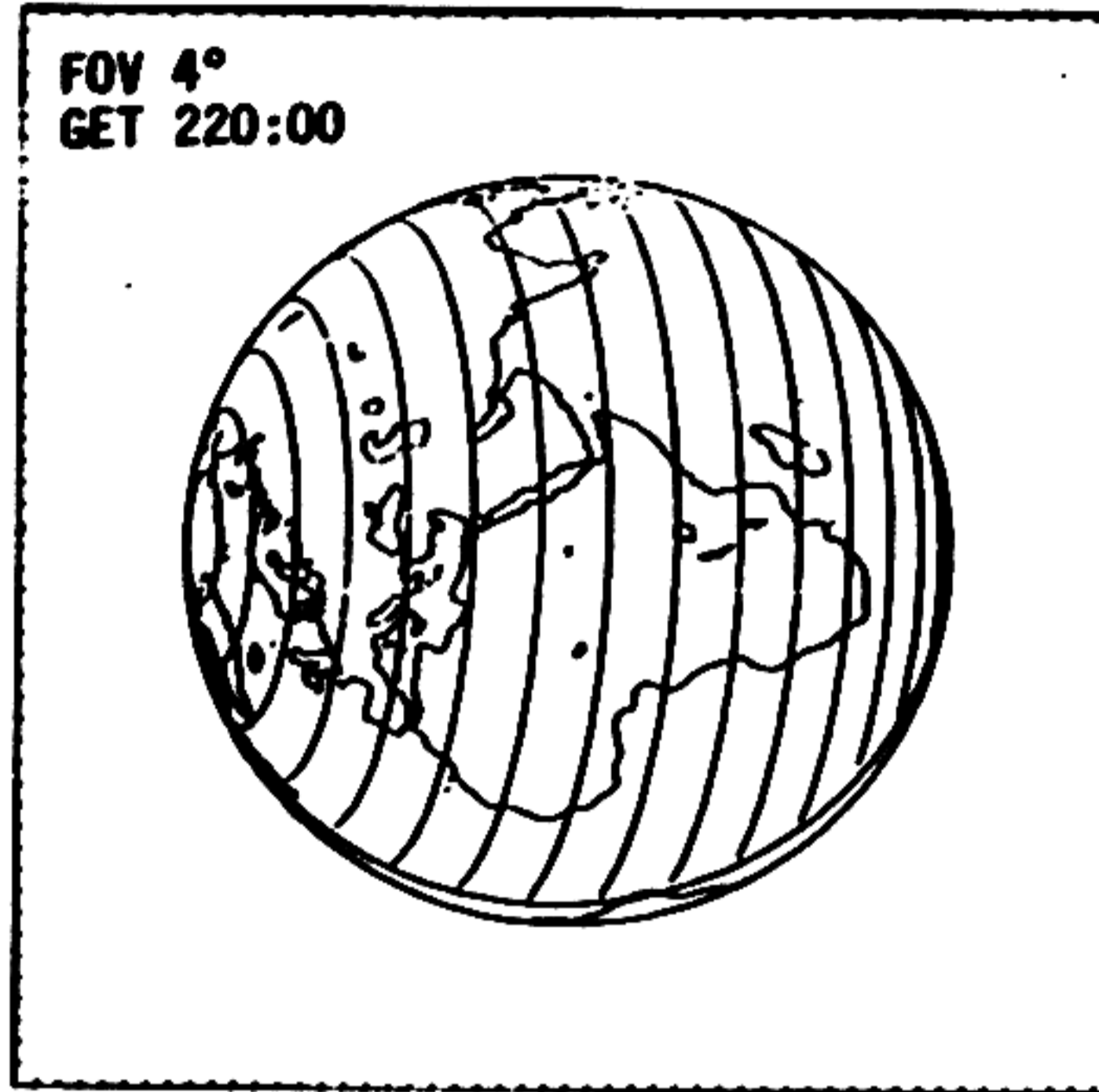
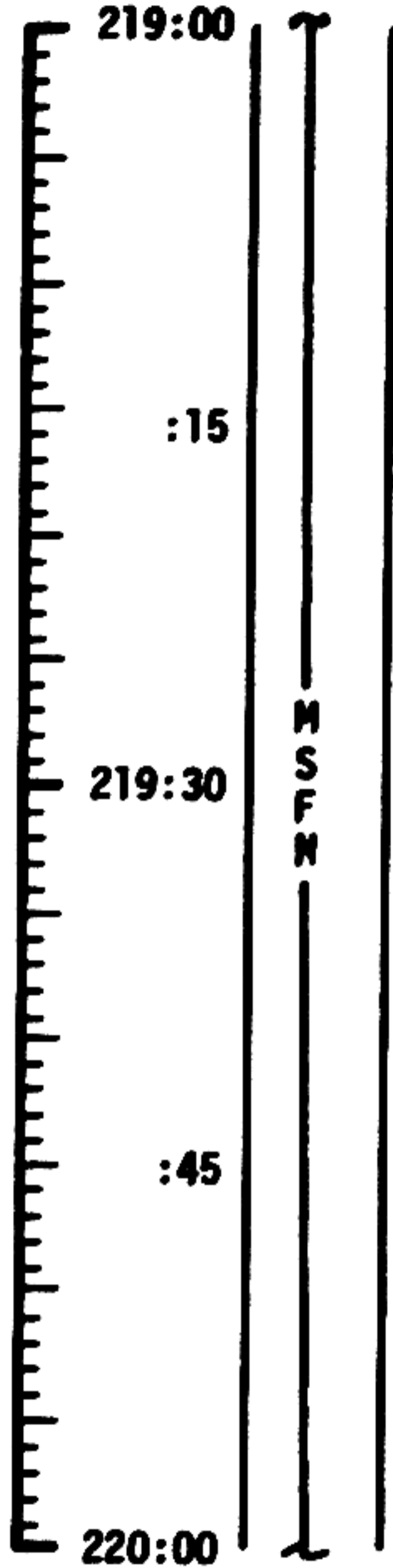
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	218:00 - 219:00	9/TEC	3-186A

MCC-N

1322 CST

FLIGHT PLAN

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	219:00 - 220:00	9/TEC	3-187

NSC Form 28 (May 68)

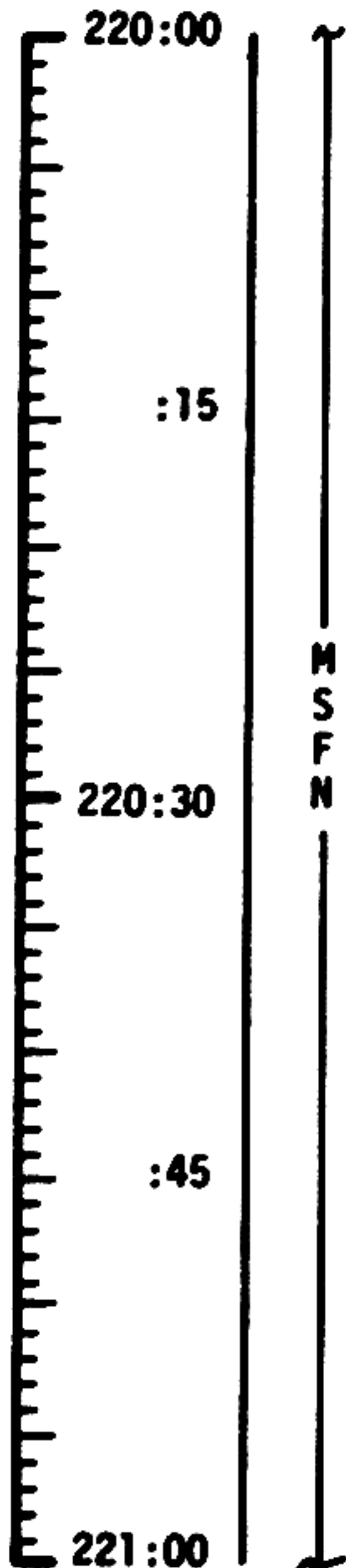
FLIGHT PLANNING BRANCH

MCC-N

1422 CST

FLIGHT PLAN

NOTES



MNVR TO OPTICS CALIBRATION ATT
 P23 - CISLUNAR NAVIGATION
 OPTICS CALIBRATION
 STAR 1 2

R 235
 P 272
 Y 0

P00
 V49 - MNVR TO SIGHTING ATT
 STAR/EARTH HORIZON
 P23 - CISLUNAR NAVIGATION

R 90
 P ~~118~~ 137
 Y ~~330~~ 329

3 MARKS ON EACH STAR

1. STAR 1 6 1 EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -7 6 6 1 5)(R2 = -2 7 1 1 3)(R3 = -5 9 5 5 9)

2. STAR 1 7 4 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -5 5 9 9 2)(R2 = -8 2 0 7 3)(R3 = +1 1 3 5 3)

3. STAR 2 6 EFH (R3 = 0 0 1 2 0)

4. STAR 1 5 6 EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -9 8 4 4 6)(R2 = -1 7 4 2 0)(R3 = -0 2 2 4 3)

5. JUPITER EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -8 9 9 7 6)(R2 = -4 0 7 8 2)(R3 = -1 5 5 3 8)

DO NOT PROCEED ON F 06 49

6. STAR 1 2 5 ENH (R3 = 0 0 1 1 0)

N88: (R1 = -2 5 4 7 2)(R2 = -7 8 6 4 7)(R3 = -5 6 2 6 6)

INCORPORATE P23
 MARK DATA AND
 UPDATE ONBOARD
 STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	220:00 - 221:00	9/TEC	3-188

MCC-N

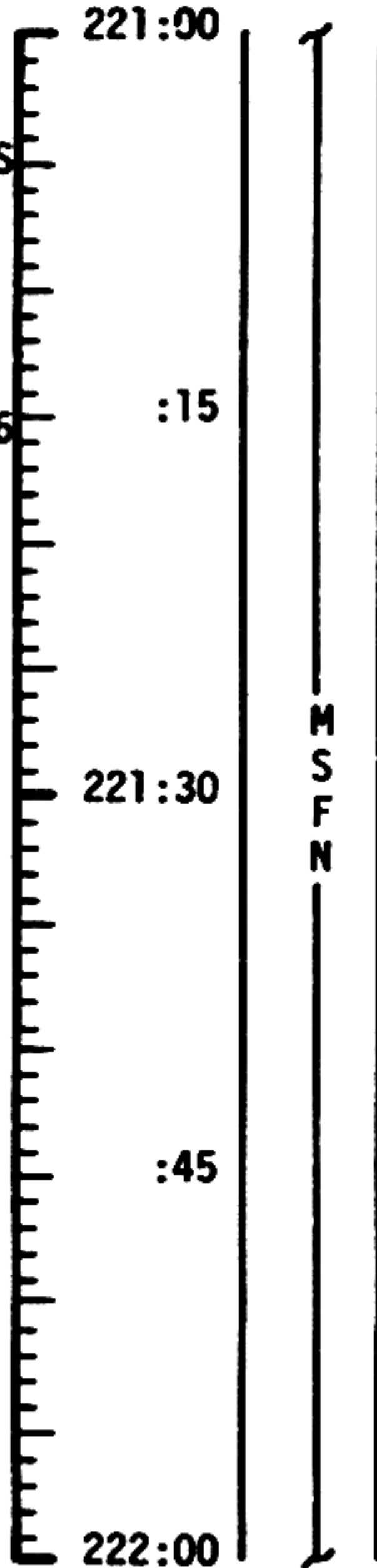
1522 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MCC-6 PAD DATA
ENTRY PAD (ASSUMES
MCC-6)

UPLINK TO CSM
STATE VECTOR & V66
MCC-6 TGT LOAD



L10H CANISTER CHANGE NO. 17
(19 INTO A, STOW 17 IN A6)

WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL

P52 - IMU REALIGN
OPTION 3 - REFSMMAT

REPORT GYRO TORQUING ANGLES

P30 EXTERNAL ΔV
H₂ PURGE LINE HTRS - ON

P52 (PTC ORIENT)	
N71:	___'___
N05:	___'___
N93:	
X	___'___
Y	___'___
Z	___'___
GET	___:___:___

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	221:00 - 222:00	9/TEC	3-189

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FLIGHT PLAN

MCC-6 BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	6T + 1 SEC	TRIM X AXIS ONLY TO 0.2

TABLE 3-13
3-190

MCC-N

1622 CST

FLIGHT PLAN

NOTES

(EI-22 HRS)

222:00

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

:30

223:00

M
S
F
N

:30

224:00

V49 - MNVR TO BURN ATT

SXT STAR CHECK
H2 & O2 FUEL CELL PURGE
WASTE WATER DUMP
P40/41 - SPS/RCS THRUST
GDC ALIGN TO IMU

MCC-6

V66 - TRANSFER CSM SV TO LM SLOT
MCC-6 BURN STATUS REPORT
MNVR TO TV ATTITUDE BY 223:15

R _____ HGA
P _____ P _____
Y _____ Y _____

TIG: 222:21:47.5
ΔV: NOMINALLY ZERO

TV (GDS) 223:15-223:45
CM 4/TV-IN (f5.6/f22)

EAT PERIOD

MNVR TO PTC ATTITUDE P 270
WIPE EXCESSIVE MOISTURE FROM Y 0
TUNNEL HATCH AREA

BURN STATUS REPORT			
X	X	<input type="checkbox"/>	•
X	X		•
<input type="checkbox"/>			•
TRIM			
X	X	X	
X	X	X	
X	X	X	
<input type="checkbox"/>			•
<input type="checkbox"/>			•
<input type="checkbox"/>			•
<input type="checkbox"/>			•
X	X	X	
X	X	X	
X	X	X	

ΔTIG
BT
V_{gx}
R
P
Y
V_{gx}
V_{gy}
V_{gz}
ΔV_c *
FUEL *
OX *
UNBAL

*ITEMS TO BE
REPORTED TO MSFN

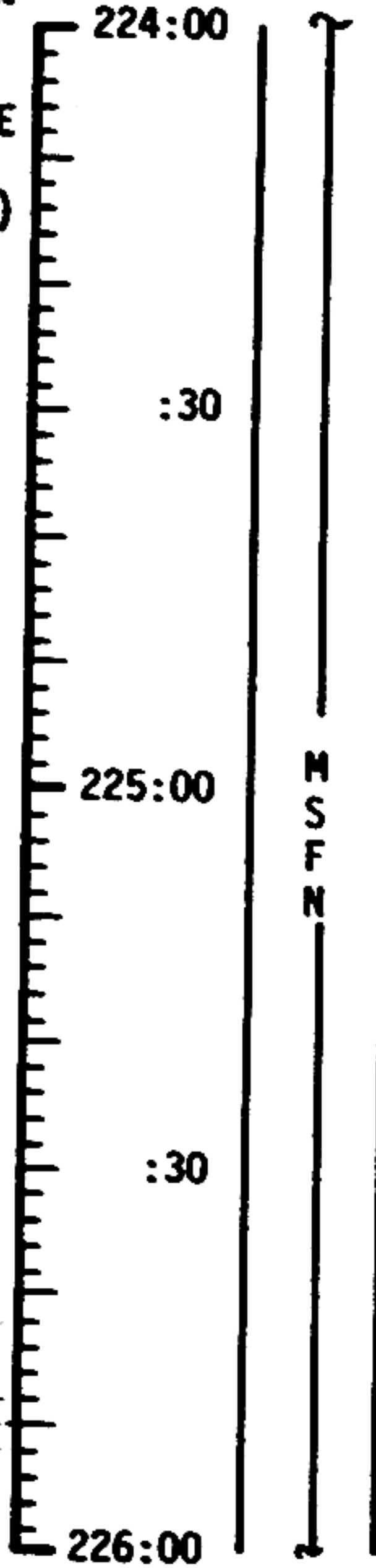
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	222:00 - 224:00	9/TEC	3-191

1822 CST

FLIGHT PLAN

MCC-N

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



START PTC
REPORT CM RCS INJECTOR
VALVE TEMPS (SYS TEST METER
5C,D,6A,B,C,D)

PTC
P 270 Y 0

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H2 FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OVBD DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMER CABIN PRESS VLV - BOTH
SURGE TK O2 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VENT - OFF
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF

REST PERIOD
(10 HOURS)

NOTES

CM RCS INJECTOR TEMP	
5C _____	5D _____
6A _____	6B _____
6C _____	6D _____

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	224:00 - 226:00	9/TEC	3-192

MSC Form 29 (May 69)

