F. MARTIN

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

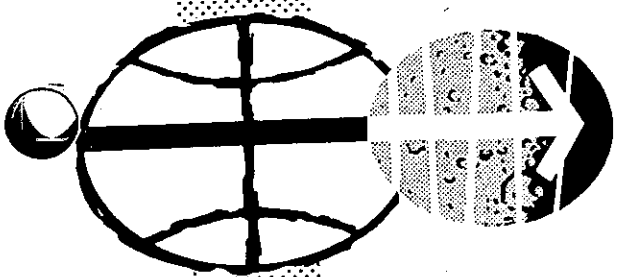
FINAL

FLIGHT PLAN APOLLO 8

AS-503/CSM-103

NOV 22, 1968

PREPARED BY
FLIGHT PLANNING BRANCH
FLIGHT CREW SUPPORT DIVISION



MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

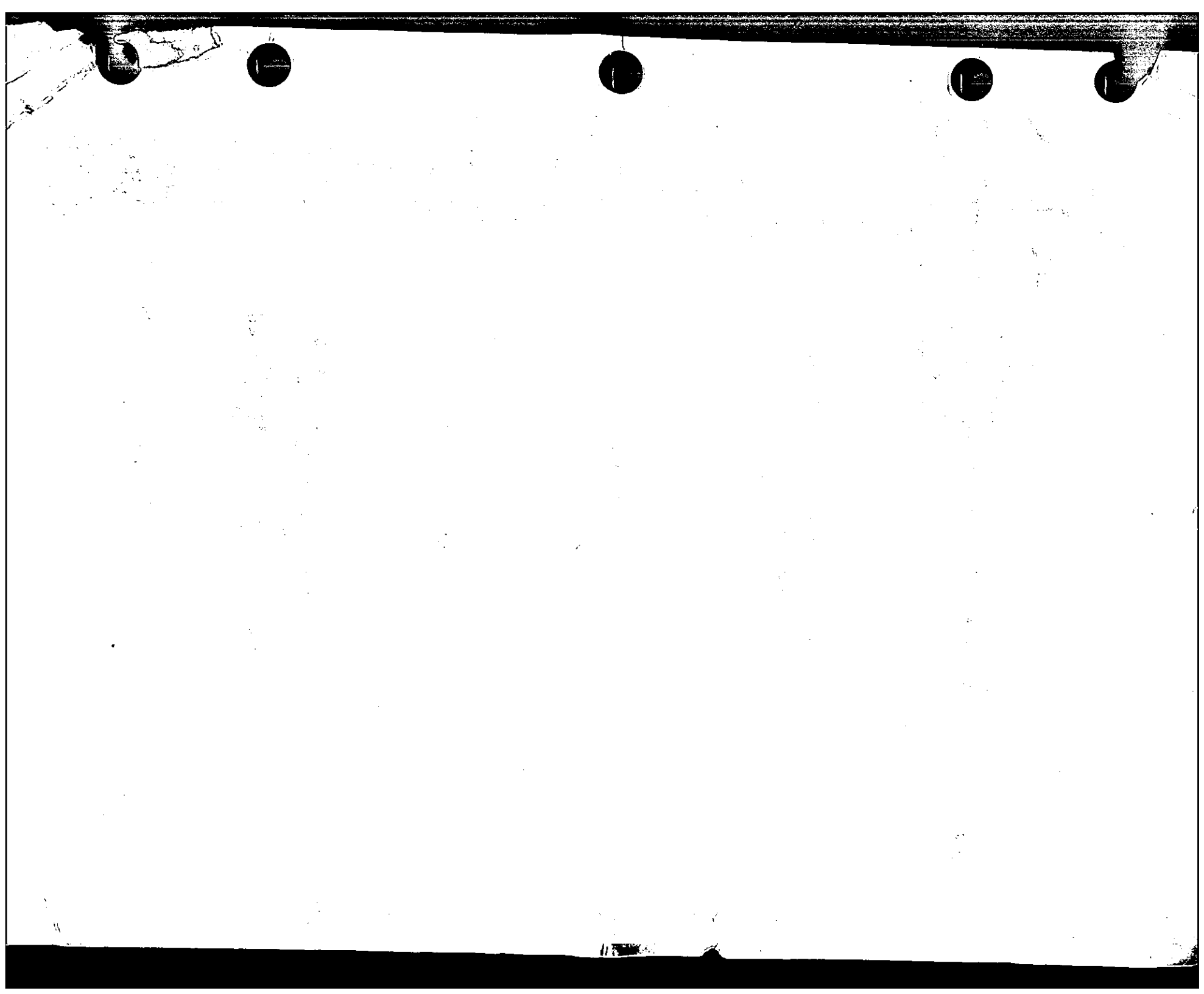
SECTION I

SECTION II

SECTION III

SECTION IV

SECTION V



APOLLO AS503/CSM 103

FINAL FLIGHT PLAN

November 22, 1968

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INTRODUCTION

This Flight Plan has been prepared by the Flight Planning Branch, Flight Crew Support Division, with technical support by TRW Systems.

This document schedules the AS503/CSM103 operations and crew activities to fulfill, when possible, the test objectives defined in the Mission Requirements, SA503/CSM103, C' Type Mission, (Lunar Orbit).

The trajectory parameters used in this Flight Plan are for a December 21,1968 launch, with a 72° launch azimuth and were supplied by Mission Planning and Analysis Division as defined by the Apollo Mission C' Spacecraft Operational Trajectory.

The Apollo 8 Flight Plan is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes to this document that fall in the following categories should be submitted to the CPCB via a Crew Procedures Change Request:

1. Items that impose additional crew training or impact crew procedures.

2. Items that impact the accomplishment of detailed test objectives.

3. Items that result in a significant RCS or EPS budget change.

4. Items that result in moving major activities to a different activity day in the Flight Plan.

5. Items that require a change to the flight data file.

The Chief, Flight Planning Branch (FCSD) will determine what proposed changes fall in the above categories.

Mr. T. A. Guillory will act as co-ordinator for all proposed changes to the Apollo 8 Flight Plan.

ABBREVIATIONS

ACCEL	Accelerometer
ACT	Activation
ACQ	Acquisition
AEA	Abort Electronics Assembly
AGS	Abort Guidance Sybsystem
AH	Ampere Hours
ALIGN	Alignment
ALT	Altitude
AMP or amp	Ampere
AMPL	Amplifier
ANG	Antigua
Ant	Antenna
AOS	Acquisition of Signal
AOT	Alignment Optical Telescope
APS	Ascent Propulsion Subsystem
ARS	Atmosphere Revitalization
ASC	Ascension
ASCT	Ascent
ATT	Attitude
AUX	Auxiliary
AZ	Azimuth
BAT	Battery
BDA	Bermuda
BP	Barber Pole
BT	Burn time
Bio	Bio-Medical Data on Voice Downlink
BiW	Black & white
BU	Backup
BRKT	Bracket
CAL	Pt. Arquillo, California
CAL	Calibration Angle
CAM	Camera
CB	Circuit Breaker
CDH	Constant Delta Altitude
CDR	Commander
CDU	Control Data Unit
CIRC	Circularization
CK	Check
CM	Command Module
CMC	Command Module Computer
CONT	Continue
CMD	Command
CMP	Command Module Pilot
CNTL	Control
CNTLS	Controls
C.O.	Cut off
C/O	Check out
COAS	Crew Optical Alignment Sight
COMM	Communications
COMP	Computational
CONFIG	Configuration
CP	Control Point
CRO	Carnarvon, Australia
CRYO	Cryogenic
CSI	Coelliptic Sequence Initiation Maneuver
CSM	Command Service Module
C&WS	Caution and Warning System
CYI	Grand Canary Island
DAP	Digital Auto Pilot
D/B	Deadband
DEDA	Data Entry and Display Assembly
DEGS	Degrees
DEPL	Depletion
DET	Determination or Digital Event Timer
DIFF	Difference
DK	Docked
DOI	Descent Orbit Insertion

DPS	Descent Propulsion Subsystem
DSE	Data Storage Equipment
DSKY	Display and Key Board
DTO	Detailed Test Objective
DUA	Digital Uplink Assembly
DWN	Down
E	Erasable
ECS	Environmental Control Subsystem
EPH	Earth Far Horizon
EI	Earth (atmosphere) Interface
ELDMK	Earth Landmark
EMS	Entry Monitor System
ENH	Earth Near Horizon
EPO	Earth Parking Orbit
EPS	Electrical Power Subsystem
EQUIP	Equipment
EST	Eastern Standard Time
EVAP	Evaporator
EVT	Extravehicular Transfer
EXT	External
f	F Stop
FC	Fuel Cell
FDAI	Flight Director Attitude Indicator
FLT	Flight
FM	Frequency Modulated
FOV	Field of View
fps	Feet per second
FQ	Flight Qualification
FT or ft	Feet
FTP	Full Throttle Position
GBI	Grand Bahama
GDC	Gyro Display Coupler
GDS	Goldstone, California
GET	Ground Elapsed Time
GETI	Ground Elapsed Time of Ignition
GLY	Glycol
GMT	Greenwich Mean Time
G&N	Guidance and Navigation
GNCS	Guidance Navigation Control System
GWM	Guam
GYM	Guaymas, Mexico
HA	Apogee Altitude
HAW	Hawaii
HBR	High Bit Rate (TLM)
HD	Highly Desirable
HGA	High Gain Antenna
HI	High
Hp	Perigee Altitude
HSK	Honeysuckle (Canberra, Australia)
HTR	Heater
HTV	USNS Huntsville
ID	Identification
IGN	Ignition
IMU	Inertial Measurement Unit
INIT	Initialization
INT	Intervalometer
IP	Initial Point
IU	Instrumentation Unit
IVT	Intravehicular Transfer
JETT	Jettison
kwh	Kilowatt Hour
LAT	Latitude
LBR	Low Bit Rate (TLM)
LBS or lbs	Pounds

ABBREVIATIONS (Cont'd)

LCG	Liquid Cooled Garment
LDG	Landing
LDMK	Landmark
LEB	Lower Equipment Bay
LFH	Lunar Far Horizon
LGC	LM Guidance Computer
LH	Left-hand
L/H	Local Horizontal
LHEB	Left-hand Equipment Bay
LHFEB	Left-hand Forward Equipment Bay
LIOH	Lithium Hydroxide
LLM	Lunar Landing Mission
LLOS	Landmark Line of Sight
LM	Lunar Module
LMP	Lunar Module Pilot
LNH	Lunar Near Horizon
LOI	Lunar Orbit Insertion
LONG	Longitude
LOS	Loss of Signal
LPO	Lunar Parking Orbit
LR	Landing Radar
LT	Light
LTG	Lighting
LV	Launch Vehicle
L/V	Local Vertical
LVPD	Launch Vehicle Pressure Display
M	Mandatory
MAD	Madrid, Spain
MAN	Manual
MAX	Maximum
MAX Q	Maximum Dynamic Pressure
MCC	Midcourse Correction
MCC-H	Mission Control Center -- Houston
MDC	Main Display Console
MEAS	Measurement
MER	USNS Mercury
MET	Mission Event Timer
M/I	Minimum Impulse
MIN	Minimum
MLA	Merritt Island
MNVR	Maneuver
MON	Monitor
MSFN	Manned Space Flight Network
MTVC	Manual Thrust Vector Control
NAV	Navigation
NCC	Corrective Combination Maneuver
nm	Nautical Miles
NOM	Nominal
NSR	Nominal Slow Rate
NXX	Noun XX
OBS	Observation
O/F	Oxidizer to Fuel
OPER	Operate
ORB	Orbital
ORDEAL	Orbit Rate Display Earth and Lunar
ORIENT	Orientation
OVHD	Overhead
P	Pitch
PAD	Voice Update
PCM	Pulse Code Modulation
PC	Pericyntiian
PGA	Pressure Garment Assembly
PGNCS	Primary Guidance Navigation Control Section
PIPA	Pulse Integrating Pendulous Accelerometer
PM	Phase Modulated
POL	Polarity or Polarizing

ABBREVIATIONS (Cont'd)

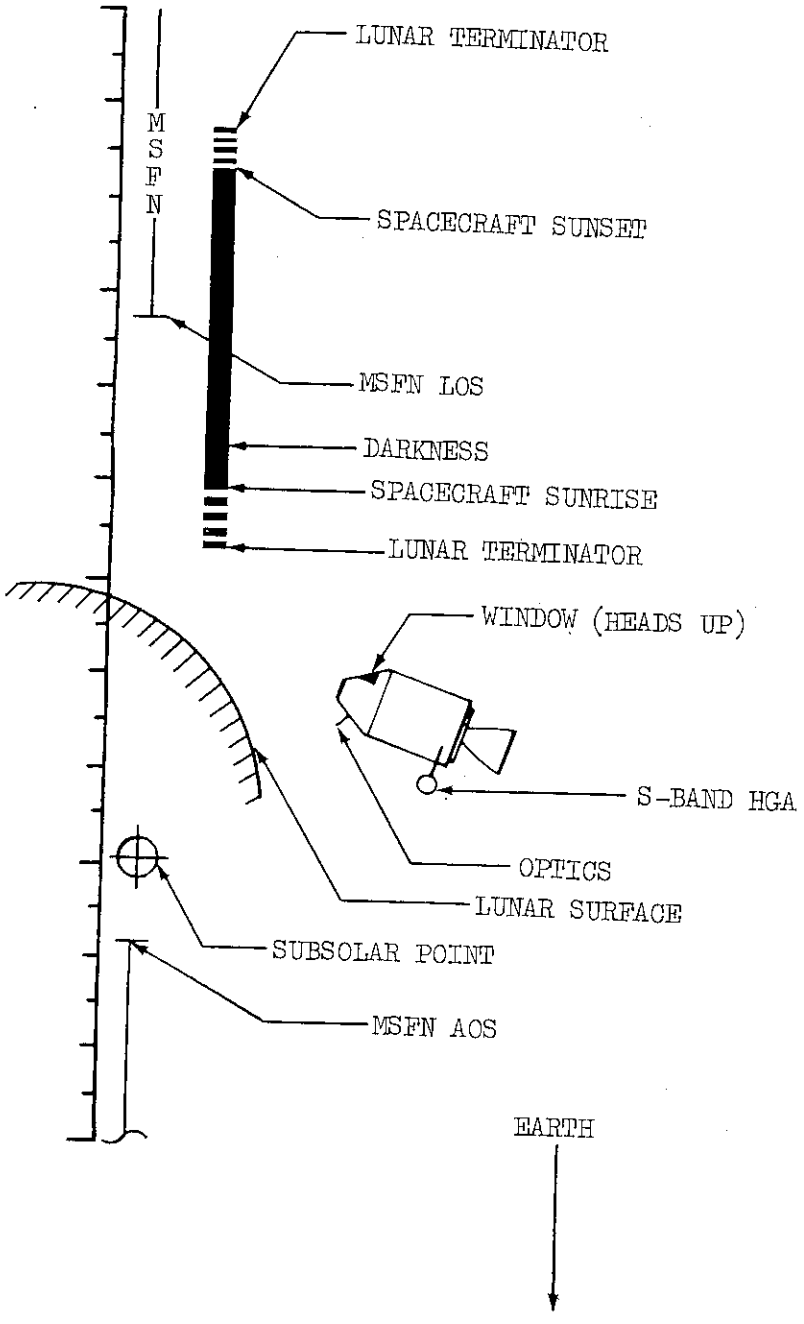
PREF	Preferred
PREP	Preparation
PRESS	Pressure
PRIM	Primary
PT	Point
PRN	Pseudo-Random Noise
PROP	Proportional
PU	Propellant Utilization
PUGS	Propellant Utilization and Gaging System
PTC	Passive Thermal Control
PWR	Power
Pxx	Program XX
Qty	Quantity
R	Roll
R&B	Red & Blue
RAD	Radiator
RCDR	Recorder
RCS	Reaction Control Subsystem
RCU	Remote Control Unit
RCV	Receiver
RED	USNS Redstone
REFSMMAT	Reference Stable Member Matrix
REG	Regulator
REQD	Required
RH	Right-hand
RNDZ	Rendezvous
RR	Rendezvous Radar
RSI	Roll Stability Indicator
RT	Real Time
RTC	Real-Time Command
Rxx	Routine XX
S	Shaft
SA	Shaft Angle
S/C	Spacecraft
SCE	Signal Conditioning Equipment
SCS	Stabilization Control System
SCT	Scanning Telescope
SEC	Secondary
SECO	S-IVB Engine Cut-off
SEP	Separate
SEQ	Sequence
SLA	Service Module LM Adapter
SLOS	Star Line-of-Sight
SM	Service Module
SPOT	Spot Meter
SPS	Service Propulsion System
SR	Sunrise
SRX	S-Band Receiver Mode No. X
SS	Sunset
STX	S-Band Transmit Mode No. X
STBY	Standby
Sw	Switch
SXT	Sextant
SYNC	Synchronization
T	Trunnion
T_{EPHEM}	Time of Ephemeris Update
TA	Trunnion Angle
TAN	Tananarive
TCA	Time of Closest Approach
TBD	To Be Determined
TEC	Trans Earth Coast
TEI	Transearth Insertion

