

FAO

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

MCC-H

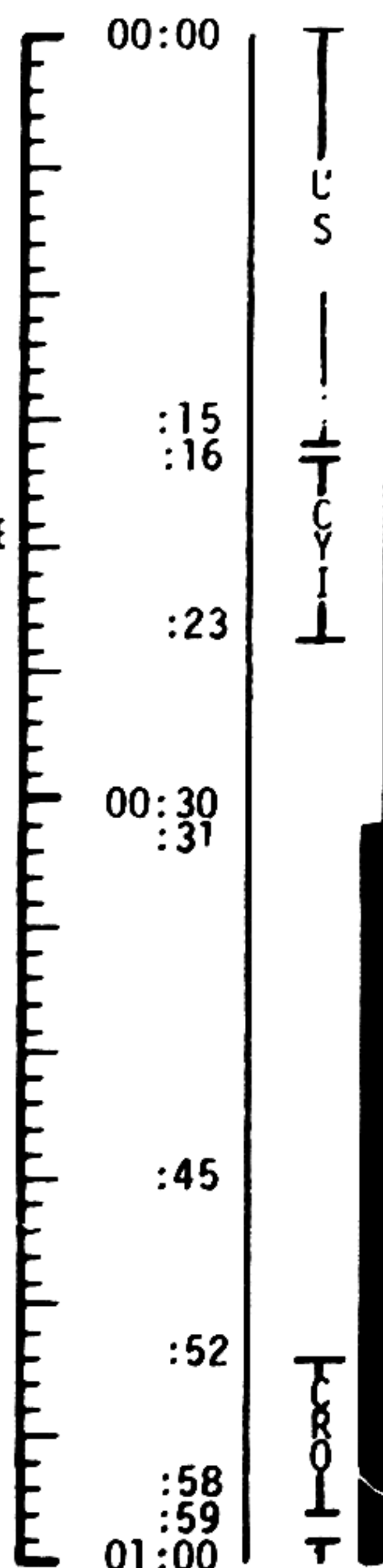
1022 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
Z TORQUING ANGLE

DUMP DSE



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

P52 (PAD ORIENT)

N71: _ _ _ ' _ _ _

N05: _ _ _ ' _ _ _

N93:

X _ _ _ ' _ _ _

Y _ _ _ ' _ _ _

Z _ _ _ ' _ _ _

GET _ _ _ ' _ _ _

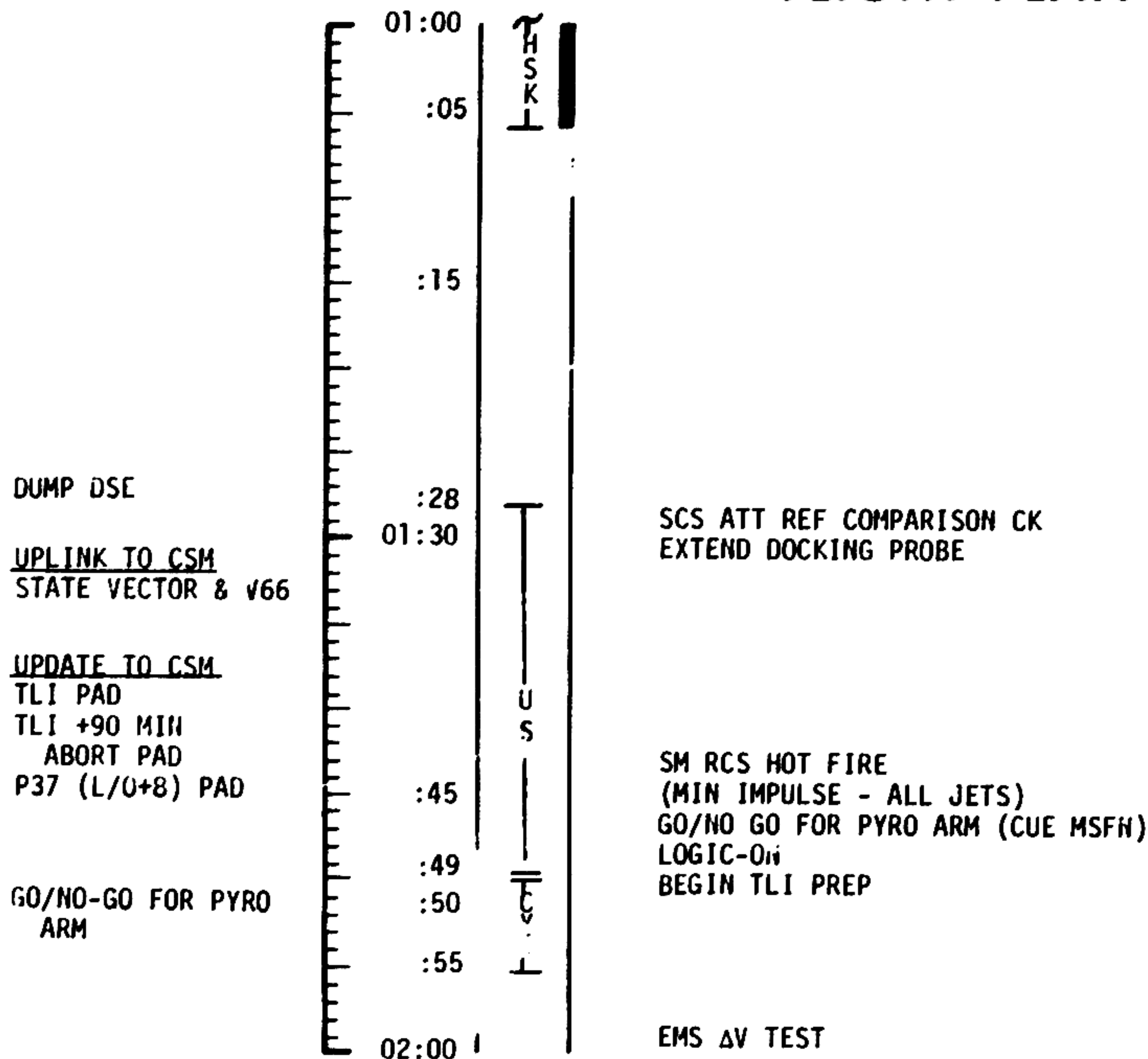
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	00:00 - 01:00	1/1	3-1

MCC-H

1122 CST

FLIGHT PLAN

NOTES



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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1222 CST

FLIGHT PLAN

NOTES

GO/NO GO

02:00

PYRO ARM

:15

GDC ALIGN TO IMU

:25

SET ORDEAL

02:30

GO/NO GO FOR TLI

: 31

: 33

TB-6 (02:37:41.8)

:45

P47 - THRUST MONITOR

TLI

:52

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

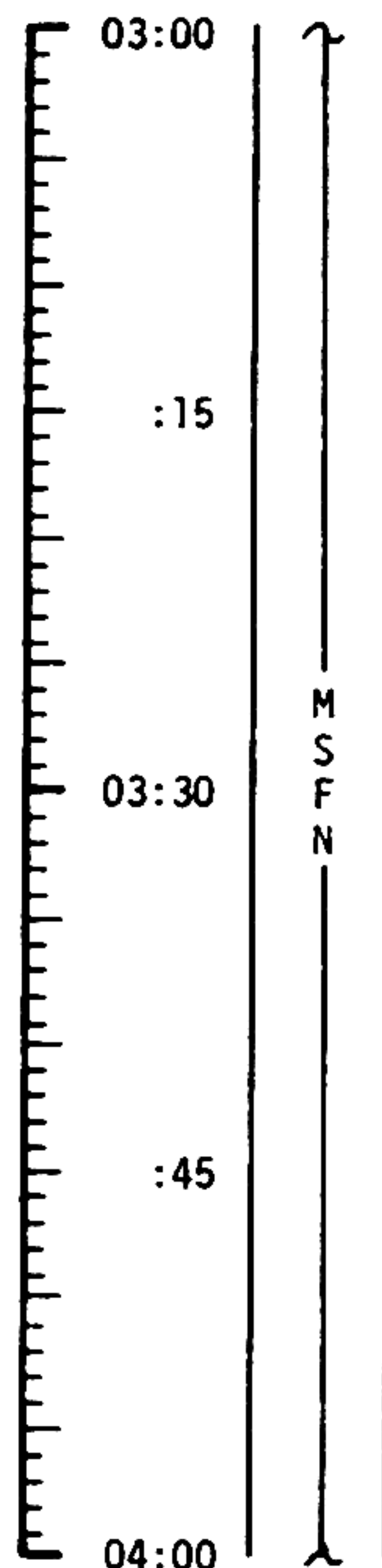
MCC-H

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
 S-BAND ANT - OMNI
 S-BAND ANT OMNI - B
 ACTIVATE AND LOAD DAP (11102, 01111)

R 356
 P 92
 Y 332

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)

04:00

:15

04:30

:45

05:00

M
S
F
NGO/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 04:18R 96
P 277
Y 344OMNI D

TIG: 04:13:19.8

BT: 3 SEC

 ΔV : 0.4 FPS

S-IVB APS EVASIVE MNVR GET = 04:25

 $\Delta V \approx 9.6$ 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
 $\Delta V \approx 0.8$ FPS. 4 JET
RCS -X TRANSLATION
0.4 FPS FOR A TOTAL
 $\Delta V \approx 1.2$ 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

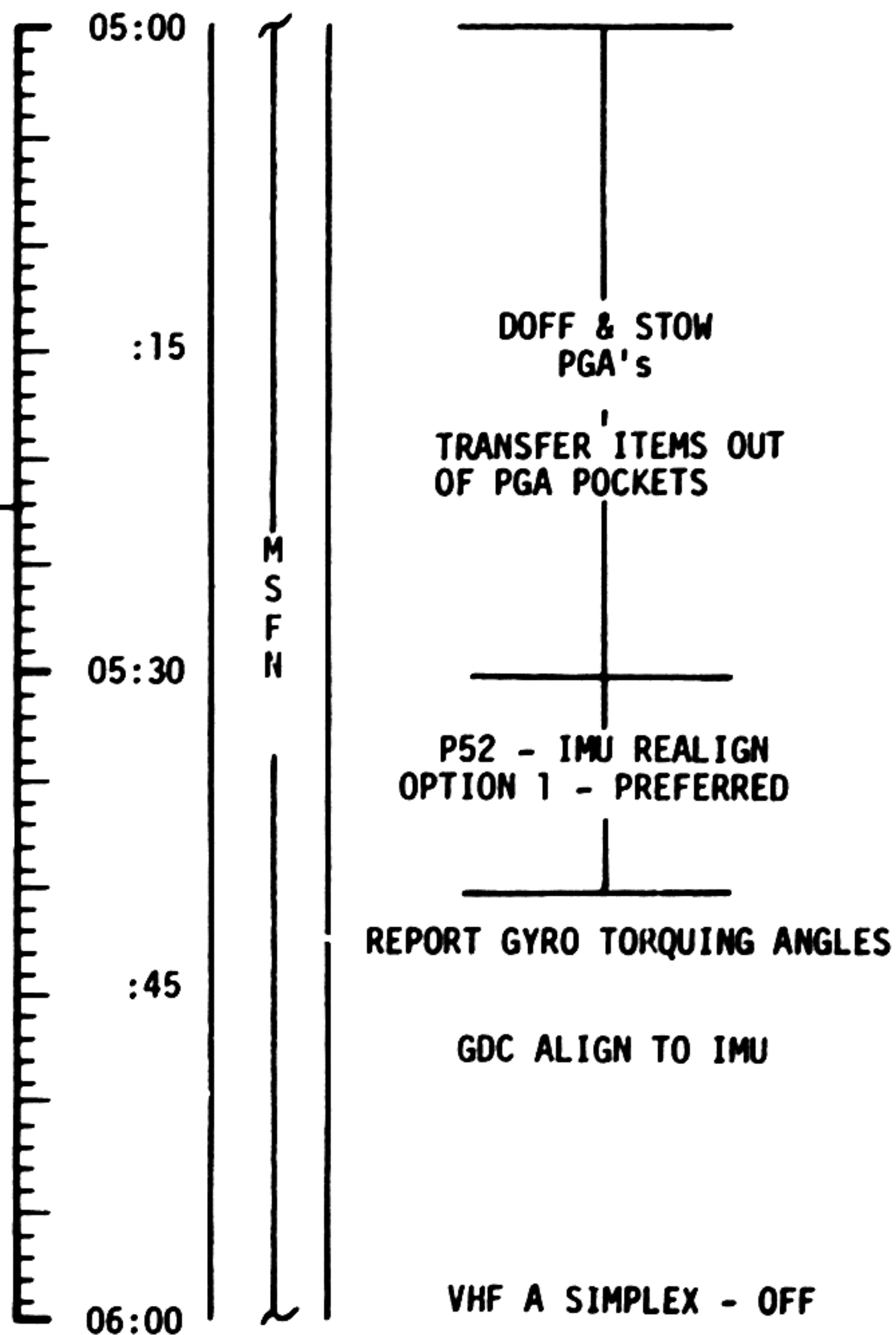
1522 CST

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

MSC Form 29 (May 69)

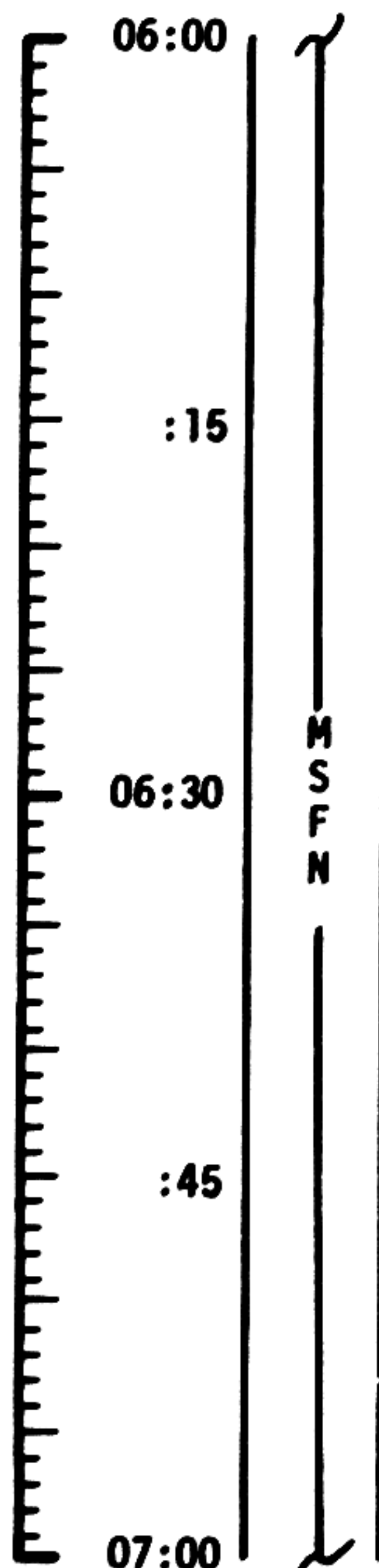
FLIGHT PLANNING BRANCH

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

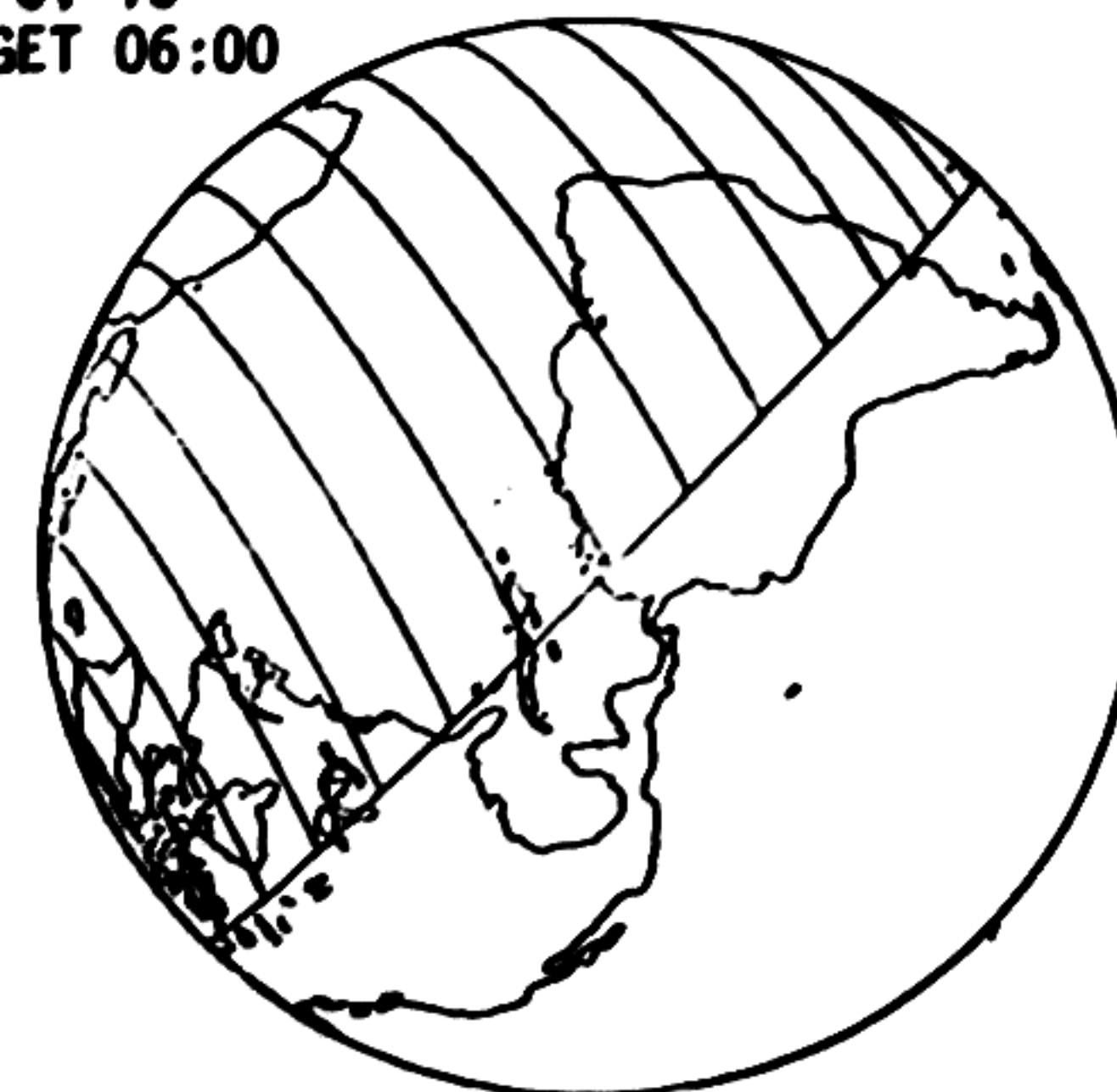
2. STAR 1 5 E F H (R3 = 0 0 1 2 0)

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-H

1722 CST

FLIGHT PLAN

NOTES

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

07:00

MNVR TO PTC ATTITUDE

P 90
Y 0

ESTABLISH PTC

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

:30

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

08:00

M
S
F
N

PTC

P 90 Y 0

:30

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

09:00

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

MSC Form 29 (May 69)

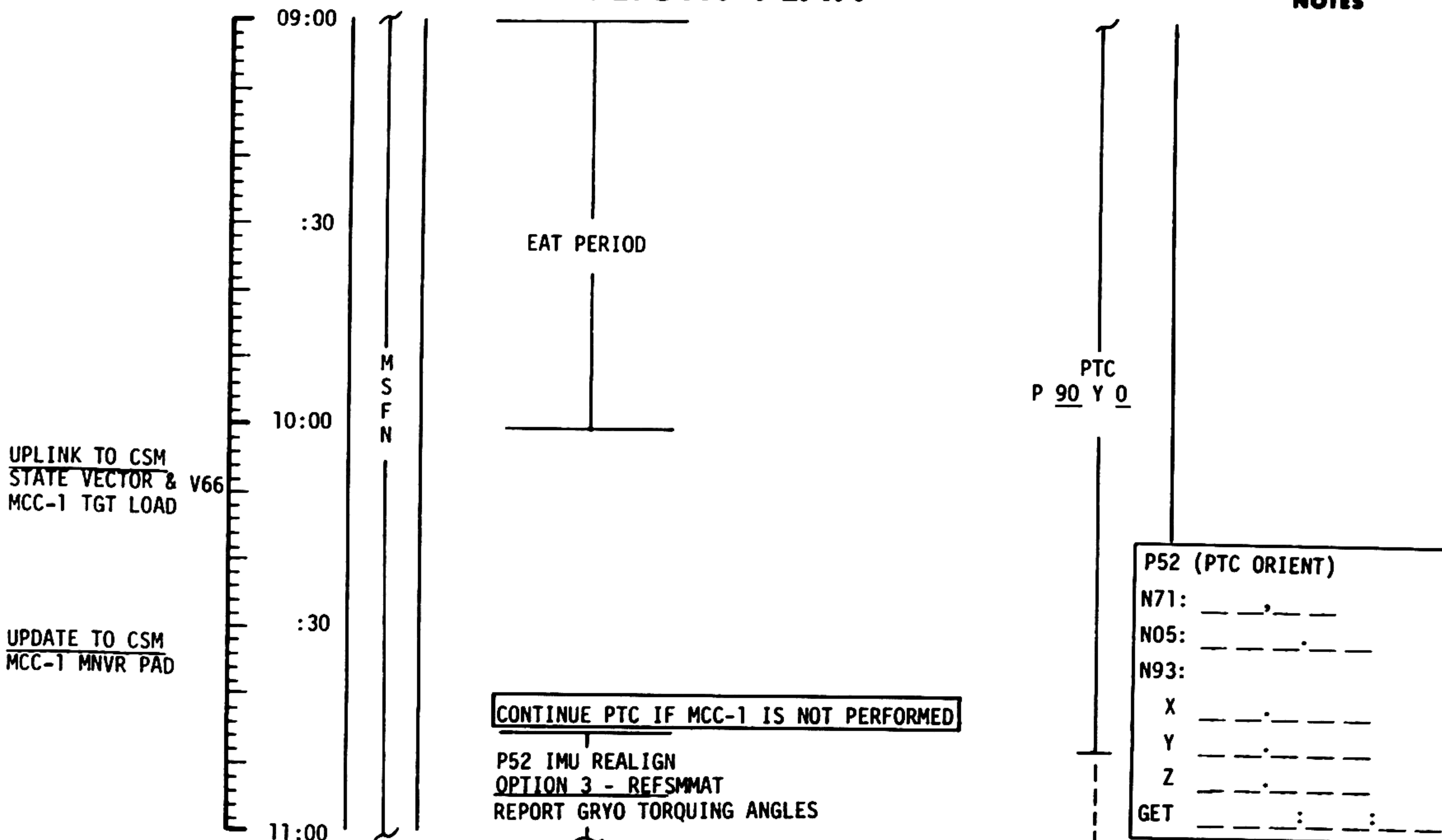
FLIGHT PLANNING BRANCH

MCC-H

1922 CST

FLIGHT PLAN

NOTES



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

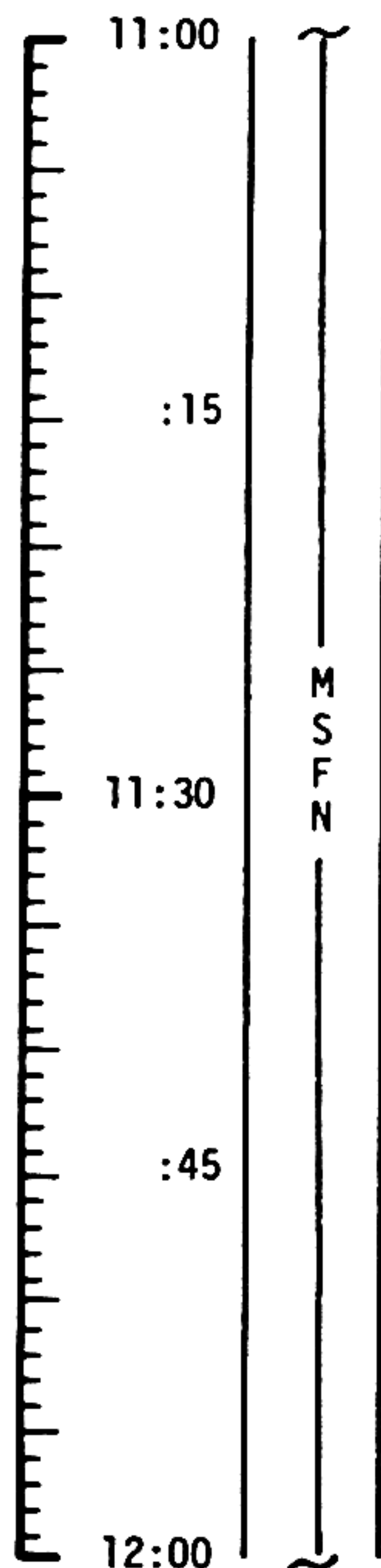
TABLE 3-2
3-11

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		•		ΔTIG
X	X		•		BT
			•		V_{gx}
TRIM					
X	X	X			R
X	X	X			P
X	X	X			Y
			•		V_{gx}
			•		V_{gy}
			•		V_{gz}
			•		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

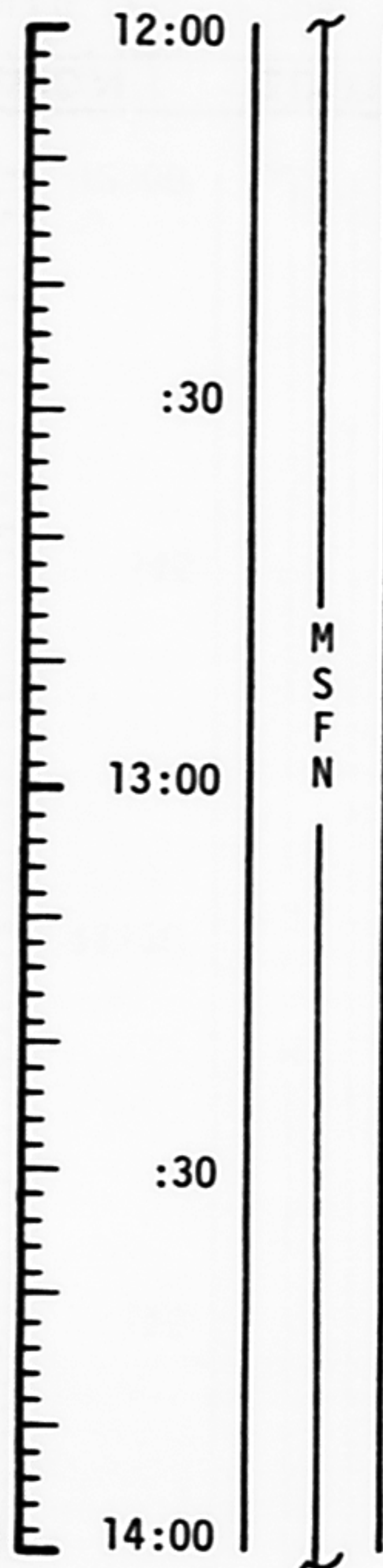
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	11:00 - 12:00	1/TLC	3-12

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

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

PTC
P 90 Y 0

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)

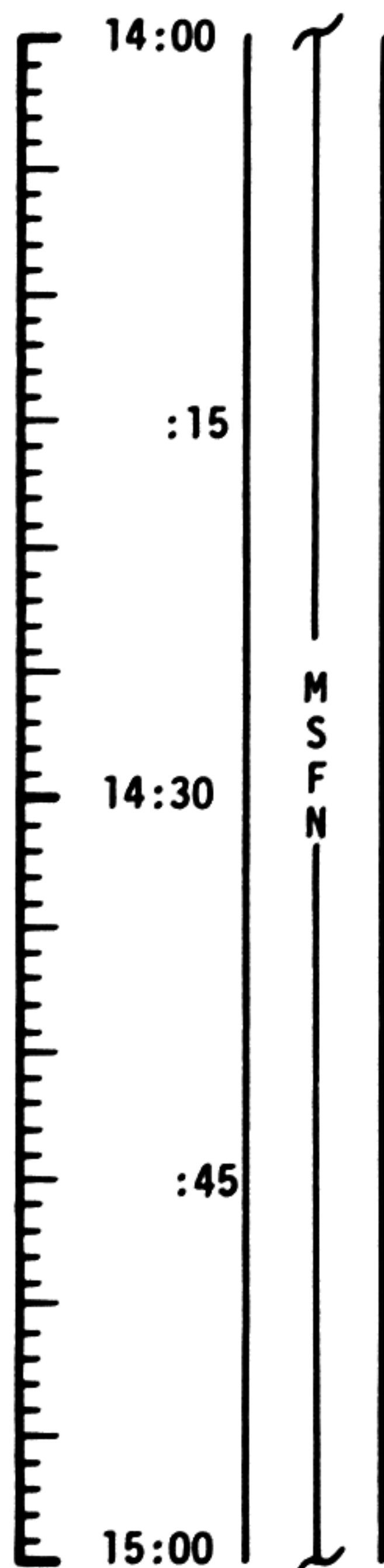
FLIGHT PLANNING BRANCH

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 _ _ _ : _ _ _ : _ _ _

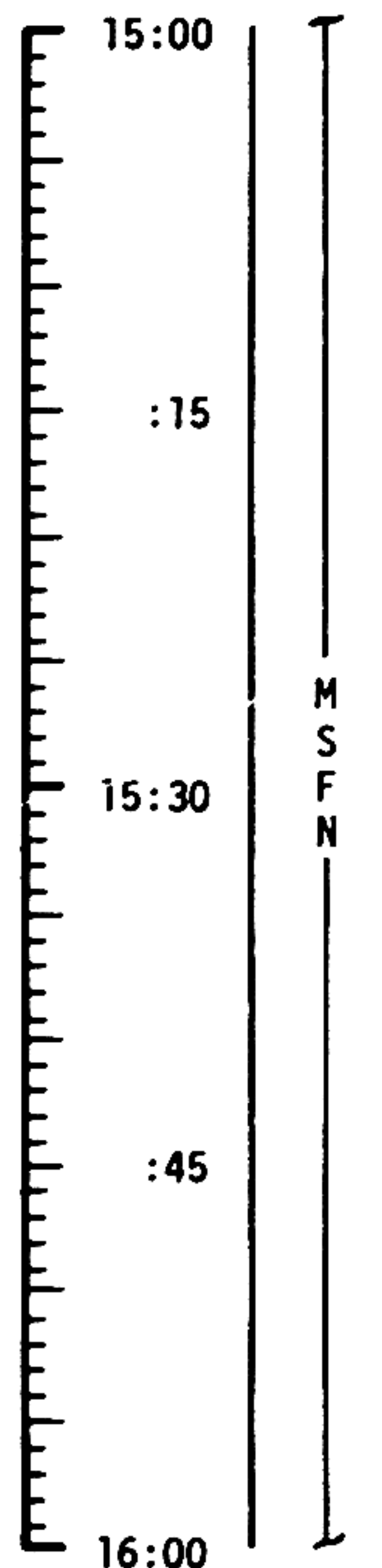
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	14:00 - 15:00	1/TLC	3-14

MCC-H

0122 CST

FLIGHT PLAN

NOTES



REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU

MNVR TO OPTICS CALIBRATION ATT

P23 - CISELUNAR NAVIGATION

OPTICS CALIBRATION

STAR 1 5

P00

R 204

P 262

Y 0

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

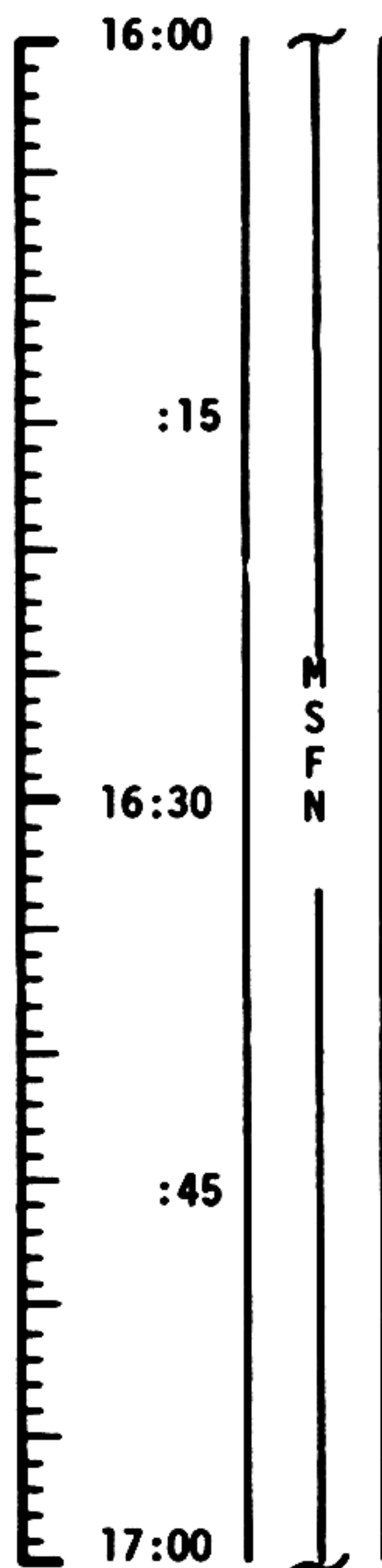
MCC-H

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)

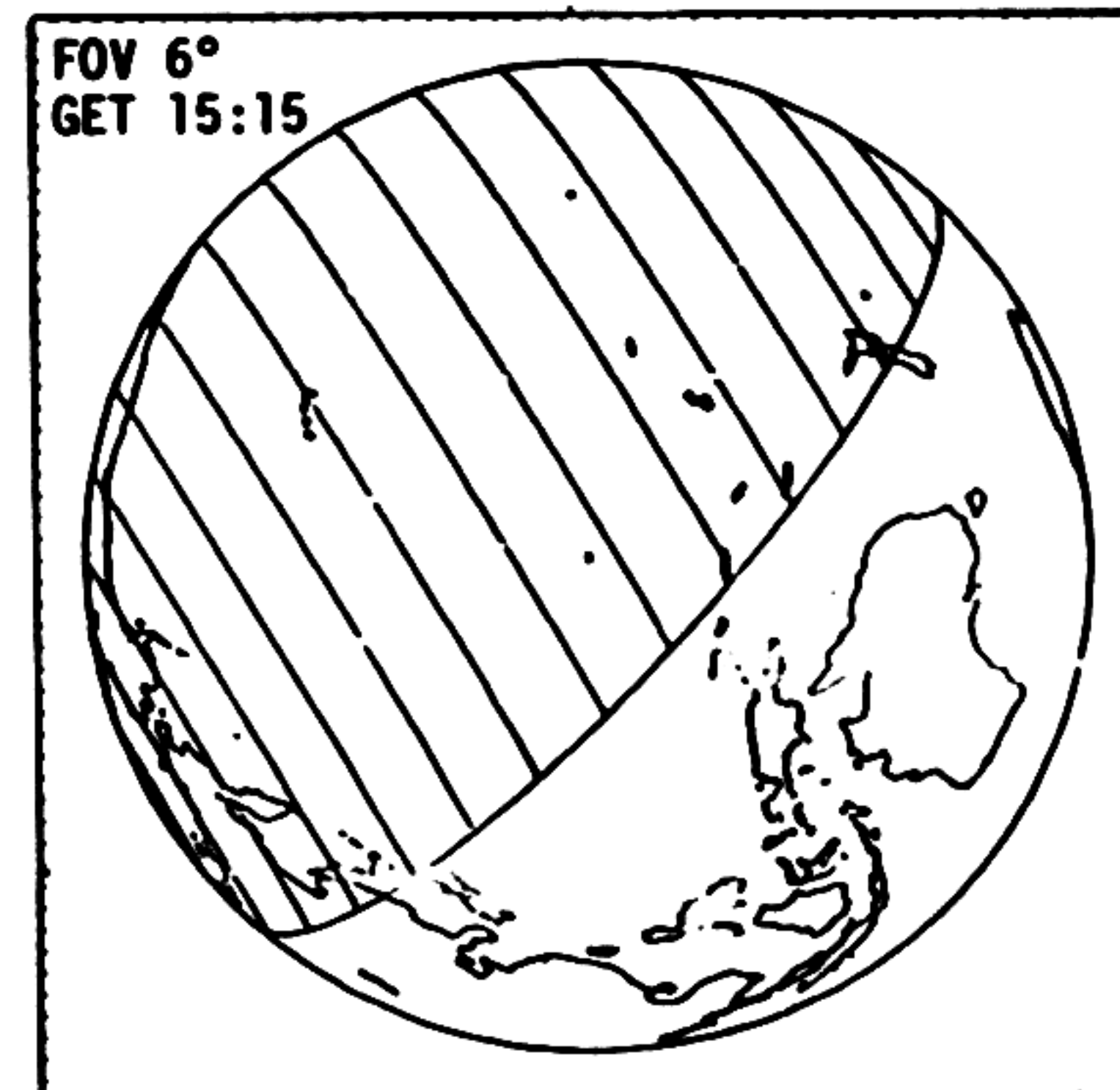
5. STAR 2 3 E N H (R3 = 0 0 1 1 0)

MNVR TO PTC ATTITUDE P 90
START PTC Y 0

EAT PERIOD

PTC

P 90 Y 0



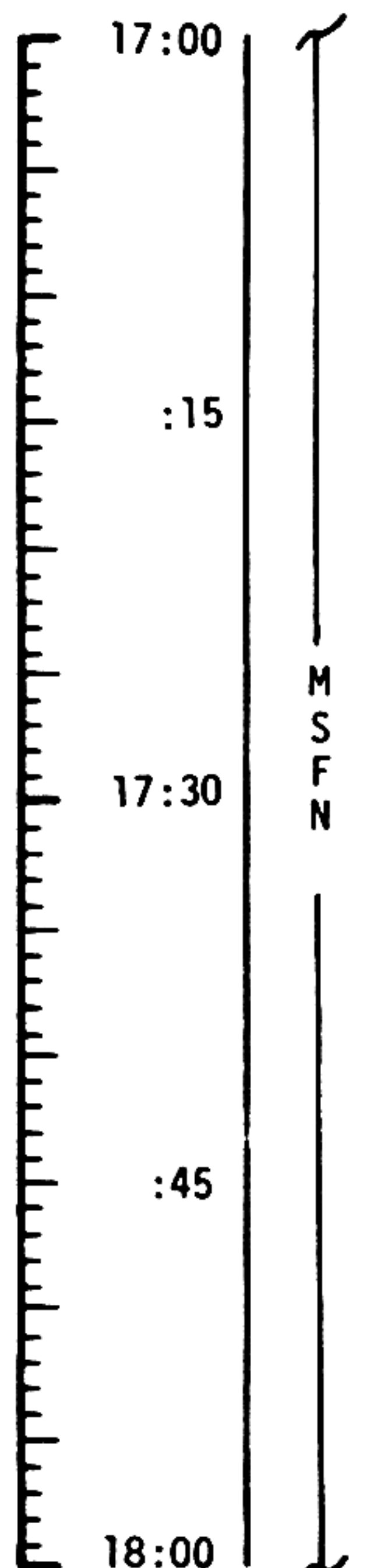
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	16:00 - 17:00	1/TLC	3-16

MCC-H

0322 CST

FLIGHT PLAN

NOTES



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

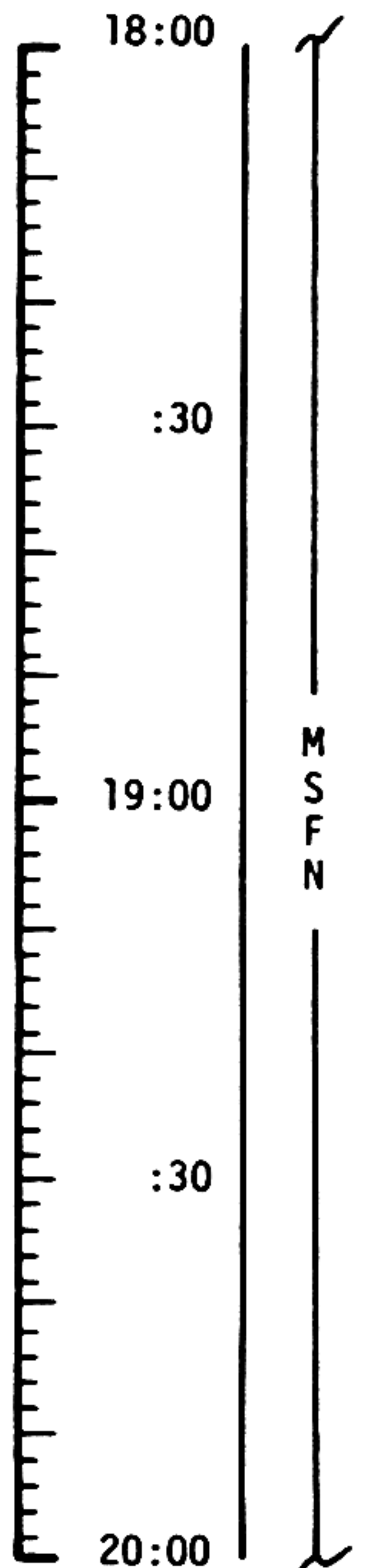
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	17:00 - 18:00	1/TLC	3-17

MCC-H

0422 CST

FLIGHT PLAN

NOTES



M
S
F
N

REST PERIOD
(10 HOURS)

PTC
P 90 Y 0

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

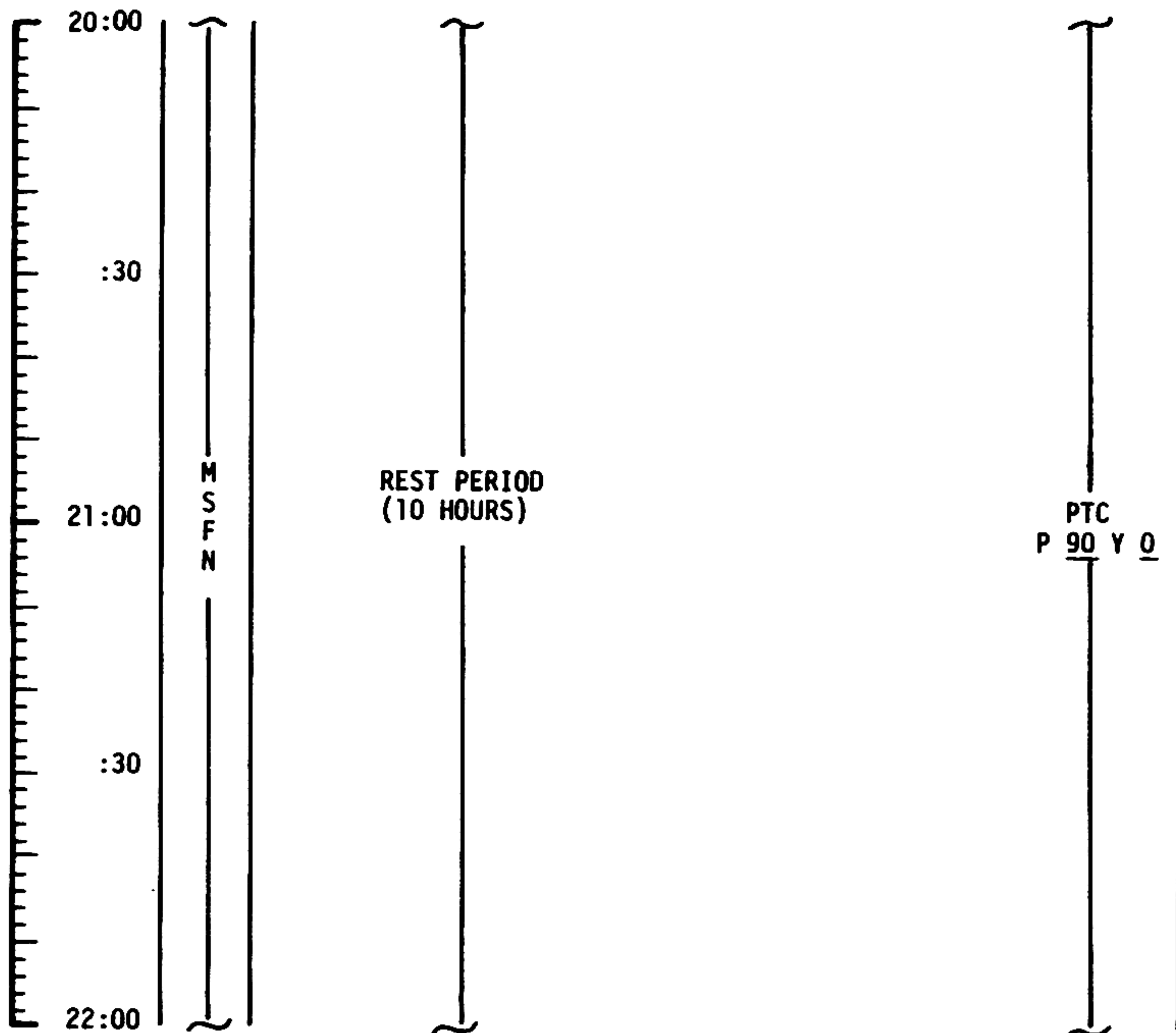
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	18:00 - 20:00	1/TLC	3-18

MCC-H

0622 CST

FLIGHT PLAN

NOTES



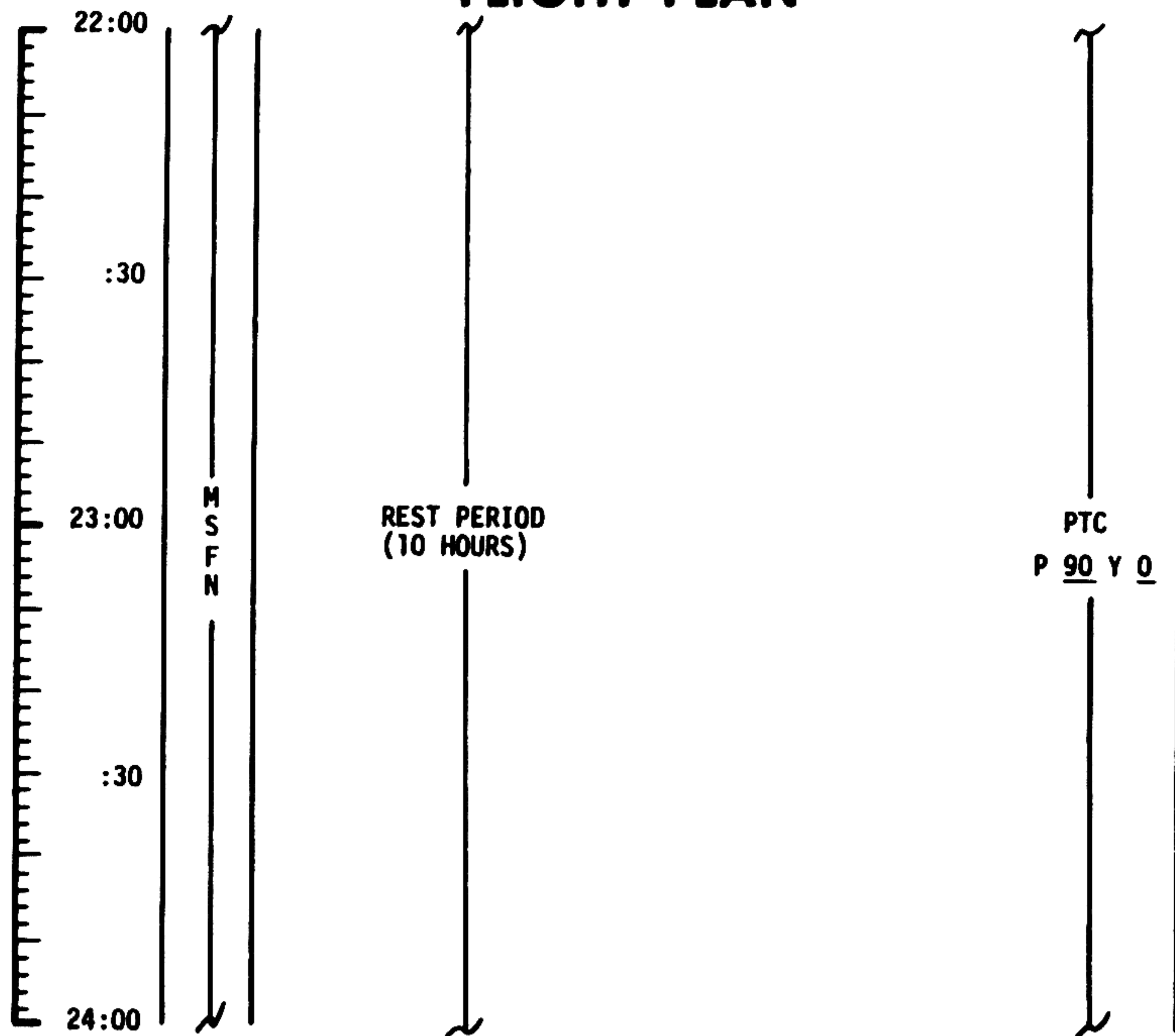
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	20:00 - 22:00	1/TLC	3-19

MCC-H

0822 CST

FLIGHT PLAN

NOTES



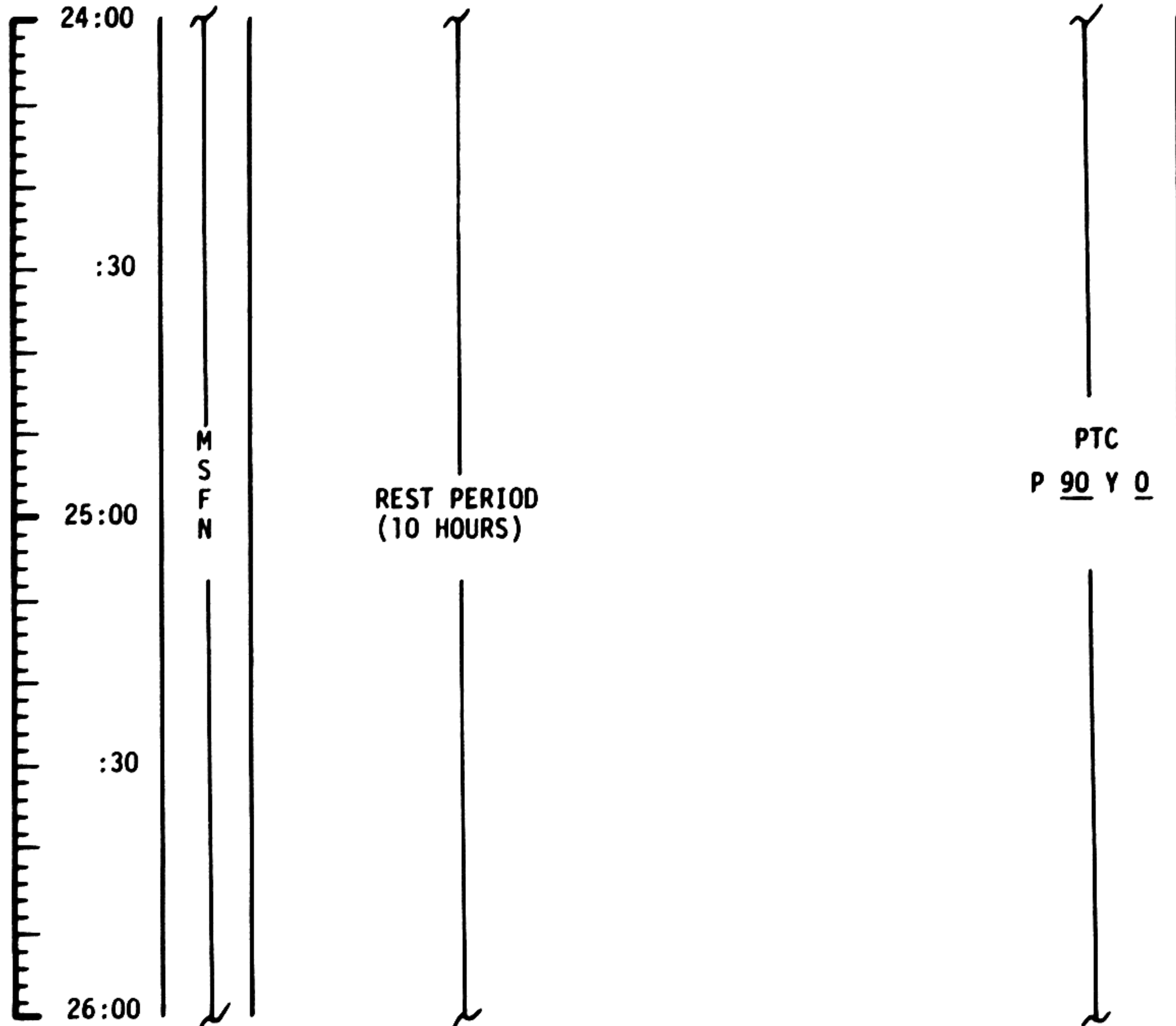
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	22:00 - 24:00	1/TLC	3-20

MCC-H

1022 CST

FLIGHT PLAN

NOTES



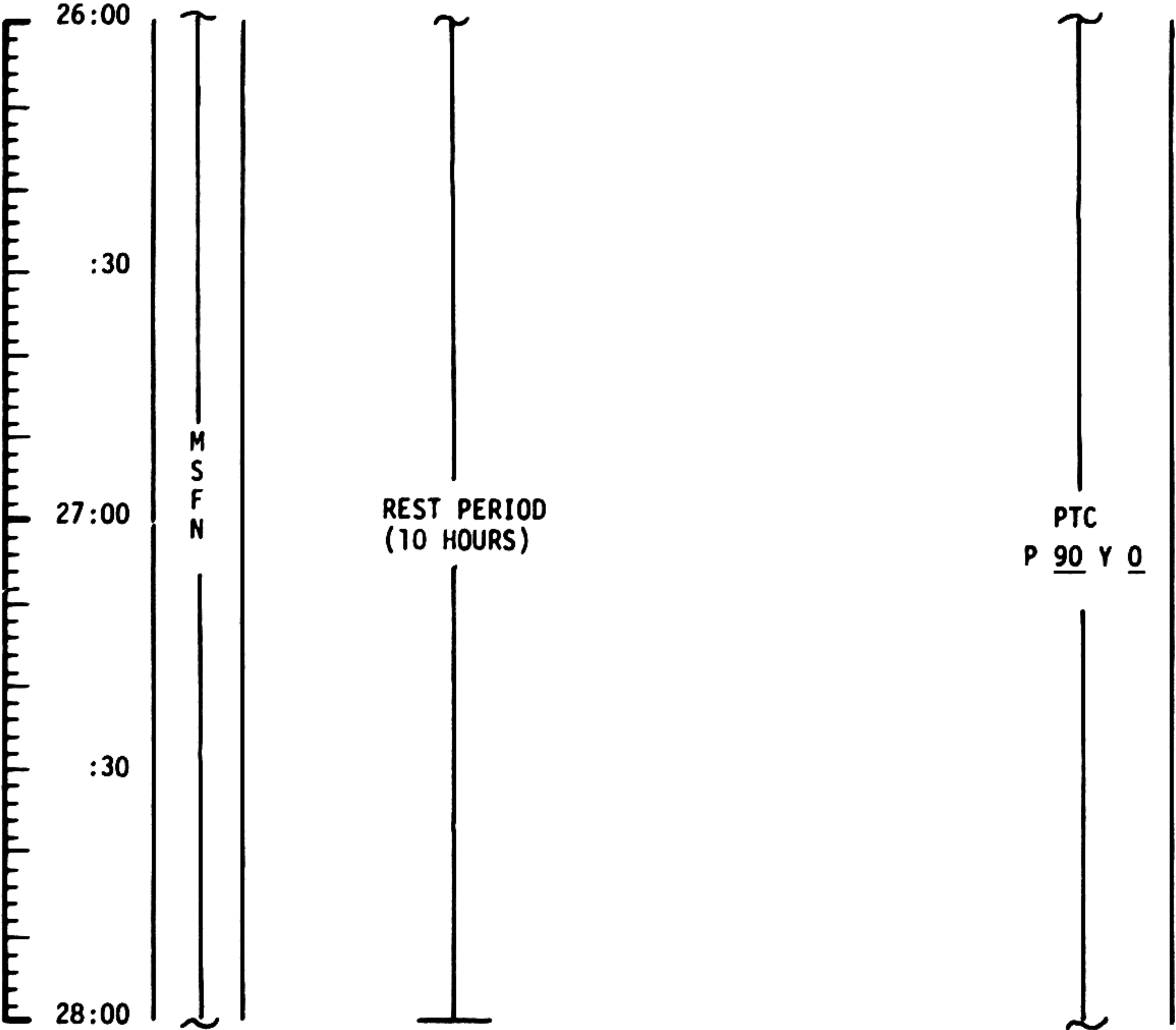
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	24:00 - 26:00	1/TLC	3-21

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-H

1422 CST

FLIGHT PLAN

NOTES

28:00

:15

28:30

:45

29:00

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 ____ %

CREW STATUS REPORT
 CDR CMP LMP
 SLEEP ____
 PRD ____

PTC
 P 90 Y 0

UPDATE TO CSM
 CONSUMABLES
 FLIGHT PLAN

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
in FOCUS 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

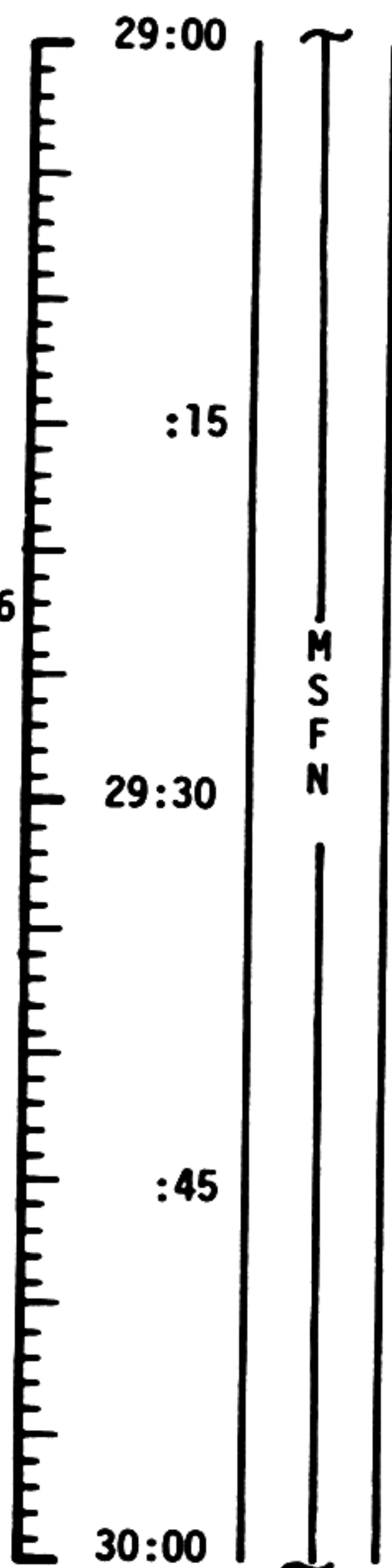
FLIGHT PLAN

NOTES

UPLINK TO CSM
STATE VECTOR &
MCC-2 TGT LOAD

V66

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



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

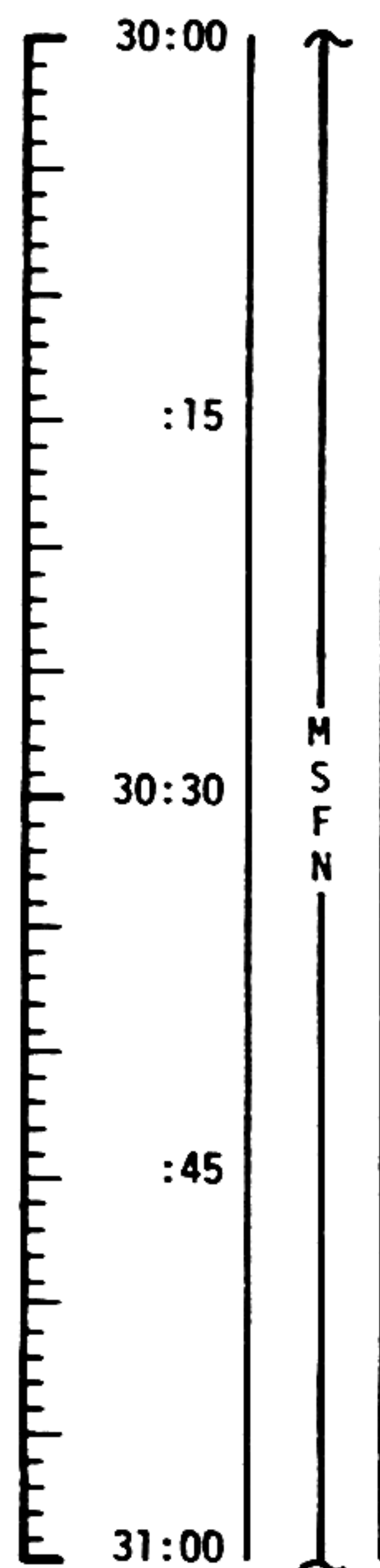
P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 1 SEC	IF<2FPS, TRIM X AXIS TO 0.2FPS IF>2FPS, NO TRIM

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	☐	•	ΔTIG
X	X		•	BT
☐			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
☐			•	V _{gx}
☐			•	V _{gy}
☐			•	V _{gz}
☐			•	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

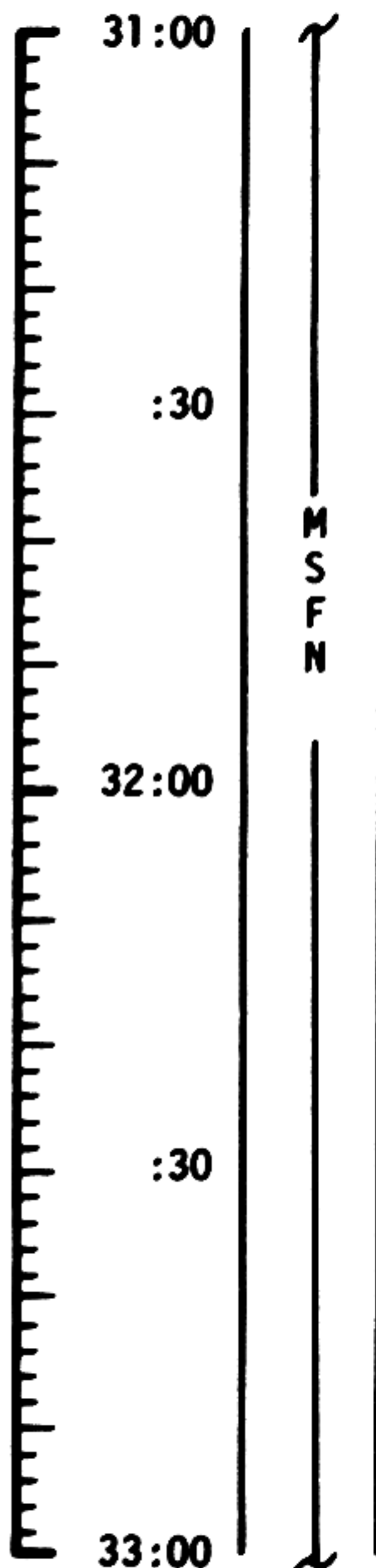
TLI + 28 HRS

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

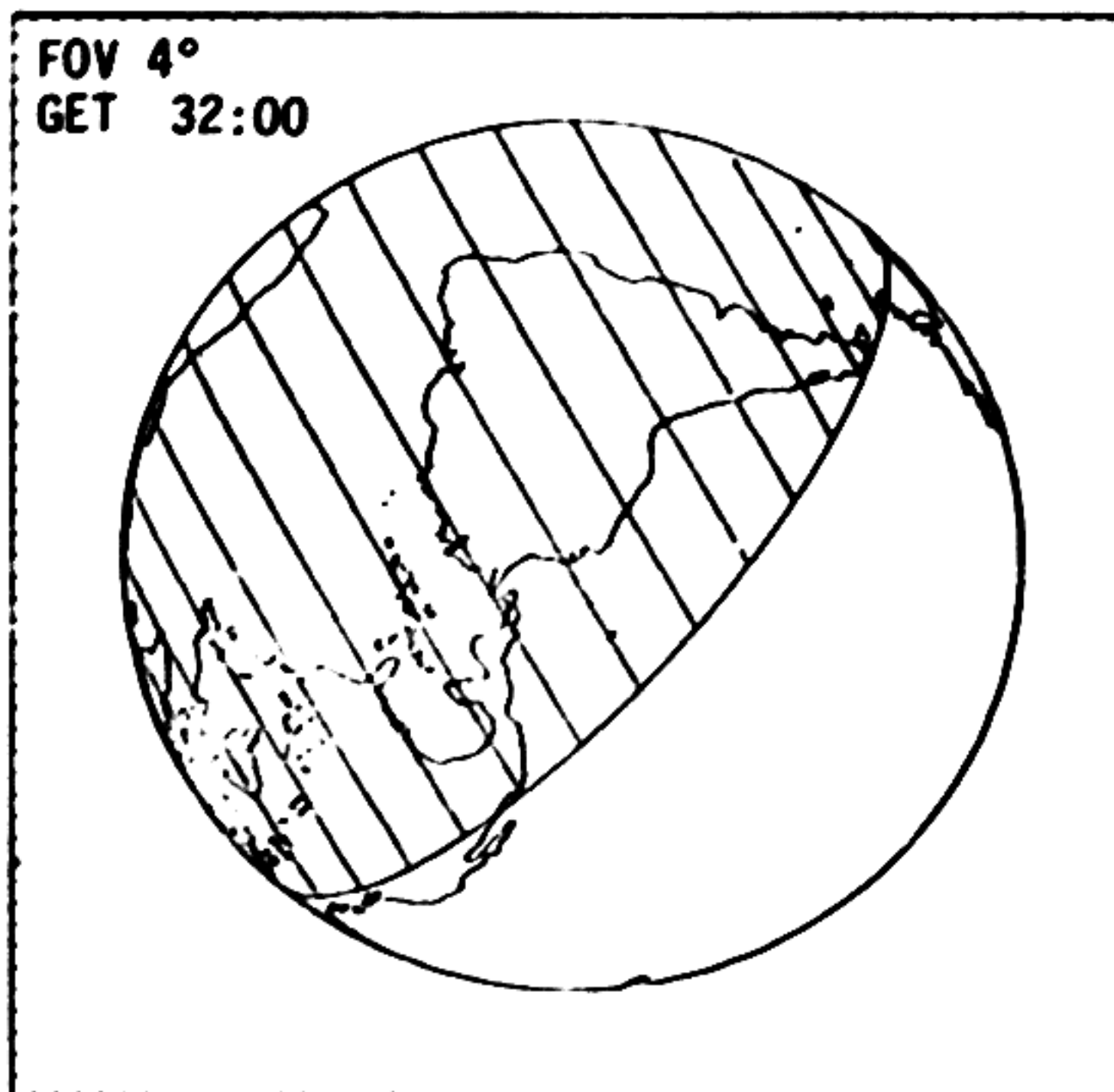
UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)



FLIGHT PLAN

NOTES

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

NSC Form 28 (May 68)

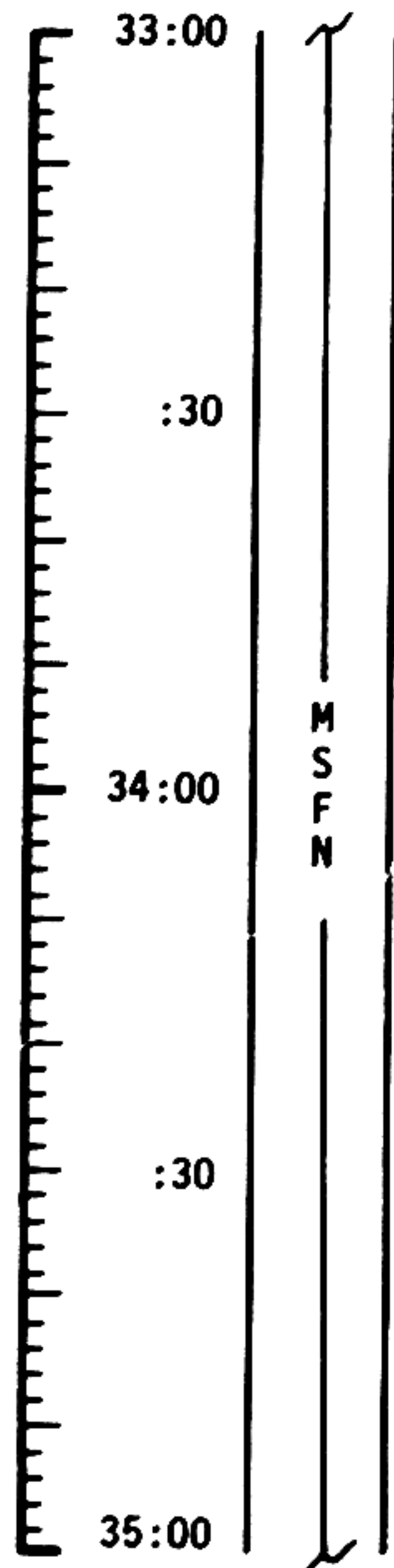
FLIGHT PLANNING BRANCH

MCC-H

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

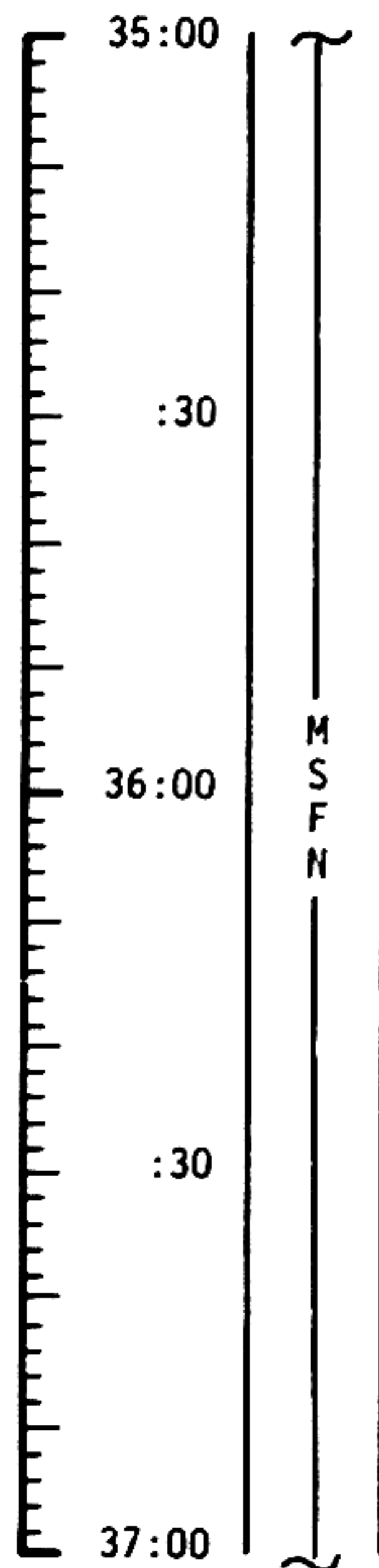
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	33:00 - 35:00	2/TLC	3-28

MCC-H

2142 CST

FLIGHT PLAN

NOTES



EAT PERIOD

 REINITIATE CSM PURGE
(IF REQUIRED)

 PTC
P 90 Y 0

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

37:00

:30

38:00

:30

39:00

M
S
F
N

PTC
P 90 Y 0

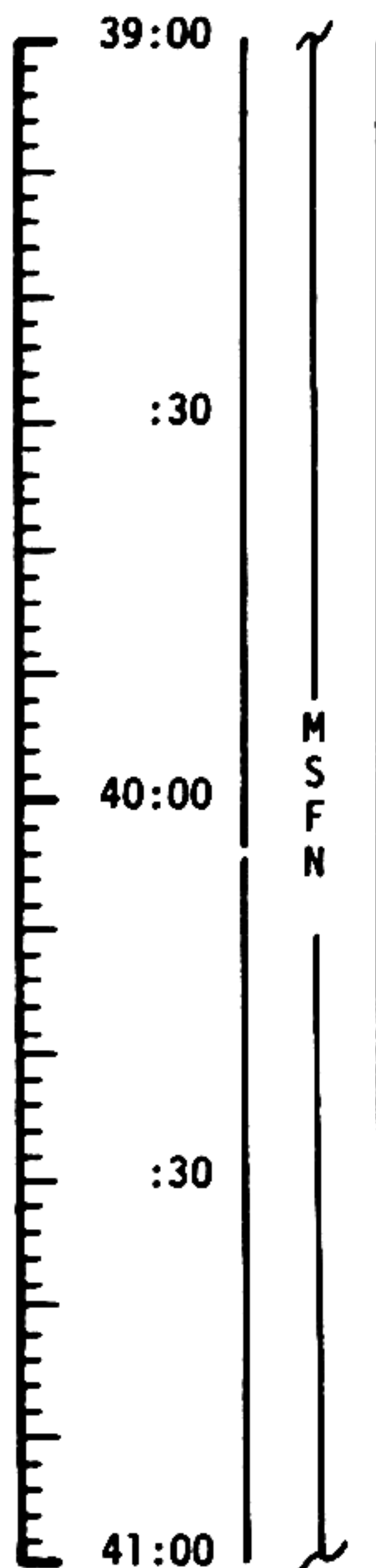
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	37:00 - 39:00	2/TLC	3-30