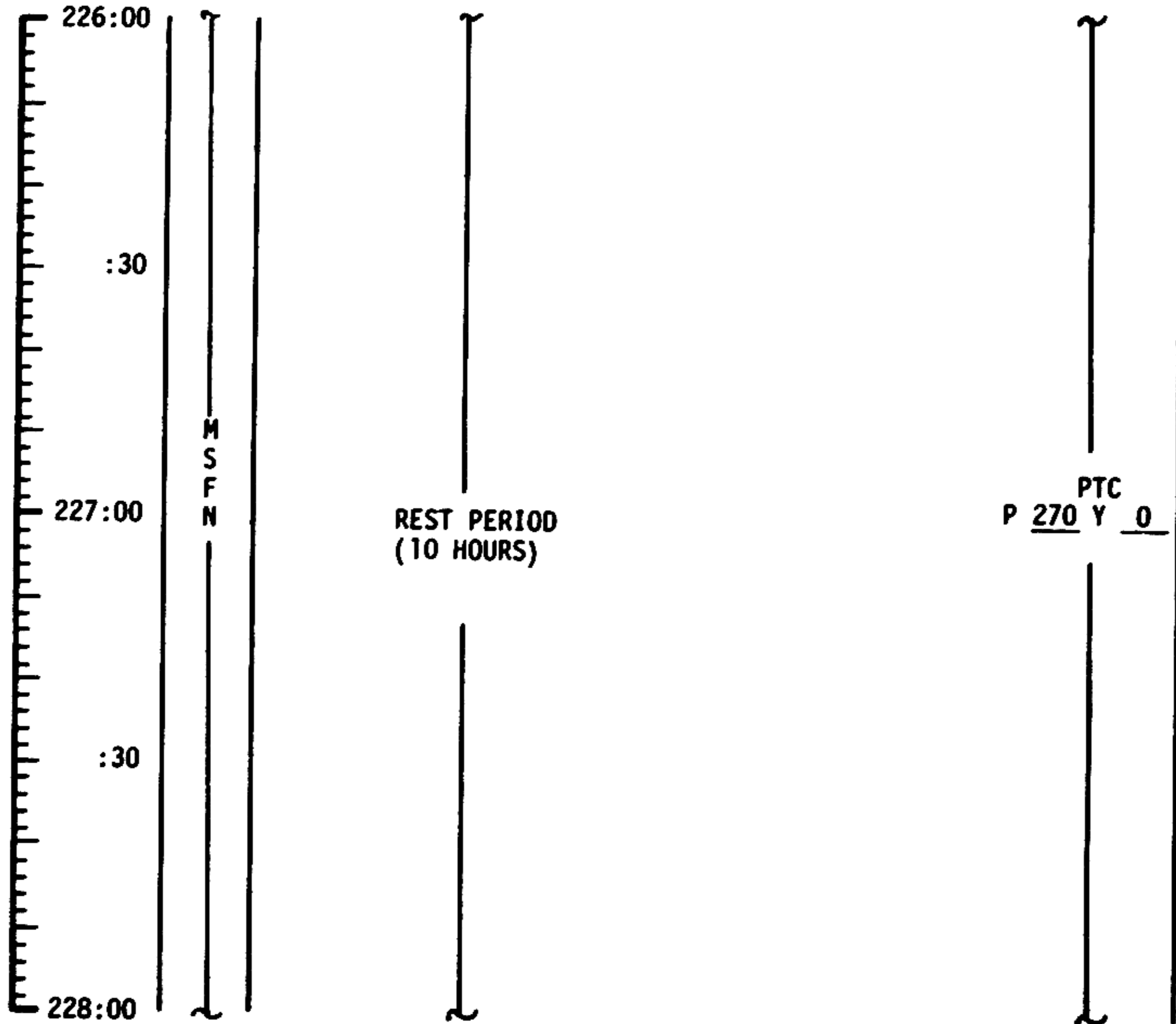
FLIGHT PLANNING BRANCH

MCC-H

2022 CST

FLIGHT PLAN

NOTES



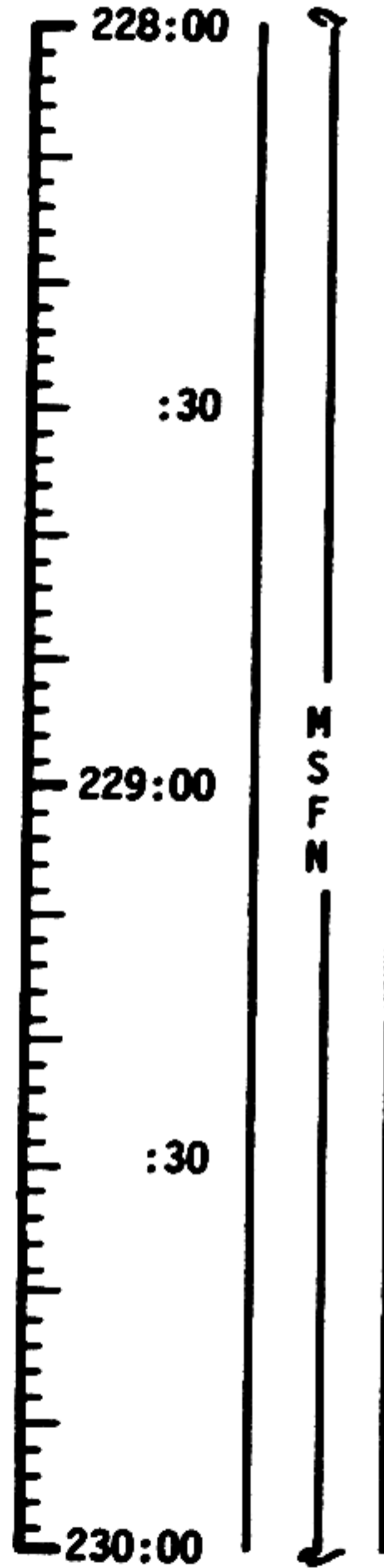
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	-FINAL (NOV 14)	OCTOBER 15, 1969	226:00 - 228:00	9/TEC	3-193

MCC-N

2222 CST

FLIGHT PLAN

NOTES



M
S
F
N

REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	228:00 - 230:00	9/TEC	3-194

NSC Form 29 (May 68)

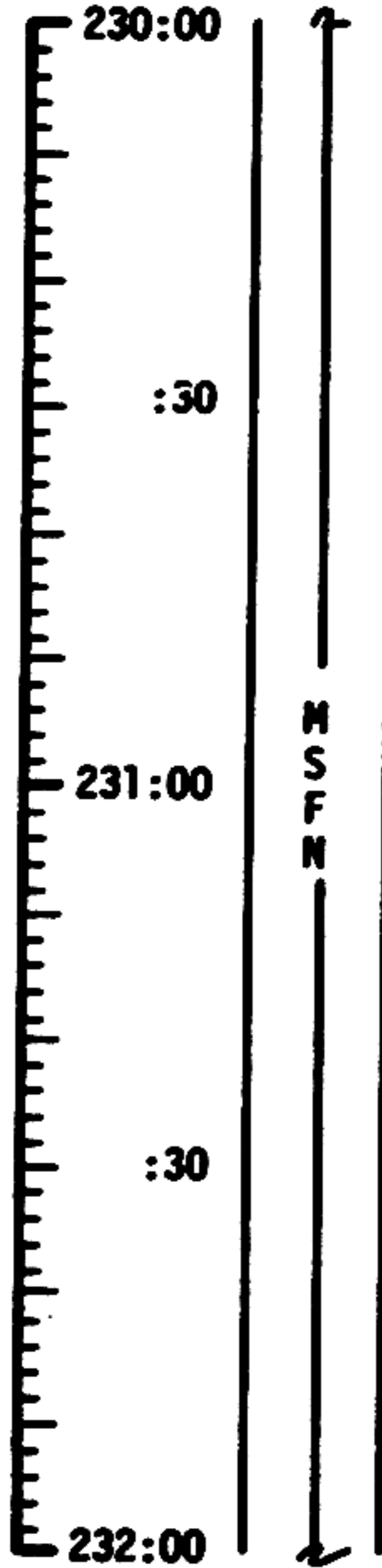
FLIGHT PLANNING BRANCH

MCC-N

0022 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

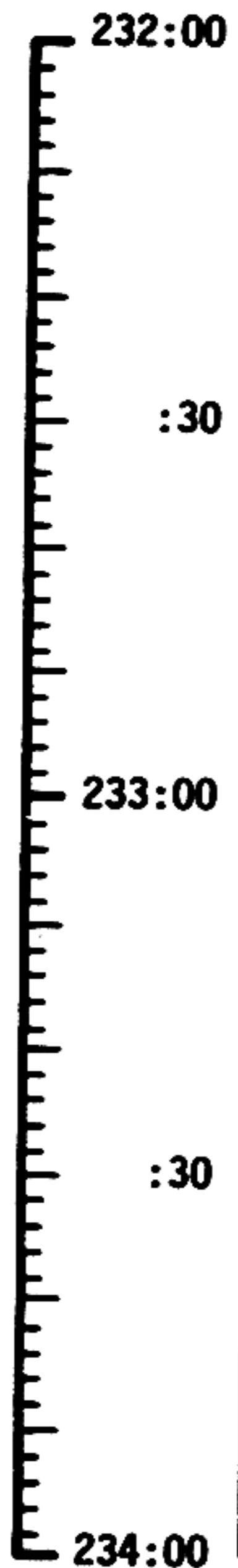
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NGV 14)	OCTOBER 15, 1969	230:00 - 232:00	9/TEC	3-195

MCC-N

0222 CST

FLIGHT PLAN

NOTES



M
S
F
N

REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (MOV 14)	OCTOBER 15, 1969	232:00 - 234:00	9/TEC	3-196

MSC Form 29 (May 69)

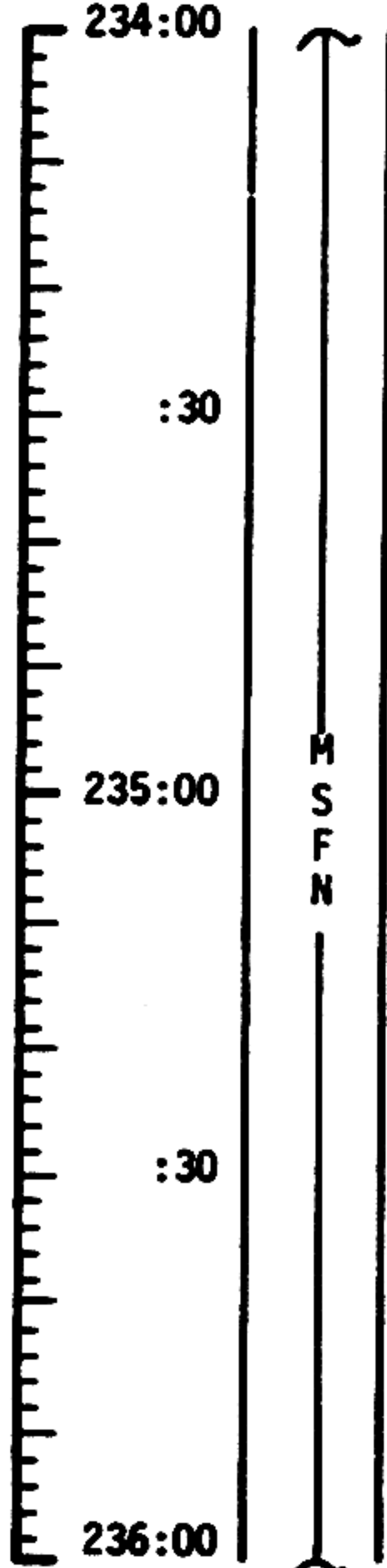
FLIGHT PLANNING BRANCH

MCC-N

U422 CST

FLIGHT PLAN

NOTES



M
S
F
N

CREW STATUS REPORT			
	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

CSM CONSUMABLES UPDATE	
GET:	_____ : _____
RCS TOTAL	_____ %
QUAD A	_____ %
B	_____ %
C	_____ %
D	_____ %
H ₂ TOTAL	_____ %
O ₂ TOTAL	_____ %

POSTSLEEP CHECKLIST:	
CREW STATUS REPORT	
CONSUMABLES UPDATE	
CYCLE H ₂ & O ₂ FANS	
FLIGHT PLAN UPDATE	
NORMAL LUNAR COMM EXCEPT:	
S-BD AUX TAPE - OFF	
TAPE RCDR FWD - OFF	
OMNI OPS	
S-BD ANT - OMNI	
S-BD ANT OMNI - B	
HGA OPS	
S-BD ANT - HI GAIN	
CREW MANAGES ANT OPS	

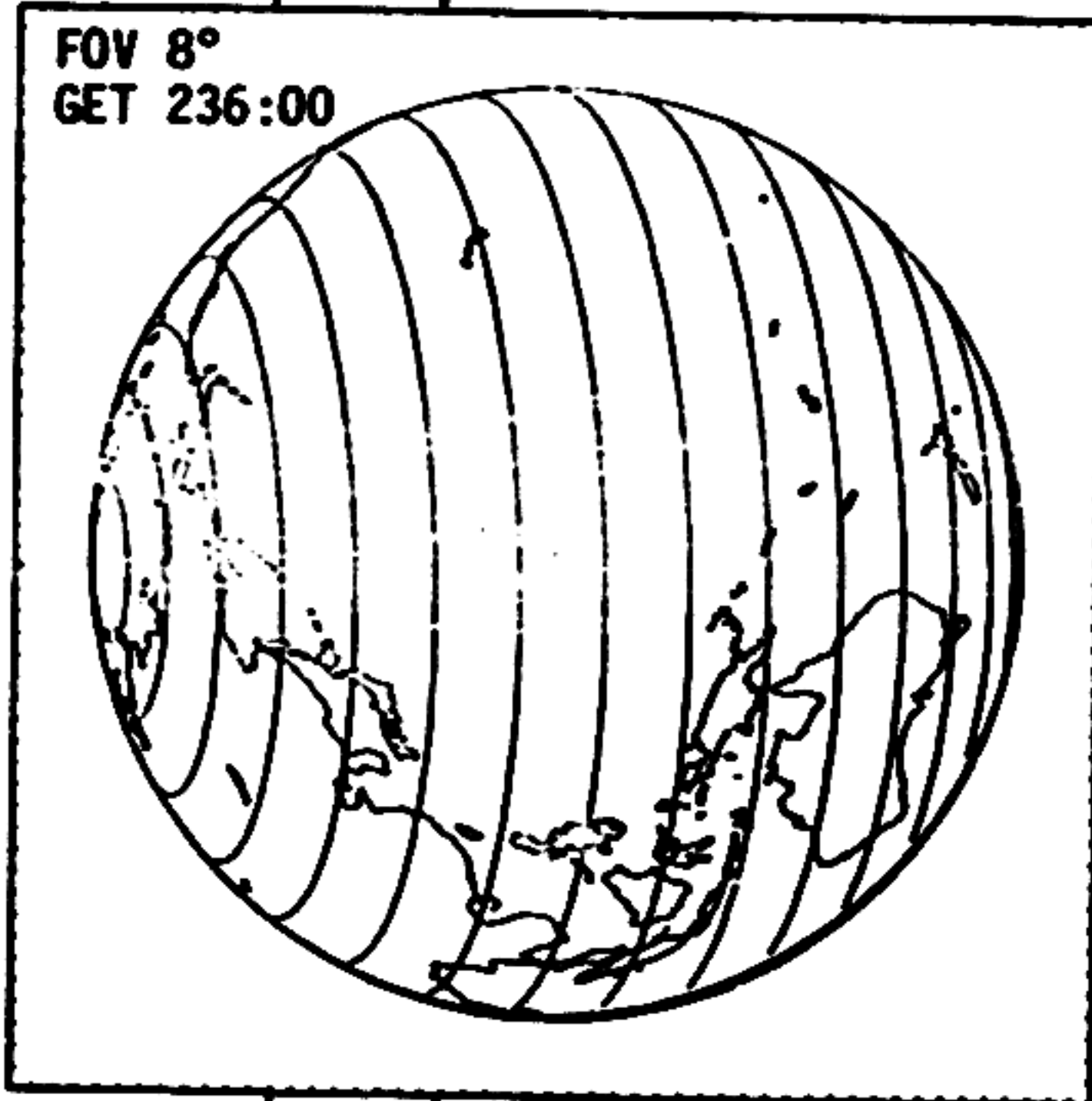
P 270 Y 0

PTC

EAT PERIOD

L10H CANISTER CHANGE NO. 18
(20 INTO B, STOW 18 IN A6)

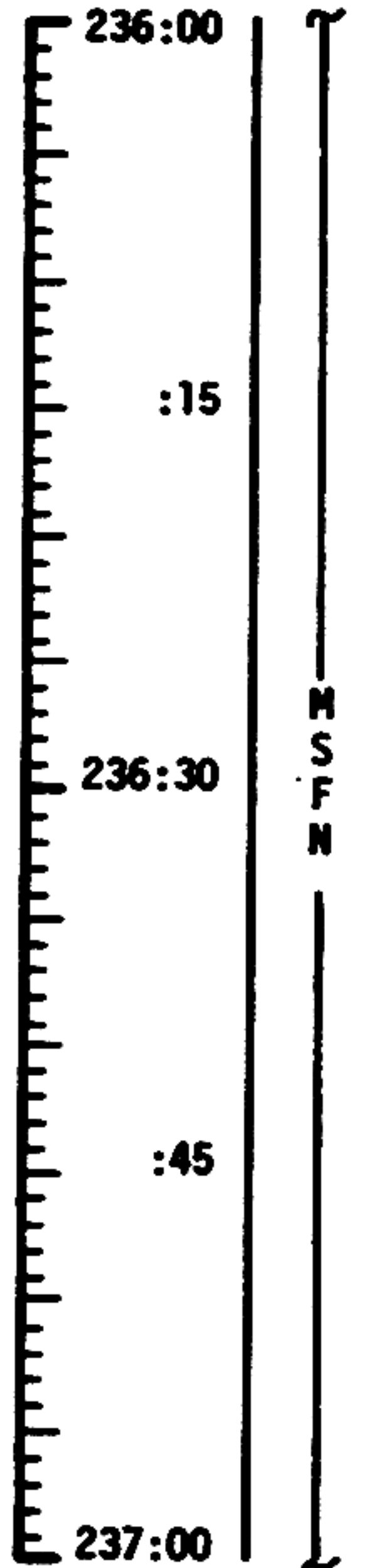
STOP PTC AT ROLL 235°



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	234:00 - 236:00	10/TEC	3-197

FLIGHT PLAN

NOTES



MNVR TO OPTICS CALIBRATION ATT R 235
 P23 - CISLUNAR NAVIGATION P 272
 OPTICS CALIBRATION Y 0
 STAR 1 2

 P00
 V49 - MNVR TO SIGHTING ATT R 90
 STAR/EARTH HORIZON P 153 168
 P23 - CISLUNAR NAVIGATION Y 341
 LOAD W MATRIX (R1 +4 5 0 0 0)(R2 +0 0 0 0 6)
 1. STAR 2 6 EFH (R3 = 0 0 1 2 0)

 2. JUPITER EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -8 9 8 5 4)(R2 = -4 1 0 1 4)(R3 = -1 5 6 3 6)
 DO NOT PROCEED ON F 06 49
 3. STAR 7 5 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -0 9 8 7 1)(R2 = -7 9 1 6 3)(R3 = -6 0 2 9 8)