ABBREVIATIONS (Cont'd)

TEMP	Temperature
TERM	Terminate
TEX	Corpus Christi, Texas
T&D	Transposition and Docking
TGT	Target
TIG	Time of Ignition
TLC	Trans Lunar Coast
TLI	Translunar Insertion
TLM	Telemetry
TPF	Terminal Phase Final
TPI	Terminal Phase Initiation
TPM	Terminal Phase Midcourse
T/R	Transmitter/Receiver
TRANS	Translation
TV	Television
TVC	Thrust Vector Control
TWR	Tower
UMB	Umbilical
UNDK	Undock
US	United States Pass
VHF	Very High Frequency
VLV	Valve
Vxx	Verb xx
W/O	Without
WRT	With Respect to
WTN	USNS Watertown
XFER	Transfer
XMIT	Transmit or Transmitter
XPONDER	Transponder
Y	Yaw
ΔV	Velocity Change (Differential)
ΔVC	Velocity Change at Engine Cutoff
ΔR	Position Change (Differential)
8-balls	Flight Director Attitude Indicator (FDAI)
LBS or lbs	Pounds

CAMERA NOMENCLATURE

2/80/B3 - Hasselblad No. 2/80mm Lens/Stowage Location
16/18/20 - 16mm Camera/18mm Lens/20 Frames Per Second
1/150/New B&W/INT - Hasselblad No. 1/150mm Lens/VSE New B&W Magazine/with interferometer
C-EX - color film - external
POL FILTER 1/4 - Polarization filter, Shutter Speed 1/4
S0368 - Type of External Film
2/80/H.S. - Hasselblad No. 2/80mm Lens/High Speed Film
Cable/BRRT/R&B - Use Power Cable, Camera Mounted on Bracket with Red & Blue Filter


LUNAR TERMINATOR
M
S
F
N
SPACECRAFT SUNSET
MSFN LOS
DARKNESS
SPACECRAFT SUNRISE
LUNAR TERMINATOR
WINDOW (HEADS UP)
S-BAND HGA
OPTICS
LUNAR SURFACE
SUBSOLAR POINT
MSFN AOS
EARTH

SECTION I - GENERAL

FLIGHT PLAN DESCRIPTION

DAY 1

The spacecraft is launched into a 100-nm circular orbit with a launch azimuth that varies between 72° and 108° during the daily launch window. The lift-off time varies during the monthly launch window, but is constrained to daylight launches. The trajectory for this flight plan is a 72° launch azimuth December 21, 1968 with a 12:51:00 GMT (7:51:00 AM, EST) lift-off. Both the variable lift-off time and launch azimuth effect the earth-orbit station coverage, IMU alignment time, translunar and transearth coast time, and lunar surface lighting conditions.

The spacecraft remains attached to the S-IVB for approximately 4 hours. During this time, the crew checks out the CSM systems, performs an optics check, IMU realignment to the pad REFSMMAT, monitors the TLI maneuver, and performs transposition and separation from the S-IVB. The crewmen doff and stow their helmets and gloves prior to TLI and they are not donned again. The TLI maneuver places the S/C in a free return lunar trajectory.

Following TLI, the CMP doffs his PGA, performs an IMU realign, and a series of star/earth horizon sightings. All translunar and transearth sightings contain three marks per set. After these sightings, the CDR and LMP doff and stow their PGA's. At this point, the first eat period is scheduled.

At TLI + 6 hours (09:00 GET), the first MCC decision point is scheduled. Before this point and prior to each midcourse, there is a MCC-H state vector update, target load, maneuver pad update, an IMU alignment, and systems checks. For the nominal trajectory, the midcourses are nominally zero.

After MCC_1, a series of star/earth landmark sightings is scheduled at which time the CDR sleep period begins (11:00 GET) followed by the CMP and LMP sleep period (18:00 GET). During the CDR sleep period, the CMP performs a series of star/earth horizon sightings.

DAY 2

Crew activity on day 2 begins at approximately 24:00 GET. At 26:30 GET, the CMP performs a series of star/earth horizon sightings, then MCC_2 at TLI + 25 hours (28:00 GET), followed by another series of star/earth horizon sightings. Then the CDR sleep period begins (29:00 GET) followed by the CMP and LMP sleep period (36:00 GET). During the CDR sleep period, TV is scheduled for 15 minutes (31:15 GET) and a series of star/earth horizon sightings is performed at (34:15 GET). During day 2, MCC_3 occurs at LOI -22 hours (47:00 GET). The maneuver is preceded by a series of star/earth horizon sightings.

DAY 3

Crew activity on day 3 begins at approximately 48:00 GET. During the CDR sleep period (52:00 GET), the CMP performs a series of star/lunar horizon sightings (52:15 GET) and TV is scheduled for 15 minutes (55:15 GET). At LOI - 8 hours (61:00 GET), MCC_4 is scheduled. The CMP and LMP sleep period (62:00 GET) is scheduled between MCC_4 and LOI_1.

At 69:07 GET, the LOI_1 maneuver places the S/C into a 60 x 170-nm lunar orbit. Scheduled during the first two lunar revolutions are camera preparation, eat period, COAS ground track determination, control point and pseudo landing site, observations, photographs of targets of opportunity, TV transmission, and LOI_2 preparation. The IMU is realigned once during each dark period in lunar orbit.

DAY 4

Crew activity on day 4 begins at approximately 72:00 GET. At 73:31 GET, the LOI_2 circularization maneuver places the S/C into a 60-nm circular orbit. Scheduled during revolutions 3 and 4 are a 2-hour CMP rest period, landmark training photography, vertical stereo photography, and landmark lighting evaluation.

Scheduled during revolutions 5 and 6 are a 3-hour CDR rest period, one control point landmark tracking, and a pseudo landing site tracking during each daylight period. Each tracking consists of 4 marks.

Scheduled during revolutions 7 and 8 are a 2-hour LMP rest period, three control point landmark trackings, and a pseudo landing site tracking during each daylight period. Each tracking consists of 4 marks.

Scheduled during revolutions 9 and 10 are a 2-hour CMP rest period, convergent stereo photography, an eat period, TEI preparation, and the TEI maneuver at 89:15 GET.

After TEI, the CDR sleep period begins (89:20 GET) followed by the CMP and the LMP sleep period (94:00 GET). During the CDR sleep period, the CMP performs a series of star/lunar horizon sightings.

DAY 5

Crew activity on day 5 begins at approximately 96:00 GET. After the sleep period, the CMP performs a series of star/lunar horizon and star/earth horizon sightings; then MCC_5 at TEI + 15 hours (104:00 GET), followed by TV transmission at 104:15 GET and a series of star/earth horizon sightings (105:15 GET).

During the CDR sleep period (105:00 GET), the CMP performs a series of star/lunar horizon and star/earth horizon sightings. The CMP and LMP sleep periods begin at 112:00 GET.

DAY 6

Crew activity on day 6 begins at approximately 120:00 GET. After a series of star/earth horizon sightings, MCC_6 is scheduled at TEI + 33 hours (122:00 GET) followed by a series of star/lunar horizon and star/earth horizon sightings. Also scheduled is the CDR sleep period (127:00) and both the CMP and LMP sleep periods (134:00). During the CDR sleep period, TV transmission is scheduled (128:00 GET), and the CMP performs a series of star/earth horizon and star/lunar horizon sightings. After the sleep period, the CMP does a series of star/earth horizon sightings.

DAY 7

Crew activity on day 7 begins at approximately 144:00 GET. At EI minus 2 hours (144:50 GET), MCC_7 is scheduled. CM/SM separation nominally occurs at 146:35 GET with splashdown in the Pacific Ocean approximately 20 minutes later.

FLIGHT PLAN NOTES

A. CREW

1. Crew designation is as follows:

Designation	Couch Postion	Prime	Backup
Commander (CDR)	Left	Borman	Armstrong
Command Module Pilot (CMP)	Center	Lovell	Aldrin
Lunar Module Pilot (LMP)	Right	Anders	Haise

2. The crew will nominally follow a 17-hour work/7-hour rest cycle where possible. One crewman will be awake at all times with all crewmen awake during major burns. The crew will eat together when possible with additional activities held to a minimum during eat periods. The eat period is normally one-hour duration.

3. The pressure suits will be doffed after TLI and donned prior to entry. Helmets and gloves will be doffed prior to TLI and will remain off until prior to entry.

4. A crew status report will be made twice a day on each crewman.

5. General flight plan updates containing changes to the following day's activity schedule, will be voiced up once per day.

6. Negative reporting will be used in reporting completion of each checklist.

B. COMMUNICATIONS AND INSTRUMENTATION

1. S-band will be prime for voice, ranging and PCM with the VHF used as backup for voice during near earth phases (< 4000 nm). The S-band backup voice system will be checked during the first orbit and the high gain antenna checked after S-IVB/CSM separation.

2. The Flight Qual Recorder will be used as follows:

   a. Lift-off -45 seconds through 0:12:00 GET
   b. TLI -2 minutes through TLI cutoff +1 minute
   c. CSM/S-IVB Sep -2 minutes through Sep +1 minute
   d. LOI_1 -2 minutes to end of tape

3. The DSE will normally be dumped by real time command (RTC).

4. During communications, the spacecraft will be referred to as "Apollo 8" and the ground as "Houston". The crew member call sign will be their assigned crew position.

C. CSM SYSTEMS

1. The spacecraft (S/C) lift-off switch positions are listed in Apollo (CSM 103) Operations Handbook (AOH), Volume 2, August 1, 1968.

2. Fuel cell purging for H_2 and O_2 will be scheduled R/T.

3. The S/C will remain fully poweredup throughout the mission (IMU, CMC and SCS always in operate) with the optics on as required.

4. IMU drift checks are scheduled after TLI, before LOI_1, on revolutions 2 and 4 through 10 in lunar orbit, and prior to entry.

5. The potable water is chlorinated at 24-hour intervals.

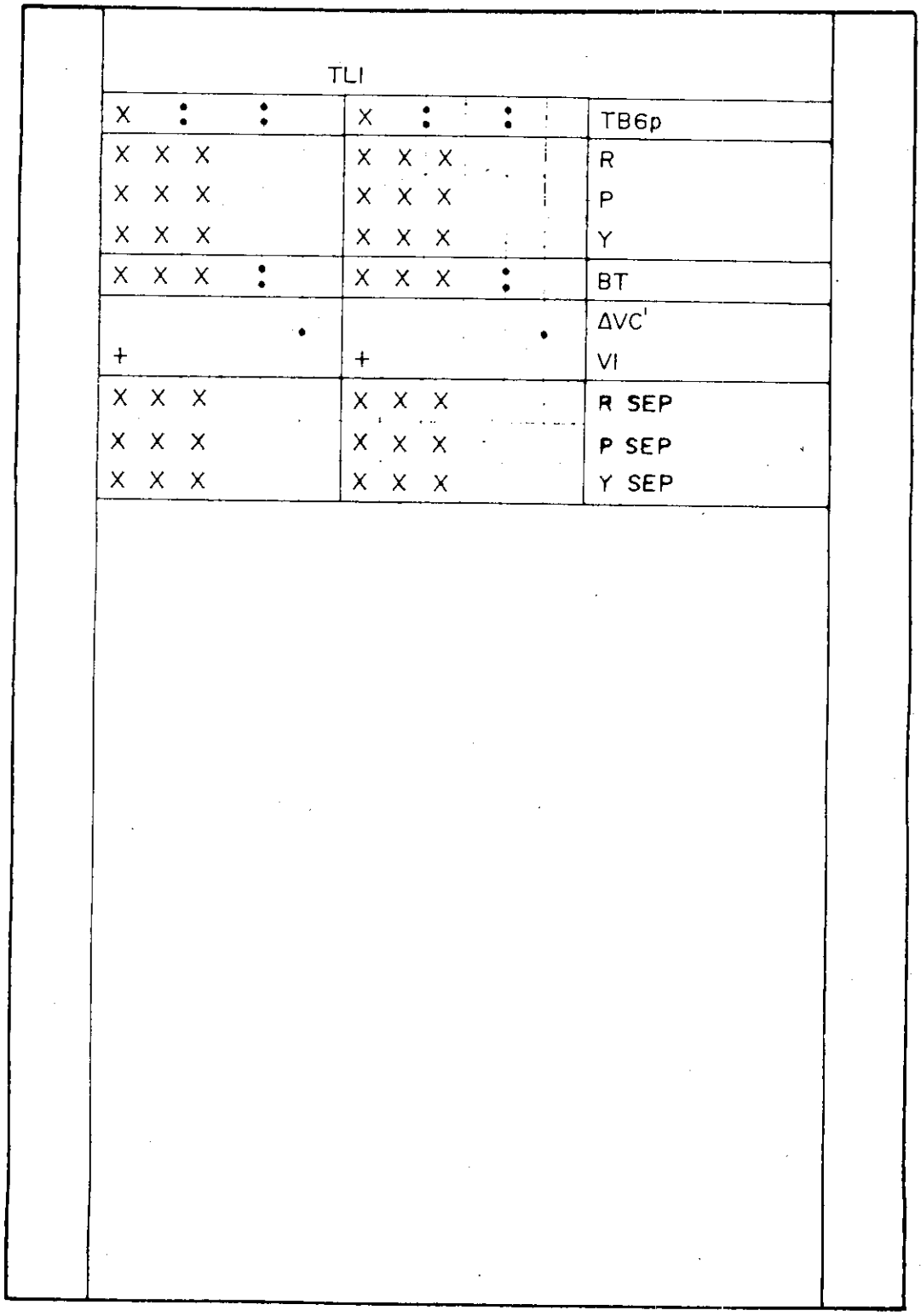
6. All onboard gage readings will be read directly from the spacecraft gages and not corrected by the appropriate factors.

SCHEDULED COMMUNICATION TESTS

GET	ALTITUDE nm	CSM ANTENNA	SIGNAL COMBINATION	GROUND ANT	COMMUNICATIONS MODE
03:20		OMNI	4.2	85' GDS	Carrier,PRN,voice, 51.2 KBPS TM
05:45	24,000	HI GAIN	4.2	85' GDS	Carrier,PRN,voice, HBR TM
	24,000	HI GAIN	6.2	85' GDS	Carrier,PRN,Voice, HBR TM
	24,000	HI GAIN	.2	85' GDS	Plybk of Recorded Voice & LBR TM
07:00	35,000	HI GAIN	4.3	85' GDS	Carrier,PRN,voice, LBR TM
to	35,000	HI GAIN	6.3	85' GDS	Carrier,PRN,voice, LBR TM
08:00	35,000	HI GAIN	5.2	85' GDS	Carrier,PRN,voice HBR TM
	35,000	HI GAIN	8.1	85' GDS	Carrier,voice and LBR TM
29:00	110,000	HI GAIN	4	30' ASC	Carrier, PRN, Voice
to	110,000	HI GAIN	5	30' ASC	Carrier, PRN, Updata
30,000	110,000	HI GAIN	6	30' ASC	Carrier, PRN, Voice, Updata
or	110,000	HI GAIN	8	30' ASC	Carrier, BU Voice
125,000	110,000	HI GAIN	4.2	30' ASC	Carrier, PRN, Voice, HBR TM
to	110,000	HI GAIN	5.2	30' ASC	Carrier, PRN, Voice, HBR TM
126,000	110,000	HI GAIN	4.3	30' ASC	Carrier, PRN, Voice, LBR TM
	110,000	HI GAIN	8.1	30' ASC	Carrier, Voice, HBR TM
	110,000	OMNI	1	30' ASC	Carrier, PRN
	110,000	OMNI	.5	30' ASC	Carrier, LBR TM
	110,000	OMNI	.6	30' ASC	Carrier, Key Subcarrier
	110,000	OMNI	1.7	30' ASC	Carrier, PRN Ranging
	110,000	OMNI	.8	30' ASC	Carrier, BU Voice, LBR TM
	110,000	OMNI	.10	30' ASC	Carrier, BU Voice
31:15	120,000	HI GAIN	.4	85' GDS	CSM Television
			NORMAL OPERATING MODES		
69:00	205,000	HI GAIN	6.2	85'	Carrier, PRN, Voice, HBR TM
	205,000	HI GAIN	6.3	85'	Carrier, PRN, Voice, LBR TM
	205,000	HI GAIN	.2	85'	Plybk of Recorded voice &LBR TM
89:00	205,000	HI GAIN	.4	85'	CSM television

Pages 1-8 thru 1-21 contain the following voice update forms and the explanation for the abbreviations and symbols used.