MCC-H

0122 CST

FLIGHT PLAN

NOTES



M
S
F
N

REPORT LM/CM ΔP

H₂ PURGE LINE HTRS - ON

PTC
P 90 Y 0

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

MCC-H

0322 CST

FLIGHT PLAN

NOTES

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

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

UPLINK TO CSM
 STATE VECTOR & V66

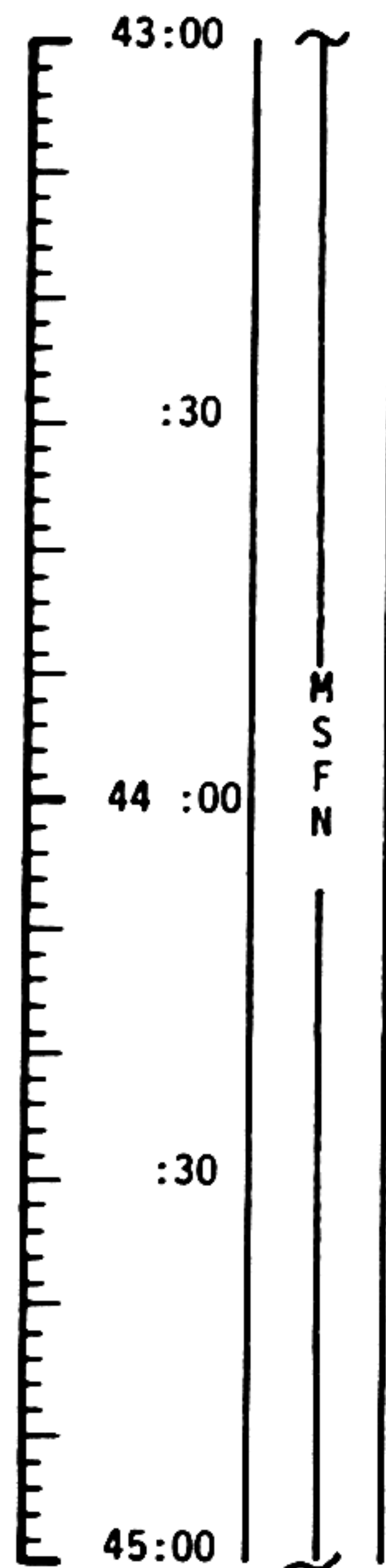
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	41:00 - 43:00	2/TLC	3-32

MCC-H

0522 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 90 Y 0

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

MSC Form 29 (May 69)

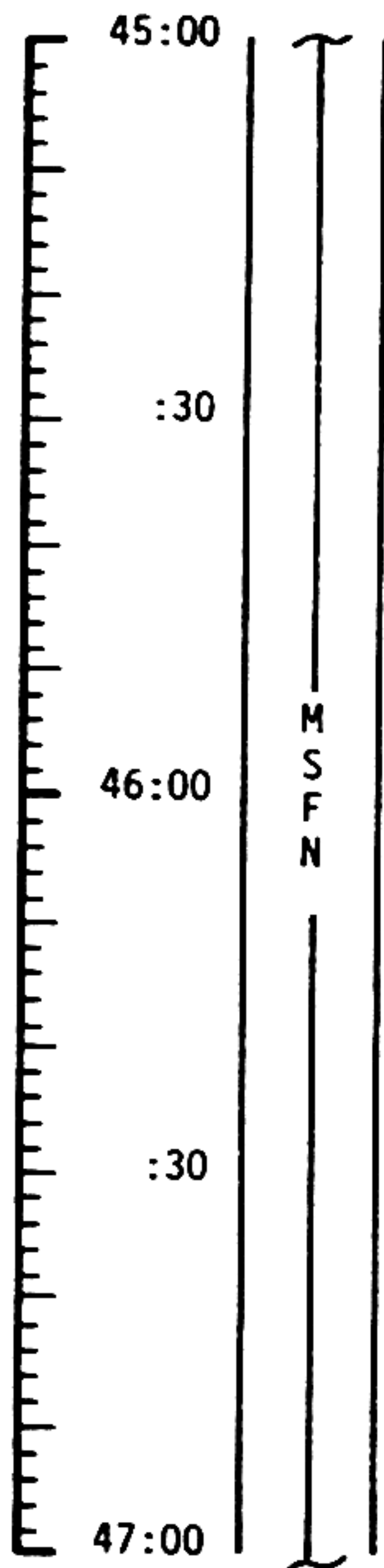
FLIGHT PLANNING BRANCH

MCC-H

0722 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 90 Y 0

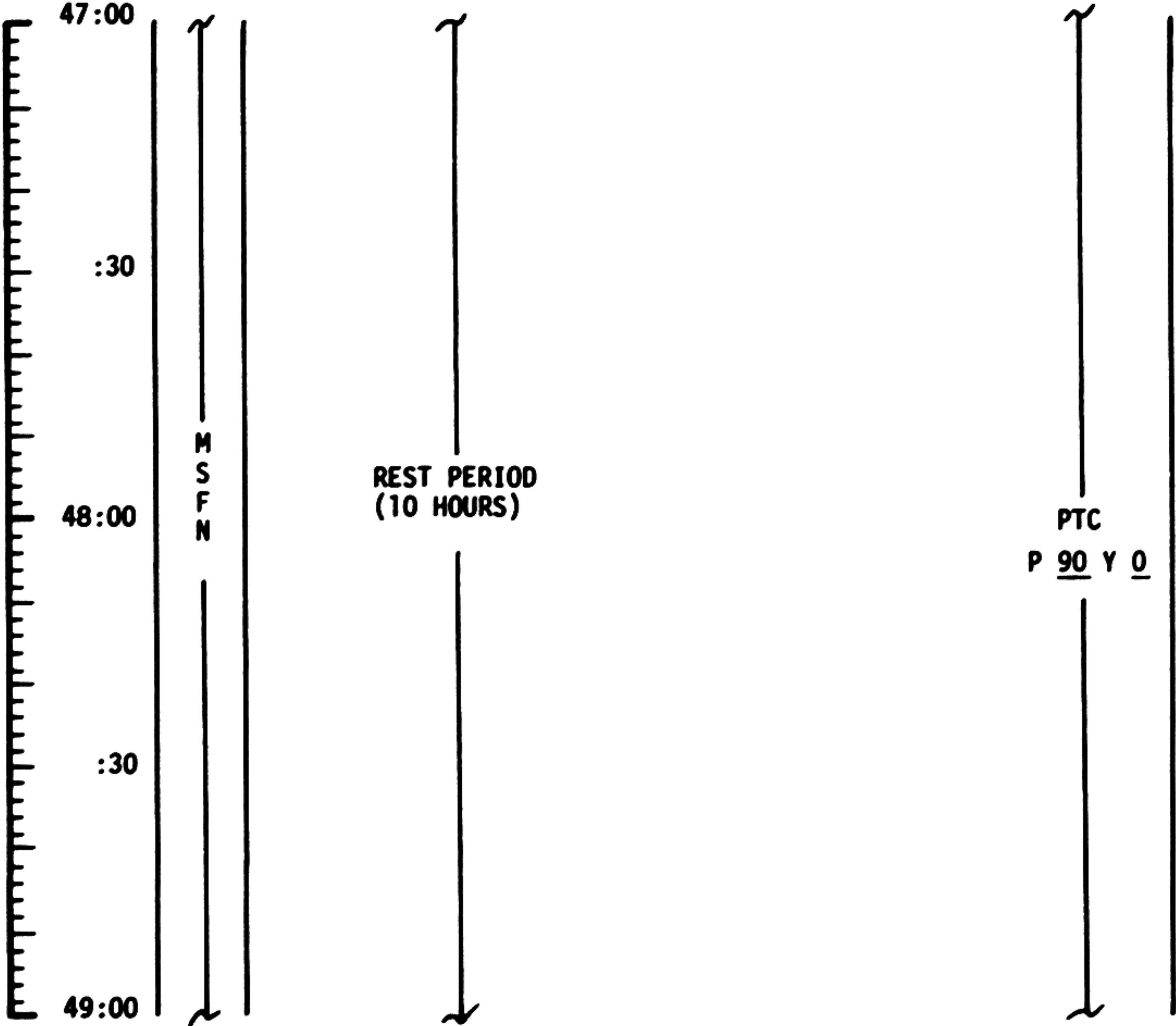
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	45:00 - 47:00	2/TLC	3-34

MCC-H

0922 CST

FLIGHT PLAN

NOTES



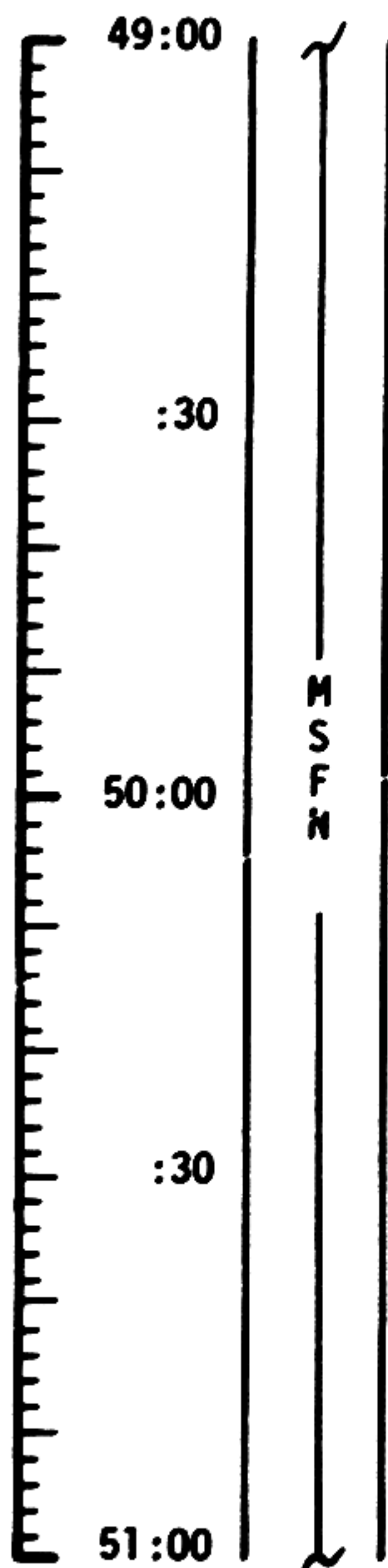
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	47:00 - 49:00	2/TLC	3-35

MCC-H

1122 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 90 Y 0

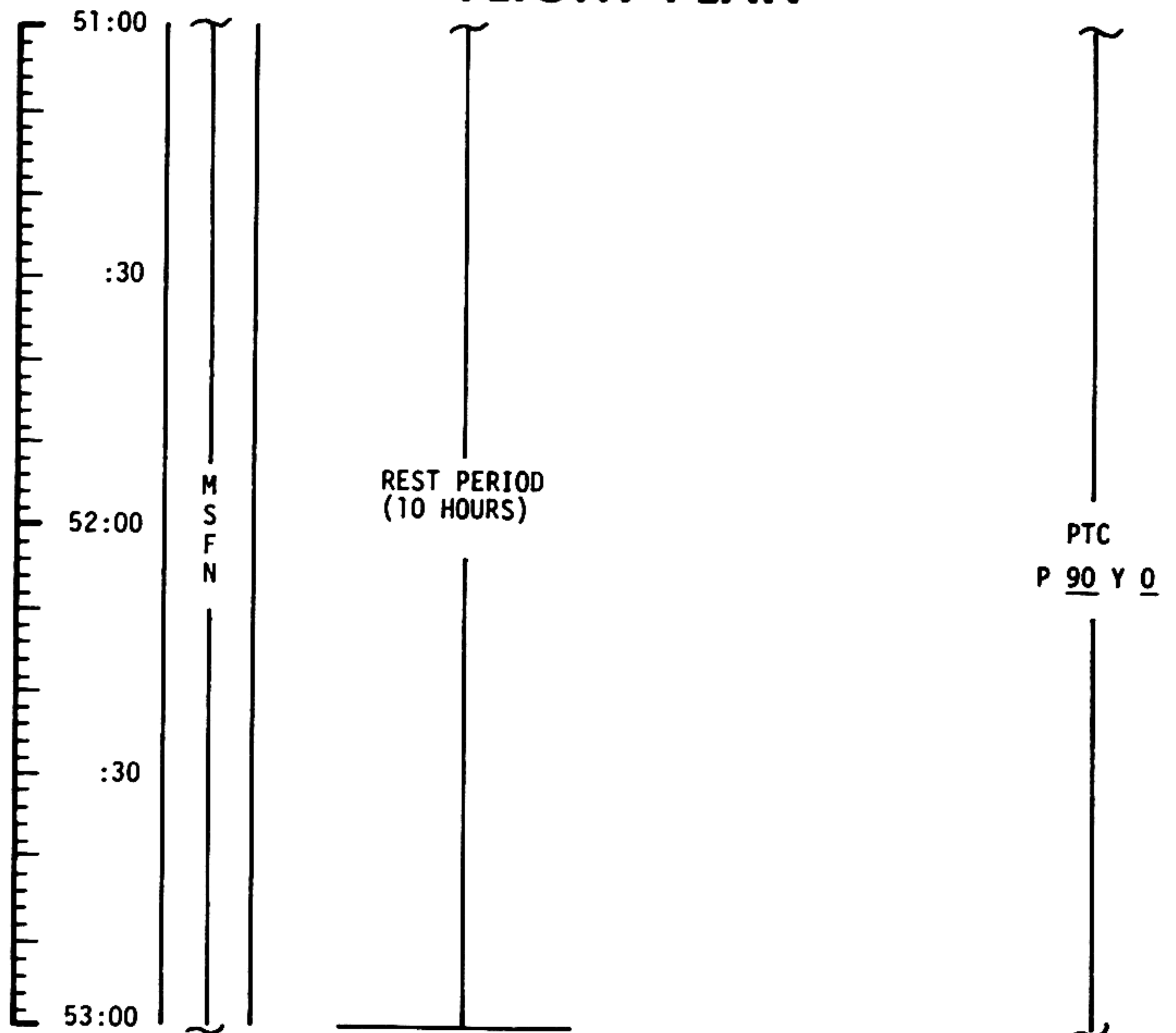
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	49:00 - 51:00	2/TLC	3-36

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

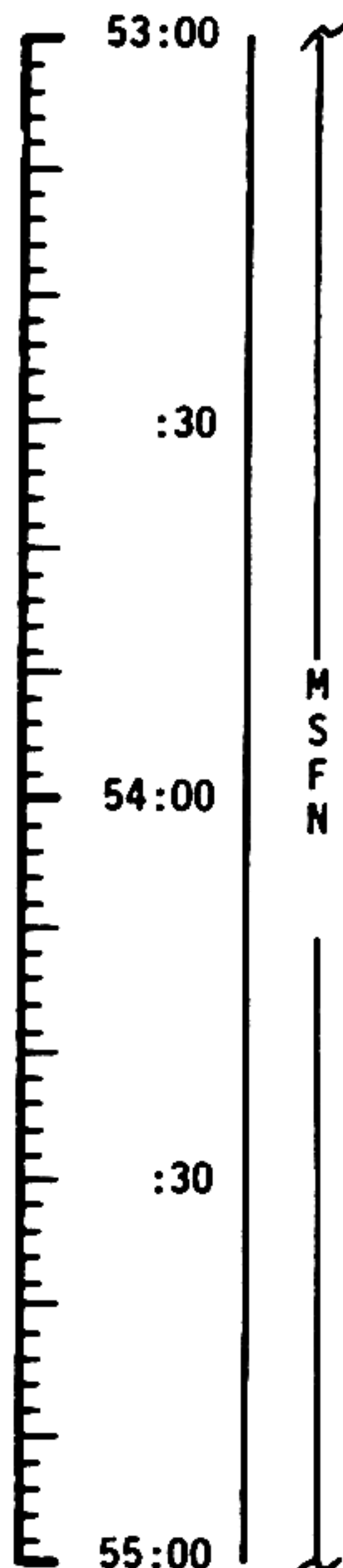
MCC-H

1522 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN



EAT PERIOD

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

REPORT LM/CM ΔP

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	_____	_____	_____

PTC
P 90 Y 0

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

MCC-H

1722 CST

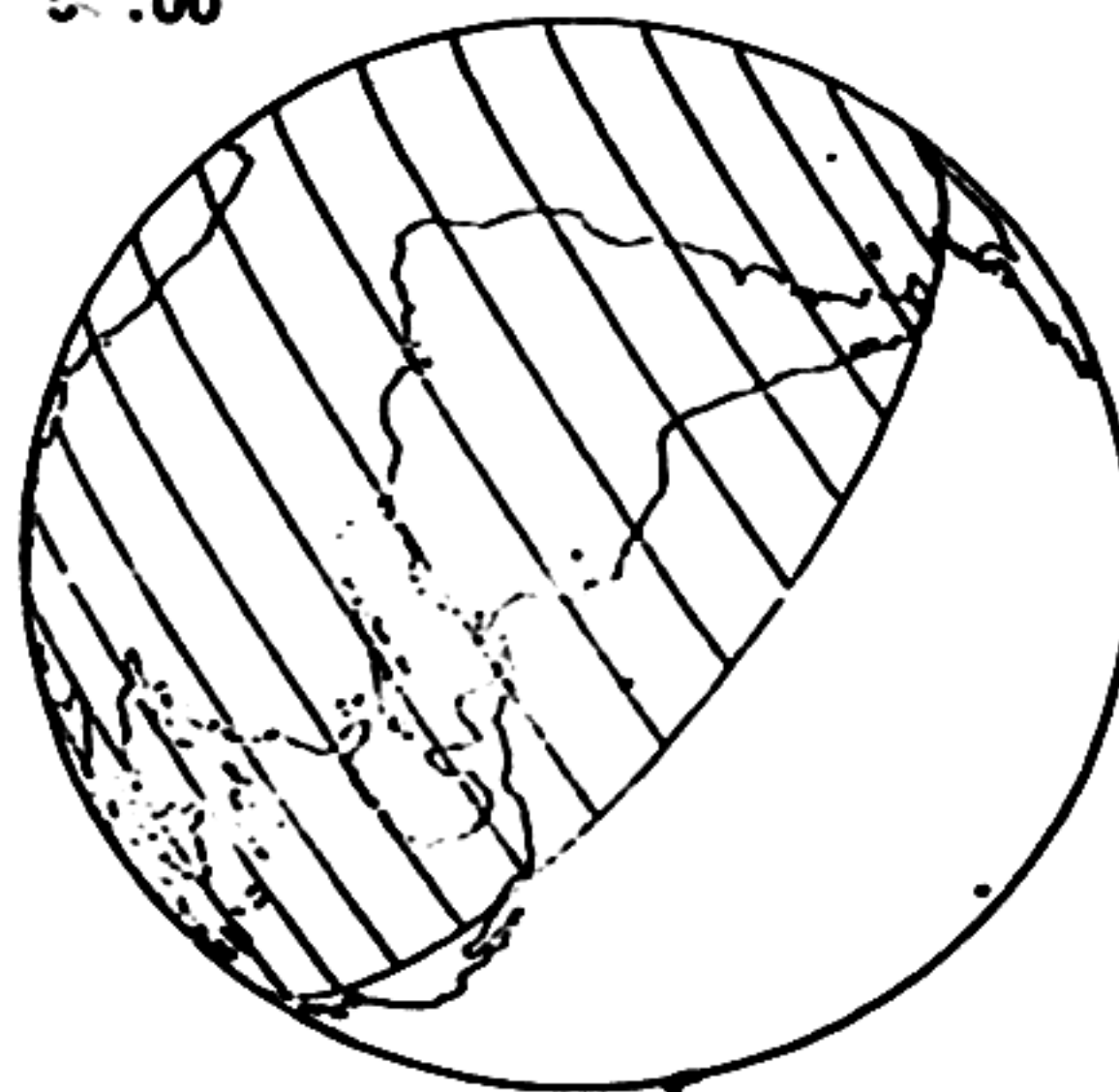
FLIGHT PLAN

NOTES

P52 IMU REALIGN
OPTION 3 REFSMMAT
(OPTIONAL)

REPORT GYRO TORQUING ANGLES

FOV 3°
GET 55:00



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

55:00

:30

56:00

:30

57:00

M
S
F
N

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

NSC Form 20 (May 69)

FLIGHT PLANNING BRANCH

MCC-H

1922 CST

FLIGHT PLAN

NOTES

57:00

:30

58:00

:30

59:00

M
S
F
N

PTC
P 90 Y 0

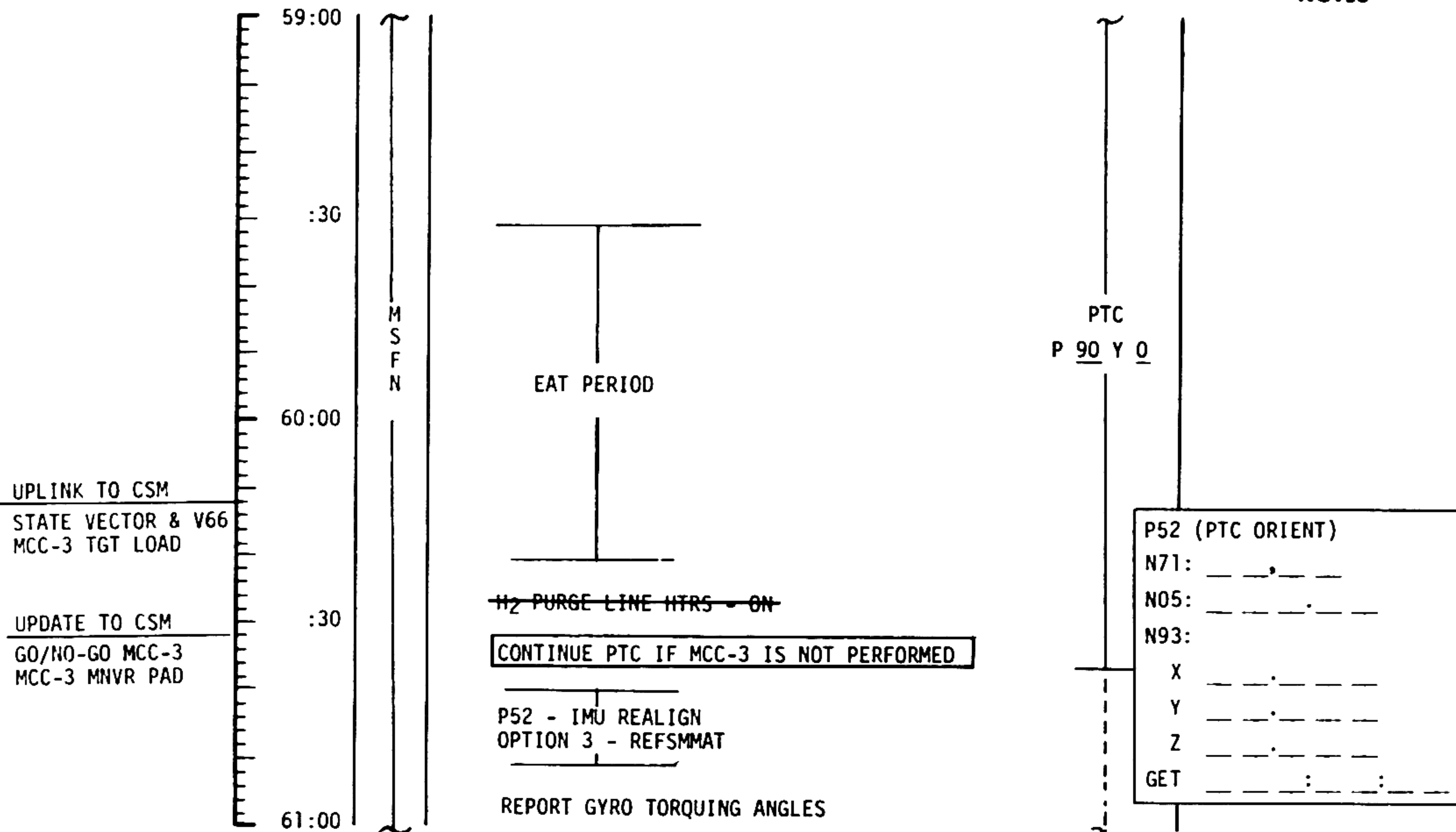
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	57:00 - 59:00	3/TLC	3-40

MCC-M

2122 CST

FLIGHT PLAN

NOTES



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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

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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

MCC-H

FLIGHT PLAN

NOTES

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

:15

M
S
F
N

GDC ALIGN TO IMU

MCC-3

TIG: 61:25:18.2
 ΔV : NOMINALLY
ZERO

61:30

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

MNVR TO PTC ATTITUDE

P 90
Y 0

START PTC

:45

62:00

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

BURN STATUS REPORT

X	X		•		Δ TIG
X	X		•		BT
			•		V _{gx}
TRIM					
X	X	X			R
X	X	X			P
X	X	X			Y
			•		V _{gx}
			•		V _{gy}
			•		V _{gz}
			•		ΔV_c *
X	X	X			FUEL *
X	X	X			OX *
X	X	X			UNBAL

* ITEMS TO BE
REPORTED TO MSFN

(LOI₁ - 22 HRS)

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

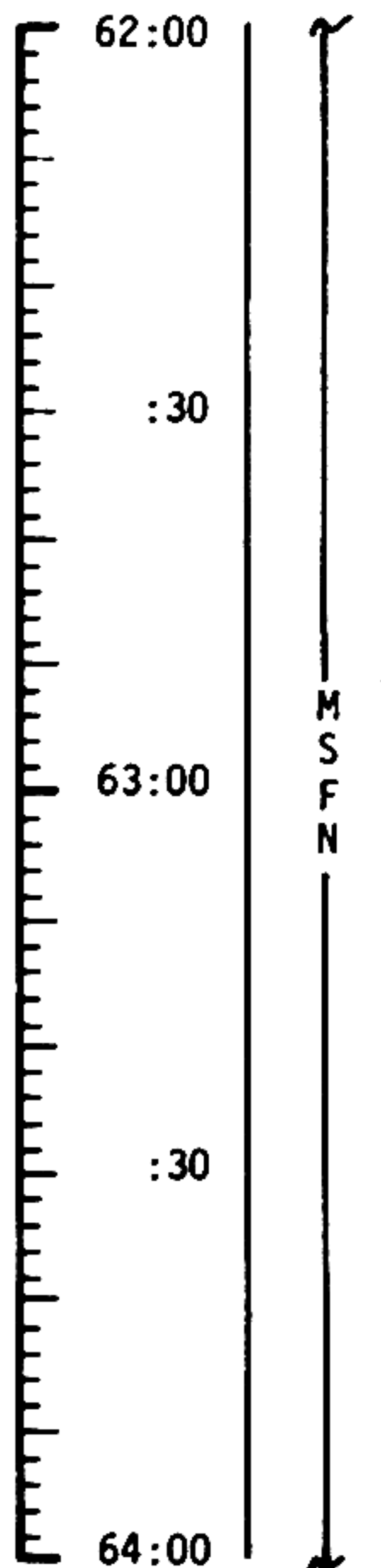
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	61:00 - 62:00	3/TLC	3-43

MCC-H

0022 CST

FLIGHT PLAN

NOTES



BATTERY CHARGE, BATTERY B

PRESSURIZE CSM TO 5.7 PSIA THEN:
PRESSURIZE LM

STOP PTC AT TV ATTITUDE

R _____
HGA: P _____ Y _____

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

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

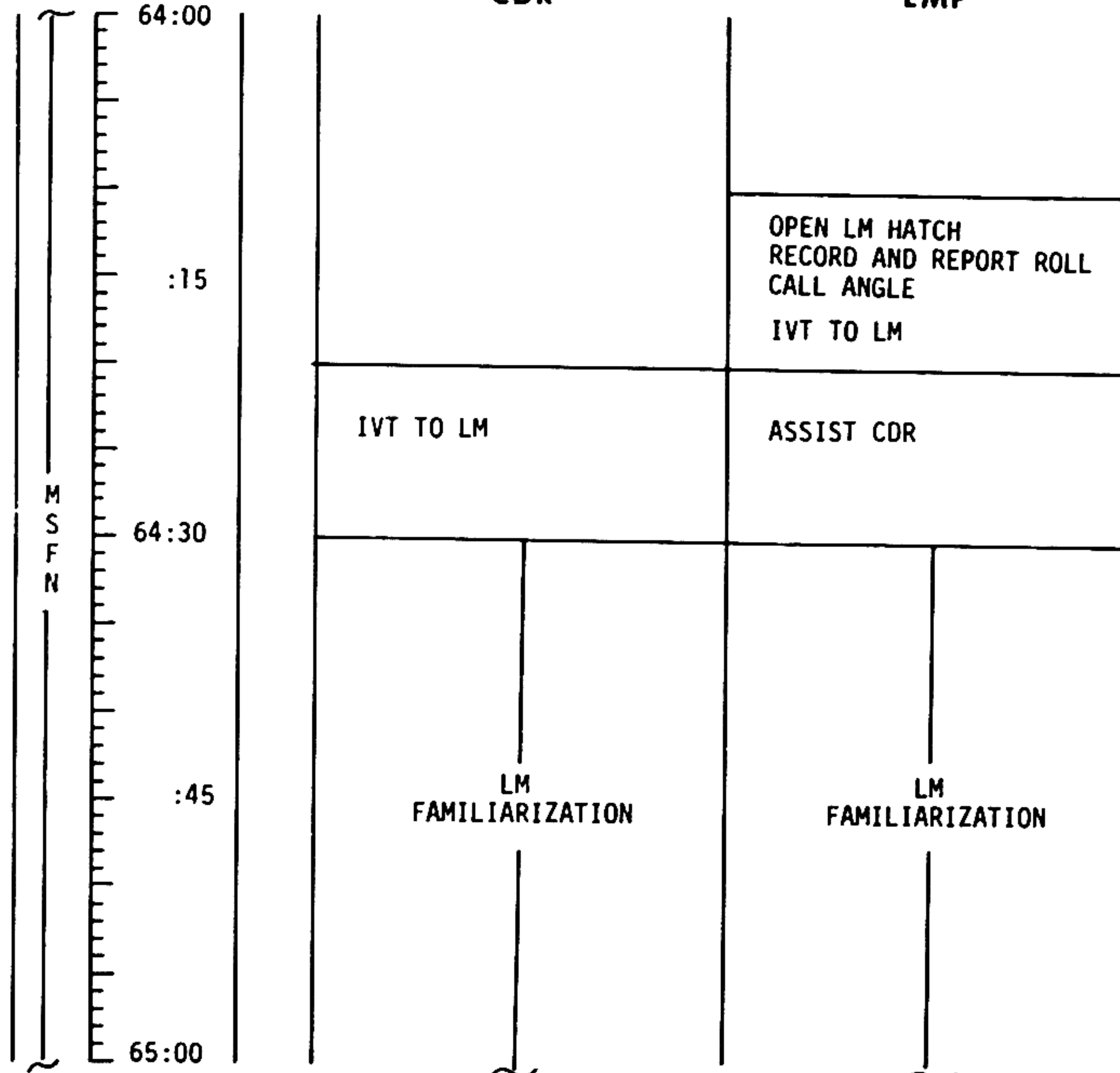
LM

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

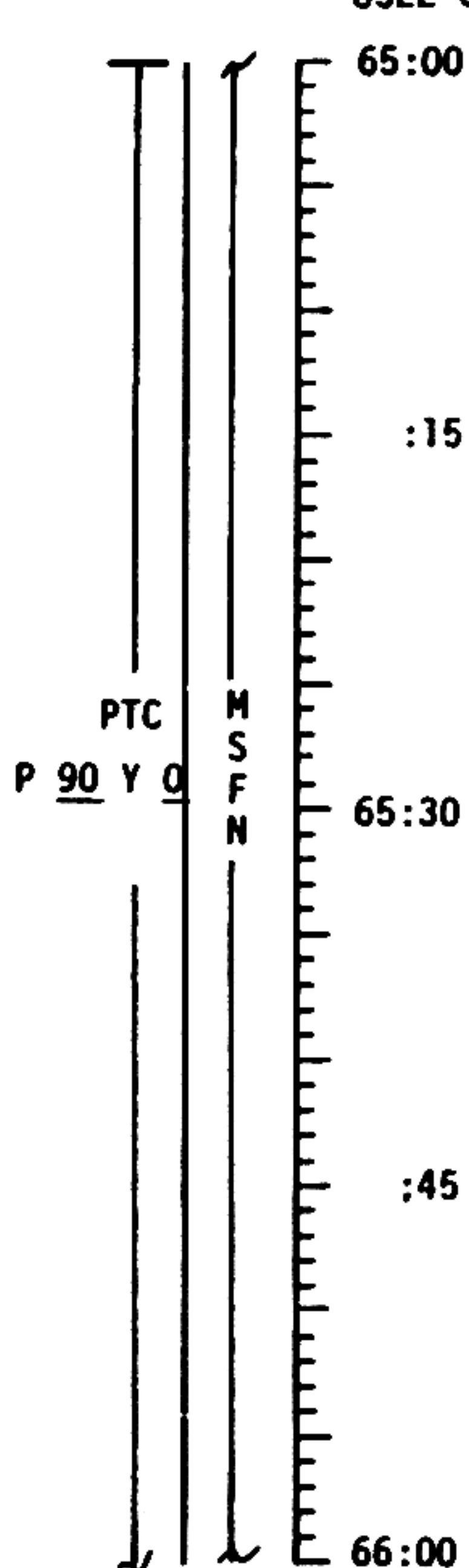
CMP

START PTC

0322 CST

LM

MCC-H



CDR

LMP

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

LM
FAMILIARIZATION

LM
FAMILIARIZATION

IVT TO CSM

IVT TO CSM

CLOSE LM HATCH

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

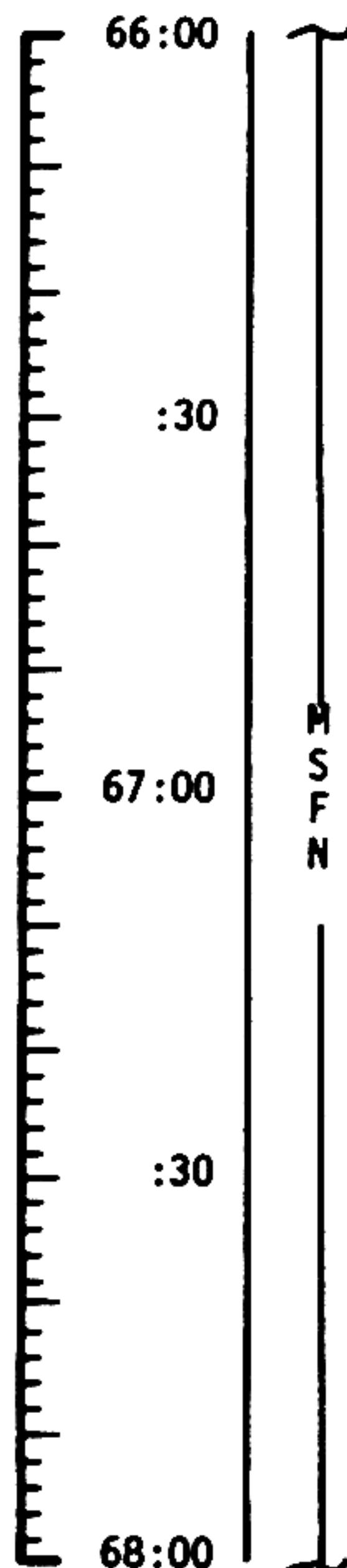
FLIGHT PLANNING BRANCH

MCC-H

0422 CST

FLIGHT PLAN

NOTES



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

L10H CANISTER CHANGE
 NO. 6 (8 INTO B, STOW
 6 IN B6)

M
S
F
N

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 - MNA OR B

PTC
 P 90 Y 0

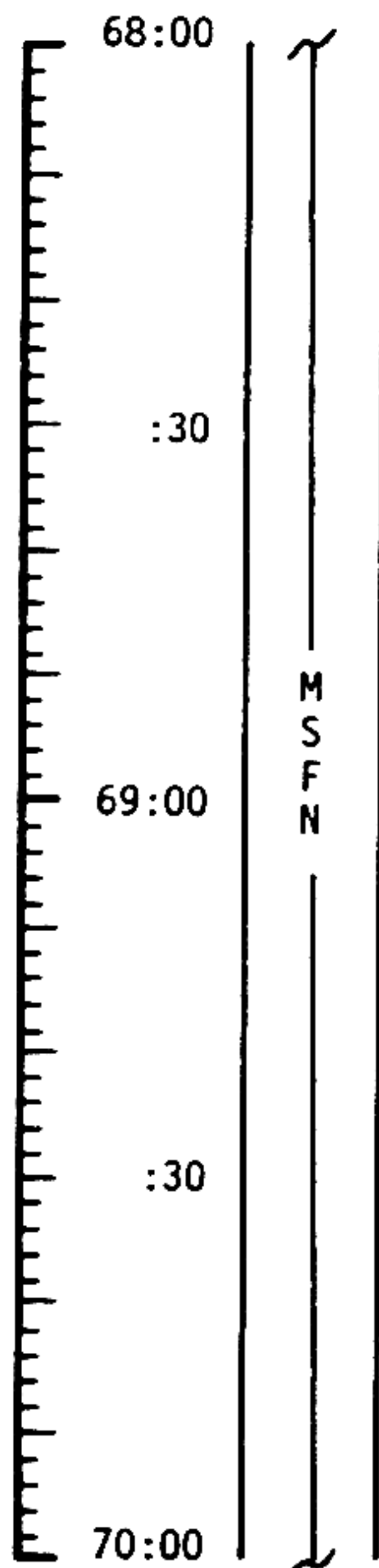
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	66:00 - 68:00	3/TLC	3-47

MCC-H

0622 CST

FLIGHT PLAN

NOTES



REST PERIOD
(8 HOURS)

PTC
P 90 Y 0

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

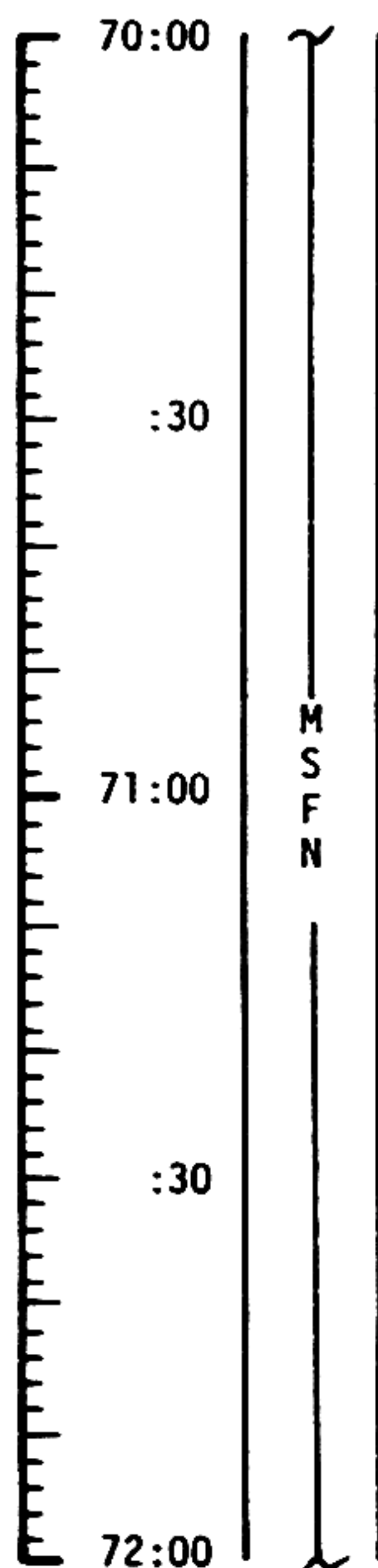
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	68:00 - 70:00	3/TLC	3-48

MCC-H

0822 CST

FLIGHT PLAN

NOTES



REST PERIOD
(8 HOURS)

PTC
P 90 Y 0

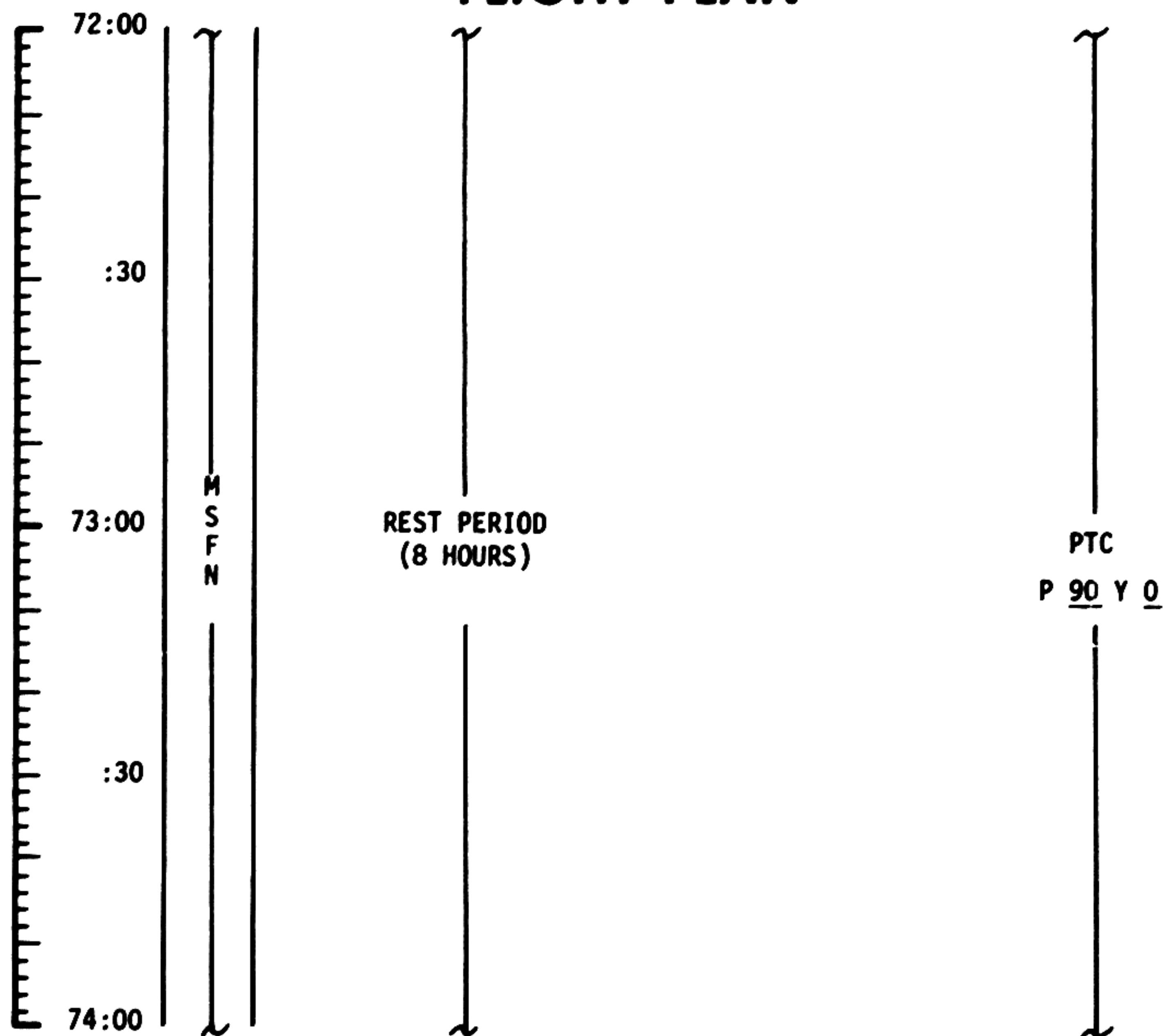
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	70:00 - 72:00	3/TLC	3-49

MCC-H

1022 CST

FLIGHT PLAN

NOTES



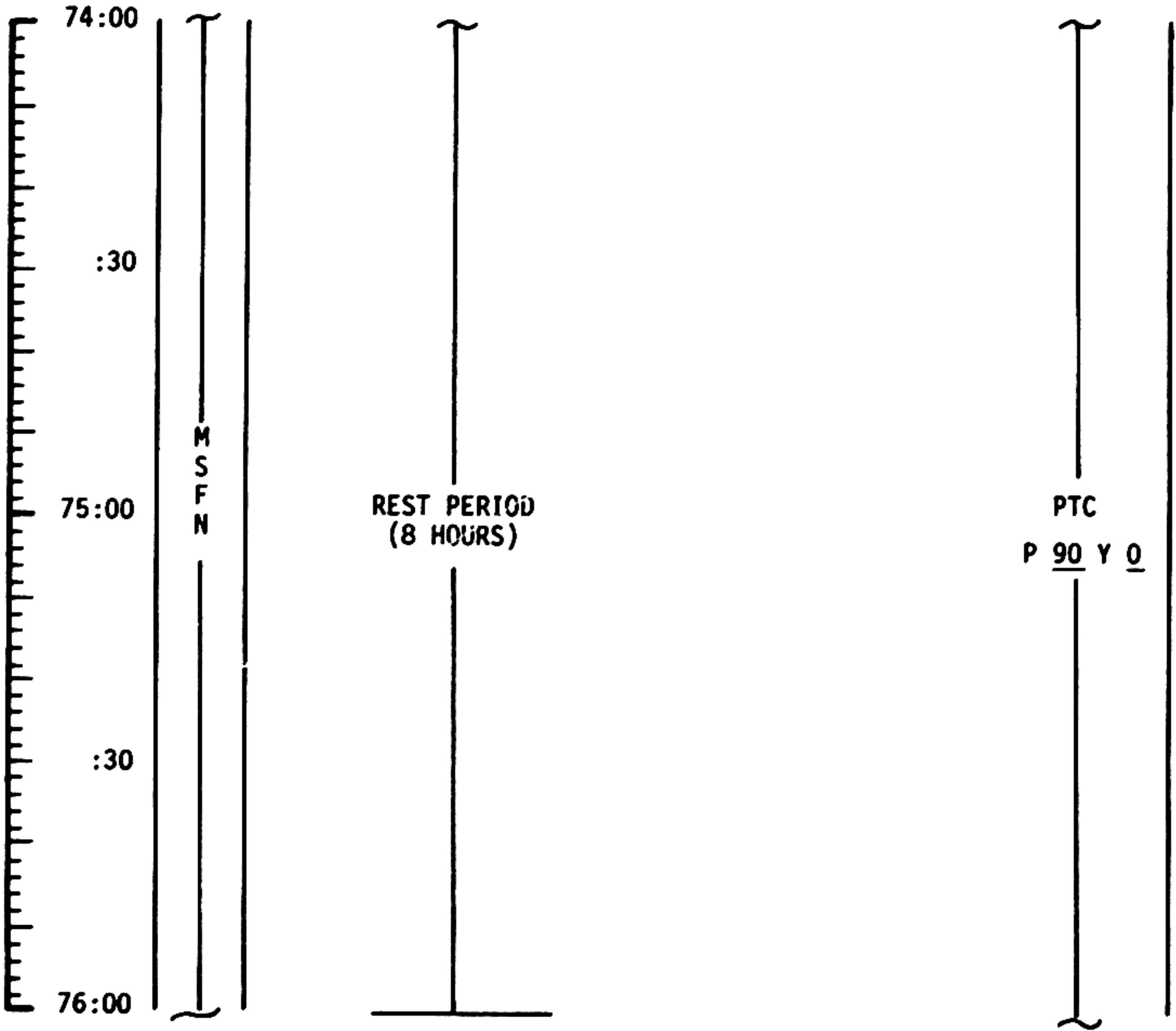
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	72:00 - 74:00	3/TLC	3-50

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

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

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

BATTERY CHARGE,
BATTERY A

EAT PERIOD

CSM CONSUMABLES UPDATE

GET: _____:_____

RCS TOTAL _____%

QUAD A _____% B _____%

C _____% D _____%

H₂ TOTAL _____%

O₂ TOTAL _____%

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

P52 IMU REALIGN
OPTION 1 - PREFERRED
REPORT GYRO TORQUING ANGLES

CREW STATUS REPORT

CDR CMP LMP

SLEEP _____

PRD _____

P30 - EXTERNAL ΔV

PTC
P 90 Y 0

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

P52 (LDG SITE ORIENT)
OPTION 1 - PREFERRED

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____:_____

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

76:00

:30

77:00

:30

78:00

M
S
F
N

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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

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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

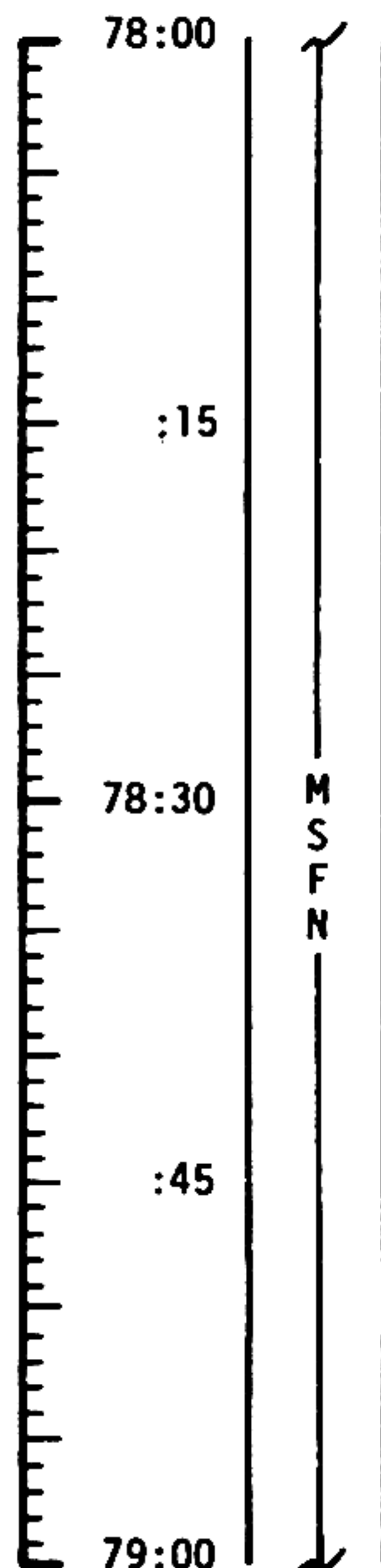
MCC-H

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

* ITEMS TO BE
 REPORTED TO MSFN

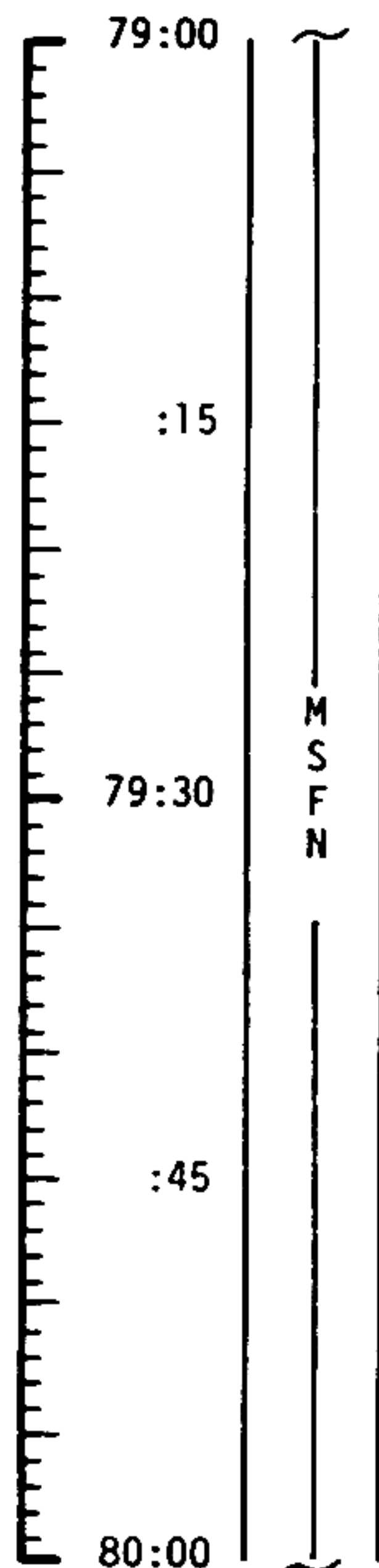
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	78:00 - 79:00	4/TLC	3-54

MCC-H

1722 CST

FLIGHT PLAN

NOTES



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

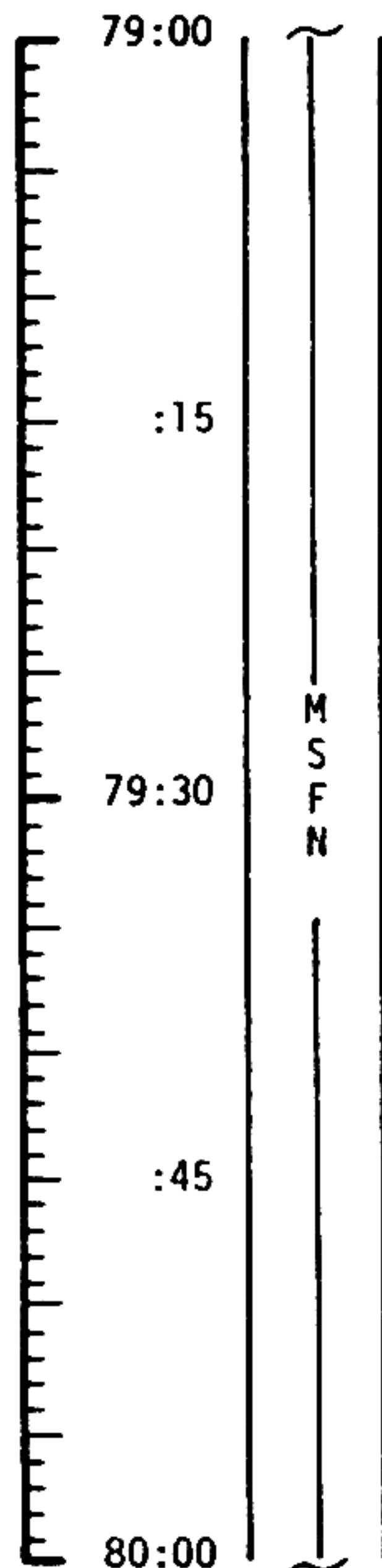
NSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

1722 CST

FLIGHT PLAN

NOTES



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

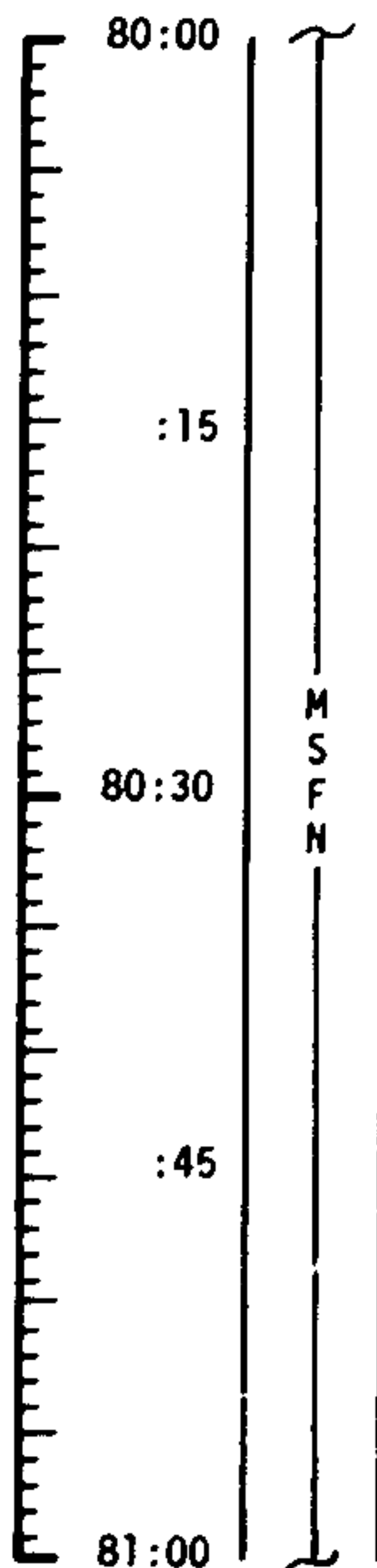
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	79:00 - 80:00	4/TLC	3-55

MCC-H

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

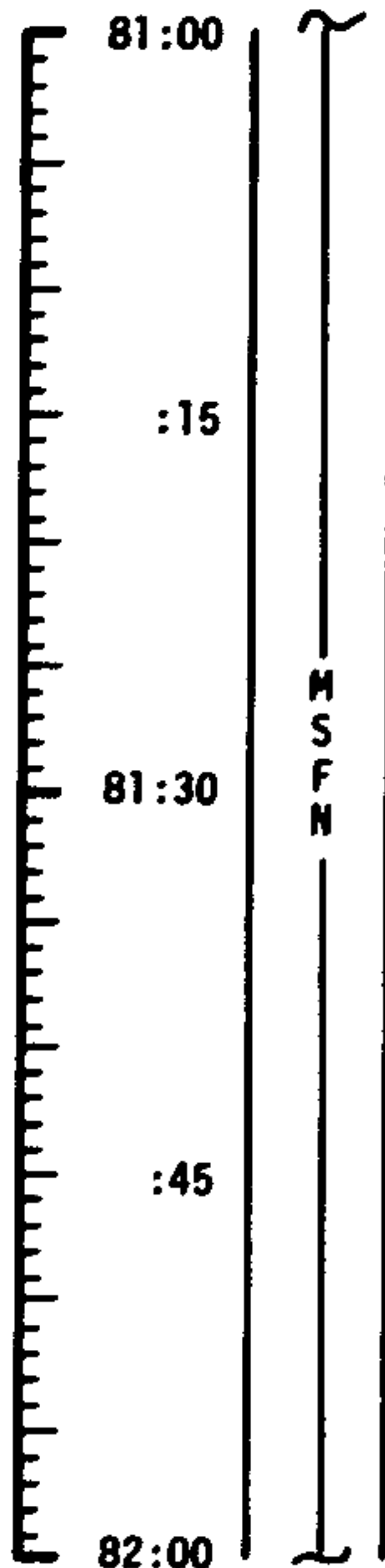
MCC-N

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 - REFSMMAT

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 261 P -18
Y 19 Y 251

P52 (LDG SITE ORIENT)

N71: — — — —

N05: — — — —

N93: — — — —

X — — — —

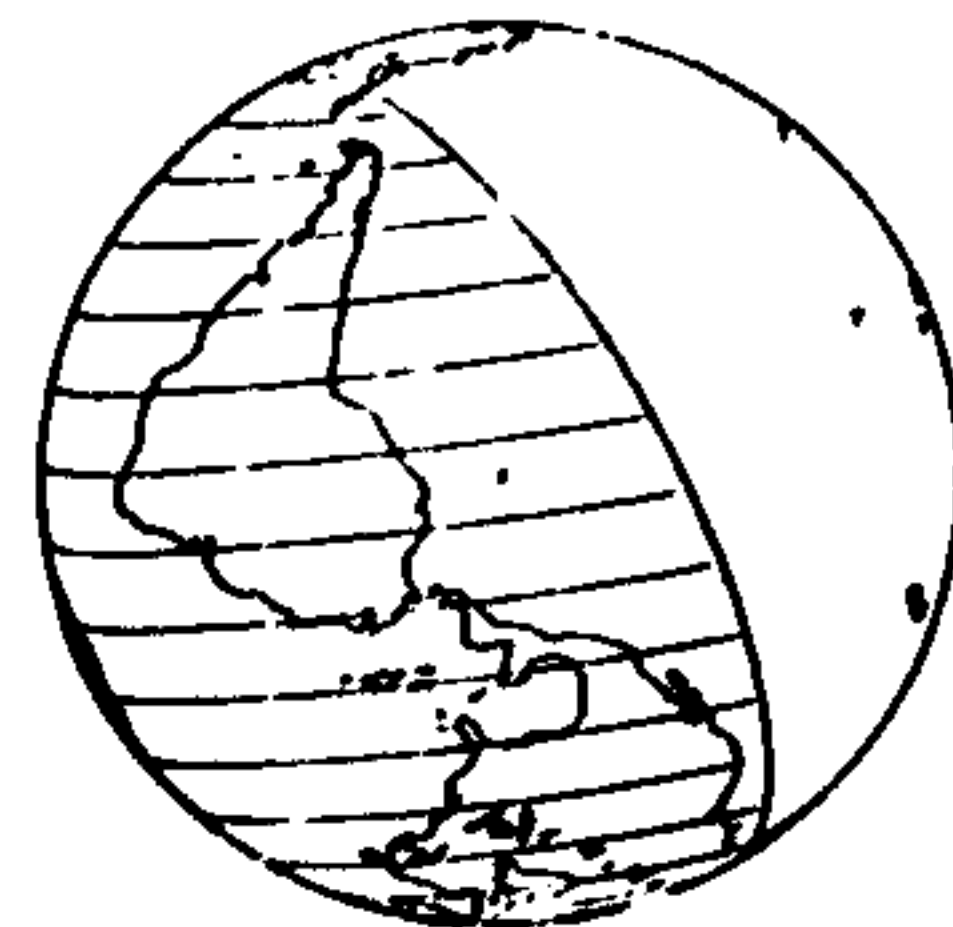
Y — — — —

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 68)

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.

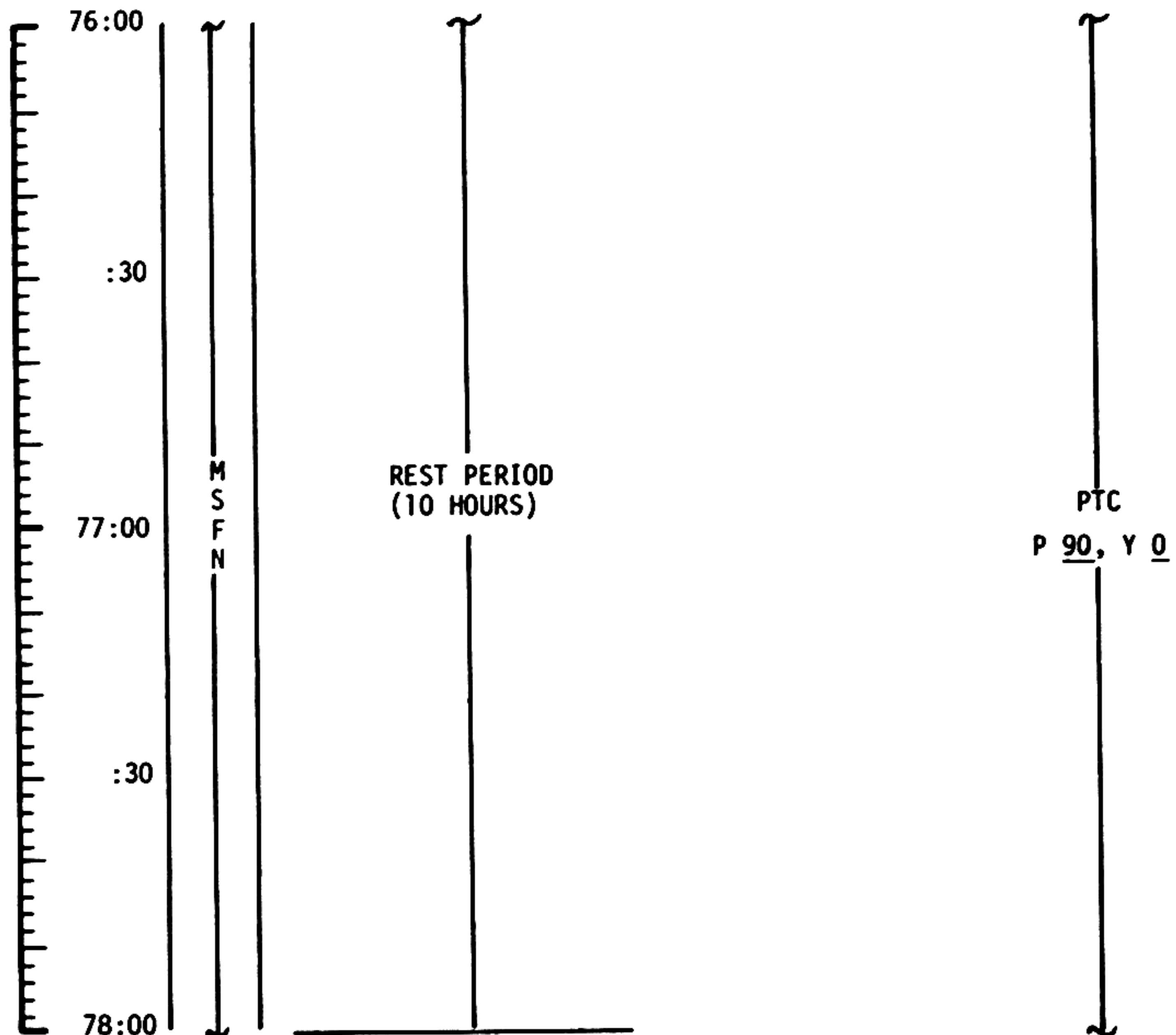
TLC WITHOUT
MCC 4

MCC-H

1422 CST

FLIGHT PLAN

NOTES



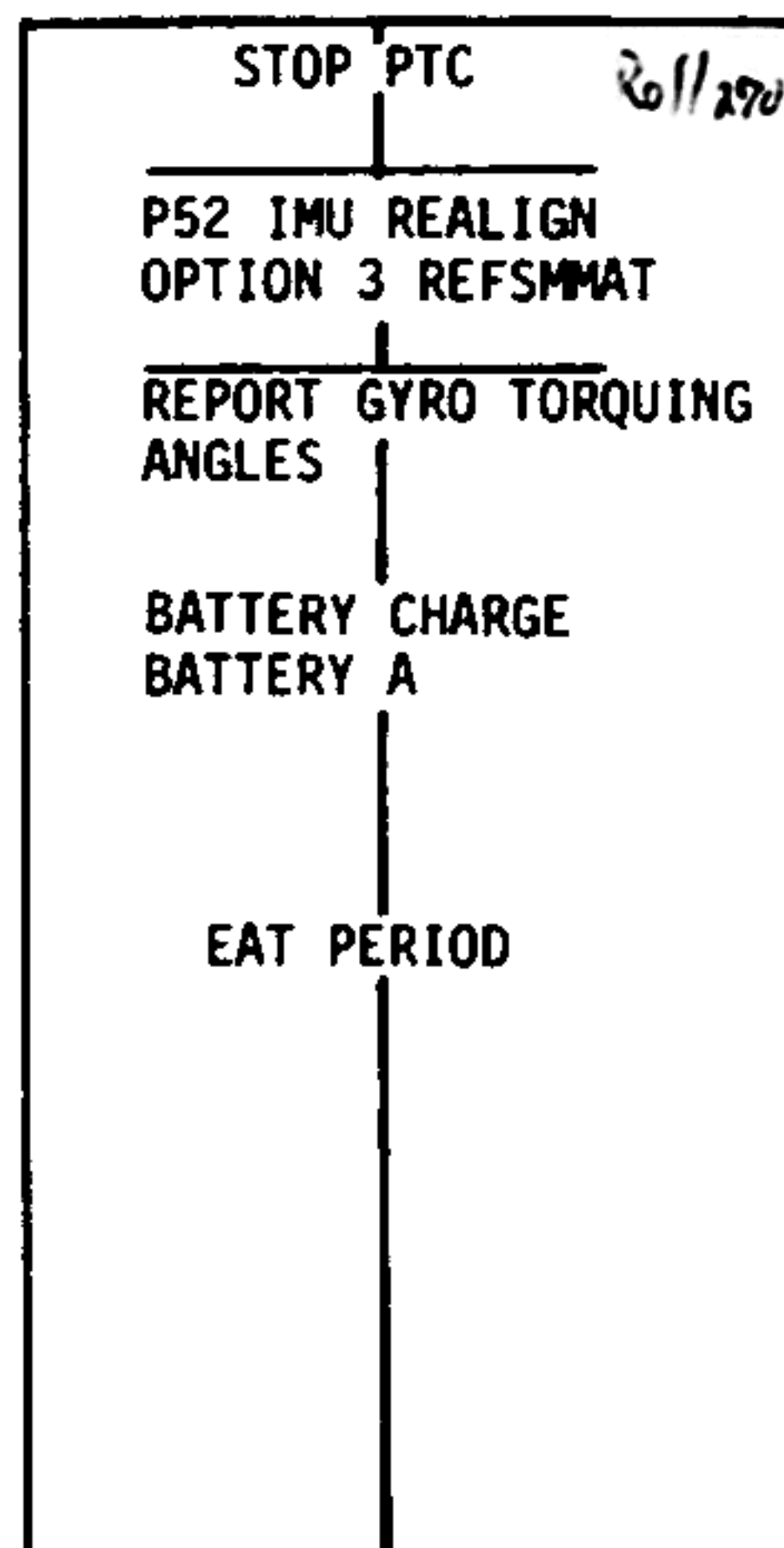
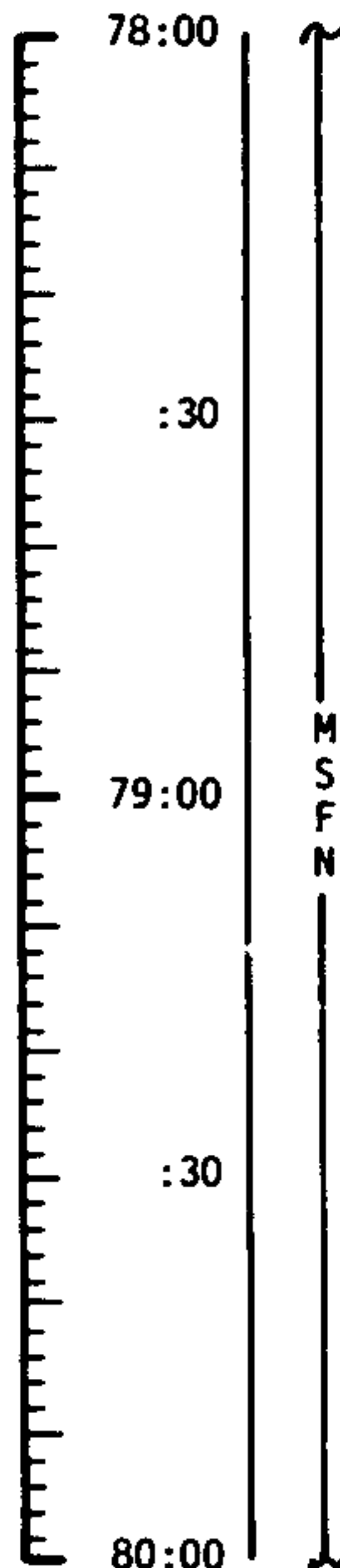
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	76:00 - 78:00	4/TLC	6-6

MCC-H

1622 CST

FLIGHT PLAN

NOTES

UPLINK TO CSM
STATE VECTOR & V66UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN
PERICYNTHION +2
ABORT PAD

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

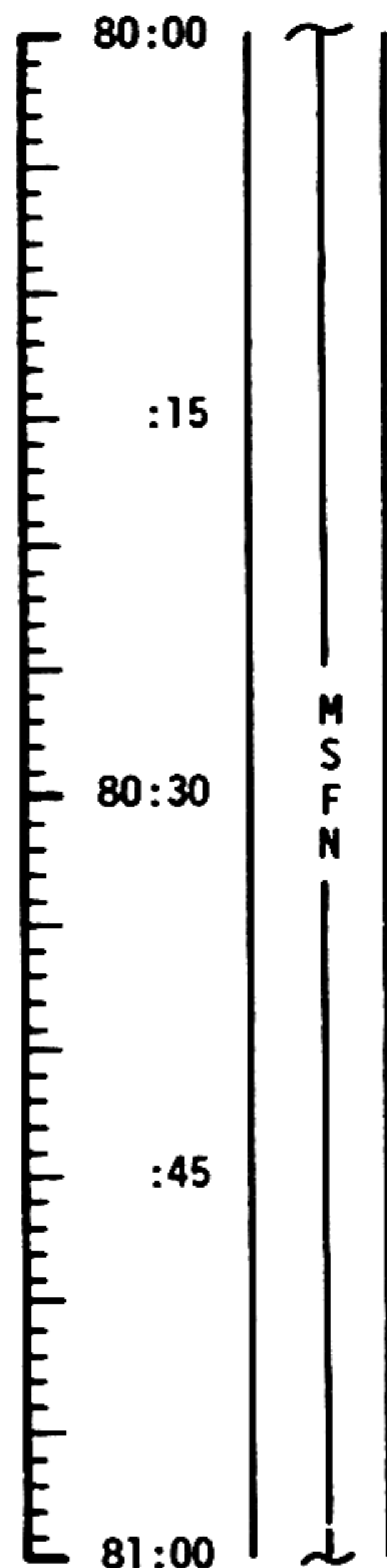
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	78:00 - 80:00	4/TLC	6-7