 4. STAR 1 6 3 EFH (R3 = 0 0 1 2 0)
 N88: (R1 = -8 3 4 6 4)(R2 = -4 4 9 6 6)(R3 = +3 1 8 0 9)
 5. STAR 2 0 5 ENH (R3 = 0 0 1 1 0)
 N88: (R1 = -0 9 1 5 3)(R2 = -5 5 8 9 1)(R3 = -8 2 4 1 6)
 6. STAR 3 1 EFH (R3 = 0 0 1 2 0)

3 MARKS ON EACH STAR

 INCORPORATE P23
 MARK DATA AND
 UPDATE ONBOARD
 STATE VECTOR

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	236:00 - 237:00	10/TEC	3-198

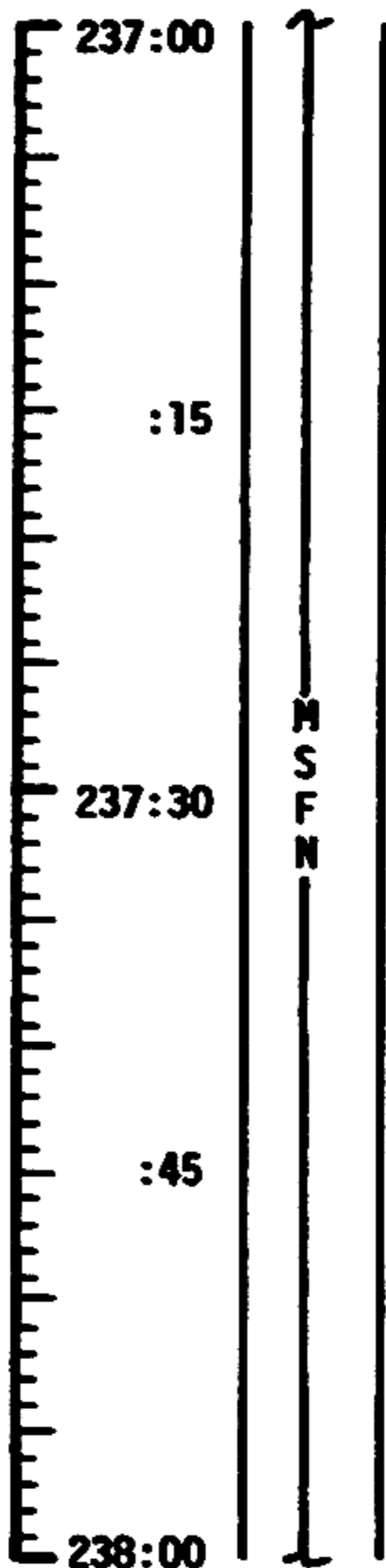
MCC-11

0722 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



START PTC

M
S
F
N

PTC
P 270, Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	237:00 - 238:00	10/TEC	3-199

MCC-7

0822 CST

FLIGHT PLAN

NOTES

(EI-6 HRS)
GO/NO-GO

238:00

:30

GO/NO-GO FOR MCC-7
REPORT CM RCS INJECTOR
VALVE TEMPS (SYS TEST METER 5C, D, 6A, B, C, D)

CM RCS INJECTOR TEMP	
5C _____	5D _____
6A _____	6B _____
6C _____	6D _____

PTC
P 270 Y 0

UPDATE TO CSM
MCC-7 MNVR PAD
ENTRY PAD
(EI-5 HRS)

239:00

M
S
F
N

VHF SIMPLEX A-ON
(COMM CHECK)

DON MAE WEST & FOOT RESTRAINTS

:30

STOP PTC

UPLINK TO CSM
STATE VECTOR & V66
MCC-7 TGT LOAD
DESIRED ORIENT(ENT)

240:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	238:00 - 240:00	10/TEC	3-200

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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FLIGHT PLAN

MCC-7
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	TRIM X AXIS ONLY TO 0.2 FPS

TABLE 3-14
3-201

MCC-N

1022 CST

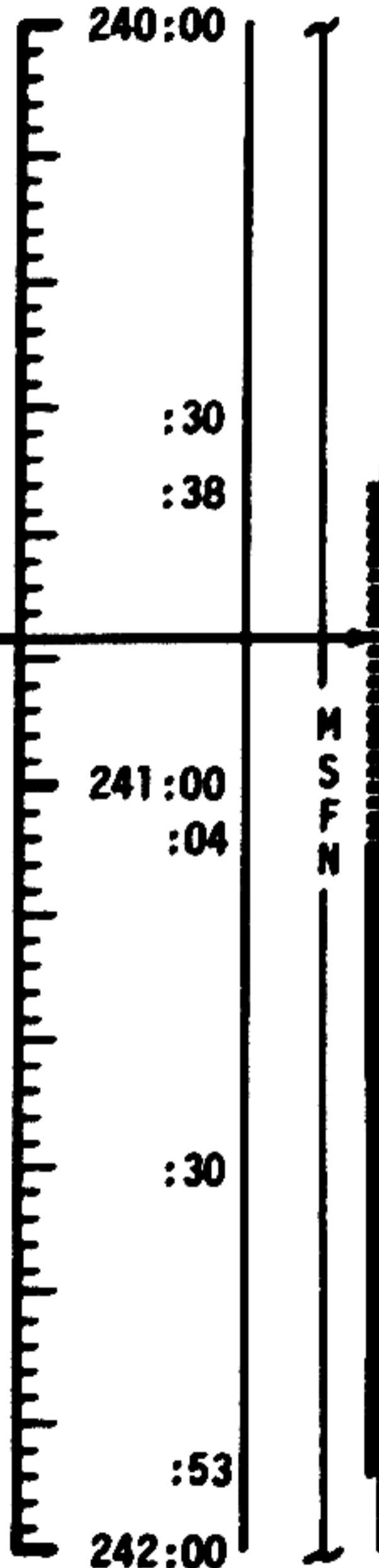
FLIGHT PLAN

NOTES

(EL - 4 HRS)

EARTH PENUMBRA

(EI - 3 HRS)



P52 - IMU REALIGN
OPTION 1 - PREFERRED
 REPORT GYRO TORQUING ANGLES
 ECS & EPS CK
 SPS CHECK
 CM RCS MON CK
 SM RCS MON CK
 C & W SYS CK
 CMC SELF TEST
 DSKY COND LT TEST

P30 - EXTERNAL ΔV
 V49 - MNVR TO BURN ATT BY 240:50:00

SXT STAR CHECK
 P40/P41-SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-7

MCC-7 BURN STATUS REPORT
 V66 - TRANS CSM SV TO LM SLOT

TIG: 241:21:48
 ΔV: NOMINALLY ZERO

*ITEMS TO BE REPORTED
 to MSFN

P52 (REENTRY ORIENT)
 N71: _____
 N05: _____
 N93: _____
 X _____
 Y _____
 Z _____
 GET : :

BURN STATUS REPORT				
X	X	<input type="checkbox"/>	•	ΔTIG
X	X		•	BT
<input type="checkbox"/>			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
<input type="checkbox"/>			•	V _{gx}
<input type="checkbox"/>			•	V _{gy}
<input type="checkbox"/>			•	V _{gz}
<input type="checkbox"/>			•	ΔV _c *
X	X	X		FUEL*
X	X	X		OX*
X	X	X		UNBAL

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	240:00 - 242:00	10/TEC	3-202

MCC-N

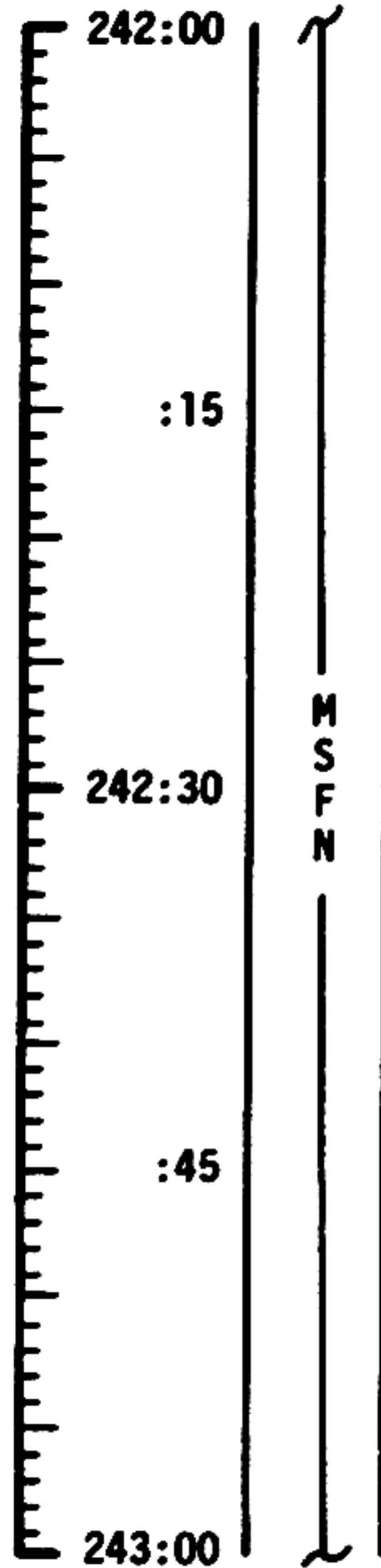
1222 CST

FLIGHT PLAN

NOTES

(EI - 2 HRS)

GO/NO GO FOR PYRO
ARM



LOGIC SEQUENCE CHECK
 GO/NO GO FOR PYRO ARM (CUE MSFN)
 LOGIC-ON

MNVR TO ENTRY ATTITUDE R ___
 P ___
 Y ___

SXT AND BORESIGHT STAR CHECK

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	242:00 - 243:00	10/TEC	3-203

MCC-N

1322 CST

FLIGHT PLAN

NOTES

P52 (REENTRY ORIENT)	
N71:	— — — — —
N05:	— — — — —
N93:	— — — — —
X	— — — — —
Y	— — — — —
Z	— — — — —
GET	— — — — —

P52 - IMU REALIGN
 OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES
 GDC ALIGN TO IMU
 EMS ENTRY CHECK

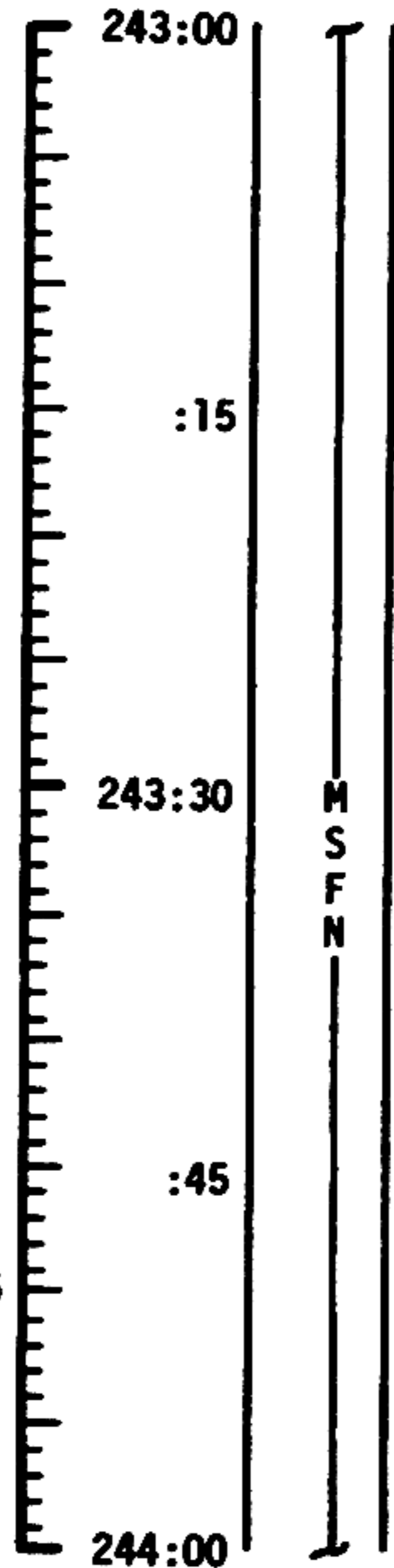
PRIM & SEC WATER EVAP ACTIVATION
 CM RCS PRE-HEAT (IF REQ'D)
 FINAL STOWAGE

CONFIGURE CAMERA EQUIP FOR FIREBALL AND CHUTES PHOTOS
 CM/DAC/18/GIN-(f11,250,7) 12 FPS, .5MAG (4 MIN) FIREBALL
 HCEX-(f11,125,7) 12 FPS, .5MAG (4 MIN) CHUTES

TERMINATE CM RCS PREHEAT
 SYS TEST PANEL CONFIGURATION
 PYRO BATT CHECK
 FINAL GDC DRIFT CK
 CM RCS ACTIVATION
 GO/NO GO FOR PYRO ARM (CUE MSFN)
 LOGIC-ON
 SET DET (UP, TO EI)
 EMS INITIALIZATION
 RSI ALIGN TO GDC

CM RCS CK

SEPARATION CHECKLIST



MSFN

(EI - 1 HR)

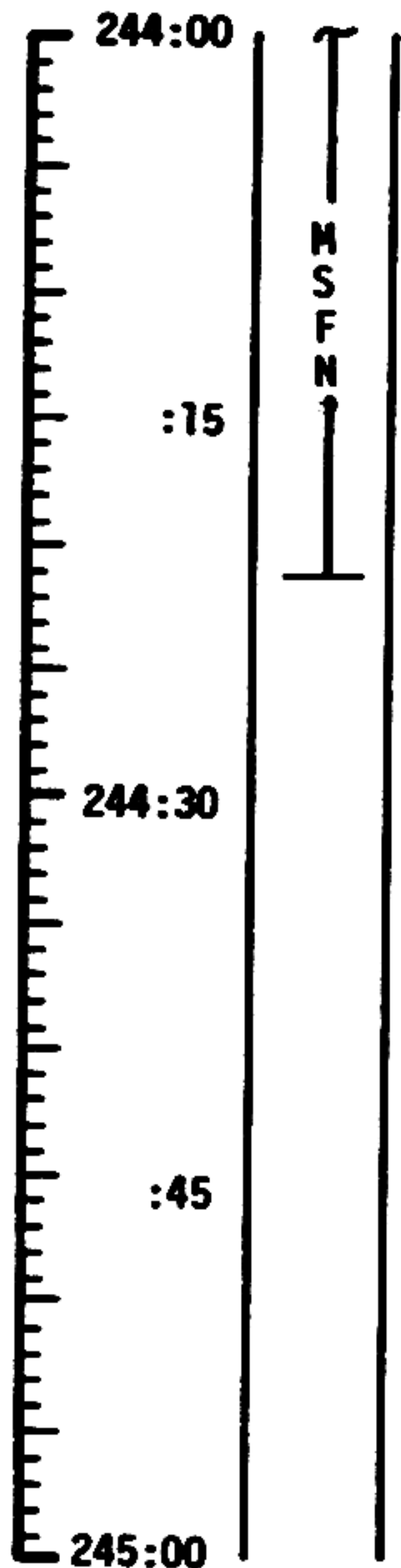
UPDATE TO CSM
 ENTRY PAD
 RECOVERY PAD
 GO/NO GO FOR PYRO
 ARM

UPLINK TO CSM
 STATE VECTOR & V66
 (EI - 30 MIN)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	243:00 - 244:00	10/TEC	3-204

FLIGHT PLAN

NOTES



PYRO ARM
 P61 - ENTRY PREP R
 P62 - CM/SM SEP ATT P
 Y

CM/SM SEP

MNVR TO ENTRY ATT R
 P63 - ENTRY INIT P
 Y

EI - GET = 244:21:48

P64 - ENTRY POST 0.05G

TRAJECTORY EVENTS

400,000 FEET (GET 244:21:48)
 ENTER S BAND BLACKOUT
 0.05G
 KA - INITIATE CONSTANT DRAG
 RDOT = -700 FPS
 PEAK G
 SUBCIRCULAR VELOCITY
 P64 TO P67
 EXIT S BAND BLACKOUT
 GUIDANCE TERMINATION
 DROGUE DEPLOYMENT
 MAIN DEPLOYMENT
 SPLASHDOWN

**TIME FROM EI
MIN : SEC**

00 : 00
 00 : 18
 00 : 30
 00 : 52
 01 : 18
 01 : 22
 02 : 10
 02 : 12
 03 : 23
 07 : 06
 08 : 08
 08 : 54
 13 : 35

Y = -6 . 5° -
 L/D = 0 . 3 0 9
 V = 3 6 1 1 6
 R = 1 2 5 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	244:00 - 245:00	10/TEC	3-205

SECTION 5 - ABBREVIATED TIMELINE

**ABBREVIATED
TIMELINE**

ABBREVIATED TIMELINE

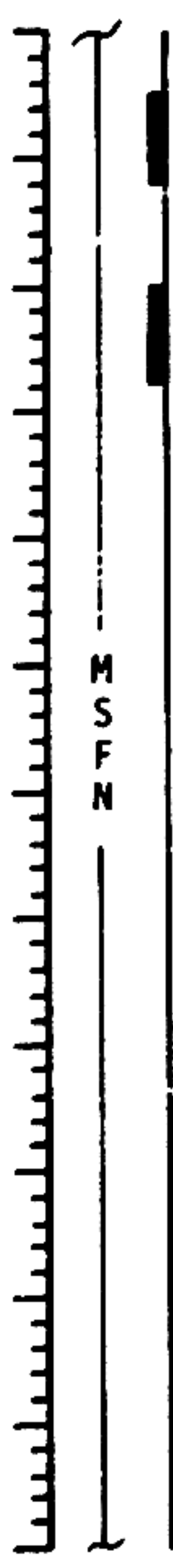
1022 CST

NOV 14

CSM

CSM

00:00
02:00
04:00
06:00
08:00
10:00
12:00



LIFTOFF 00:00
 INSERTION CHECKLIST
 P52 - IMU REALIGN, OPT 3

 BEGIN TLI PREP
 GO/NO-GO FOR TLI
TLI 02:47
CSM/S-IVB SEP 03:12 TV
DOCK 03:22
 CONFIGURE FOR EJECTION
CSM/LM EJECTION 04:07
S-IVB EVASIVE MANEUVER 04:24
S-IVB SLINGSHOT MANEUVER 04:57
 DOFF & STOW PGA'S
 P52 - IMU REALIGN, OPT 1