Pg 1-8 and 1-9	TLI PAD/EXPLANATION
Pg 1-10 and 1-11	P27 UPDATE PAD/EXPLANATION
Pg 1-12 thru 1-14	MANEUVER PAD/EXPLANATION
Pg 1-15 thru 1-17	ENTRY PAD/EXPLANATION
Pg 1-18 thru 1-21	MAP UPDATE PAD/EXPLANATION


TLI
X : :
X : :
TB6p
X X X
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R
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Y
X X X :
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BT
+
+
ΔVC'
VI
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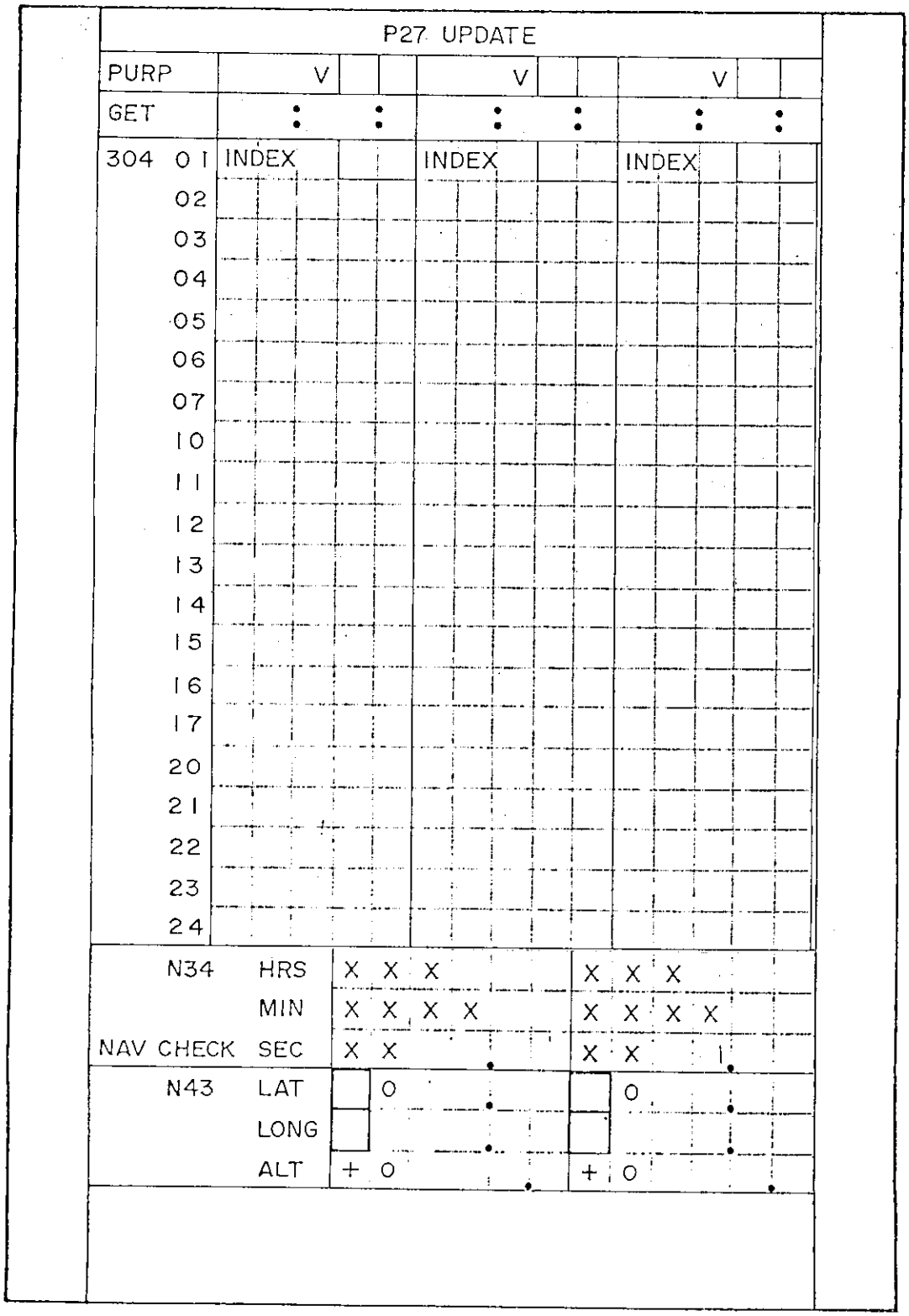
R SEP
P SEP
Y SEP

TLI PAD

TB6p	X:XX:XX(HRS:MIN:SEC)	PREDICTED TIME OF BEGINNING OF S-IVB RESTART PREPARATION FOR TLI (TB6 = TLI IGN -9 MIN)
R	XXX (DEG)	PREDICTED SPACECRAFT IMU GIMBAL ANGLES AT TLI IGNITION
P	XXX (DEG)	
Y	XXX (DEG)	
BT	XX:XX (MIN:SEC)	DURATION OF TLI BURN
ΔVC'	XXXXX.X (fps)	NOMINAL TLI ΔV SET INTO EMS ΔV CONTROL
VI	+XXXXX (fps)	NOMINAL INERTIAL VELOCITY DISPLAYED ON DSKY AT TLI CUTOFF
R SEP	XXX (DEG)	PREDICTED SPACECRAFT IMU GIMBAL ANGLES AT COMPLETION OF S-IVB MNVR TO CSM/S-IVB SEP ATTITUDE
P SEP	XXX (DEG)	
Y SEP	XXX (DEG)	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PURP
V
V
V
GET
304 01
INDEX
INDEX
INDEX
02
03
04
05
06
07
10
11
12
13
14
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NAV CHECK
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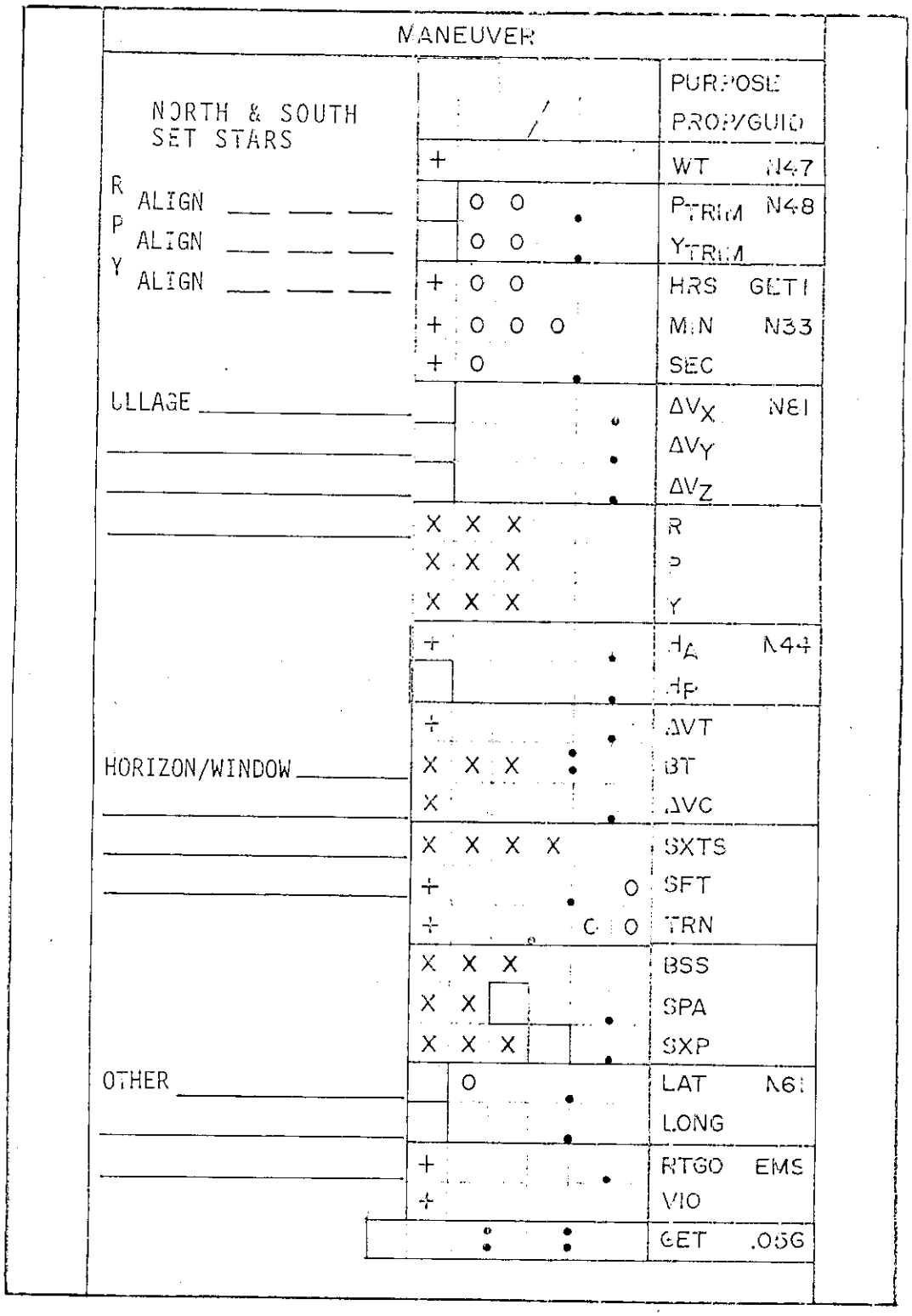
X X
X X X
X X X X
X X
N43
LAT
LONG
ALT
0
+ 0
0
+ 0

P27 UPDATE

PURP	XXX	TYPE OF DATA TO BE RECEIVED (SUCH AS: NAV - LIFT-OFF TIME)
V	XX	TYPE OF COMMAND LOAD (70 - 71 - 72 - 73)
GET	XXX:XX:XX(HR:MIN:SEC)	TIME DATA RECORDED
01	XX (OCTAL)	INDEX NO. OF COMMAND WORDS IN LOAD
02-24	XXXXX	NO. OF CORRECTION COMMAND WORDS
NAV CHECK		TO CONFIRM POINT ABOVE GROUND TRACK FOR A GIVEN TIME
T	XX:XX:XX(HRS:MIN:SEC)	TIME
LAT	XX:XX (DEG)	LATITUDE
LONG	XXX:XX (DEG)	LONGITUDE
ALT	XXX.X (nm)	ALTITUDE

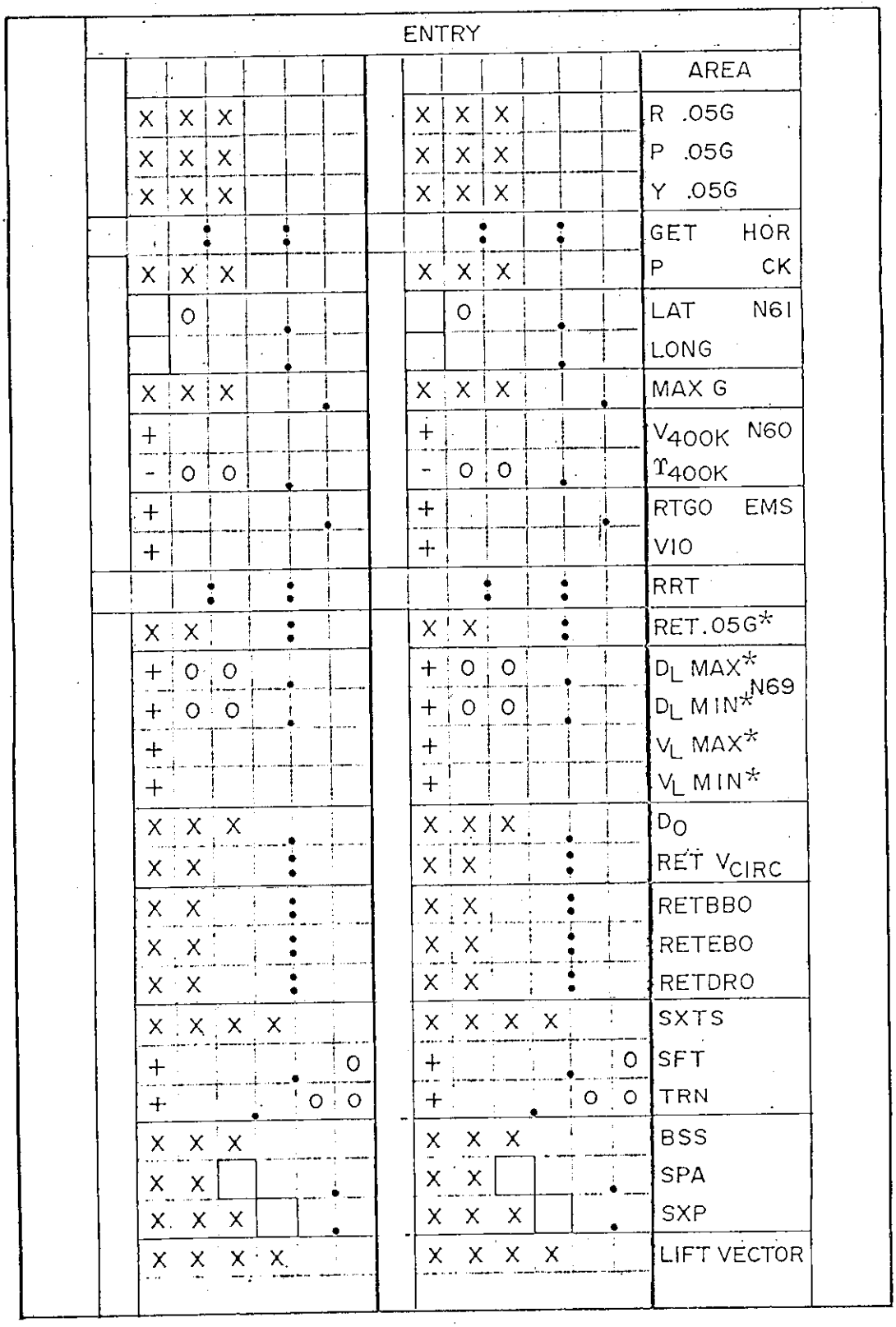

MANEUVER
NORTH & SOUTH
SET STARS
R
ALIGN
P
ALIGN
Y
ALIGN
ULLAGE
HORIZON/WINDOW
OTHER
PURPOSE
PROP/GUID
WT N47
P TRIM N48
Y TRIM
HRS GET
MIN N33
SEC
ΔVX N81
ΔVY
ΔVZ
R
P
Y
HA N44
HP
ΔVT
BT
ΔVC
SXTS
SFT
TRN
BSS
SPA
SXP
LAT N61
LONG
RTGO EMS
VIO
GET .05G