MCC-H

1822 CST

FLIGHT PLAN

NOTES



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

81:00

:15

81:30

:45

82:00

M
S
F
N

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

P 154 P 4Y 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 -18Y 19 Y 251

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	81:00 - 82:00	4/TLC	6-9

MCC-H

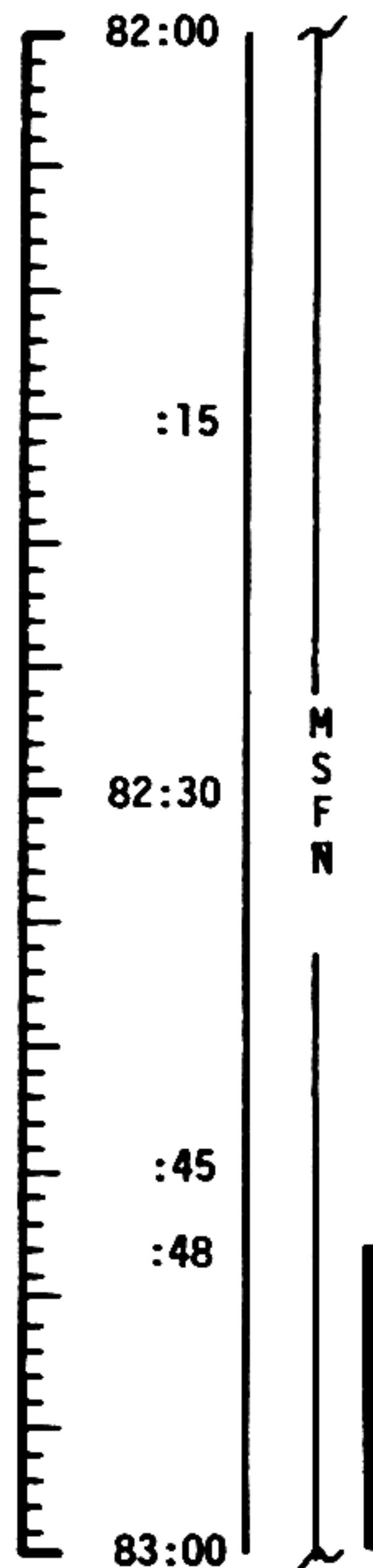
2022 CST

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 1

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

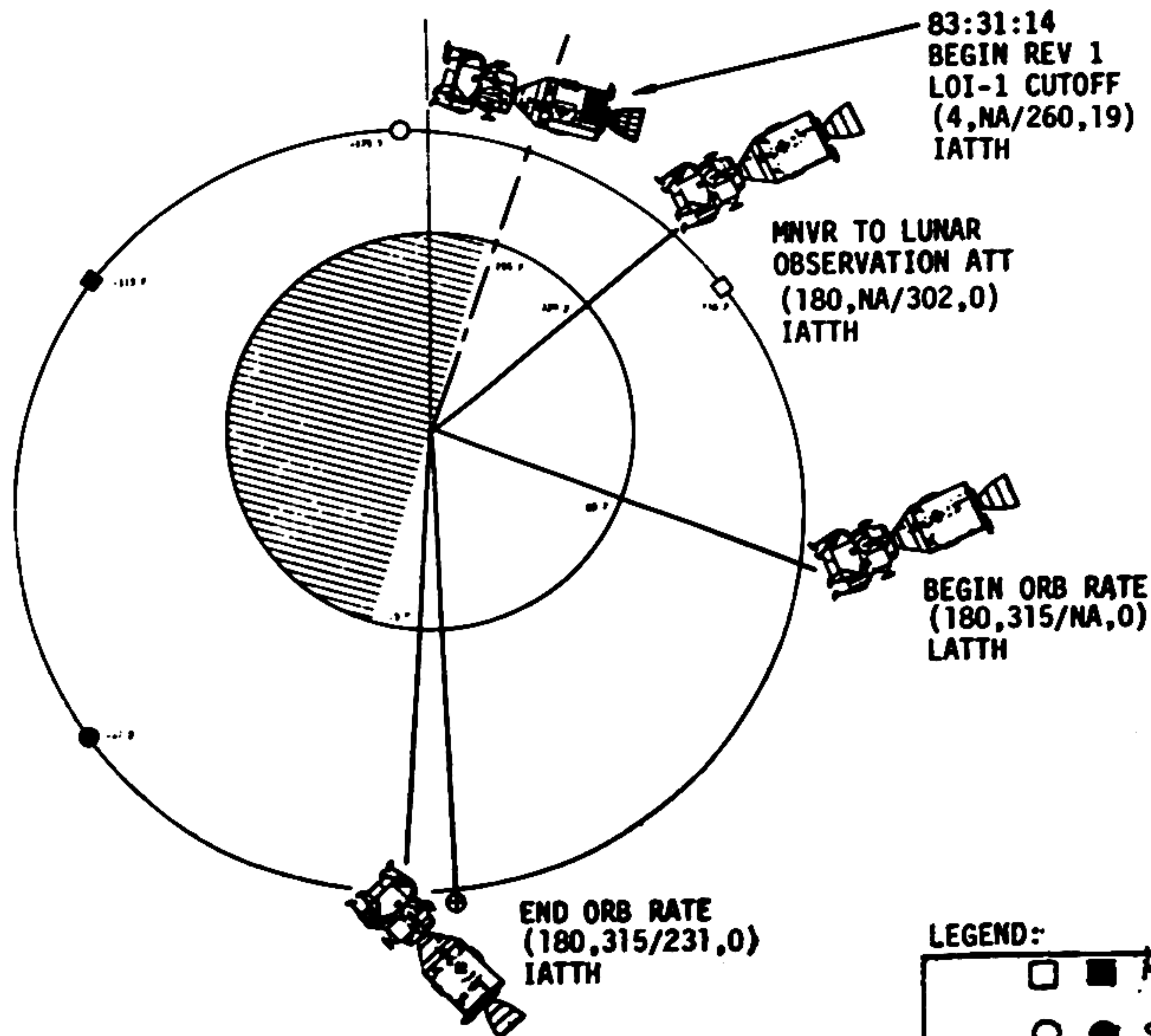
P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + 10 SEC	DO NOT TRIM

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

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REV 1



3-59A

LEGEND:

☐	☒	KSFN AOS, LOS
☐	☒	S/C SUNRISE, SUNSET
☒		SUBEARTH POINT
(R,LHP/INP,Y)		
IATTH - INERTIAL ATTITUDE HOLD		
LATTH - LOCAL ATTITUDE HOLD		

REVISION B

MCC-M

2122 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
GO/NO-GO LOI-1

83:00

M
S
F
NROLL TO BURN ATT R 4
P 261OMNI DSXT STAR CHECK Y 19
VERIFY DSE MOTION AT LOS

:15

:18

:25

83:30

REV 1

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

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

ACQUIRE MSFN

:44
:45M
S
F
N

LOI-1 BURN STATUS REPORT

LUNAR SURFACE OBSERVATION ATTITUDE
 (HATCH WINDOW) - HEADS DOWN
 GO ORB RATE BY 84:00

:58

84:00



BURN STATUS REPORT

X	X		•	Δ TIG **
X	X		•	BT **
			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V _{gx} ***
			•	V _{gy} ***
			•	V _{gz} ***
			•	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

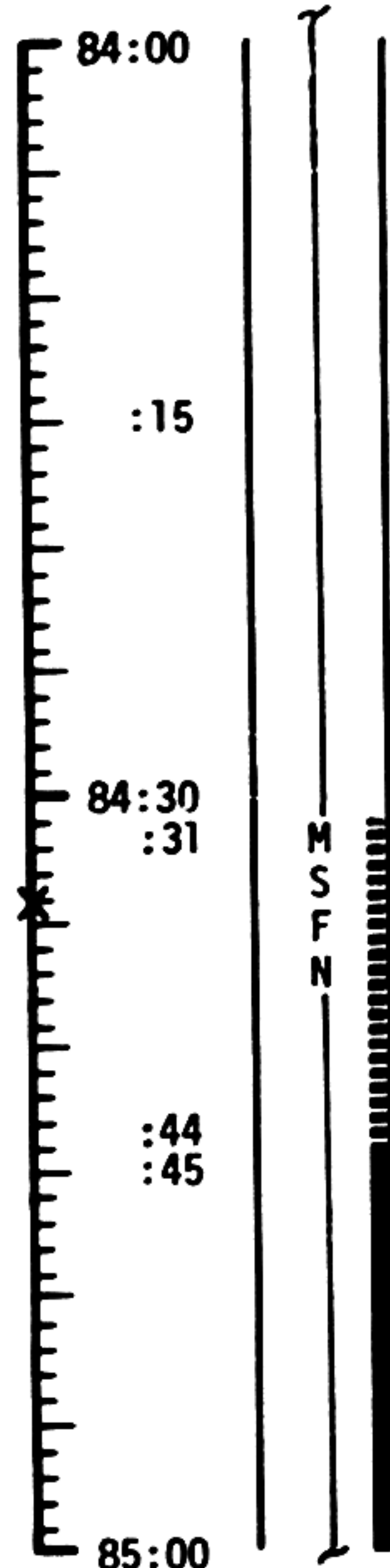
MCC-H

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 231 P -38
Y 0 Y 189

UPDATE TO CSM
MAP UPDATE REV 2

EAT PERIOD

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

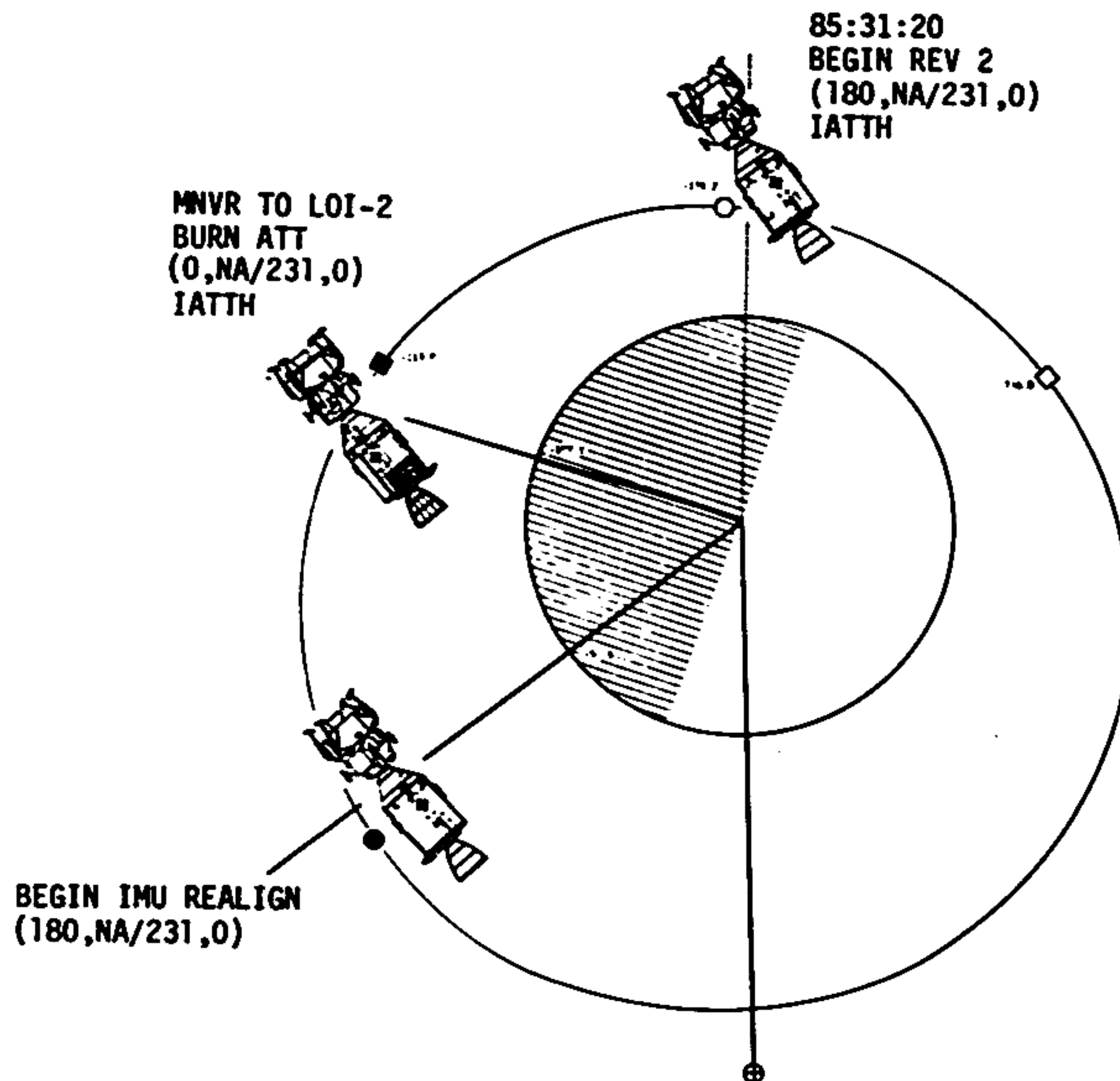
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
Apollo 12	FINAL (NOV 14)	OCTOBER 15, 1969	84:00 - 85:00	4/1	3-61

MSC Form 29 OT (Mar. 69)

FLIGHT PLANNING BRANCH

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REV 2



LEGEND:

- ■ MSFN ACS, LOS
- ● S/C SUNRISE, SUNSET
- ⊕ SUBEARTH POINT

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-61A

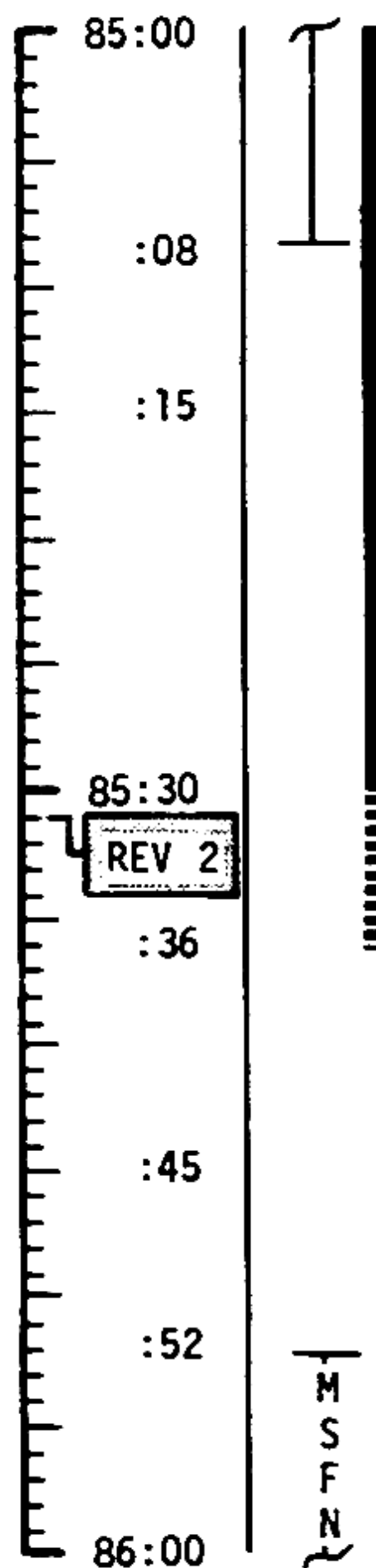
REVISION B

MCC-H

2322 CST

FLIGHT PLAN

NOTES

H₂ PURGE LINE HTRS - ONVERIFY DSE MOTION AT LOS
EAT PERIODH₂ AND O₂ FUEL CELL PURGE
WASTE WATER DUMPREACQUIRE 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

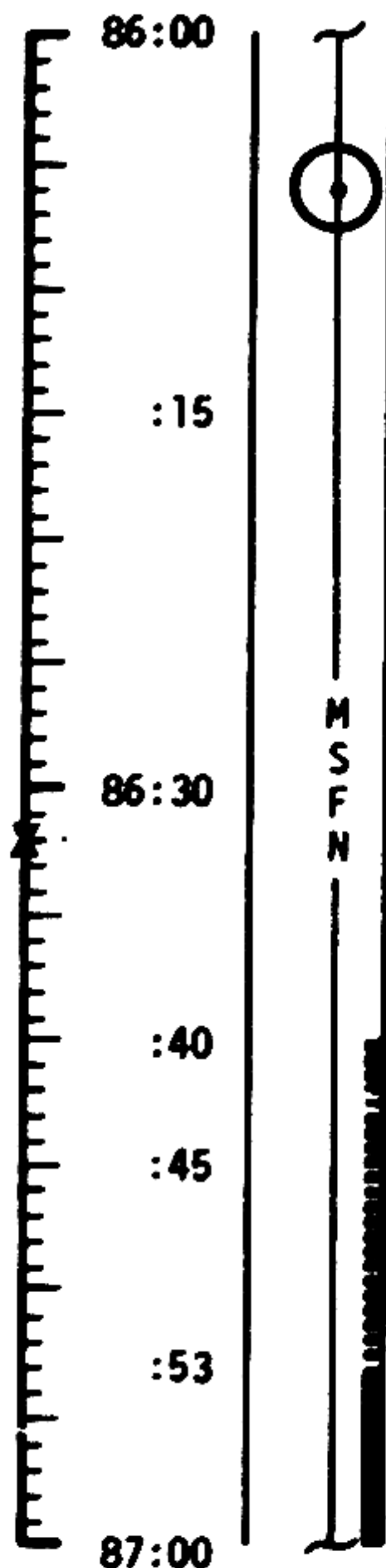
MCC-H

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

NSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

REVISION A

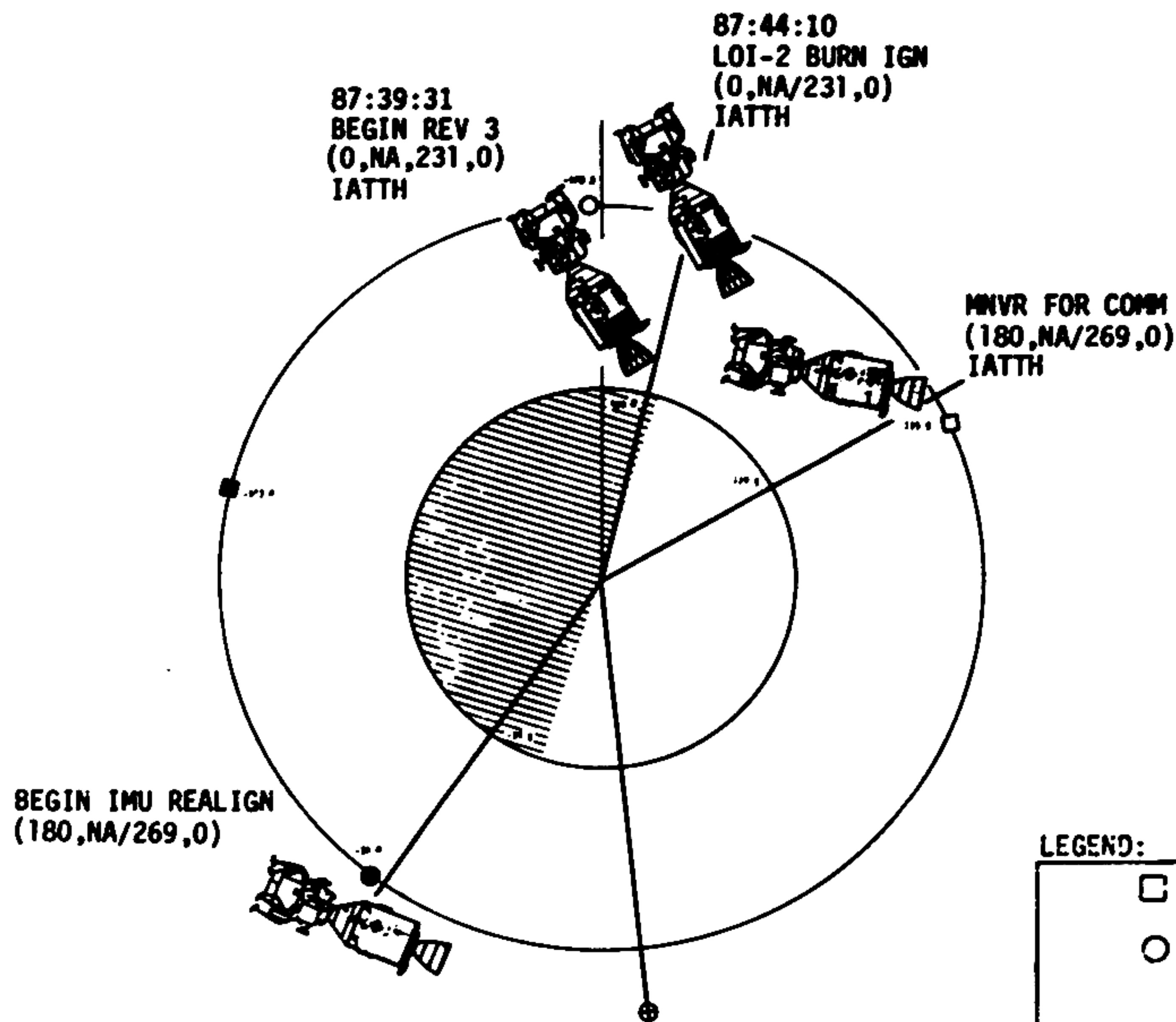
FLIGHT PLAN

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

REV 3



LEGEND:

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

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-64A

REVISION B

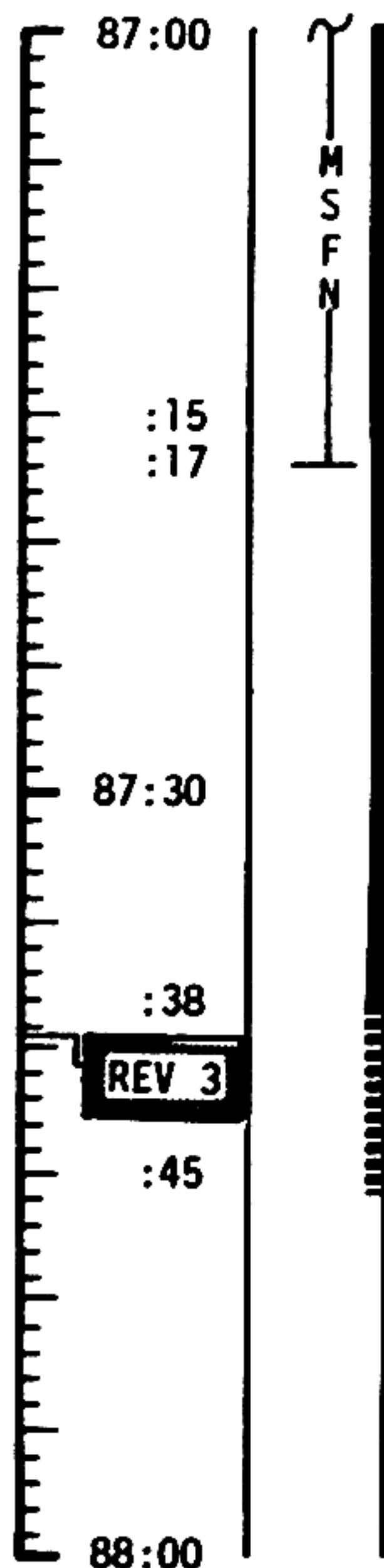
MCC-M

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
 RETROGRADE
 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: _ _ _ . _ _ _

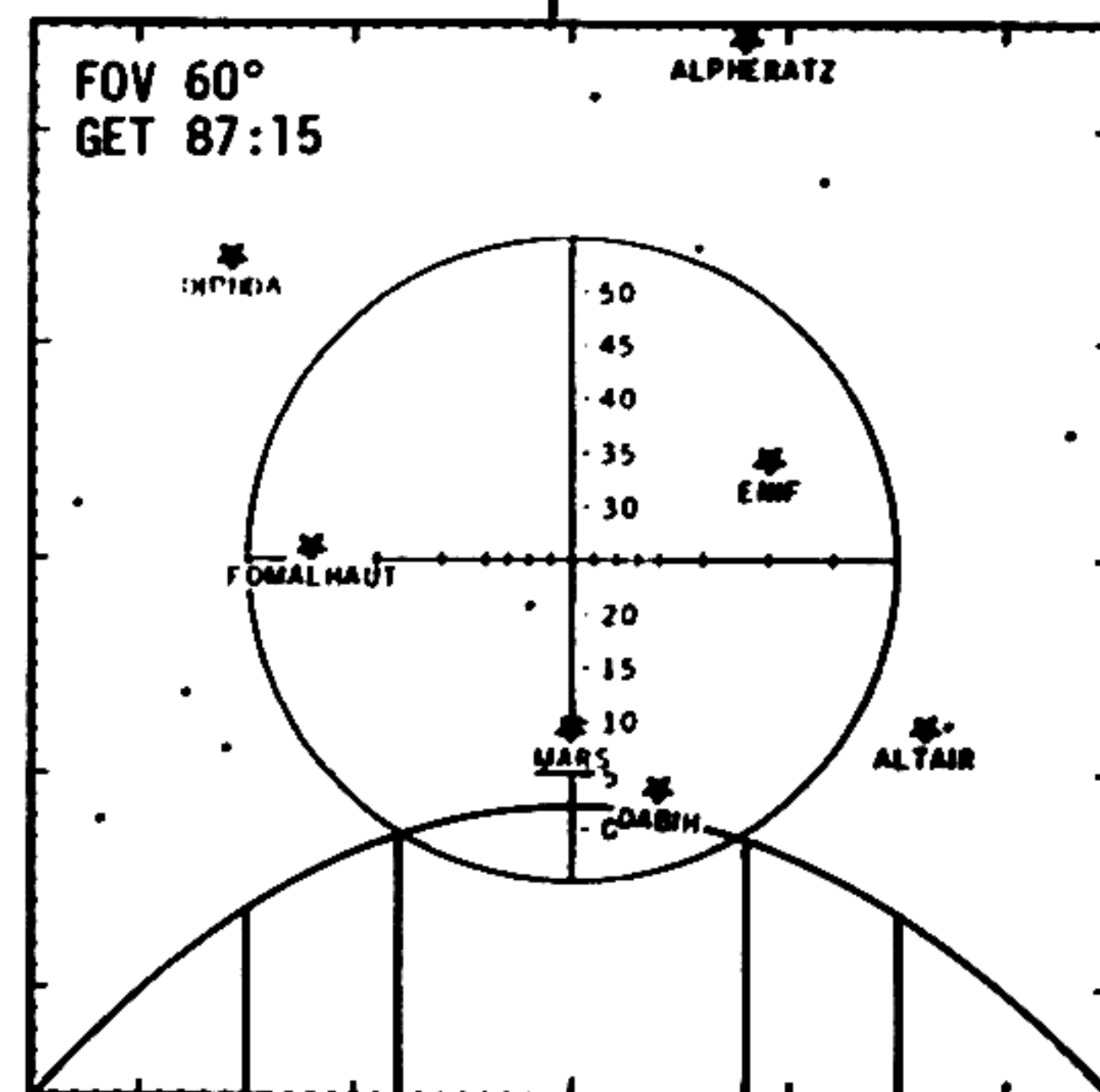
N93:

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

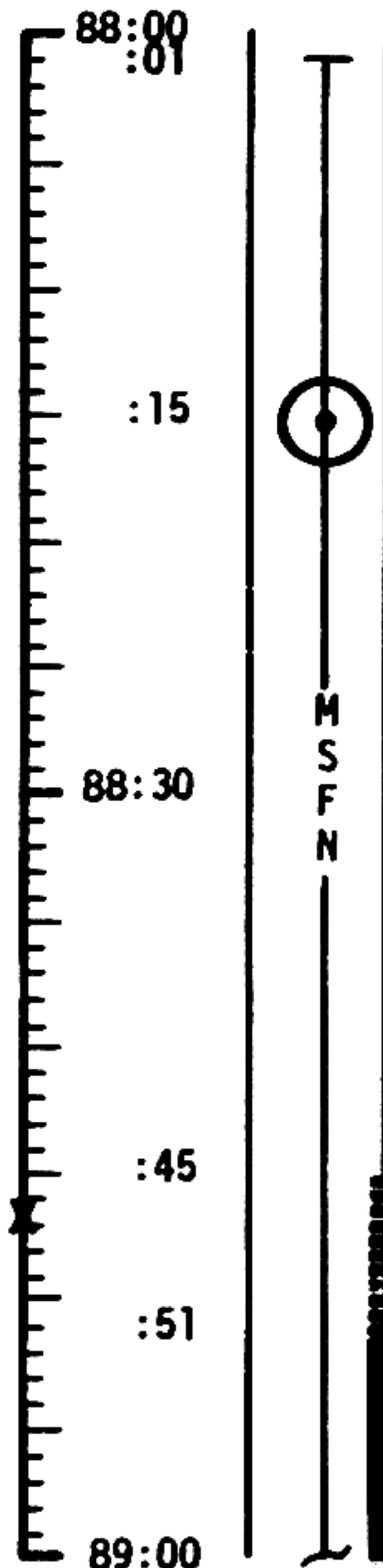
0222 CST

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 REFSMMAT

P52 (LDG SITE ORIENT)

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

BURN STATUS REPORT

X	X		•	ΔTIG**
X	X		•	BT**
			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V _{gx} ***
			•	V _{gy} ***
			•	V _{gz} ***
			•	ΔV _c *
X	X	X		FUEL*
X	X	X		OX*
X	X	X		UNBAL

MAP UPDATE REV 4

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

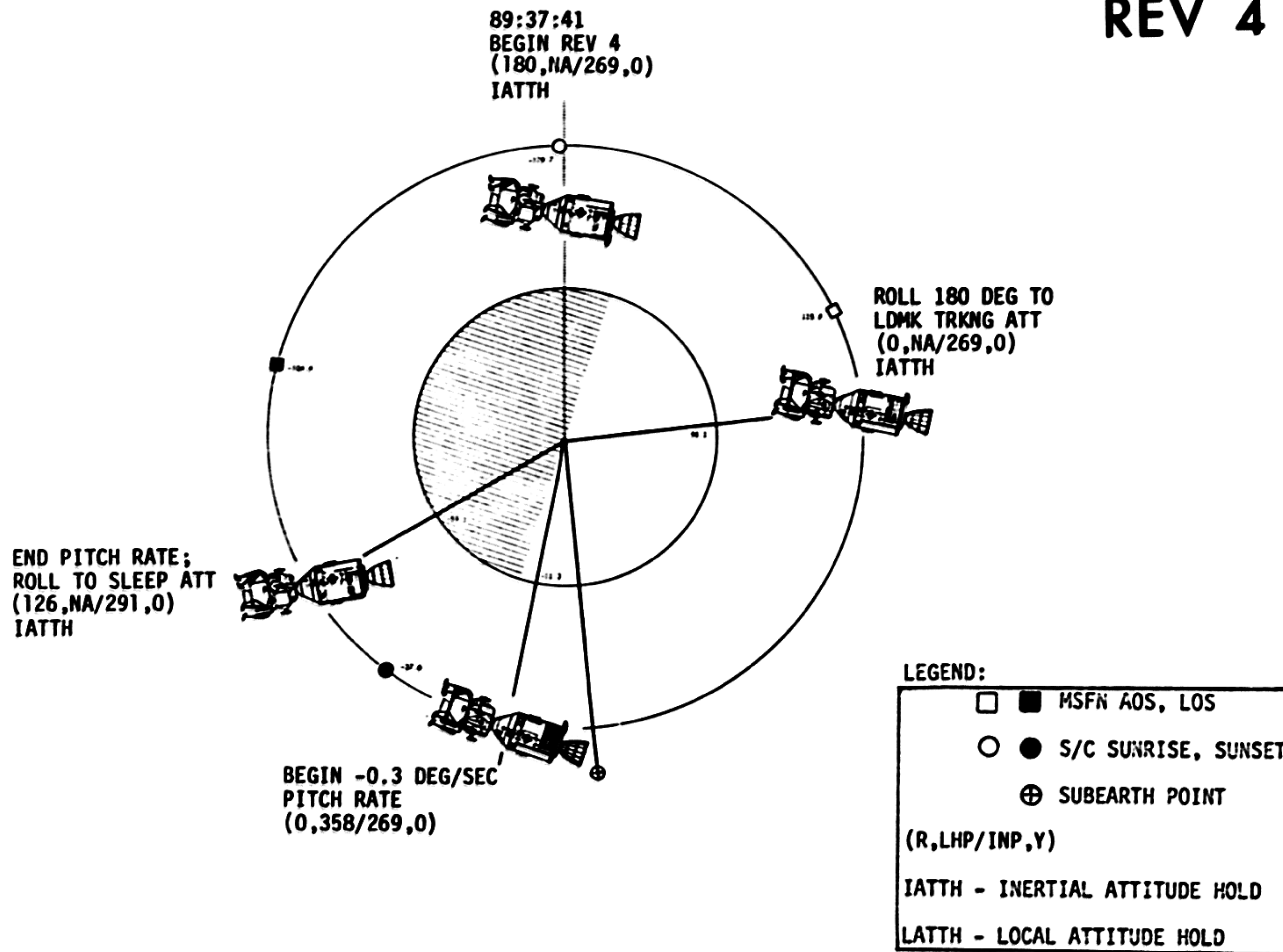
*ITEMS TO BE REPORTED
TO MSFN
**REPORT IF OFF MORE
THAN 1 SEC
***REPORT IF >0.2 FPS

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

MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

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3-66A

REVISION B

FLIGHT PLAN

CSM

LM

M. C-H

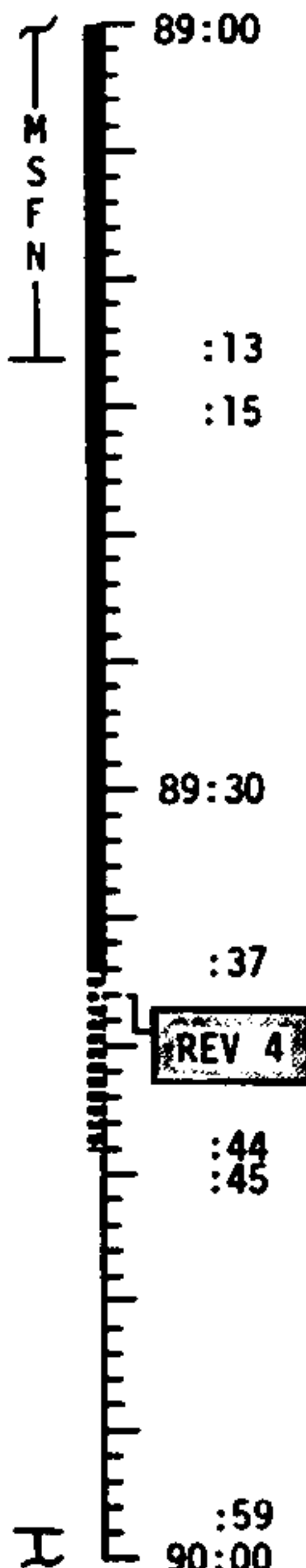
CMP

0322 CST

CDR

LMP

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	
IVT TO LM		LM ENTRY STATUS CHECKS	
		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

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

DOCKED LANDMARK TRACKING PROFILE

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

HORIZON

HORIZON

LANDMARK

RADIUS OF MOON

CENTER OF MOON

$\Delta T_1 = 300 \text{ SEC}$
 $\Delta T_2 = 40 \text{ SEC}$
 $\Delta T_3 = 25 \text{ SEC}$
 $\Delta T_4 = 25 \text{ SEC}$
AOS to LOS = 3 MIN

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	---	---	---	---

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

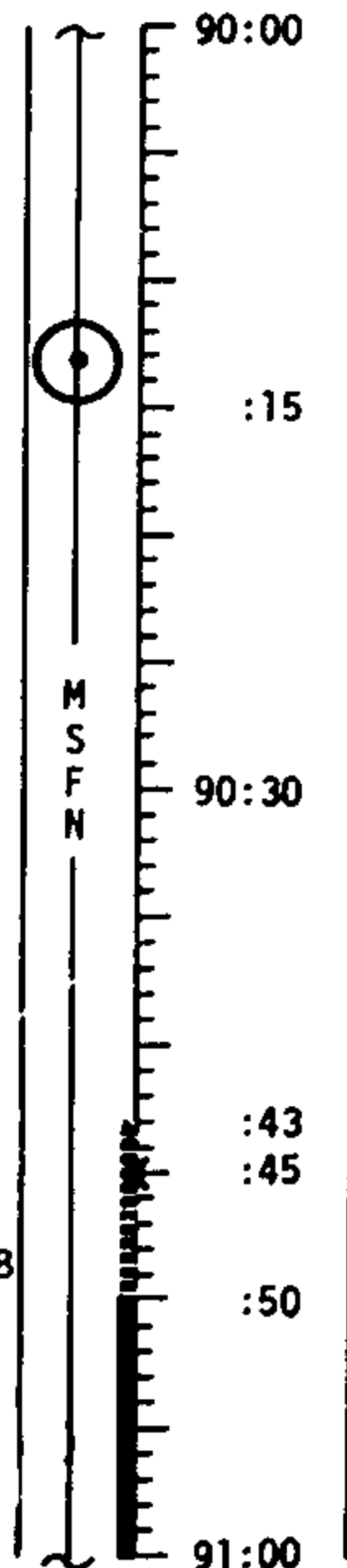
TRACK LDMK H-1
DO NOT PRO ON
FINAL N89,
25 SEC BETWEEN MARKS
5 MARKS

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



LM

AID LMP AS REQUIRED

MCC-H

LMP

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

LUNAR ORBIT REST PERIOD ATTITUDE

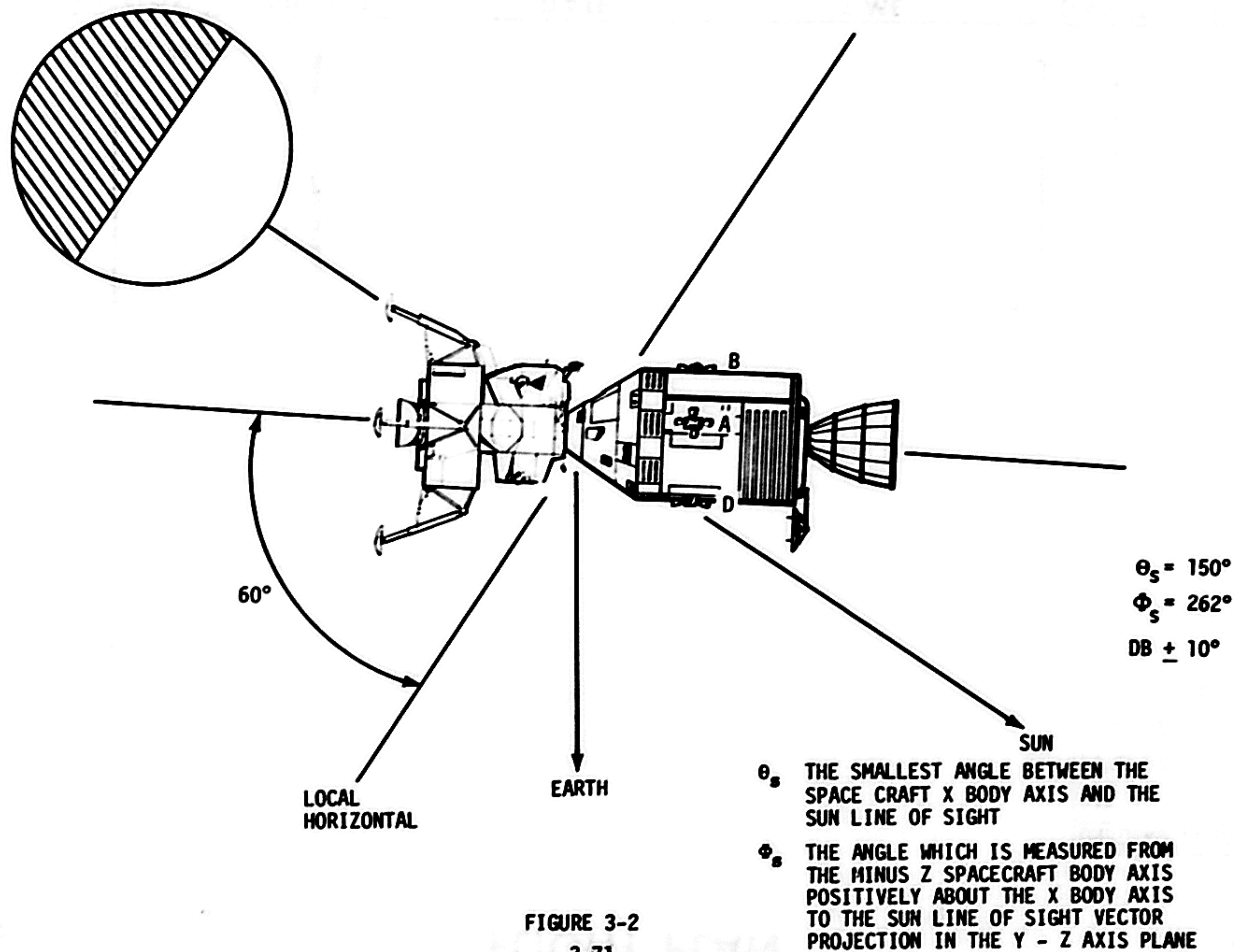


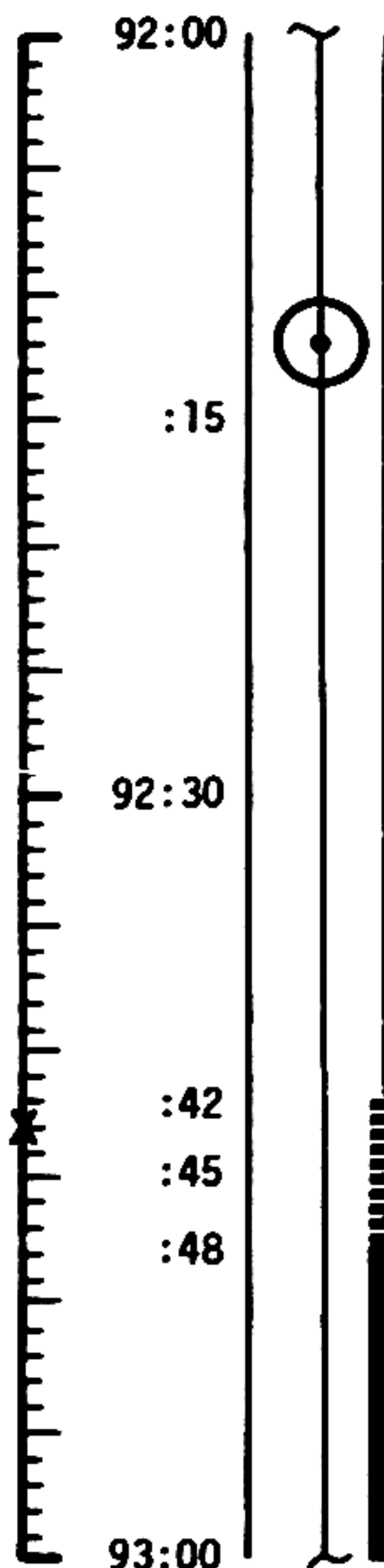
FIGURE 3-2
3-71

MCC-H
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

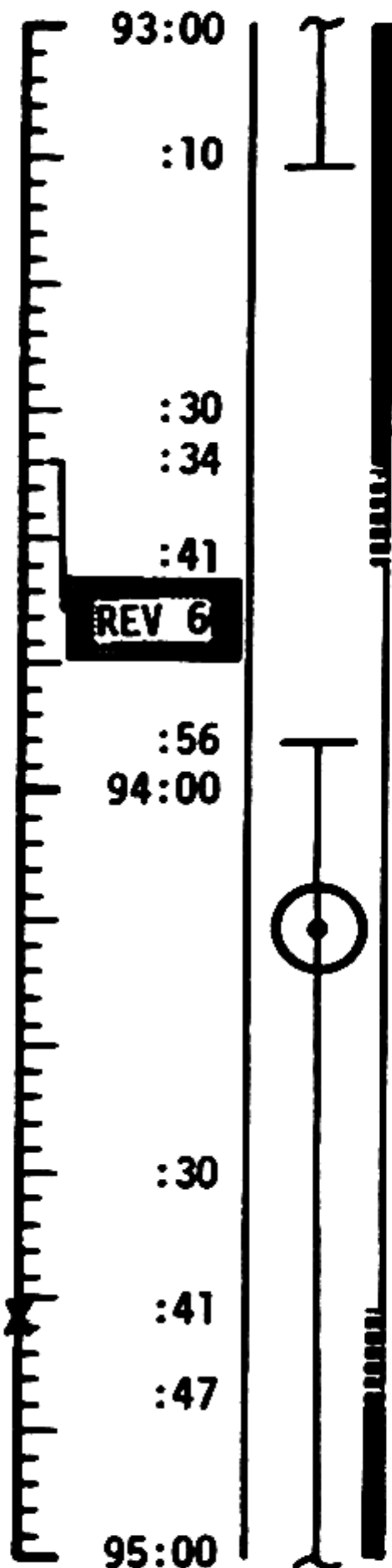
MCC-H

0722 CST

FLIGHT PLAN

NOTES

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

0922 CST
95:00
REV 7
:30
:33
:40
:54
96:00
:30
:39
:45
97:00

DUMP DSE



REST PERIOD
(8.5 HOURS)

REST
ATT

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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

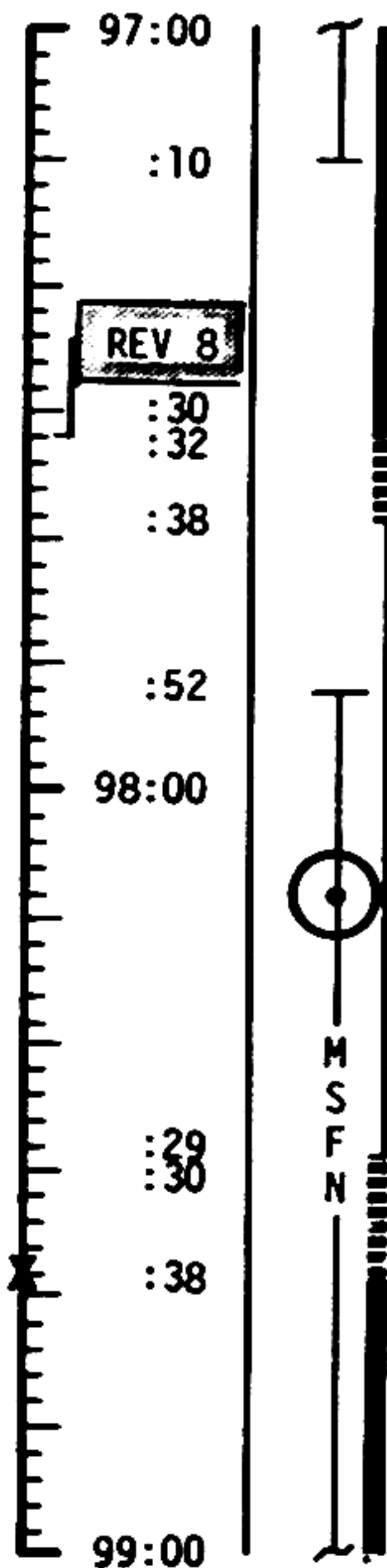
MCC-H

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

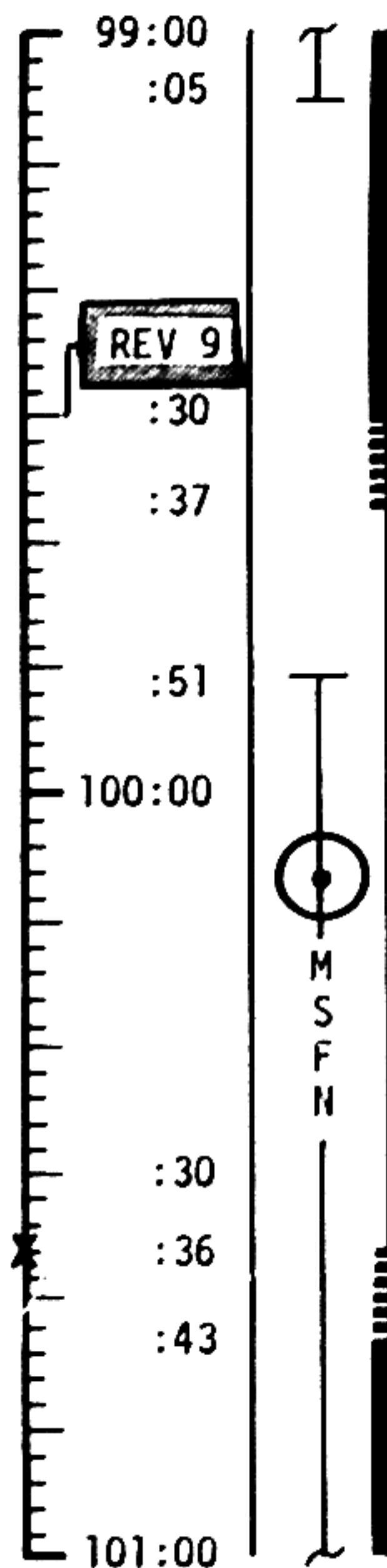
MCC-H

1322 CST

FLIGHT PLAN

NOTES

DUMP DSE



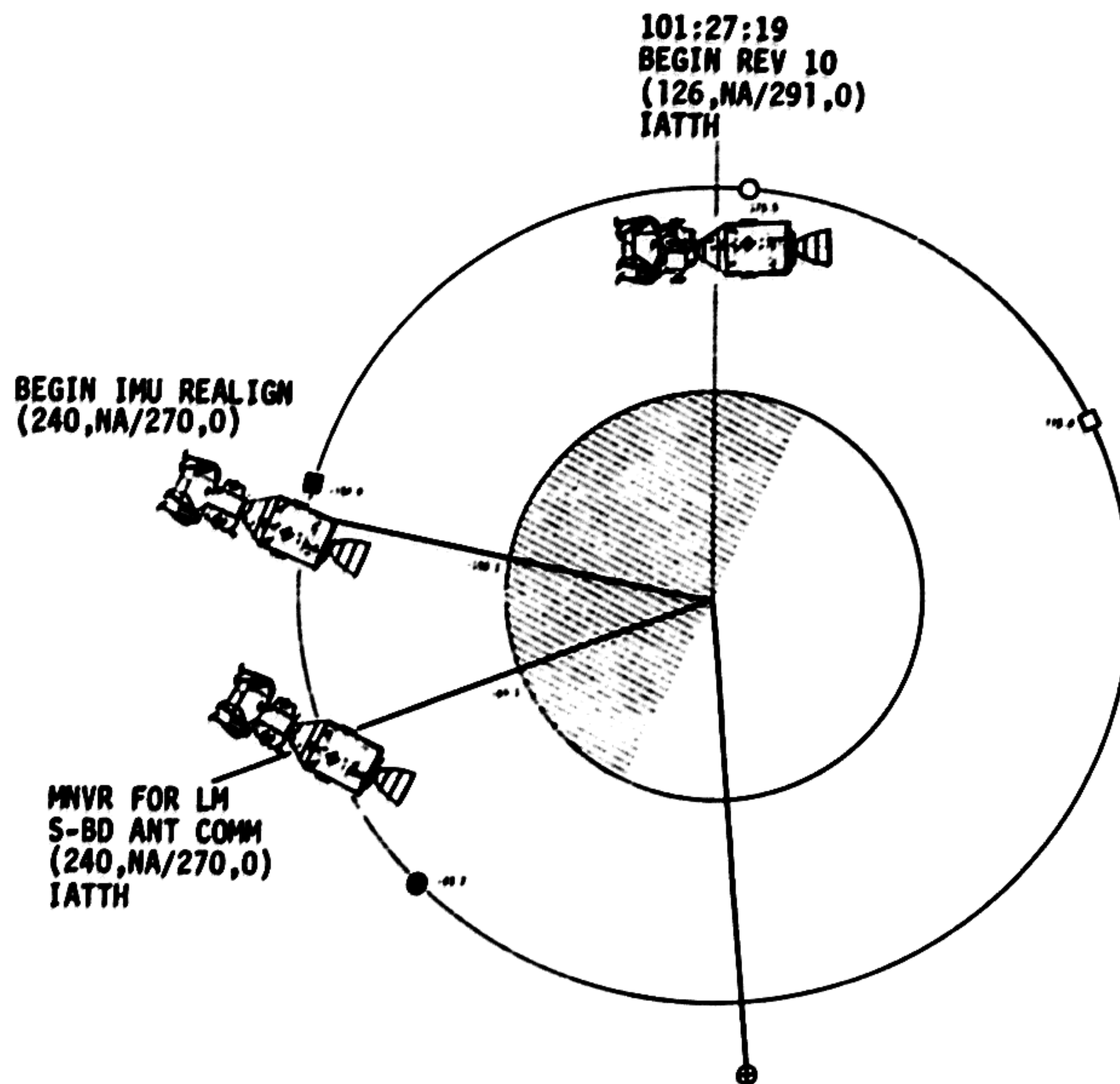
REST PERIOD
(8.5 HOURS)

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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REV 10



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

:29

101:30

:35

:45

:49

102:00

VERIFY DSE MOTION AT LOS

WASTE WATER DUMP
O₂ FUEL CELL PURGE
EAT PERIOD

POSTSLEEP CHECKLIST

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

CSM CONSUMABLES UPDATE

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

CREW STATUS REPORT

	CDR	CMP	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

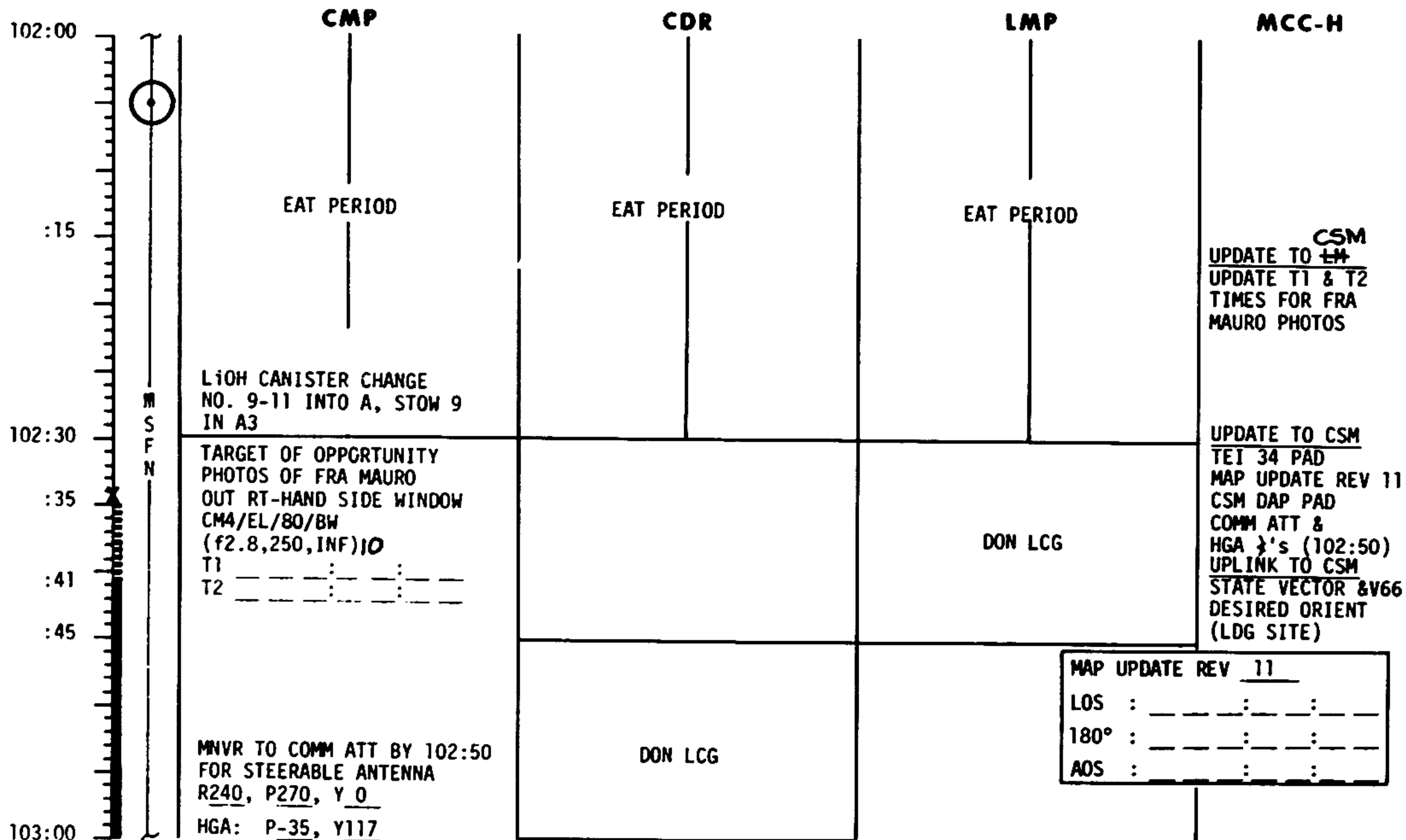
DUMP DSE

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



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

MSC Form 8458 (Jan 69)

FLIGHT PLANNING BRANCH

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

:34

EQUALIZE CM/LM PRESSURE

:45

:47

OPEN & STOW CM HATCH
REMOVE & STOW PROBE & DROGUE
CHECK LATCHES
REACQUIRE MSFN
HGA: P-35, Y117

MAP UPDATE REV 12

LOS : _____:_____:_____

180° : _____:_____:_____

AOS : _____:_____:_____

REPORT DOCKING TUNNEL
INDEX ANGLE

VERIFY DOCKING TUNNEL
INDEX ANGLE

DUMP DSE

104:00

DON PGA W/O HELMET & GLOVES

OPEN LM HATCH

UPDATE TO CSM
MAP UPDATE REV 12

IVT TO LM

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

CMP

CSM POWER TO LM
OFF AT LMP'S REQUEST

CDR

DON PGA
W/O HELMET & GLOVES

LMP

TRANSFER TO LM POWER

LM FAMILIARIZATION &
HOUSEKEEPING
(IF NECESSARY)

MCC-H

:15

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

DISCONNECT & STOW
LM POWER UMBILICAL

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

UPDATE TO CSM
P22 LDMK
TRACKING PAD

104:30

CM2/EL/80/CEX
(f8,250, 50) 10

IVT TO LM
TRANSFER HELMET & GLOVES

CAUTION/WARNING C/O

CB ACTIVATION

TB VERIFICATION

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

:33

~~INHIBIT 838C4 CSM THRUSTERS~~

ECS ACTIVATION & C/O
CONNECT TO LM ECS

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

:40

LM CLOCK SYNC: V06N65
T EPHEM: V05NOTE 1706E

PGNCS TURN-ON & SELF TEST

SUIT FAN/H₂O SEP CHECK

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

:45

LM VHF CHECKOUT:
VHF AM(B)-SIMPLEX
VHF RCV ONLY-B DATA
VHF AM(B)-OFF
VHF AM(A)-SIMPLEX
V06N20E

LGC/CMC CLOCK SYNC
T EPHEM UPDATE
E MEMORY DUMP

GLYCOL PUMP CHECK

VHF CHECKOUT

:59

MIN DB FOR LM ALIGN
VERIFY DSE MOTION AT LOS
RECORD LM PCM DATA

DOCKED IMU COARSE ALIGN
REPORT GIMBAL ANGLES
& TIME TO MSFN

IVT TO CSM

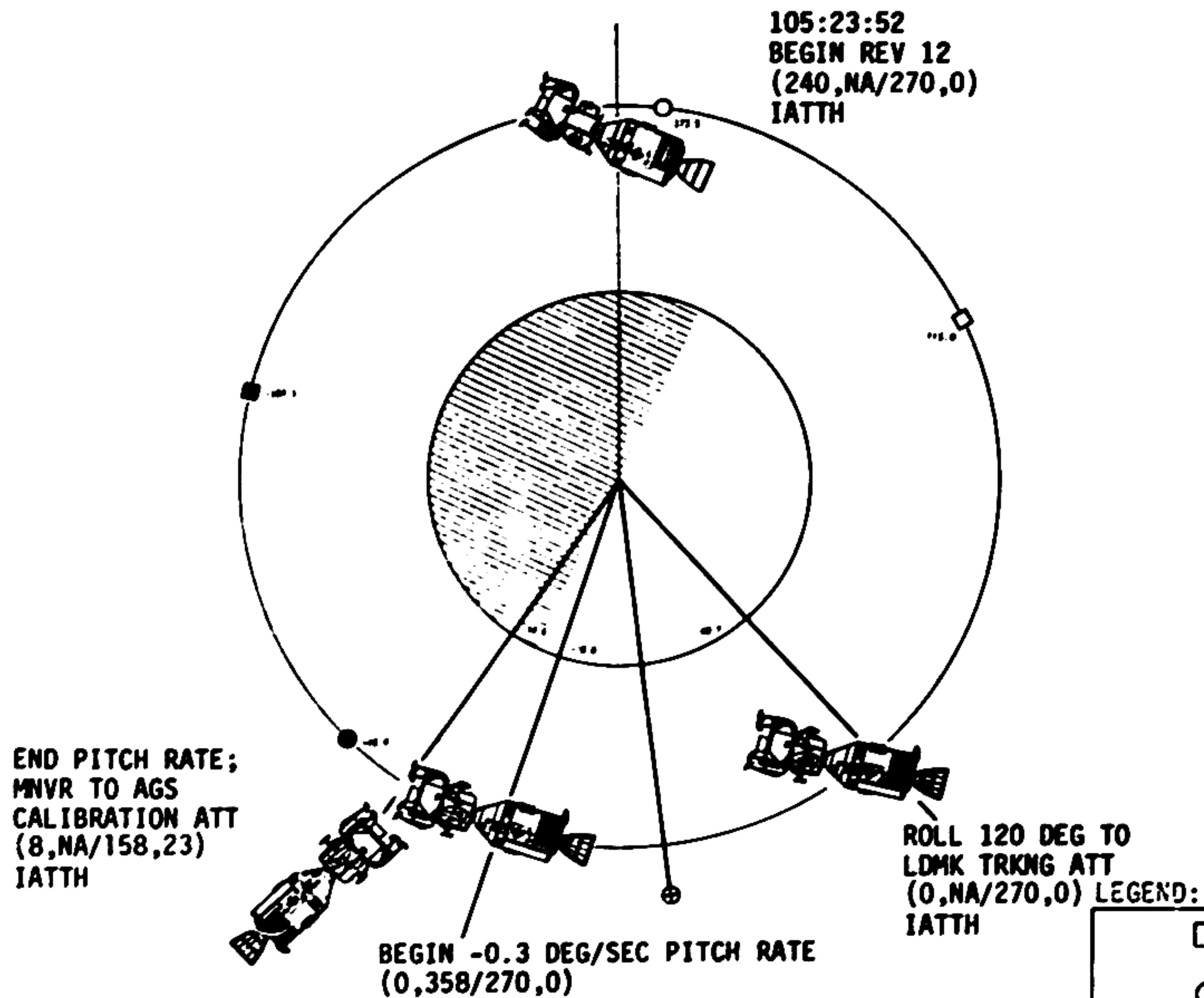
105:00

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

DON PGA

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

FLIGHT PLAN

CSM

1922 CST

LM

MCC-H

CMP

CDR

LMP

DON HELMET & GLOVES
PGA PRESSURE INTEGRITY
CHECK

105:00

:15

REV 12

:26

105:30

:32

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

REACQUIRE MSFN
HGA: P-35, Y 117

VO6N20E
DOFF HELMET & GLOVES

M
S
F
N

M
S
F
N

:45

106:00

VERIFY DROGUE
& PROBE
INSTALLATION

CLOSE AND SECURE
HATCH

DEPLOY LANDING GEAR

POO & DATA FOR UPLINK
DOCKED IMU FINE ALIGN
VO6 N20E ON MARK

DON PGA
IN CSM

IVT TO LM
TRANSFER HELMET & GLOVES

CONNECT TO LM ECS
& COMM

ASCENT BATTERY
ACTIVATION
AND C/O

RECORD ED BAT
VOLTS

AGS ACT & SELF TEST

STEERABLE ANTENNA:
P 68, Y 19

BIOMED SW - LEFT

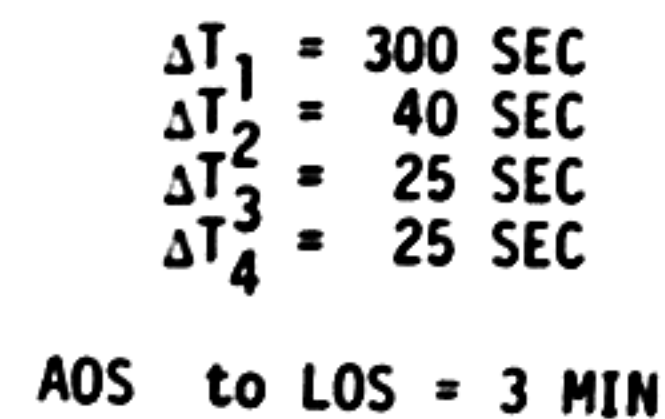
V47-AGS INITIALIZATION

DUMP DSE

UPLINK TO CSM
CSM STATE VECTOR & V66
UPDATE TO LM
DAP DATA
GYRO TORQUING $\frac{1}{2}$'s

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

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



LANDMARK

- RADIUS OF MOON

CENTER OF MOON

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 O , P270, Y O

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

106:00

:15

106:30

: 32

: 38

:45

:57

107:00

DAP SET - GIMBAL &
THROTTLE TEST
LOAD DAP - 32022

RATE GYRO
TEST
VO6N20 ON MARK

RCS PRESSURIZATION

V06 N20E ON MARK

VO6N20E ON MARK

RCS CHECKOUT

LOAD AGS PAD

SELECT OMNI-FWD

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

RCS CHECKOUT

FWD OMNI-LBR
SLEW STEERABLE S-BD
ANT: P 132, Y 24

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

FLIGHT PLANNING BRANCH

REVISION A

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&C4 JETS~~

107:00

:15

REV 13

:24

107:30

:31

:43

:45

108:00

T
M
S
F
NT
M
S
F
N

CDR

RR ACT & SELF
 TEST

DON HELMET & GLOVES

ARS/PGA PRESSURE INTEGRITY CHECK

CABIN REGULATOR
 CHECK

DPS PRESS & C/O

GO/NO-GO
 PREPARE FOR
 UNDOCKING
 P47-THRUST MONITOR

YAW LEFT 60°
 PITCH UP 90°
 R 180, P 195, Y 0

LMP

AGS ACCELEROMETER
 & GYRO CALIBRATION

DON HELMET & GLOVES

CABIN REGULATOR
 CHECK

V47-AGS UPDATE & ALIGN

STEERABLE ANT:
 P 132, Y 24
 REACQUIRE MSFN
 PCM-HI

PREPARE FOR UNDOCKING

STEERABLE ANT:
 P 71, Y -52

DUMP DSE
 GO/NO-GO FOR
 UNDOCKING

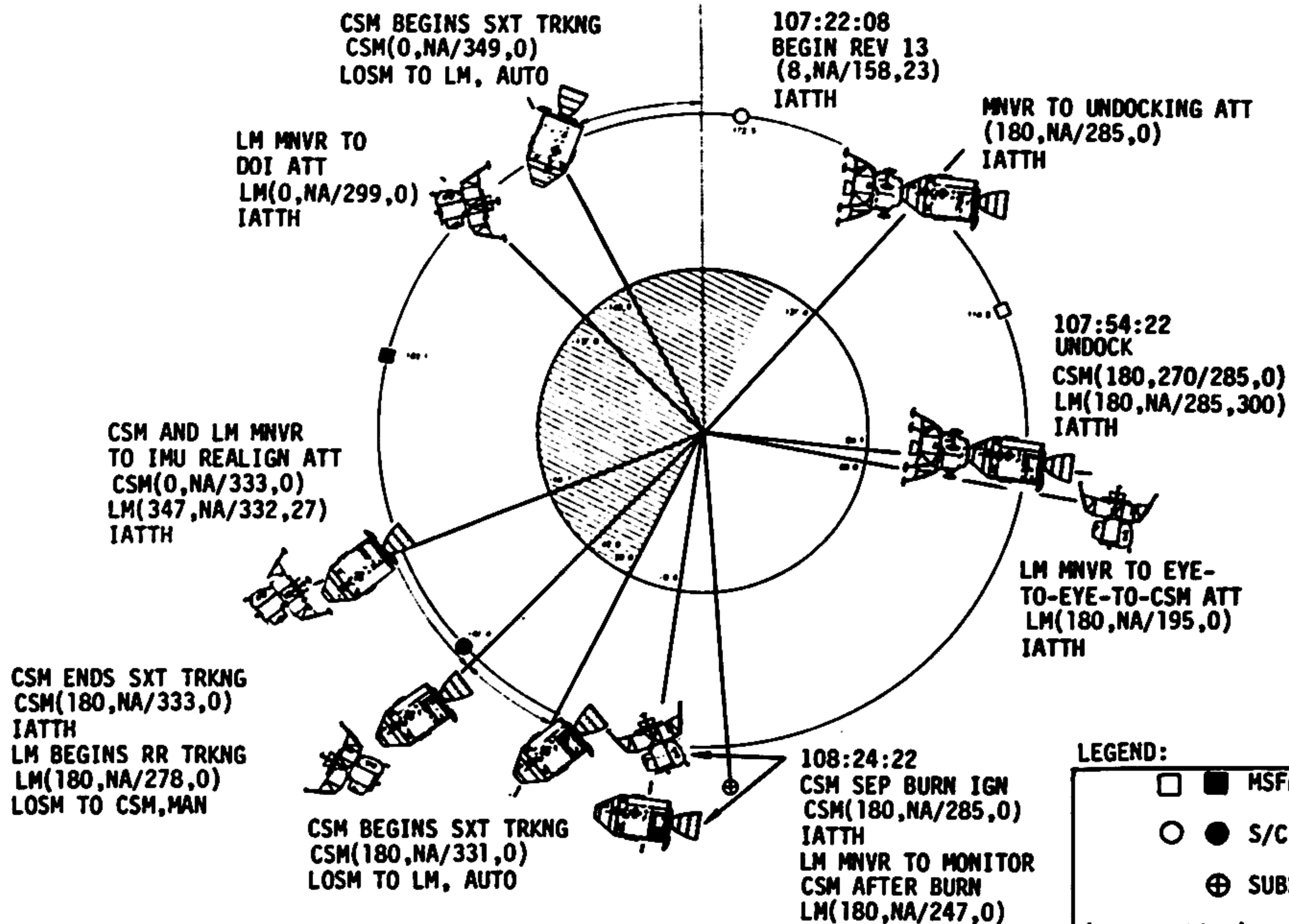
SOFT UNDOCK 107:54:22

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

REV 13



LEGEND:

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

3-84A

REVISION B

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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

:15
:23

:29
109:30

:41

:43

:45

110:00

LM

CDR

LMP

SYSTEMS CHECKS

P40-DPS THRUST
MNVR TO BURN ATT
R 0, P 299, Y 0

RR-ON
P20-MAN LOCK-ON
V63-COMPARE RR & CSM
VHF RANGE
RR-OFF

P30-EXT ΔV
LOAD PDI+12 ABORT

MNVR TO PDI ATT BY 109:38
R 0, P 109, Y 0
VERIFY COMM
DOI POST BURN REPORT
COAS TO OVHD WINDOW
P63-CHECK TIG

RR-ON
P20-MODE II LOCK-ON

SYSTEMS CHECKS

V47-AGS UPDATE & ALIGN

VHF A - VOICE/RNG
VHF B - OFF

SET CAMERA
LM/UAC/HCEX(4,500,INF)6FPS

SLEW STEERABLE ANT
P 12, Y 0
S-BD RANGING-RANGE
BIOMED SW-LEFT

DON HELMETS & GLOVES
BATTERY 5&6 - ON
SYSTEMS CHECK: DPS, APS,
RCS, EPS, CWEA
S-BD RANGING-OFF/RESET

MCC-H

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

MSFN

MSFN

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 PLANNING BRANCH

FLIGHT PLAN

CSM

CMP

SEXTANT TRACKING

P00, TRACK MANUALLY
GO/NO-GO

CONFIRM STAY/NO-STAY
V44-SET LS FLAG

CONFIRM STAY/NO-STAY

STOP PITCH: R 0, P79, Y 0
HGA: P-51, Y 13

VHF RANGING-OFF

P52-IMU REALIGN
OPT 3 - REFSMMAT
LDG SITE ORIENT

VERIFY DSE MOTION AT LOS
GDC ALIGN TO IMU

2422 CST
110:00

M
S
F
N

M
S
F
N

:15

:29
110:30

:35

:45

:54

111:00

CDR

P00 (FOR UPLINK)