 P23 - CISELUNAR NAVIGATION
 (5 SETS)

 PTC
 EAT
 PTC (IF MCC-1 NOT PERFORMED)
MCC-1 11:47 (NOM ZERO)

12:00
14:00
16:00
18:00
20:00
22:00
24:00

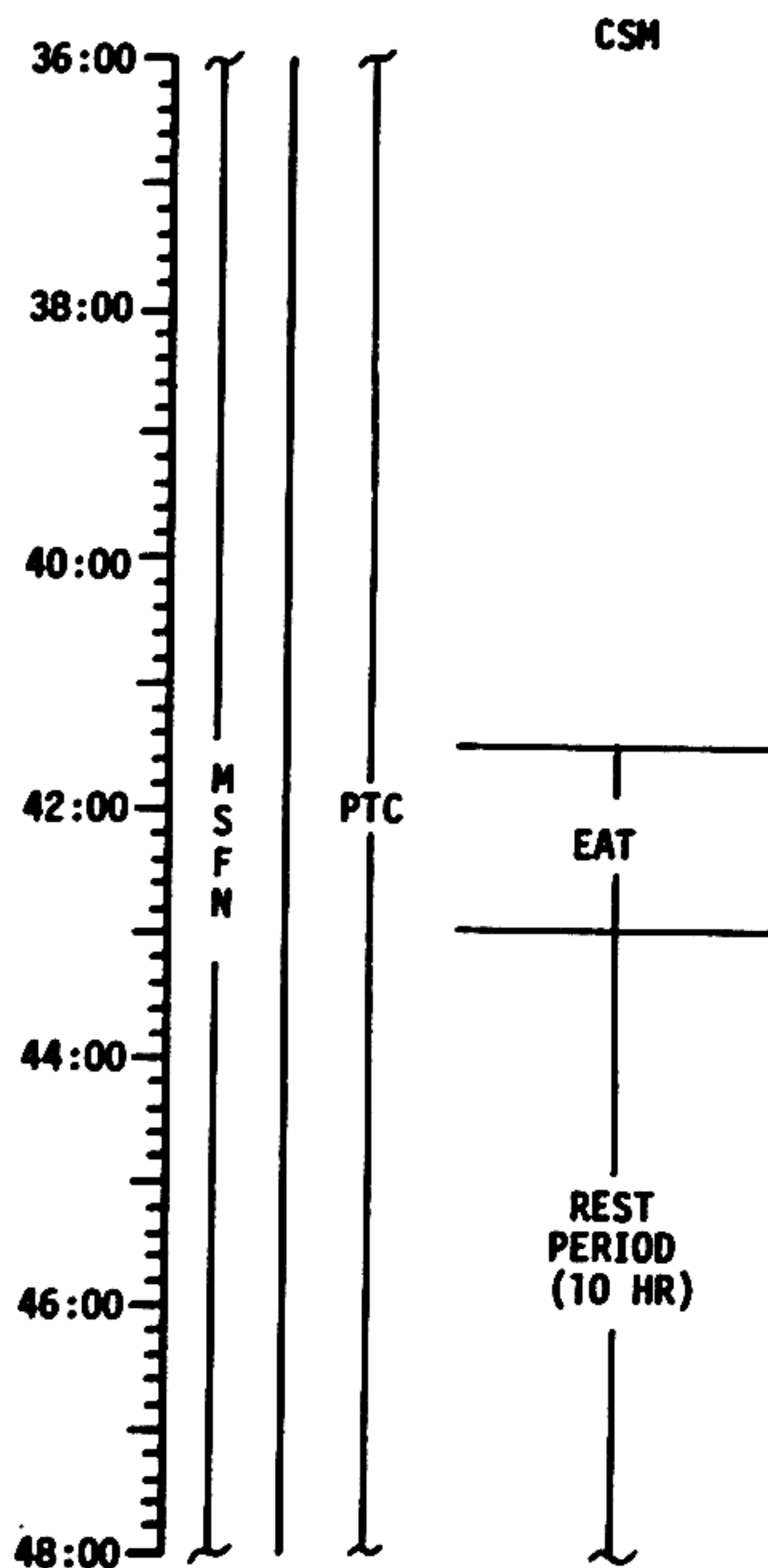
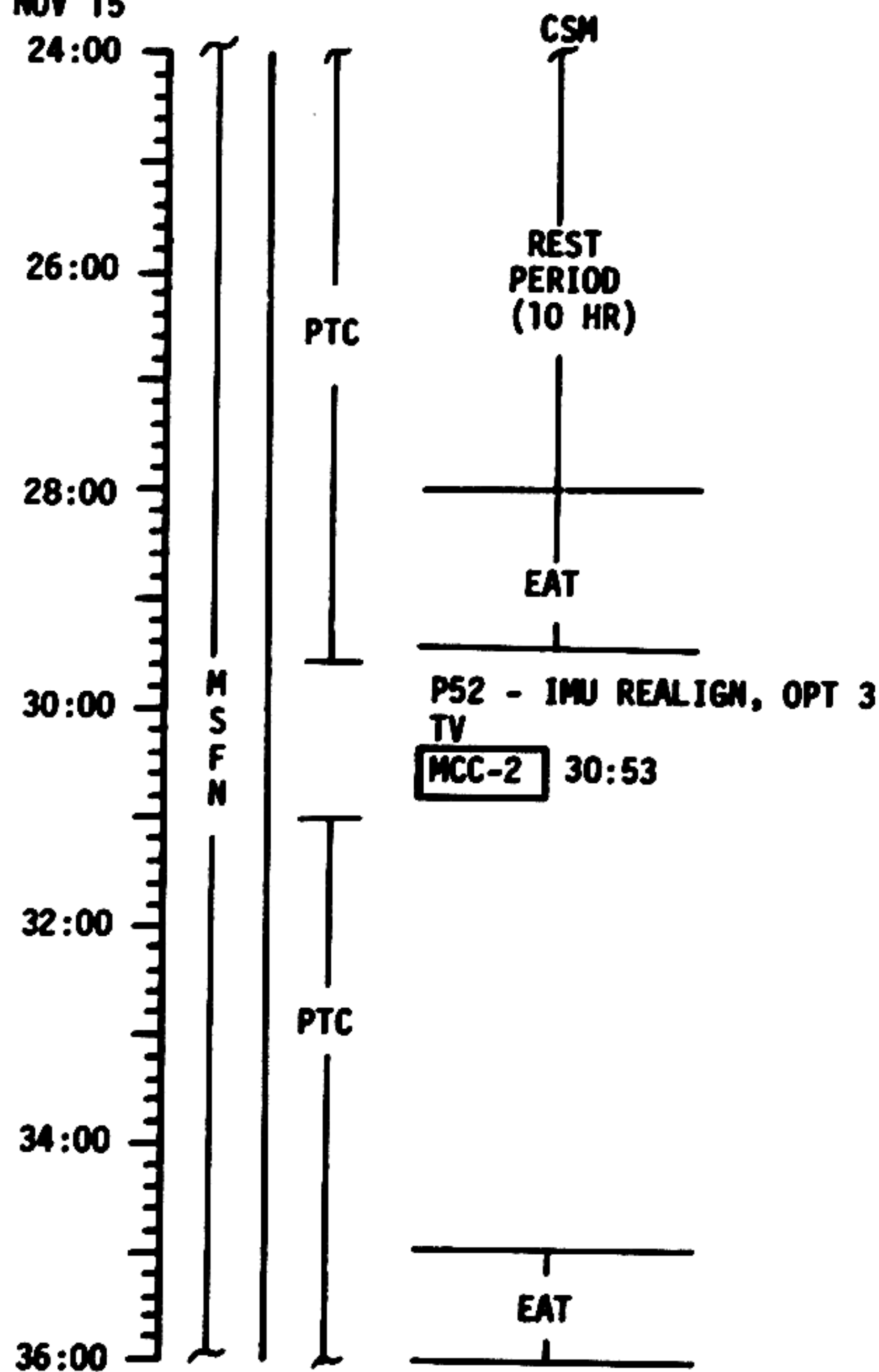


PTC
 P52 - IMU REALIGN, OPT 3
 P23 - CISELUNAR NAVIGATION
 (5 SETS)
 EAT
 REST PERIOD
 (10 HR)
 PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	00:00 - 24:00	1/TLC	5-1

ABBREVIATED TIMELINE

1022 CST
NOV 15



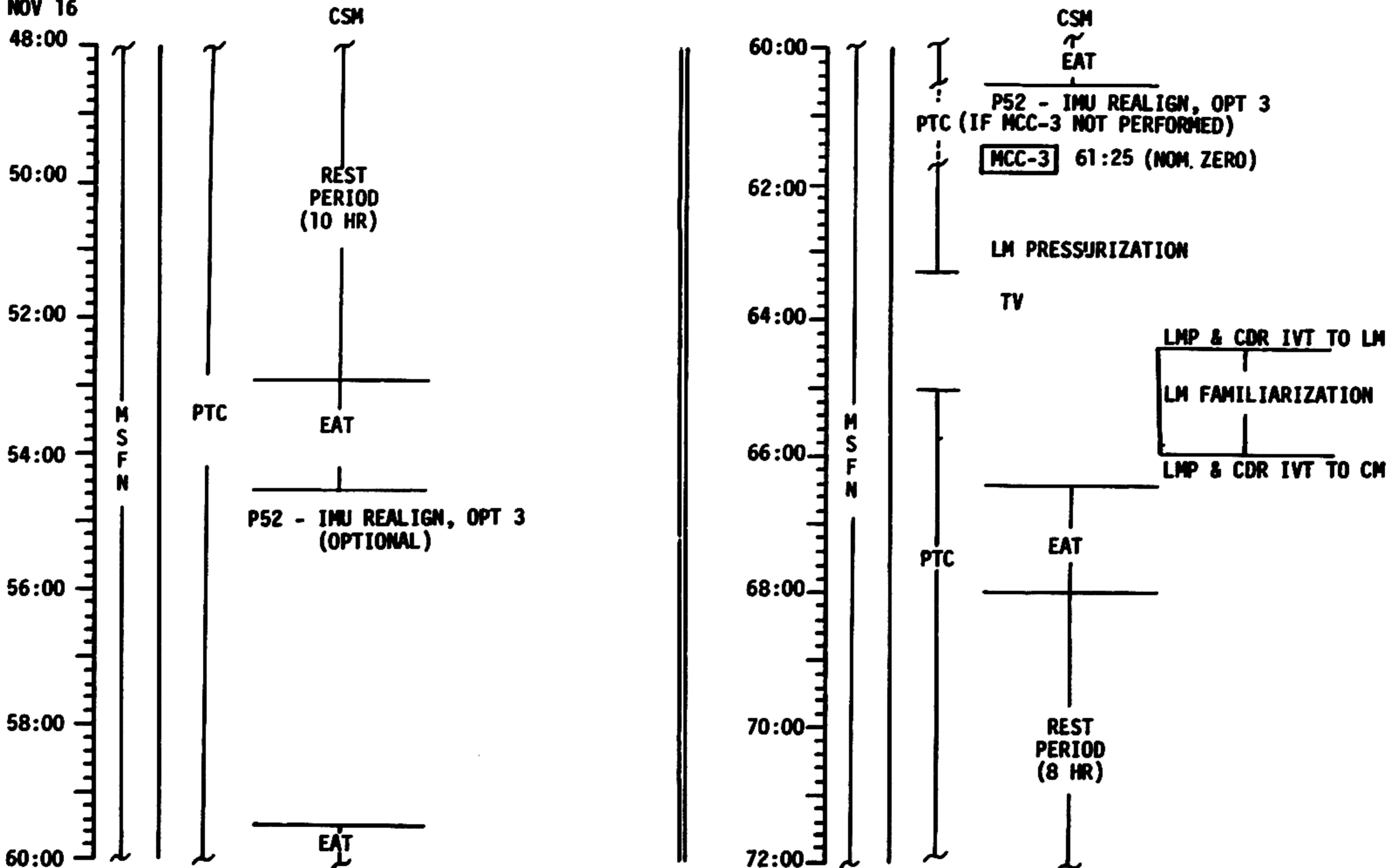
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	24:00 - 48:00	2/TLC	5-2

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

ABBREVIATED TIMELINE

1022 CST
NOV 16



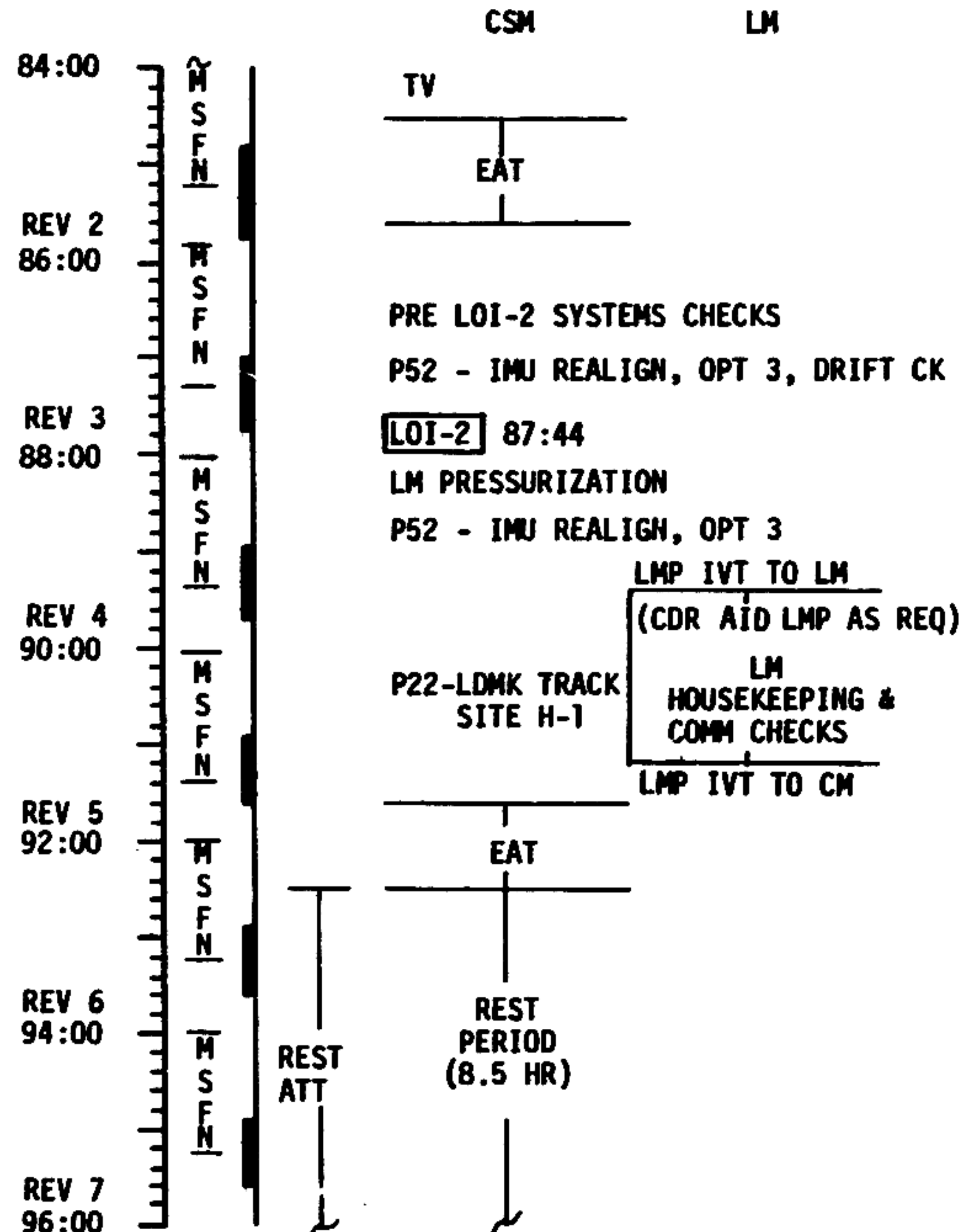
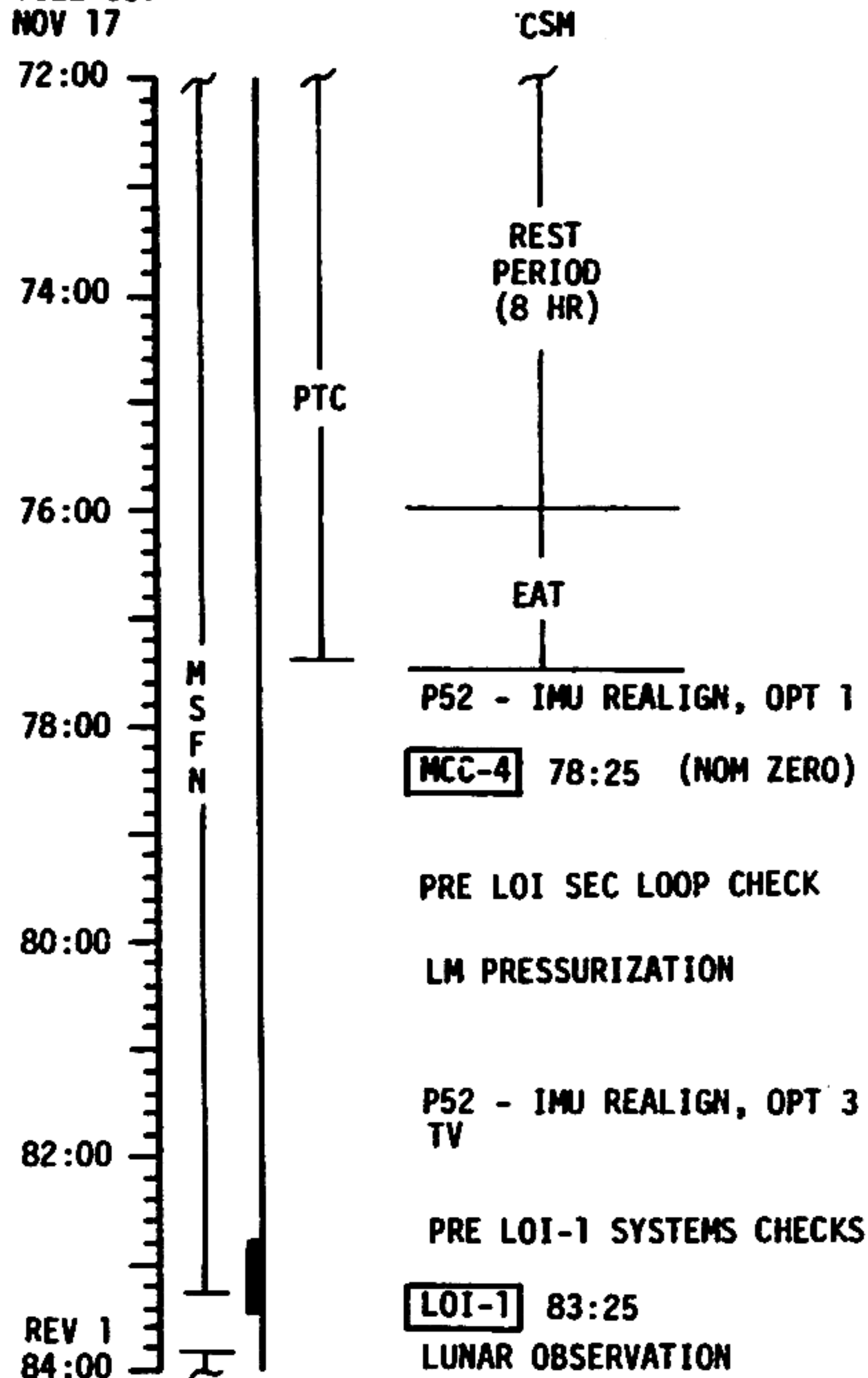
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	48:00 - 72:00	3/TLC	5-3