MANEUVER PAD

PURPOSE	XXXXXX	TYPE OF MNVR TO BE PERFORMED
PROP/GUID		PROPULSION SYSTEM (SPS/RCS)/ GUIDANCE (SCS/G&N)
WT	XXXXX (lbs)	PREMANEUVER VEHICLE WEIGHT
P TRIM	X.XX (DEG)	SPS PITCH GIMBAL OFFSET TO PLACE THRUST
Y TRIM	X.XX (DEG)	SPS YAW GIMBAL OFFSET TO PLACE THRUST
GETI	XX:XX:XX (HRS:MIN:SEC)	TIME OF MNVR IGNITION
ΔVX ΔVY ΔVZ	XXXX.X (fps) XXXX.X (fps) XXXX.X (fps)	P30 VELOCITY TO BE GAINED COMPONENTS IN LOCAL VERTICAL COORDINATES
R P Y	XXX (DEG) XXX (DEG) XXX (DEG)	IMU GIMBAL ANGLES OF MANEUVER ATTITUDE
H_A	XXXX.X (nm)	PREDICTED APOGEE ALTITUDE AFTER MANEUVER
H_P	XXXX.X (nm)	PREDICTED PERIGEE ALTITUDE AFTER MANEUVER
ΔVT	XXXX.X	TOTAL VELOCITY OF MANEUVER
BT	X:XX (MIN:SEC)	MANEUVER DURATION
ΔVC	XXXX.X (fps)	PREMANEUVER ΔV SETTING IN EMS ΔV COUNTER
SXTS	XX (OCTAL)	SEXTANT STAR FOR MANEUVER ATTITUDE CK
SFT	XXX.X (DEG)	SEXTANT SHAFT SETTING FOR MANEUVER ATTITUDE CK
TRN	XX.X (DEG)	SEXTANT TRUNNION SETTING FOR MANEUVER ATTITUDE CK
BSS	XXX (OCTAL)	BORESIGHT STAR FOR MANEUVER ATTITUDE CK USING THE COAS
SPA	XX.X (DEG)	BSS PITCH ANGLE ON COAS

MANEUVER PAD (cont'd)

SXP	X.X (DEG)	BSS X POSITION ON COAS
LAT LONG	XX.XX XXX.XX	LATITUDE AND LONGITUDE OF THE LANDING POINT FOR ENTRY GUIDANCE
RTGO	XXXX.X	RANGE TO GO FOR EMS INITIALIZATION
VIO	XXXXXX (fps)	INERTIAL VELOCITY AT .05G FOR EMS INITIALIZATION
GET(.05G)	XX:XX:XX	TIME OF .05G
NORTH & SOUTH SET STARS		STARS FOR TELESCOPE FOR BACKUP GDC ALIGN
R, P, Y (ALIGN)		ATTITUDE TO BE SET IN ATTITUDE SET TW FOR BACKUP GDC ALIGN
ULLAGE		NO. OF SM RCS JETS USED AND LENGTH OF TIME OF ULLAGE
HORIZON WINDOW		WINDOW MARKING AT WHICH HORIZON IS PLACED AT A SPECIFIED TIG (ATT CK)


ENTRY
AREA
R .05G
P .05G
Y .05G
GET HOR
P CK
LAT N61
LONG
MAX G
V_{400K} N60
γ_{400K}
RTGO EMS
VIO
RRT
RET.05G*
D_L MAX*
D_L MIN* N69
V_L MAX*
V_L MIN*
D_O
RET V_{CIRC}
RETBBO
RETEBO
RETDRO
SXTS
SFT
TRN
BSS
SPA
SXP
LIFT VECTOR

ENTRY PAD

AREA	XXX	SPLASHDOWN AREA DEFINED BY TARGET LINE
R .05G P .05G Y .05G	XXX(DEG) XXX(DEG) XXX(DEG)	SPACECRAFT IMU GIMBAL ANGLES REQUIRED FOR AERODYNAMIC TRIM AT .05G
GET (HOR CK)	XX:XX:XX (HRS:MIN:SEC)	TIME OF ENTRY ATTITUDE HORIZ CHECK AT EI -17 MIN.
P (HOR CK)	XXX(DEG)	PITCH ATTITUDE FOR HORIZON CHECK AT EI -17 MIN
LAT	±XX.XX(DEG)	LATITUDE OF TARGET POINT
LONG	±XXX.XX(DEG)	LONGITUDE OF TARGET POINT
MAX G	XX.X (G's)	PREDICTED MAXIMUM REENTRY ACCELERATION
V_{400K}	XXXXX (fps)	INERTIAL VELOCITY AT ENTRY INTERFACE
γ_{400K}	X.XX(DEG)	INERTIAL FLIGHT PATH ANGLE AT ENTRY INTERFACE
RTGO	+XXXX.X(nm)	RANGE TO GO FROM .05G TO TARGET FOR EMS INITIALIZATION
VIO	+XXXXX.(fps)	INERTIAL VELOCITY AT .05G FOR EMS INITIALIZATION
RRT	XX:XX:XX (HRS:MIN:SEC)	REENTRY REFERENCE TIME BASED ON GET OF PREDICTED 400K (DET START)
RET .05G	XX:XX (MIN:SEC)	TIME OF .05G FROM 400K (RRT)
D_L MAX	X.XX (G's)	MAXIMUM ACCEPTABLE VALUE OF PREDICTED DRAG LEVEL (FROM CMC)
D_L MIN	X.XX (G's)	MINIMUM ACCEPTABLE VALUE OF PREDICTED DRAG LEVEL (FROM CMC)
V_L MAX	XXXXX (fps)	MAXIMUM ACCEPTABLE VALUE OF EXIT VELOCITY (FROM CMC)
V_L MIN	XXXXX (fps)	MINIMUM ACCEPTABLE VALUE OF EXIT VELOCITY (FROM CMC)

ENTRY PAD (cont'd)

DO	X.XX (G's)	PLANNED DRAG LEVEL DURING CONSTANT G
RET V_{CIRC}	XX:XX (MIN:SEC)	TIME FROM EI THAT S/C VELOCITY BECOMES CIRCULAR
RETBBO	XX:XX (MIN:SEC)	TIME FROM EI TO THE BEGINNING OF BLACKOUT
RETEBO	XX:XX (MIN:SEC)	TIME FROM EI TO THE END OF BLACKOUT
RETDRO	XX:XX (MIN:SEC)	TIME FROM EI TO DROGUE DEPLOY
SXTS	XX(OCTAL)	SEXTANT STAR FOR ENTRY ATTITUDE CHECK
SFT	XXX.X(DEG)	SEXTANT SHAFT SETTING FOR ENTRY ATTITUDE CHECK
TRN	XX.X(DEG)	SEXTANT TRUNNION SETTING FOR ENTRY ATTITUDE CHECK
BSS	XXX(OCTAL)	BORESIGHT STAR FOR ENTRY ATTITUDE CHECK USING THE COAS
SPA	XX.X(DEG)	BSS PITCH ANGLE ON COAS
SXP	X.X(DEG)	BSS X POSITION ON COAS
LIFT VECTOR	XX	LIFT VECTOR DESIRED AT .05G's BASED ON ENTRY CORRIDOR

MAP UPDATE

REV 1/2 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

REV 2/3 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

REV 3/4 . REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

MAP UPDATE

REV 7/8 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

REV 8/9 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

REV 9/10 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

PM __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

REV 10 REMARKS

GET (hrs:min:sec)

LOS __ __:__ __:__ __

SR __ __:__ __:__ __

AOS __ __:__ __:__ __

SS __ __:__ __:__ __

MAP UPDATE

REV 4/5
GET (hrs:min:sec)

		REMARKS
LOS	__ __:__ __:__ __	
SR	__ __:__ __:__ __	
PM	__ __:__ __:__ __	
AOS	__ __:__ __:__ __	
SS	__ __:__ __:__ __	

REV 5/6
GET (hrs:min:sec)

		REMARKS
LOS	__ __:__ __:__ __	
SR	__ __:__ __:__ __	
PM	__ __:__ __:__ __	
AOS	__ __:__ __:__ __	
SS	__ __:__ __:__ __	

REV 6/7
GET (hrs:min:sec)

		REMARKS
LOS	__ __:__ __:__ __	
SR	__ __:__ __:__ __	
PM	__ __:__ __:__ __	
AOS	__ __:__ __:__ __	
SS	__ __:__ __:__ __	

MAP UPDATE

LOS	XX:XX:XX(HRS:MIN:SEC)	TIME OF MSFN LOSS OF SIGNAL IN LUNAR ORBIT
AOS	XX:XX:XX(HRS:MIN:SEC)	TIME OF MSFN ACQUISITION OF SIGNAL
SS	XX:XX:XX(HRS:MIN:SEC)	TIME OF SPACECRAFT SUNSET IN LUNAR ORBIT
SR	XX:XX:XX(HRS:MIN:SEC)	TIME OF SPACECRAFT SUNRISE IN LUNAR ORBIT
PM	XX:XX:XX(HRS:MIN:SEC)	TIME OF CROSSING OF MOON'S PRIME MERIDIAN (150°W)

SECTION II - DETAILED TIMELINE

FLIGHT PLAN

TIME	EVENT		REMARKS
-00:45	LMP:	FLT RCDR - RECORD	
-00:09	LCC:	IGNITION COMMAND	
-00:01		L/V ENGINE LTS (5) - OUT	
00:00	LCC:CDR:	REPORT LIFT-OFF	LIFT-OFF LT - ON, MET STARTS COUNT
		P11 AUTO	
00:02	CDR:	REPORT YAW MNVR	
00:11	CDR:	REPORT ROLL AND PITCH PROGRAM	
		INITIATE	
00:28	CDR	REPORT ROLL COMPLETE	
00:42	MCC-H:CDR:	REPORT MARK MODE 1B	
00:50	LMP:	REPORT CABIN PRESS DECREASE	
01:17	CDR:	REPORT MAX Q	
01:50	MCC-H:CDR:	REPORT MARK MODE 1C	
02:00	MCC-H:CDR:	REPORT GO/NO GO FOR STAGING	
02:05	CDR:	REPORT INBOARD ENGINE CUTOFF	
02:31	CDR:	REPORT OUTBOARD ENGINE CUTOFF	LTS 1, 2, 3, & 4 - ON
02:32	CDR:	REPORT S-IC/S-II STAGING	LTS OFF

MSC FORM 2114C (JUL 67)

FLIGHT PLAN

TIME	EVENT	REMARKS
03:00	CDR: REPORT 2ND PLANE SEP	>65% THRUST-S-II SEP LIGHT OUT
03:07	CDR: REPORT TWR JETT & MODE II	
03:25	CDR: REPORT GUIDANCE INITIATE	
03:53	MCC-H: REPORT TRAJECTORY AND GUID. GO/NO GO	
04:00	CMP: REPORT S/C GO/NO GO	
05:00	LMP: REPORT S/C GO/NO GO	
05:53	MCC-H:CDR: REPORT S-IVB TO ORBIT CAPABILITY	
06:00	CDR: REPORT S/C GO/NO GO	
06:15	LMP: OMNI ANT-D	IF LAUNCH AZIMUTH <90°
07:00		
	CDR: REPORT S/C GO/NO GO	
08:00		
08:20	MCC-H:CDR: REPORT GO/NO GO FOR STAGING	
08:40	CDR: REPORT S-II CUTOFF, S-II STAGING	

MSC FORM 2114C (JUL 67)

FLIGHT PLAN

TIME	EVENT	REMARKS
08:45	CDR: REPORT S-IVB IGNITION	
09:00	CDR: REPORT S/C GO/NO GO	
	MCC-H: REPORT TRAJECTORY AND GUID. GO/NO GO	
09:50	MCC-H:CDR: REPORT MARK MODE IV	
10:00	MCC-H:CDR: REPORT GO/NO GO FOR ORBIT	
	MCC-H: REPORT PREDICTED TIME OF SECO	
11:21	CDR: REPORT SECO AND HP	
11:31	MCC-H:CDR: REPORT ORBITAL GO/NO GO	
12:00	LMP: FLT RCDR - OFF	

MSC FORM 2114C (JUL 67)

FLIGHT PLAN

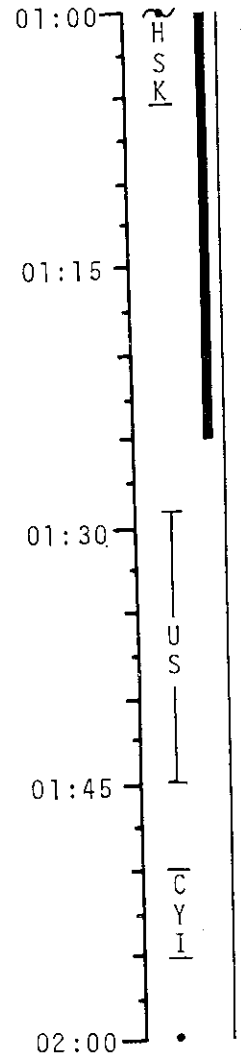
	CDR	CMP	LMP	MCC-H
00:00				
	POST INSERTION CONFIG	POST INSERTION CONFIG SM RCS CK CM RCS CK	POST INSERTION CONFIG	
00:15	REMOVE HELMET & GLOVES	C&W CK REMOVE HELMET & GLOVES	REMOVE HELMET & GLOVES	
	ECS POST INSERTION CONFIG		ECS POST INSERTION CONFIG	
	GDC ALIGN TO IMU	INGRESS LEB O_2 MAIN REG CK	EPS PERIODIC MONITOR ECS MONITOR CK	
00:30	MOUNT & INITIALIZE ORDEAL		SPS PERIODIC MONITOR PUGS TEST	
	INSTALL COAS	JETTISON OPTICS COVER	ECS REDUNDANT COMP CK	
	COAS HORIZON CK	RECORD ΔAZ CORRECTION	FC PURGE CK	VOICE UPDATE: ΔAZ CORRECTION
00:45				
		OPTICS CK IMU REALIGN P52 OPTION 3 - REFSMMAT STAR ID__ __, __ __ (cont'd)	BIOMED Sw - CENTER	
01:00				

US — TCYI TAN — TCRO HE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	00:00 - 01:00	1/LPO	2-1

MSC Form 1910 (OT) (Oct 68) FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR	CMP	LMP	MCC-H
	STAR ANGLE DIFF TORQUE ANGLES: X ___ ___.___ ___ ___ Y ___ ___.___ ___ ___ Z ___ ___.___ ___ ___		
SCS ATT REFERENCE COMPARISON CK	REPORT: GYRO TORQUE ANGLES RECORD ABORT BLOCK PAD (TLI +90 MIN AND TLI +4 HOUR) RECORD TLI PAD	BACKUP COMM CK BIOMED Sw - RIGHT	GIVE GO FOR COMM CK VOICE UPDATE: BLOCK DATA VOICE UPDATE: TLI PAD P27 UPDATE: STATE VECTORS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	01:00 - 02:00	1/LPO	2-2

BURN STATUS REPORT

X X ☐	:	ΔTIG
X X	:	BT
☐	.	V_{gx}
TRIM		
X X X		R
X X X		P
X X X		Y
☐		Vi
☐	.	h
☐	.	h
☐	.	ΔV_c
X X X		FUEL
X X X		OX
X X X		UNBALANCE

REMARKS:

TLI

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
TLI	10°/SEC SHUTDOWN	±45° SHUTDOWN	B/T+6 SEC & Vi=PAD VALVE	NO TRIM

TLI PREMATURE SHUTDOWN	
ha >60,000 nm	LUNAR ORBIT OR FLYBY (DEPENDING ON ΔV REQD)
ha >22,000 nm	TWO PHASING MANEUVERS TO SEMI-SYNCHRONOUS ORBIT. DIRECT ENTRY
ha >41,000 nm	HIGH ALTITUDE ORBITS FOLLOWED BY DEBOOST TO 400 nm APOGEE
ha 100 - 41,000 nm	EITHER HI ALTITUDE (41,000 ha) OR LOW ALT, DEPENDING ON LANDMARKS

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
02:00				
TAN				
02:15	TLI PREP EMS ΔV TEST	TLI PREP TRANS TO COUCH	TLI PREP	
CRO	GO/NO-GO FOR PYRO ARM GO/NO-GO FOR TLI			GO/NO-GO
02:30	GDC ALIGN AND DRIFT CK		BIOMED Sw - LEFT	
	TB-6			
02:45				
RED HAW	P47 BURN ATT CK TLI	GETI = 2:50:31	FLT RCDR - RECORD	
	SECO S-IVB INERTIAL SECO +20 SEC S-IVB TO LH,ORB RATE,HEADS DOWN		FLT RCDR - OFF	
03:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	02:00 - 03:00	1/LPO	2-3