P63-AUTO MNVR TO PDI ATT

LR-ON

GO/NO-GO FOR PDI
FINAL TRIM
ULL: 2 JET, 7.5 SEC

RR-OFF

EVALUATE MANUAL CONTROL
PITCH OVER AT P64
P66

DPS VENT
P68, P12

LR-OFF

P57-IMU ALIGN
OPT 3 - REFSMMAT
A/T 1 - GRAVITY

LM

LMP

CONFIGURE EGRESS MODE
CHECK SYS CONFIGURATION

V47-INITIALIZE AGS
TARGET AGS FOR ABORT

PDI 110:20:00

START 16mm CAMERA
SYSTEMS MONITOR
UPDATE AGS ALT @ 6000'

TOUCHDOWN 110:31:19

PERFORM LUNAR CONTACT CHECKLIST

STAY/NO-STAY AT PDI + 15

UPDATE & ALIGN AGS

STAY/NO-STAY AT PDI +19

STOP 16mm CAMERA
ASCENT BATTERIES OFF
REPORT DEDA 047.053

AGS LUNAR SURFACE
GYRO CALIBRATION
LOAD AGS ASCENT TARGET

BIOMED SW - RIGHT

DOFF HELMETS & GLOVES

MCC-H

UPLINK TO LM
LM STATE VECTOR
RLS

UPDATE TO LM
ΔRLS

STAY/NO-STAY

STAY/NO-STAY

COPY AGS AZIMUTH

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

FLIGHT PLANNING BRANCH

REVISION A

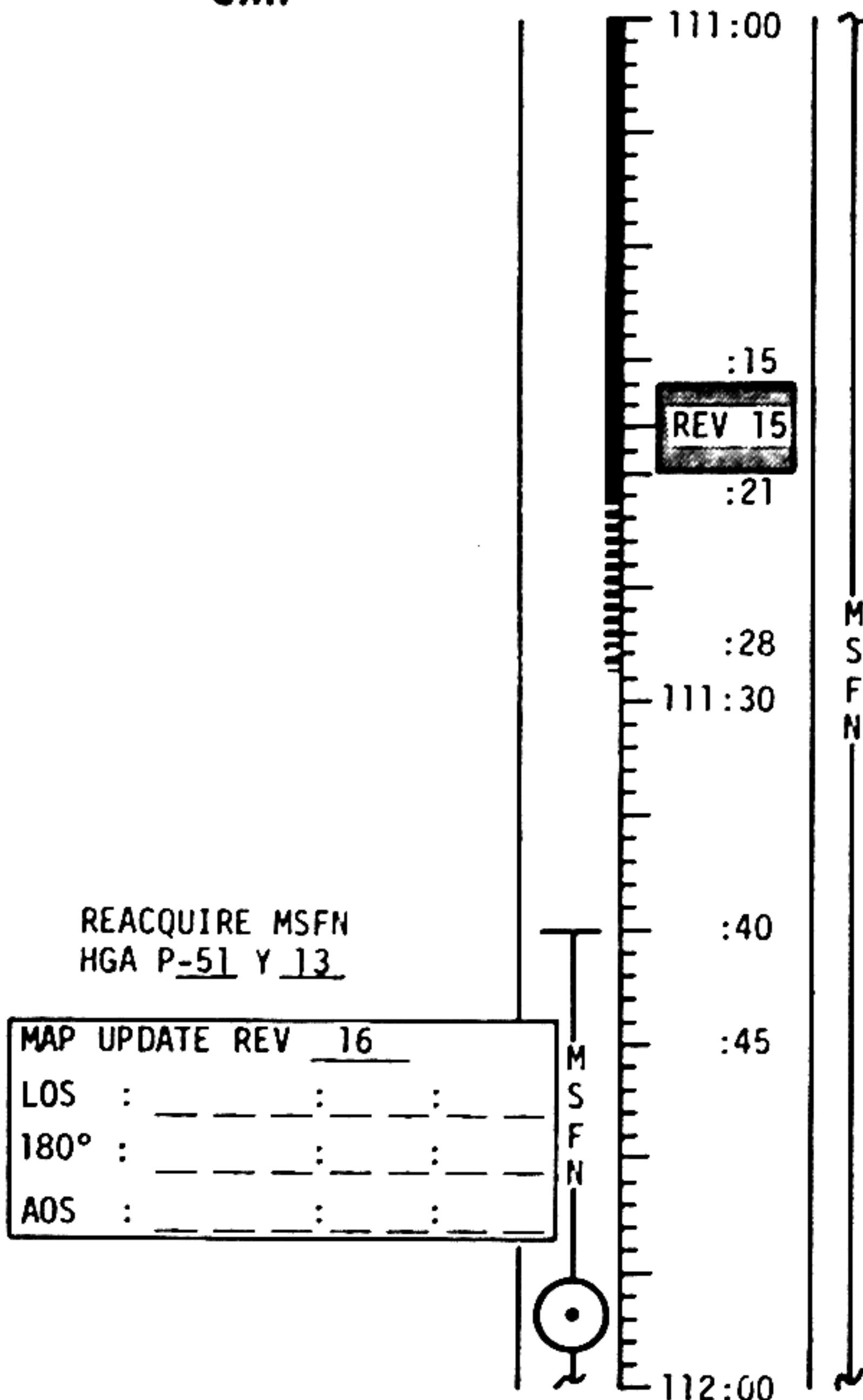
CSM

CMP

0122 CST

LM

MCC-H

CDR
INSTALL WINDOW SHADESP57 - IMU ALIGN
OPT 3 - REFSMMAT
A/T 2 - TWO CELESTIAL
BODIESP57 - IMU ALIGN
OPT 3 - REFSMMAT
A/T 2 - TWO CELESTIAL
BODIES

STOW WINDOW SHADES

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

LMP
TERMINATE AGS
GYRO CALIBRATION

P57 - OBSERVE THRU AOT

P57 - OBSERVE THRU AOT

ALIGN AGS TO PGNC

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

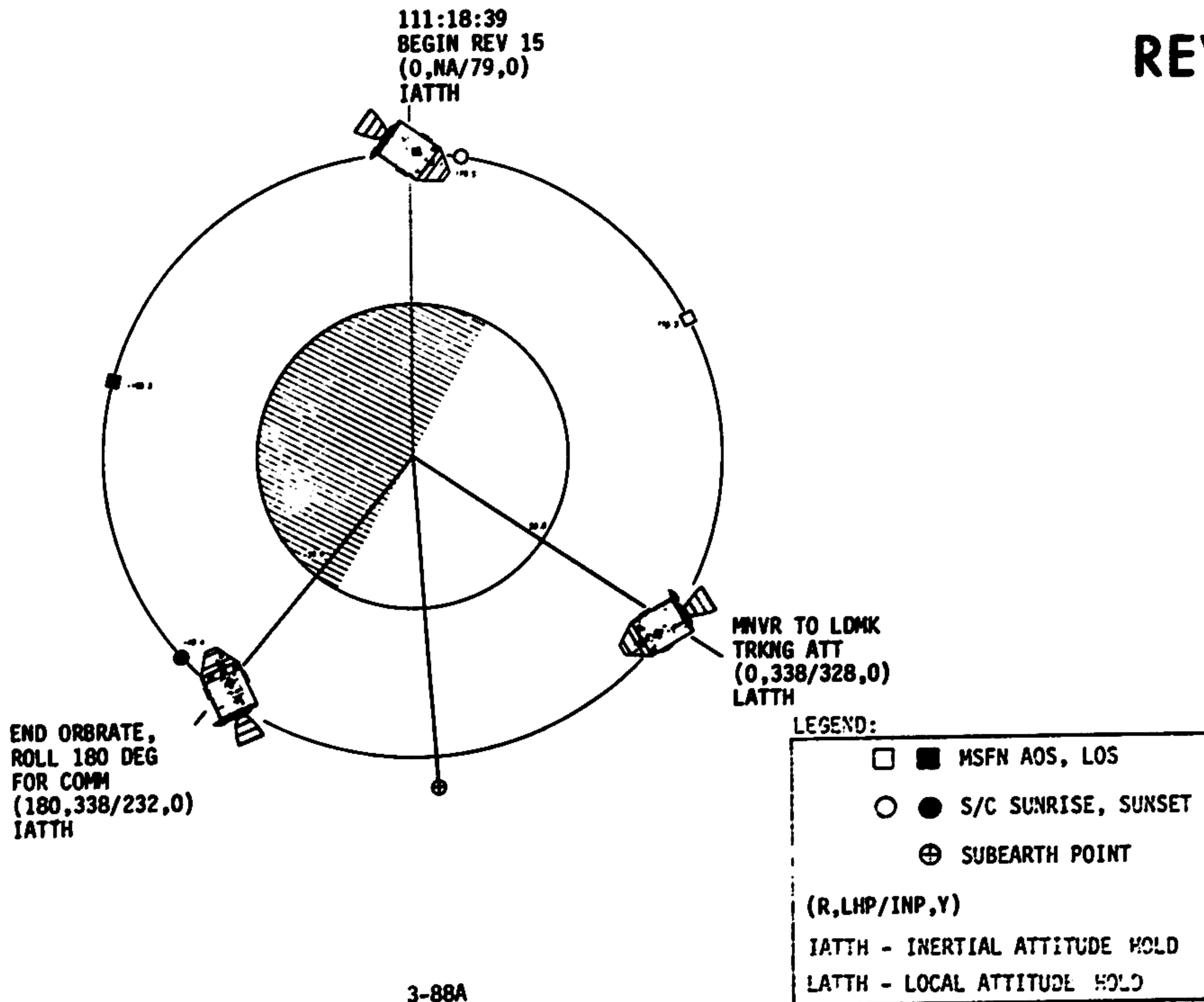
UPDATE TO LM

LM CONSUMABLES

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

FLIGHT PLANNING BRANCH

REV 15

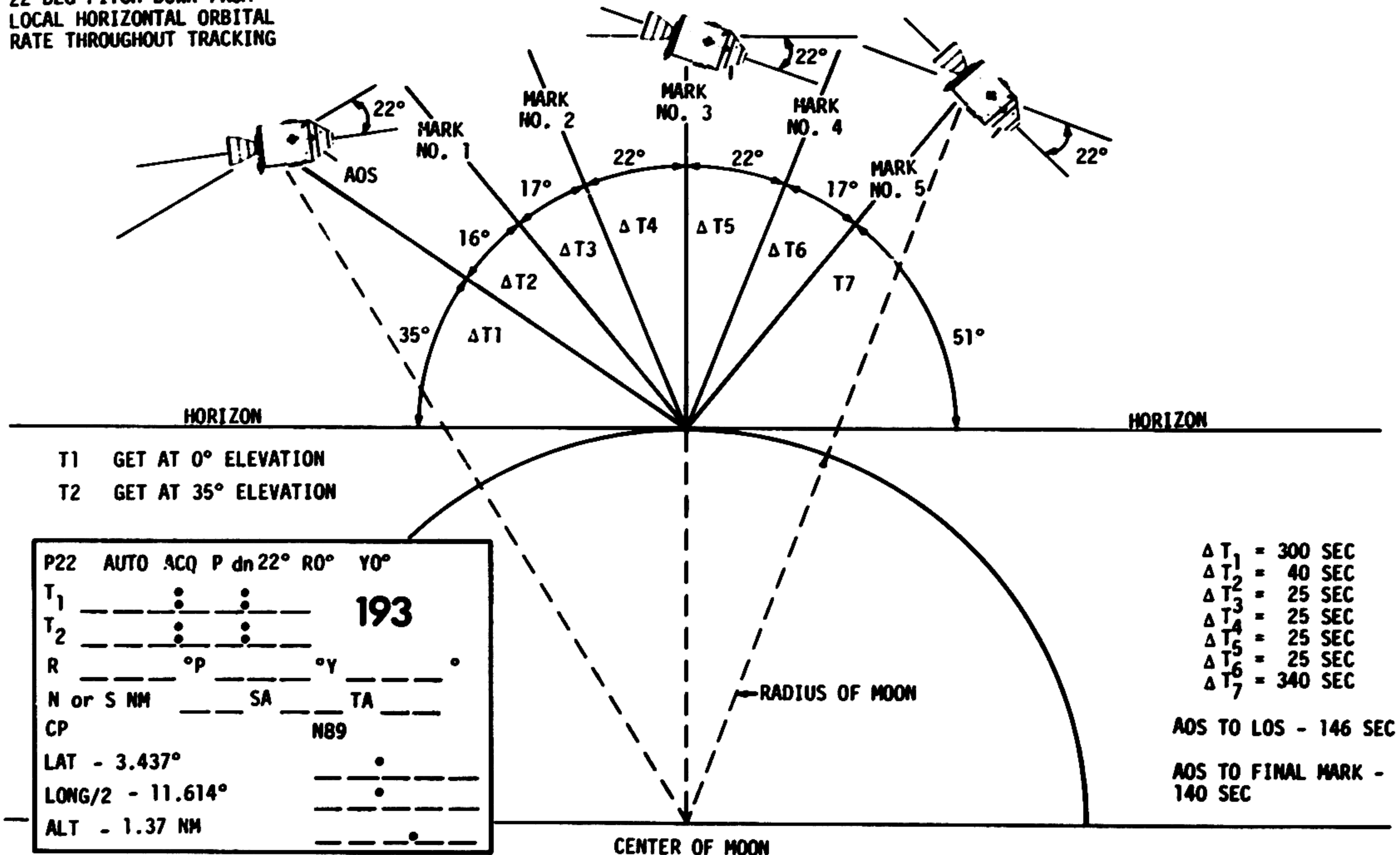


3-88A

REVISION B

CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING



CENTER OF MOON

FIGURE 3-3

3-89

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

MSFN

CDR

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

EAT PERIOD

LM

LMP

MCC-H

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

EAT PERIOD

CABIN PREP FOR EVA (CONT)

0322 CST
113:00

:15

REV 16

:20

:27

113:30

:38

:45

MSFN



114:00

MSFN

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

-1:20

-1:10

-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

-:40

PLSS COMM CHECK

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

FINAL SYSTEMS PREP

-:30

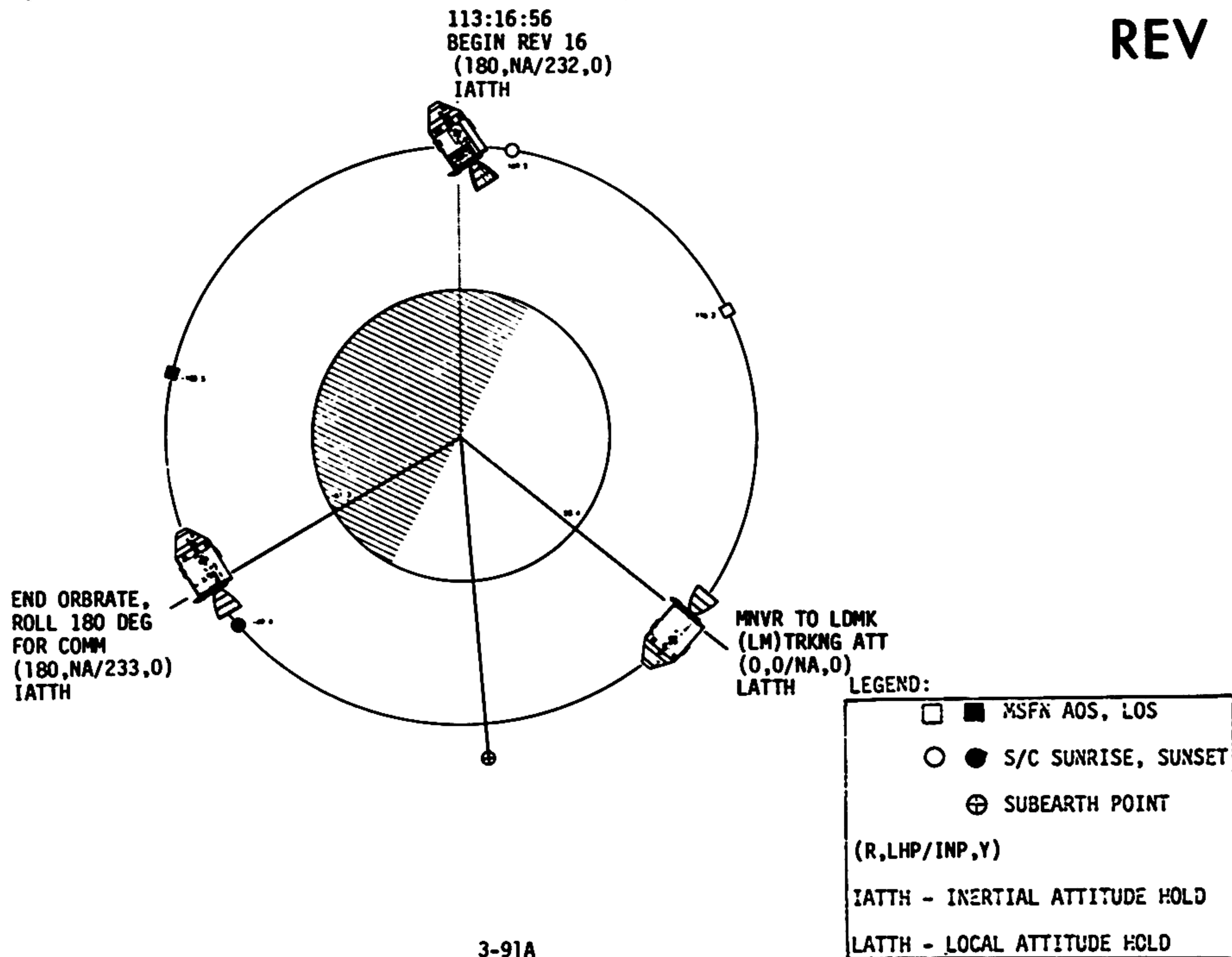
REACQUIRE MSFN
HGA P -23 , Y 189

MAP UPDATE REV 17

LOS : _ _ _ : _ _ _
180°W: _ _ _ : _ _ _
AOS : _ _ _ : _ _ _

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

REV 16

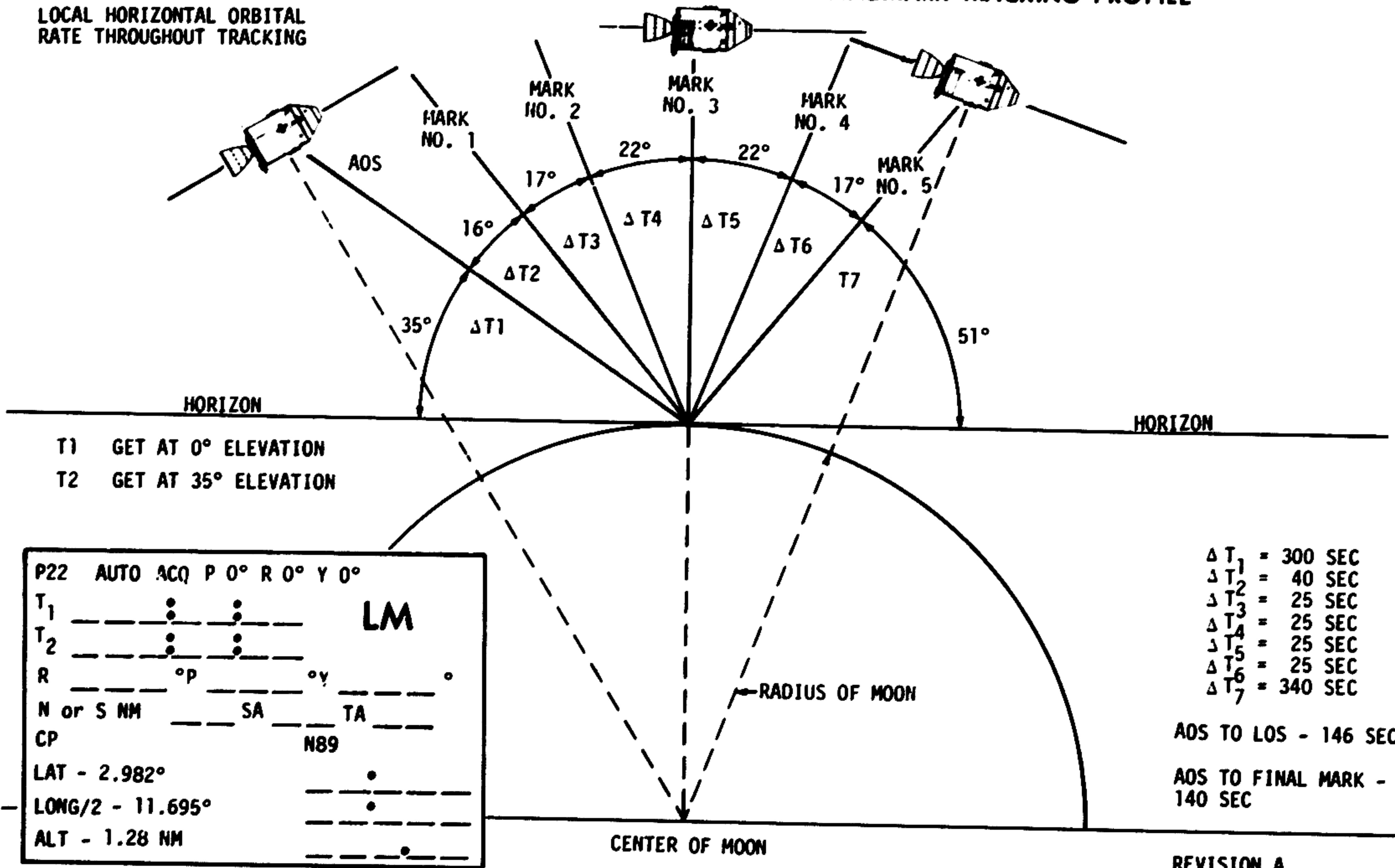


3-91A

REVISION B

LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING

CSM LANDMARK TRACKING PROFILE



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

MSFN

:15

:26

114:30

:33

:45

:50

115:00

MSFN

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

ENVIRONMENTAL FAM
CK BALANCE, CK LM STABILITY

CONT. SAMPLE COLLECTION
COLLECT & STOW SAMPLE

ETB TRANSFER
DEPLOY MESA & ETB

ASSIST & MONITOR CDR

ACTIVATE 16MM SEQ CAMERA

MONITOR & PHOTO CDR
WITH 70 MM CAMERA

PERFORM FINAL LM & EMU CK

CONFIRM "GO" FOR EVA

MCC-H

:30

:20

:10

START EVA
0:00

0:10

0:20

0:30

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

:15

:19

:25

115:30

:36

:45

116:00

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

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

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

FLAG DEPLOY

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

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

REMOVE SIDE SUBPALLET
FROM PKG #2

ASSIST CDR WITH ETB
TRANSFER

LMP EGRESS
MOVE THROUGH HATCH
DESCEND TO SURFACE

ENVIRONMENTAL FAM
CHECK BALANCE & STABILITY

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

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

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

DEPLOY FUEL CASK
EXTRACT FUEL ELEMENT
FUEL RTG

0:40

0:50

1:00

1:10

DUMP DSE

1:20

1:30

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

MSC Form 1674 (OT)(June 69)

FLIGHT PLANNING BRANCH

REVISION A

FLIGHT PLAN

CSM
CMP

LM

MCC-H

0622 CST
116:00

CDR

LMP

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

M
S
F
N

:15

:25

116:30
:31

:45

:49

117:00

M
S
F
N

CLOSE SEQ BAY DOORS
CARRY HTC TO MESA
PICK UP TONGS

ALSEP TRAVERSE

CARRY SUBPALLET TO TV
ORIENT TV FOR ALSEP
CARRY SUBPALLET TO
DEPLOYMENT SITE

ALSEP SYSTEM INTERCONNECT

UNSTOW SIDE FROM SUBPALLET
CONNECT TO CENTRAL STATION
UNSTOW & POSITION PSE STOOL

SWE DEPLOYMENT
DEPLOY SWE, ALIGN & PHOTOGRAPH

LSM OFFLOAD

UNSTOW LSM

SUNSHIELD DEPLOYMENT
RELEASE PERIMETER, ANT,
CABLE, & INNER BOLTS, RAISE
SUNSHIELD, & CK. CURTAINS

ANTENNA INSTALLATION

INSTALL ANT MAST
INSTALL ANT ON MAST
SET AZIMUTH & ELEVATION
OFFSETS
LEVEL & ALIGN ANTENNA

ALSEP ACTIVATION

VERIFY EXPERIMENTS DEPLOYED
ACTIVATE ALSEP

CONNECT PKG #2 TO CARRY
BAR

ALSEP TRAVERSE

CARRY ALSEP PKG's TO
DEPLOYMENT SITE
REST ENROUTE

ALSEP SYSTEM INTERCONNECT POSITION PKGS

UNSTOW RTG CABLE AND
CONNECT TO CENTRAL STATION

PSE DEPLOYMENT
UNSTOW PSE & PLACE ON PSE
STOOL, DEPLOY THERMAL SKIRT
LEVEL & PHOTOGRAPH PSE

LSM DEPLOYMENT

CARRY LSM TO DEPLOY SITE
DEPLOY LSM, & LEVEL &
ALIGN
PHOTOGRAPH LSM

SIDE DEPLOYMENT

CARRY SIDE TO DEPLOY SITE
DEPLOY GROUND SCREEN
DEPLOY CCIG
LEVEL & ALIGN SIDE
PHOTOGRAPH SIDE

ALSEP SITE PHOTOGRAPHY
PHOTO DEPLOYMENT SITE

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

REV 18

:15

:17

:24

117:30

:35

:45

118:00

M
S
F
NM
S
F
N

EAT PERIOD

REACQUIRE MSFN
HGA P -23, Y 190

MAP UPDATE REV 19

 LOS : _ _ _ : _ _ : _ _
 180°W: _ _ _ : _ _ : _ _
 AOS : _ _ _ : _ _ : _ _

 RETURN TRAVERSE
 TRAVERSE TO LM COLLECTING
 SAMPLES
 REST ENROUTE

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

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

 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

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

 ATTACH LEC TO SRC
 TRANSFER SRC INTO LM

ASSIST CDR

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

 REMOVE SRC FROM LEC
 STOW SRC ON ENG COVER

PASS LEC TO CDR

 JETTISON EQUIPMENT & CLOSE HATCH
 REPRESS CABIN

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

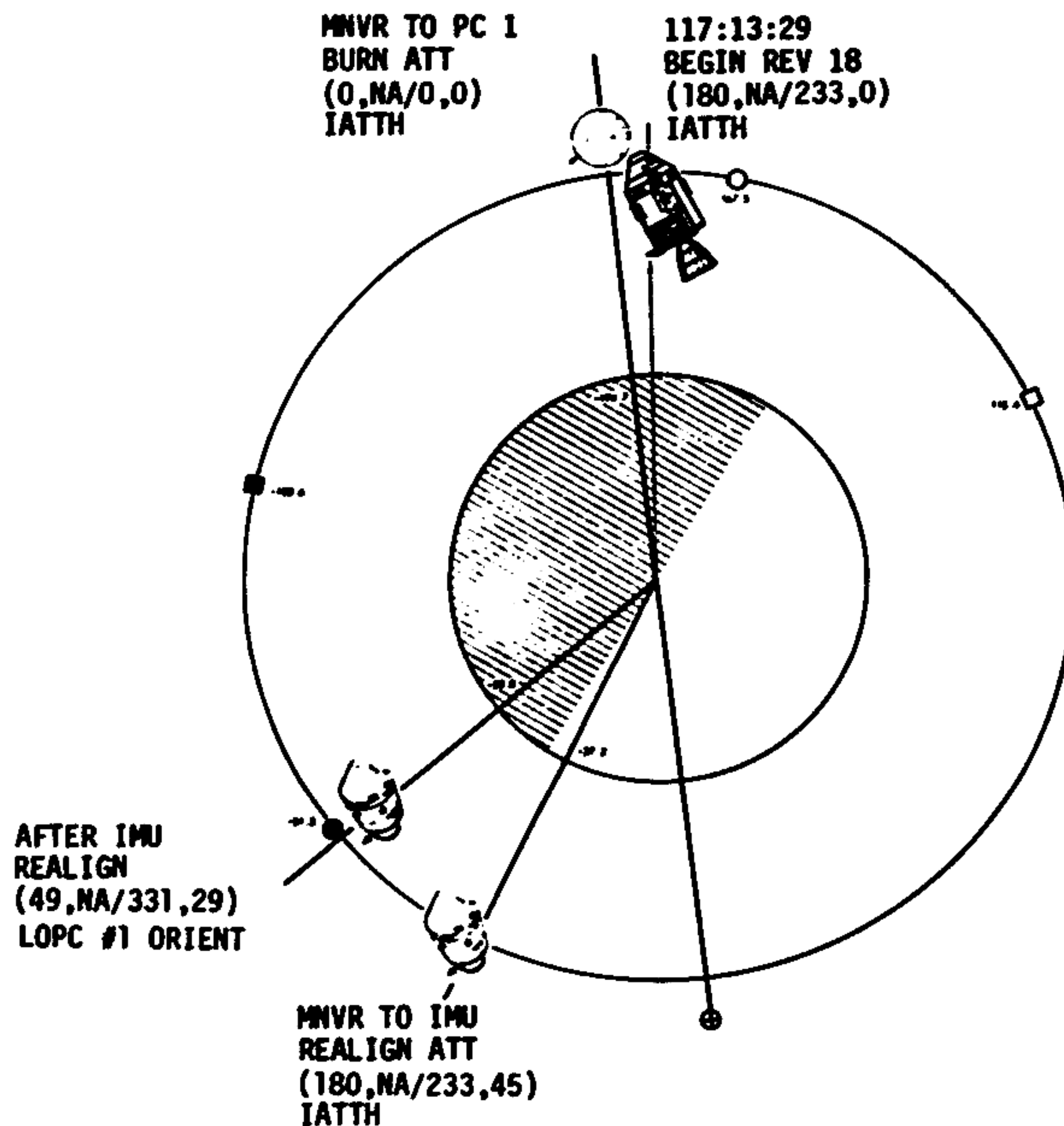
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FLIGHT PLANNING BRANCH

REVISION B

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REV 18



3-96A

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

LM

MC-H

CMP

0822 CST

CDR

LMP

3:30

EAT PERIOD

MNVR TO P52 ATT BY 118:22

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

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

GDC ALIGN TO IMU

VERIFY DSE MOTION @ LOS

118:00

:15

:24

118:30

:45

:47

119:00

M
S
F
N

M
S
F
N

POST EVA SYSTEMS CONFIGURATION
CONFIGURE VALVES AND CIRCUIT BREAKERS

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

UPDATE TO CSM
MNVR PAD
(PLANE CHANGE)

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))

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

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

POST EVA CABIN CONFIGURATION

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

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

EAT PERIOD

EAT PERIOD

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

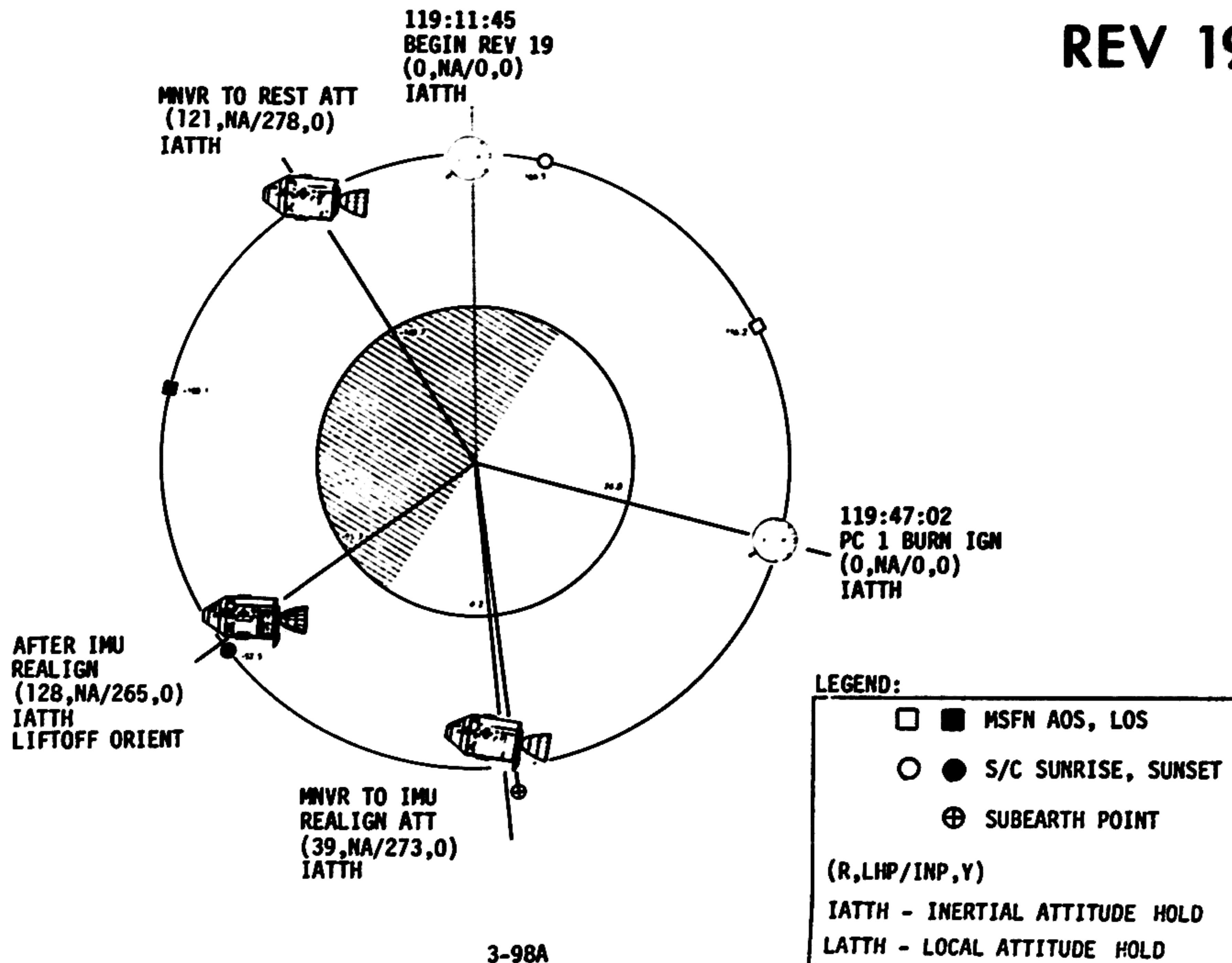
CSM PLANE CHANGE #1
BURN TABLE

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



CDR

LM

LMP

MCC-H

EAT PERIOD

EAT PERIOD

PLSS RECHARGE

BURN STATUS REPORT

X	X		•	ΔTIG
X	X		•	BT
			•	V_{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V_{gx}
			•	V_{gy}
			•	V_{gz}
			•	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 0HGA P 30, Y 245MAP 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 A3O₂ FUEL CELL PURGE
WASTE WATER DUMP

1022 CST

120:00

:15

:23

:29
120:30

:45

121:00

M
S
F
NM
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 HOURSREST PERIOD
9 HOURS

MCC-H

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

MSC Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

REVISION A

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

121:00

REV 20

:15

:22

121:30
:32

:45

122:00

M
S
F
N



CDR

REST PERIOD
9 HOURS

LM

LMP

REST PERIOD
9 HOURS

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

REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

DUMP DSE

1222 CST
122:00

123:00

124:00

REV 21

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	122:00 - 124:00	5/20-21	3-102

FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

LMP

REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

DUMP DSE

1422 CST
124:00

125:00

REV 22

:12

:19

:28

:30

126:00

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

CDR

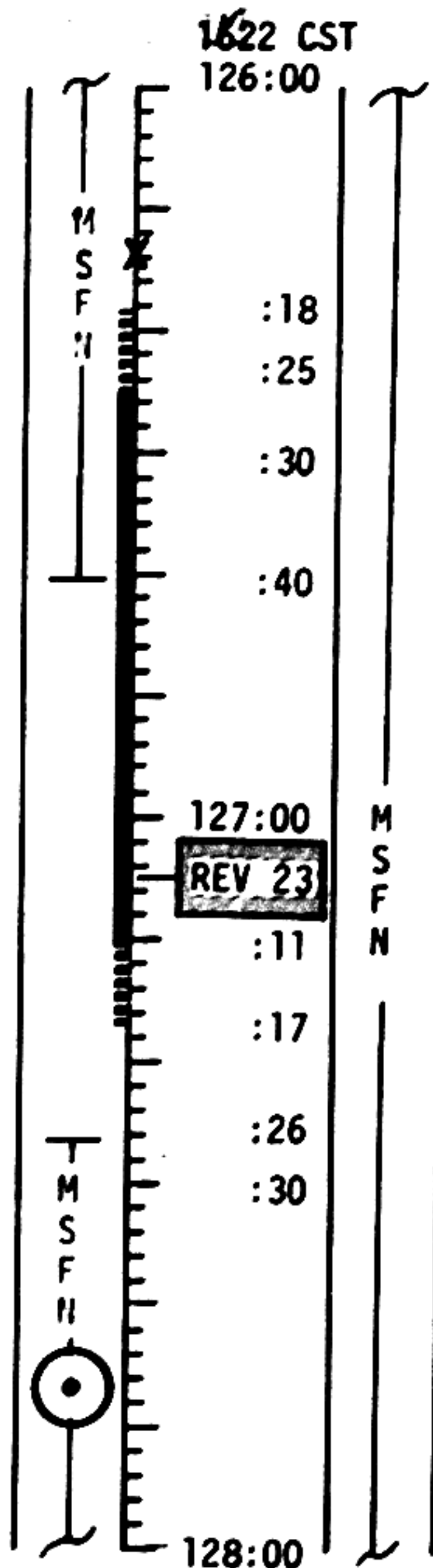
LMP

REST PERIOD
9 1/2 HOURS

REST PERIOD
9 HOURS

REST PERIOD
9 HOURS

DUMP DSE

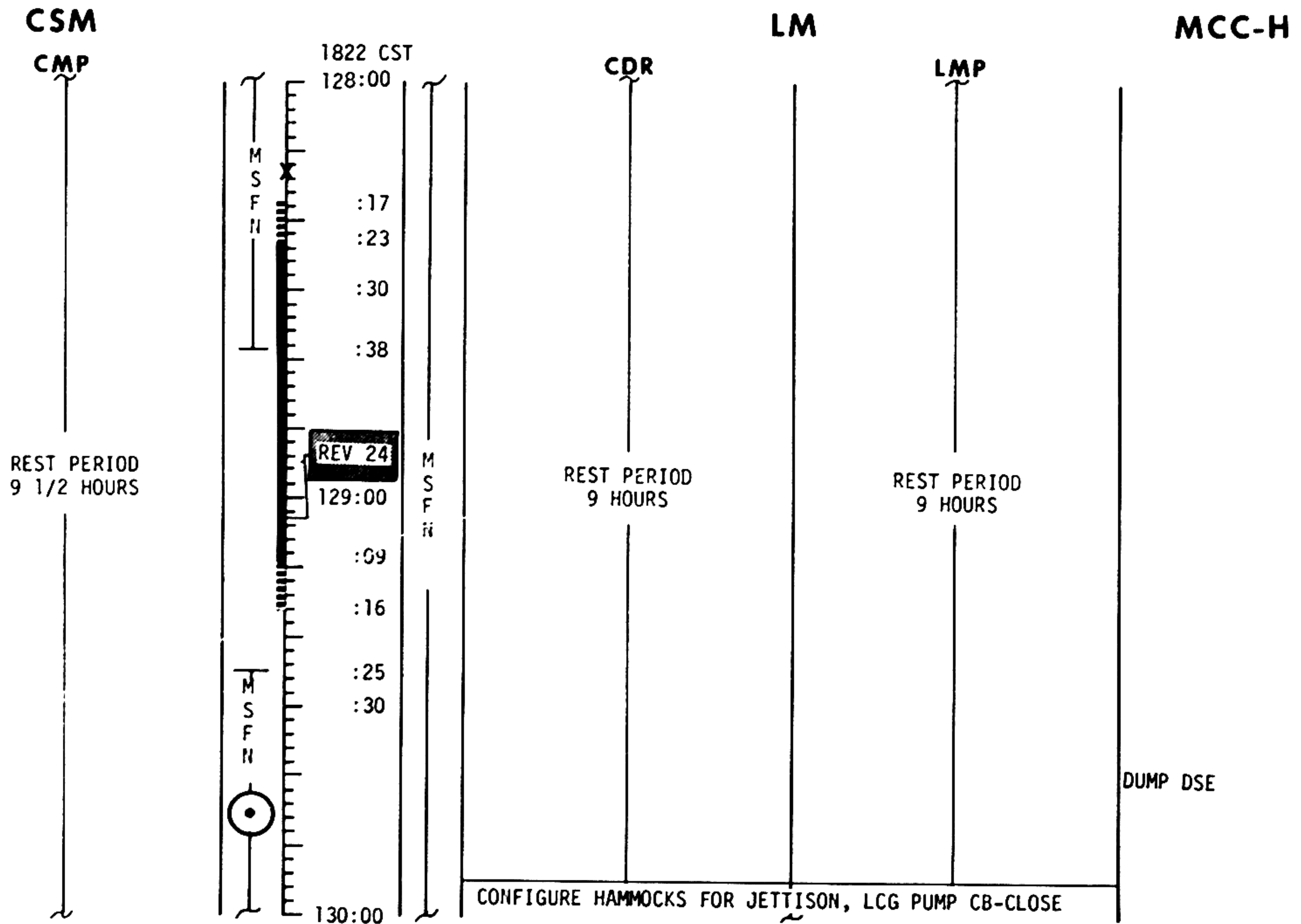


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	126:00 - 128:00	5/22-23	3-104

Form 1674 (OT) (June 69)

FLIGHT PLAN 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 L10H 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

REST PERIOD
 9 1/2 HOURS

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

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

MSC Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

REVISION B

FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

LMP

REST PERIOD
9 1/2 HOURS

2122 CST
131:00

REV 25

:08

:15

:23

131:30

:45

132:00

BATTERY CHARGE, BATTERY A
HGA P-24, Y254

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

EAT PERIOD

EAT PERIOD

EVA PLANNING PERIOD

CABIN PREP FOR EVA

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

DUMP DSE

CREW STATUS REPORT

CMP

SLEEP? _____

PRD _____

UPDATE TO CSM
CONSUMABLES

CSM CONSUMABLES UPDATE

GET: _____:_____

RCS TOTAL _____%

QUAD A _____% B _____%

C _____% D _____%

H₂ TOTAL _____%

O₂ TOTAL _____%

EQUIPMENT PREP

SET DET FOR CABIN DEPRESS

PREPARE CAMERAS
COLLECT ITEMS FOR JETTISON
UNSTOW AND CHECK BOTH OPS

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

CMP

MAP UPDATE REV 26

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

EAT PERIOD

VERIFY DSE MOTION @ LOS

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

M
S
F
N2222 CST
132:00:14
:15

:21

132:30
M
S
F
N

:35

:45

133:00

CDR

LM

LMP

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 CHECKPLSS O₂ ON

CABIN DEPRESS

CONFIRM "GO" FOR EVA
 DEPRESS CABIN TO 3.5 PSIA

MCC-H

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 _ _ _ : _ _ _ : _ _ _

-:10

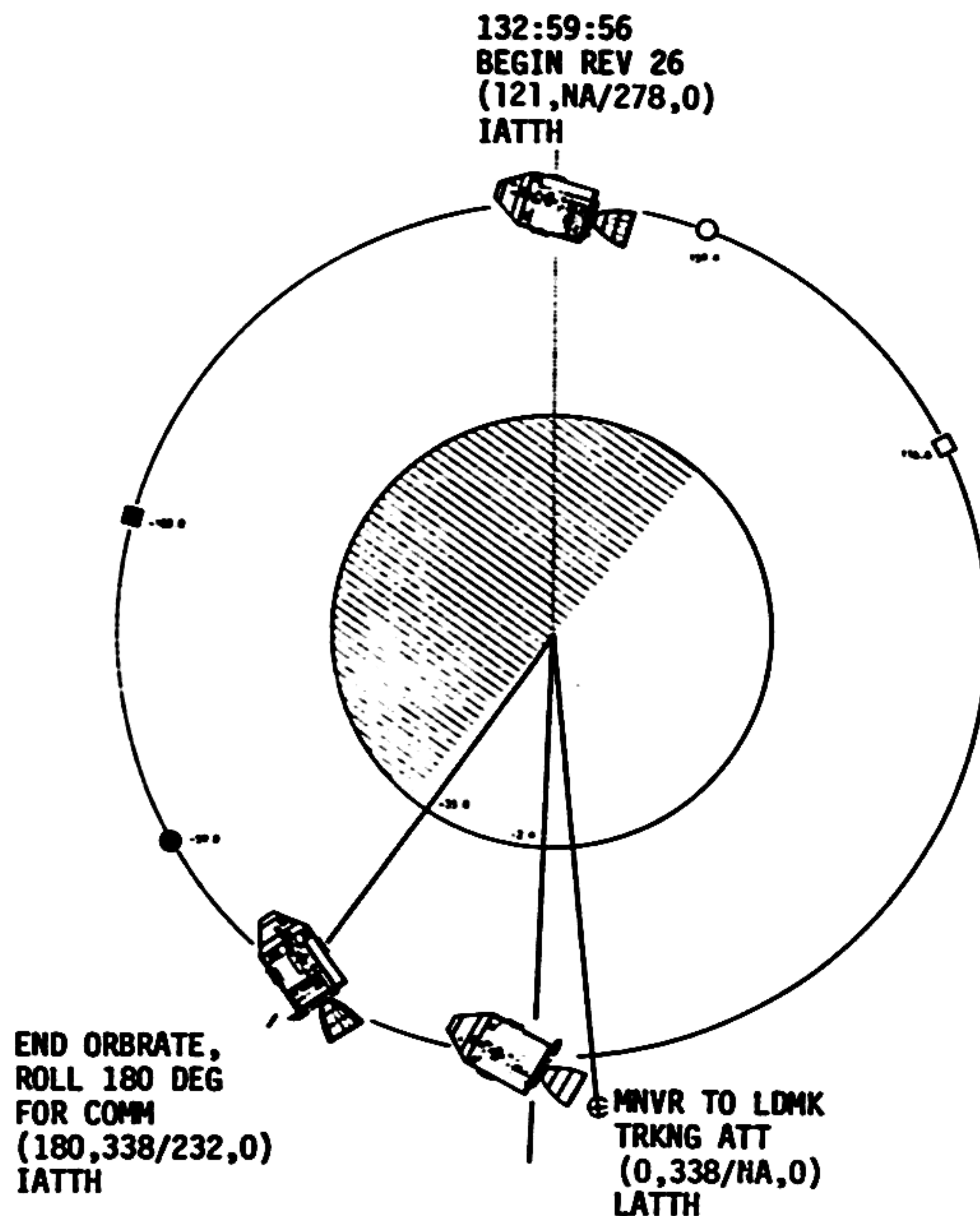
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	132:00 - 133:00	6/25	3-108

MSC Form 1674 (OT)(June 69)

FLIGHT PLANNING BRANCH

REVISION A

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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

3-108A

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

MNVR 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

M
S
F
N

:45

134:00

M
S
F
N

CDR

LM

LMP

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

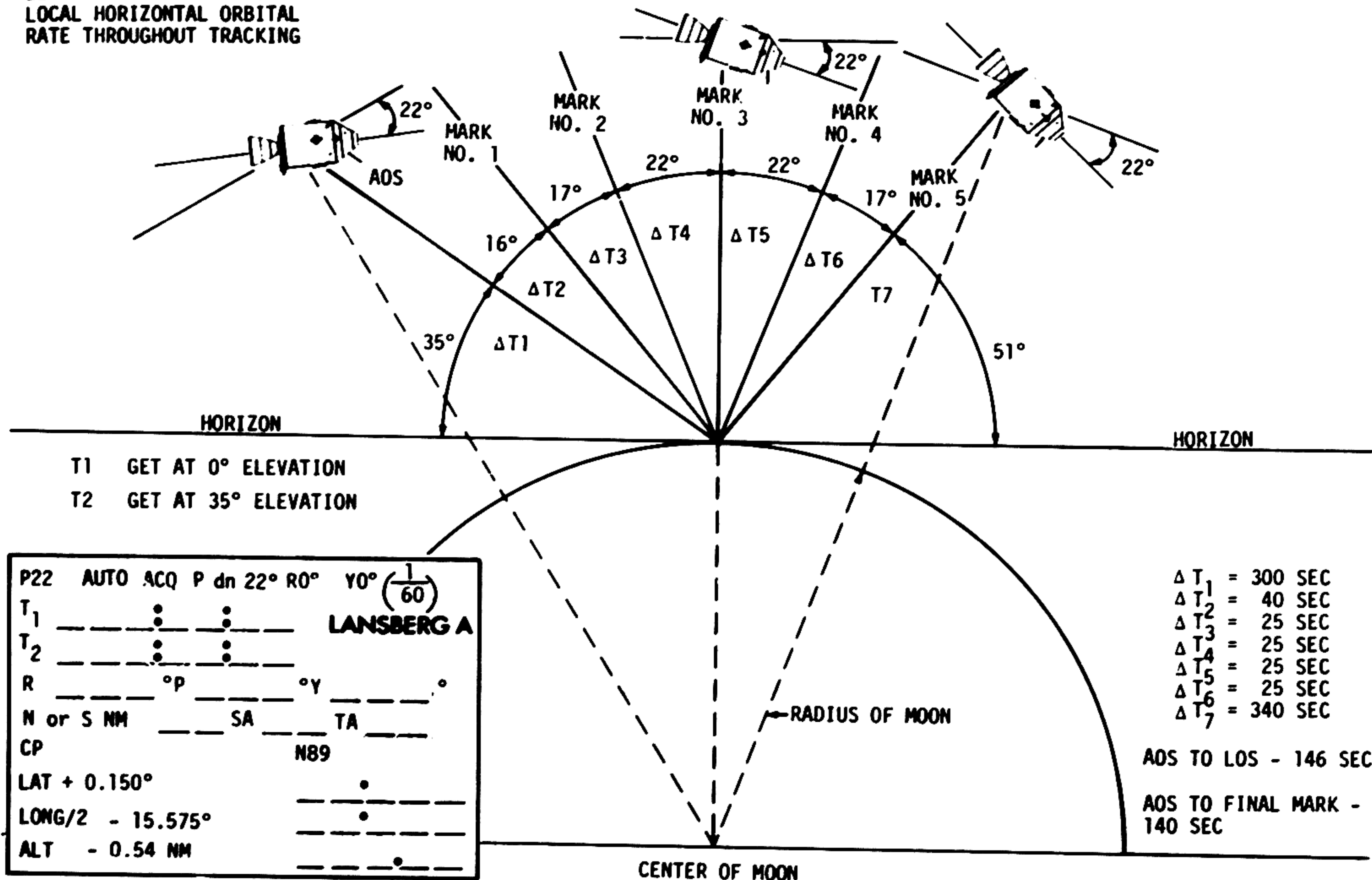
0:40

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



CENTER OF MOON

FIGURE 3-3
3-110

FLIGHT PLAN

CSM

CMP

LM

MCC-H

CDR

LMP

0022 CST

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

M
S
F
N

:12

:15

:19

134:30

:33

:45

REV 27

135:00

M
S
F
N

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 (_____:_____:_____)

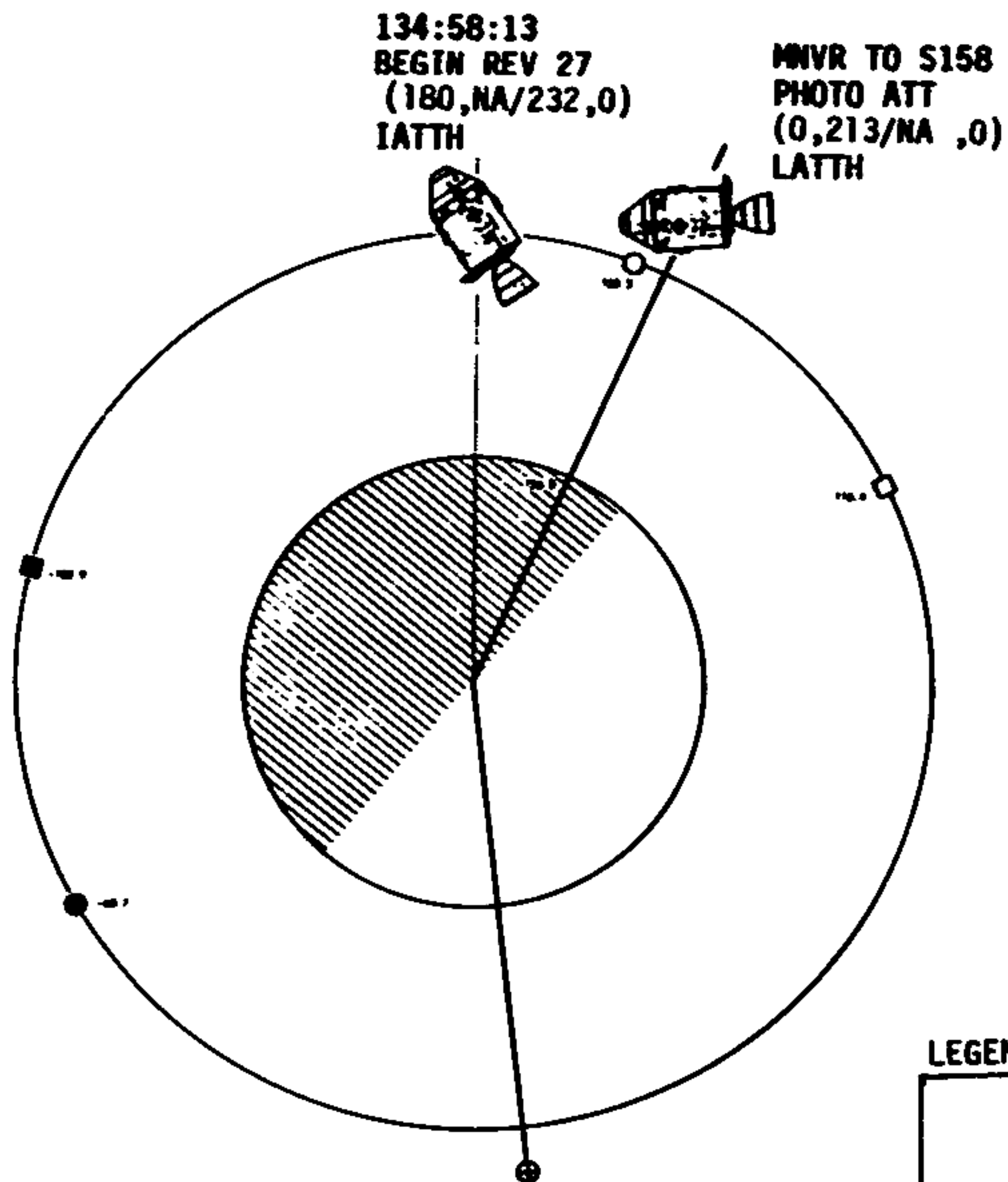
T₃ START BLUE, GREEN & RED CAMERAS @ 135:40:00 (_____:_____:_____)
START BLACK CAMERA @ T₃ + 7 MIN

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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REV 27



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

MIVR 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

M
S
F
N

M
S
F
N

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

136:00

CDR

LMP

CHECK & CLEAN LMP EMU
CLOSE & SEAL SRC

EVA TERMINATION
STOW 70MM CAMERA IN ETB
CLEAN EMU
ASCEND TO PLATFORM, INGRESS
CHECK EMU & LM SYSTEMS

3:00

UPDATE TO CSM
MAP UPDATE REV 28
S-158 PAD (REV 28)

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

3:10

TRANSFER SURVEYOR PARTS BAG

DISCARD LEC

3:20

EVA TERMINATION
CLEAN EMU, ASCEND TO
PLATFORM
INGRESS

CLOSE HATCH & REPRESS CABIN

3:30

POST EVA SYSTEMS CONFIGURATION
CONFIGURE VALVES AND CIRCUIT BREAKERS

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

136:30
:32

:45

137:00

REV 28

M
S
F
N

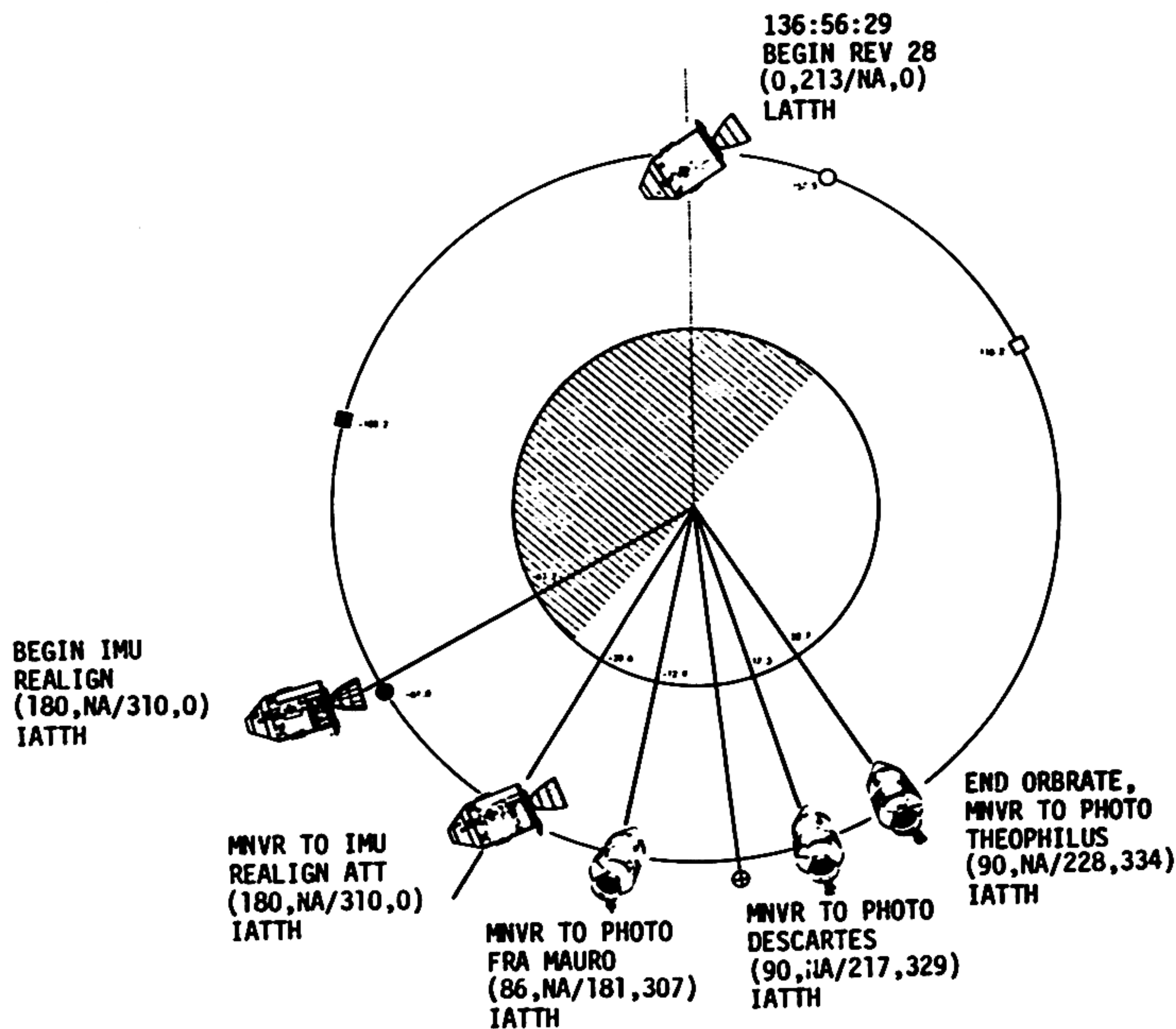
M
S
F
N

VERIFY DSE MOTION @ LOS

MAP UPDATE REV 28			
LOS	:	---	:
180°	:	---	:
AOS	:	---	:

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

REV 28



LEGEND:

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

3-114A

REVISION B

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

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

137:00

:04

:10

:15

:18

137:30

:45

138:00

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

PRESSURE INTEGRITY CHECK
CHECK VALVE POSITIONS
VERIFY GAGE READINGS

CABIN DEPRESS
OPEN DUMP VALVE

HATCH OPENING
OPEN HATCH
JETTISON EQUIPMENT

MAP UPDATE REV 29

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

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

:45

REV 29

139:00

M
S
F
N

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

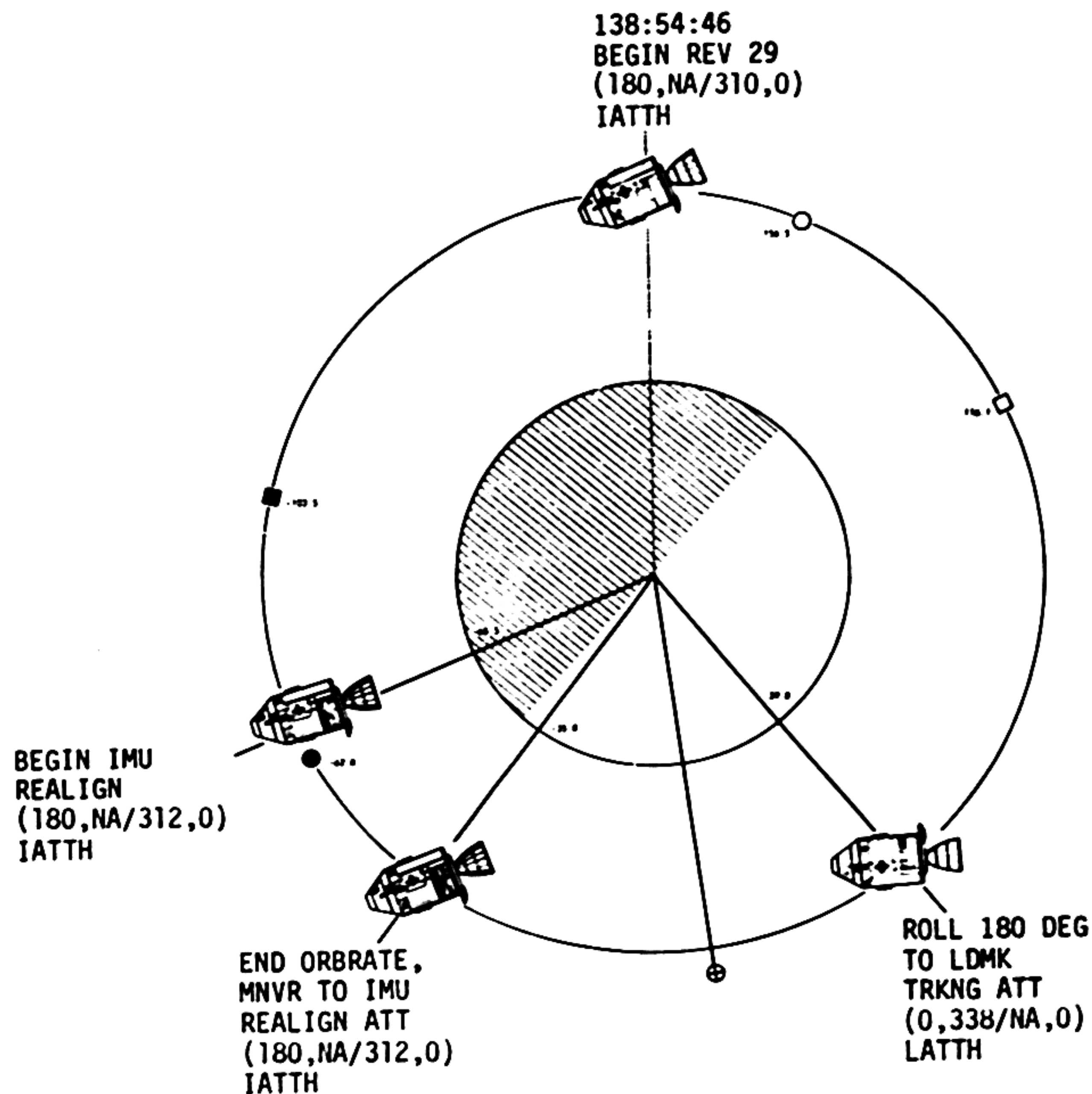
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	138:00 - 139:00	6/28-29	3-117

MSC Form 1674 (OT)(June 69)

FLIGHT PLANNING BRANCH

REVISION A

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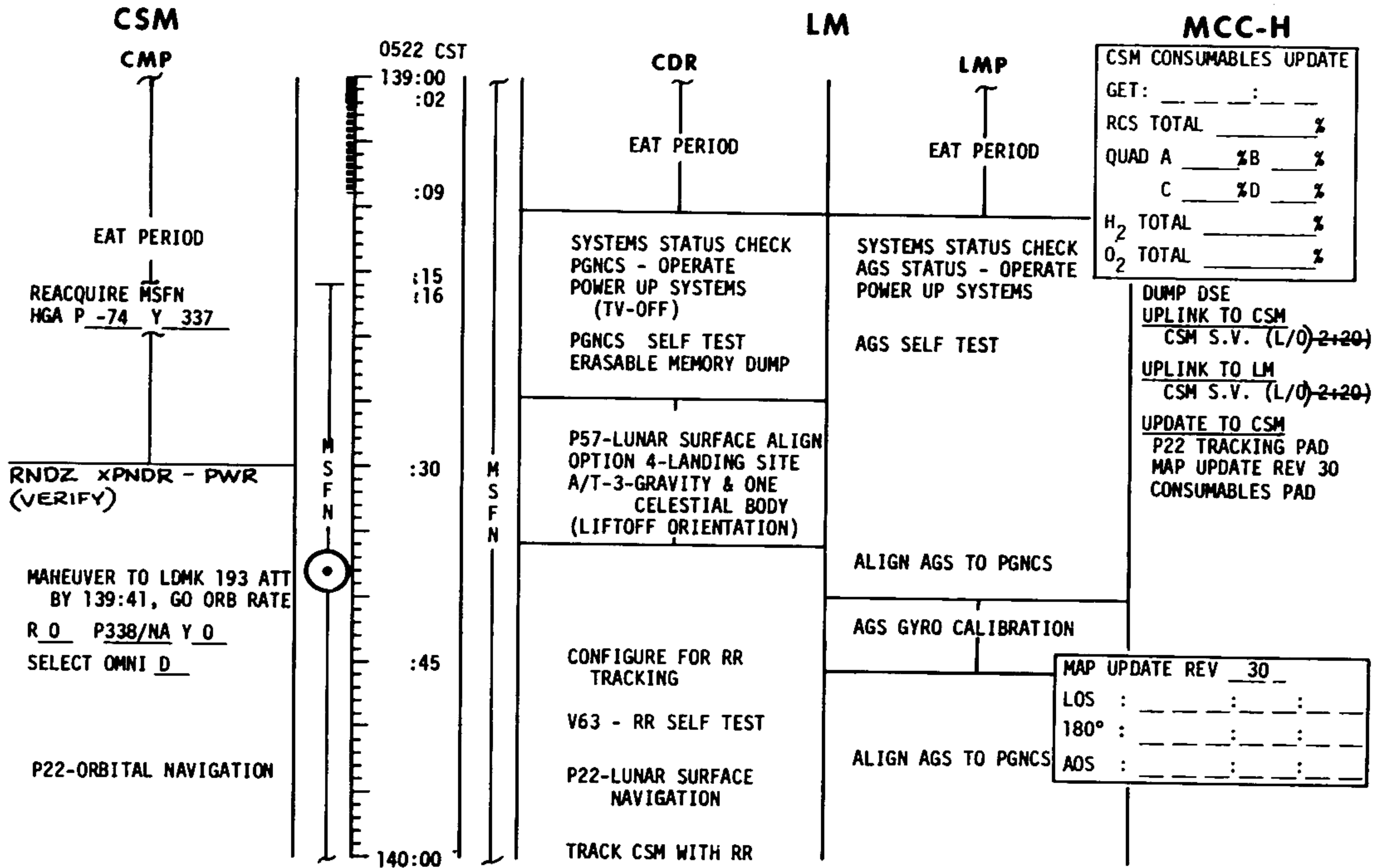
LEGEND:

□	■	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

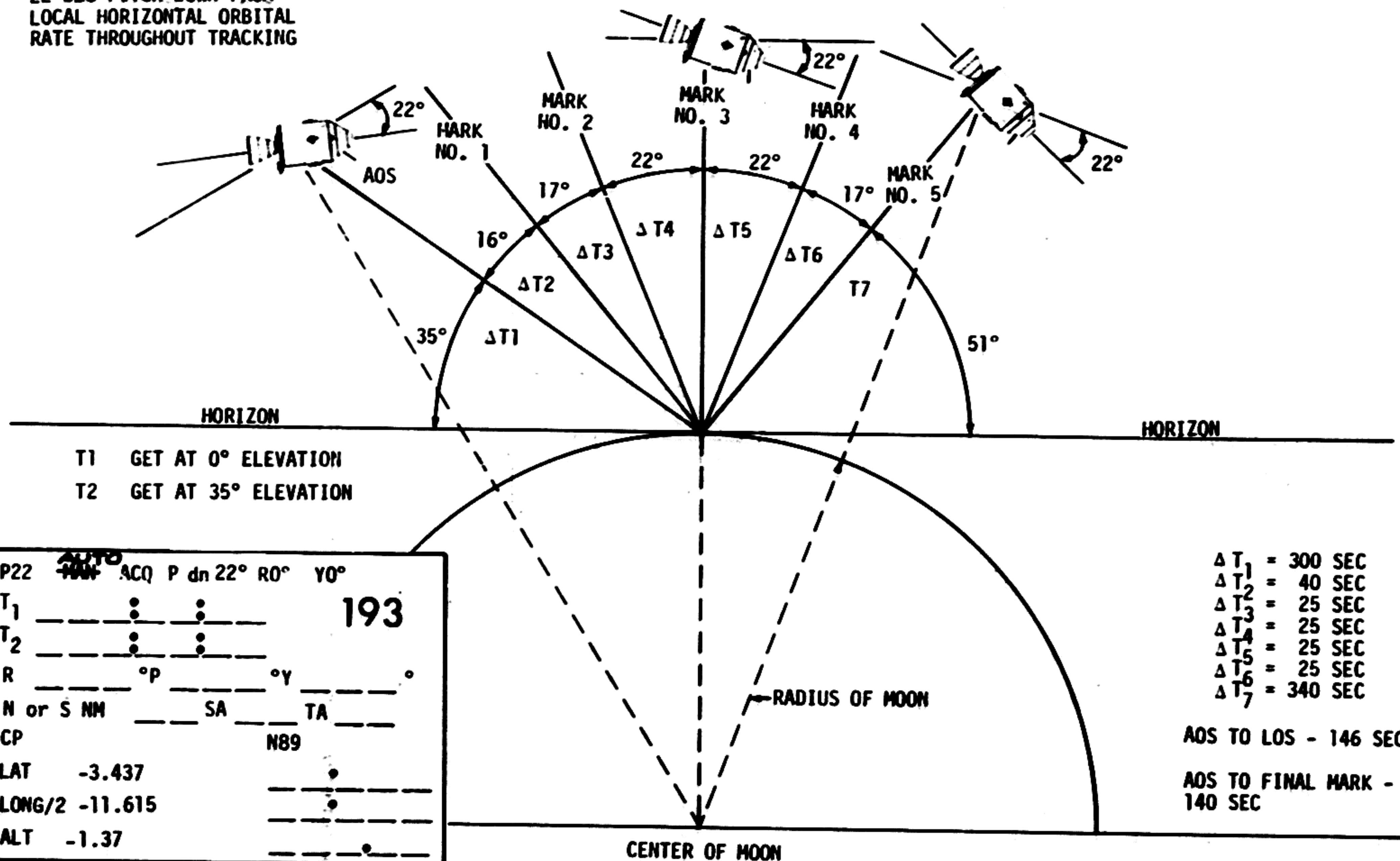
FLIGHT PLAN



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



CENTER OF MOON

FIGURE 3-3

3-118a

FLIGHT LAN

CSM

LM

MCC-H

CMP

0622 CST

CDR

LMP

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

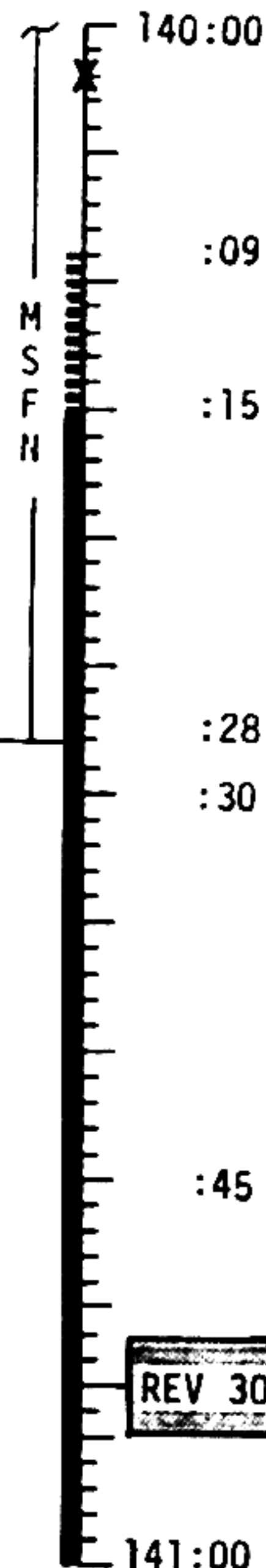
R 180 P 312 Y 0
HGA P -73 Y 338

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



TRACK CSM WITH RR

RATE GYRO CHECK

RCS CHECKOUT

V47-AGS INITIALIZATION

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

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 _ _ _ . _ _ _

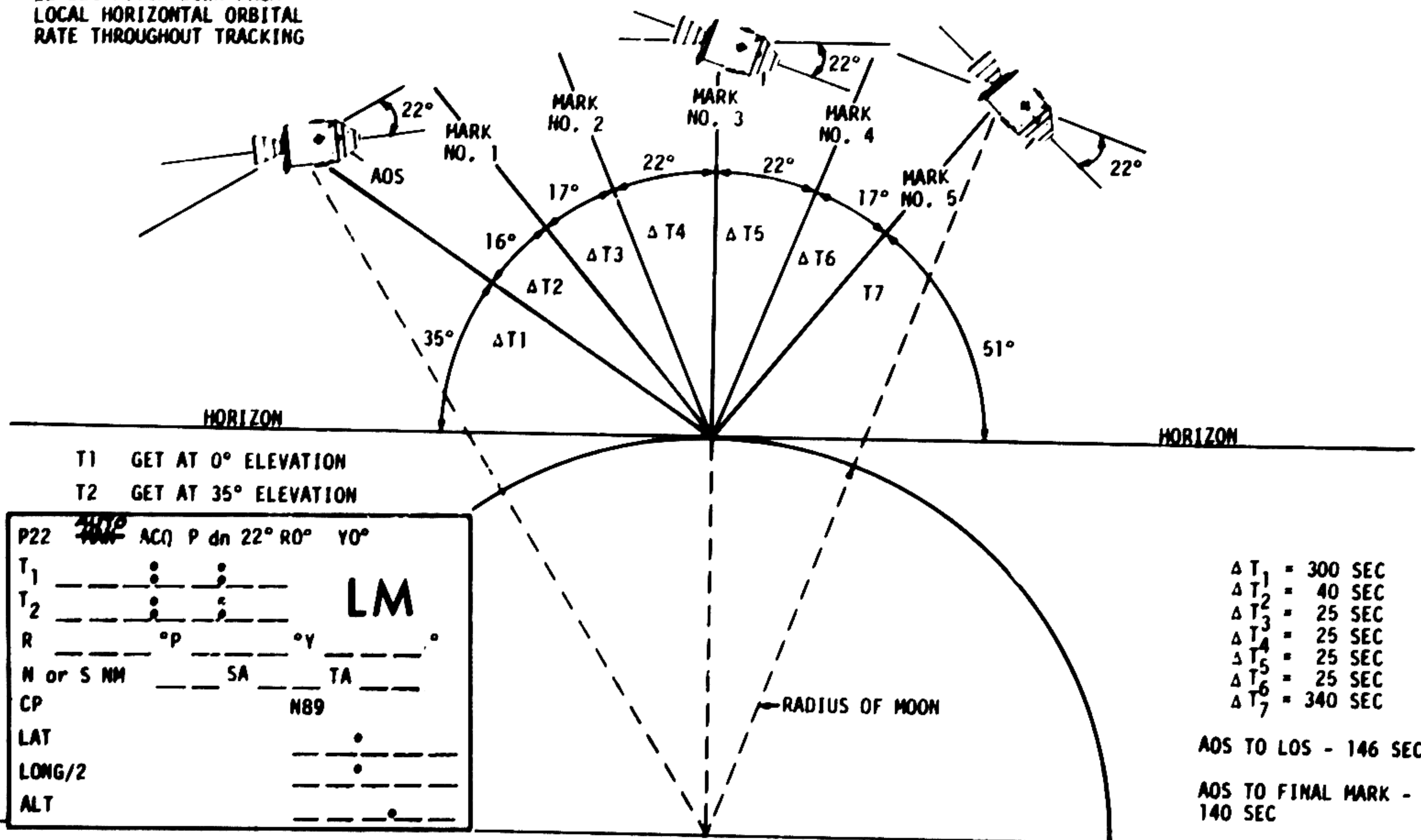
Z _ _ _ . _ _ _

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



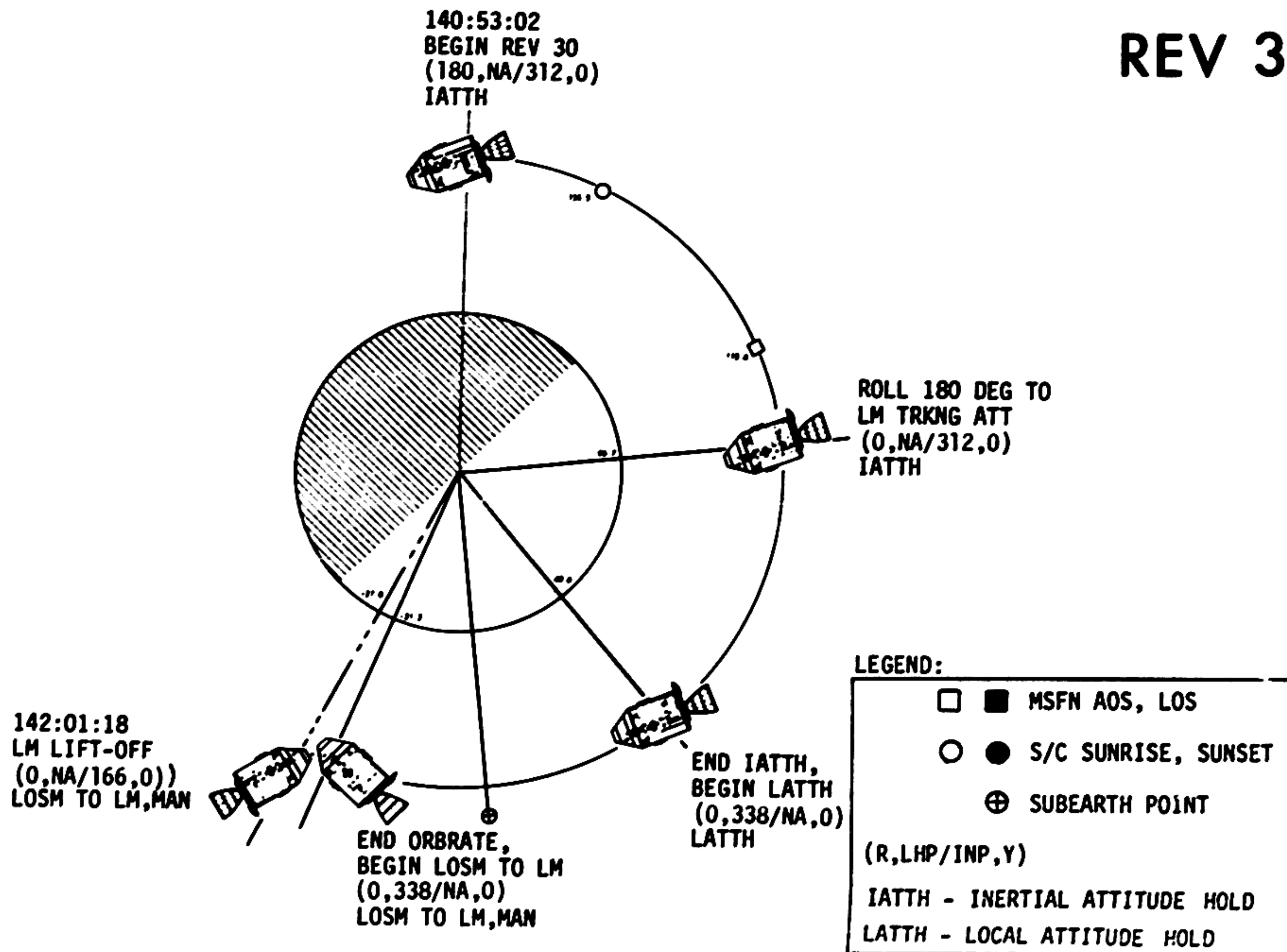
NOTE: Coordinates of LM to be updated
Real time

CENTER OF MOON

FIGURE 3-3

3-120

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3-120A

REVISION B

FLIGHT PLAN

CJM

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

- 142:00

CDR

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

LM

LMP

ALIGN AGS TO PGNC5
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

MCC-1.