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

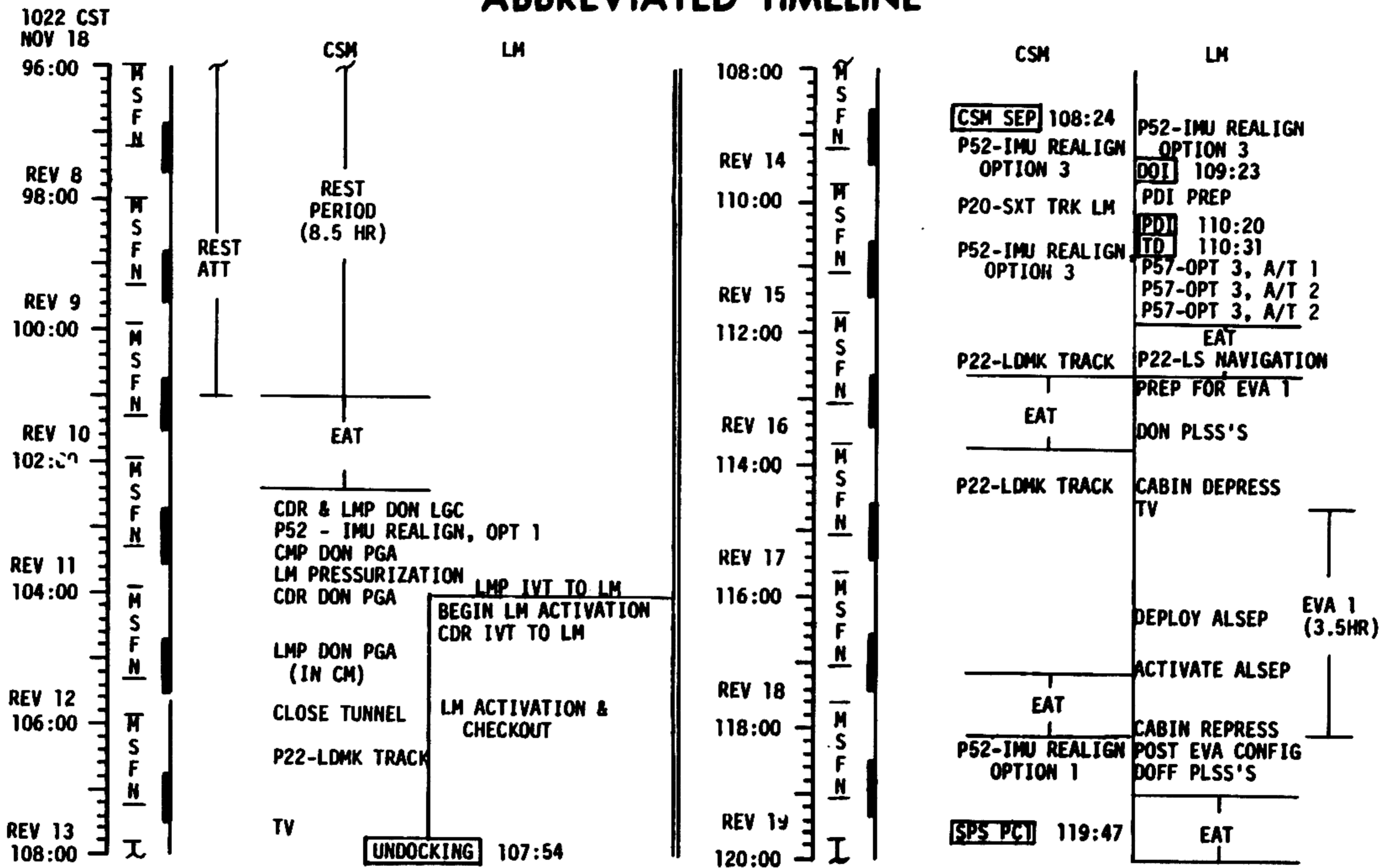
ABBREVIATED TIMELINE

1022 CST
NOV 17



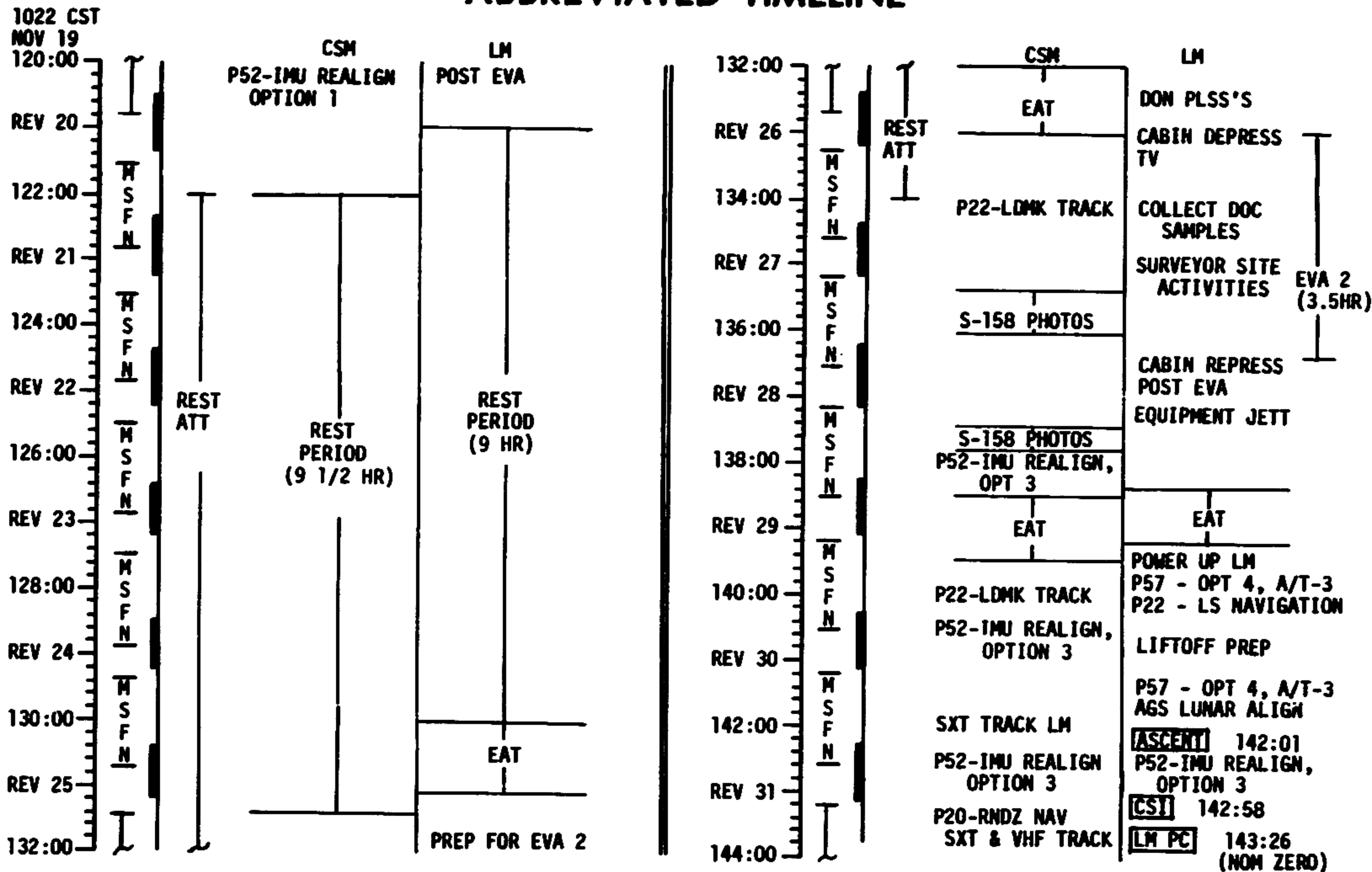
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	72:00 - 96:00	4/TLC, 1-7	5-4

ABBREVIATED TIMELINE



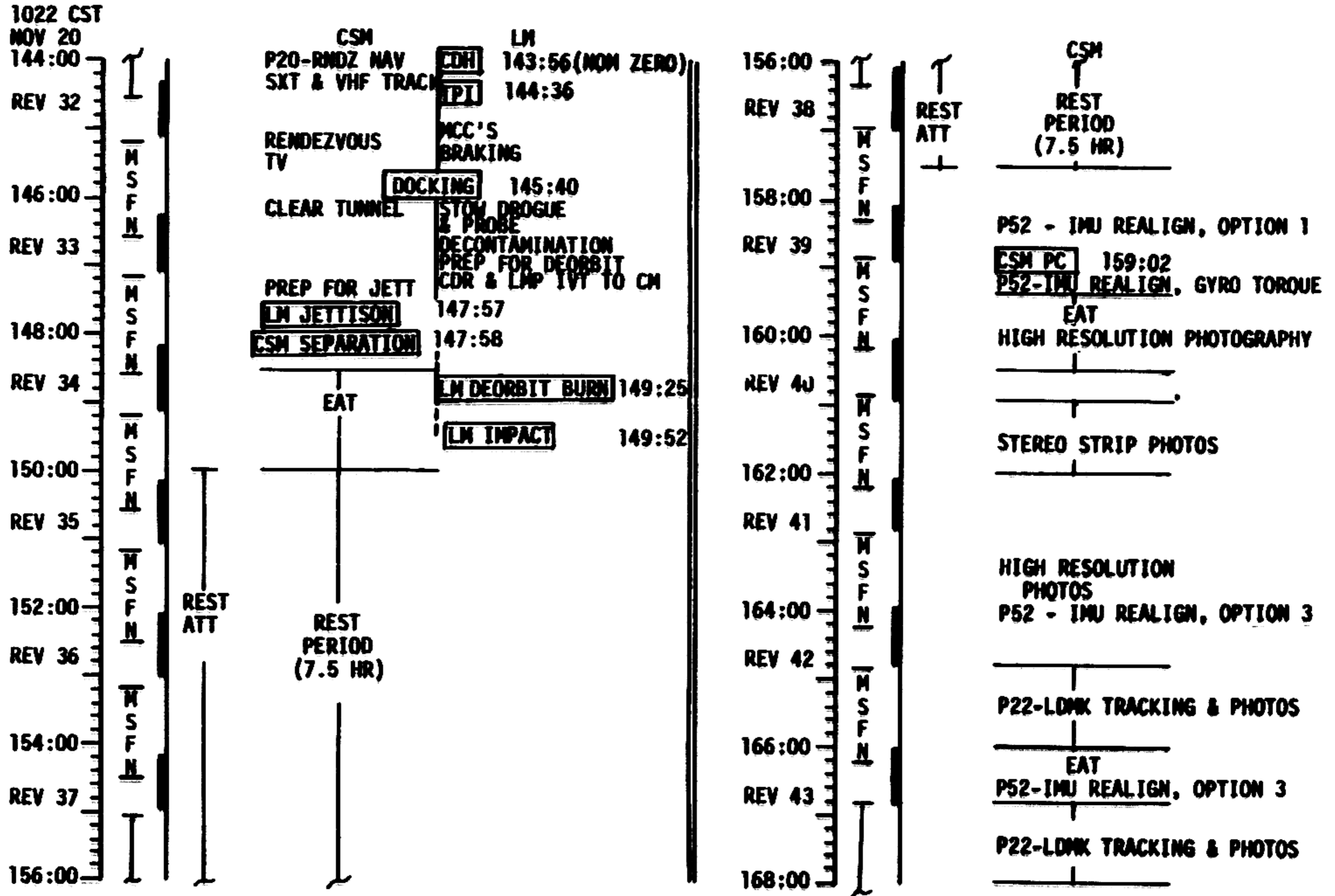
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	96:00 - 120:00	5/7-19	5-5

ABBREVIATED TIMELINE



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	120:00 - 144:00	5-6/19-31	5-6

ABBREVIATED TIMELINE



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	144:00 - 168:00	6-7/31-43	5-7

ABBREVIATED TIMELINE

1022 CST

NOV 21

168:00

REV 44

170:00

REV 45

172:00

REV 46

174:00

176:00

178:00

180:00



CSM

STEREO STRIP PHOTOS

P52-IMU REALIGN, OPTION 1

PREP FOR TEI

TEI 172:21

TV

P52-IMU REALIGN, GYRO TORQUE

EAT

PTC

REST PERIOD (10 HR)

180:00

182:00

184:00

186:00

188:00

190:00

192:00



CSM

REST PERIOD (10 HR)

EAT

P52-IMU REALIGN, OPTION 3

PTC

PTC (IF MCC-5 NOT PERFORMED)

MCC-5 187:21 (NOM ZERO)

P23 - CISELUNAR NAVIGATION (5 SETS)

PTC

EAT

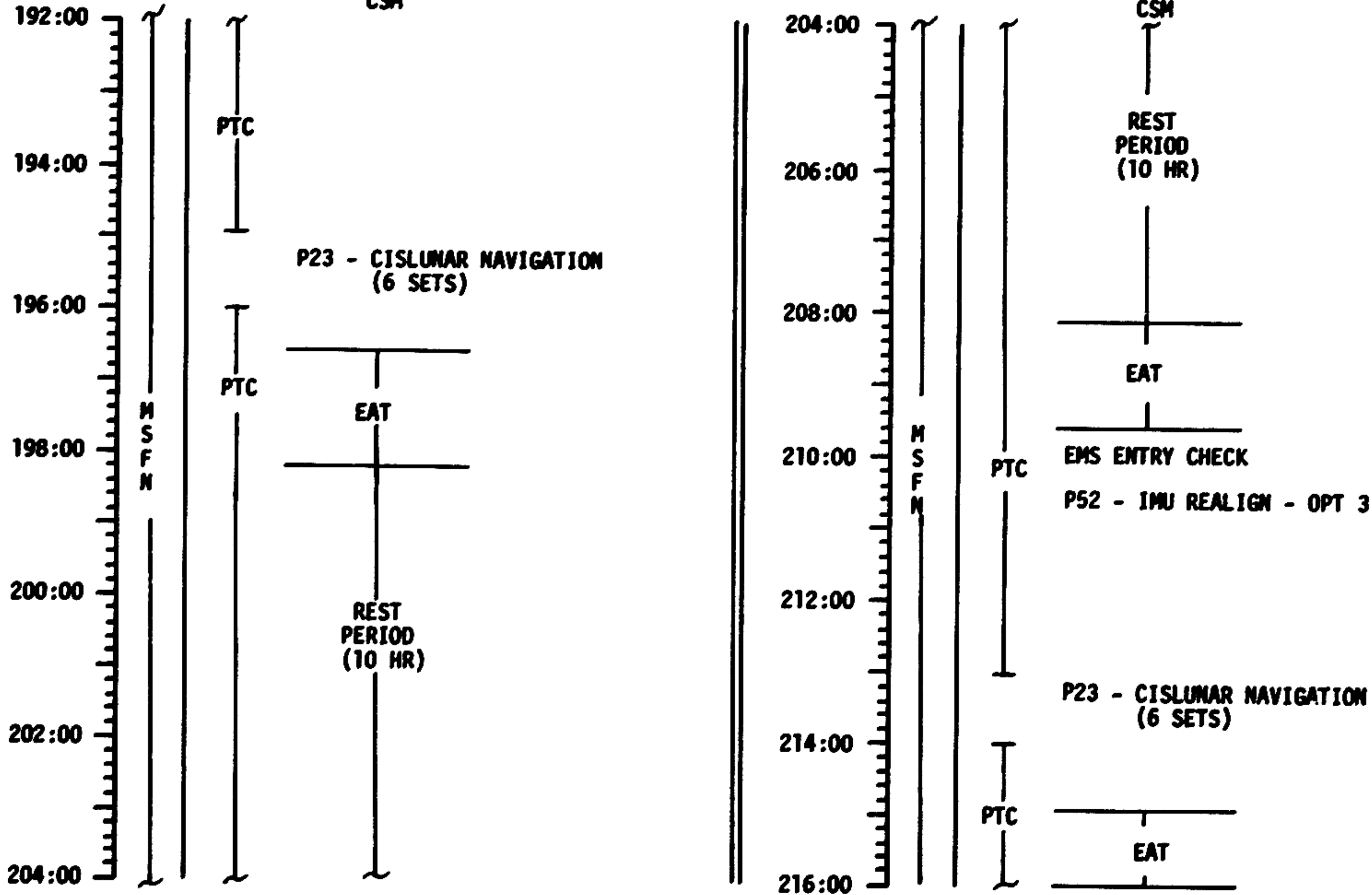
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	168:00 - 192:00	7-8/43-TEC	5-8