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
03:00	TLI BURN STATUS REPORT	RECORD GET SEP MNVR INIT		VOICE UPDATE: GET OF SEP MNVR INIT
	S-IVB MNVR TO SEP ATT	TRANS CSM STATE VECTOR TO LM SLOT		
03:15	GO/NO-GO FOR 90-MIN ABORT	UNSTOW PHOTO EQUIP B3 16mm DAC 18mm LENS RT ANG MIRROR 16mm C-EX MAG PWR CABLE 70mm CAM 80mm LENS 70mm C-MAG	S-BAND XPONDER - SEC FLT RCDR - RECORD	GO/NO-GO COMM TEST MODE: 4.2
	TRANSPOSITION FROM S-IVB +X FOR 1 fps, COAST FOR 1 MIN, -X FOR 0.5 fps, PITCH UP 4°/SEC	R13 SPOTMETER	FLT RCDR - OFF NONESS BUS - OFF PHOTOGRAPH S-IVB 16/18/C-EX, 1/250, f11, 6 fps (1 MAG) 2/80/C, 1/250, SPOT (10 EXP)	
03:30	FLY FORMATION	DOFF & STOW PGA		
03:45	MNVR TO LOCAL VERTICAL -X RADIALLY UPWARD 1.5 fps			
		TRANS CSM STATE VECTOR TO LM SLOT		
04:00				

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	03:00 - 04:00	1/TLC	2-4

FLIGHT PLAN

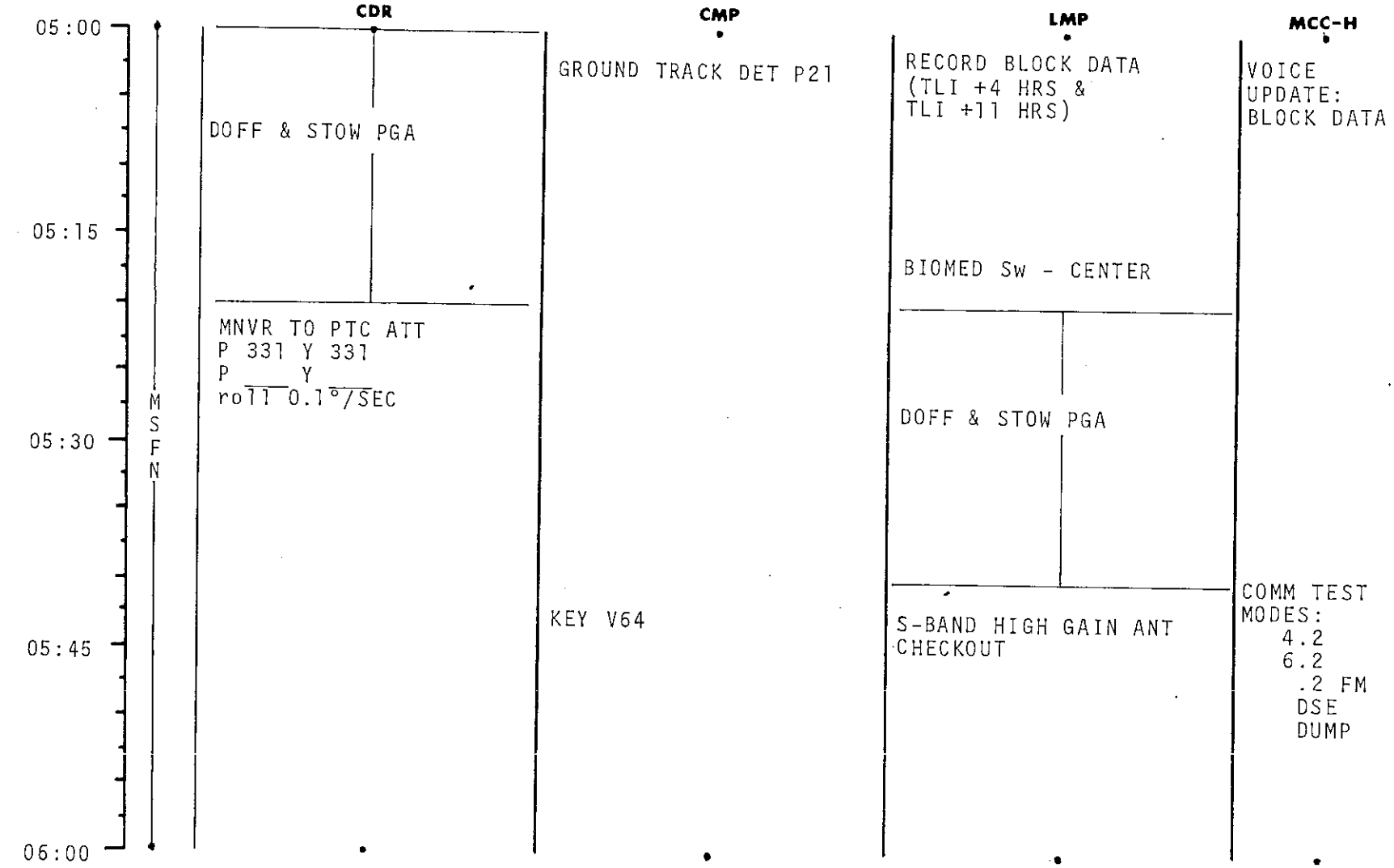
	CDR	CMP	LMP	MCC-H
04:00		IMU REALIGN P52 OPTION 3 - REFSMMAT STAR ID___,___ ___ STAR ANGLE DIFF ___ ___.___ ___ TORQUE ANGLES: X ___ ___.___ ___ ___ Y ___ ___.___ ___ ___ Z ___ ___.___ ___ ___	REPORT PERSONAL RADIATION DOSIMETER READINGS	
04:15	GDC ALIGN TO IMU	CISLUNAR NAVIGATION P23 TRN BIAS 1. STAR 14 ENH STAR___ ___ E__H 1 SET - 3 MARKS EACH		
04:30	MSFN	2. STAR 15 EFH STAR___ ___ E__H 2 SETS - 3 MARKS EACH		
04:45		3. STAR 16 EFH STAR___ ___ E__H 2 SETS - 3 MARKS EACH		
05:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	04:00 - 05:00	1/TLC	2-5

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

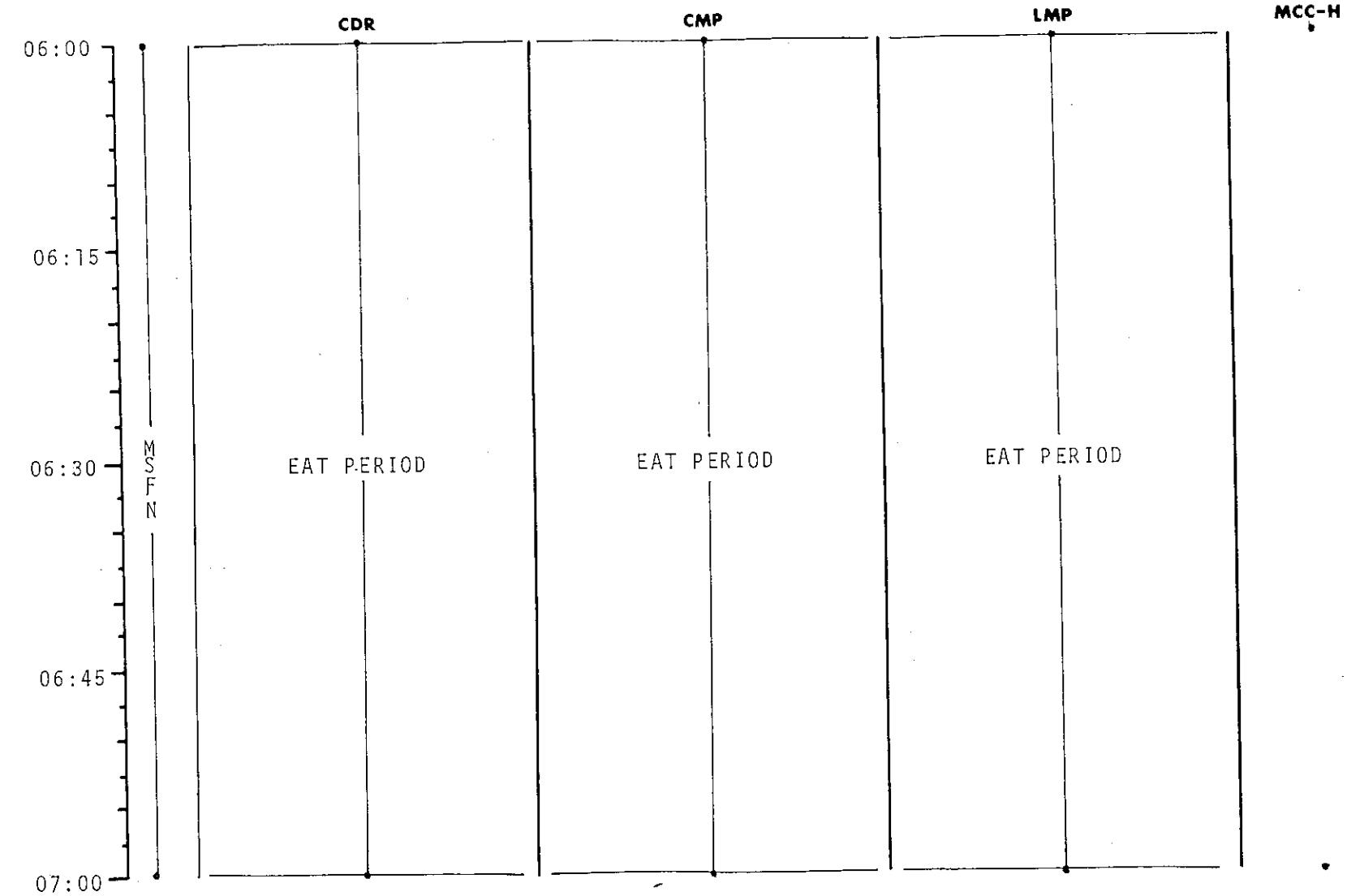


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	05:00 - 06:00	1/TLC	2-6

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



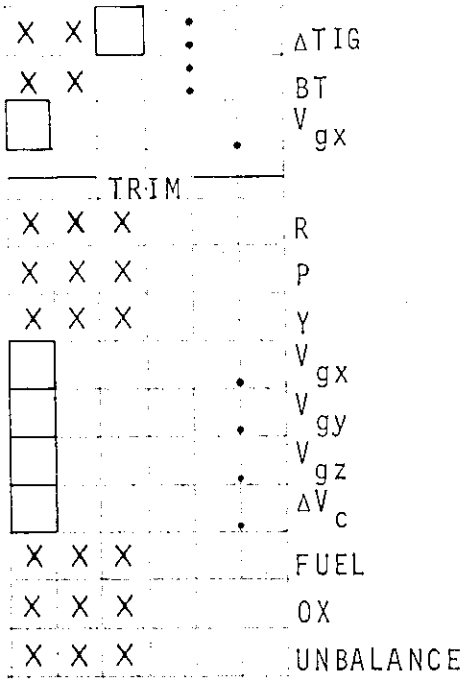
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	06:00 - 07:00	1/TLC	2-7

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
07:00				PERFORM COMM TESTS MODES: 4.3, 6.3, 5.2, 8.1
07:15				
07:30	MSFN	LiOH CANISTER CHANGE (CARTRIDGE NO. 3 FROM A3 INTO CANISTER A)		
		OPEN COOLANT CONTROL ATTENUATION PANEL EVAP WATER CONT SEC VLV - OFF		
07:45		CLOSE COOLANT CONTROL ATTENUATION PANEL		
		WASTE STOWAGE VENT - CLOSED BAT VENT VLV - OPEN (UNTIL SERVICE METER = 0) BAT VENT VLV - CLOSED		P27 UPDATE: STATE VECTOR TGT LOAD
08:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	07:00 - 08:00	1/TLC	2-8

BURN STATUS REPORT



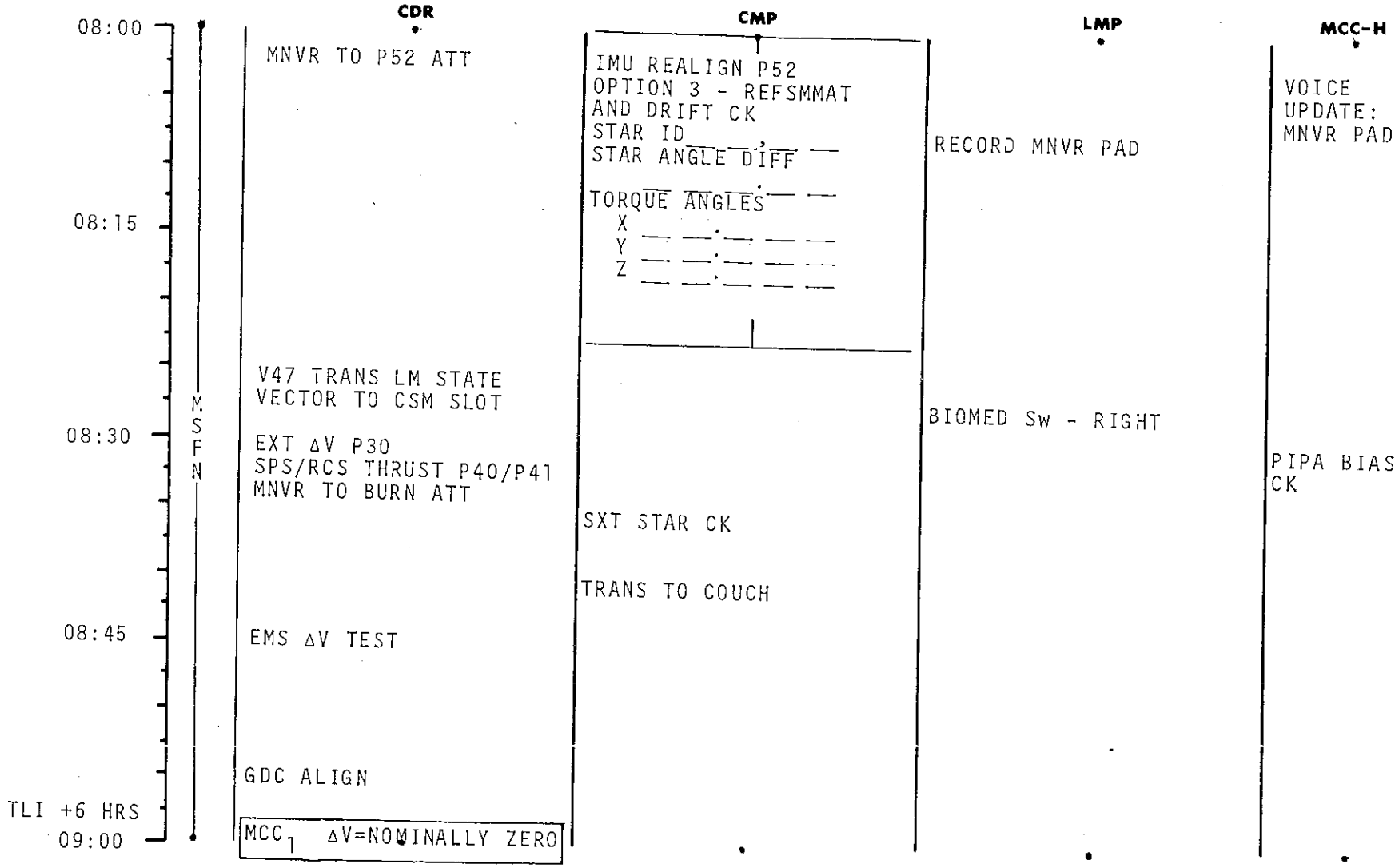
REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	08:00 - 09:00	1/TLC	2-9