MAP UPDATE REV 31

L0S	:	—	—	:	—	:	—	—
180°	:	—	—	:	—	:	—	—
A0S	:	—	—	:	—	:	—	—

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

CMP

0822 CST

CDR

LMP

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

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

REV 31

M
S
F
N

ABORT STAGE
YAW RIGHT 20° FOR COMM

APS LIFTOFF

INSERTION

NULL RESIDUALS
LOAD DAP, N46-11002

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

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

FINAL CSI COMPUTATION
P41-RCS THRUSTING

NULL RESIDUALS

STOP 16 MM CAMERA
ECS CHECK

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

CHECK RCS, EPS, ECS

LOAD AGS CSI EXT ΔV

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

CDR

LMP

0922 CST
143:00

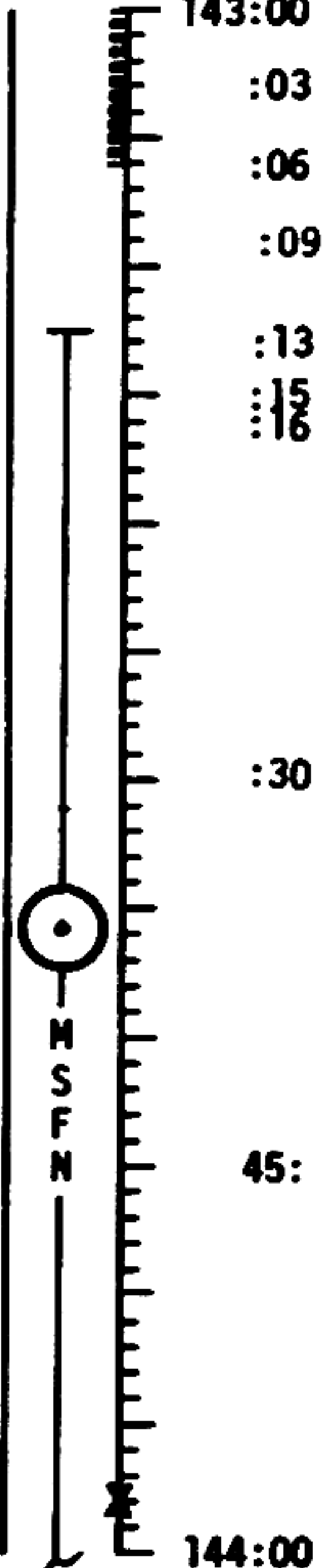
P20 AUTO MNVR TO
TRACK ATTITUDE
SXT & VHF TRACKING

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



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

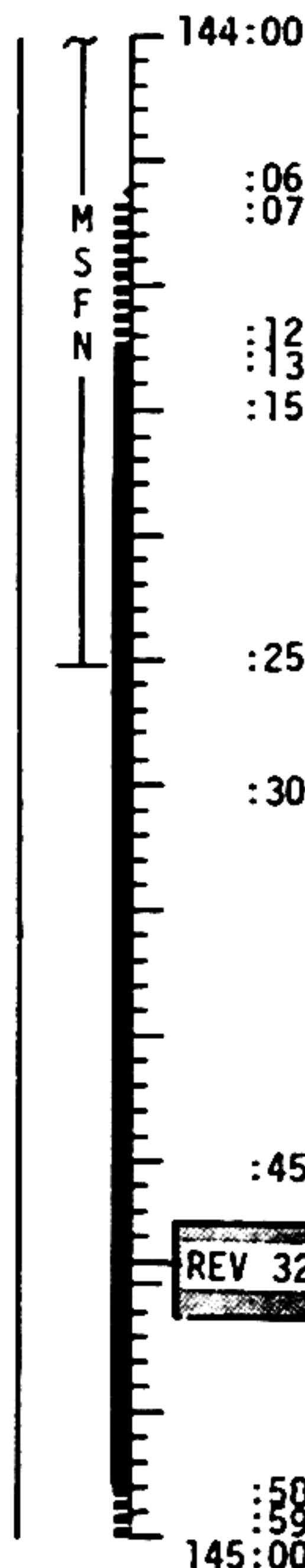
P34-TARGET TPI
SXT & VHF TRACKING

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

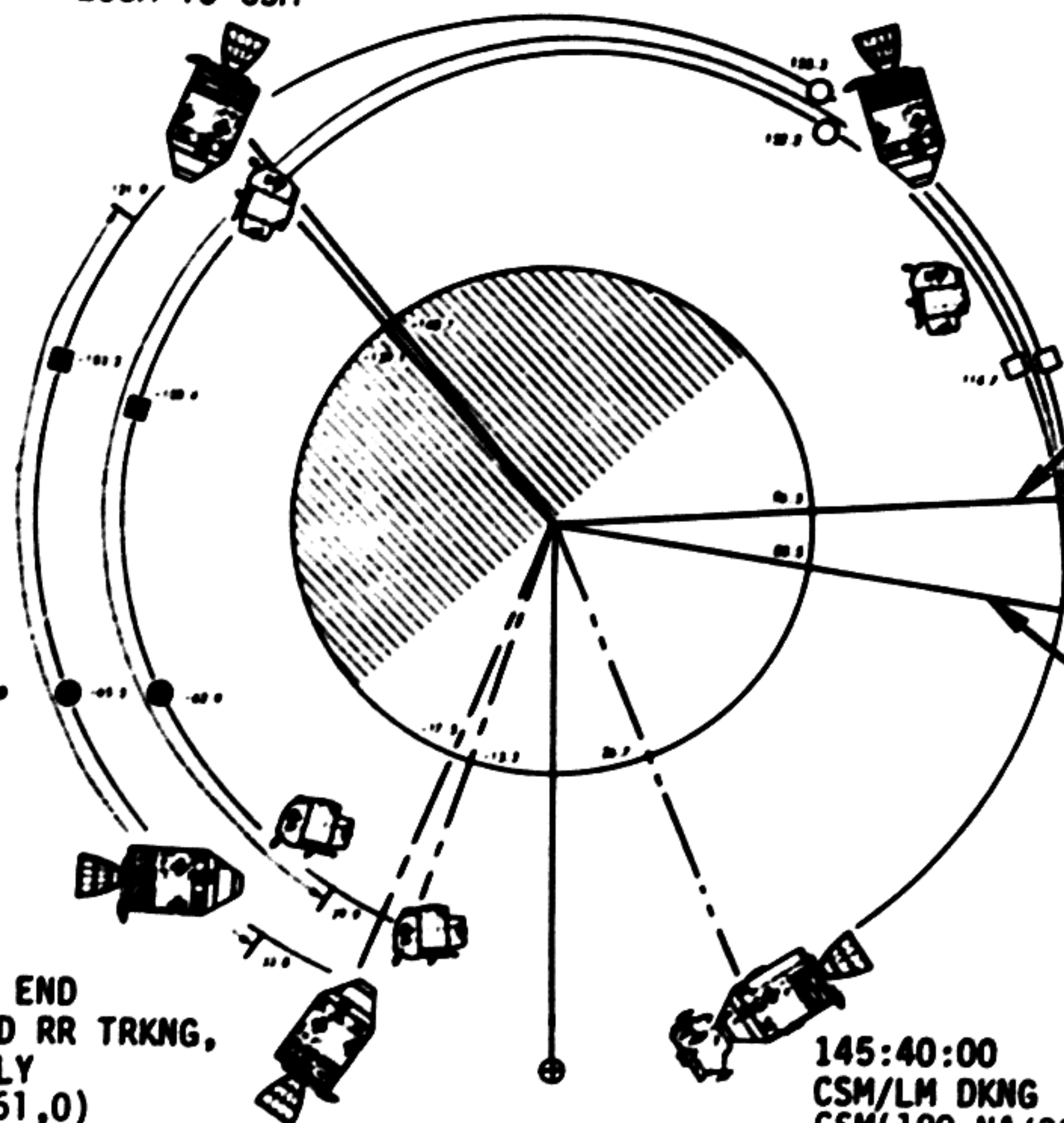
TIG: 144:36:25.7
BT: 22.1 SEC
 ΔV_R : 24.6 FT/SEC
ORBIT: 61.9x44.2

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



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

145:17:39
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

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

LEGEND:

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

3-124A

REVISION B

FLIGHT PLAN

CSM

LM

MCC-H

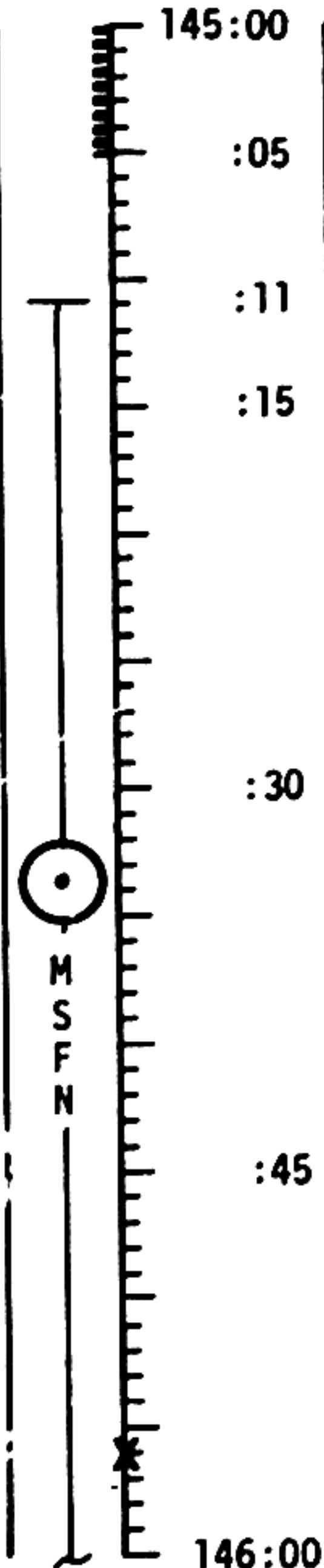
CMP

1122 CST

CDR

LMP

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



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
RR-OFF

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

DOCKING ATTITUDE
R 180 P 336 Y 300

STEERABLE ANGLES
P 181
Y 61

GO/NO GO FOR PYRO
ARM

DOCKING

GET: 145:40

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

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

DOFF HELMET & GLOVES
ASSIST CDR

DUMP DSE

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

FLIGHT PLANNING BRANCH

REVISION A

CMP

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

- 146:00

MSFN

:04

:11

:15

:23

: 30

:45

REV 33

:57

147:00

CDR

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

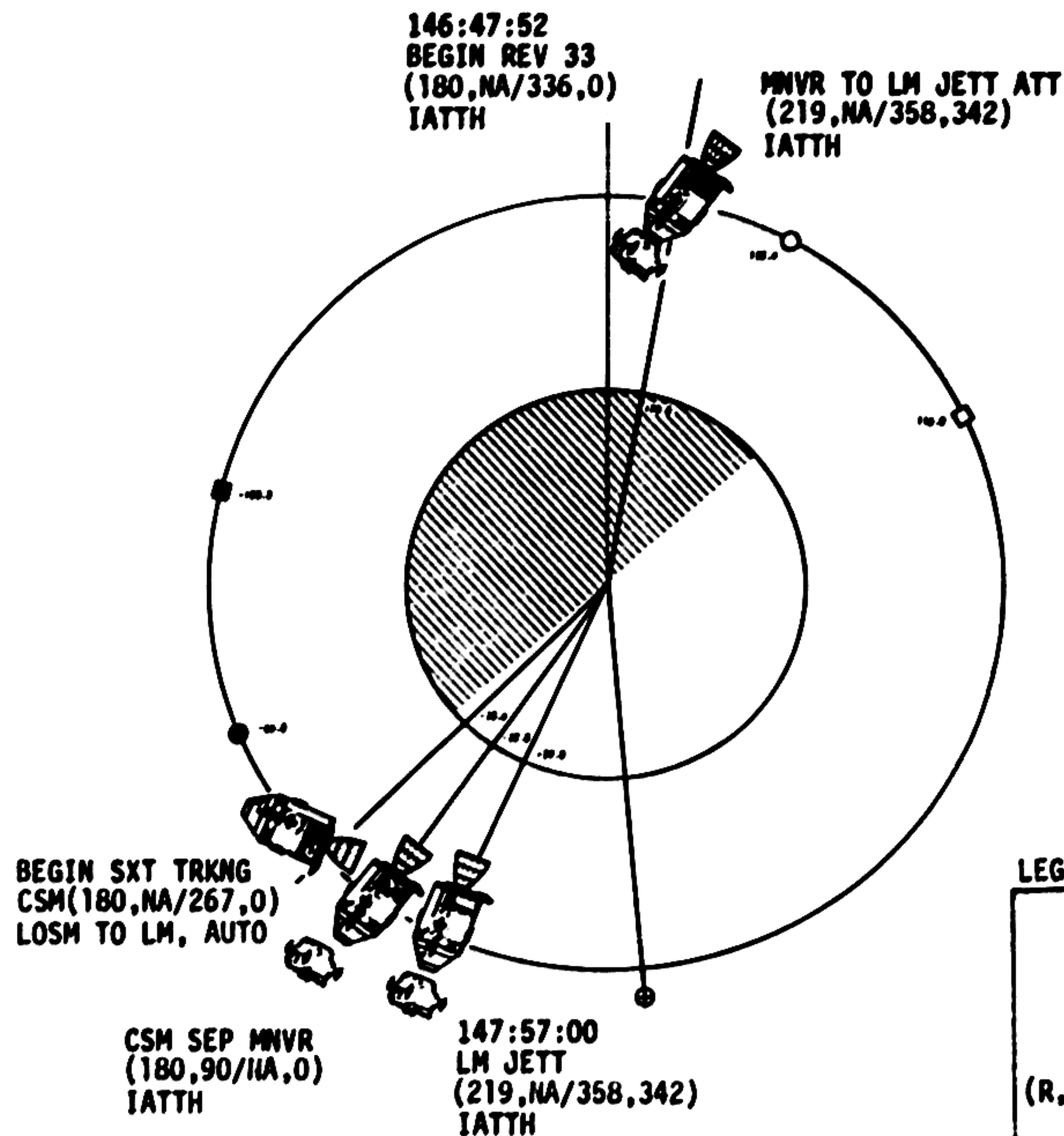
MAP UPDATE REV 33

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

FLIGHT PLANNING BRANCH

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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

147:00

:04

:09

:15

: 30

:45

148:00

DISCONNECT FROM LM
IVT TO CM

CONFIGURE S-BAND
VERIFY COMM
ALIGN AGS TO PGNC
V47-AGS INITIALIZATION
P30-TARGET PGNC
TARGET AGS ΔV
CONFIGURE FOR LM JETT
CLOSE HATCH, IVT TO CM

DUMP DSE
UPDATE TO CSM
P76 PAD
MAP UPDATE REV 34

**GO/NO-GO FOR LM
JETT & PYRO ARM**

MAP UPDATE REV 34

LOS : : :

180°W: : :

AOS : : :

LM JETTISON
GET: 147:57:00
AV_R: 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

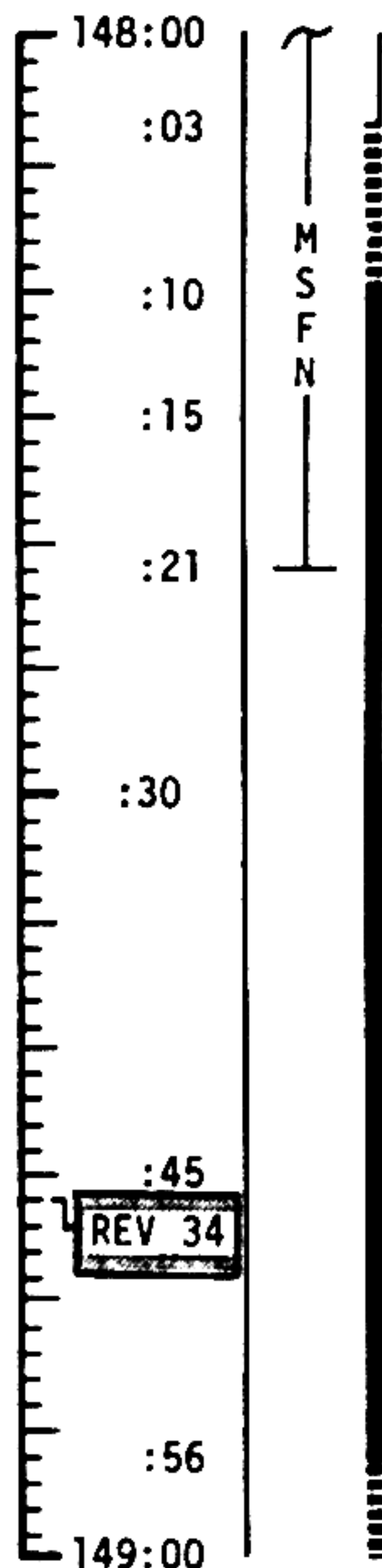
REVISION A

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

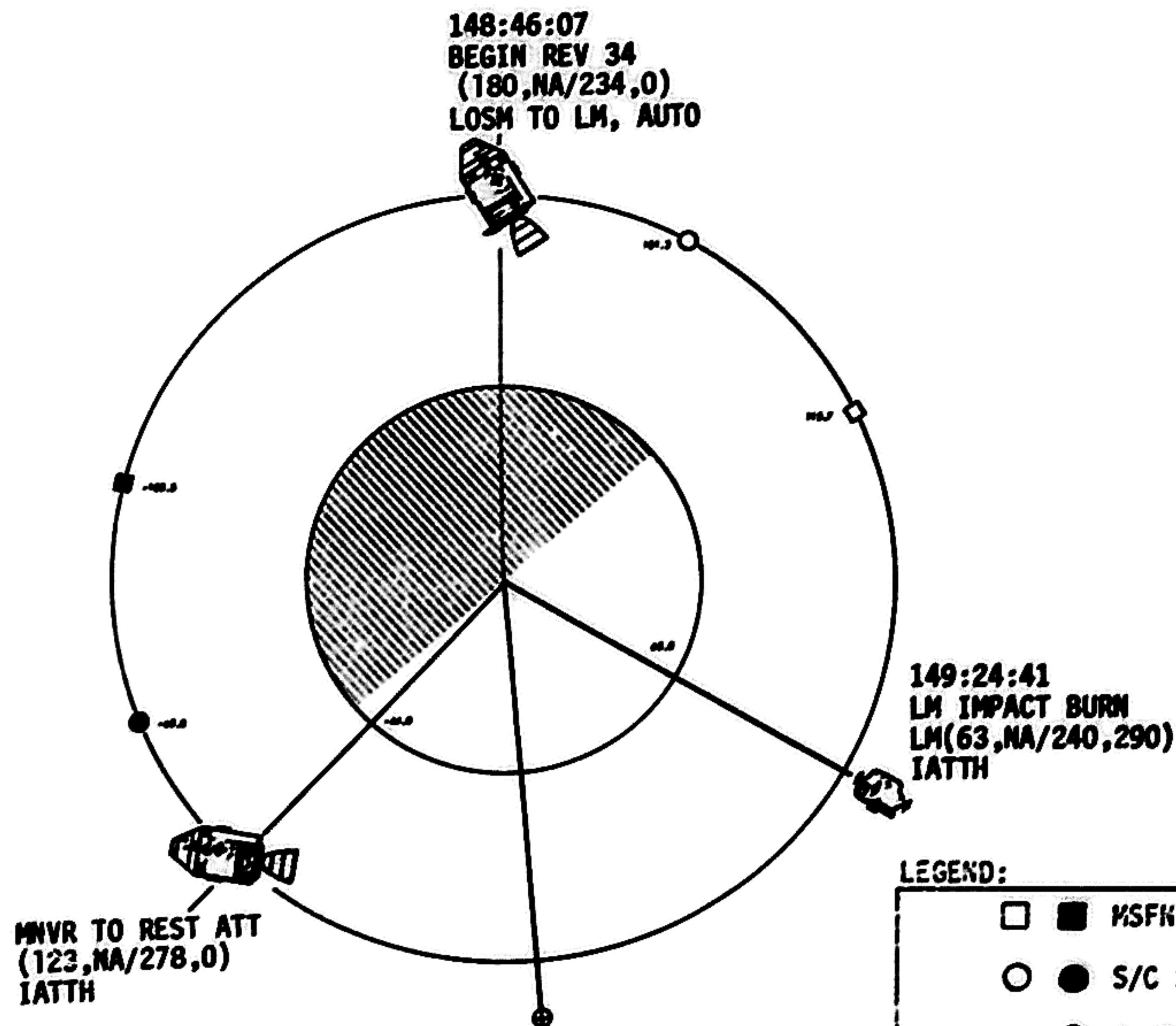
BT: ~~2.7~~ SEC 5.5 SEC ΔV_R : 1.0 FT/SEC

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

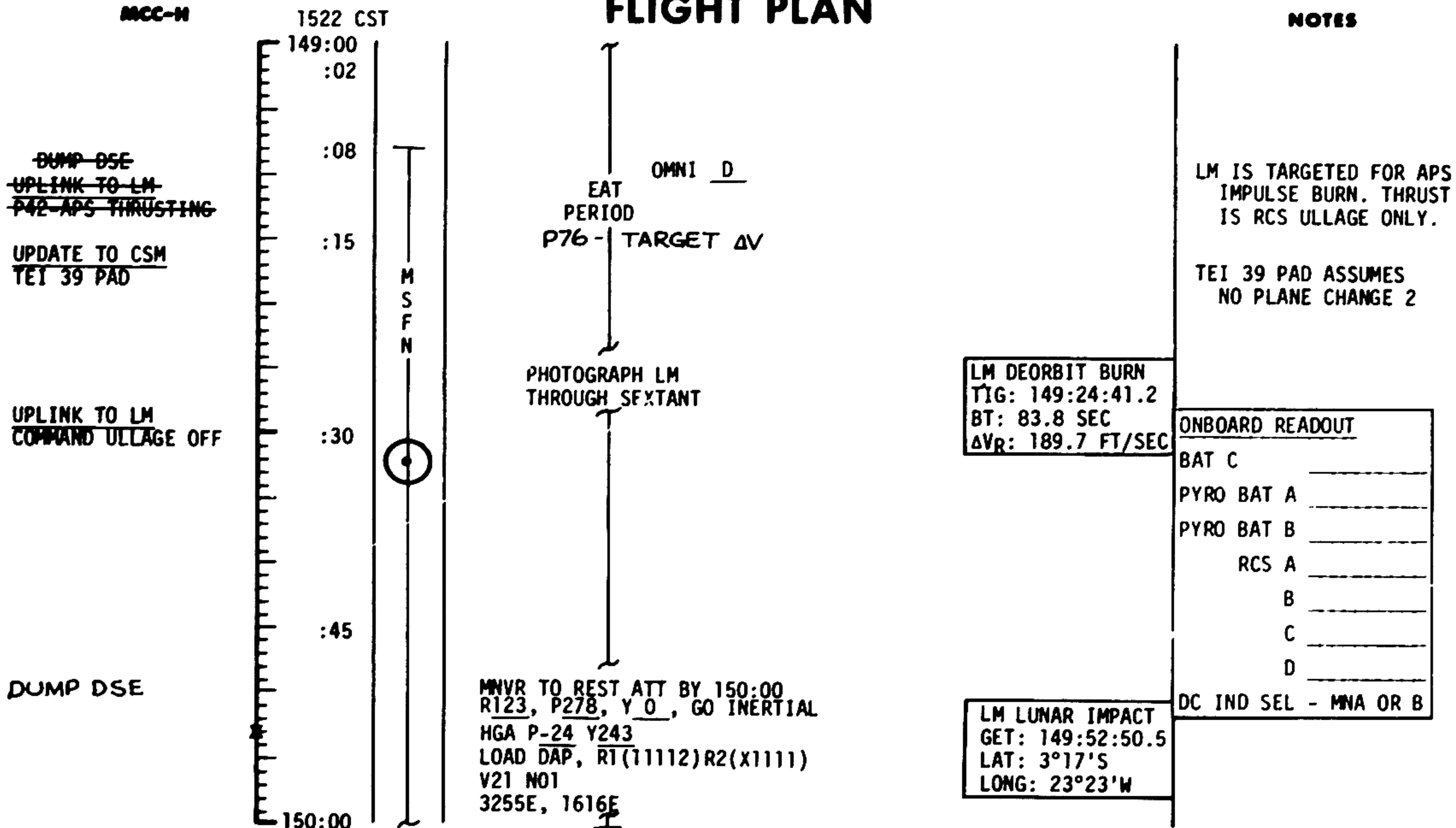
3-128A

REVISION B

MCC-H

FLIGHT PLAN

NOTES



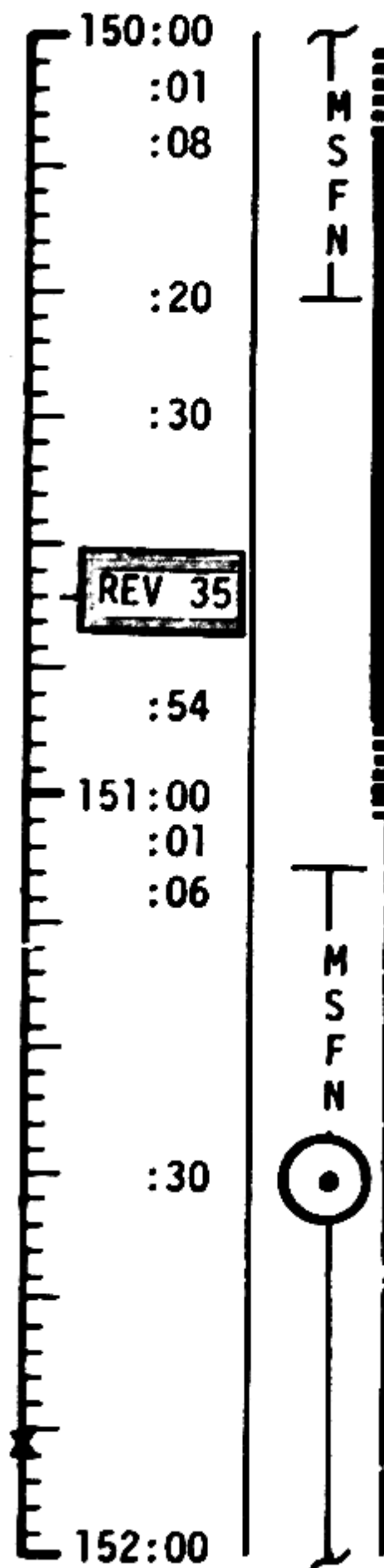
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	149:00 - 150:00	6/34	3-129

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

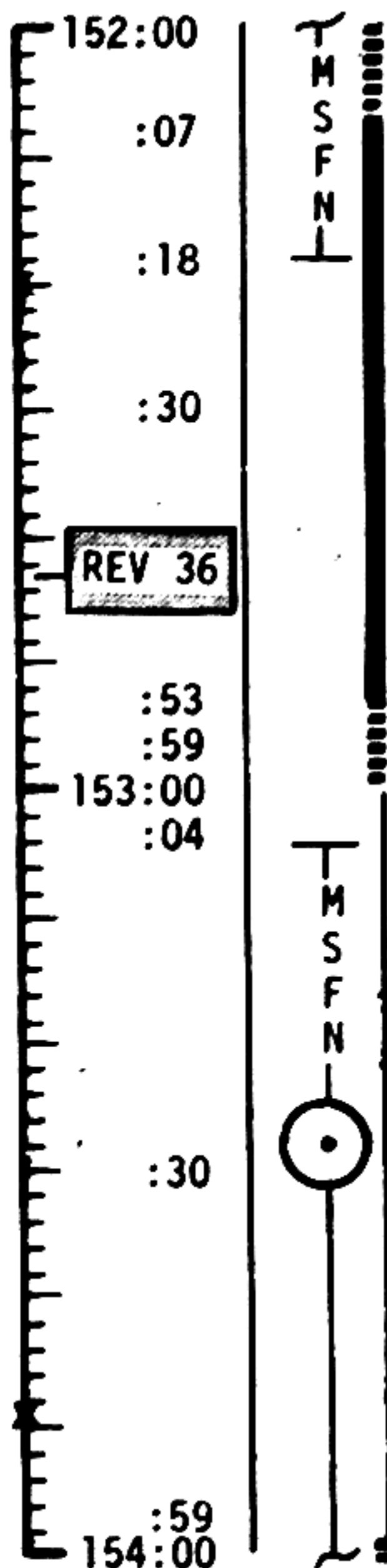
MCC-H

1822 CST

FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD
(7.5 HOURS)

REST
ATT

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

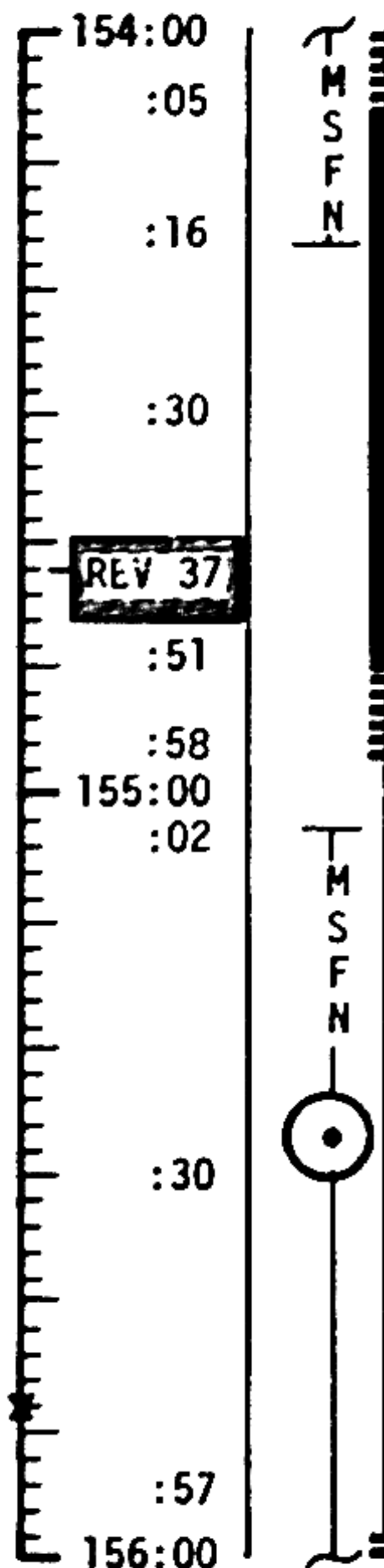
MCC-M

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

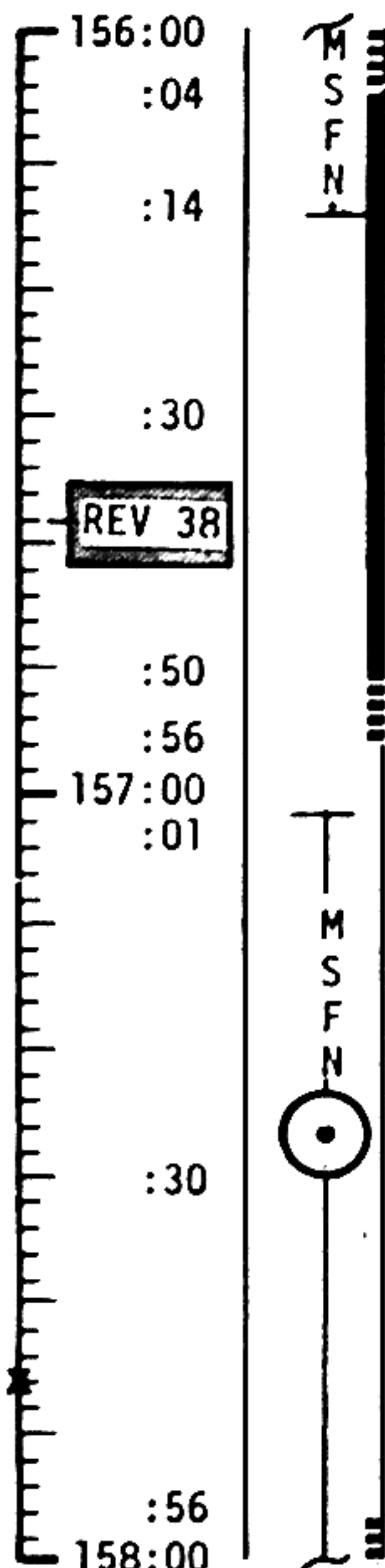
2222 CST

FLIGHT PLAN

NOTES

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)



REST PERIOD
(7.5 HOURS)

HGA P-22 Y239

REST
ATT

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
REV 39
:45
:48
:54
:59
159:00

M
S
F
N

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)

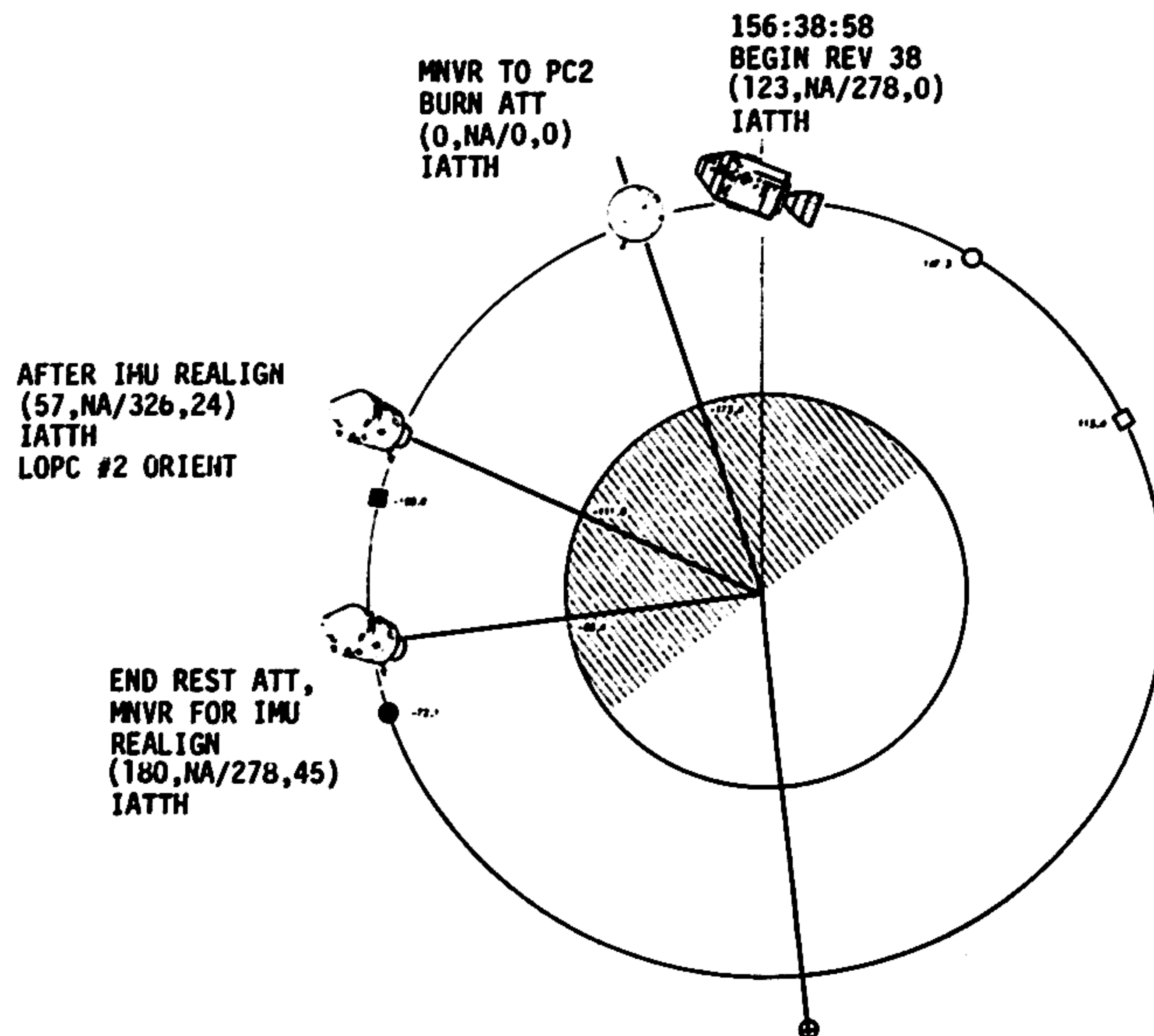
N71: :
N05: :
N93: :
X :
Y :
Z :
GET : :

CREW STATUS REPORT

CDR CMP LMP
SLEEP : :
PRD : :

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

REV 38



LEGEND:

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

3-134A

REVISION B

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HIGH RESOLUTION PHOTOGRAPHY
REV 39

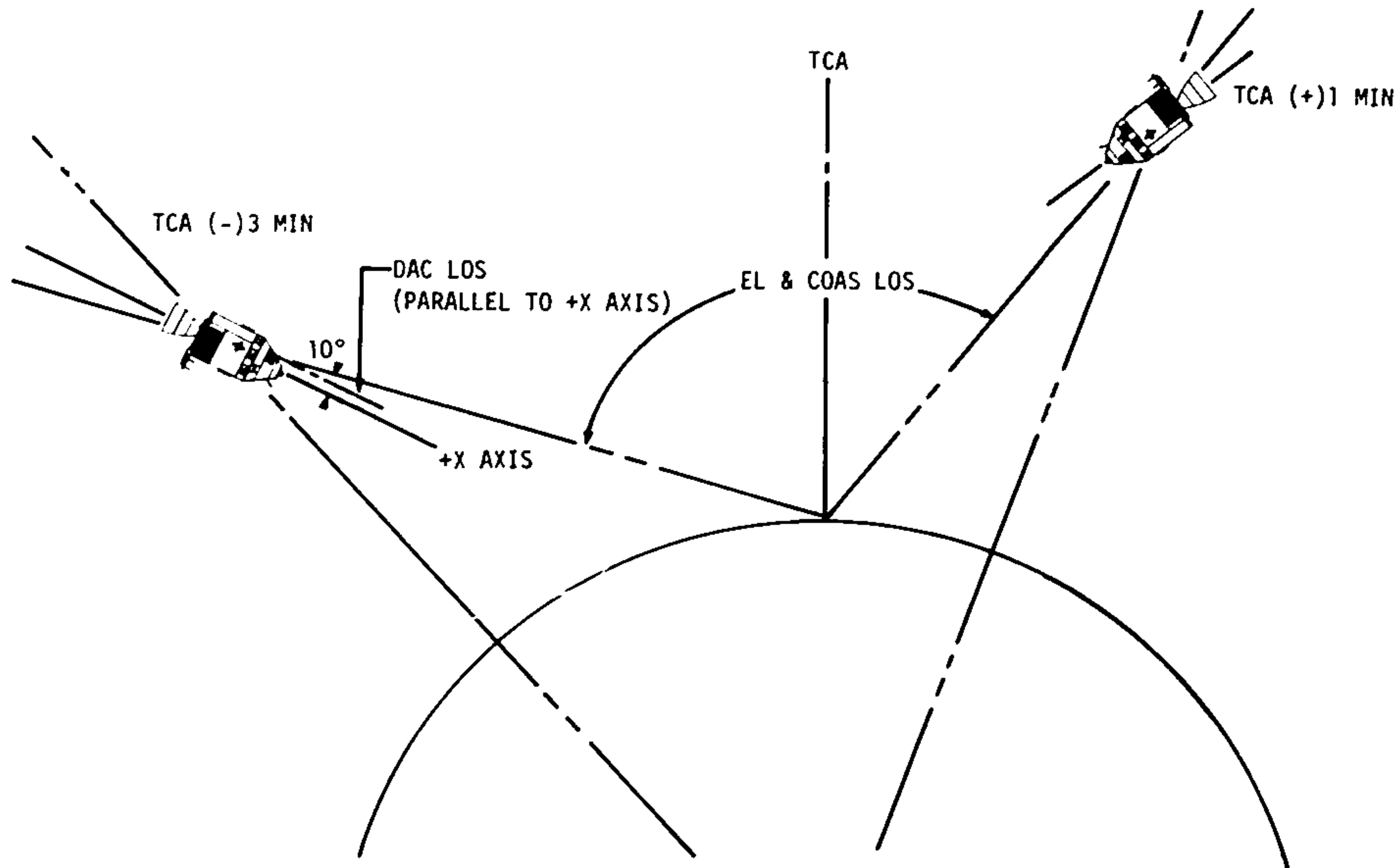


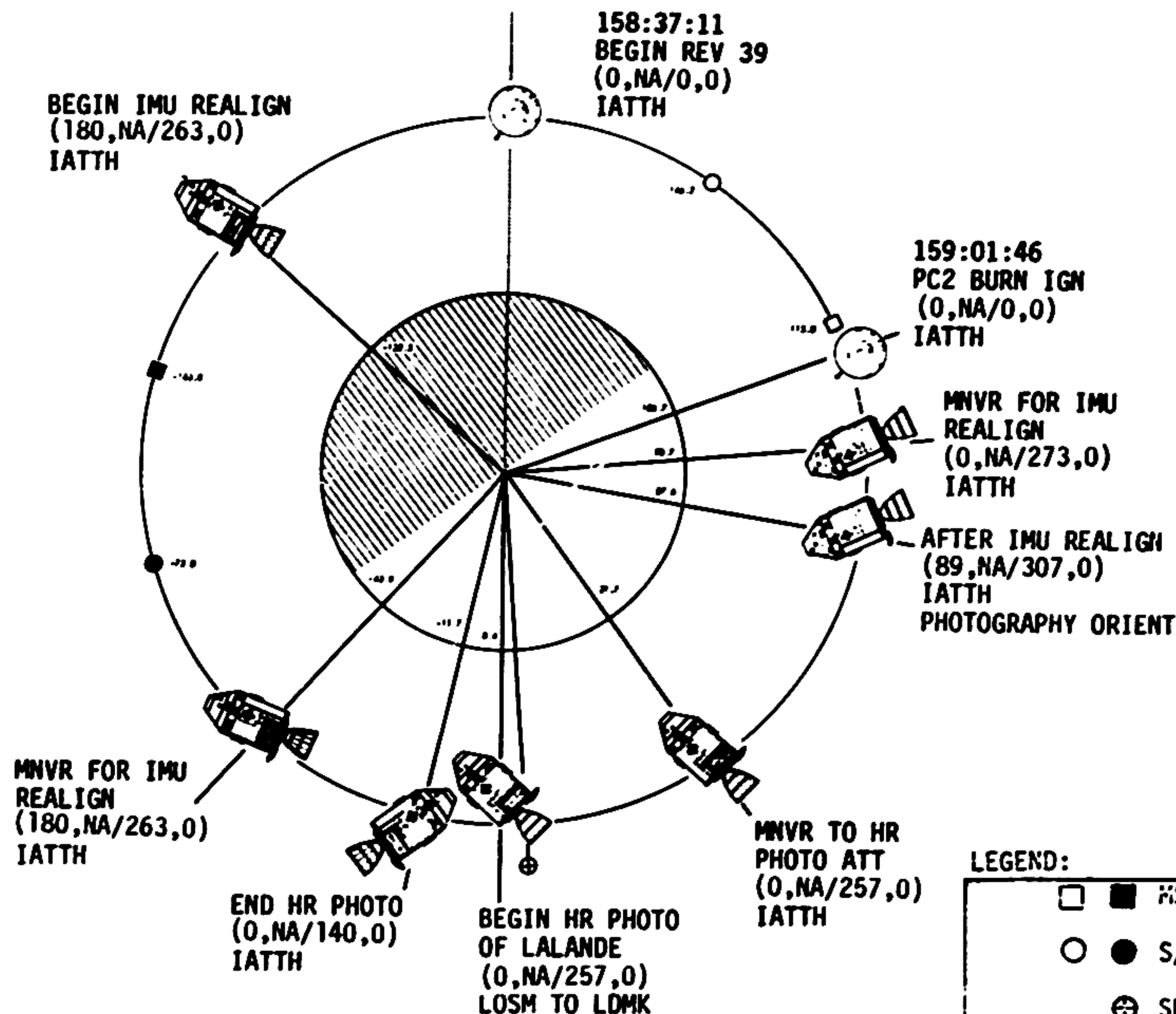
FIGURE 3-4
3-135

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

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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		

3-136A

REVISION B

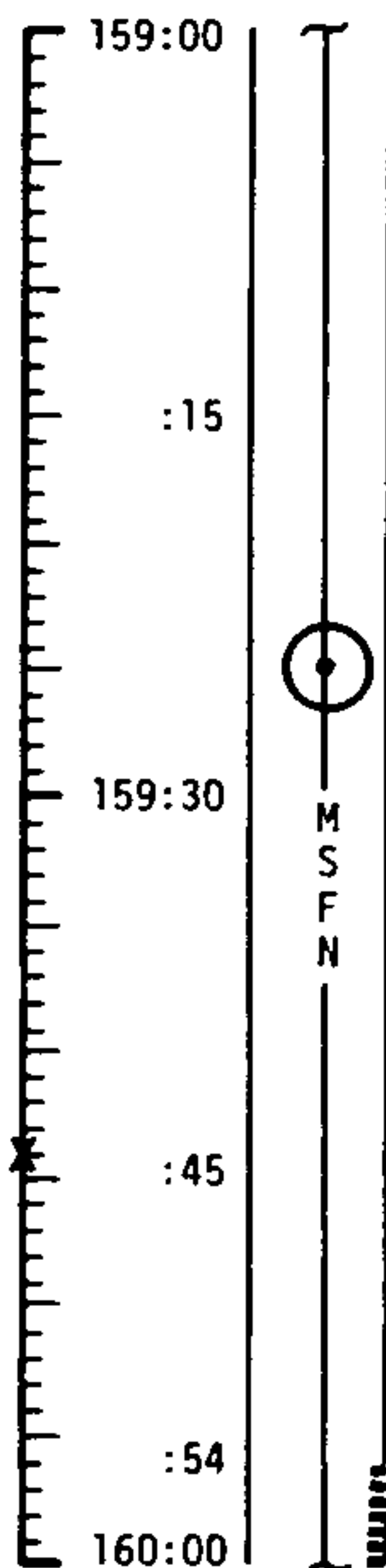
MCC-H

0122 CST

FLIGHT PLAN

NOTES

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



CSM PLANE CHANGE #2

MNVR TO P52 ATT BY 159:07

P52 IMU REALIGN

OPTION 1 PREFERRED

GYRO TORQUE

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

P257

Y 0

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

MNVR TO P52 ATT BY 159:51

R180

P263

Y 0

HGA

P -56

Y 186

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

HGA P 3, Y 281

T1 IS 3 MINUTES

PRIOR TO TCA

T2 IS 1 MINUTE

AFTER TCA

EL CAM TO BE MANUALLY
ACTUATED AT APPROX.

20 SECOND INTERVALS

HI RESOLUTION PHOTO
LALANDE

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

BURN STATUS REPORT

X	X		•	Δ TIG
X	X		•	BT
			•	V_{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V_{gx}
			•	V_{gy}
			•	V_{gz}
			•	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 (REV 14)	OCTOBER 15, 1969	159:00 - 160:00	7/39	3-137

STEREO STRIP PHOTOGRAPHY
REV 40

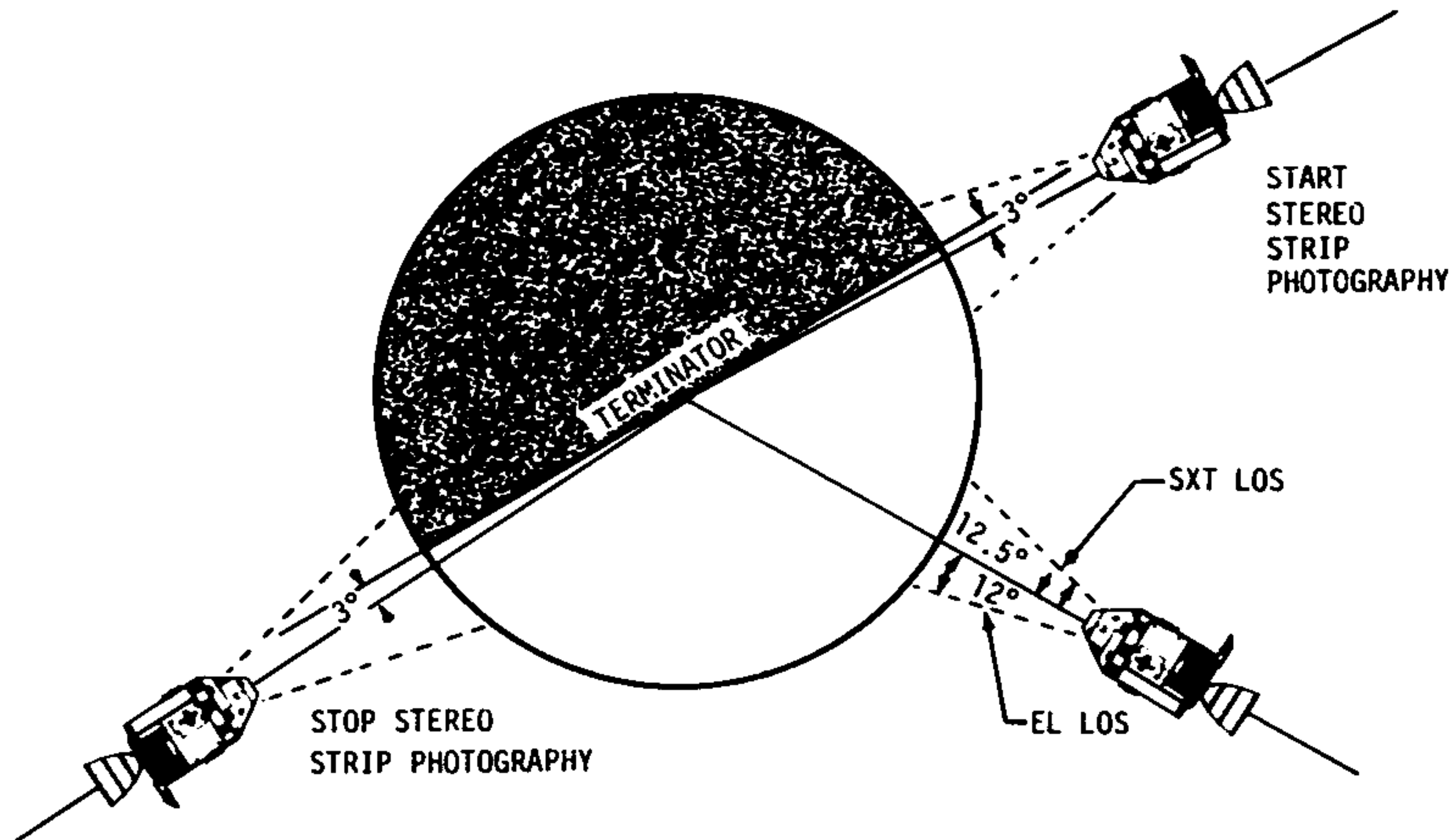


FIGURE 3-5
3-138

MCC-H

0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
STEREO PHOTO TIME
MAP UPDATE REV 40

160:00	M S F N
:01	
:10	
:15	
160:30	
REV 40	
:45	
:47	
:53	
:57	
161:00	

SETUP EL CAMERA FOR STEREOSCOPIC 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(1MAG=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-H

0322 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV41
TEI 43 PAD

DUMP DSE

161:00
:15
161:30
:45
:53
:59
162:00

MSFN

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

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

STEREO STRIP
PHOTOGRAPHY

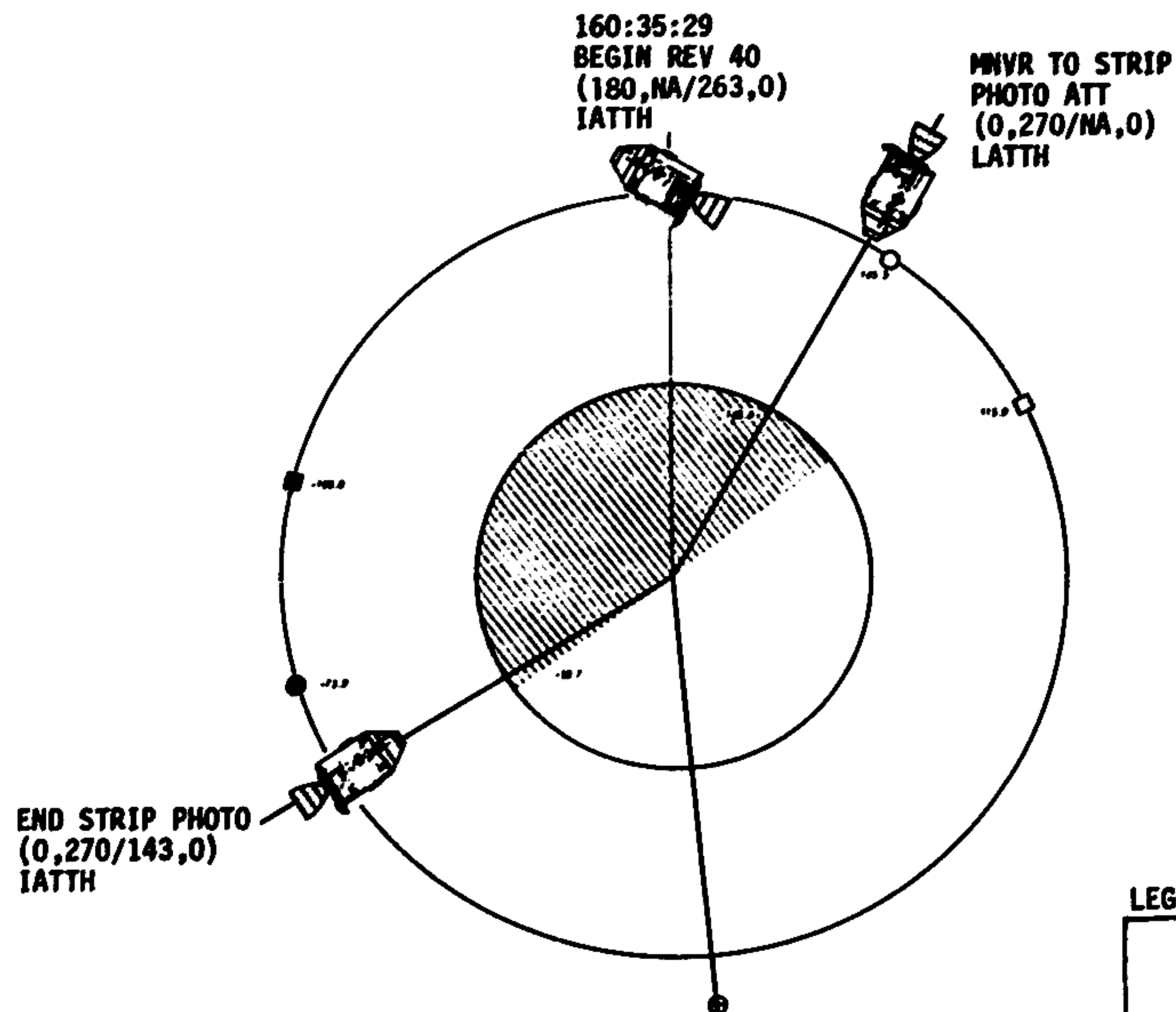
DAC SHUTTER SPEED 125 GET 161:34 OMNI B
(GET _ _ _ : _ _)
DAC SHUTTER SPEED 60 GET 161:38
(GET _ _ _ : _ _)

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 41
LOS : _ _ _ : _ _ _ : _ _ _
180° : _ _ _ : _ _ _ : _ _ _
AOS : _ _ _ : _ _ _ : _ _ _

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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MCC-N

0422 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
TIME - HIGH
RESOLUTION PHOTOS

162:00

T
H
S
F
N

REPORT GYRO TORQUING ANGLES

:09

VERIFY DSE MOTION AT LOS

:15

162:30

REV 41

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

:45

:52

:55

REACQUIRE MSFN
HGA P -64, Y 173

163:00

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

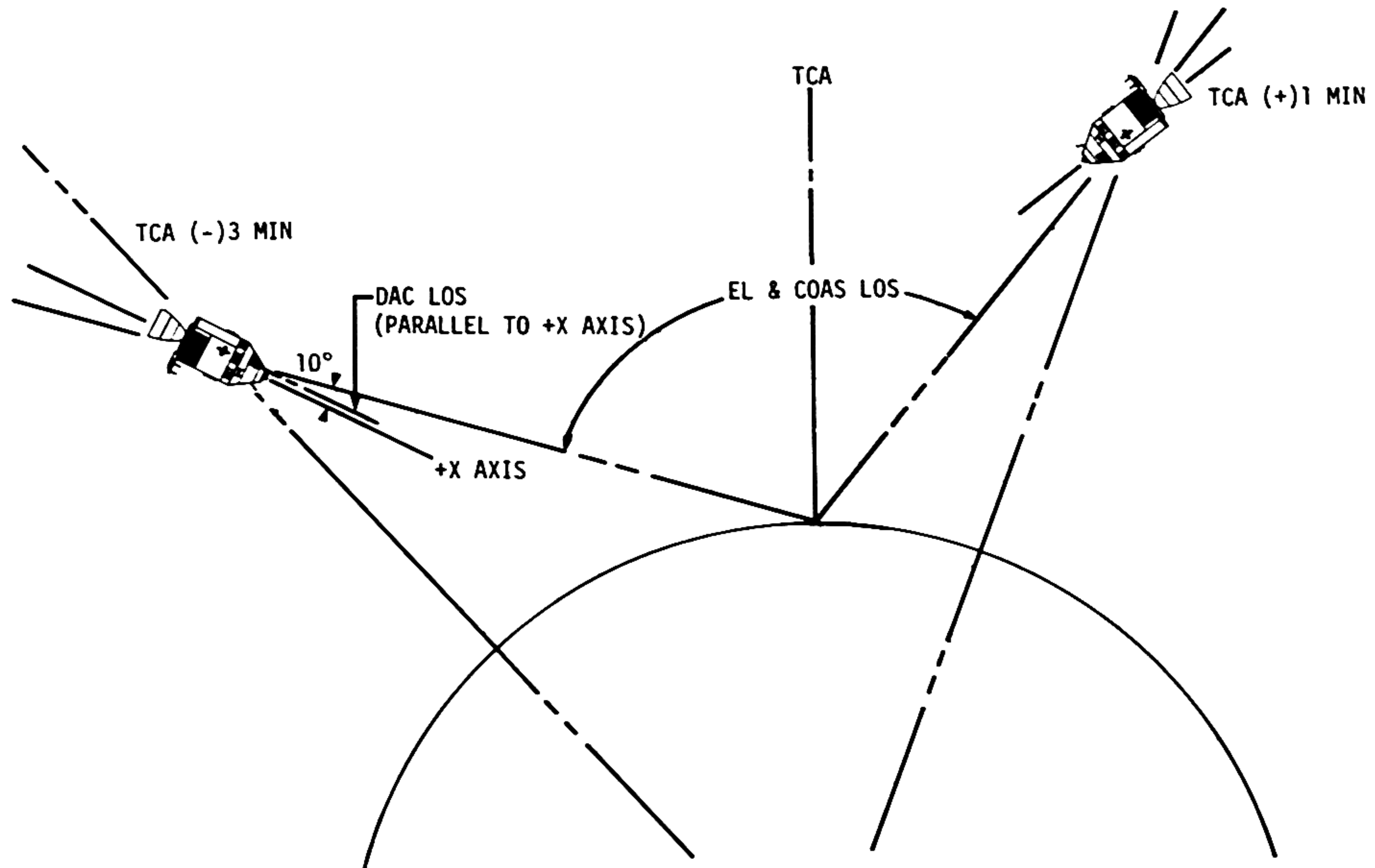
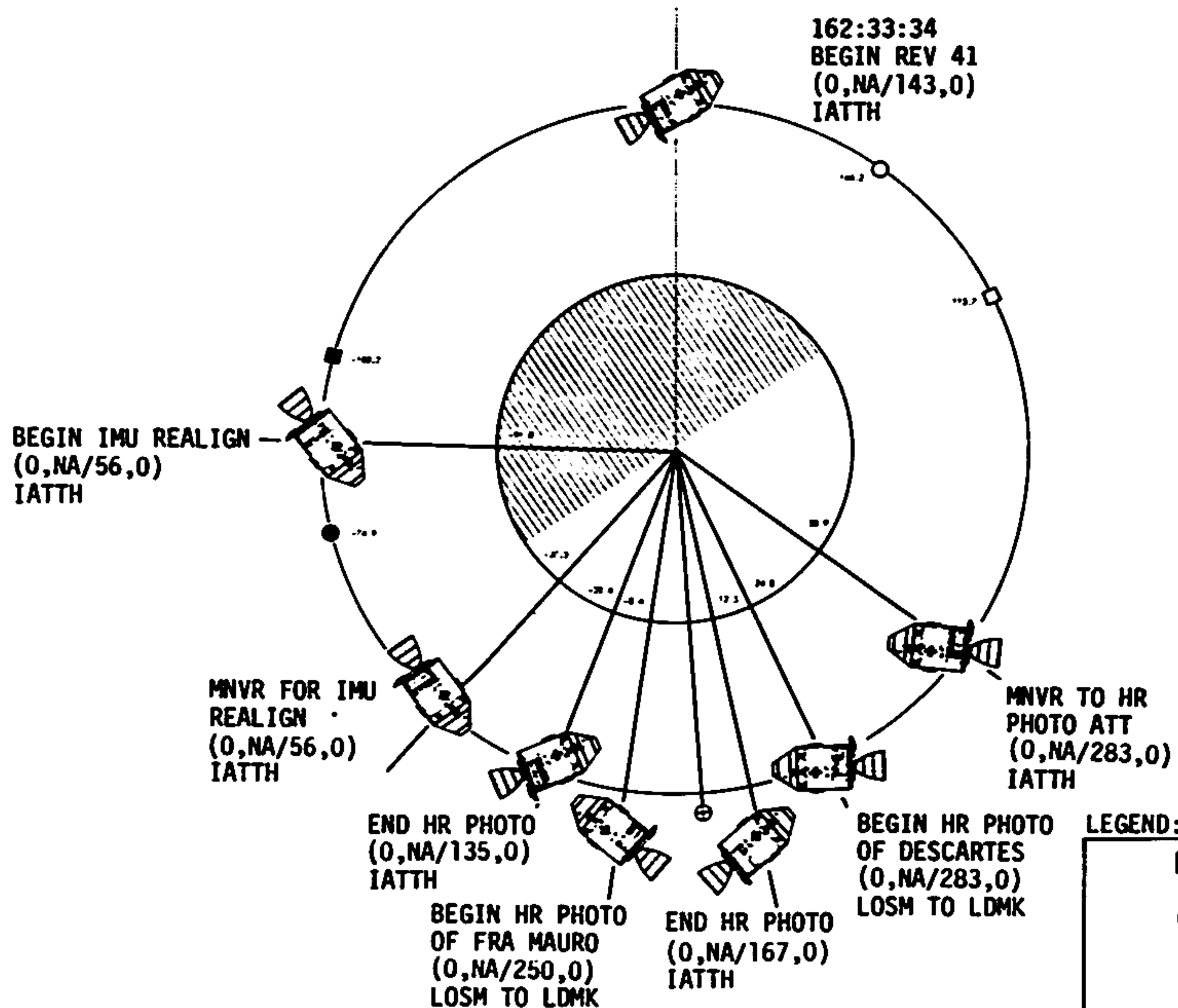


FIGURE 3-4
3-142

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LEGEND:

- MSFN AOS, LOS
- S/C SUNRISE, SUNSET
- ⊕ SUBEARTH POINT

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-142A

REVISION 8

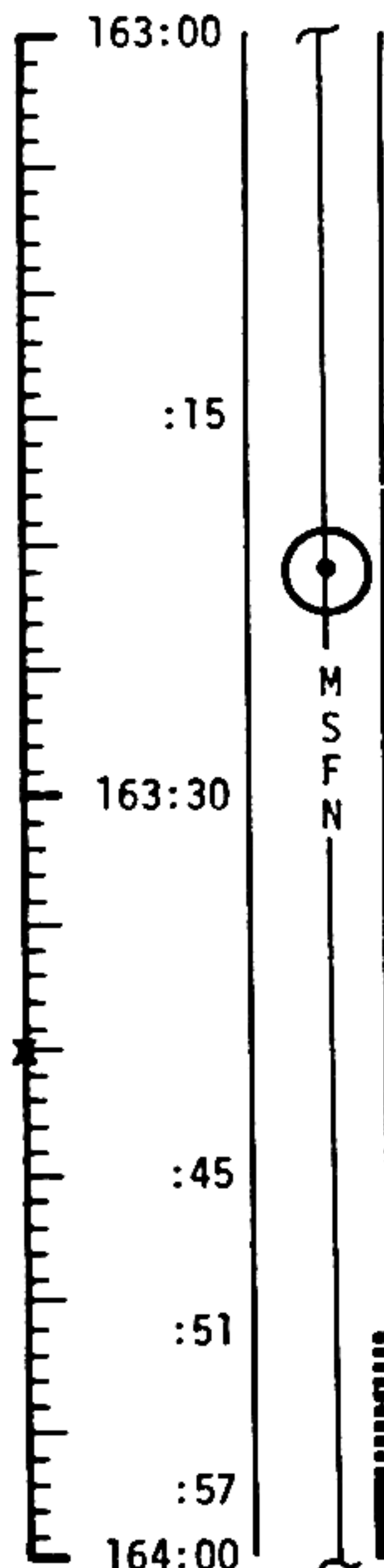
MCC-H

0522 CST

FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM
MAP UPDATE REV 42~~PCM LBR~~UPDATE TO CSM
LDMK TRACK PADUPLINK TO CSM
CSM STATE VECTOR
& V66

MNVR-TO ATT FOR DESCARTES PHOTOGRAPHY BY 163:16

OMNI	<u>D</u>	R	<u>0</u>
		P	<u>283</u>
		Y	<u>0</u>

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

R	<u>0</u>	P	<u>250</u>	Y	<u>0</u>	OMNI	<u>D</u>
---	----------	---	------------	---	----------	------	----------

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	<u>0</u>
P	<u>56</u>
Y	<u>0</u>

MAP UPDATE REV 42

LOS : _____ : _____ : _____

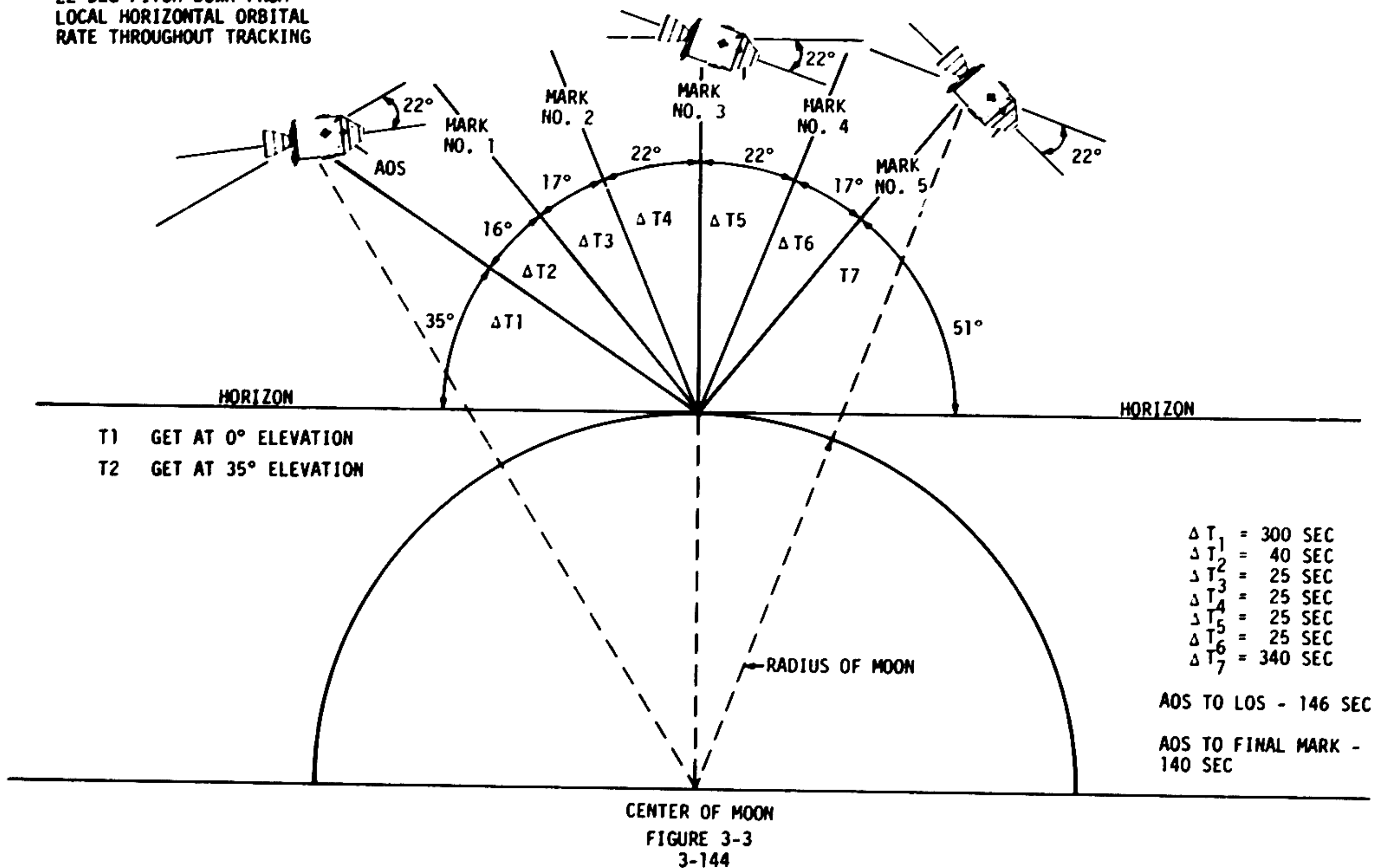
180° : _____ : _____ : _____

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



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

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P22 ~~AUTO~~ ~~MAN~~ 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 ~~AUTO~~ ~~MAN~~ 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 ~~AUTO~~ ~~MAN~~ 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 ~~AUTO~~ ~~MAN~~ 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° _____ .