1022 CST (Nov 21)

FLIGHT PLANNING BRANCH

ABBREVIATED TIMELINE

1022 CST
NOV 22



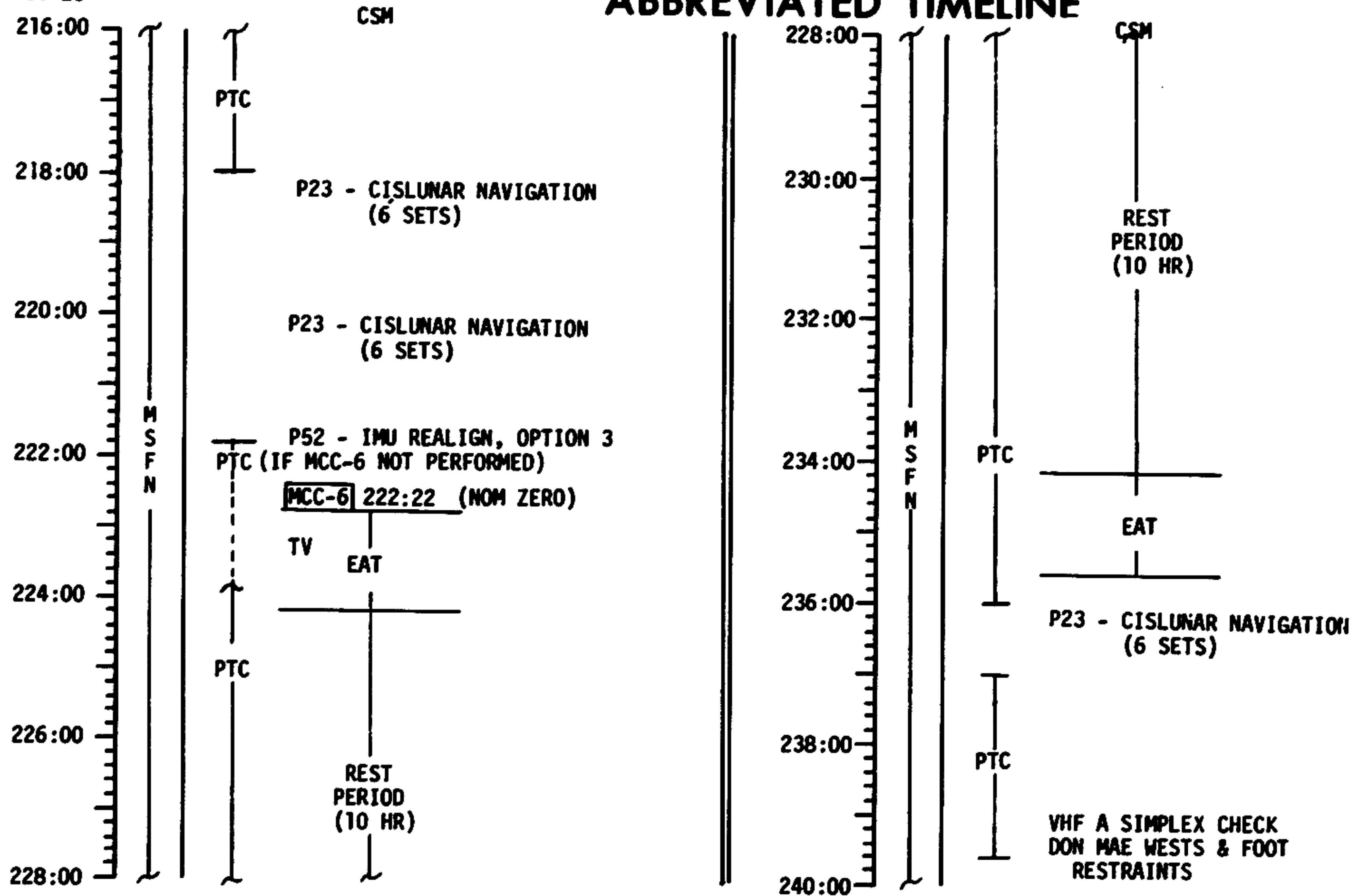
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	192:00 - 216:00	8-9/TEC	5-9

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

1022 CST
NOV 23

ABBREVIATED TIMELINE



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	216:00 - 240:00	9-10/TEC	5-10

ABBREVIATED TIMELINE

1022 CST
NOV 24

240:00

242:00

244:00

246:00

M
S
F
N

CSM
P52 - IMU REALIGN, OPTION 1

MCC-7 241:22 (NOM ZERO)

BEGIN ENTRY PREP

P52 - IMU REALIGN, OPTION 3

INITIALIZE EMS
SEPARATION CHECKLIST

CM/SM SEP










ENTRY INTERFACE 244:22

SPLASHDOWN 244:35

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	240:00 - 246:00	10/TEC	5-11

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PHOTO PLAN

TIME	ACTIVITY or TARGET	CAMERA CONFIGURATION CODE	MAGAZINE
3:20	Transposition/Docking	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps, .3 mag (5 MIN) CM2/EL/80/CEX - (f8,250,30) 10 CM4/TV - IN, BRKT (f22) 1 HR 05 MIN	(A) (Q)
4:15	LM Ejection	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 12 fps, .7 mag (6 MIN) CM4/EL/80/CEX- (f8,250,30) 5	(A) (Q)
TLC	Earth Photography Distant Moon	CM_/EL/80 or 250/CEX-RING (f11,250,∞) 20 CM_/EL/250 or 80/CEX or BW-RING (f5.6,250,∞) 5/5	(Q) (Q) 
30:25	Hybrid Burn (MCC2) Crew Activities	CM/TV - IN (f5.6) 35 MIN	
63:30	IVT Transfer	CM/TV - IN (f5.6) 50 MIN	
81:30	Pre-LOI1 Lunar Surface	CM/TV - IN (f22) 20 MIN	
84:00	Lunar Surface	CM/TV - IN (f22) 30 MIN	
107:55	Undocking	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps, 1 mag (16 MIN) CM2/EL/80CEX- (f8,250,50) 10 LM1/DC/60/HCEX-(f11,250,50) 10 LM_/DAC/10/CEX-(f11,250,7) 6 fps .25 mag (4 MIN) CM4/TV - IN BRKT (f22) 20 MIN	(B) (Q) (CC) (K)
Lunar Orbit	Targets of Opportunity Fra Mauro	CM/EL/80 or 250/CEX-(CC,250,∞) 175 CM/EL/80/BW-(f2.8,250,) 10	(Q)  (S)
110:26	PDI + 6 MIN/Descent	LM3/DAC/10/CEX- (f2.8,500,30) 12 fps, .75 mag (6 MIN)	(K)
114:40	EVA 1	See Surface Photo and TV Timelines	  
133:17	EVA 2		   
134:10	Sextant Photography- Lansberg Rev 26	CM/DAC/SEXT/CEX-(fixed,60,fixed) 1 fps (5 MIN)	(O) (F)
135:19, 137:25	Lunar Multispectral	Blu- CM3/LMC/80/MBW-IVL,47B FIL (* ,fixed) 150	(BB)
137:47	North Wall of Theophilus	Red-CM3/LMC/80/MBW-IVL,29+ FIL (* ,fixed) 150	(CC)
137:51	Descartes	Grn-CM3/LMC/80/BW-IVL,58 FIL (* ,fixed) 150	(DD)
138:01	Fra Mauro	Blk-CM3/LMC/80/IRBW-IVL,87C FIL (* ,fixed) 120	(AA)

DATE NOVEMBER 3, 1969

PHOTO PLAN

142:00	LM Ascent	LM3/DAC/10/CEX-(f2.8,500,30) 12 fps, 1 mag (8 MIN)	▽	
145:30	Rendezvous/Docking	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps, 1 mag (16 MIN) CM2/EL/80/CEX- (f8,250,30) 10 LM/DC/60/HCEX-(f11,250,FOCUS) 5 CM4/TV-IN BRKT (f22) 30 MIN	□ ◇ ▽ □	
148:00	LM Jettison Crew Option	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 12 fps, .5 mag (4 MIN) CM/DAC/SEXT/CEX-(fixed,250,fixed) 1 fps .5 mag (46 MIN)	□	
159:40	High Resolution/Oblique Photography - LaLande	CM4/EL/500/BW-BRKT,Cont (f8,125,∞) 20 CM2/DAC/18/BW - BRKT, MIR (f8,125,∞) 6 fps .5 mag (8 MIN)	◇ ◇	
160:54	Vertical Stereo Strip	CM4/EL/80/BW - BRKT, IVL (f4,250,∞) 180 CM/DAC/SEXT/CEX - (fixed,CC,fixed) 1 fps, 1 mag (93 MIN)	△ □	
163:20	High Resolution/Oblique Photography - Descartes Fra Mauro	CM4/EL/500/BW-BRKT,CONT (f8,125,∞) 150	◇	
		CM2/DAC/18/BW-BRKT,MIR (f8,125,∞) 6 fps, 1.5 mag (24 MIN)	◇	◇
164:50	Landmark Tracking Sextant Photography	CM4/DAC/SEXT/CEX - (fixed,CC,fixed) 1 fps, ~1 mag (88 MIN)	□	
168:51	Vertical Stereo Strip	CM4/EL/80/BW-BRKT,IVL (f4,250,∞) 180	△	
172:55	Lunar Surface	CM/TV - IN (f22) 20 MIN		
TEC	Distant Moon	CM/EL/80 or 250/BW or CEX-RING (f5.6,250,∞) 5/5	◇	◇
	Earth Photography	CM/EL/80 or 250/CEX-RING (f11,250,∞) 10	◇	
223:15	Earth, Interior	CM/TV - IN (f5.6/f22) 30 MIN		
244:30	Reentry	CM/DAC/18/ GIN ^{HCEX} -(f11,250,7)12fps, .5 mag(4 MIN) Fireball -(f11,125,7)12fps, .5 mag(4 MIN) Chutes		◇
Crew Option	Crew/Spacecraft Compatibility	CM/DAC/5/CIN- (f2.8,60,∞)SPOT 6 fps, 1 mag (16 MIN)	◇	
	Stowing/Unstowing Equip- ment (Aft bulkhead)	CM/TV - IN (f5.6)		
	LM to CSM Crew Transfer Donning/Doffing Spacesuit			
Crew Option	Crew Observations	CM_/EL/80 or 250/CEX - (Decal)	◇	

DATE NOVEMBER 3, 1969







FILM MAGAZINE IDENTIFICATION AND STORAGE

MAGAZINES

STORAGE

16mm (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P)

CEX	X	X	X	X	X	X					X	X	X	X	X	X
CIN							X	X								
HCEX BW 164							X		X	X						
TR											X	X	X	X	X	X

	CAMERA
	B8
	B2
	A8
	A10
	R13 (Mag bag)

70mm (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) (AA) (BB) (CC) (DD) (EE)

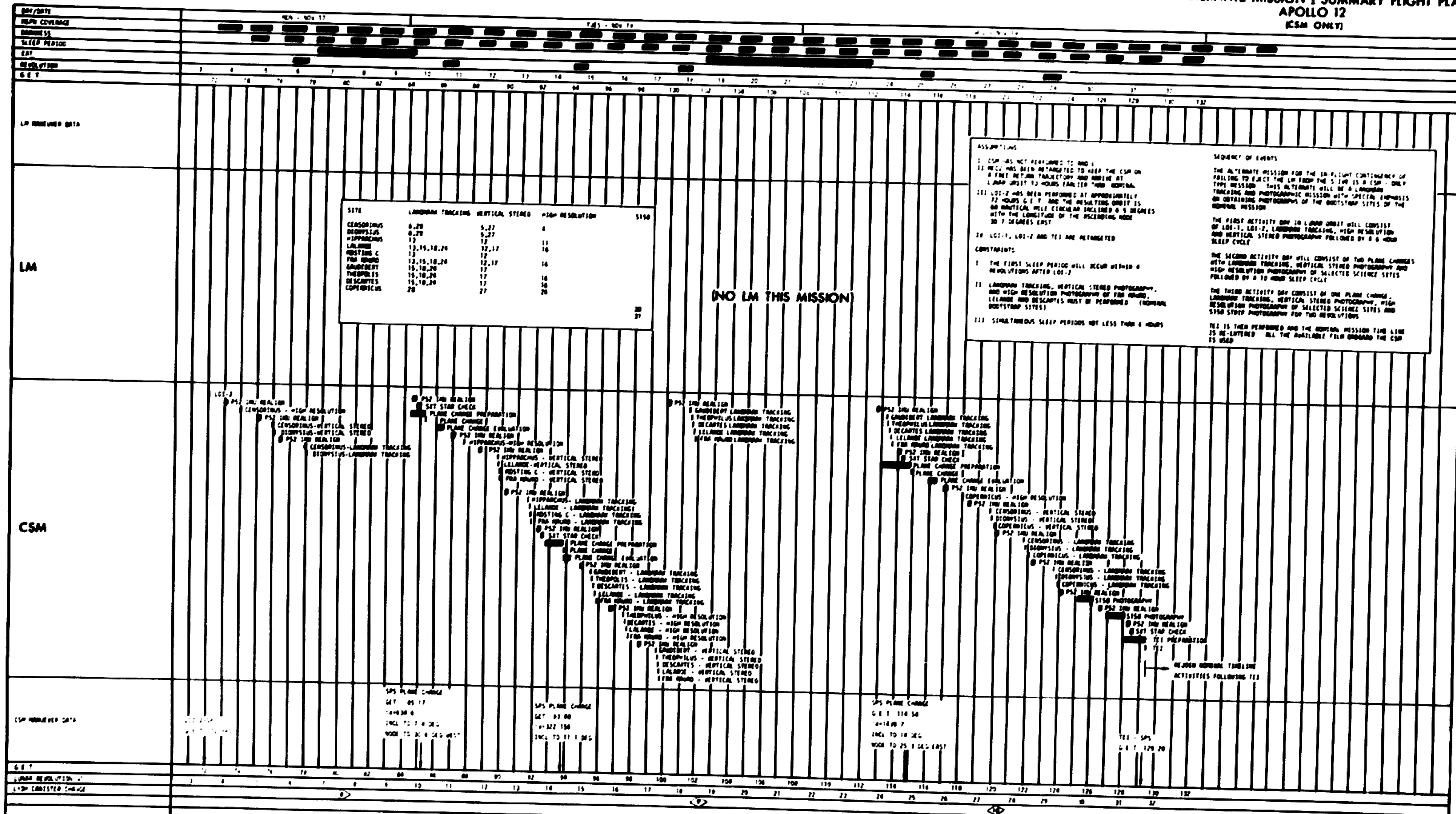
CEX	X	X														
HCEX										X	X	X				
BW			X	X	X	X										
MBW							X	X	X							
HBW														X	X	
IRBW										X						
TR											X	X	X	X	X	

TR - Transfer and return

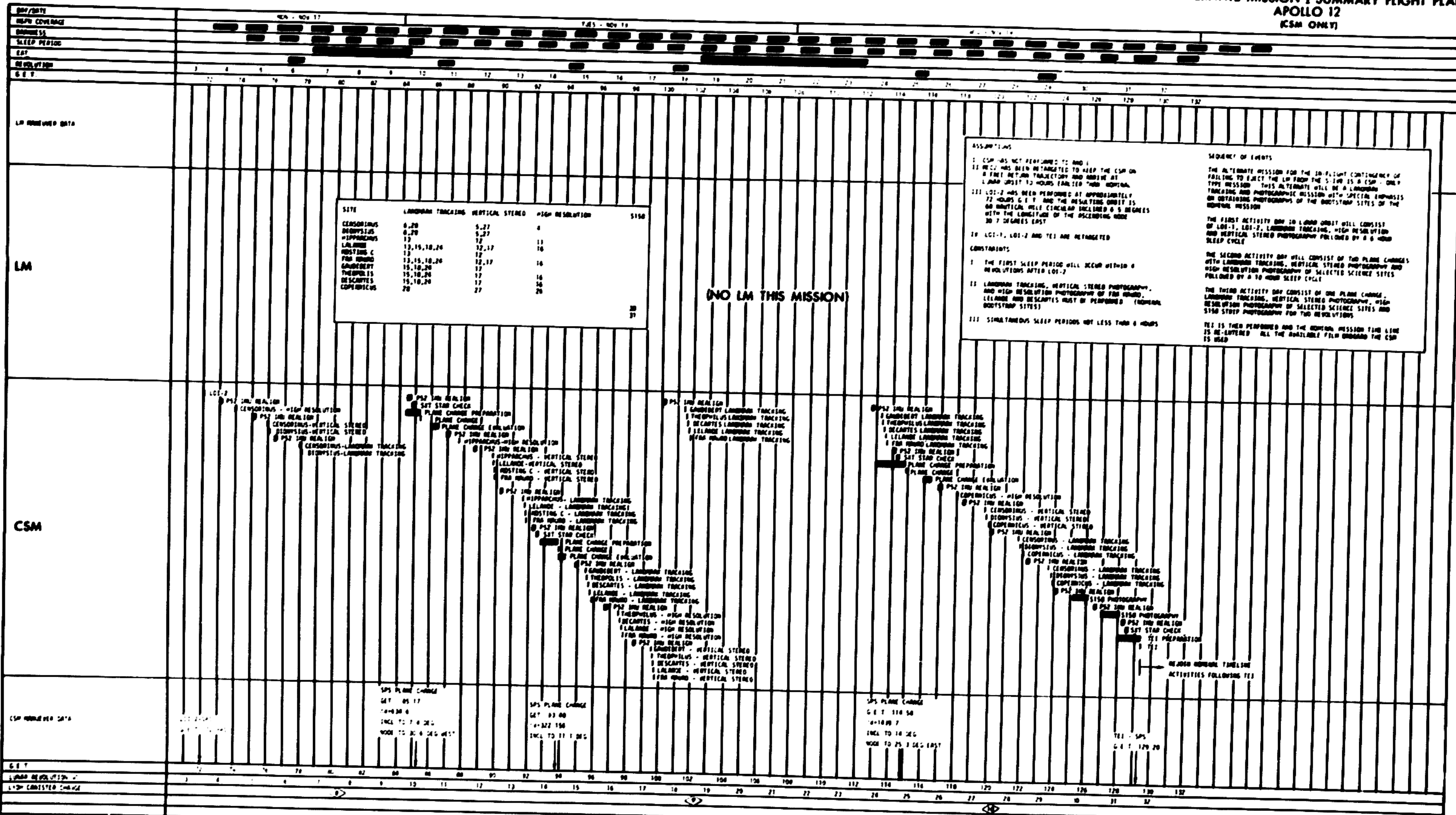
SECTION 6 - ALTERNATE MISSIONS

**ALTERNATE
MISSIONS**

ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN
 APOLLO 12
 (CSM ONLY)



ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN
 APOLLO 12
 (CSM ONLY)



SITE	LANDMARK TRACKING	VERTICAL STEREO	HIGH RESOLUTION	S150
CECROPIUS	0,20	5,27	4	
DIOPHANTUS	0,20	5,27		
HIPPOCRATUS	13	17	11	
LALANDE	13,15,18,24	12,17	16	
ROSTING C	13	17		
FOR WOUND	13,15,18,24	12,17	16	
GAUDREY	15,18,24	17		
THEOPHILUS	15,18,24	17	16	
DESCARTES	15,18,24	17	16	
COPERNICUS	20	27	20	

(NO LM THIS MISSION)

ASSUMPTIONS

- CSM HAS NOT PERFORMED TO AND
- RECI HAS BEEN INTENDED TO KEEP THE CSM ON A FREE RETURN TRAJECTORY AND ARRIVE AT LUNAR ORBIT 12 HOURS EARLIER THAN USUAL
- LOI-2 HAS BEEN PERFORMED AT APPROXIMATELY 72 HOURS C.E.T. AND THE RESULTING ORBIT IS AN ORBITICAL WAVE CIRCULAR INCLINED 6.5 DEGREES WITH THE LONGITUDE OF THE ASCENDING NODE 30.7 DEGREES EAST

SEQUENCE OF EVENTS

THE ALTERNATE MISSION FOR THE IN-FLIGHT CONTINGENCY OF FAILING TO EJECT THE LM FROM THE S-140 IS A CSM-ONLY TYPE MISSION. THIS ALTERNATE WILL BE A LANDMARK TRACKING AND PHOTOGRAPHIC MISSION WITH SPECIAL EMPHASIS ON OBTAINING PHOTOGRAPHS OF THE BOOTSTAMP SITES OF THE GENERAL MISSION.

THE FIRST ACTIVITY DAY IN LUNAR ORBIT WILL CONSIST OF LOI-1, LOI-2, LANDMARK TRACKING, HIGH RESOLUTION AND VERTICAL STEREO PHOTOGRAPHY FOLLOWED BY A 6 HOUR SLEEP CYCLE.

THE SECOND ACTIVITY DAY WILL CONSIST OF TWO PLANE CHANGES WITH LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY AND HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES FOLLOWED BY A 6 HOUR SLEEP CYCLE.

THE THIRD ACTIVITY DAY CONSIST OF ONE PLANE CHANGE, LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY, HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES AND S150 STREP PHOTOGRAPHY FOR TWO REVOLUTIONS.

TEI IS THEN PERFORMED AND THE GENERAL MISSION TIME LINE IS RE-ENTERED. ALL THE AVAILABLE FILM ONBOARD THE CSM IS USED.

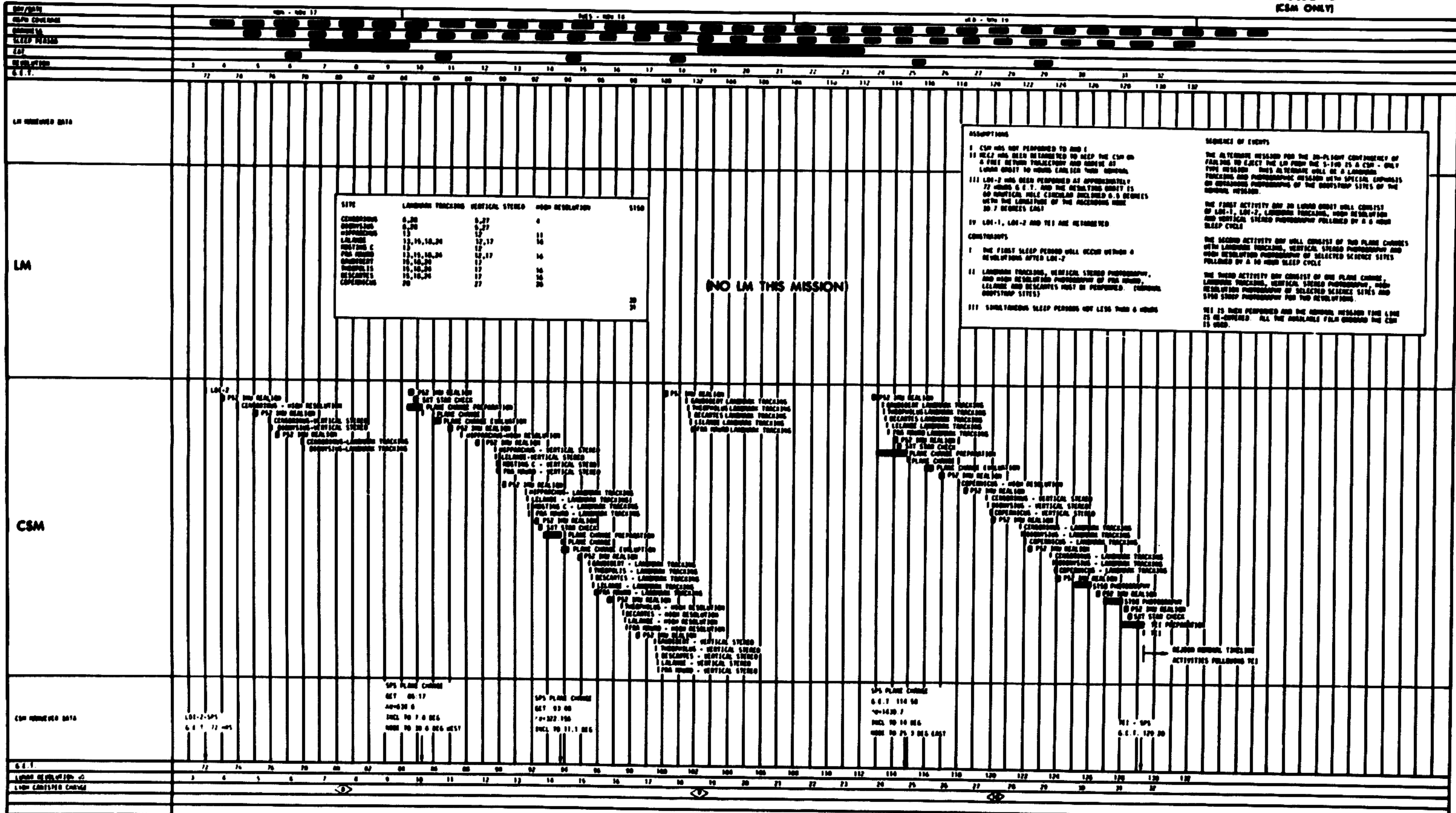
CONSTRAINTS

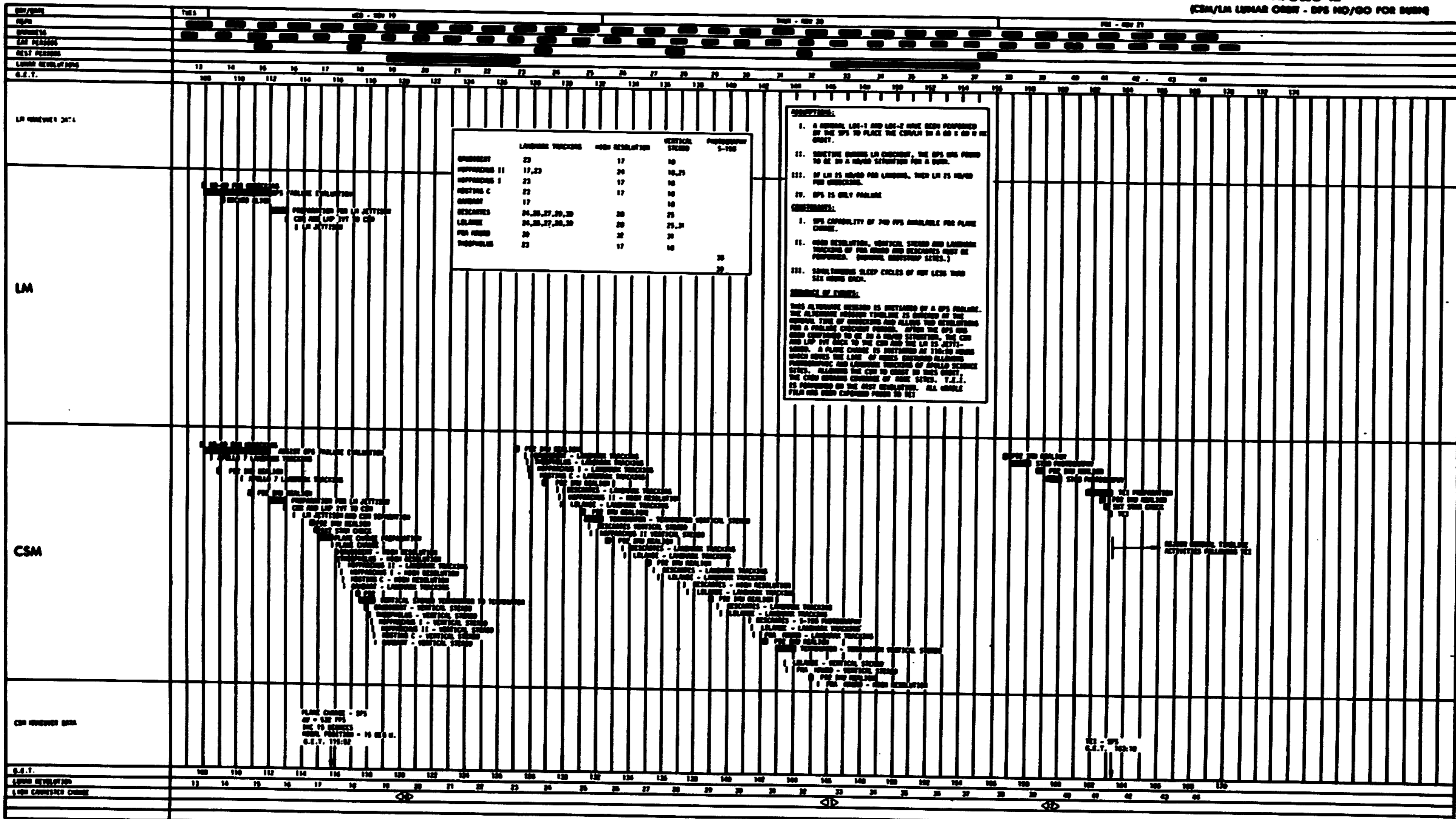
- THE FIRST SLEEP PERIOD WILL OCCUR WITHIN 6 REVOLUTIONS AFTER LOI-2
- LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY, AND HIGH RESOLUTION PHOTOGRAPHY OF FOR WOUND, LALANDE AND DESCARTES MUST BE PERFORMED (GENERAL BOOTSTAMP SITES)
- SIMULTANEOUS SLEEP PERIODS NOT LESS THAN 6 HOURS

REJOIN GENERAL TIME LINE
 ACTIVITIES FOLLOWING TEI

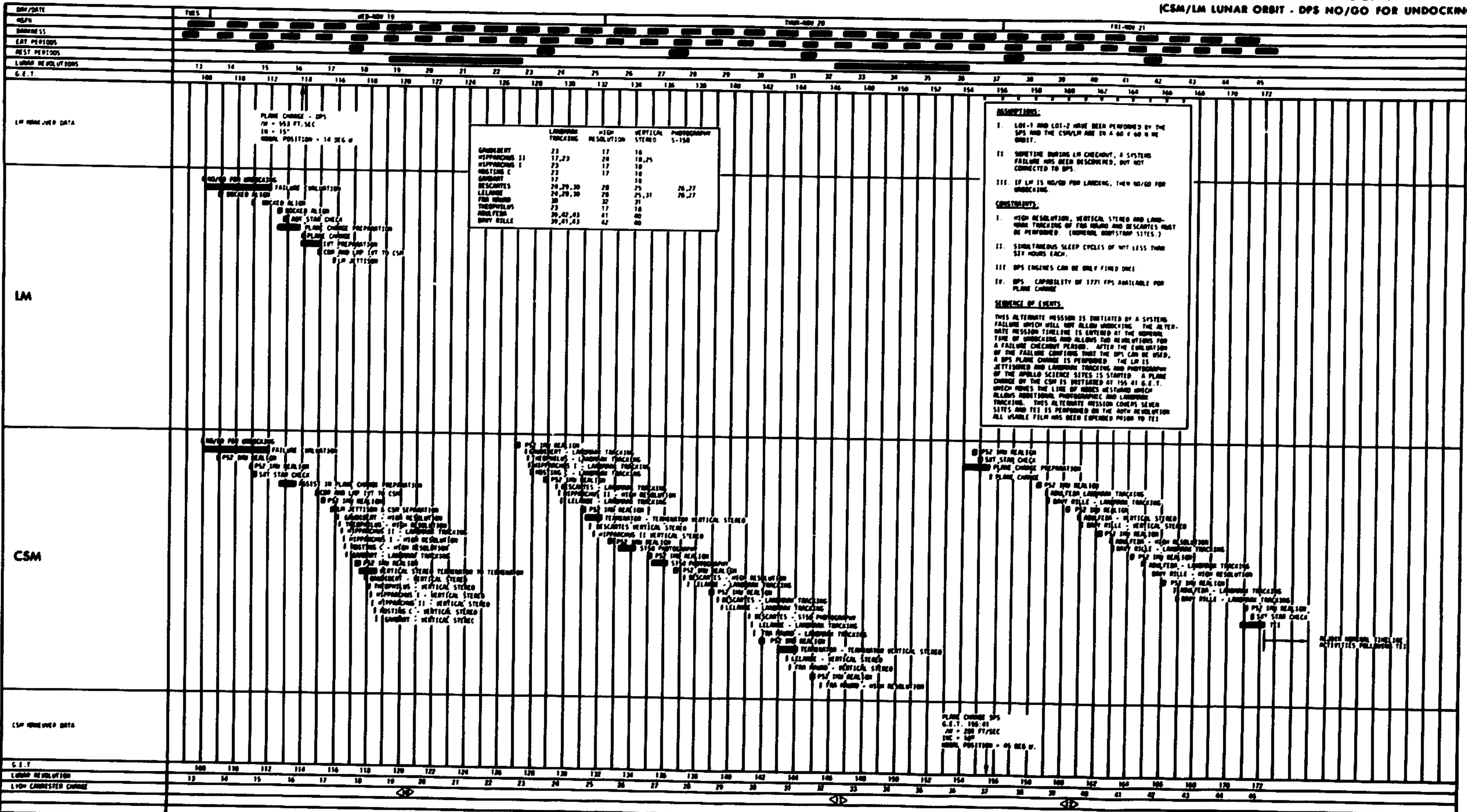
**DISREGARD PREVIOUS
2 IMAGES**

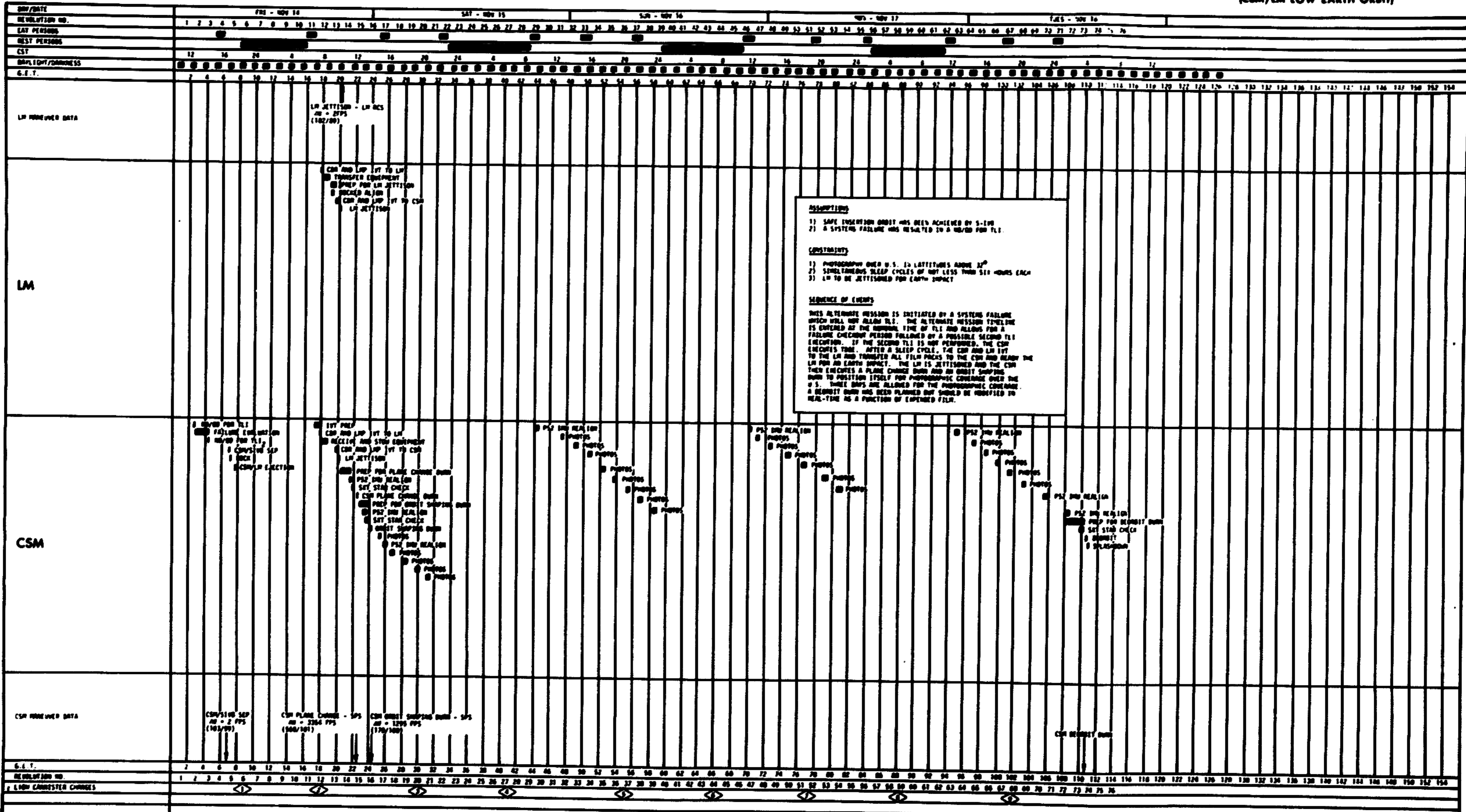
ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN
 APOLLO 12
 CSM ONLY





ALTERNATE MISSION 3 SUMMARY FLIGHT PLAN
 APOLLO 12 REVISION A
 (CSM/LM LUNAR ORBIT - DPS NO/GO FOR UNDOCKING)





ASSUMPTIONS

- 1) SAFE INSERTION ORBIT HAS BEEN ACHIEVED BY S-110.
- 2) A SYSTEM FAILURE HAS RESULTED IN A REVED FOR TLI.