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

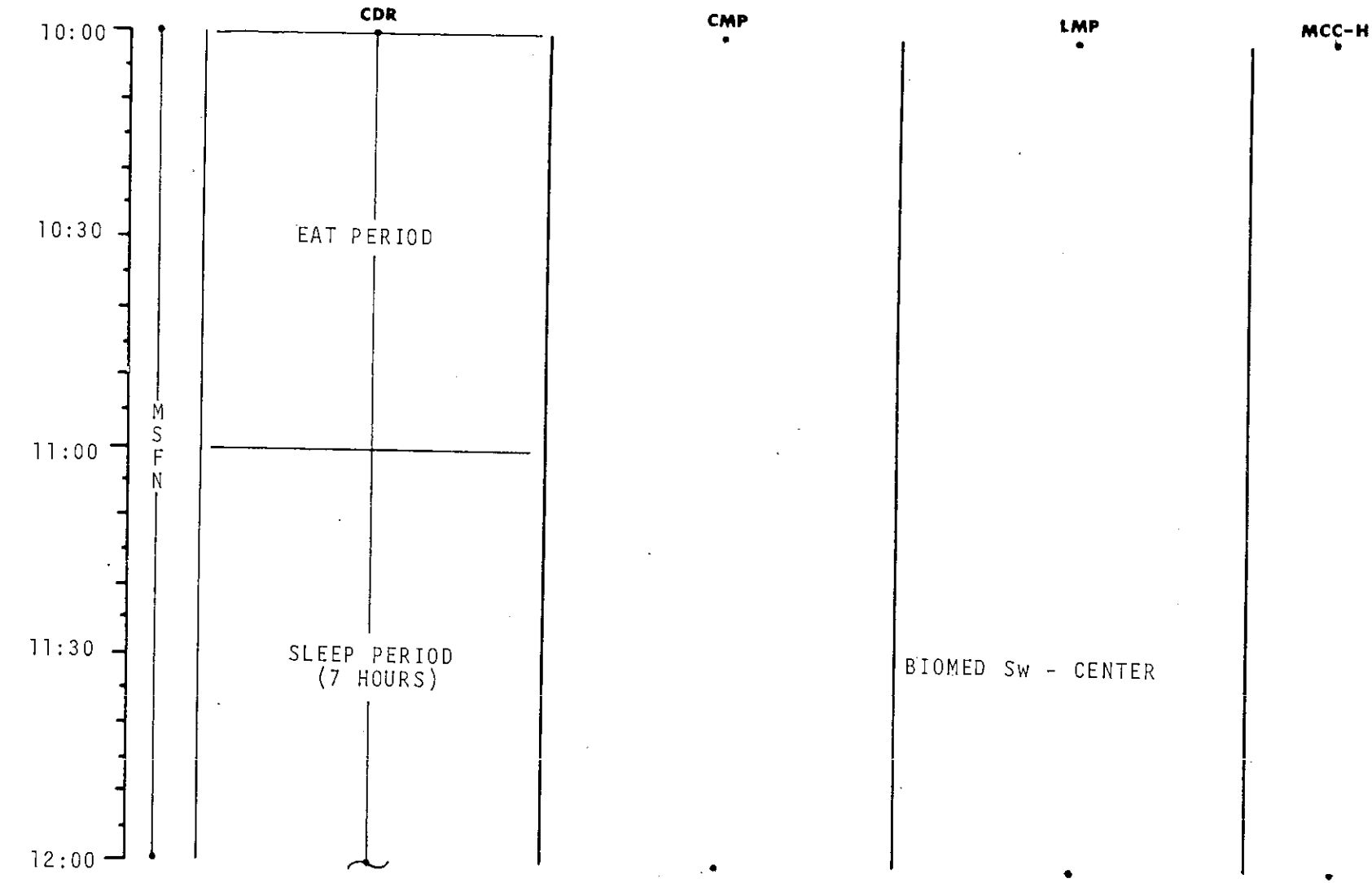
FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
09:00	V66 TRANS CSM STATE VECTOR TO LM SLOT MCC_1 BURN STATUS REPORT MNVR TO SIGHTING ATT	SM RCS CK TRN BIAS CISLUNAR NAVIGATION P23 1. STAR 15 ELDMK 10 LAT 28.876°N LONG/2 56.292°W ALT 000.01 STAR__ __ELDMK__ __ LAT __ __.__ __ __ LONG/2__ __.__ __ __ ALT __ __.__ __ __ 2 SETS	SPS MONITOR CK INITIATE BAT CHARGE	
09:30		2. STAR 16 ELDMK 10 LAT 28.876°N LONG/2 56.292°W ALT 000.01 STAR__ __ELDMK__ __ LAT __ __.__ __ __ LONG/2__ __.__ __ __ ALT __ __.__ __ __ GROUND TRACK DET P21		
	MNVR TO PTC ATT P 331 Y 331 P ___ Y ___ ROLL 0.1°/SEC			
10:00				

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	09:00 - 10:00	1/TLC	2-10

FLIGHT PLAN

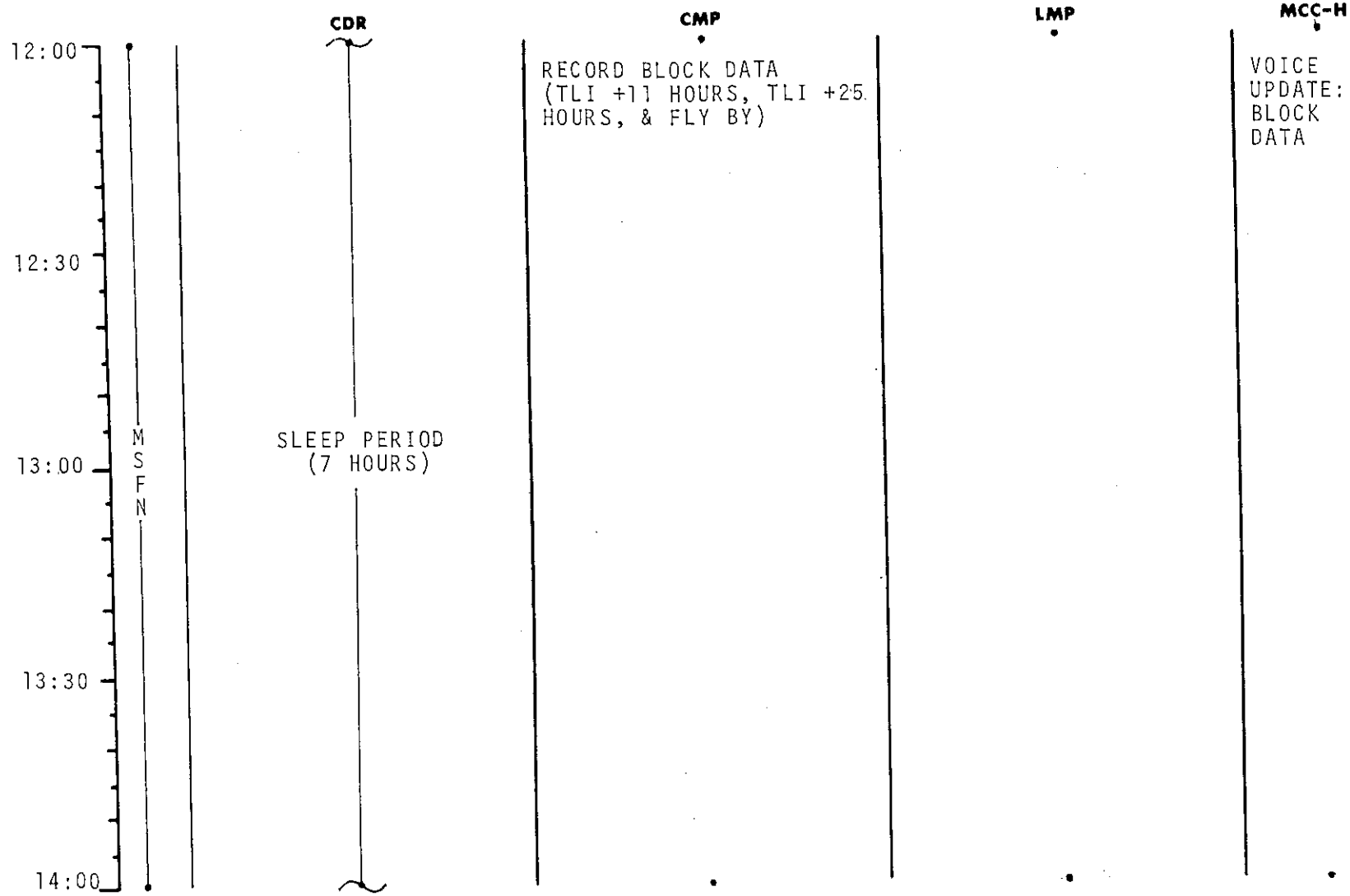


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	10:00 - 12:00	1/TLC	2-11.

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

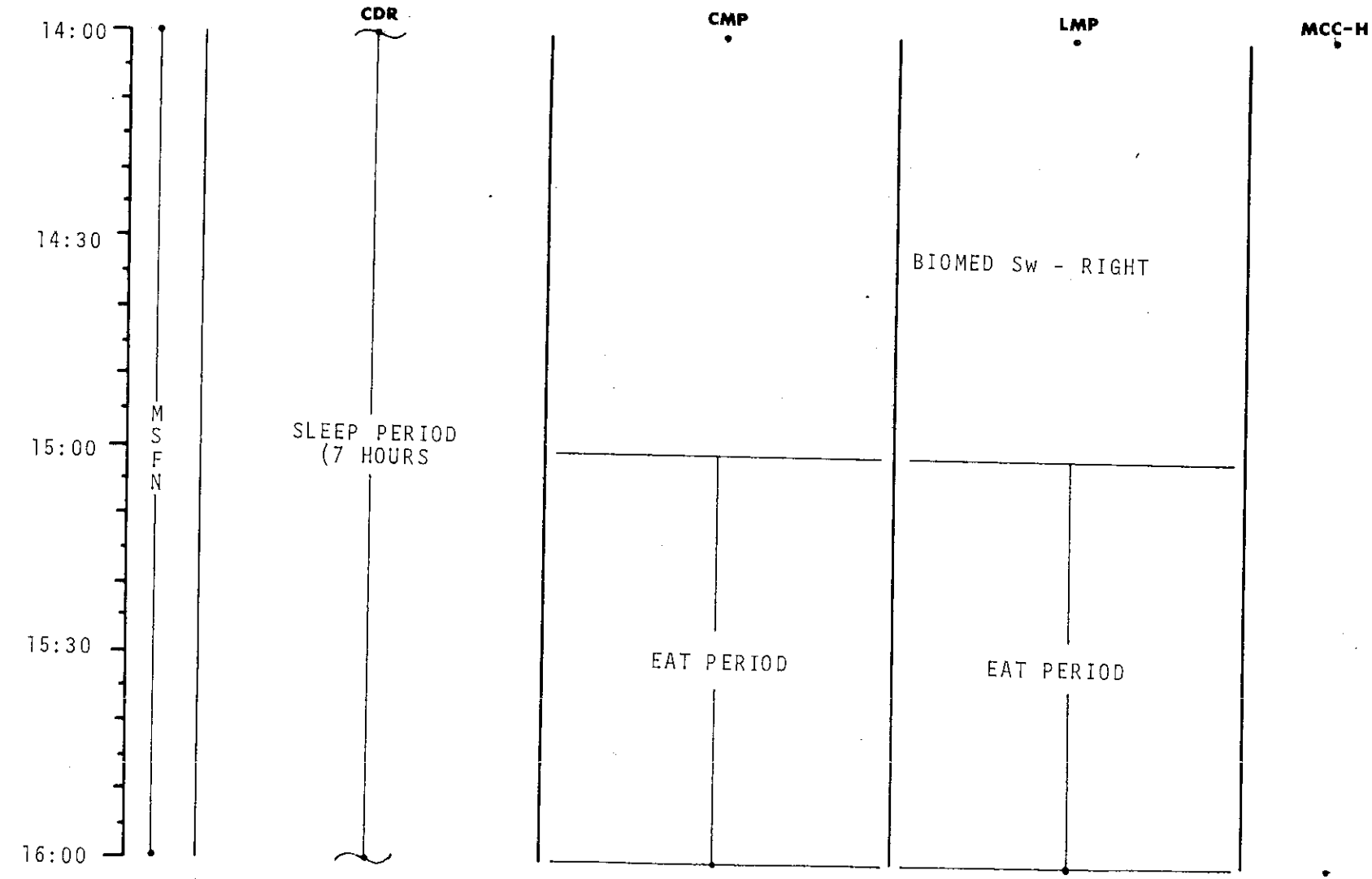


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	12:00 - 14:00	1/TLC	2-12

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

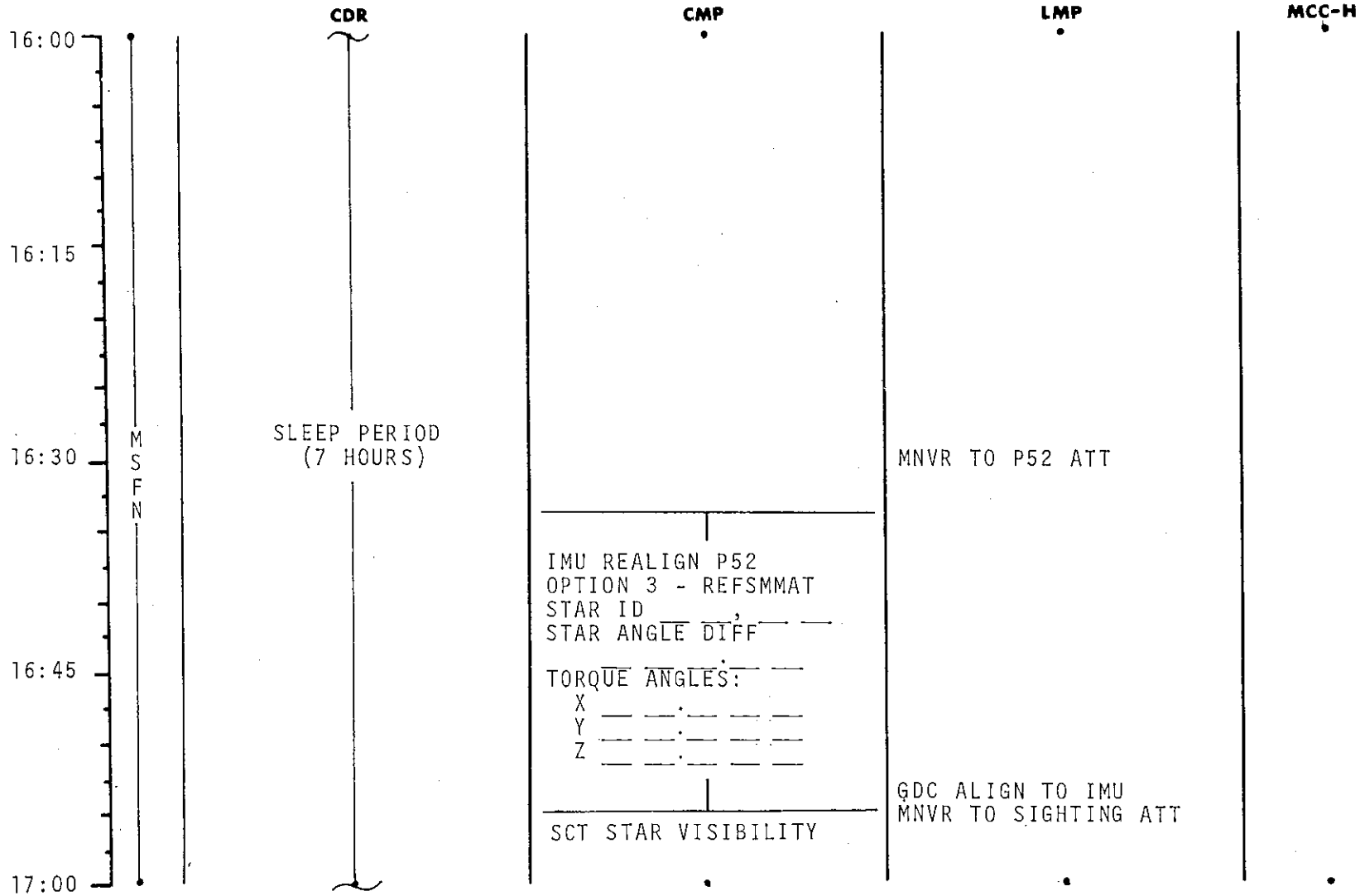


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	14:00 - 16:00	1/TLC	2-13

MSC Form 1910 (Nov 68)