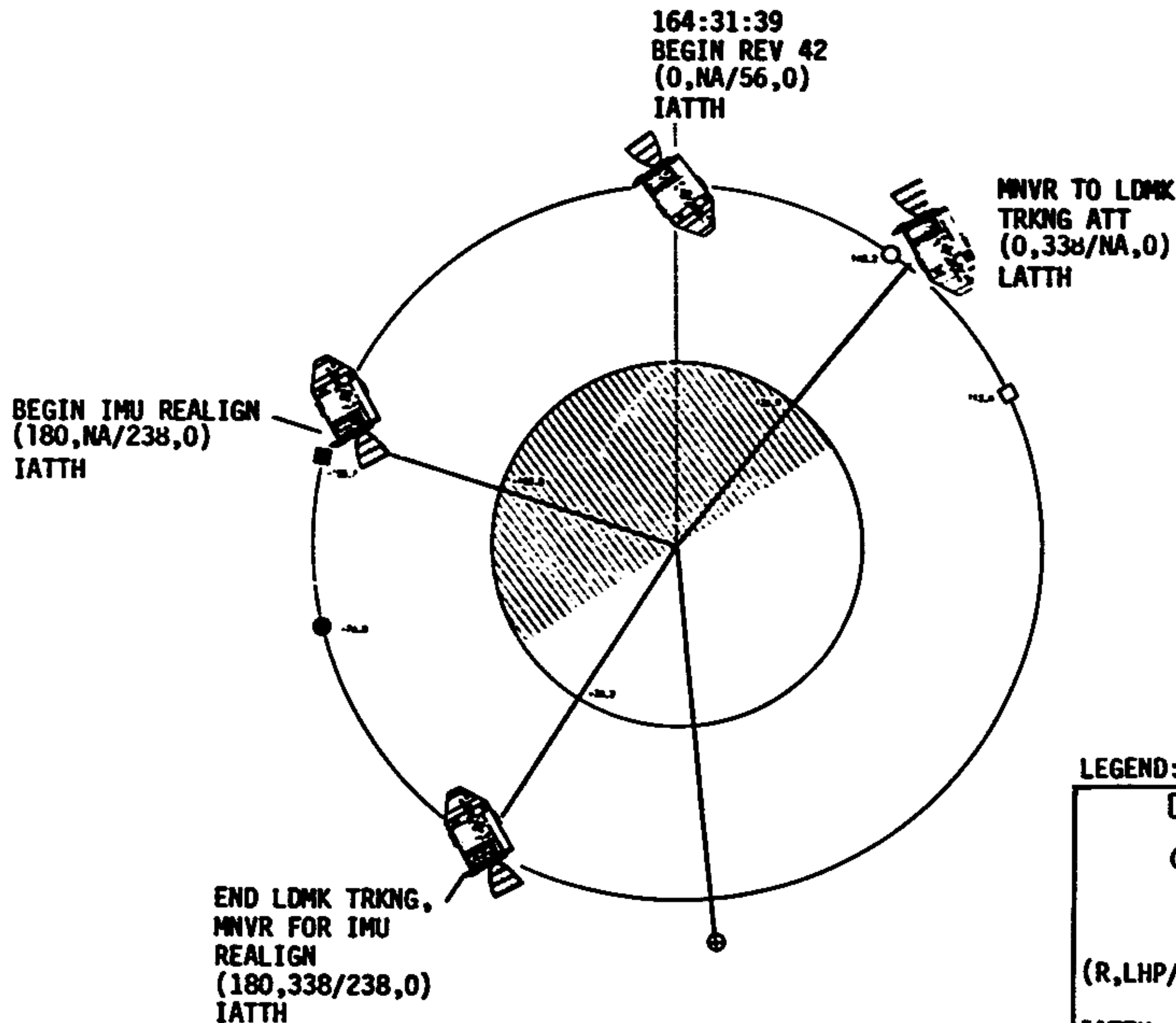
ALT -1.56NM _____ .

FM-1

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

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REV 42



LEGEND:

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

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

MCC-H

0622 CST

FLIGHT PLAN

NOTES

164:00	M S F N
:07	
:15	
164:30	
REV 42	
:44	
:45	
:50	
:53	
165:00	

P52 IMU REALIGN
OPTION 3 REFSMMAT

VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU
02 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 (IMAG-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

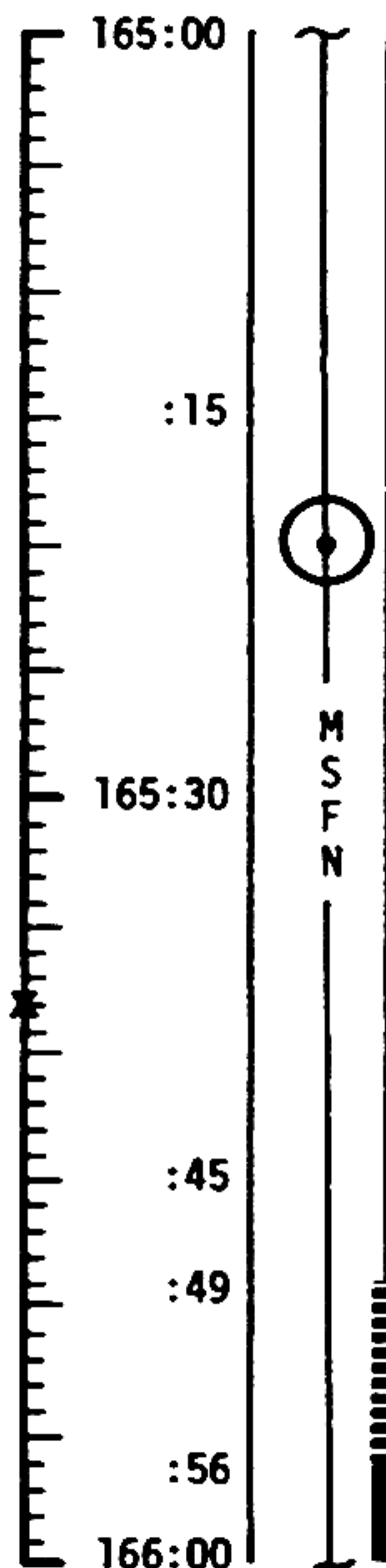
MCC-N

0722 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM
MAP UPDATE REV 43
TEI 45 PAD



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 RY 165:42

R 180 HGA
P 238 P -27
Y 0 Y 183

MAP UPDATE REV 43

LOS : _ _ _ : _ _ _

180° : _ _ _ : _ _ _

AOS : _ _ _ : _ _ _

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

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

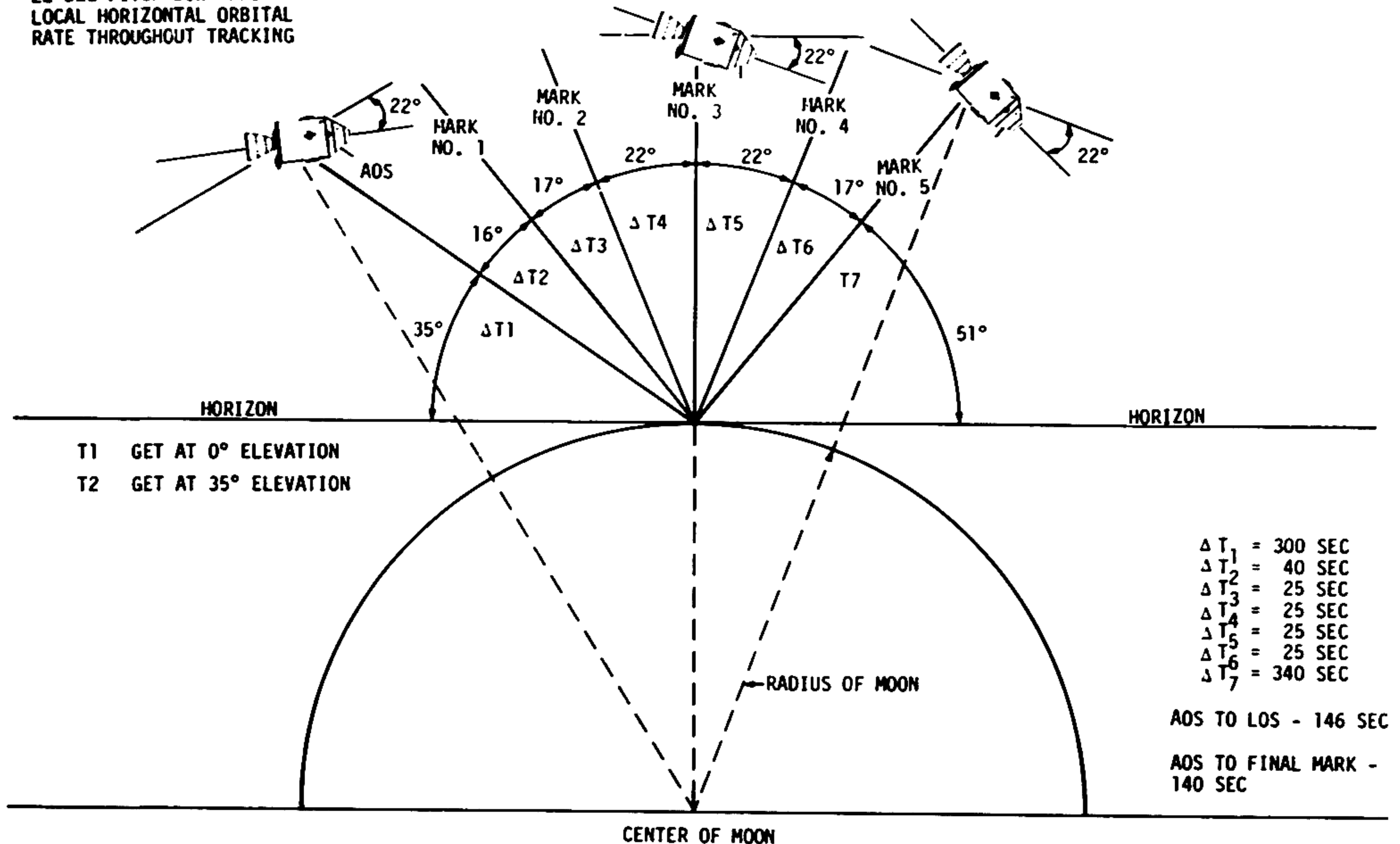


FIGURE 3-3
3-148

P22 ~~MAN~~ ⁴⁰⁷⁰ 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~~ ⁴⁰⁷⁰ 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~~ ⁴⁰⁷⁰ 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~~ ⁴⁰⁷⁰ 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°

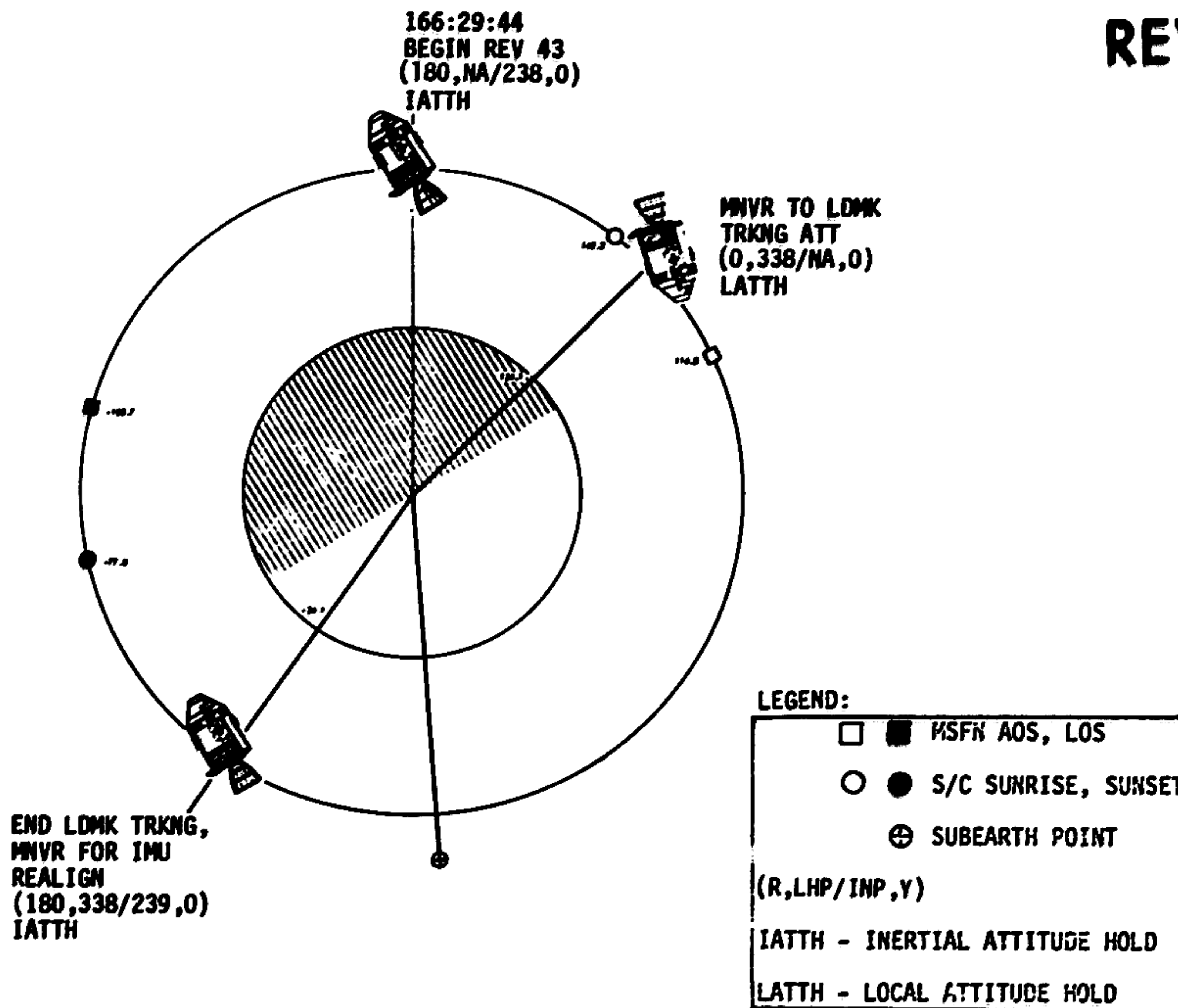
LONG/2 -8.665°

ALT -1.56NM

FM-1

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1989	166:00 - 167:00	7/42-43	3-149

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MCC-H

0822 CST

FLIGHT PLAN

NOTES

UPLINK CSM
STATE VECTOR
& V66

166:00
:05
:15
166:30
REV 43
:42
:45
:48
:51
167:00

I

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN
OPTION 3 REFSMMAT

GDC ALIGN TO IMU

EAT PERIOD

SEXT UP DAC FOR LDMK TRACKING PHOTO'S THRU SXT
CM/DAC/SXT/CEX (SEE LDMK TRACK PAD) 1FPSSELECT OMNI DMNVR TO LDMK TRACK ATT BY 166:45
GO ORB RATER 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)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

M
S
F
N

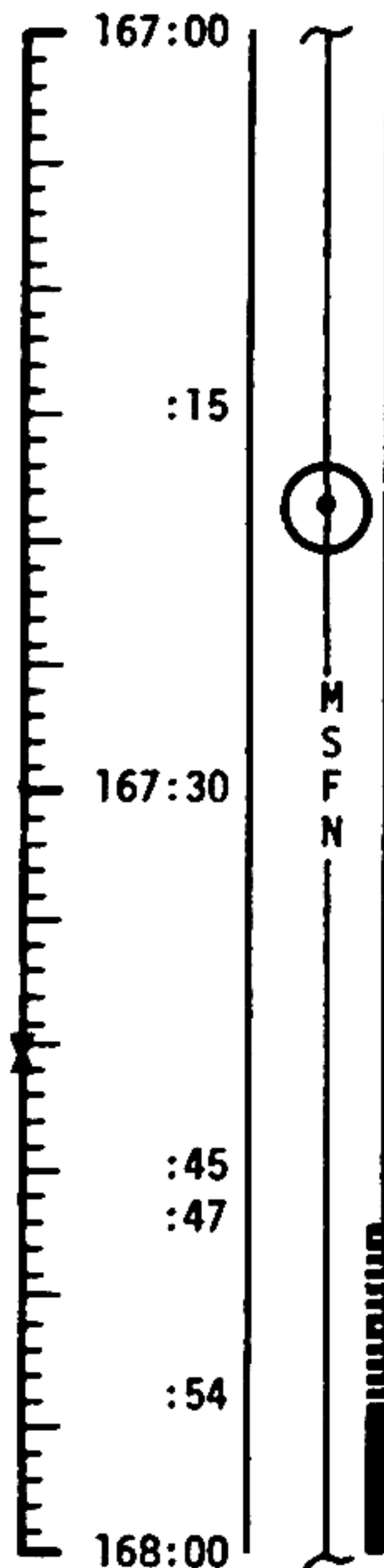
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	166:00 - 167:00	7/42-43	3-150

MCC-H

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 180
P 239
Y 0

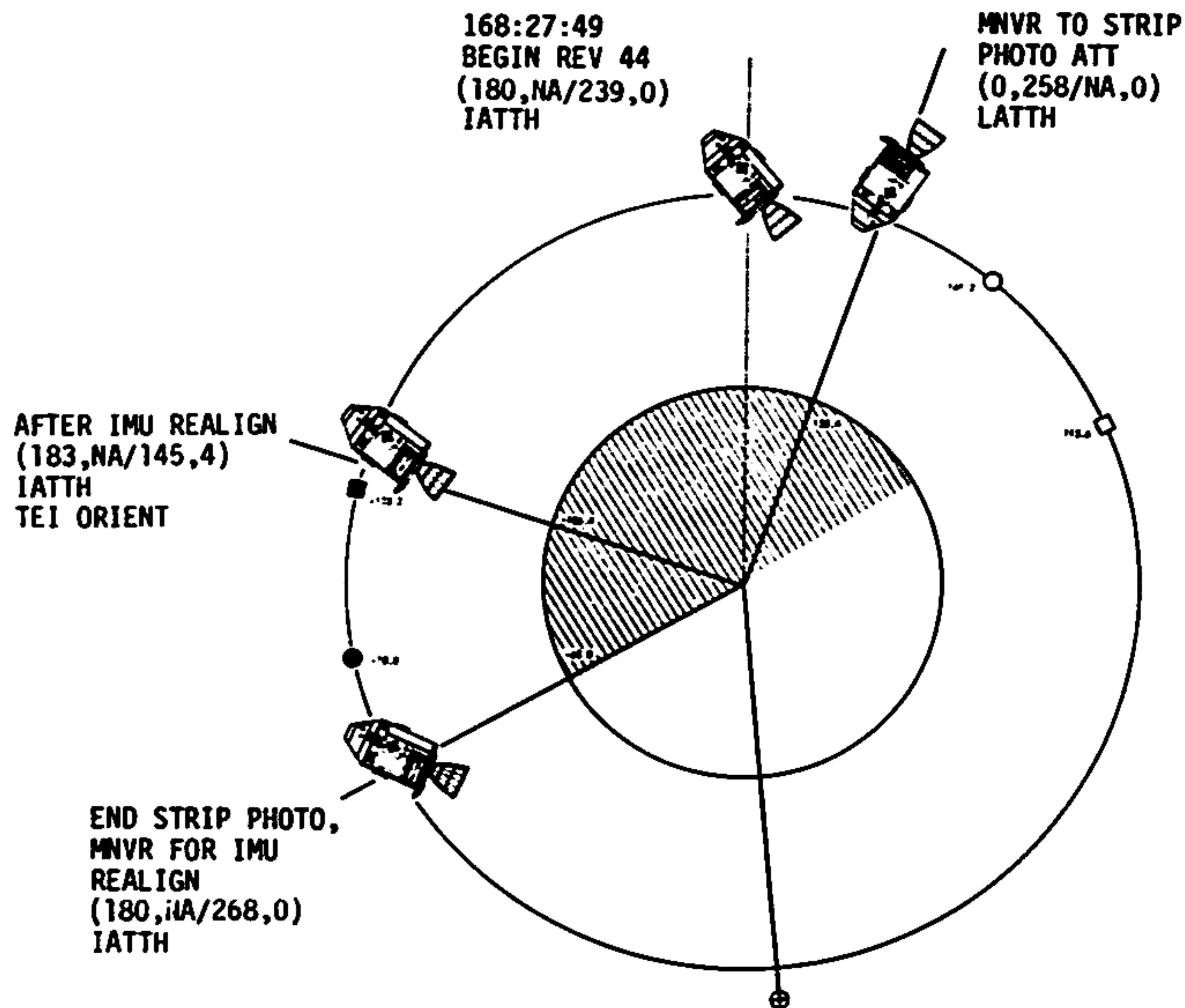
HGA:
P -29
Y 184

MAP UPDATE REV 44			
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

REV 44



3-151A

REVISION B

STEREO STRIP PHOTOGRAPHY

REV 44

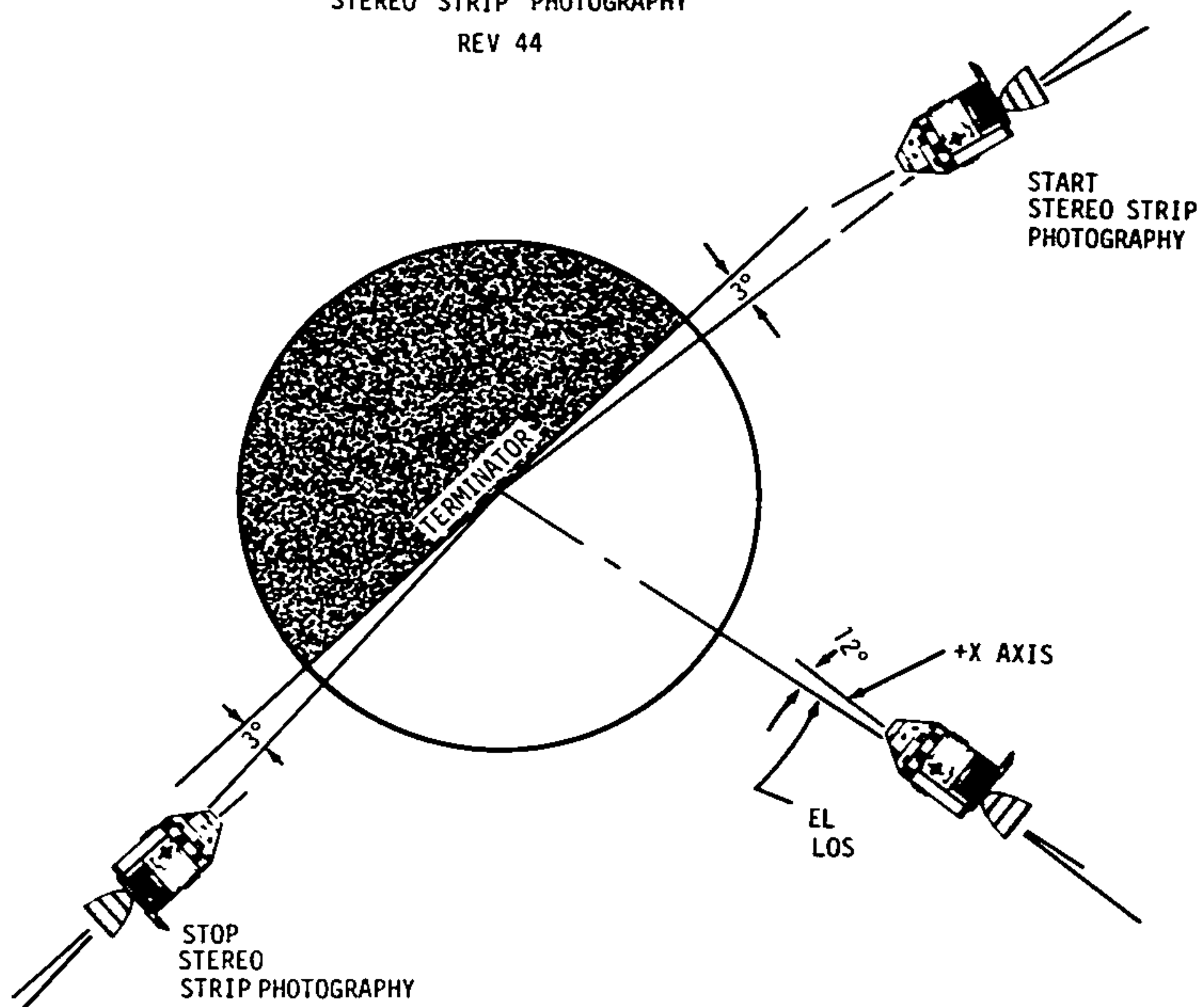


FIGURE 3-5
3-152

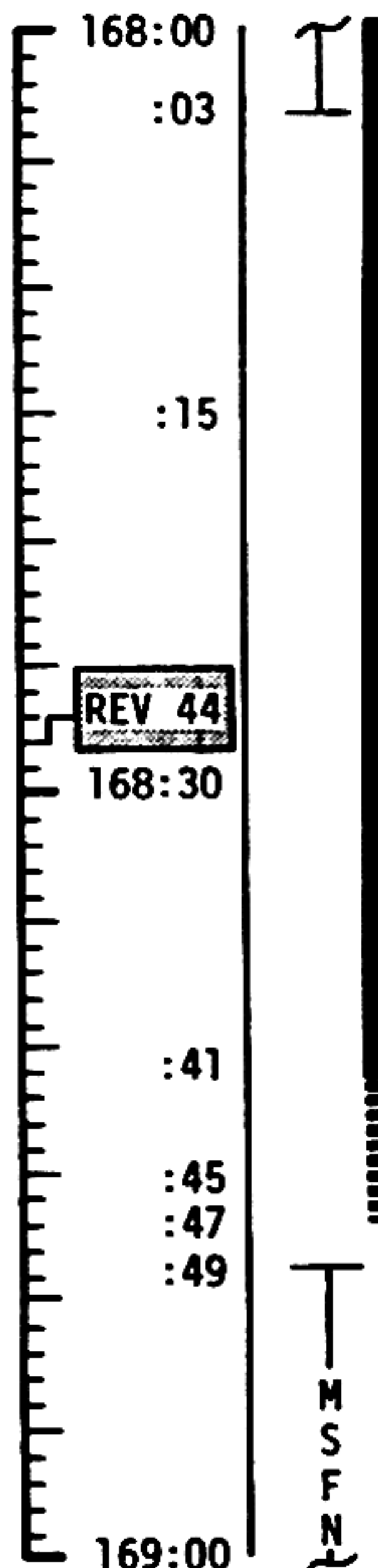
MCC-H

1022 CST

FLIGHT PLAN

NOTES

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



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

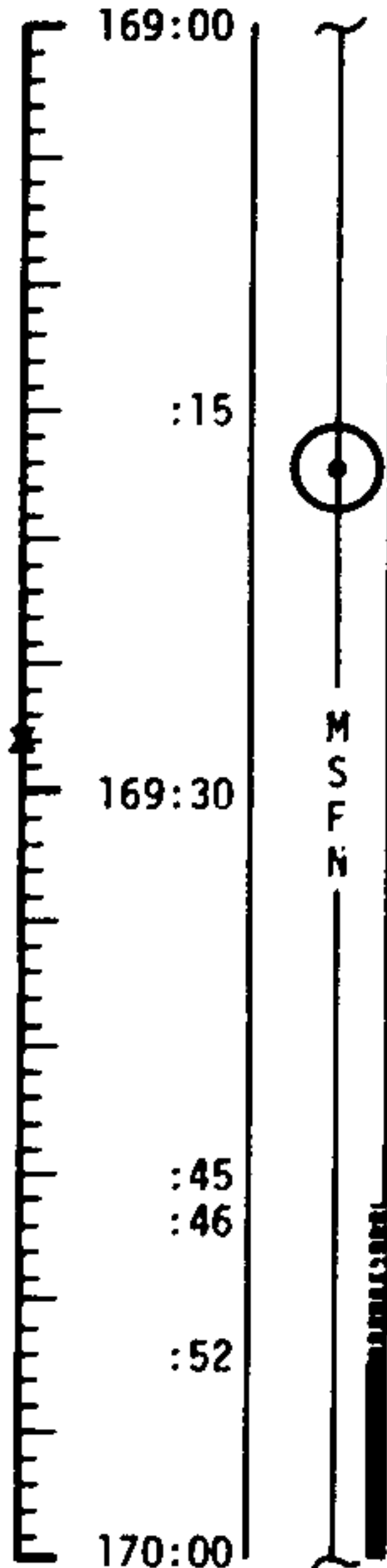
FLIGHT PLAN

NOTES

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

DUMP DSE

CSM
UPLINK TO ~~HH~~
TEI DESIRED
ORIENT



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

MAP UPDATE REV 45		
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

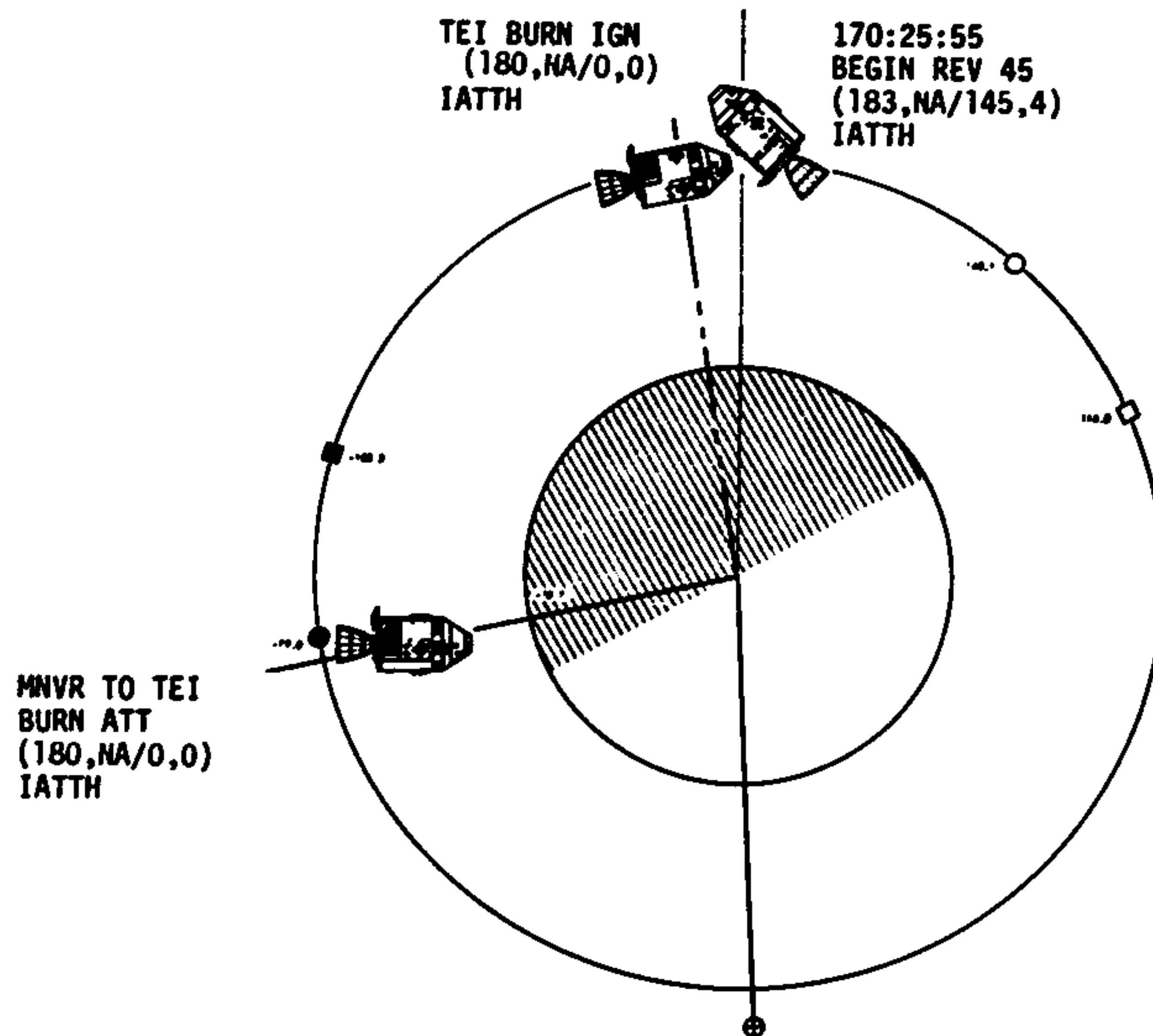
MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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REV 45



LEGEND:

☐	☒	MSFN AOS, LOS
<input type="circle"/>	<input checked="" type="circle"/>	S/C SUNRISE, SUNSET
<input checked="" type="circle"/>		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

170:00
:01
:15
:39
:45
:46
:48
171:00

REV 45

I

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN
OPTION 1 PREFERRED

GDC ALIGN TO IMU

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

M
S
F
N

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

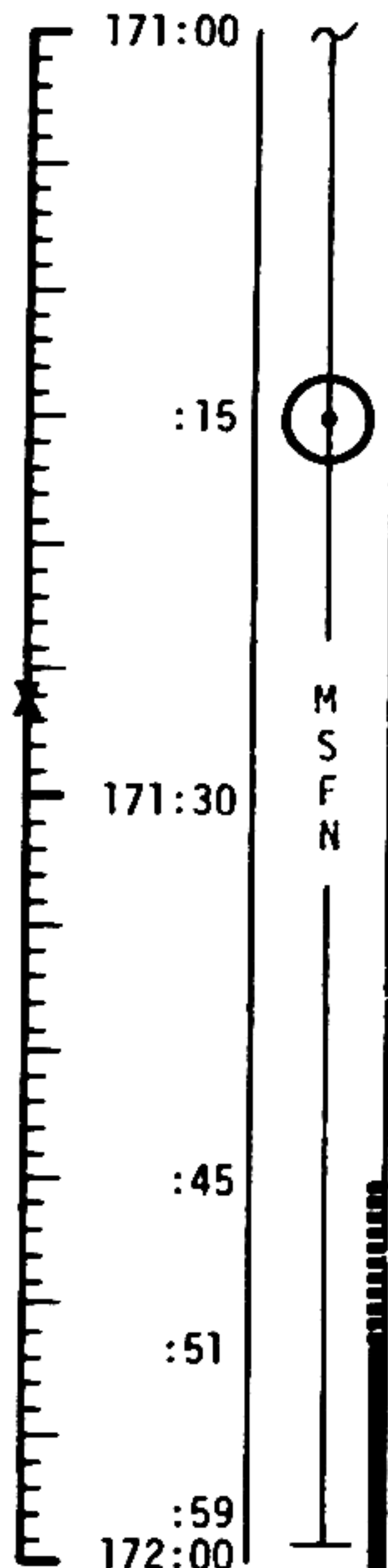
1322 CST

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

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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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 & $\Delta VC > +50$ FPS SWITCH TO SCS AUTO & RESTART SPS	BT + 2 SEC & $\Delta VC = -40$ 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

UPLINK TO CSM
DESIRED ORIENT
(PTC)M
S
F
N

173:00

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
 P 200
 P 4

HGA
 P -71
 Y 11

BURN STATUS REPORT

X	X		•	Δ TIG**
X	X		•	BT**
			•	V_{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V_{gx} ***
			•	V_{gy} ***
			•	V_{gz} ***
			•	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

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-H

1522 CST

FLIGHT PLAN

NOTES

173:00

:15

173:30

:45

174:00

M
S
F
H

WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL

P52 - IMU REALIGN
GYRO TORQUE

REPORT GYRO TORQUING ANGLES

MNVR TO PTC ATTITUDE
START PTC

P270
Y 0

EAT PERIOD

PTC
P 270 Y 0

P52 (PTC ORIENT)

N71: _ _ ' _ _

N05: _ _ _ ' _ _

N93:

X _ _ _ ' _ _

Y _ _ _ ' _ _

Z _ _ _ ' _ _

GET _ _ _ : _ _ _ :

DUMP DSE

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	173:00 - 174:00	7/TEC	3-159

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

MCC-H

1622 CST

FLIGHT PLAN

NOTES

174:00 :30 175:00 :30 176:00	M S F N	EAT PERIOD	PTC P 270 Y 0
		REST PERIOD (10 HOURS)	PRESLEEP CHECKLIST: CREW STATUS REPORT 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 _____ RC: A _____ B _____ C _____ D _____ DC IND SEL - MIA OR B	

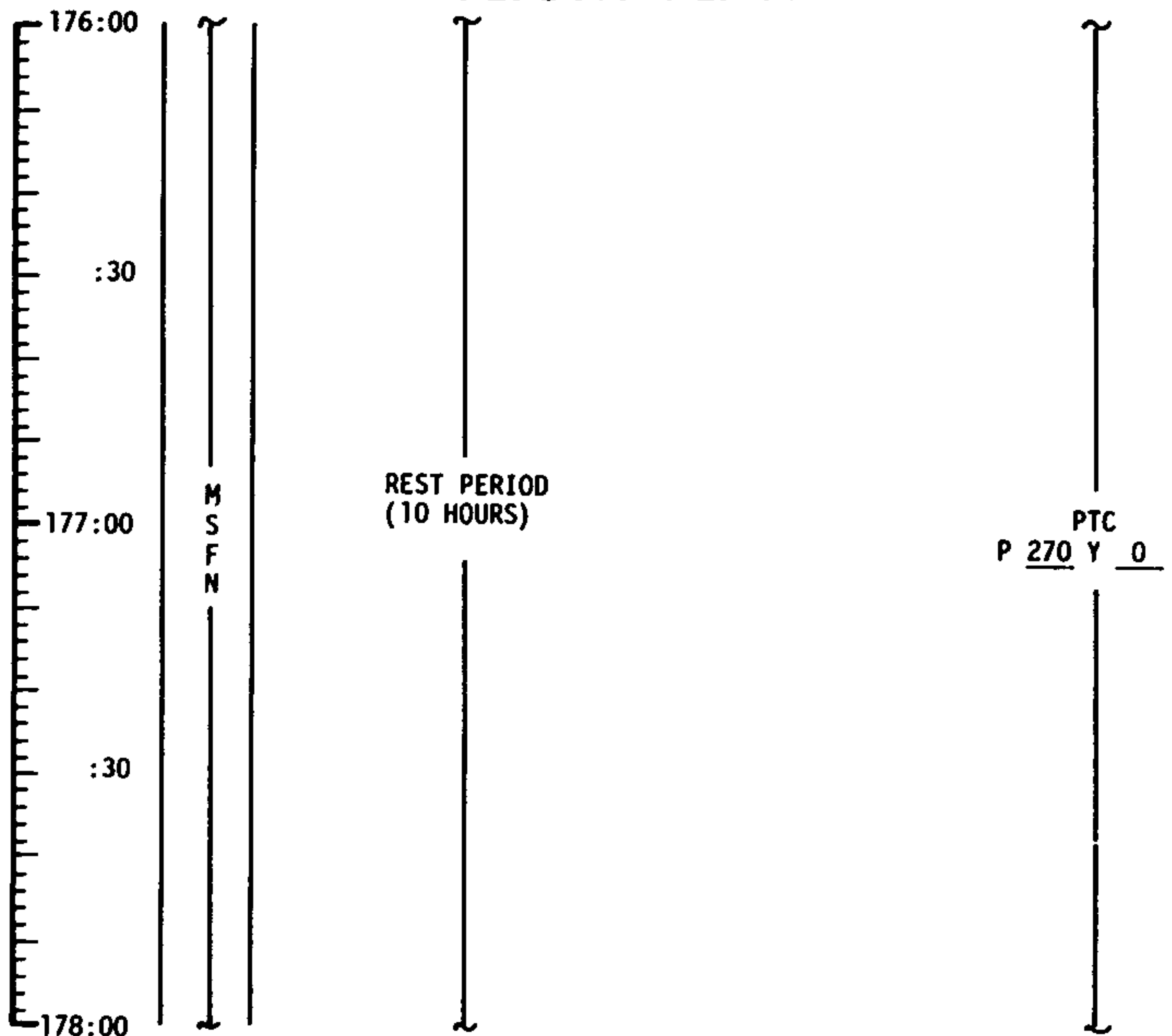
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	174:00 - 176:00	7/TEC	3-160

MCC-H

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

178:00			
:30			
179:00	M S F N	REST PERIOD (10 HOURS)	PTC P <u>270</u> Y <u>0</u>
:30			
180:00			

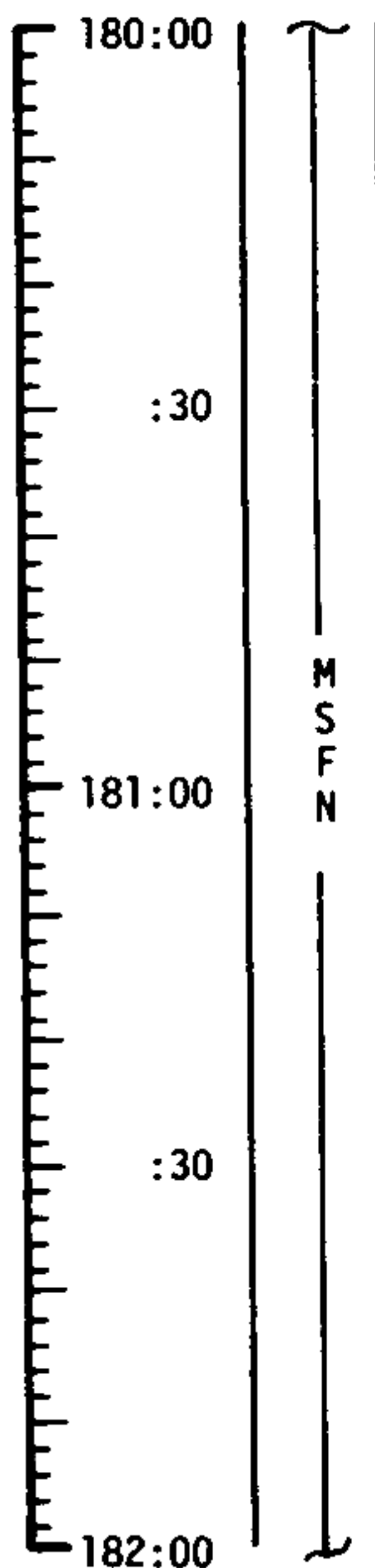
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	178:00 - 180:00	7/TEC	3-162

MCC-H

2222 CST

FLIGHT PLAN

NOTES



M
S
F
N

REST PERIOD
(10 HOURS)

PTC
P 270, Y 0

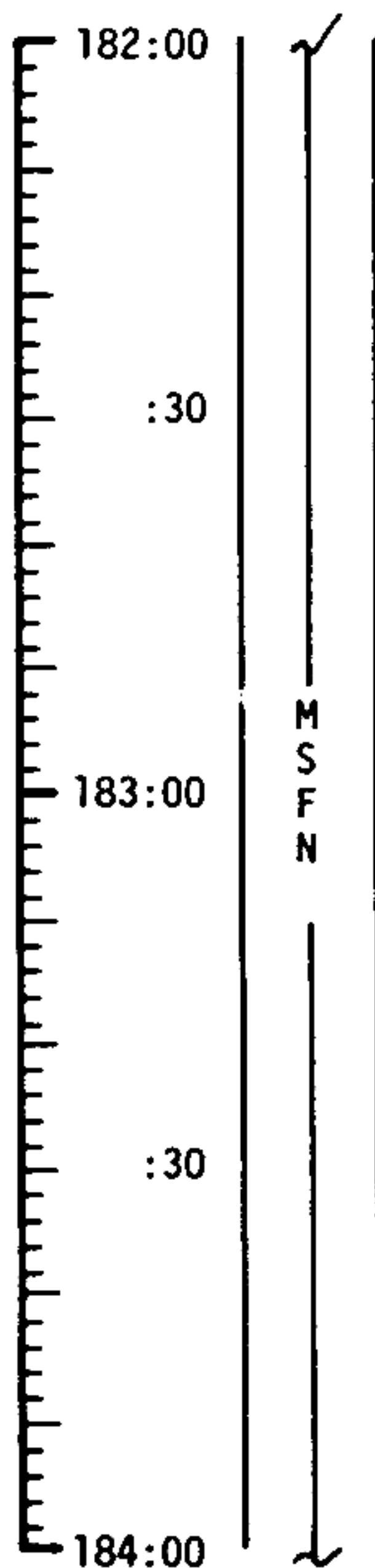
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	180:00 - 182:00	7/TEC	3-163

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

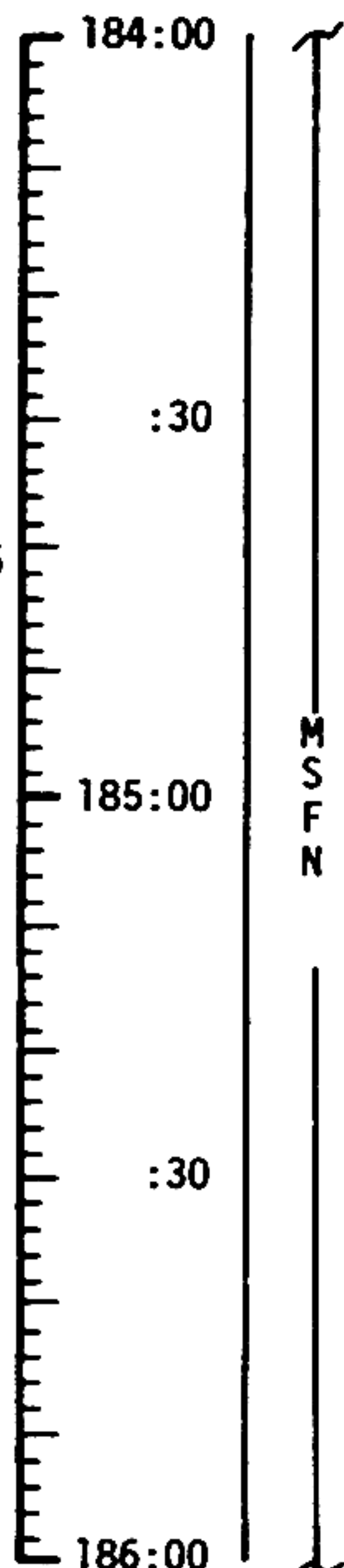
MCC-H

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



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

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	_____	_____	_____

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____ %

QUAD A _____ % B _____ %

C _____ % D _____ %

H₂ TOTAL _____ %

O₂ TOTAL _____ %

P52 (PTC ORIENT)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____ : _____

PTC
270, Y 0

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
3-100

MCC-H

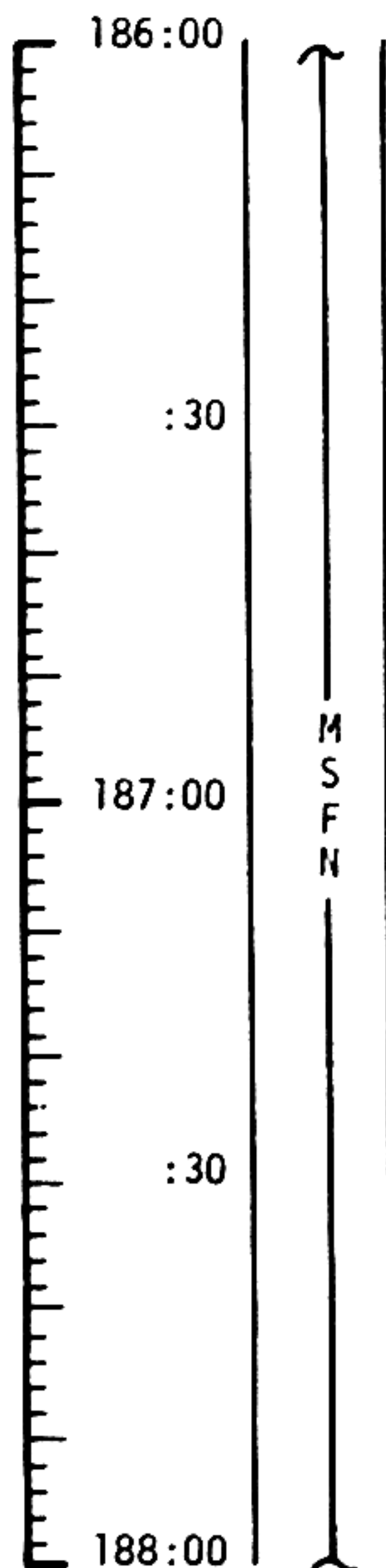
0422 CST

FLIGHT PLAN

NOTES

BATTERY CHARGE, BATTERY B

(TEI + 15 HRS)



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		•	ΔTIG
X	X		•	BT
			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		F
X	X	X		Y
			•	V _{gx}
			•	V _{gy}
			•	V _{gz}
			•	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

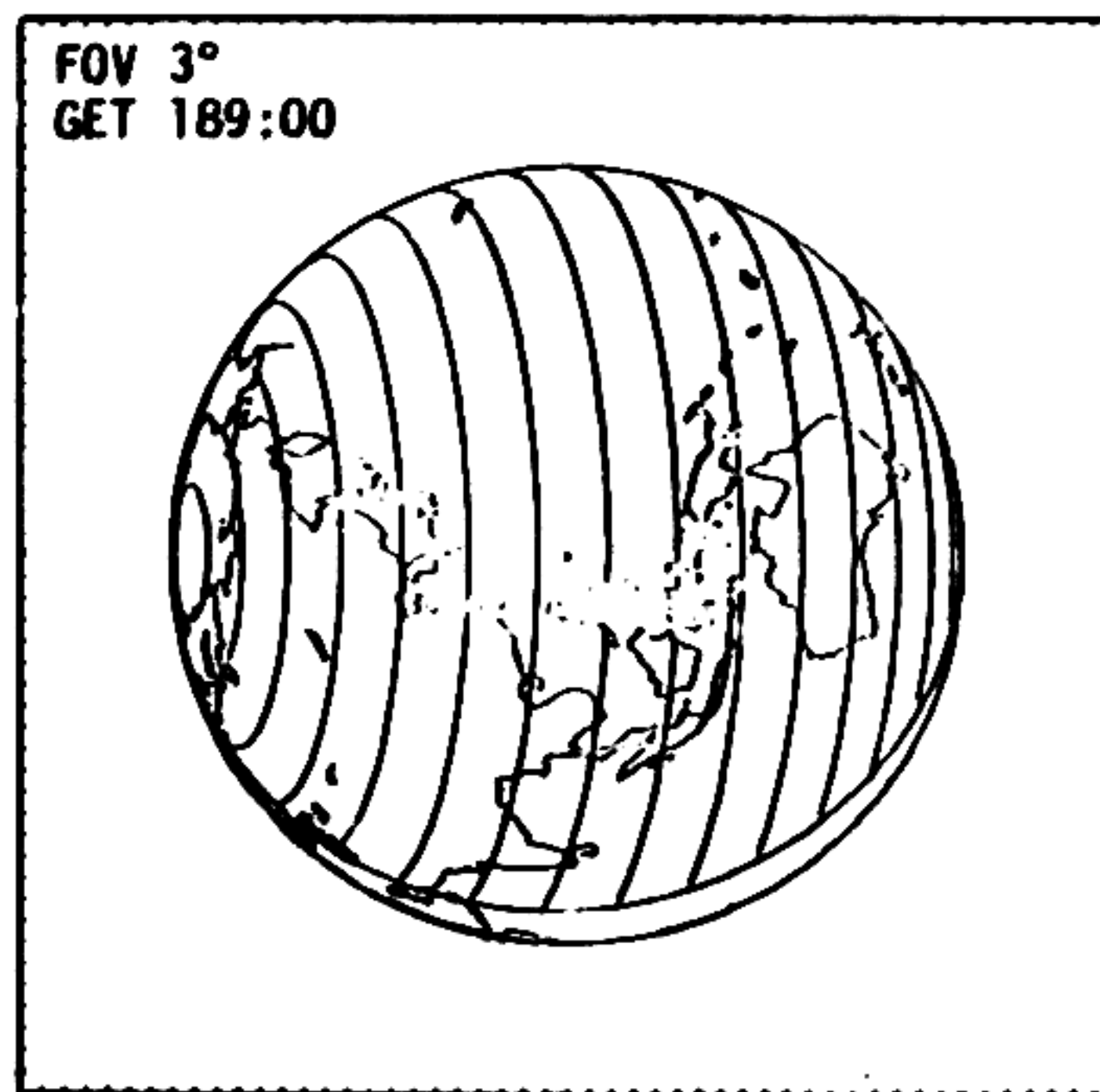
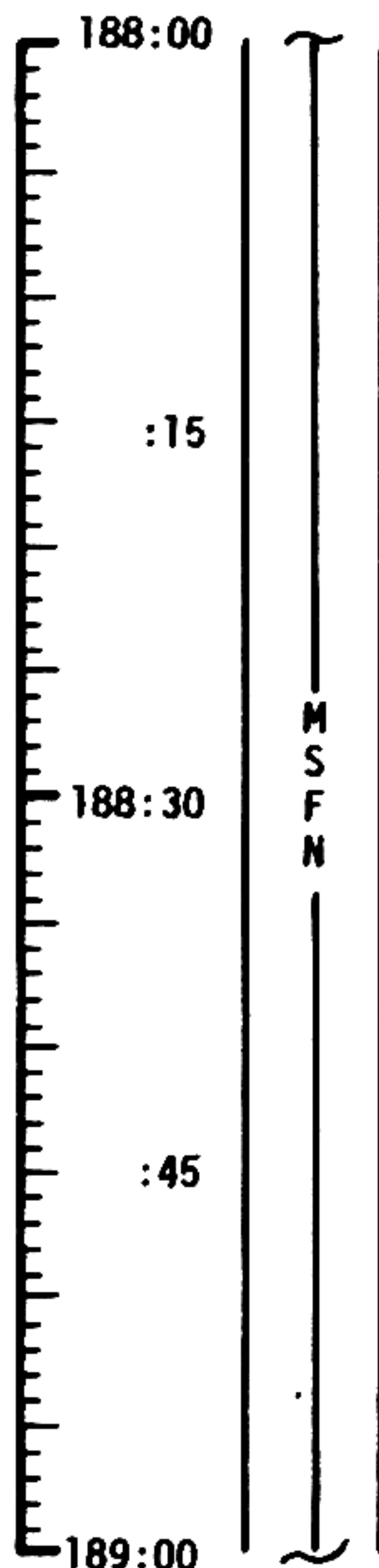
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	186:00 - 188:00	8/TEC	3-167

MCC-H

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-H

0722 CST

FLIGHT PLAN

NOTES

189:00

MNVR TO OPTICS CALIBRATION ATT

R 235

P23 - CISELUNAR 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 - CISELUNAR 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)

:15

189:30

M
S
F
N

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)

:45

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

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

190:00

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

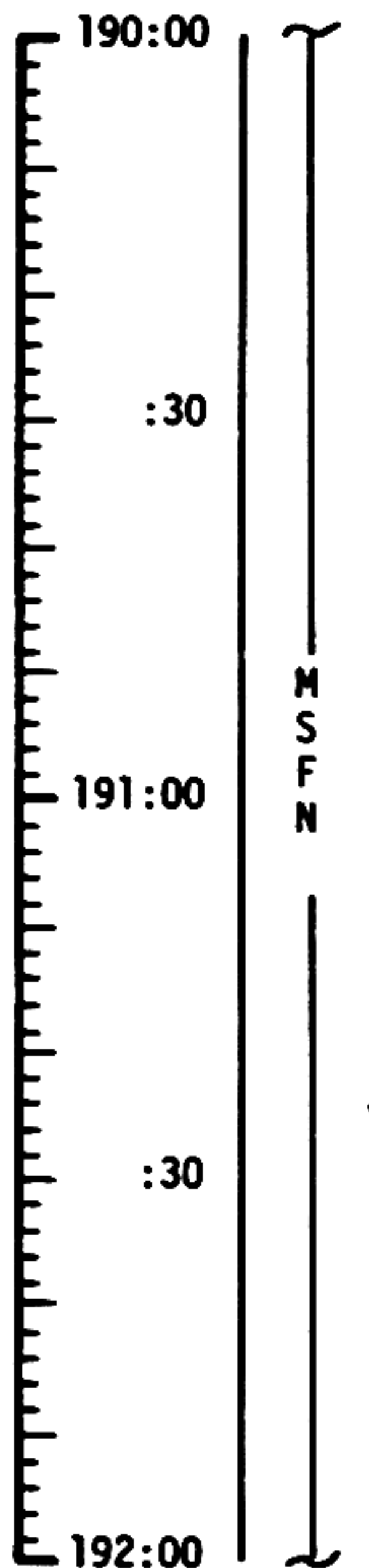
MCC-H

0822 CST

FLIGHT PLAN

NOTES

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



M
S
F
N

START PTC

EAT PERIOD

PTC
P 270, Y 0

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

NSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

1022 CST

FLIGHT PLAN

10115

192:00

:30

193:00

:30

194:00

M
S
F
H

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-EC	3-171

10115-03 (Nov 69)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

197.00

: 1'

104:30

45

100

**M
S
P
L**

FOV 3°
GET 195:00



Article 10 of the 1994 Constitution

P 270, Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
W-120-12	12-1 (12-1)	OCTOBER 15, 1969	194:00 - 195:00	8/TEC	3-147

FLIGHT PLANNING SECTION

MCC-H

1322 CST

FLIGHT PLAN

NOTES

195:00	M S F N	MNVR TO OPTICS CALIBRATION ATT P23 - CISELUNAR NAVIGATION OPTICS CALIBRATION STAR <u>1 2</u> P00 V49 - MNVR TO SIGHTING ATT STAR/EARTH HORIZON P23 - CISELUNAR NAVIGATION 1. VENUS ENH (R3 = 0 0 1 1 0) N88: (R1 = - <u>7</u> <u>0</u> <u>4</u> <u>9</u> <u>6</u>)(R2 = - <u>6</u> <u>5</u> <u>8</u> <u>7</u> <u>4</u>)(R3 = - <u>2</u> <u>6</u> <u>2</u> <u>9</u> <u>2</u>) DO NOT PROCEED ON F 06 49 2. STAR <u>2 6</u> EFH (R3 = 0 0 1 2 0)	R <u>235</u> P <u>272</u> Y <u>0</u> R <u>90</u> P <u>329</u> Y <u>332</u>
:15			
195:30		3. STAR <u>1 6 0</u> EFH (R3 = 0 0 1 2 0) N88: (R1 = - <u>9</u> <u>4</u> <u>7</u> <u>0</u> <u>3</u>)(R2 = - <u>2</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u>)(R3 = + <u>1</u> <u>9</u> <u>2</u> <u>8</u> <u>6</u>) 4. STAR <u>1 7 1</u> ENH (R3 = 0 0 1 1 0) N88: (R1 = - <u>5</u> <u>2</u> <u>4</u> <u>7</u> <u>3</u>)(R2 = - <u>5</u> <u>0</u> <u>9</u> <u>2</u> <u>0</u>)(R3 = - <u>6</u> <u>8</u> <u>2</u> <u>1</u> <u>8</u>)	
:45		5. STAR <u>1 6 3</u> EFH (R3 = 0 0 1 2 0) N88: (R1 = - <u>8</u> <u>3</u> <u>4</u> <u>6</u> <u>4</u>)(R2 = - <u>4</u> <u>4</u> <u>9</u> <u>6</u> <u>6</u>)(R3 = + <u>3</u> <u>1</u> <u>8</u> <u>0</u> <u>9</u>) 6. STAR <u>2 0 4</u> ENH (R3 = 0 0 1 1 0) N88: (R1 = - <u>2</u> <u>1</u> <u>3</u> <u>8</u> <u>9</u>)(R2 = - <u>9</u> <u>3</u> <u>8</u> <u>6</u> <u>8</u>)(R3 = - <u>2</u> <u>7</u> <u>0</u> <u>4</u> <u>2</u>)	
196:00			

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)

196:00
:30
197:00
:30
198:00

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)

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

PTC
P 270, 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	196:00 - 198:00	8/TEC	3-174

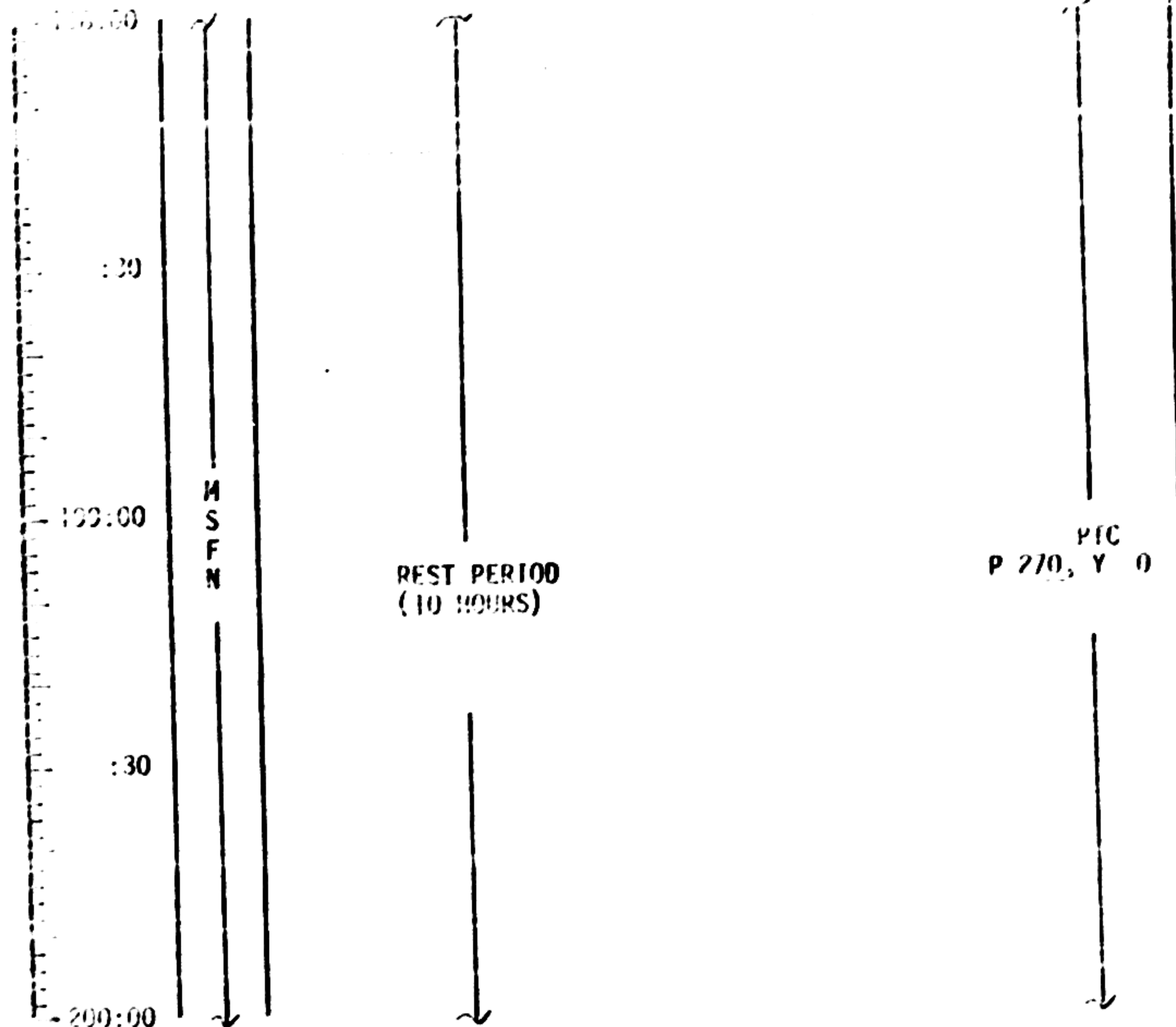
NSC Form 20 (May 69)

FLIGHT PLANNING BRANCH

1872 CST

FLIGHT PLAN

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
0110 12	FINAL (NOV 14)	OCTOBER 15, 1969	198:00 - 200:00	8/11C	3-175

MACC-11

1827 (EST)

FLIGHT PLAN

NOTES

200:00

201:00

202:00

203:00

204:00

205:00

206:00

207:00

208:00

209:00

210:00

211:00

212:00

213:00

214:00

215:00

216:00

217:00

218:00

219:00

220:00

221:00

222:00

223:00

224:00

225:00

226:00

227:00

228:00

229:00

230:00

231:00

232:00

233:00

234:00

235:00

236:00

237:00

238:00

239:00

240:00

241:00

242:00

243:00

244:00

245:00

246:00

247:00

248:00

249:00

250:00

251:00

252:00

253:00

254:00

255:00

256:00

257:00

258:00

259:00

260:00

261:00

262:00

263:00

264:00

265:00

266:00

267:00

268:00

269:00

270:00

271:00

272:00

273:00

274:00

275:00

276:00

277:00

278:00

279:00

280:00

281:00

282:00

283:00

284:00

285:00

286:00

287:00

288:00

289:00

290:00

291:00

292:00

293:00

294:00

295:00

296:00

297:00

298:00

299:00

300:00

REST PERIOD
(10 HOURS)

PIC
P 270, Y 0

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
MACC-11	1827 (EST)	OCTOBER 15, 1969	200:00 - 202:00	8/TEC	3/10