CONSTRAINTS

- 1) PHOTOGRAPH OVER U.S. IN LATITUDES ABOVE 32°
- 2) SIMULTANEOUS SLEEP CYCLES OF NOT LESS THAN SIX HOURS EACH
- 3) LM TO BE JETTISONED FOR EARTH IMPACT

SEQUENCE OF EVENTS

THIS ALTERNATE MISSION IS INITIATED BY A SYSTEM FAILURE WHICH WILL NOT ALLOW TLI. THE ALTERNATE MISSION TIMELINE IS ENTERED AT THE ORIGINAL TIME OF TLI AND ALLOWS FOR A FAILURE CHECKOUT PERIOD FOLLOWED BY A POSSIBLE SECOND TLI EXECUTION. IF THE SECOND TLI IS NOT PERFORMED, THE CSM EXECUTES TIME. AFTER A SLEEP CYCLE, THE CSM AND LM GET TO THE LM AND TRANSFER ALL FILM PACKS TO THE CSM AND READY THE LM FOR AN EARTH IMPACT. THE LM IS JETTISONED AND THE CSM THEN EXECUTES A PLANE CHANGE BURN AND AN ORBIT SHAPING BURN TO POSITION ITSELF FOR PHOTOGRAPHIC COVERAGE OVER THE U.S. THREE DAYS ARE ALLOWED FOR THE PHOTOGRAPHIC COVERAGE. A BEARBY BURN HAS BEEN PLANNED BUT SHOULD BE MODIFIED TO REAL-TIME AS A FUNCTION OF EXPENDED FILM.

APOLLO XII (CONRAD - RED VELCRO)

Check items eaten

MEAL	Day 1*, 5**, 9	Day 2, 6, 10	Day 3, 7, 11	Day 4, 8
A	1 5 9 Peaches Corn Flakes Bacon Squares (8) Orange Drink Coffee w/Sugar	2 6 10 Apricots Sausage Patties Scrambled Eggs Grapefruit Drink Coffee w/Sugar	3 7 11 Pears Corn Flakes Bacon Squares (8) Grape Drink Coffee w/Sugar	4 8 Canadian Bacon & Applesauce Scrambled Eggs Cinnamon Bread (4) Orange-G.F. Drink Coffee w/Sugar
B	Tuna Salad Beef & Gravy WP Jellied Candy Grape Punch	Turkey & Gravy WP Cheese Crackers (4) Chocolate Pudding Orange-G.F. Drink	Frankfurters WP Applesauce Chocolate Bar P.A.-G.F. Drink	Shrimp Cocktail Ham & Potatoes WP Apricots Chocolate Pudding Orange Drink
C	Cream of Chicken Soup Chicken & Rice Sugar Cookies (4) Butterscotch Pudding P.A.-G.F. Drink	Pork & Scalloped Potatoes Bread Slice Sandwich Spread WP Jellied Candy Cocoa Orange Drink	Salmon Salad Chicken Stew Butterscotch Pudding Peaches Grapefruit Drink	Spaghetti w/Meat Beef Stew Banana Pudding Cocoa Grape Drink

* Day 1 consists of Meal B and C only

**Day 5 consists of Meal A only

WP = Wet Pack

APOLLO XII (GORDON - WHITE VELCRO)

MEAL		Check items eaten			Day 2, 6, 10			Day 3, 7, 11			Day 4, 8		
Day 1*, 5, 9		1	5	9	2	6	10	3	7	11	4	8	
A	Peaches Corn Flakes Bacon Squares (8) Orange Drink Coffee (black)				Apricots Scrambled Eggs Sausage Patties Grapefruit Drink Coffee (black)			Pears Corn Flakes Bacon Squares (8) Grape Drink Coffee (black)			Canadian Bacon & Applesauce Strawberry Cubes (4) Scrambled Eggs Orange-G.F. Drink Coffee (black)		
B	Tuna Salad Beef & Gravy WP Jellied Candy Grape Punch				Turkey & Gravy WP Cheese Crackers (4) Chocolate Pudding Orange-G.F. Drink			Frankfurters WP Applesauce Chocolate Bar P.A.-G.F. Drink			Shrimp Cocktail Ham & Potatoes Apricots Chocolate Pudding Orange Drink		
	(Day 5)												
	Beef & Potatoes WP												
C	Pea Soup Chicken & Rice Sugar Cookies (4) Butterscotch Pudding P.A.-G.F. Drink				Pork & Scalloped Potatoes Bread Slice Sandwich Spread WP Date Fruitcake (4) Cocos Orange Drink			Salmon Salad Beef & Gravy Butterscotch Pudding Peaches Grapefruit Drink			Spaghetti w/Meat Beef Stew Banana Pudding Cocos Grape Drink		

*Day 1 consists of Meal B and C only

WP = Wet Pack

APOLLO XII (BEAN - BLUE VELCRO)

Check items eaten

MEAL	Day 1*, 5**, 9	Day 2, 6, 10	Day 3, 7, 11	Day 4, 8
A	1 5 9 Peaches Corn Flakes Canadian Bacon & Applesauce Cocoa Orange Drink	2 6 10 Fruit Cocktail Corn Flakes Jellied Candy Grapefruit Drink P.A.-G.F. Drink	3 7 11 Peaches Corn Flakes Canadian Bacon & Applesauce Cocoa Orange Drink	4 8 Fruit Cocktail Corn Flakes Jellied Candy Cocoa Orange-G.F. Drink
B	Beef & Gravy WP Fruit Cocktail Jellied Candy Grapefruit Drink	Cream of Chicken Soup Turkey & Gravy WP Peaches Orange-G.F. Drink	Potato Soup Beef and Gravy Jellied Candy P.A.-G.F. Drink	Cream of Chicken Soup Chicken Stew Peaches Chocolate Pudding Orange Drink
C	Potato Soup Chicken & Rice Spaghetti w/Meat Butterscotch Pudding Orange-G.F. Drink	Pork & Scalloped Potatoes Bread Slice Sandwich Spread Chocolate Pudding Cocoa Orange Drink	Chicken & Rice Fruit Cocktail Cinnamon Bread (4) Butterscotch Pudding Grapefruit Drink	Spaghetti w/Meat Banana Pudding Cocoa P.A.-G.F. Drink

* Day 1 consists of Meal B and C only

**Day 5 consists of Meal A only

WP = Wet Pack

Front

Color _____

APOLLO XII/LM-6 MENU

CDR - Red Velcro
Check Items Eaten
Day 1 Meal C

Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Apricots
Grapefruit Drink
Pineapple-Grapefruit
Drink

Day 2 Meal A

Peaches
Scrambled Eggs
Bacon Squares (8)
Cocoa
Orange Drink

Day 2 Meal B

Beef and Gravy WP
Pears
Butterscotch Pudding
Pineapple-Grapefruit
Drink
Grape Drink

Day 2 Meal C

Turkey and Gravy
Chicken Stew
Apricots
Jellied Candy
Orange-Grapefruit
Drink

2 Spoons

WP = Wet Pack

LMP - Blue Velcro
Day 1 Meal C

Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Chocolate Pudding
Grapefruit Drink
Pineapple-Grapefruit
Drink

Day 2 Meal A

Peaches
Corn Flakes
Canadian Bacon &
Applesauce
Cocoa
Orange Drink

Day 2 Meal B

Beef and Gravy WP
Butterscotch Pudding
Pineapple-Grapefruit
Drink
Grapefruit Drink

Day 2 Meal C

Turkey and Gravy WP
Chicken Stew
Fruit Cocktail
Jellied Candy
Orange-Grapefruit
Drink

FOOD LOG

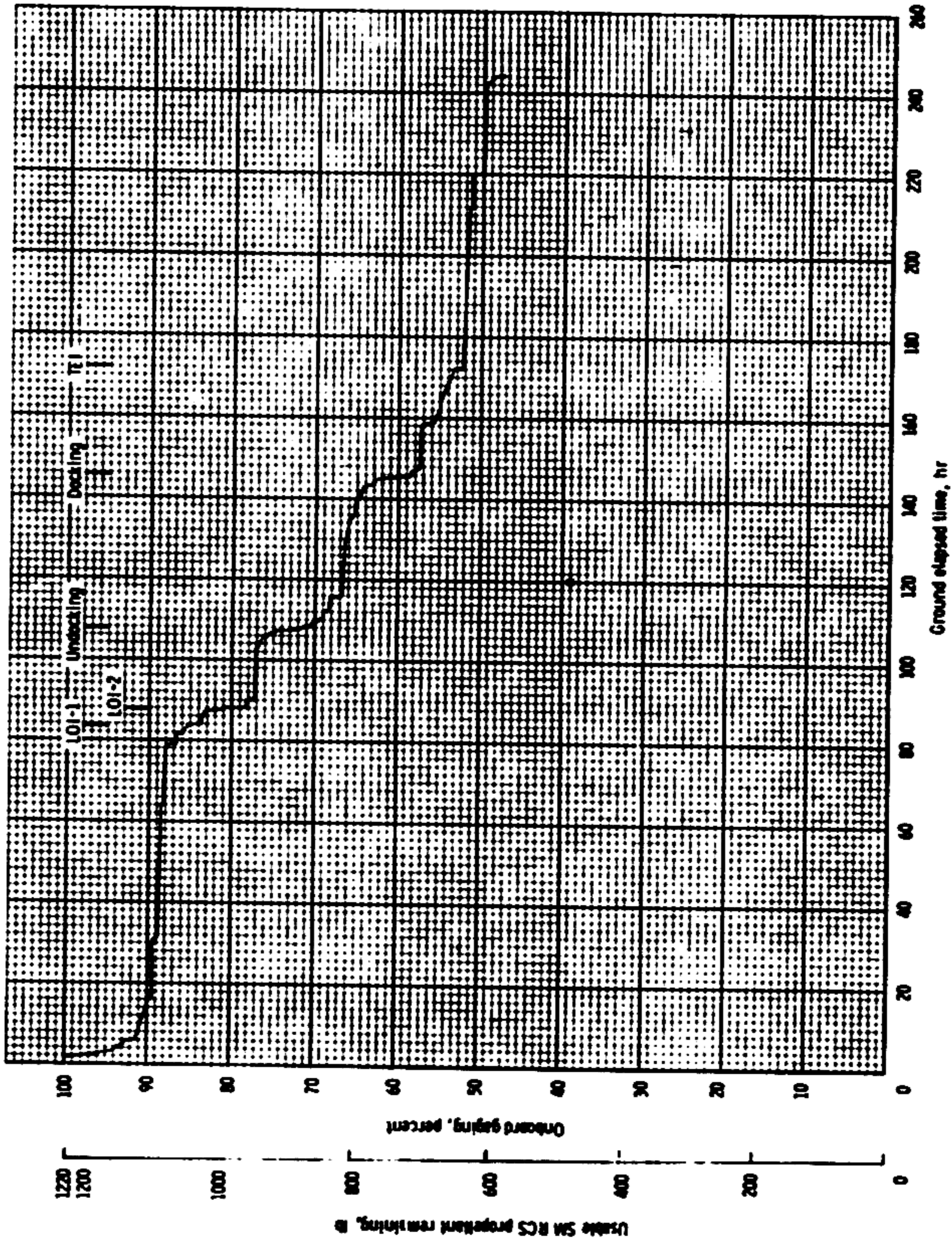
FOOD LOG

FOOD LOG

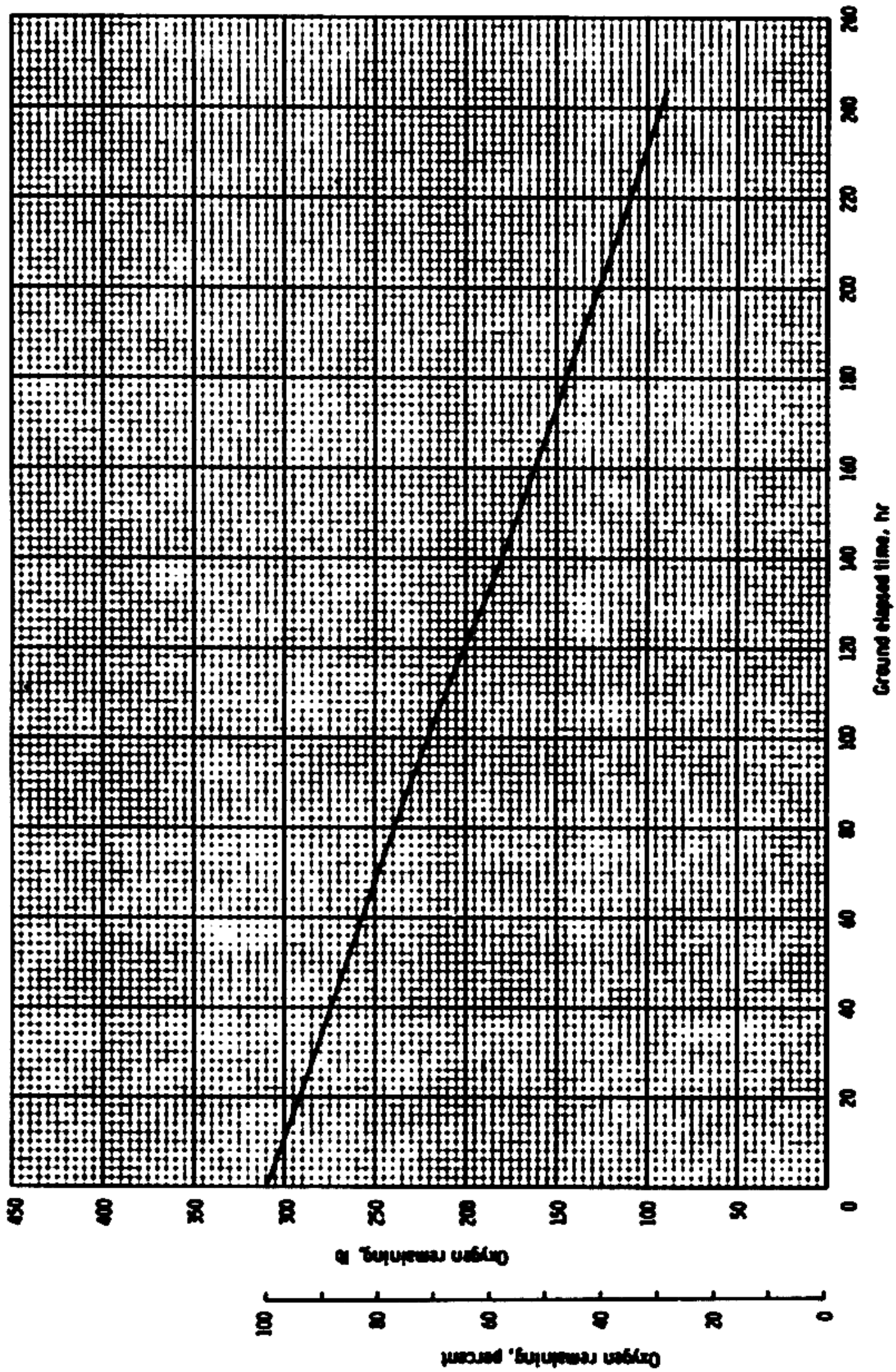
FOOD LOG

Basic Date
Changed

DATE NOVEMBER 3, 1969



TOTAL SM RCS



DATE NOVEMBER 3, 1969

TANK

CSM H₂
1 TANK

DATE NOVEMBER 3, 1969