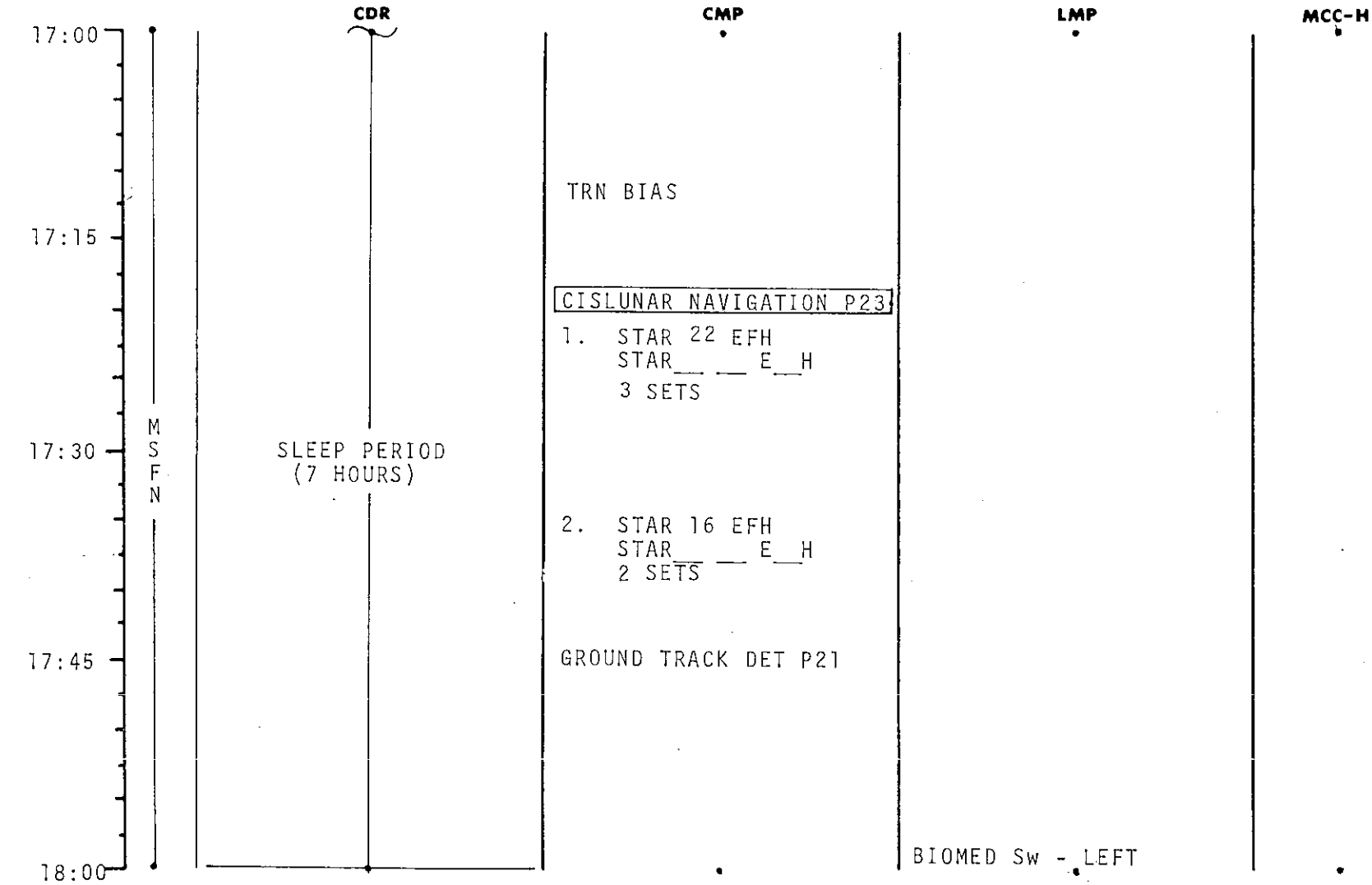
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	16:00 - 17:00	1/TLC	2-14