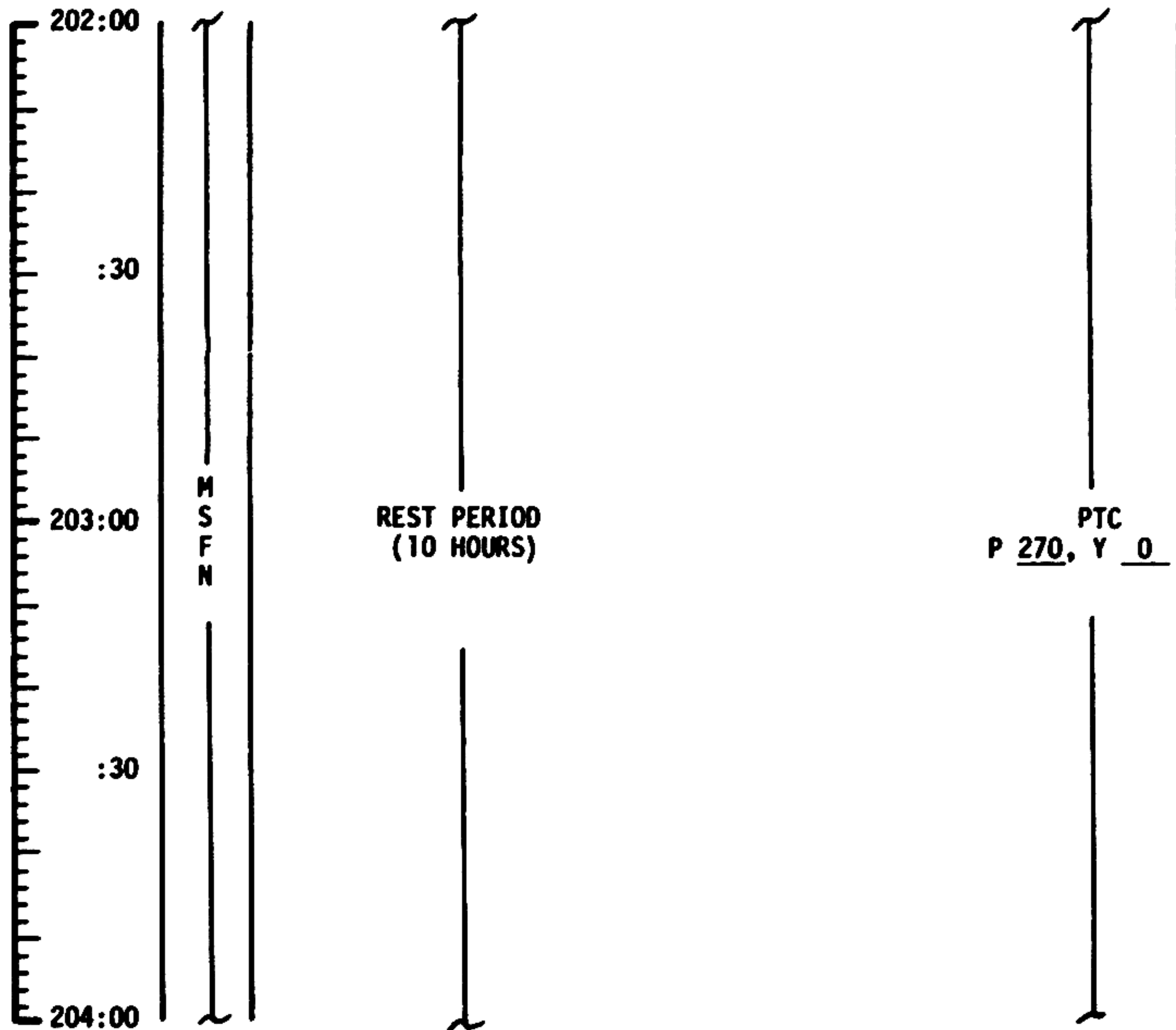
FLIGHT PLANNING BRANCH

MCC-M

2022 CST

FLIGHT PLAN

NOTES



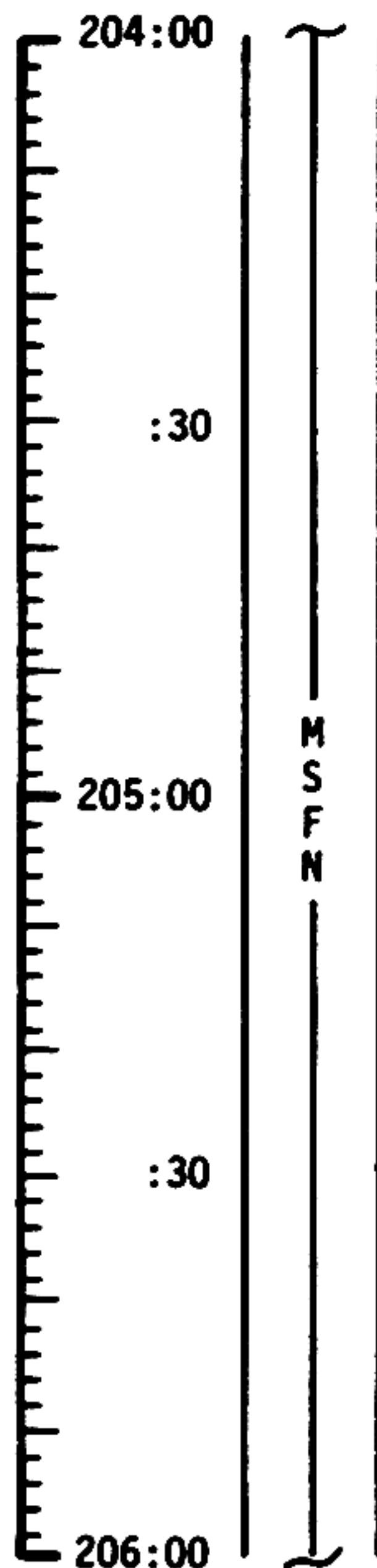
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	202:00 - 204:00	8/TEC	3-177

MCC-H

2222 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270, Y 0

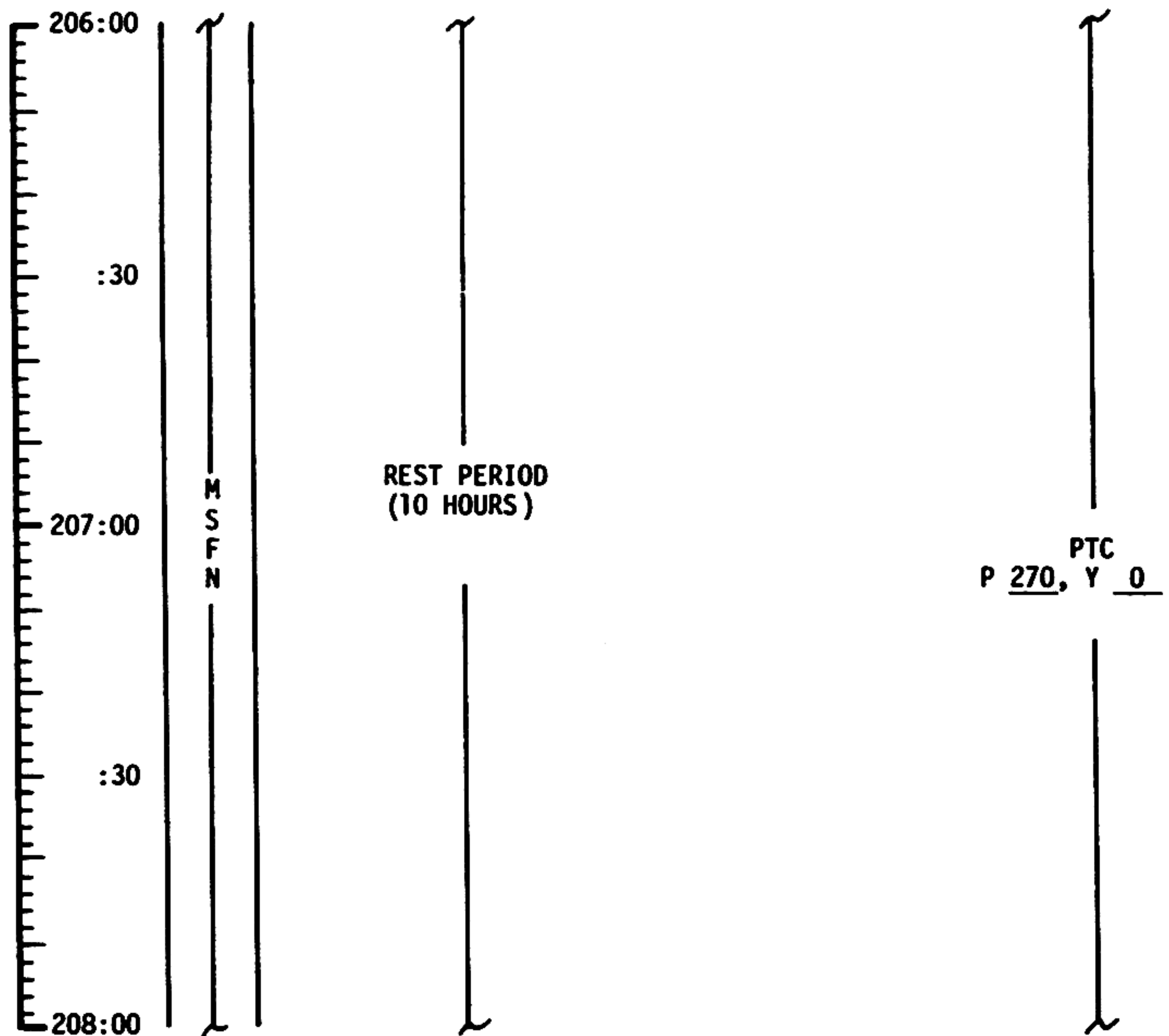
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	204:00 - 206:00	8/TEC	3-178

MCC-H

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-H

0222 CST

FLIGHT PLAN

NOTES

UPDATE TO CSM

CONSUMABLES
FLIGHT PLAN

UPLINK TO CSM

STATE VECTOR & V66

208:00

:30

209:00

:30

210:00

M
S
F
N

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

EAT PERIOD

EMS ENTRY CHECK

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	CMF	LMP
SLEEP	_____	_____	_____
PRD	_____	_____	_____

 PTC
P 270, Y 0

CSM CONSUMABLES UPDATE

GET: _____:_____

RCS TOTAL _____%

QUAD A _____% B _____%

C _____% D _____%

H₂ TOTAL _____%

O₂ TOTAL _____%

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

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

G.E.T.**REMARKS**

FLIGHT PLAN

DATE 10/5/69

LIGHT FLASH
& RADIO LOG

REMARKS

[illegible]

DATE 10/5/69

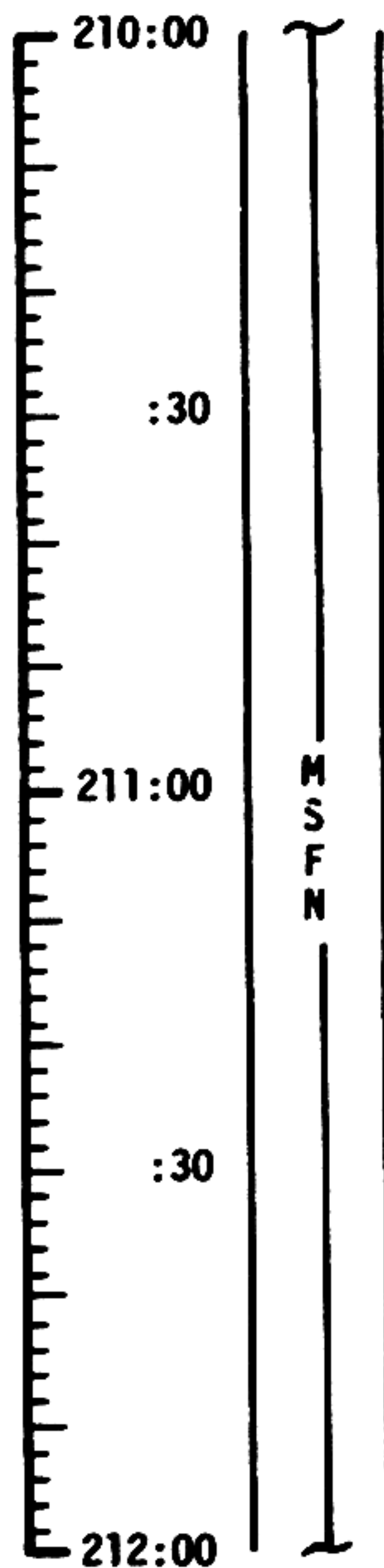
LIGHT FLASH: & RADIO LOG

MCC-H

0422 CST

FLIGHT PLAN

NOTES



P52-IMU REALIGN
OPTION 3 REFSMMAT
(OPTIONAL)

REPORT GYRO TORQUING ANGLES

P52 (PTC ORIENT)

N71: _ _ _ , _ _ _

N05: _ _ _ . _ _ _

N93: _ _ _ . _ _ _

X _ _ _ . _ _ _

Y _ _ _ . _ _ _

Z _ _ _ . _ _ _

GET _ _ _ : _ _ _ : _ _ _

PTC
P 270, Y 0

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

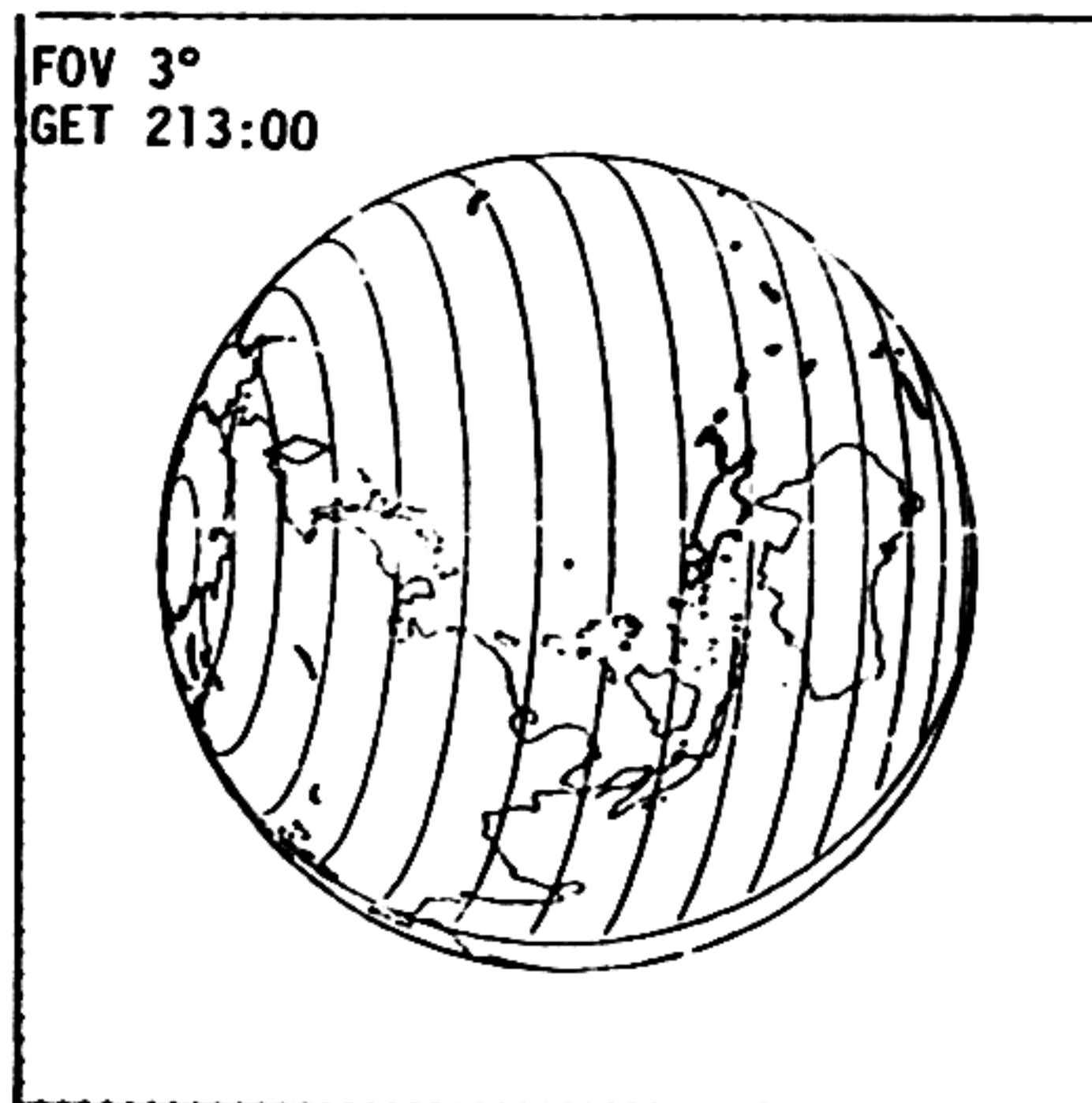
:15

212:30

:45

213:00

M
S
F
N



STOP PTC AT ROLL 235°

PTC

P 270, Y 0

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

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

R 235
 P 272
 Y 0

P00

V49 - MNVR TO SIGHTING ATT
 STAR/EARTH HORIZON

R 90
 P 155 99
 Y 328 327

P23 - CISELUNAR NAVIGATION

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

:15

M
S
F
N

213:30

:45

214:00

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

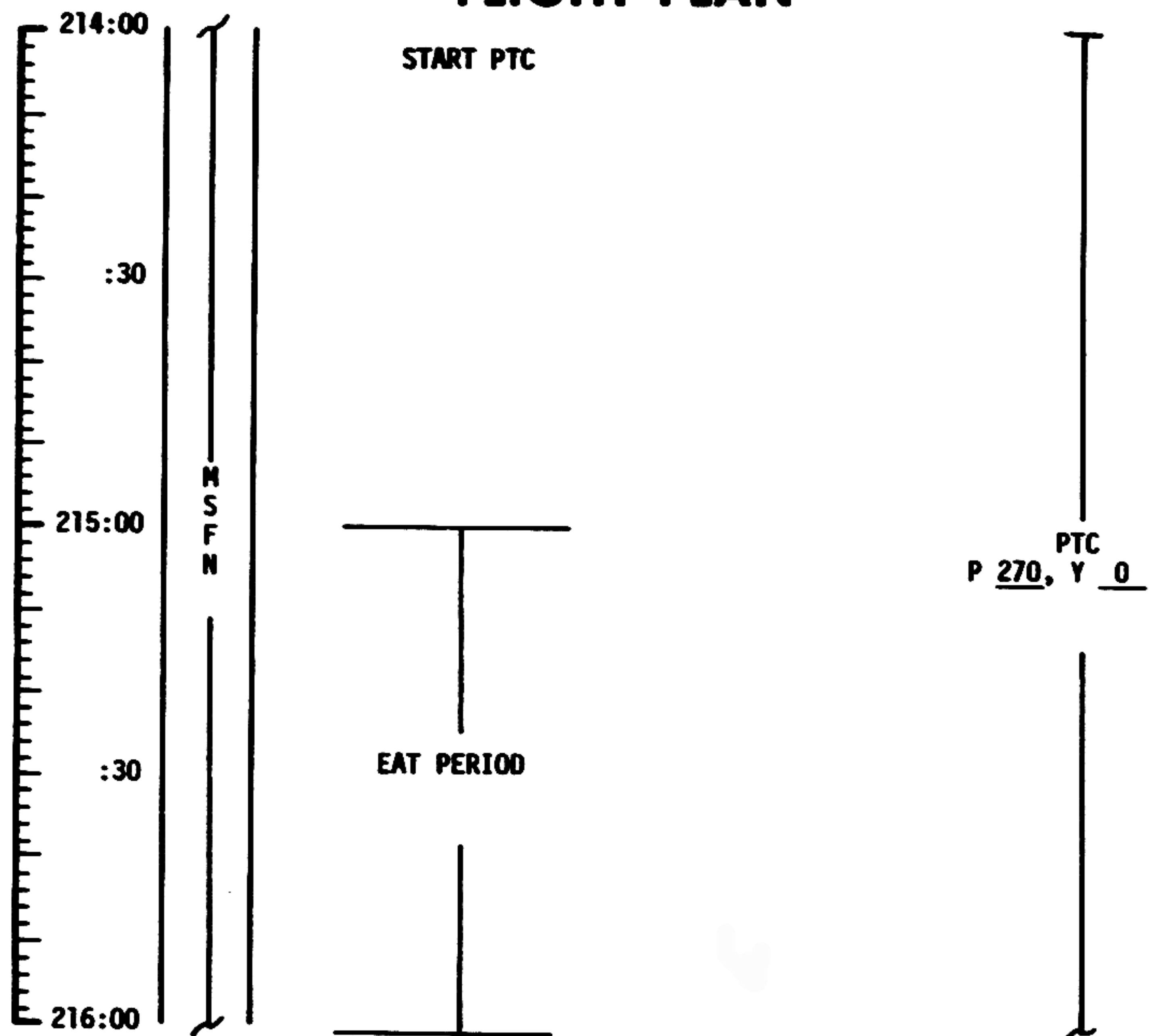
MCC-N

0822 CST

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

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-H

1022 CST

FLIGHT PLAN

NOTES

216:00

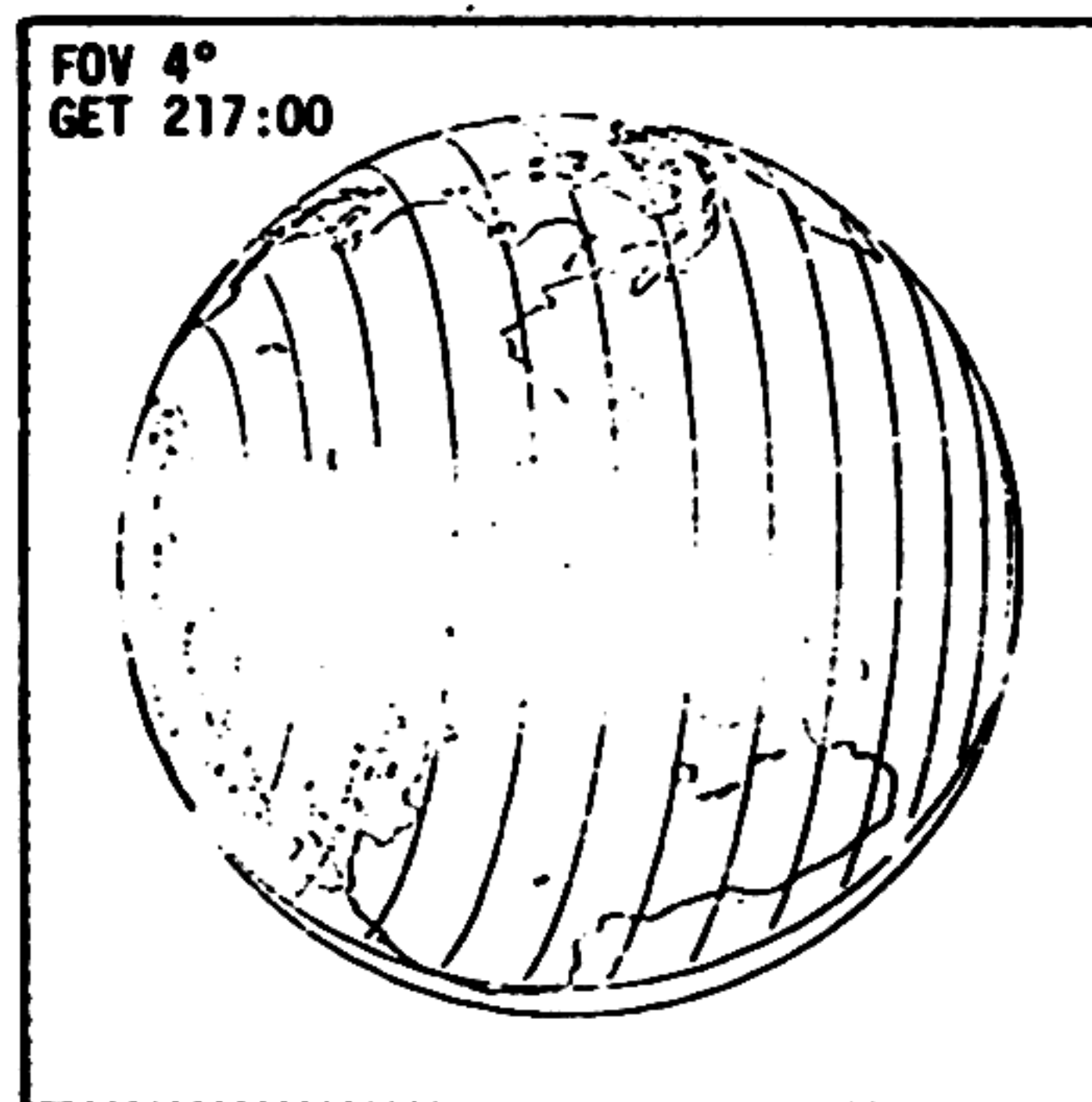
:15

216:30

:45

217:00

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	216:00 - 217:00	9/TEC	3-185

MCC-H

1122 CST

FLIGHT PLAN

NOTES

217:00	M S F N	MNVR TO OPTICS CALIBRATION ATT	R 235
		P23 - CISELUNAR NAVIGATION	P 272
:15		OPTICS CALIBRATION	Y 0
		STAR 1 2	
		P00	
		V49 - MNVR TO SIGHTING ATT	R 90
		STAR/EARTH HORIZON	P 135 180
		P23 - CISELUNAR NAVIGATION	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)	
217:30		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)	
:45		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)	
218:00			

3 MARKS ON EACH STAR

INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

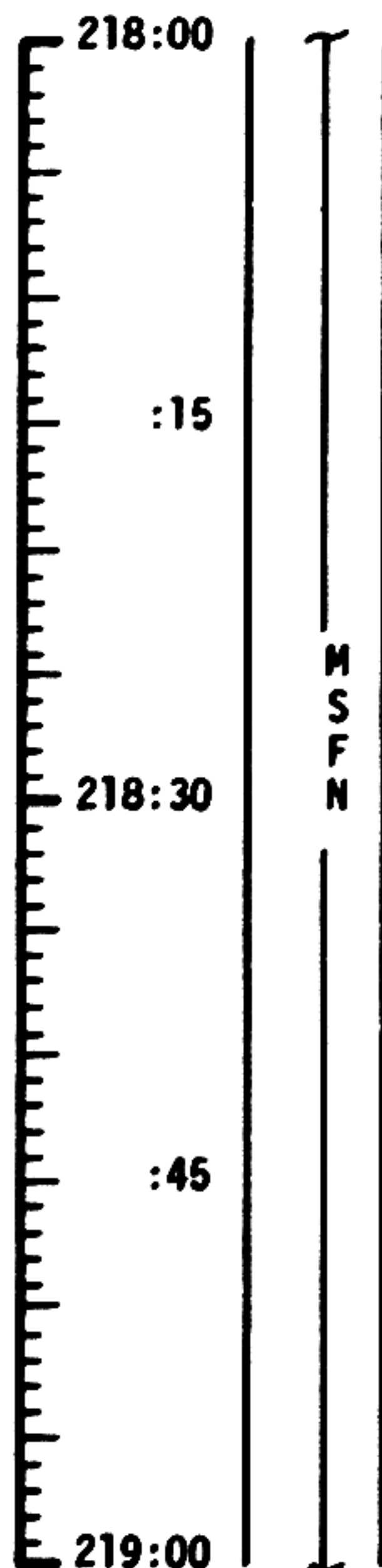
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	217:00 - 218:00	9/TEC	3-186

MCC-N

1222 CST

FLIGHT PLAN

NOTES



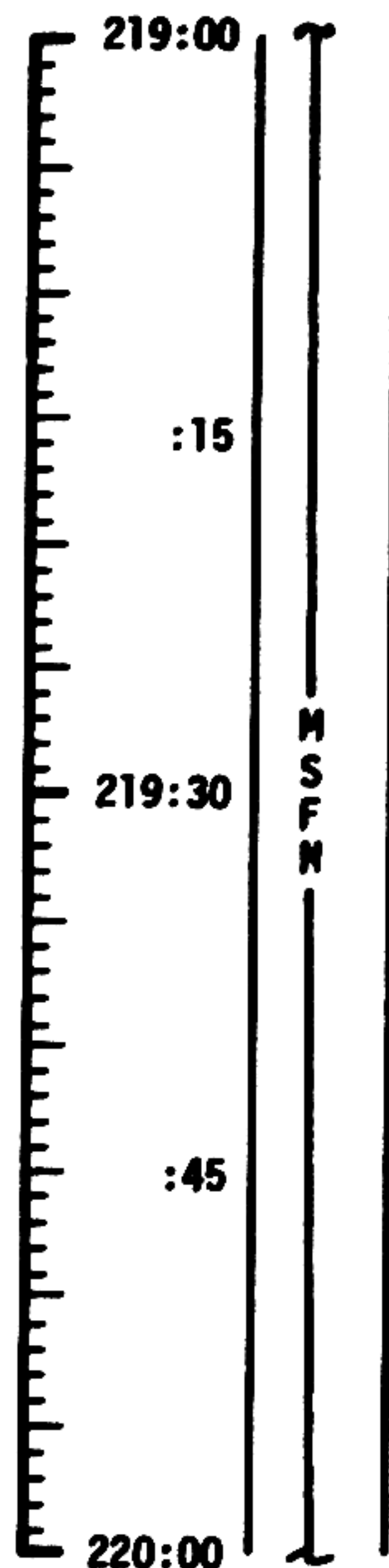
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	218:00 - 219:00	9/TEC	3-186A

MCC-N

1322 CST

FLIGHT PLAN

NOTES



FOV 4°
GET 220:00



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-H

1422 CST

FLIGHT PLAN

NOTES

220:00	↑	MNVR TO OPTICS CALIBRATION ATT	R 235
		P23 - CISELUNAR NAVIGATION	P 272
		OPTICS CALIBRATION	Y 0
		STAR 1 2	
		P00	
		V49 - MNVR TO SIGHTING ATT	R 90
:15		STAR/EARTH HORIZON	P 118 137
		P23 - CISELUNAR NAVIGATION	Y 338 329
		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)	
220:30		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)	
:45		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)	
221:00	↓		

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	220:00 - 221:00	9/TEC	3-188

MCC-H

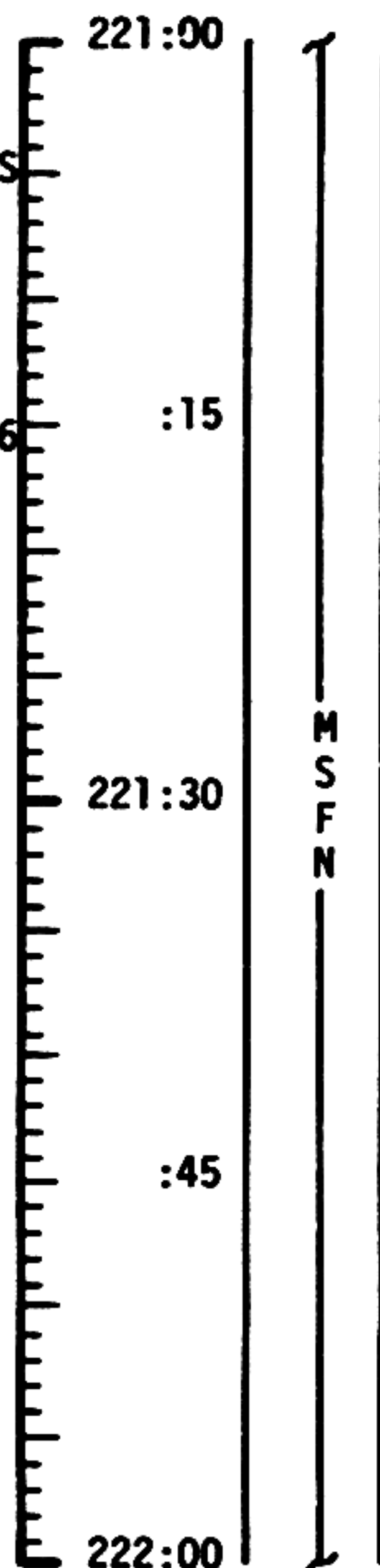
1522 CST

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

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

P

Y

HGA

P

Y

TIG: 222:21:47.5
 ΔV : NOMINALLY ZERO

BURN STATUS REPORT

X	X		•	ΔTIG	
X	X		•		BT
			•		
TRIM					
X	X	X		R	
X	X	X		P	
X	X	X		Y	
			•	V _{gx}	
			•	V _{gy}	
			•	V _{gz}	
			•	ΔV_c *	
X	X	X		FUEL *	
X	X	X		OX *	
X	X	X		UNBAL	

*ITEMS TO BE
REPORTED TO MSFNTV (GDS) 223:15-223:45
CM 4/TV-IN (f5.6/f22)

EAT PERIOD

:30

224:00

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

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

MCC-N

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

1822 CST

FLIGHT PLAN

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

PTC
P 270 Y 0

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	

224:00

:30

225:00

:30

226:00

MSFN

REST PERIOD
(10 HOURS)

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
 ENER 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

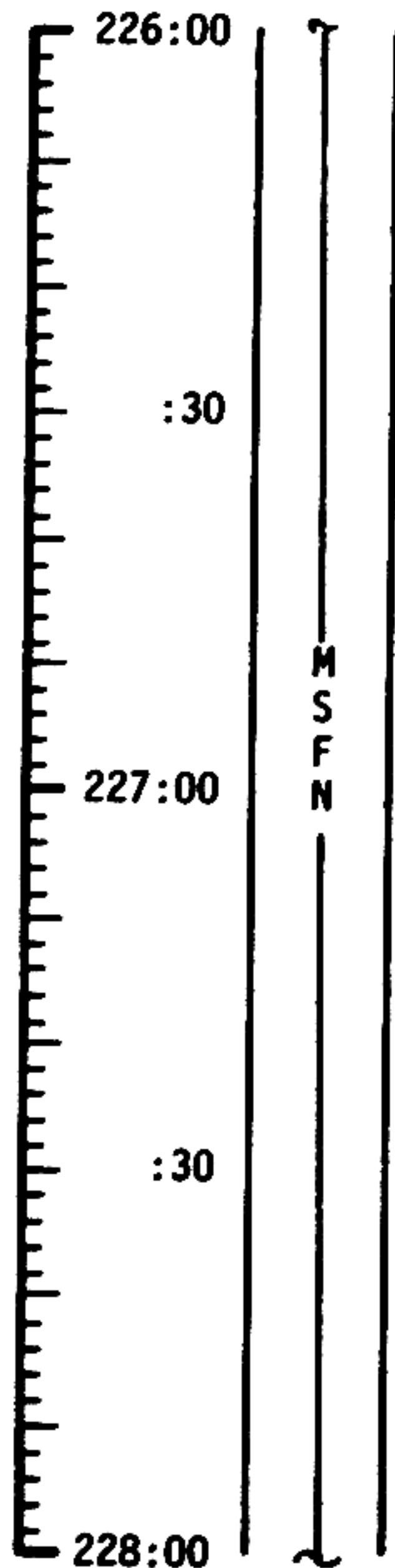
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	224:00 - 226:00	9/TEC	3-192

MCC-H

2022 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

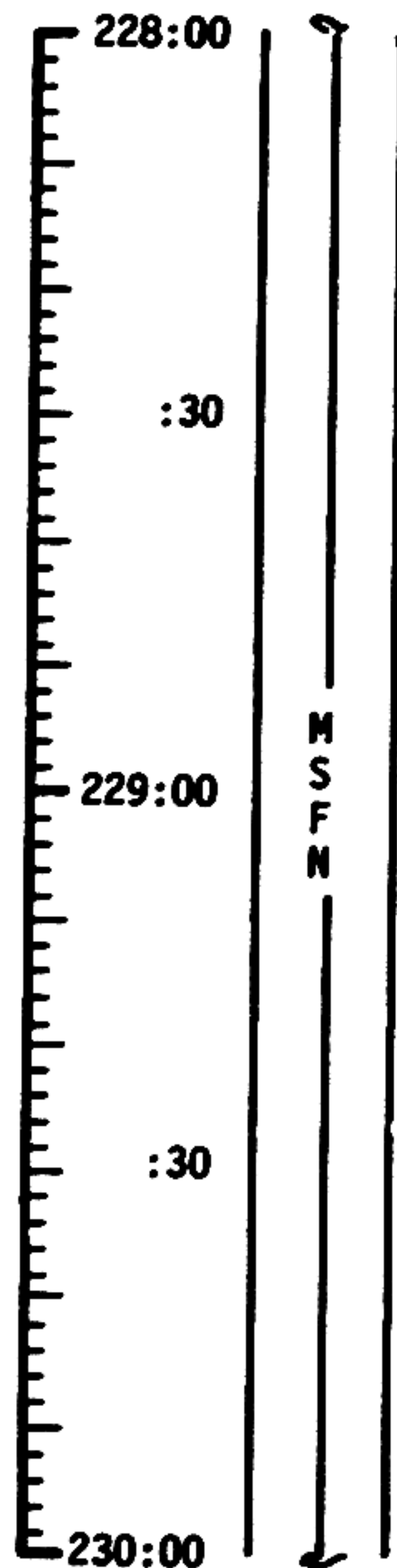
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	-FINAL (NOV 14)	OCTOBER 15, 1969	226:00 - 228:00	9/TEC	3-193

MCC-N

2222 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

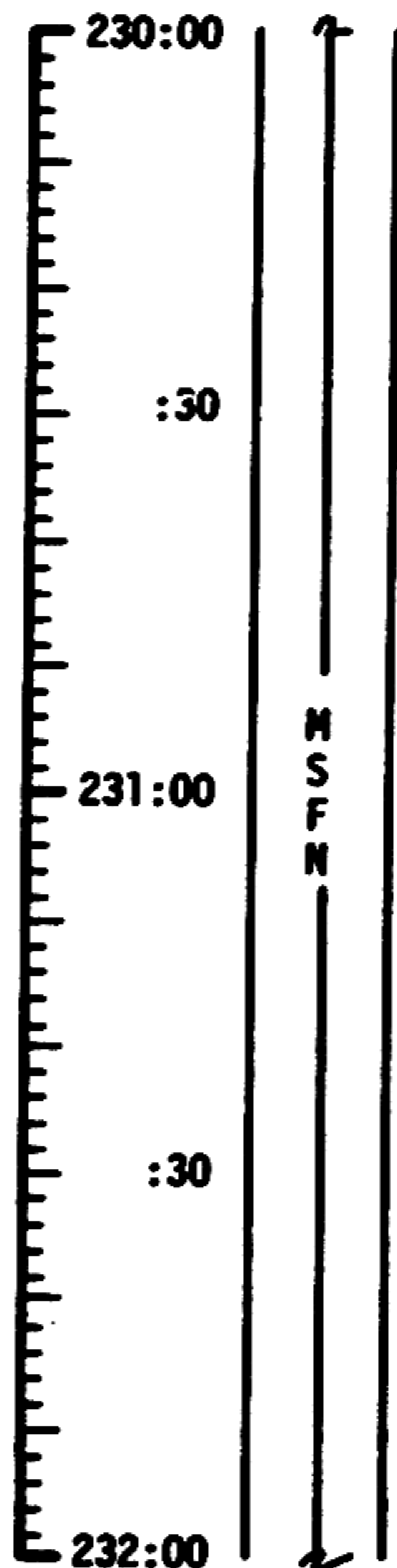
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NOV 14)	OCTOBER 15, 1969	228:00 - 230:00	9/TEC	3-194

MCC-N

0022 CST

FLIGHT PLAN

NOTES



REST PERIOD
(10 HOURS)

PTC
P 270 Y 0

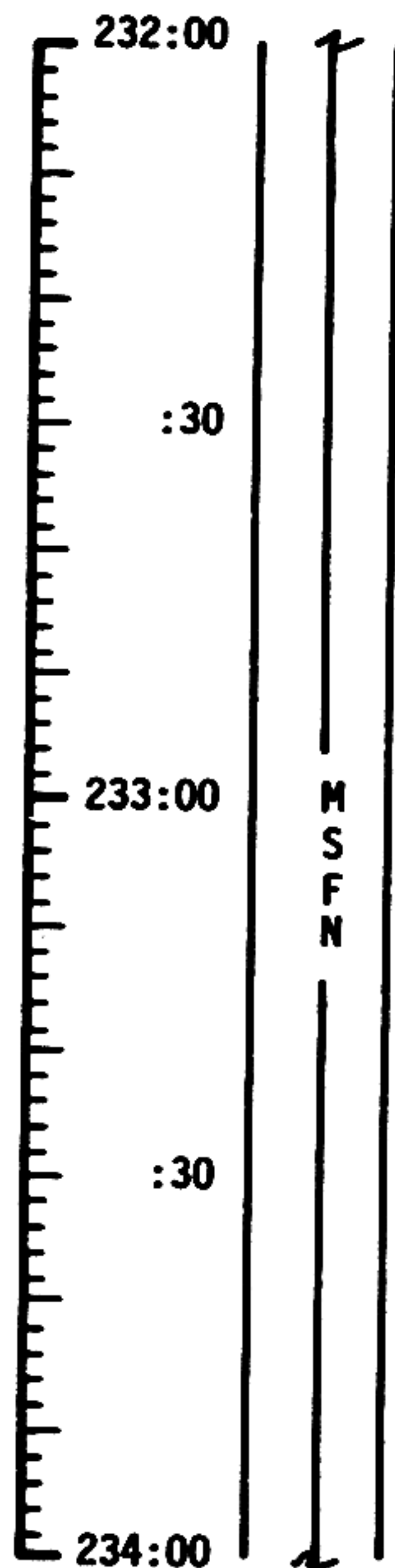
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	FINAL (NGV 14)	OCTOBER 15, 1969	230:00 - 232:00	9/TEC	3-195

MCC-H

0222 CST

FLIGHT PLAN

NOTES



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)

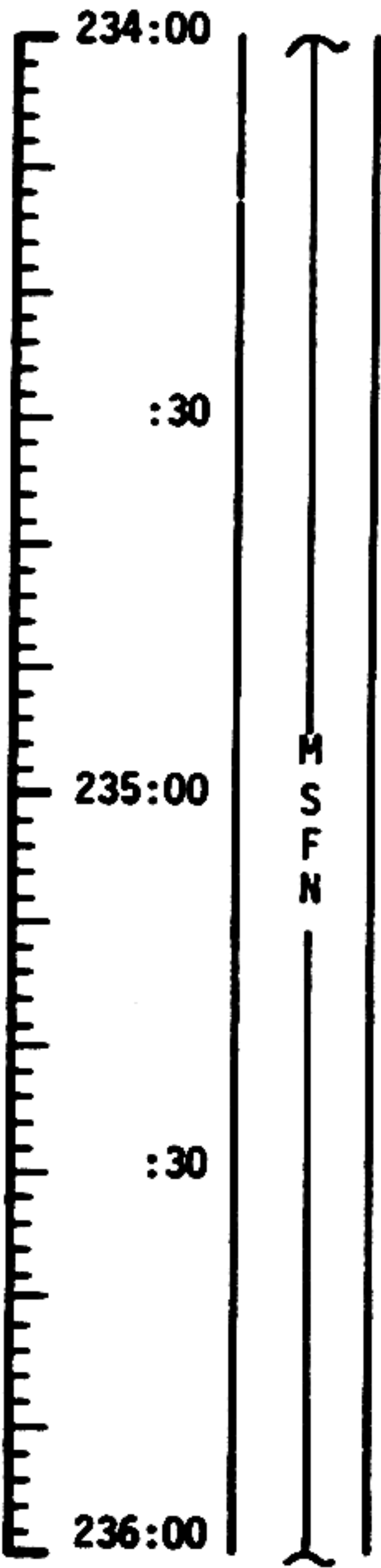
FLIGHT PLANNING BRANCH

MCC-H

0422 CST

FLIGHT PLAN

NOTES



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

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

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

PTC

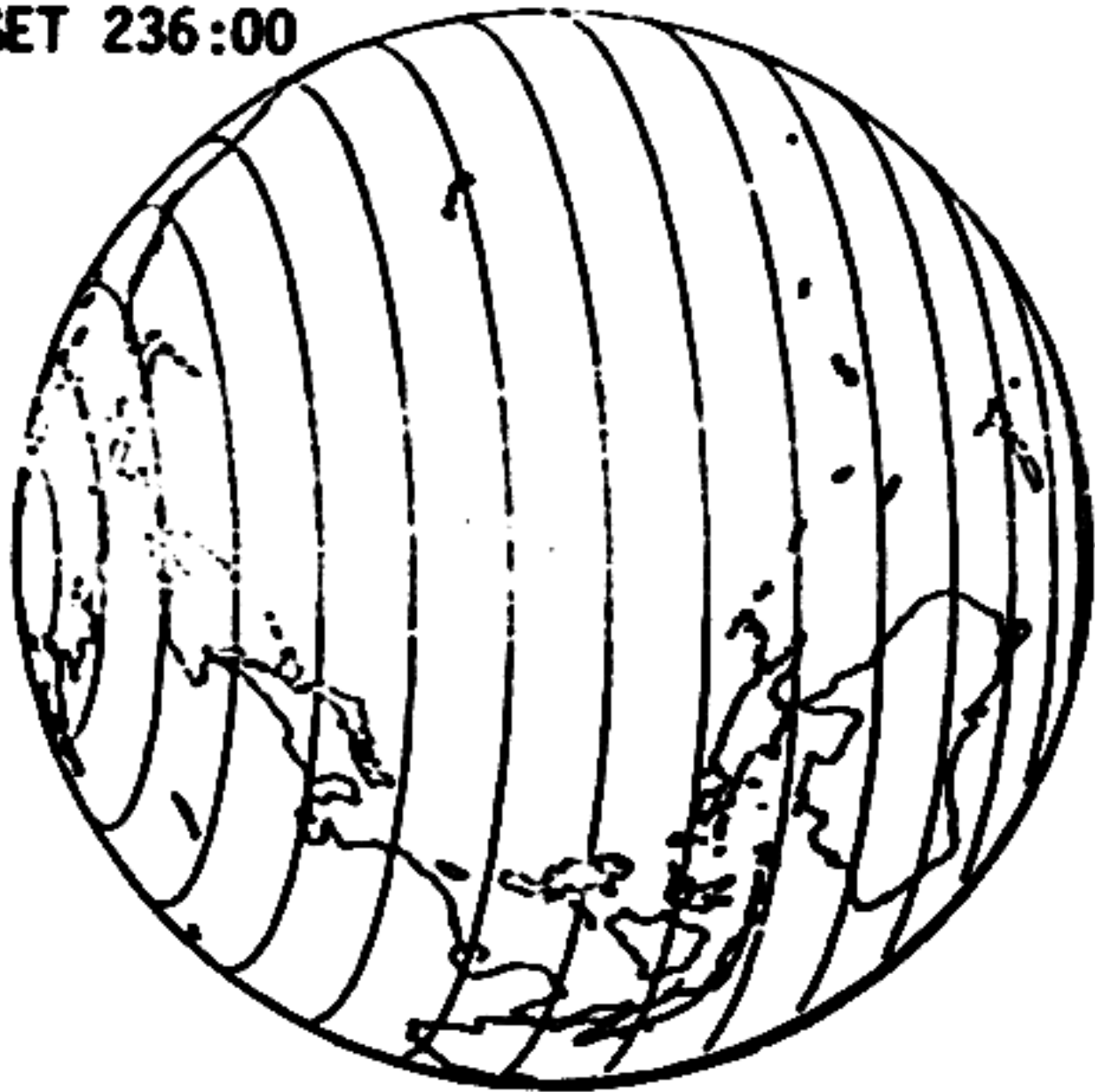
P 270 Y 0

EAT PERIOD

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

STOP PTC AT ROLL 235°

FOV 8°
GET 236:00



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

MCC-M

0622 CST

FLIGHT PLAN

NOTES

236:00	M S F N	MNVR TO OPTICS CALIBRATION ATT	R 235
		P23 - CISELUNAR NAVIGATION	P 272
:15		OPTICS CALIBRATION	Y 0
		STAR 1 2	
		P00	
		V49 - MNVR TO SIGHTING ATT	R 90
		STAR/EARTH HORIZON	P 153 168
		P23 - CISELUNAR NAVIGATION	Y 341
236:30		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)	
:45		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)	
237:00		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

NSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

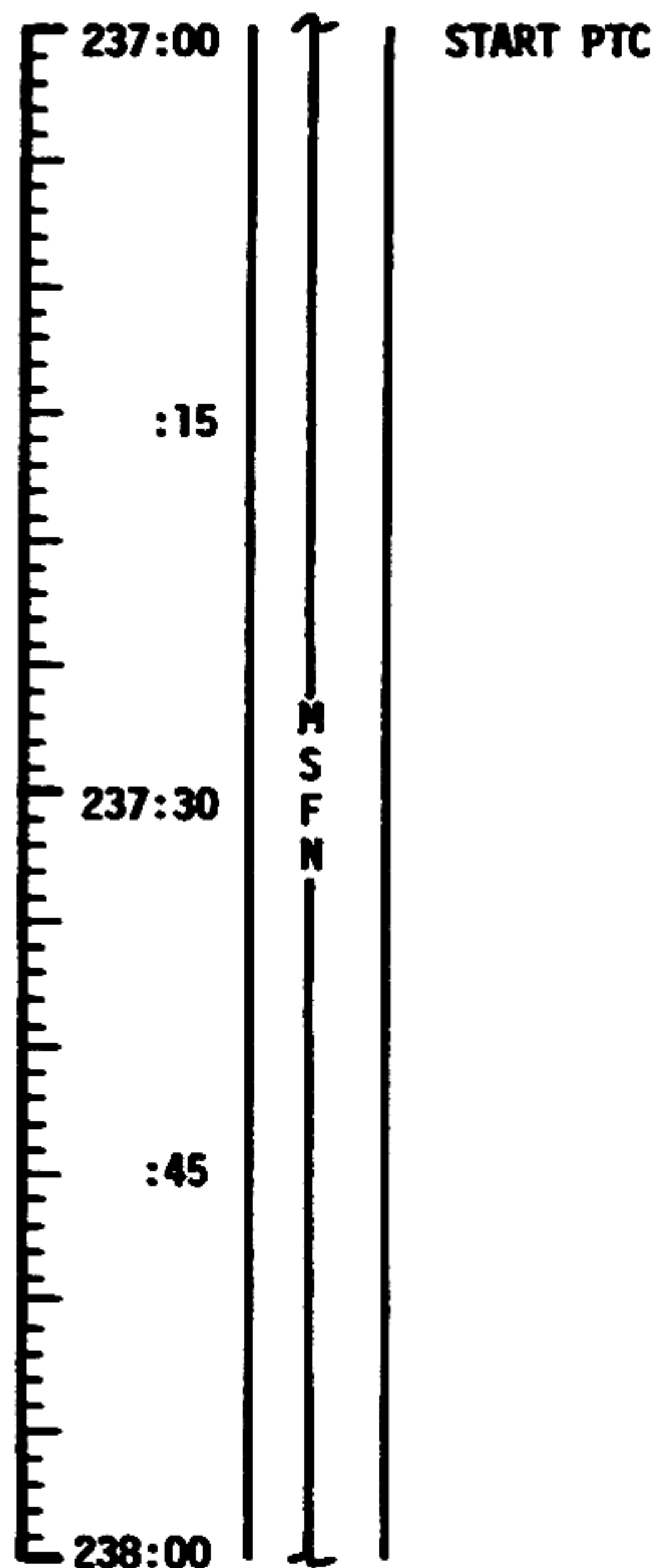
MOC-N

0722 CST

FLIGHT PLAN

NOTES

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



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-H

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

239:00

M
S
F
N

VHF SIMPLEX A-ON
(COMM CHECK)

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

:30

DON MAE WEST & FOOT RESTRAINTS

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

STOP PTC

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

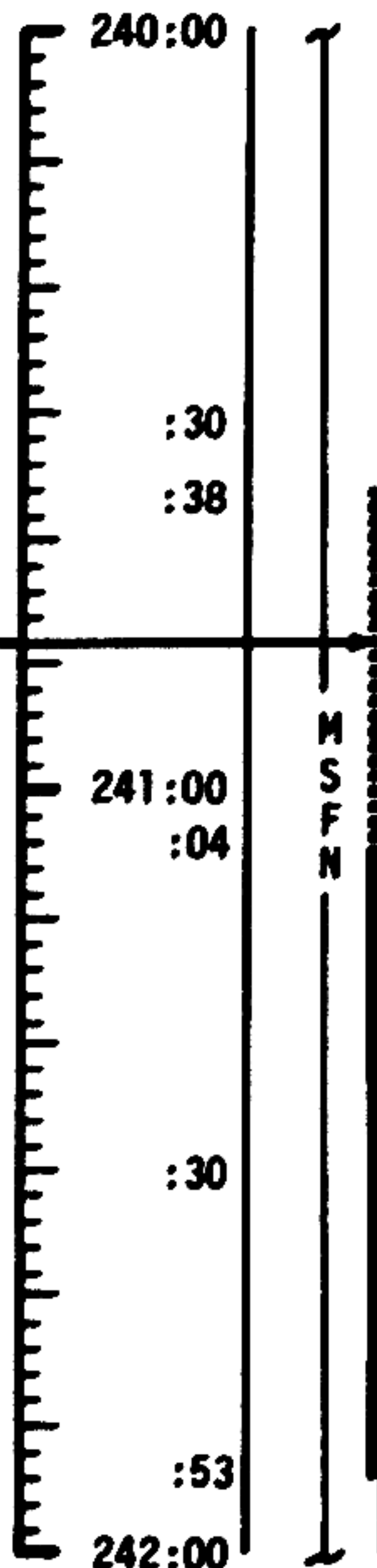
FLIGHT PLAN

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		•	ΔTIG
X	X		•	BT
			•	V _{gx}
TRIM				
X	X	X		R
X	X	X		P
X	X	X		Y
			•	V _{gx}
			•	V _{gy}
			•	V _{gz}
			•	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

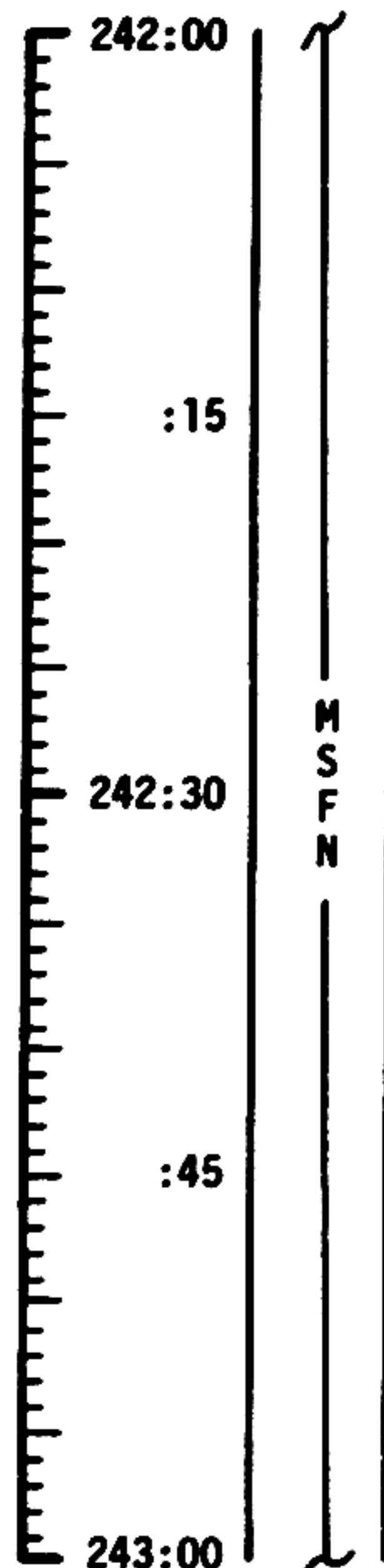
1222 CST

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

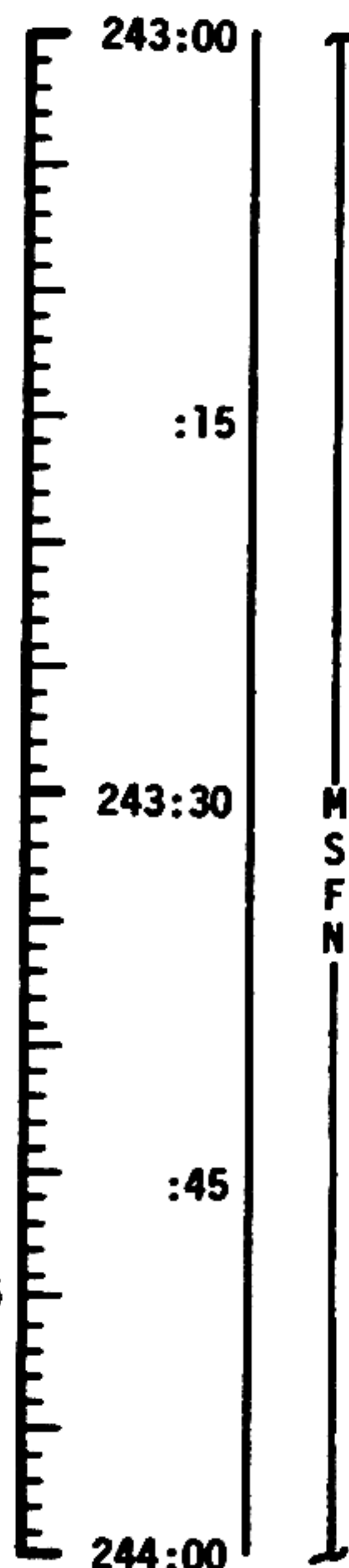
FLIGHT PLAN

NOTES

(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)



P52 - IMU REALIGN
OPTION 3 - REFSMMAT

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

P52 (REENTRY ORIENT)

N71: _ _ _ , _ _ _

N05: _ _ _ . _ _ _

N93:

X _ _ . _ _ _

Y _ _ . _ _ _

Z _ _ . _ _ _

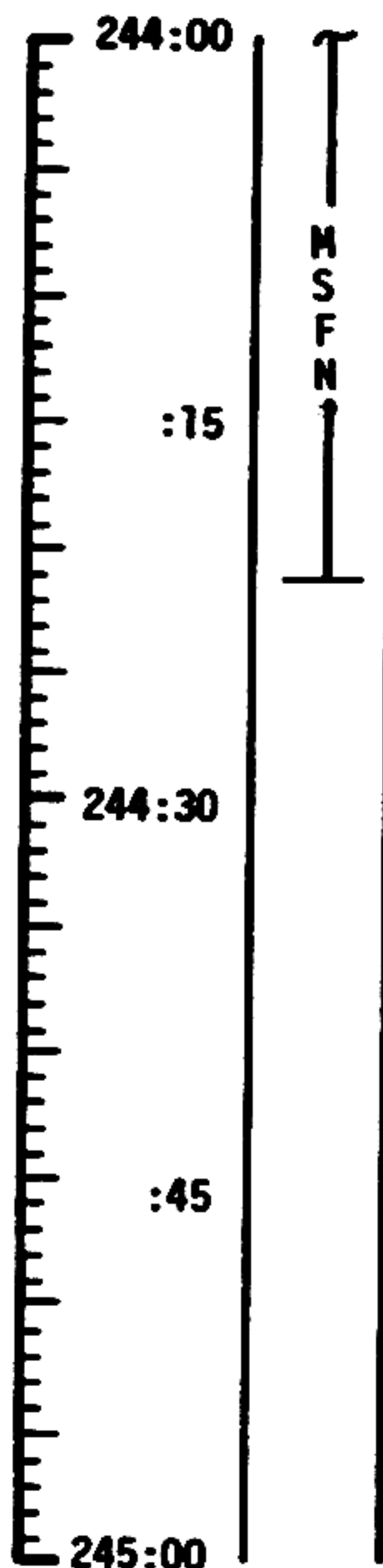
GET _ _ _ : _ _ _ : _ _ _

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

1422 CST

FLIGHT PLAN

NOTES



PYRO ARM

P61 - ENTRY PREP

P62 - CM/SM SEP ATT

 R
 P
 Y

CM/SM SEP

MNVR TO ENTRY ATT

P63 - ENTRY INIT

 R
 P
 Y

EI - GET = 244:21:48

P64 - ENTRY POST 0.056

TRAJECTORY EVENTS

400,000 FEET (GET 244:21:48

ENTER S BAND BLACKOUT

0.056

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

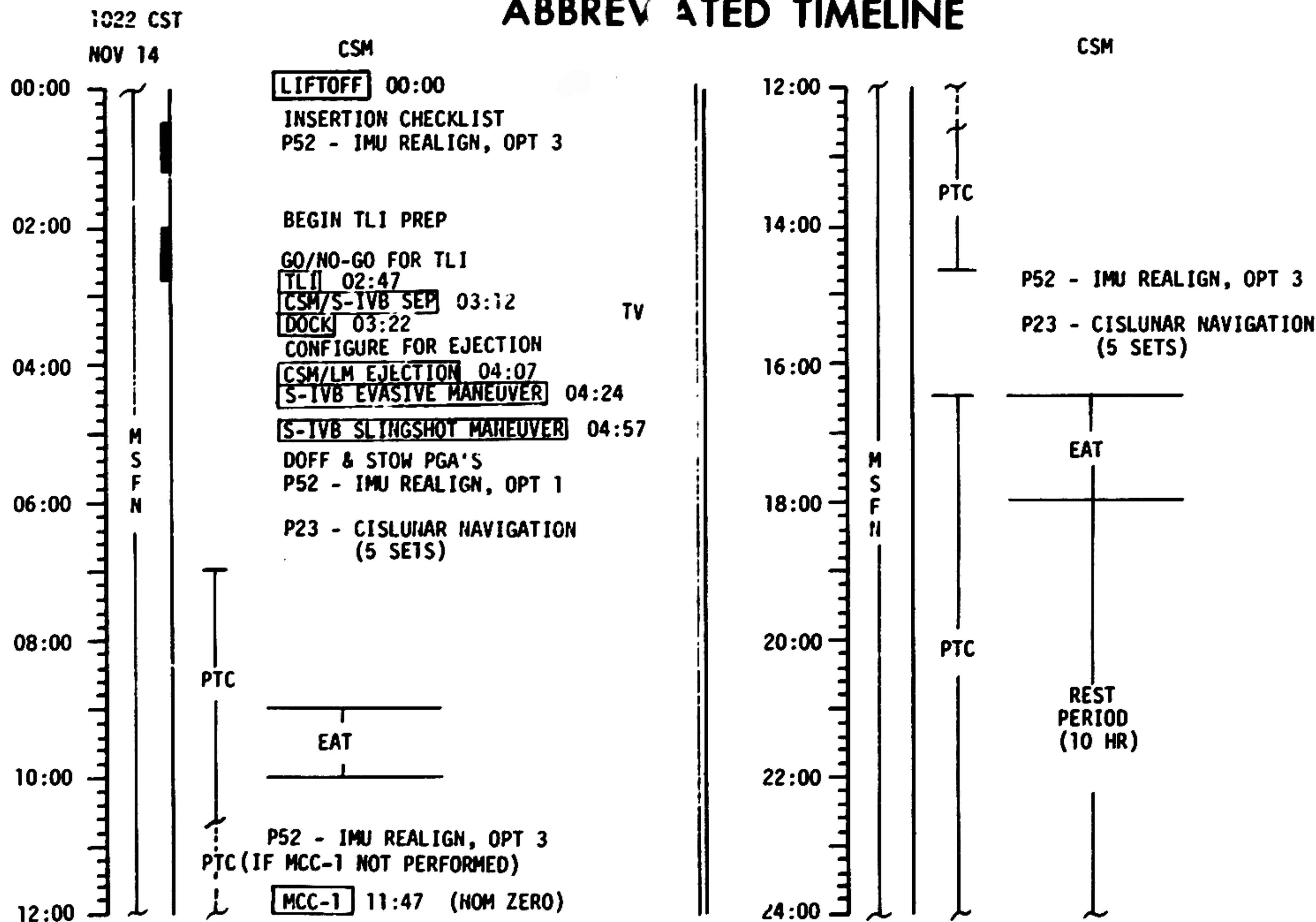
 Y = -6 . 5° -
 L/D = 0 . 3 0 9
 V = 3 6 1 1 6
 R = 1 2 5 0

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



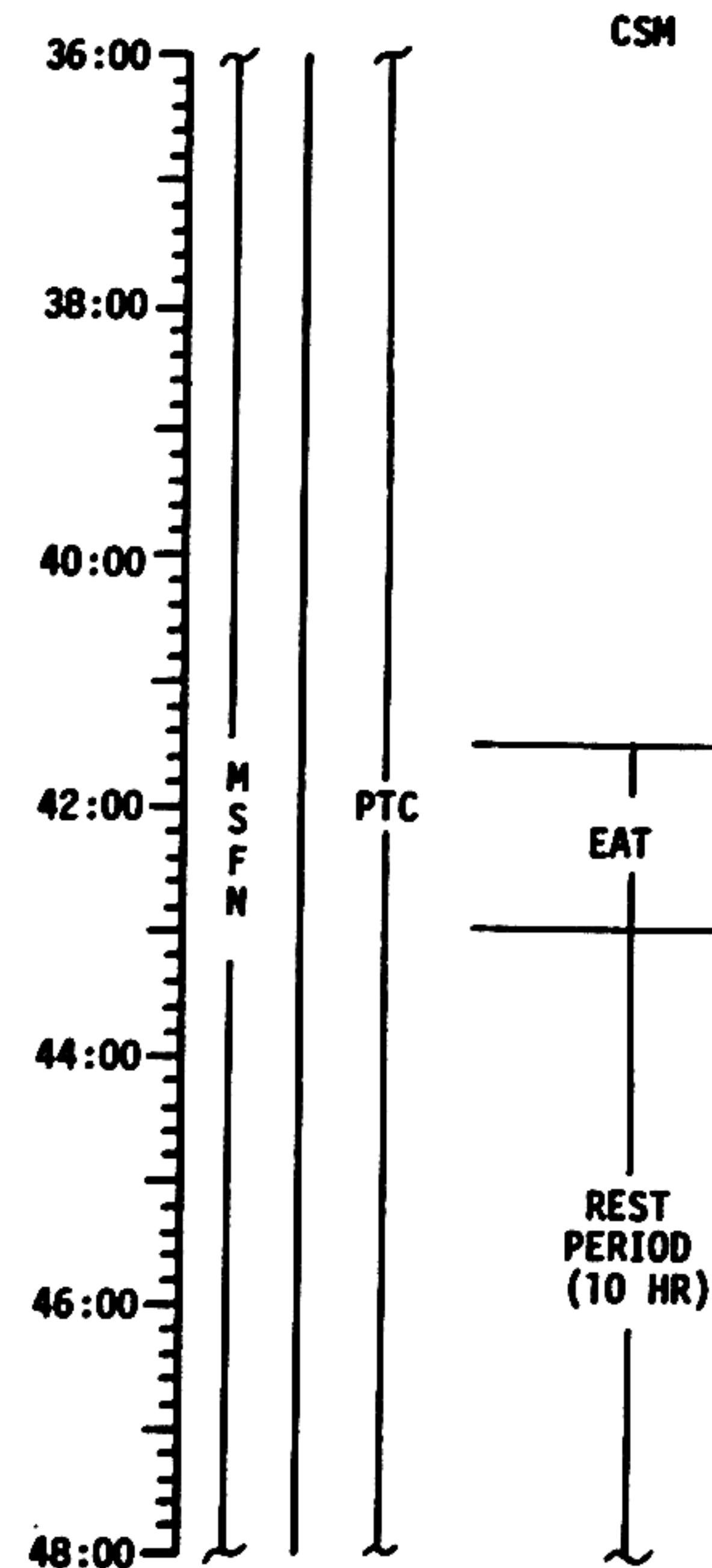
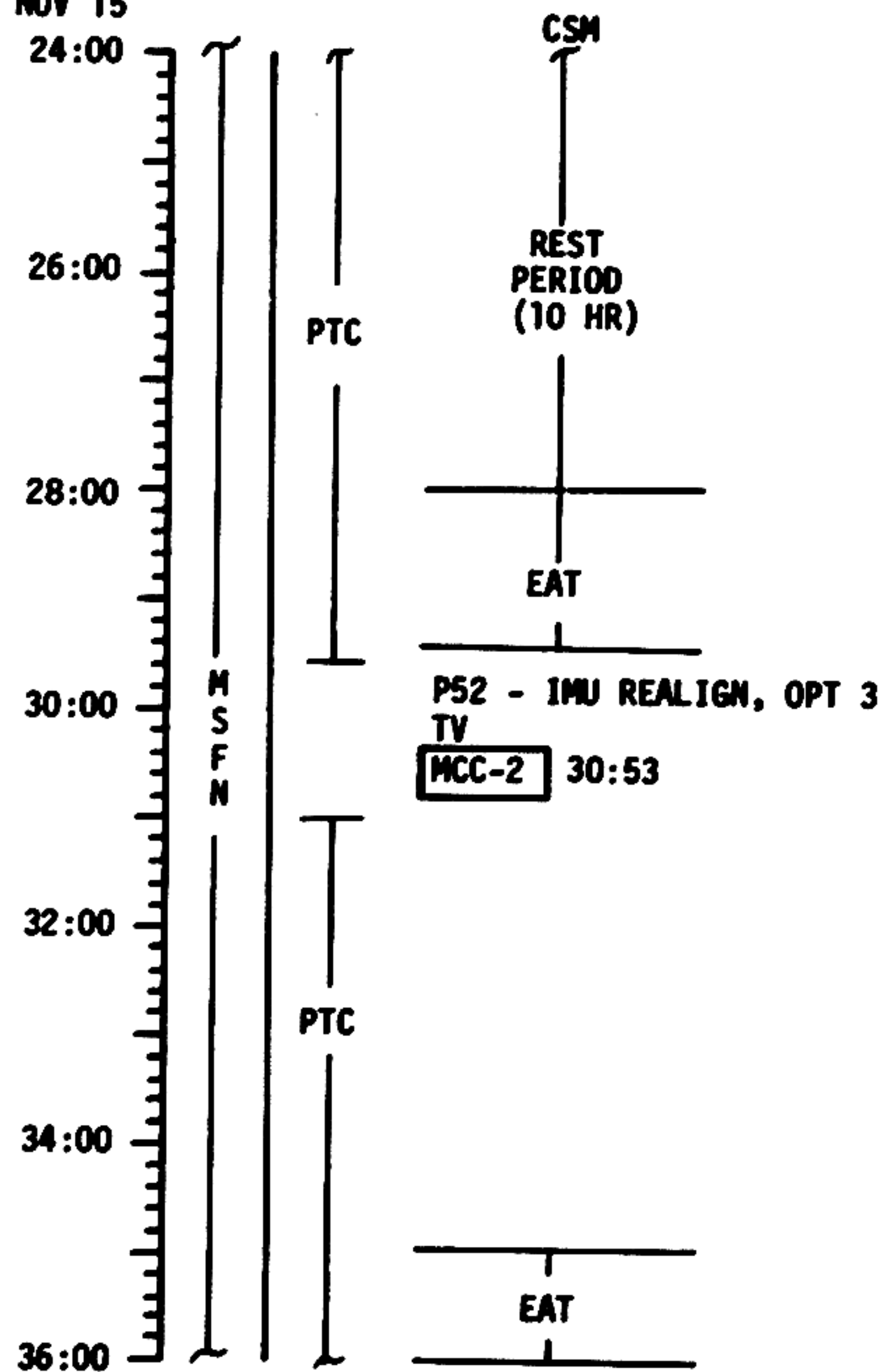
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	00:00 - 24:00	1/TLC	5-1

NOV 14, 1969 (Nov 14)

FLIGHT PLANNING BRANCH

ABBREVIATED TIMELINE

1022 CST
NOV 15



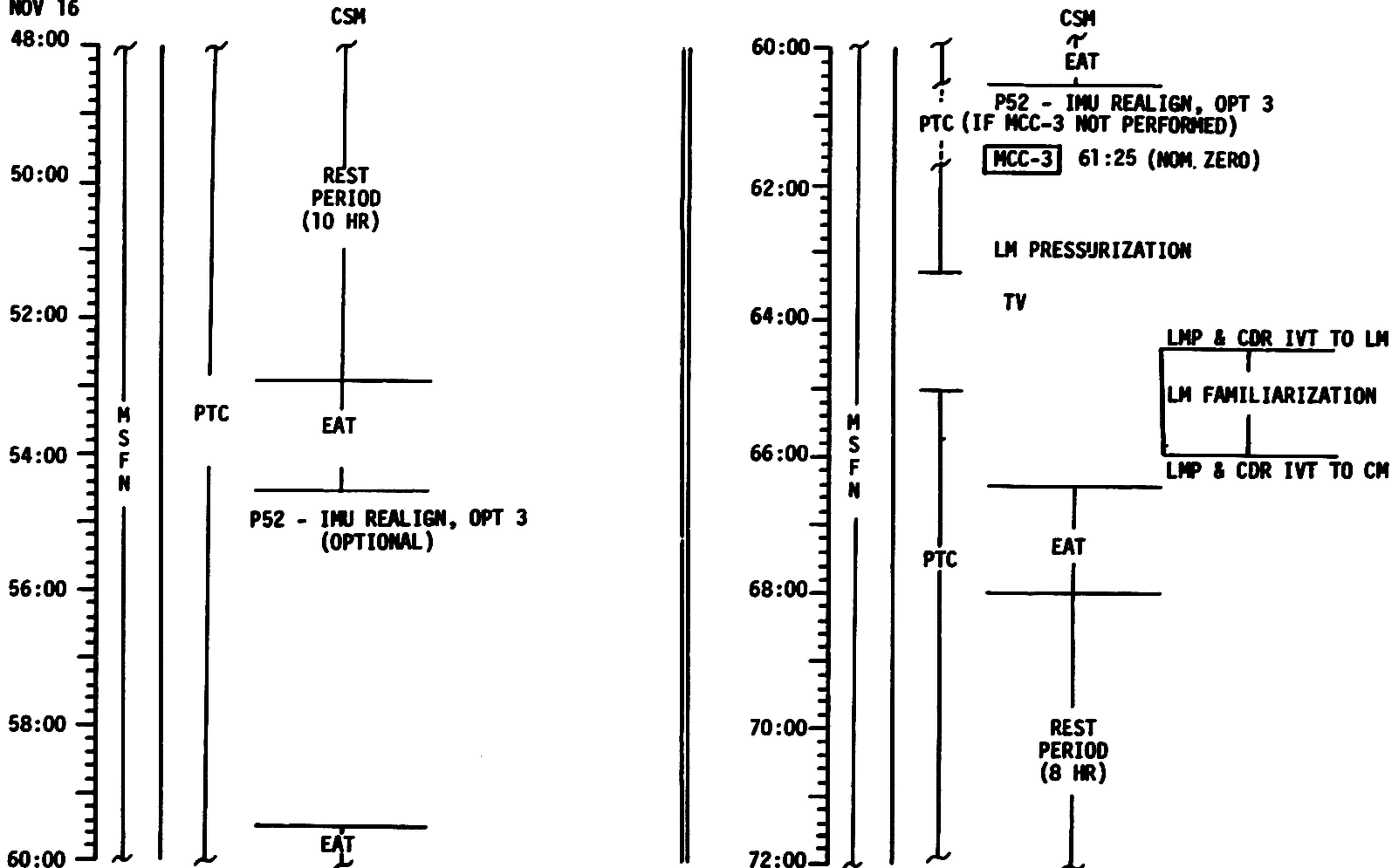
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	24:00 - 48:00	2/TLC	5-2

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

ABBREVIATED TIMELINE

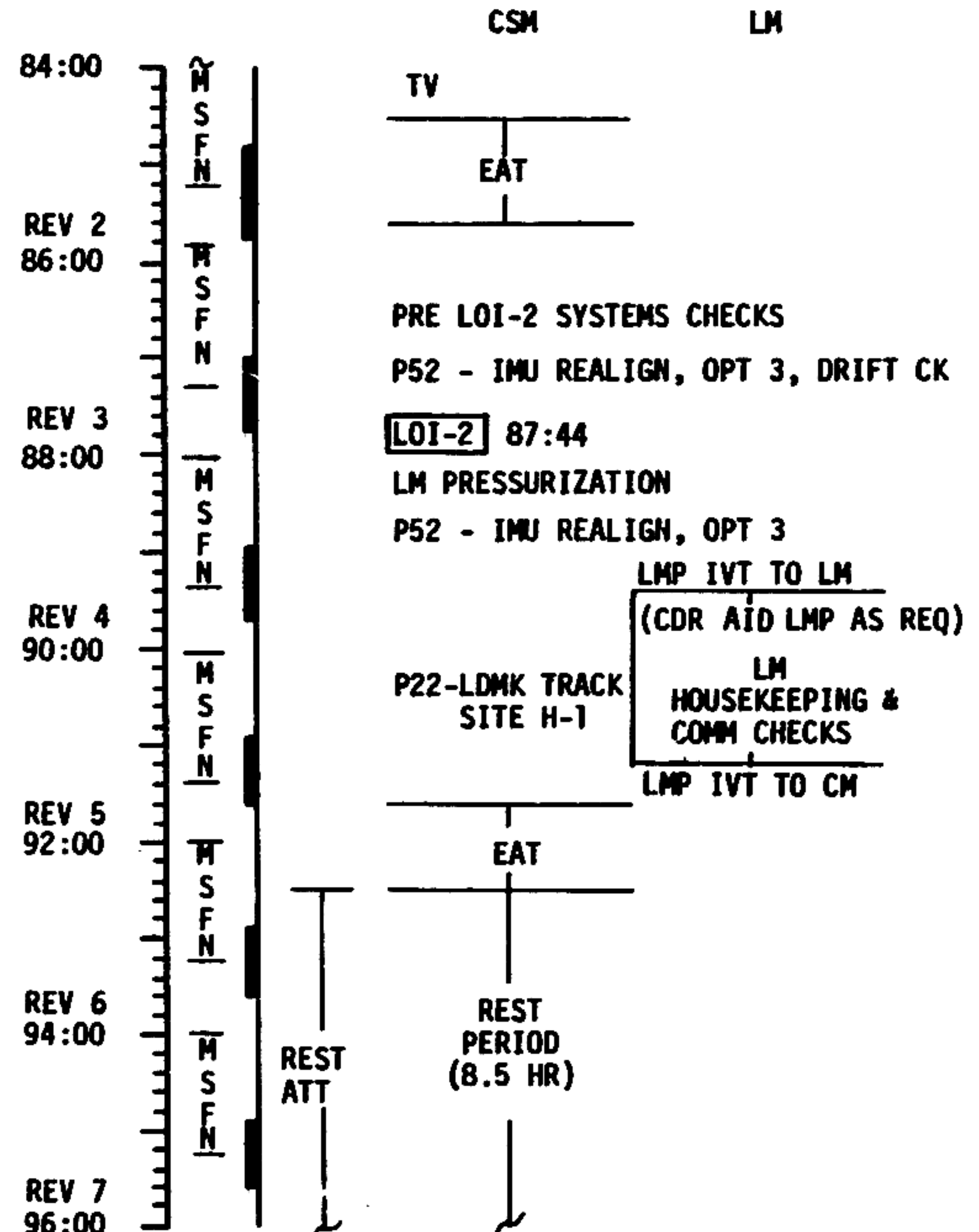
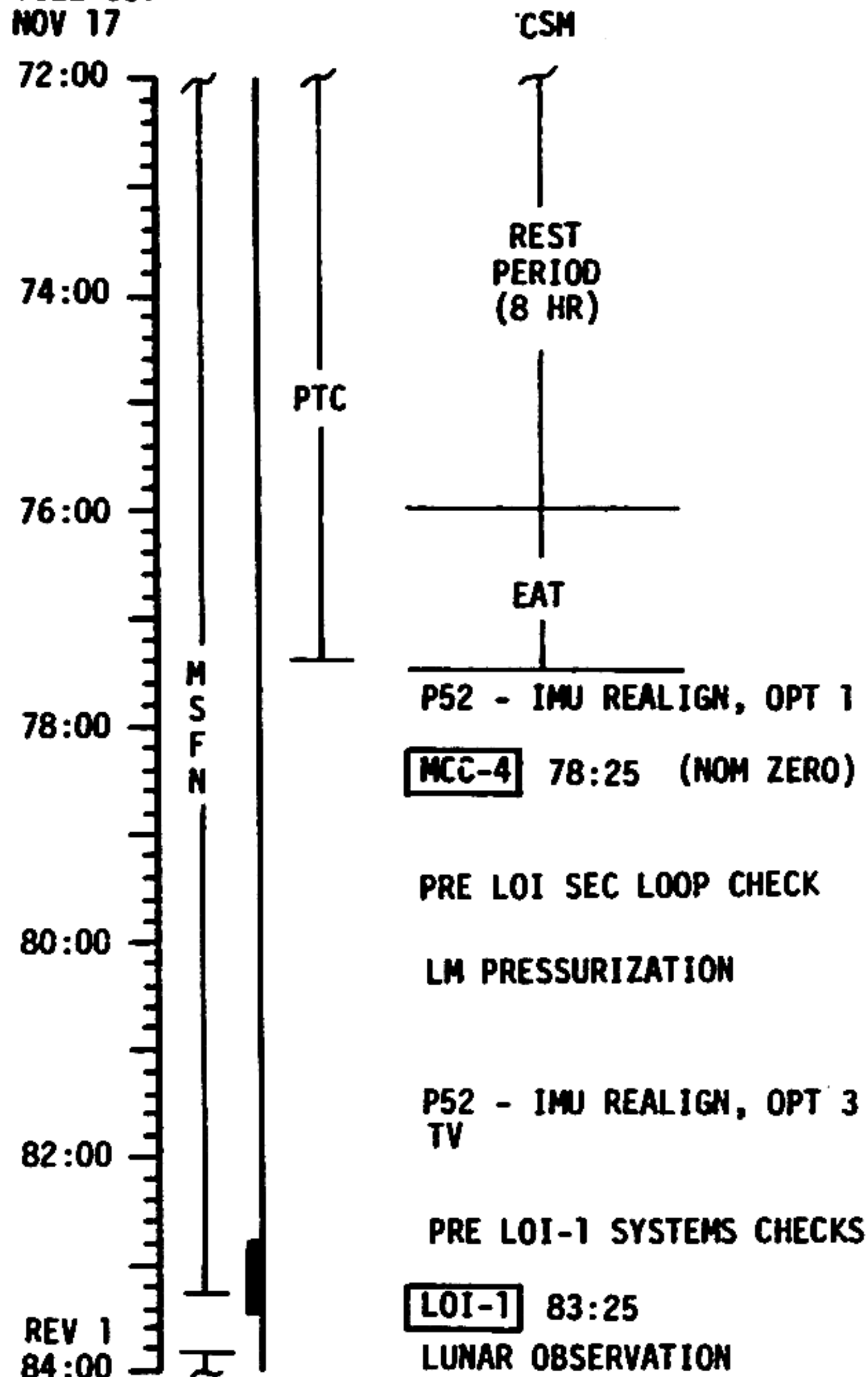
1022 CST
NOV 16



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

ABBREVIATED TIMELINE

1022 CST
NOV 17

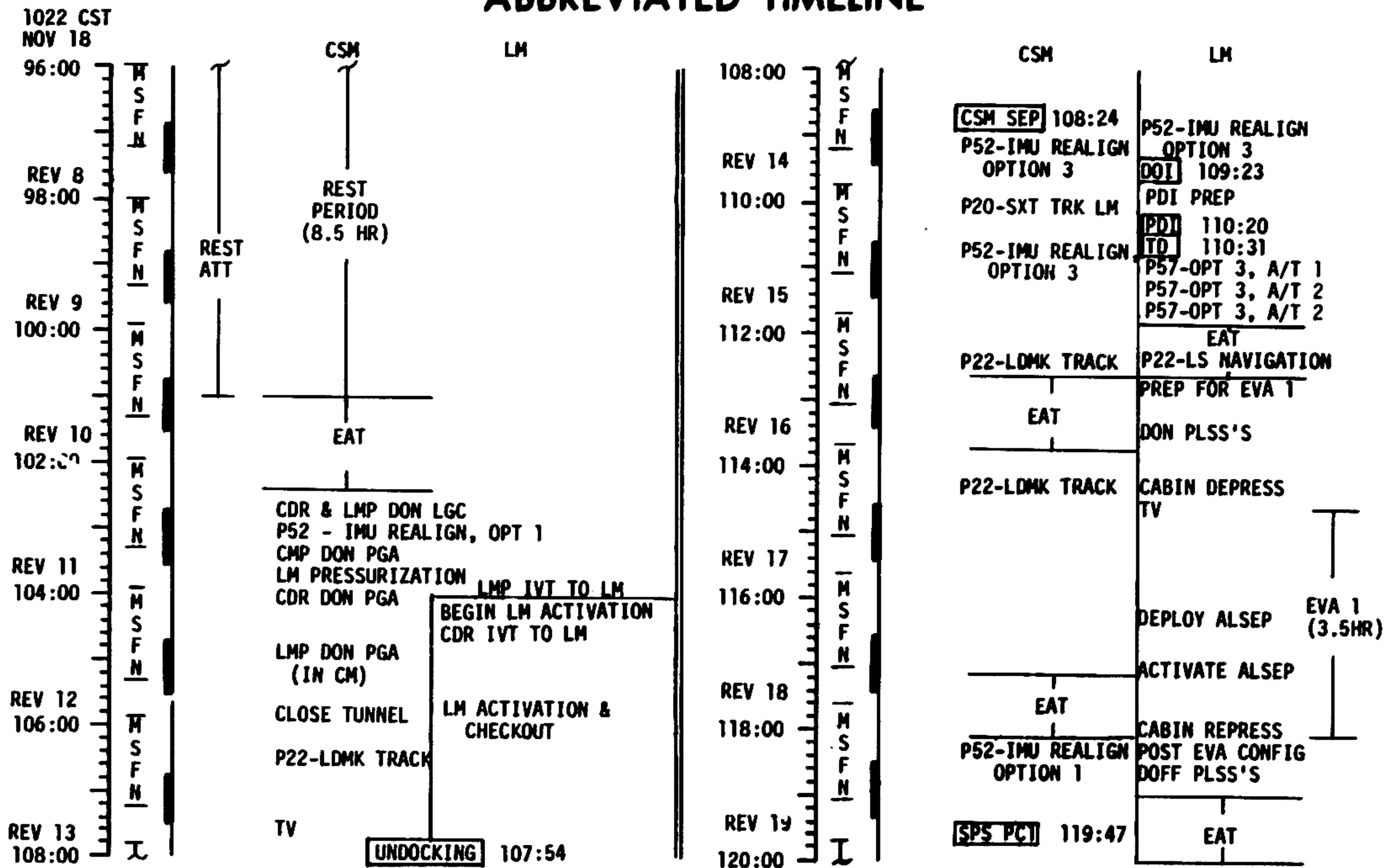


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	72:00 - 96:00	4/TLC, 1-7	5-4

Form 1057 OT (Mar 62)

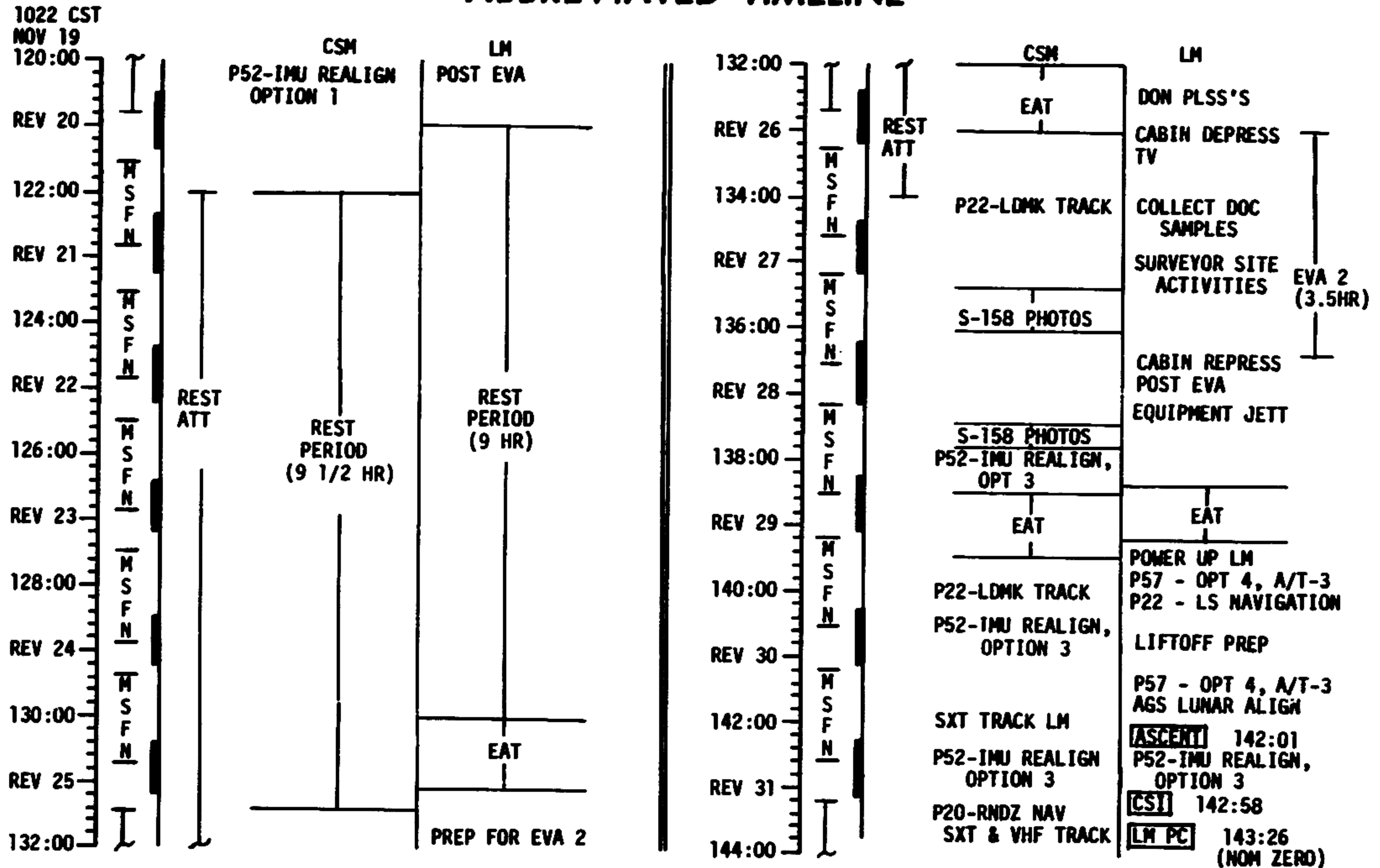
FLIGHT PLAN/ VG BRANCH

ABBREVIATED TIMELINE



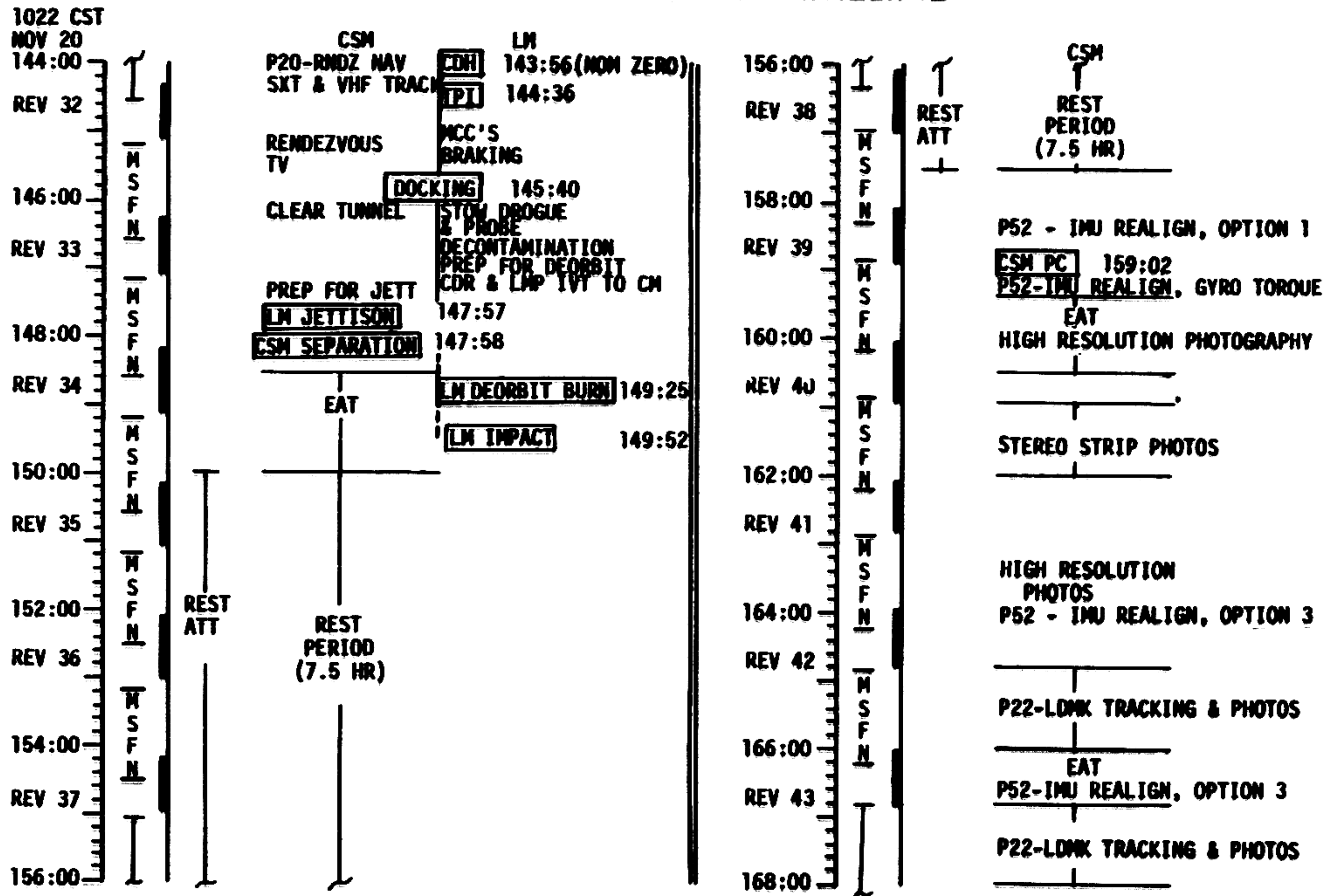
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	96:00 - 120:00	5/7-19	5-5

1022 CST
NOV 19
120:00



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

REST
PERIOD
(10 HR)

PTC

PTC

PTC (IF MCC-5 NOT PERFORMED)

MCC-5 187:21 (NOM ZERO)

P23 - CISELUNAR NAVIGATION
(5 SETS)

PTC

EAT

CSM

REST
PERIOD
(10 HR)

EAT

P52-IMU REALIGN, OPTION 3

M
S
F
N

180:00

182:00

184:00

186:00

188:00

190:00

192:00

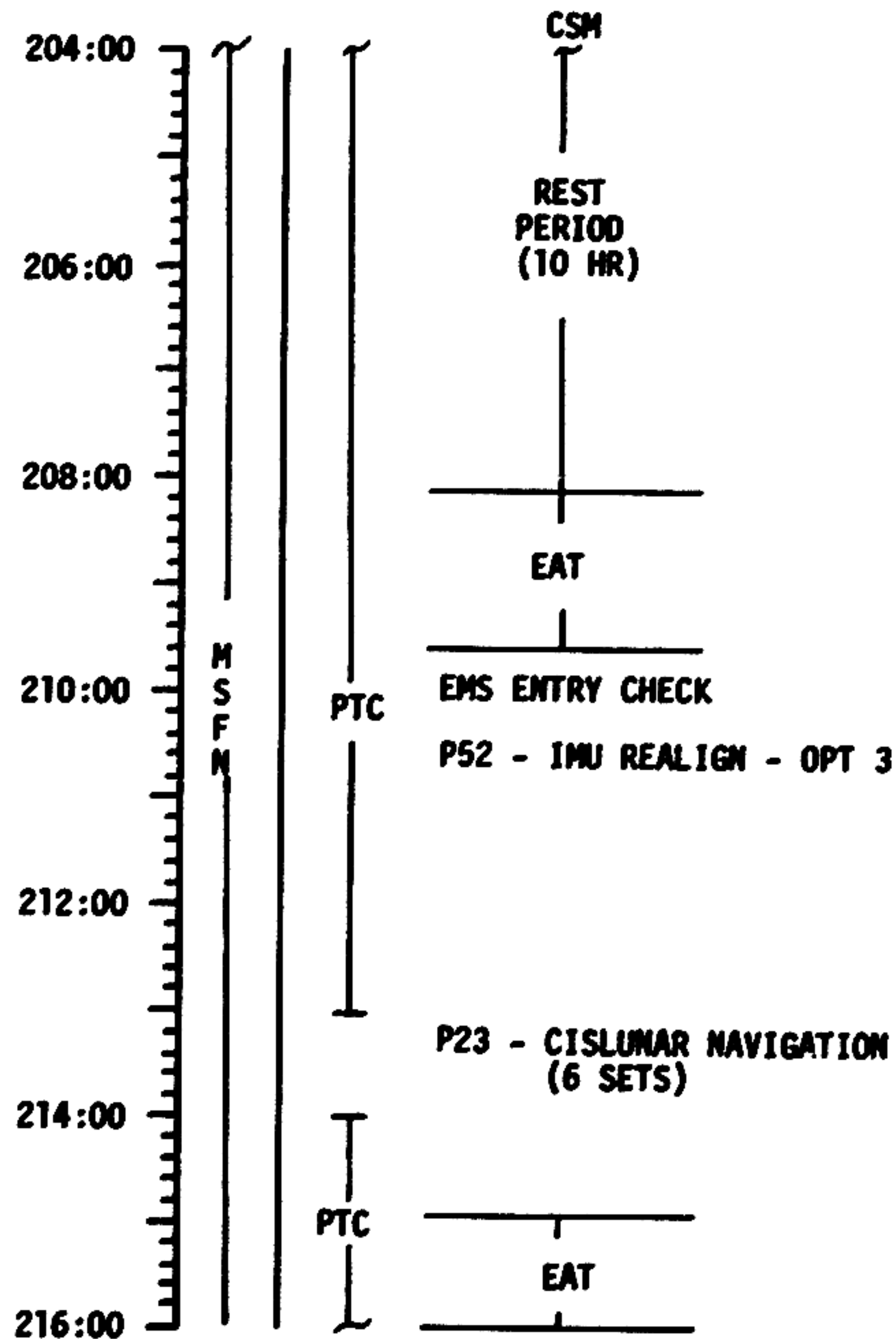
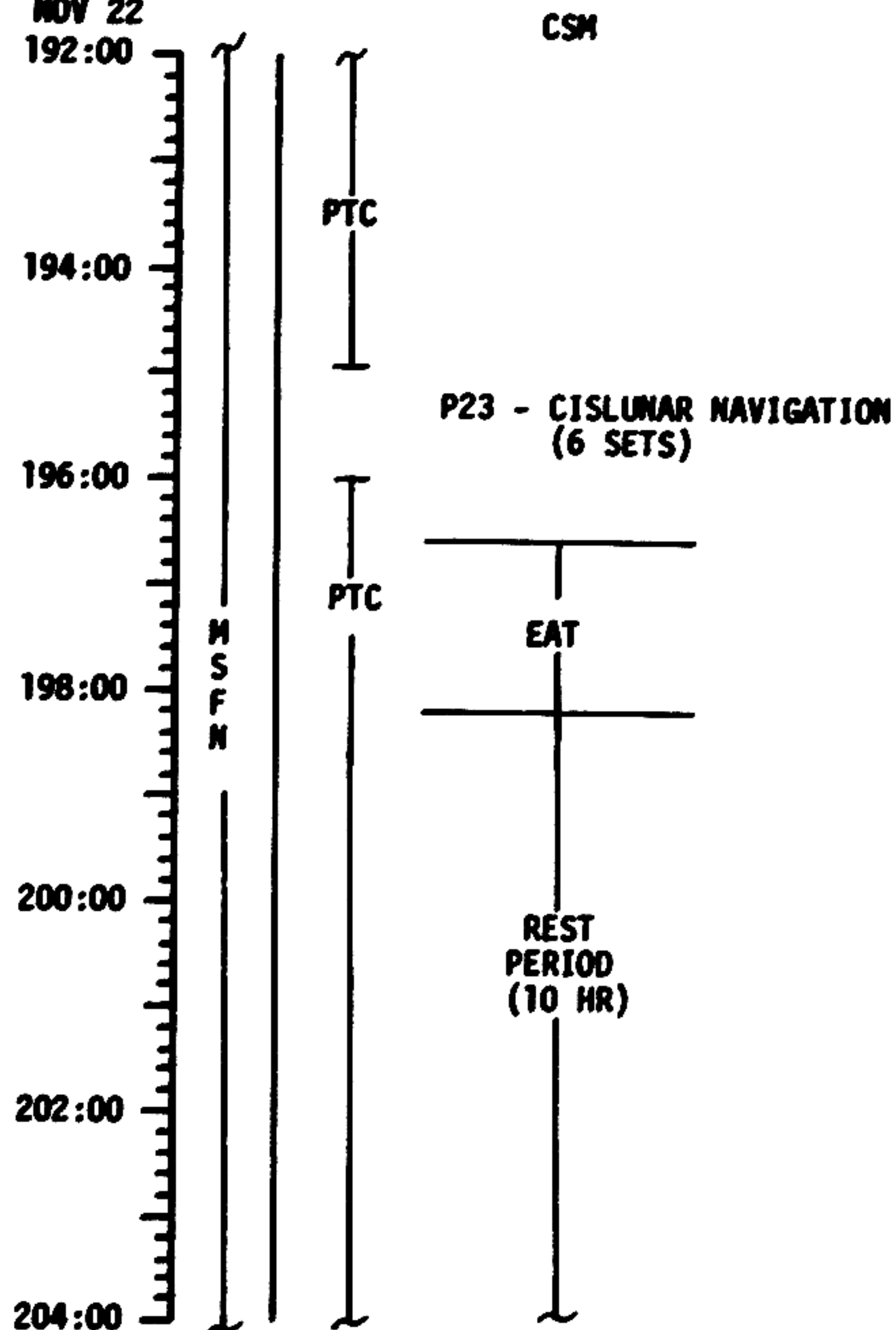
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 12	ABBREVIATED TIMELINE (NOV 14)	OCTOBER 15, 1969	168:00 - 192:00	7-8/43-TEC	5-8

1022 CST (Nov 21)

FLIGHT PLANNING BRANCH

ABBREVIATED TIMELINE

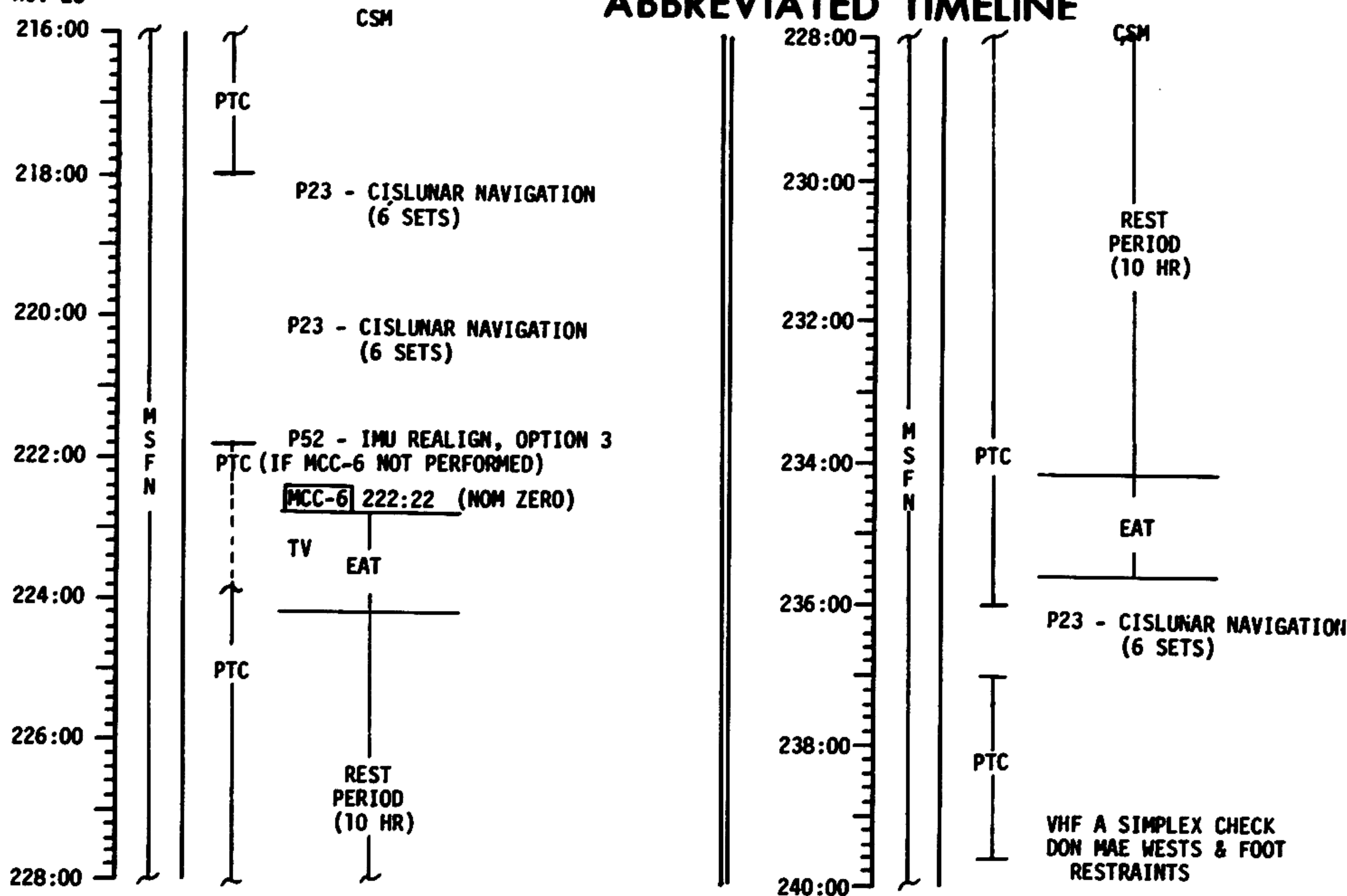
1022 CST
NOV 22
192:00



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

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

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

1022 CST
NOV 24

ABBREVIATED TIMELINE

240:00

CSM
P52 - IMU REALIGN, OPTION 1

242:00

MCC-7 241:22 (NOM ZERO)

BEGIN ENTRY PREP

244:00

P52 - IMU REALIGN, OPTION 3

INITIALIZE EMS
SEPARATION CHECKLIST

CM/SM SEP

ENTRY INTERFACE 244:22

SPLASHDOWN 244:35

246:00

M
S
F
N

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 ₁ /EL/80 or 250/CEX-RING (f11,250,∞) 20 30 CM ₁ /EL/250 or 80/CEX or BW-RING (f5.6,250,∞) 5/5	(Q) (Q) (Q) S
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 ₁ /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) R (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	L M N AA BB CC DD EE
133:17	EVA 2		
134:10	Sextant Photography- Lansberg Rev 26	CM/DAC/SEXT/CEX-(fixed,60,fixed) 1 fps (5 MIN)	(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	CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 12 fps, .5 mag (4 MIN)	□	
	Crew Option	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/ CEX ^{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

DATE NOVEMBER 3, 1969

FILM MAGAZINE IDENTIFICATION AND STOWAGE

MAGAZINES

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							X									
BW 164									X	X						
TR											X	X	X	X	X	X

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

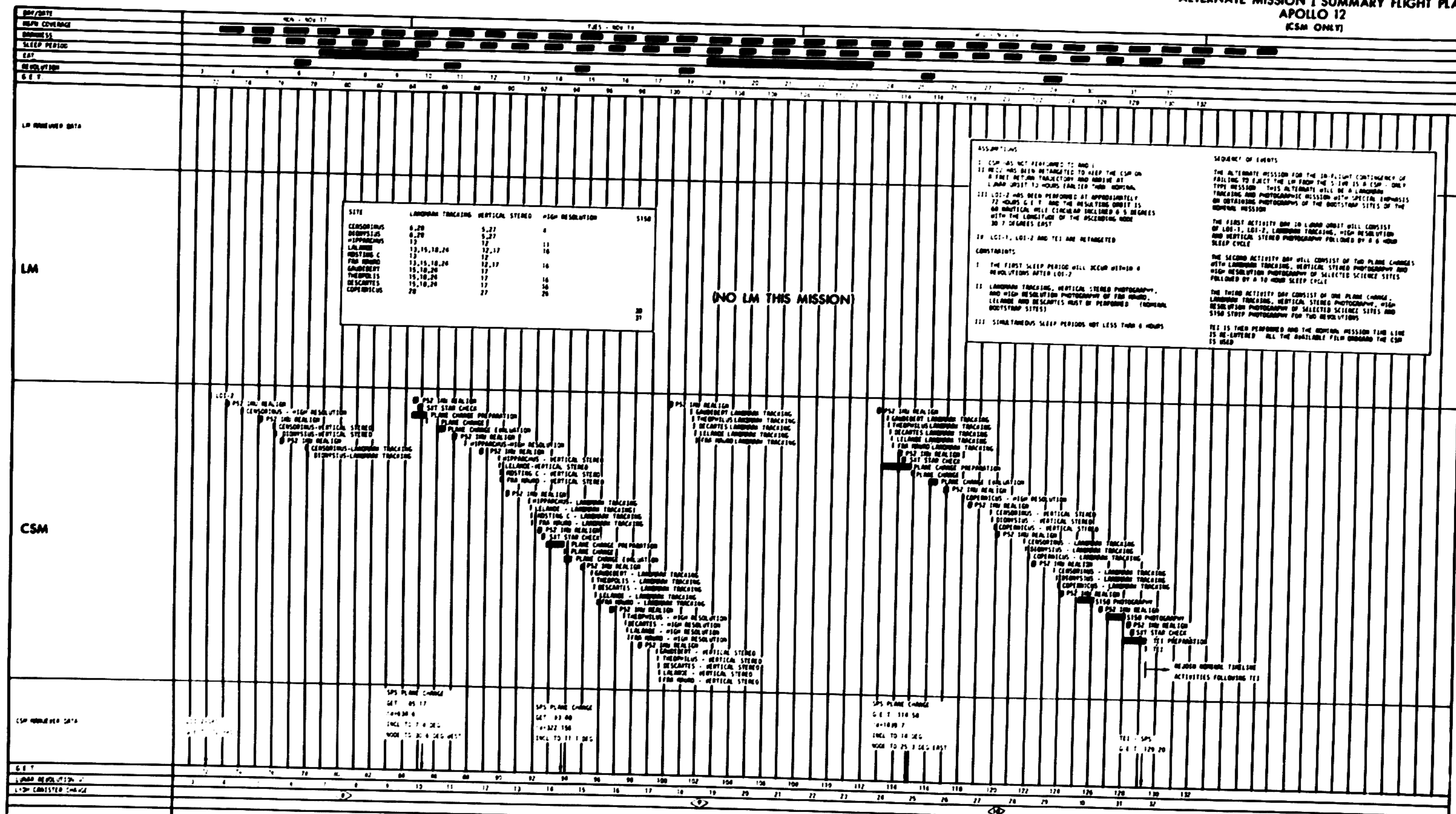
STOWAGE

○	CAMERA
□	B8
⬡	B2
◇	A8
△	A10
▽	R13 (Mag bag)

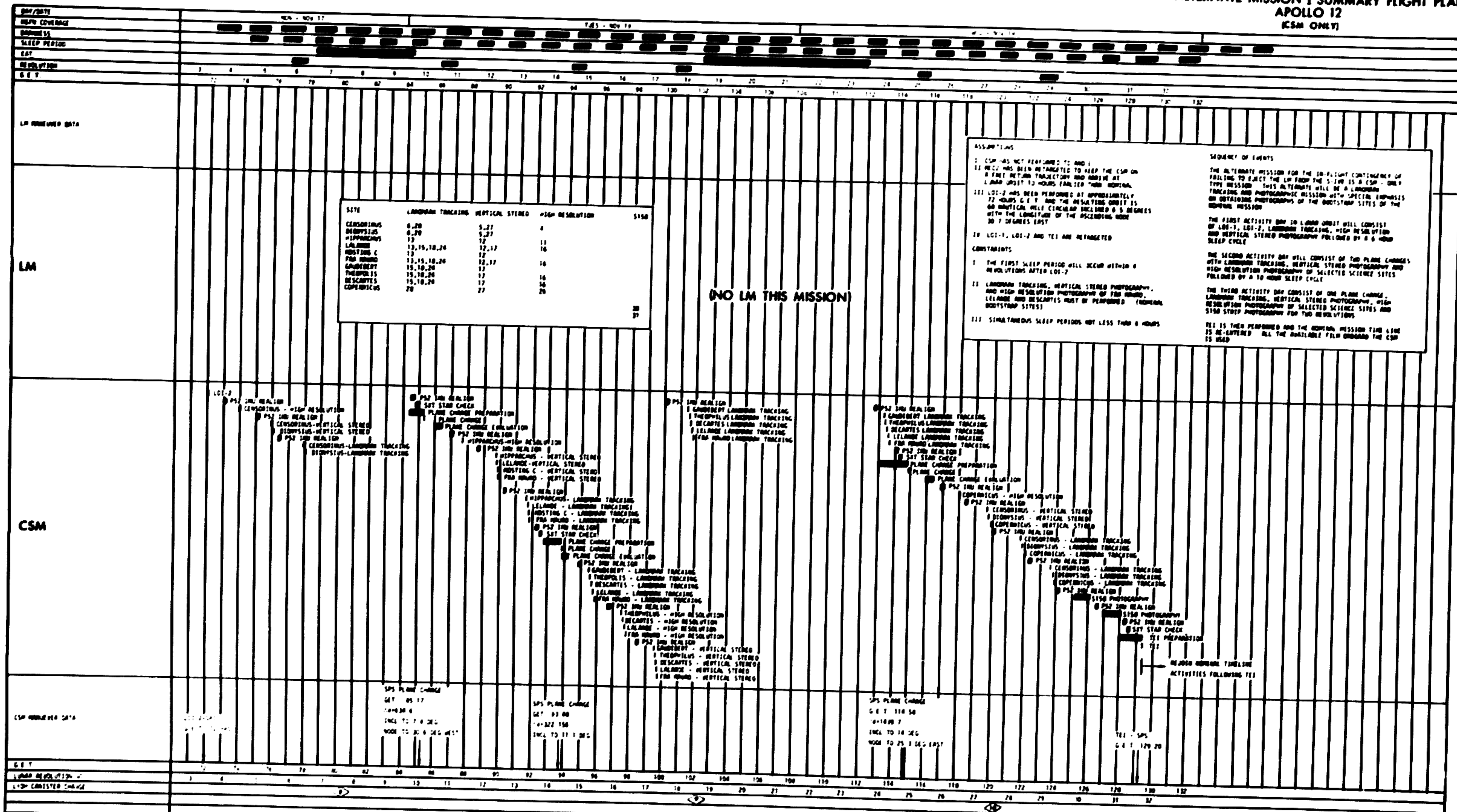
SECTION 6 - ALTERNATE MISSIONS

**ALTERNATE
MISSIONS**

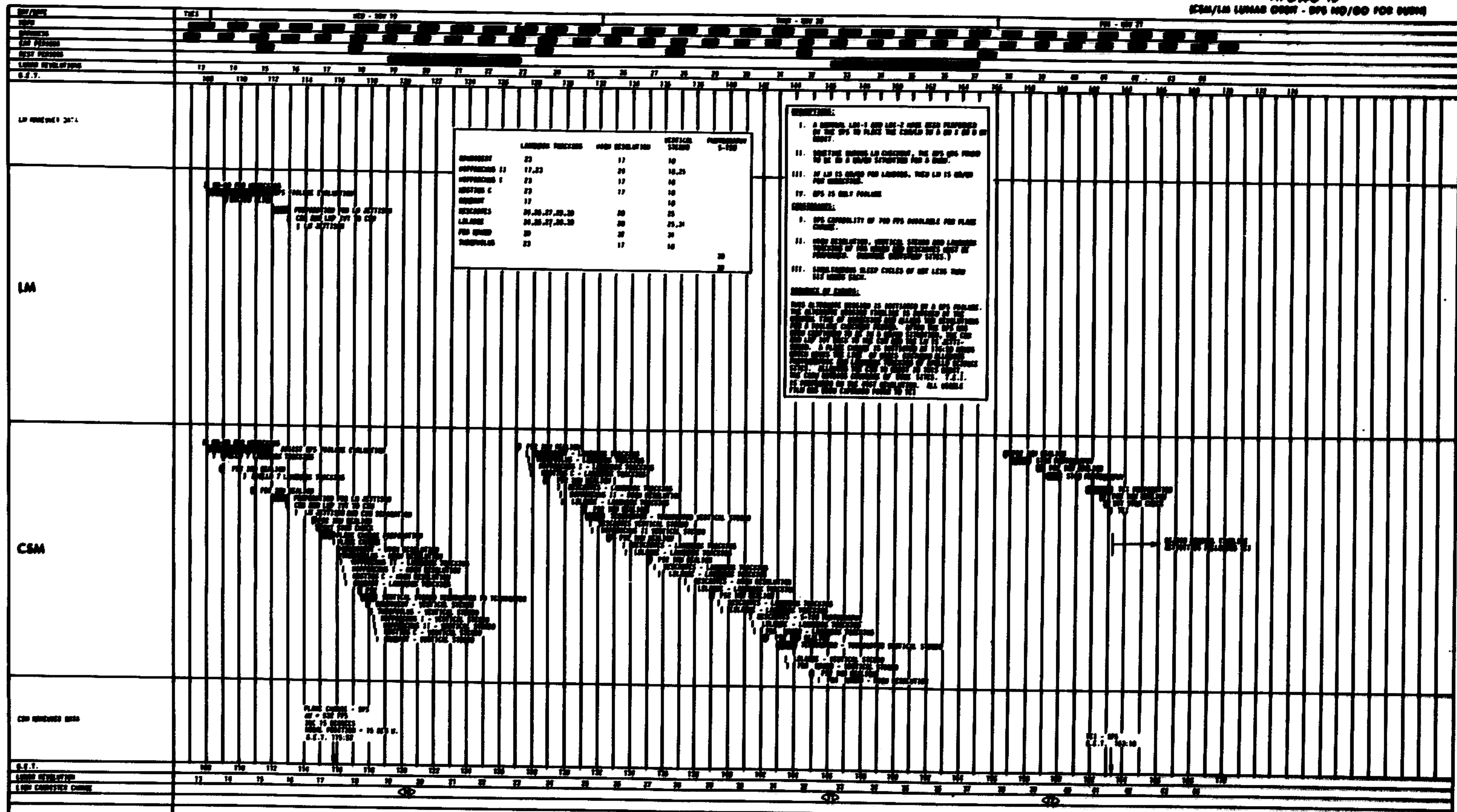
ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN APOLLO 12 (CSM ONLY)



ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN

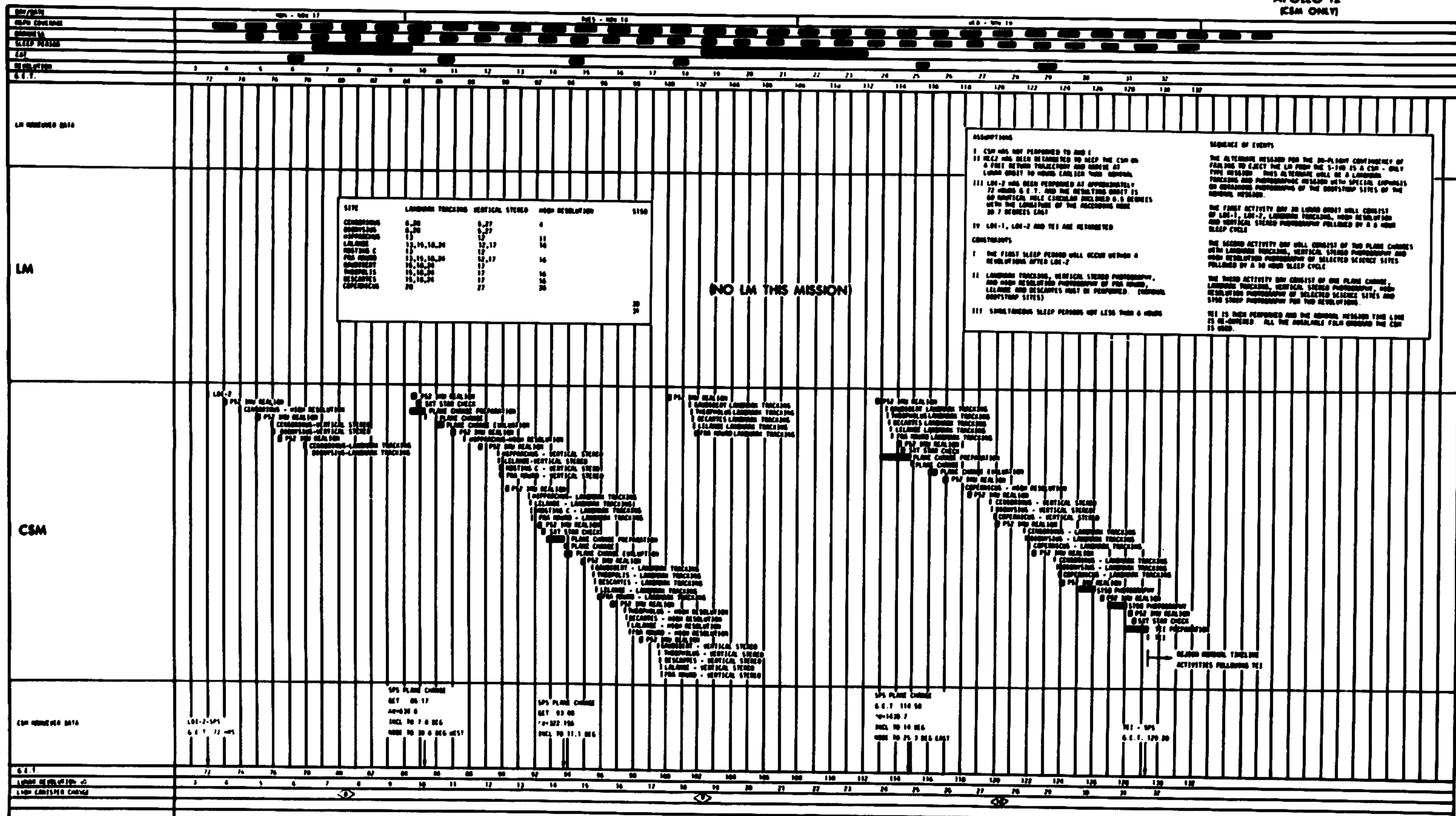


ICM/LM LUNAR ORBIT - 075 HQ/GO FOR EARTH



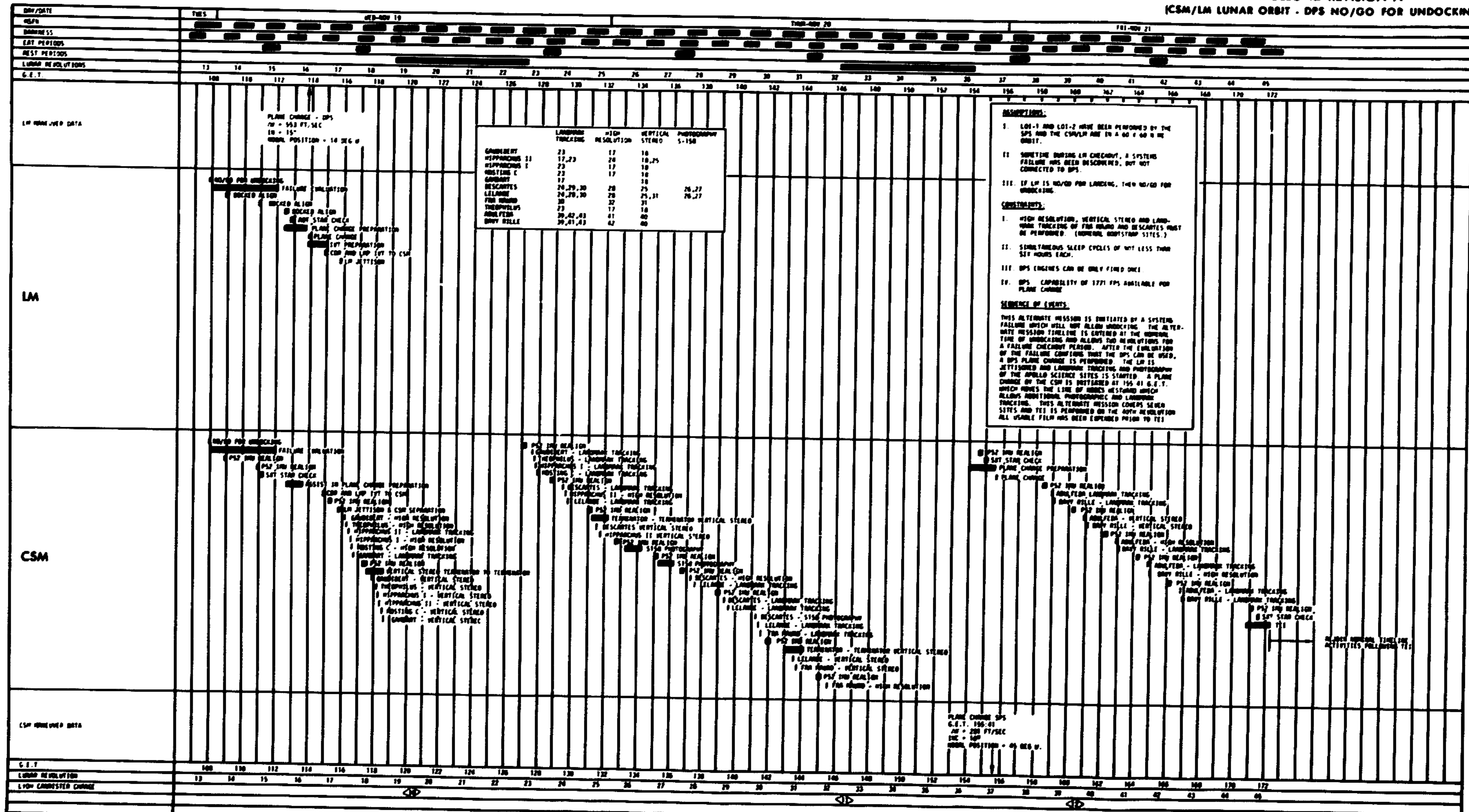
**DISREGARD PREVIOUS
2 IMAGES**

ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN
 APOLLO 12
 CSM ONLY





**ALTERNATE MISSION 3 SUMMARY FLIGHT PLAN
APOLLO 12 REVISION A
ICSM/LM LUNAR ORBIT . DPS NO/GO FOR UNDOCKING**



(CSM/LM LOW EARTH ORBIT)

ASSUMPTIONS

- 1) SAFE INSERTION ORBIT HAS BEEN ACHIEVED BY 5:10P
- 2) A SYSTEM FAILURE HAS RESULTED IN A REBID FOR FLI.

CONSTRAINTS

- 1) PHOTOGRAPHY 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 WOULD NOT ALLOW FLI. THE ALTERNATE MISSION TIMELINE IS EXPANDED AT THE NOMINAL TIME OF FLI AND ALLOWS FOR A FAILURE CHECKOUT PERIOD FOLLOWED BY A POSSIBLE SECOND FLI ATTEMPT. IF THE SECOND FLI IS NOT PERFORMED, THE CSN ENDS ITS TIME. AFTER A SLEEP CYCLE, THE CSN AND LM RIT TO THE LM AND TRANSFER ALL FILM PACKS TO THE CSN AND RELOAD THE LM FOR AN EARTH IMPACT. THE LM IS JETTISONED AND THE CSN THEN ENDS ITS PLANE CHANGE BURN AND AN ORBIT SWEEPING BURN TO POSITION ITSELF FOR PHOTOGRAPHIC COVERAGE OVER THE U.S. THREE DAYS ARE ALLOWED FOR THE PHOTOGRAPHIC COVERAGE. A REBID BURN HAS BEEN PLANNED BUT SHOULD BE MODIFIED TO REAL-TIME AS A FUNCTION OF EXPANDED 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				
	1	5	9		2	6	10		3	7	11		4	8
A Peaches Corn Flakes Bacon Squares (8) Orange Drink Coffee w/Sugar				Apricots Sausage Patties Scrambled Eggs Grapefruit Drink Coffee w/Sugar				Pears Corn Flakes Bacon Squares (8) Grape Drink Coffee w/Sugar				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 Sand- wich 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	Day 2, 6, 10			Day 3, 7, 11			Day 4, 8		
A Peaches					Apricots			Pears			Canadian Bacon		
Corn Flakes					Scrambled Eggs			Corn Flakes			& Applesauce		
Bacon Squares (8)					Sausage Patties			Bacon Squares (8)			Strawberry Cubes (4)		
Orange Drink					Grapefruit Drink			Grape Drink			Scrambled Eggs		
Coffee (black)					Coffee (black)			Coffee (black)			Orange-G.F. Drink		
B Tuna Salad					Turkey & Gravy WP			Frankfurters WP			Shrimp Cocktail		
Beef & Gravy WP					Cheese Crackers (4)			Applesauce			Ham & Potatoes		
Jellied Candy					Chocolate Pudding			Chocolate Bar			Apricots		
Grape Punch					Orange-G.F. Drink			P.A.-G.F. Drink			Chocolate Pudding		
(Day 5)											Orange Drink		
Beef & Potatoes WP													
C Pea Soup					Pork & Scalloped			Salmon Salad			Spaghetti w/Meat		
Chicken & Rice					Potatoes			Beef & Gravy			Beef Stew		
Sugar Cookies (4)					Bread Slice			Butterscotch Pudding			Banana Pudding		
Butterscotch Pudding					Sandwich Spread WP			Peaches			Cocoa		
P.A.-G.F. Drink					Date Fruitcake (4)			Grapefruit Drink			Grape Drink		
					Cocoa								
					Orange Drink								

*Day 1 consists of Meal B and C only

WP = Wet Pack

APOLLO XII (BEAN - BLUE VELCRO)

MEAL		Check items eaten																	
		Day 1*, 5**, 9			Day 2, 6, 10			Day 3, 7, 11			Day 4, 8								
		1	5	9		2	6	10		3	7	11		4	8				
A	Peaches				Fruit Cocktail				Peaches				Fruit Cocktail						
	Corn Flakes				Corn Flakes				Corn Flakes				Corn Flakes						
	Canadian Bacon				Jellied Candy				Canadian Bacon				Jellied Candy						
	& Applesauce				Grapefruit Drink				& Applesauce				Cocoa						
	Cocoa				P.A.-G.F. Drink				Cocoa				Orange-G.F. Drink						
	Orange Drink								Orange Drink										
B	Beef & Gravy WP				Cream of Chicken				Potato Soup				Cream of Chicken						
	Fruit Cocktail				Soup				Beef and Gravy				Soup						
	Jellied Candy				Turkey & Gravy WP				Jellied Candy				Chicken Stew						
	Grapefruit Drink				Peaches				P.A.-G.F. Drink				Peaches						
					Orange-G.F. Drink								Chocolate Pudding						
													Orange Drink						
C	Potato Soup				Pork & Scalloped				Chicken & Rice				Spaghetti w/Meat						
	Chicken & Rice				Potatoes				Fruit Cocktail				Banana Pudding						
	Spaghetti w/Meat				Bread Slice				Cinnamon Bread (4)				Cocoa						
	Butterscotch Pudding				Sandwich Spread				Butterscotch Pudding				P.A.-G.F. Drink						
	Orange-G.F. Drink				Chocolate Pudding				Grapefruit Drink										
					Cocoa														
					Orange 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

LMP - Blue Velcro

Check Items Eaten

Day 1 Meal C

Day 1 Meal C

Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Apricots
Grapefruit Drink
Pineapple-Grapefruit
Drink

Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Chocolate Pudding
Grapefruit Drink
Pineapple-Grapefruit
Drink

Day 2 Meal A

Day 2 Meal A

Peaches
Scrambled Eggs
Bacon Squares (8)
Cocoa
Orange Drink

Peaches
Corn Flakes
Canadian Bacon &
Applesauce
Cocoa
Orange Drink

Day 2 Meal B

Day 2 Meal B

Beef and Gravy WP
Pears
Butterscotch Pudding
Pineapple-Grapefruit
Drink
Grape Drink

Beef and Gravy WP
Butterscotch Pudding
Pineapple-Grapefruit
Drink
Grapefruit Drink

Day 2 Meal C

Day 2 Meal C

Turkey and Gravy
Chicken Stew
Apricots
Jellied Candy
Orange-Grapefruit
Drink

Turkey and Gravy WP
Chicken Stew
Fruit Cocktail
Jellied Candy
Orange-Grapefruit
Drink

2 Spoons

WP = Wet Pack

Basic Date _____
Changed _____

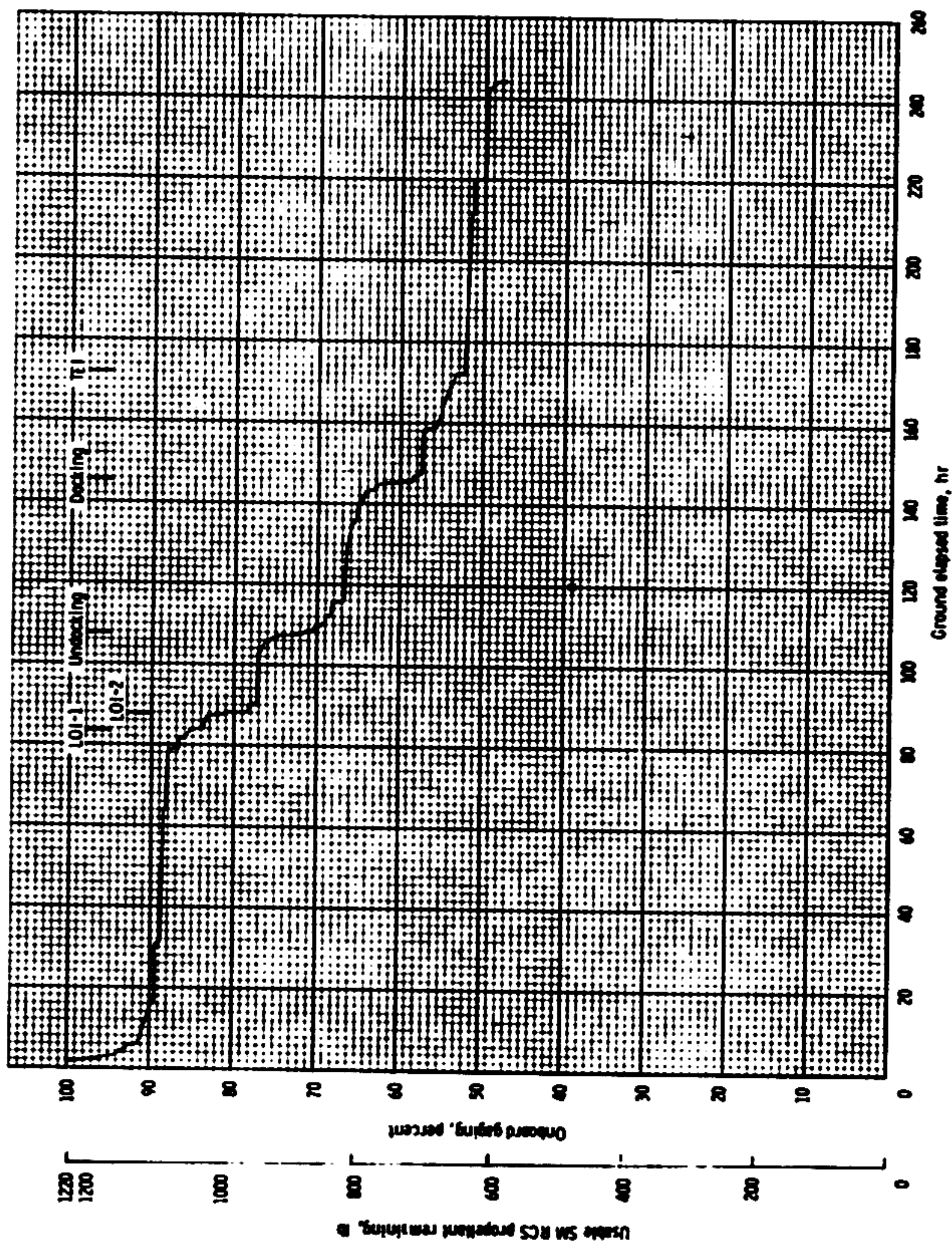
FOOD LOG

FOOD LOG

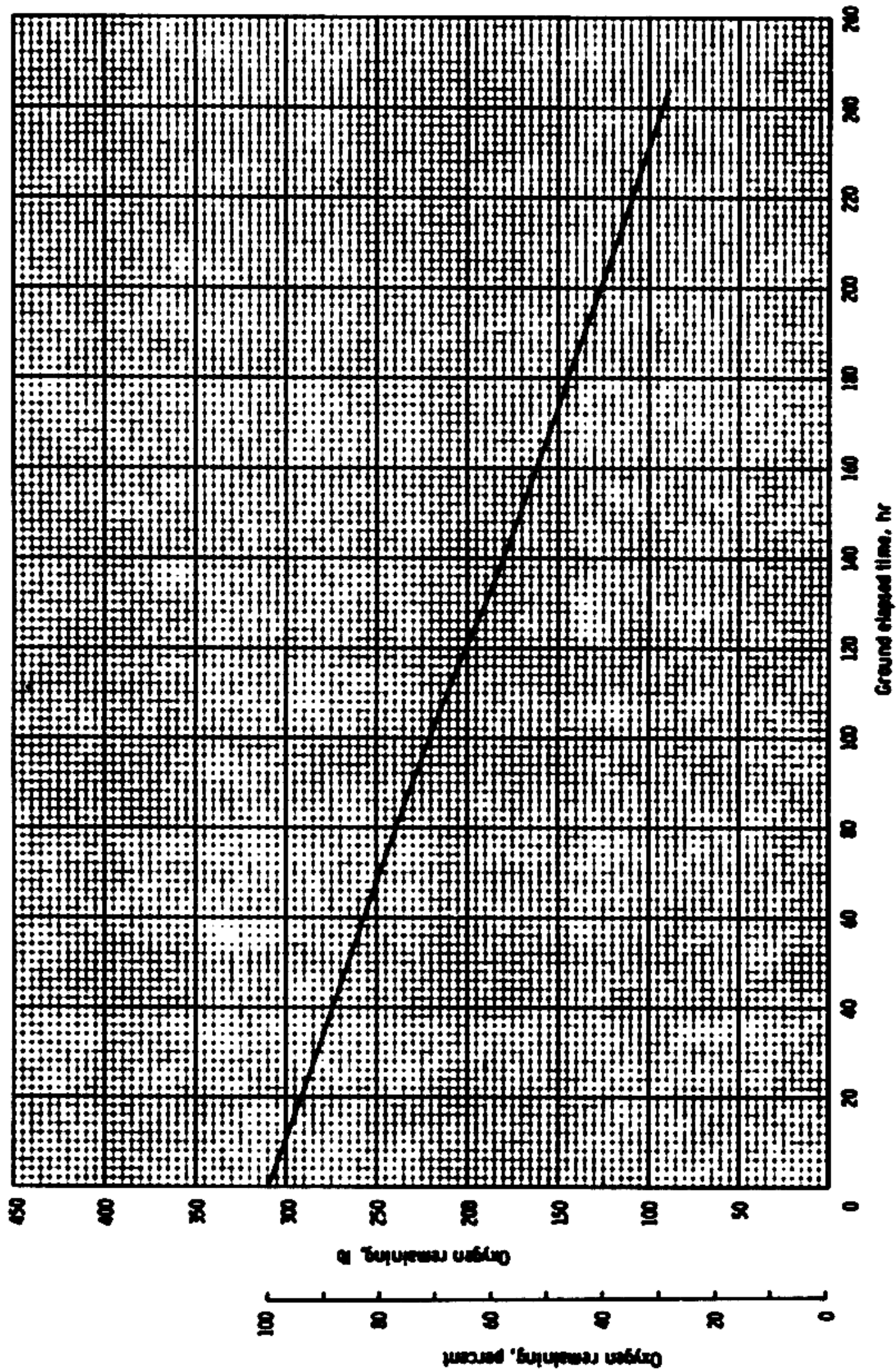
FOOD LOG

FOOD LOG

DATE NOVEMBER 3, 1969

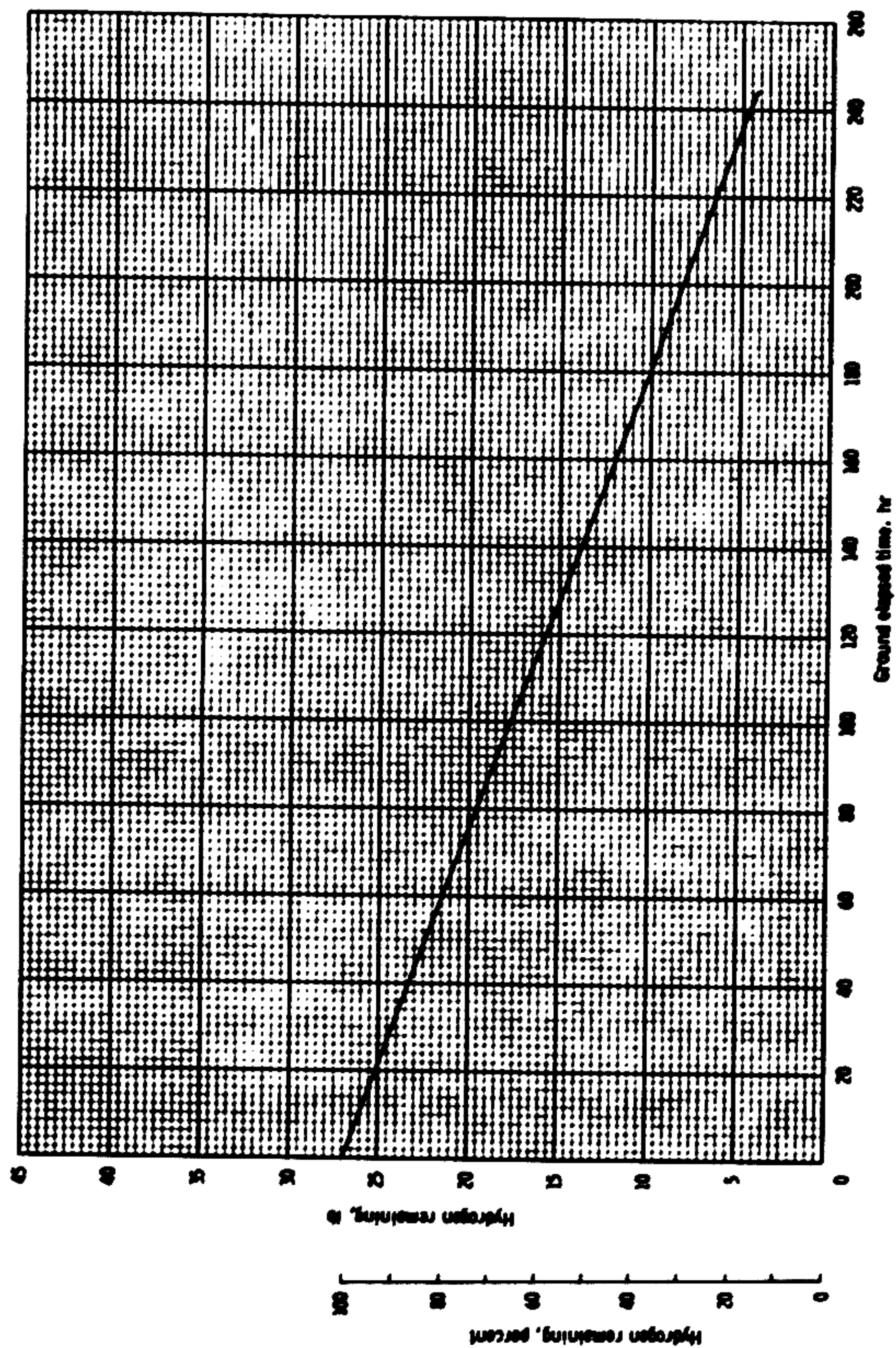


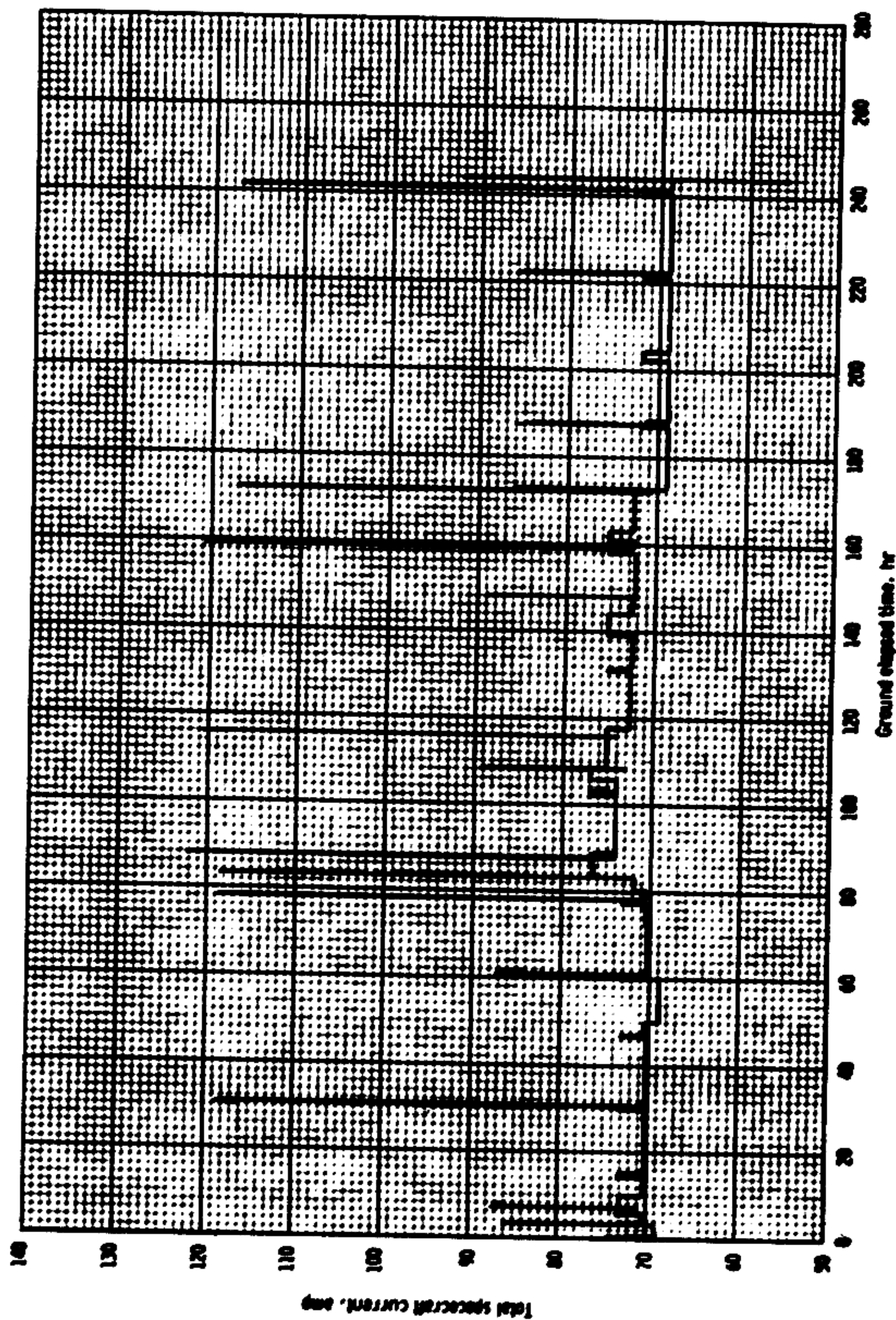
TOTAL SM RCS



DATE NOVEMBER 3, 1969

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