FLIGHT PLAN

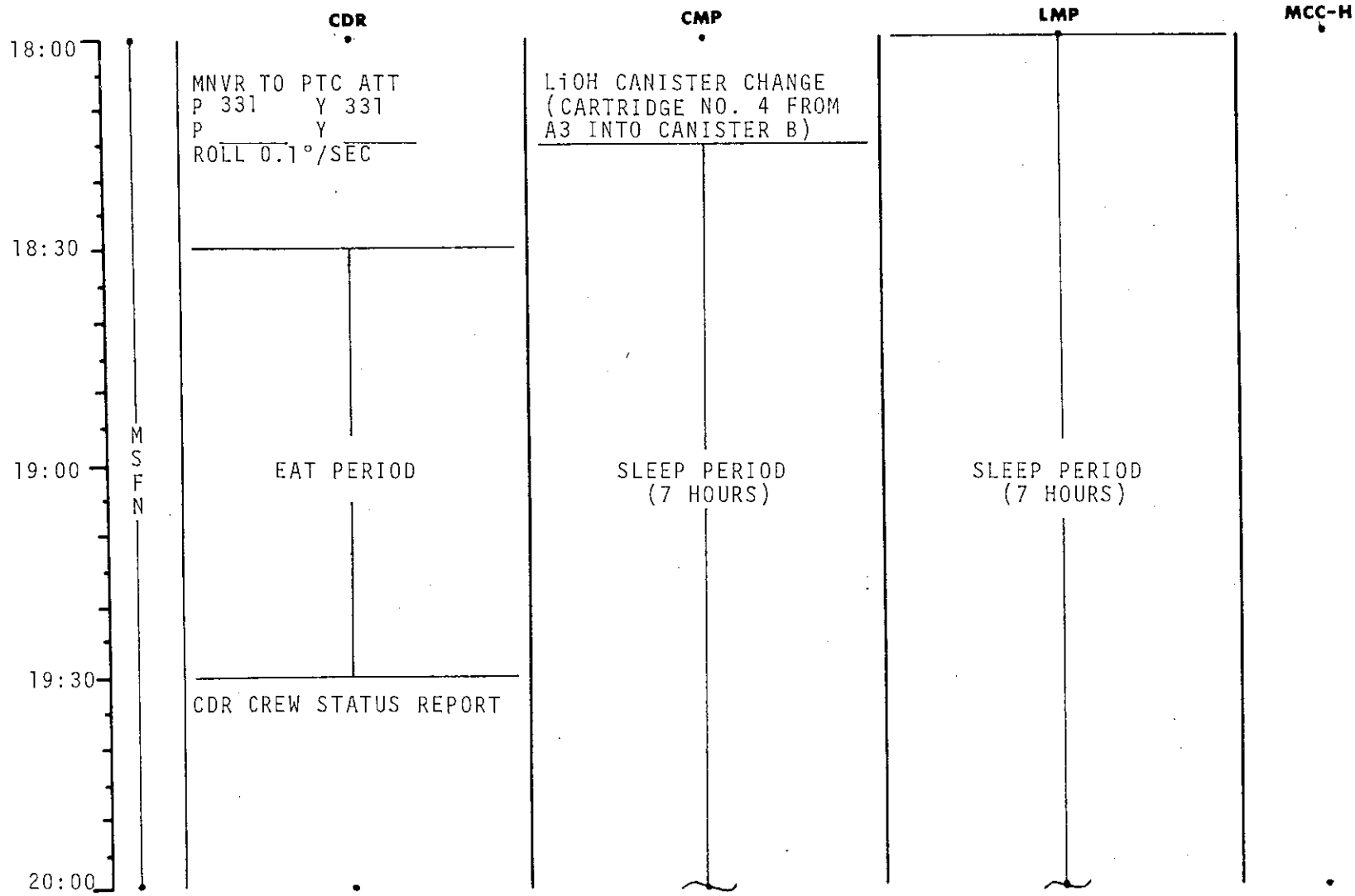


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	17:00 - 18:00	1/TLC	2-15

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

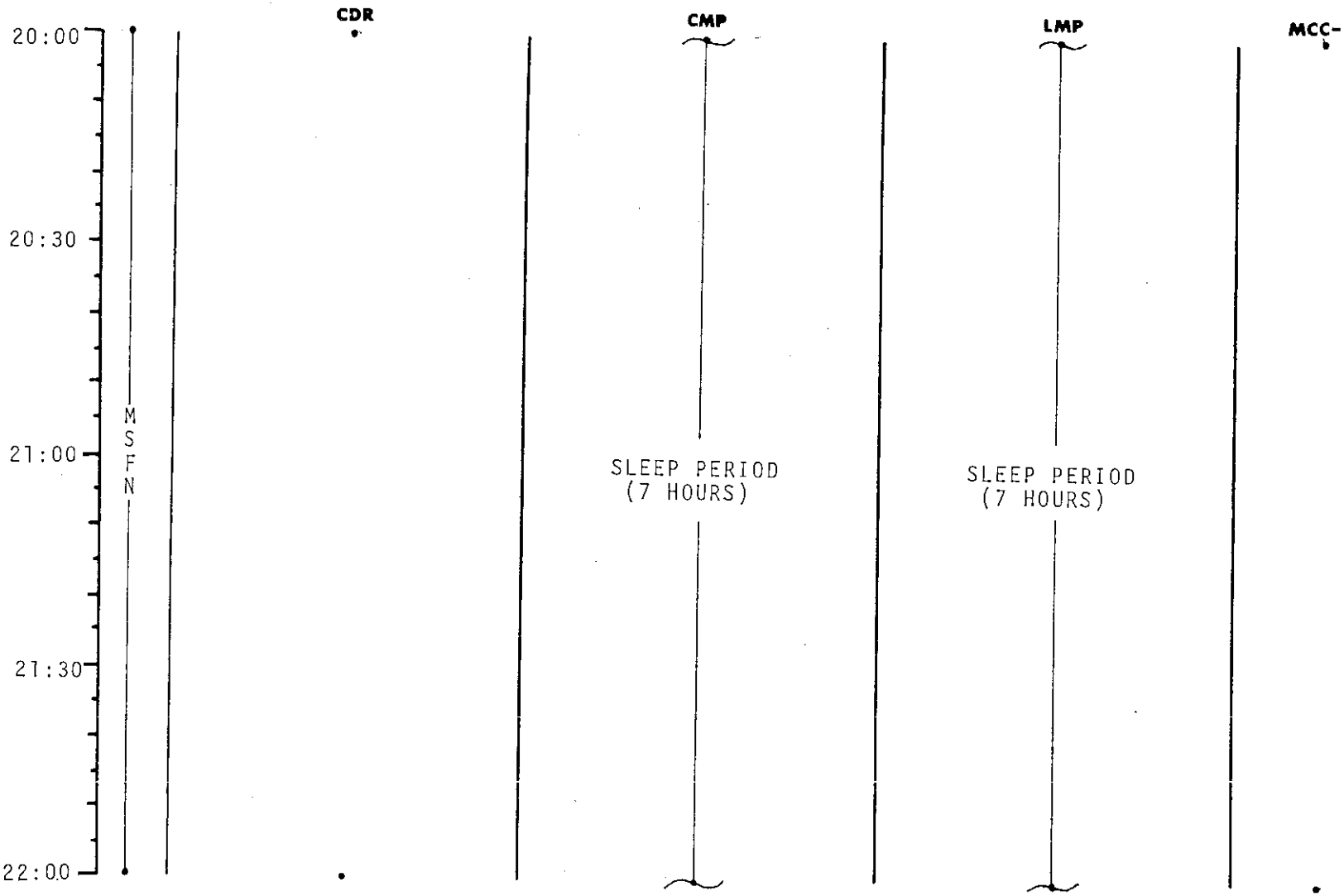


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	18:00 - 20:00	1/TLC	2-16

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

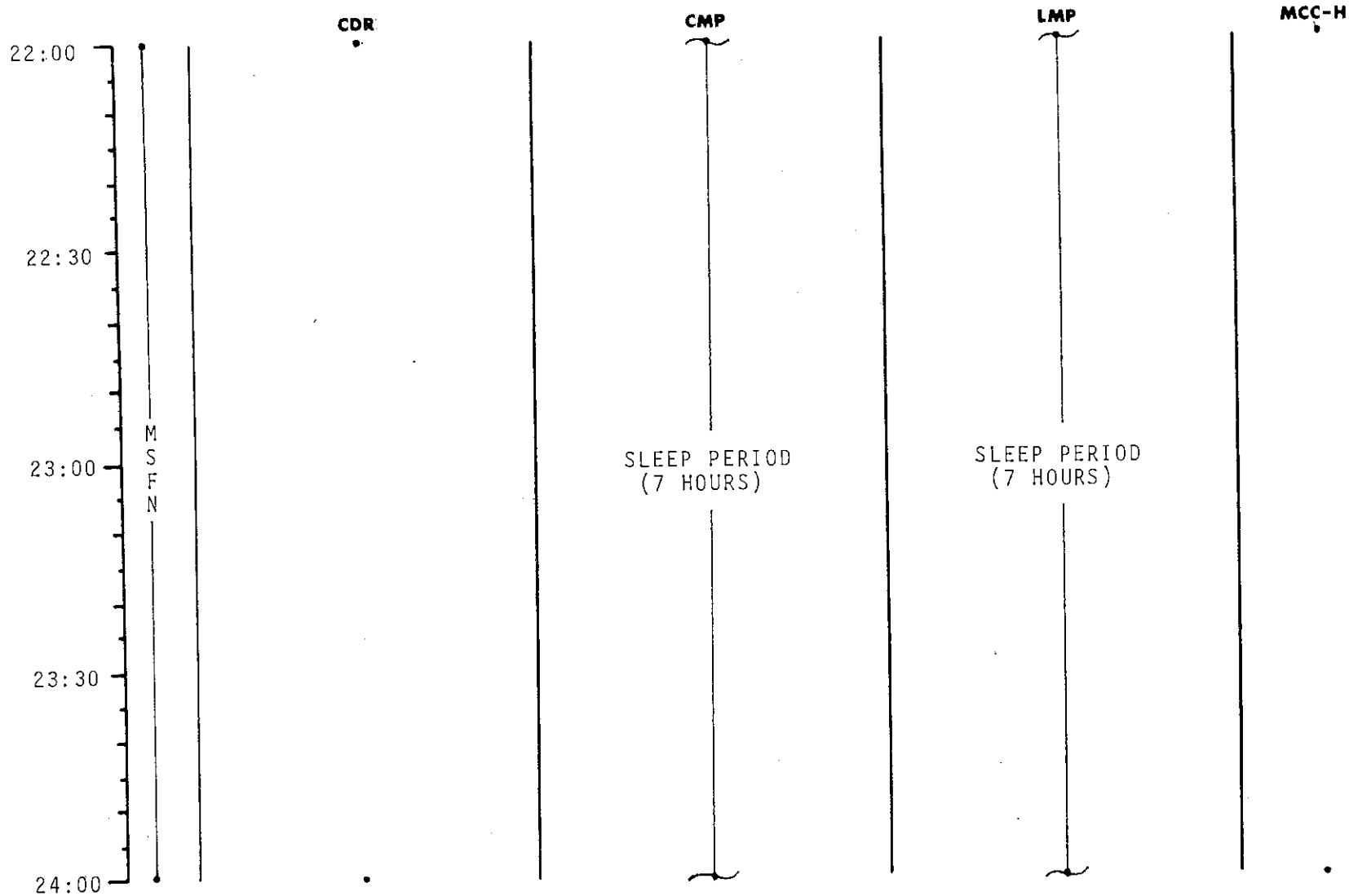


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	20:00 - 22:00	1/TLC	2-17

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

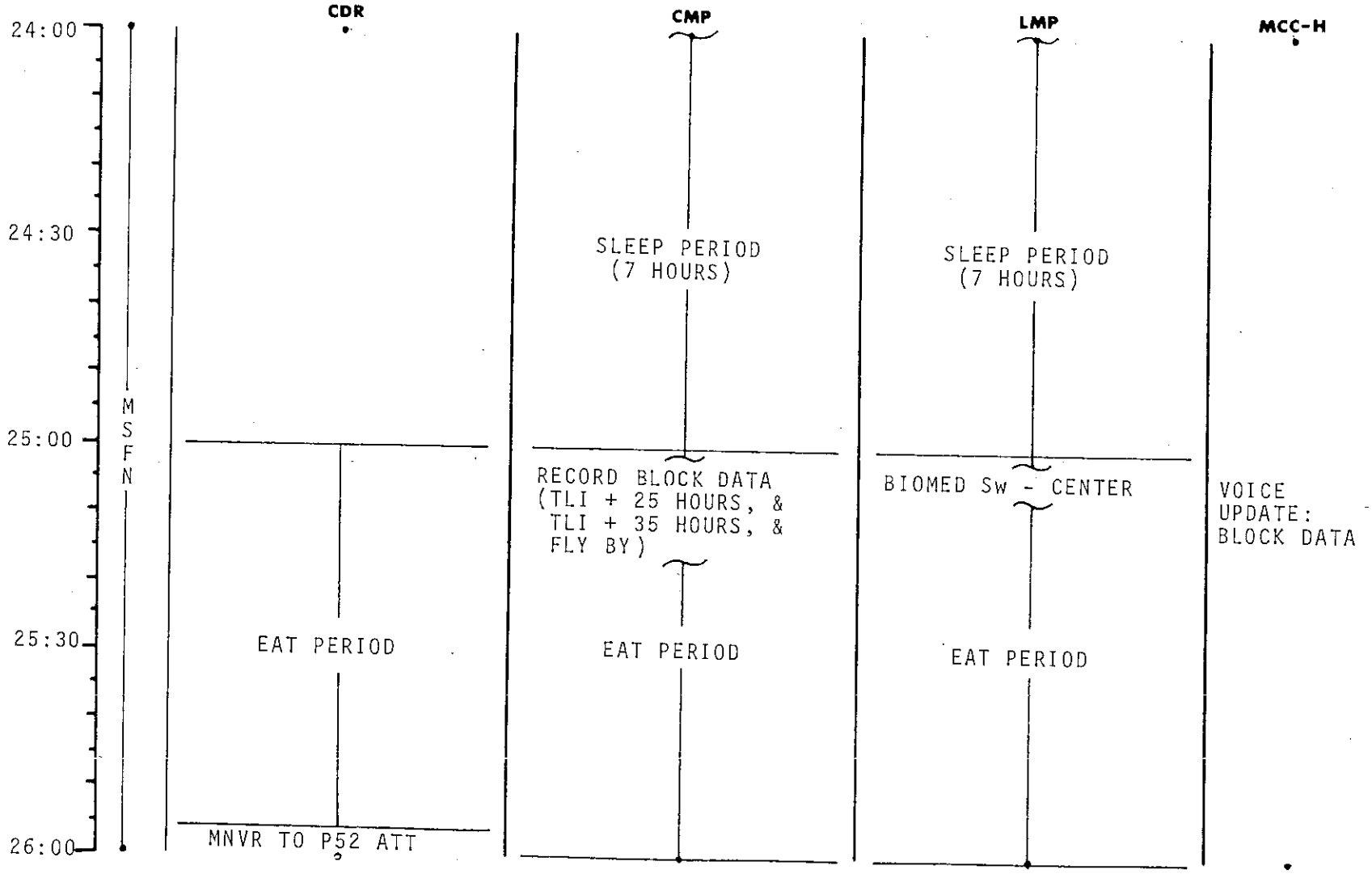


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	22:00 - 24:00	1/TLC	2-18

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

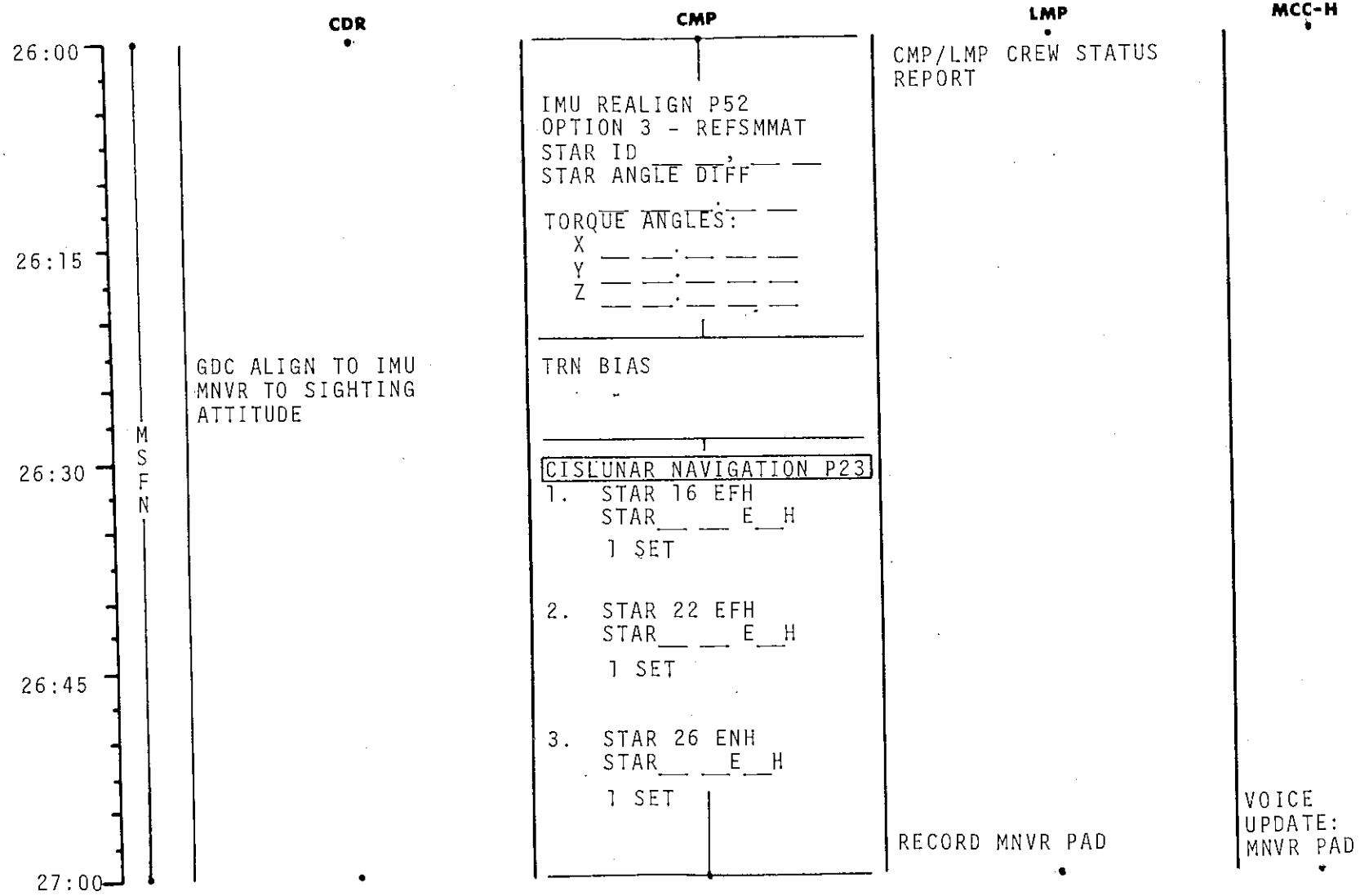


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	24:00 - 26:00	2/TLC	2-19

MSC Form 1910 (Nov 68)

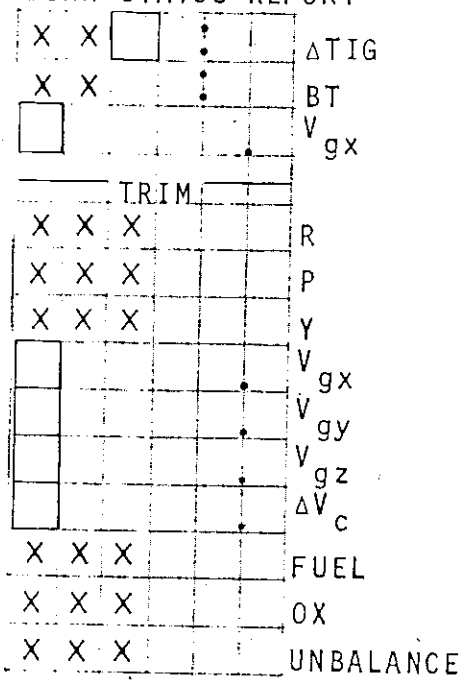
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	26:00 - 27:00	2/TLC	2-20

BURN STATUS REPORT



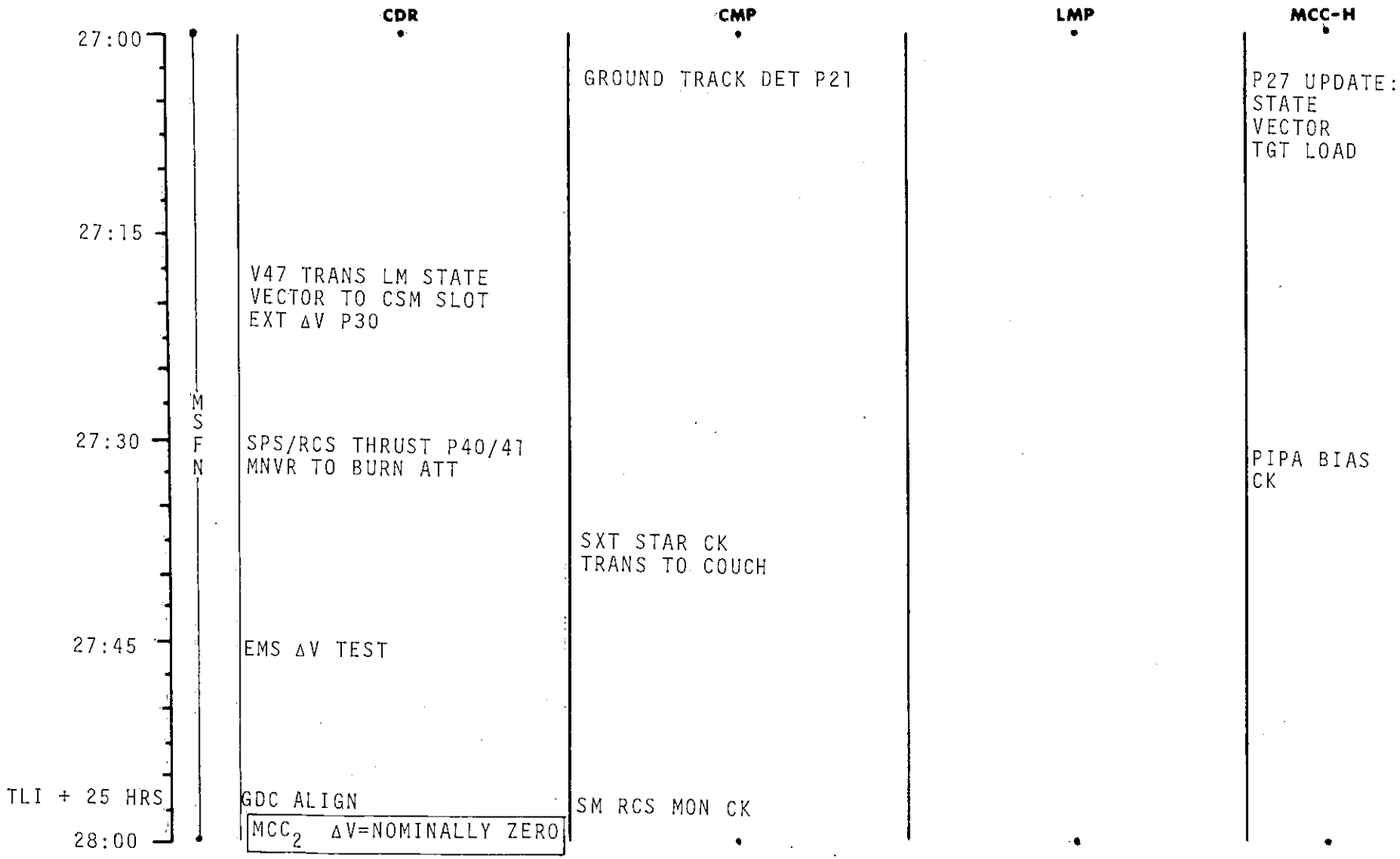
REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	27:00 - 28:00	2/TLC	2-21

FLIGHT PLAN

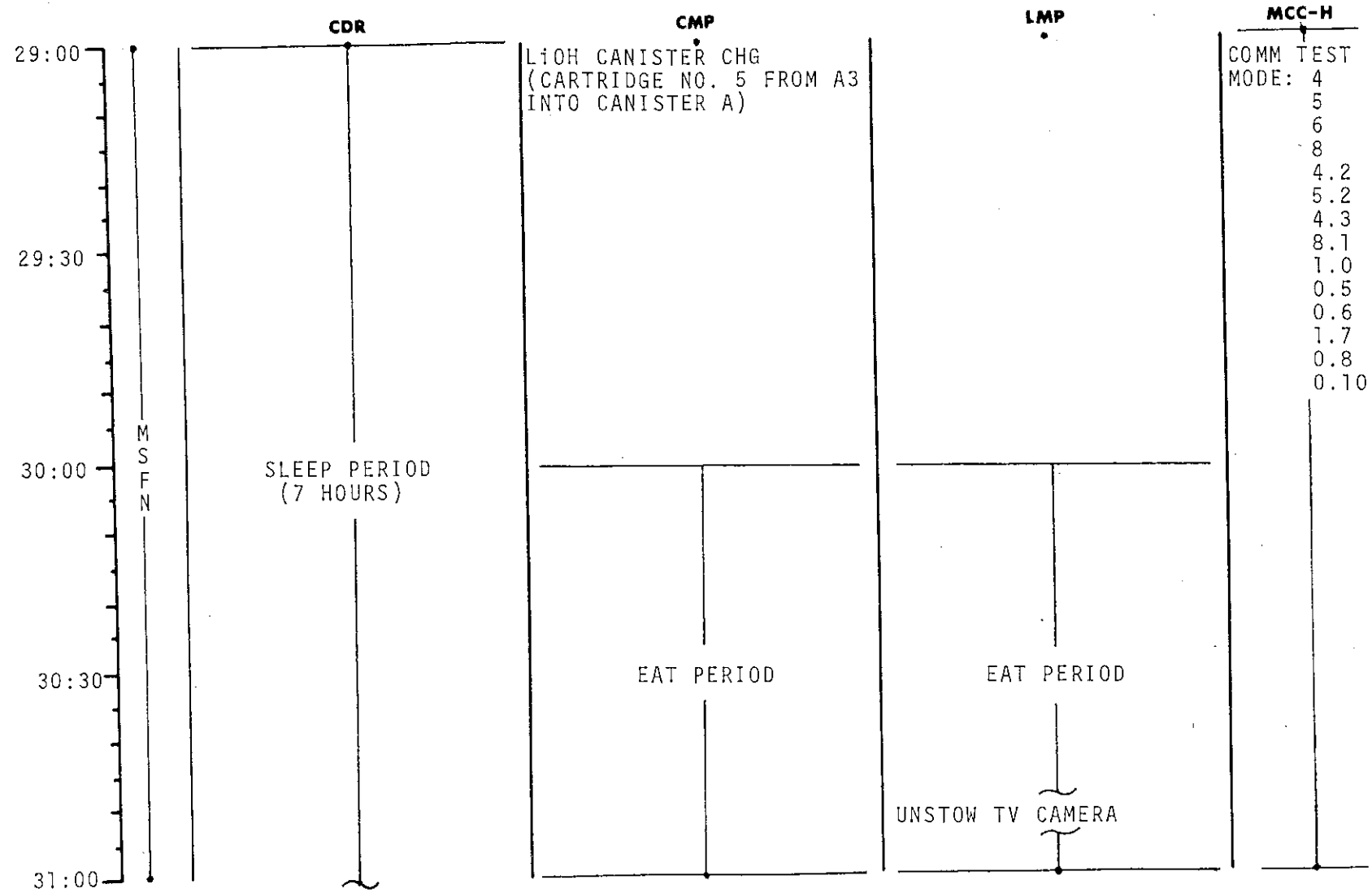
	CDR	CMP	LMP	MCC-H
28:00	V66 TRANS CSM STATE VECTOR TO LM SLOT MNVR TO SIGHTING ATT MCC_2 BURN STATUS REPORT	SM RCS MONITOR CK TRN BIAS	SPS MONITOR CK INITIATE BAT CHARGE BIOMED Sw - RIGHT	
28:15		CISLUNAR NAVIGATION P23 1. STAR 16 EFH STAR__ __ E__H 1 SET		
28:30		2. STAR 22 EFH STAR__ __ E__H 1 SET		
		3. STAR 21 EFH STAR__ __E__H 1 SET		
28:45		4. STAR 26 ENH STAR__ __ E__H 1 SET		
		GROUND TRACK DET P21	MNVR TO PTC ATT P 331 Y 331 P ___ Y ___ ROLL 0.1°/SEC	
29:00	CDR CREW STATUS REPORT			

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	28:00 - 29:00	2/TLC	2-22

MSC Form 1910 (Nov 68) FLIGHT PLANNING BRANCH

FLIGHT PLAN

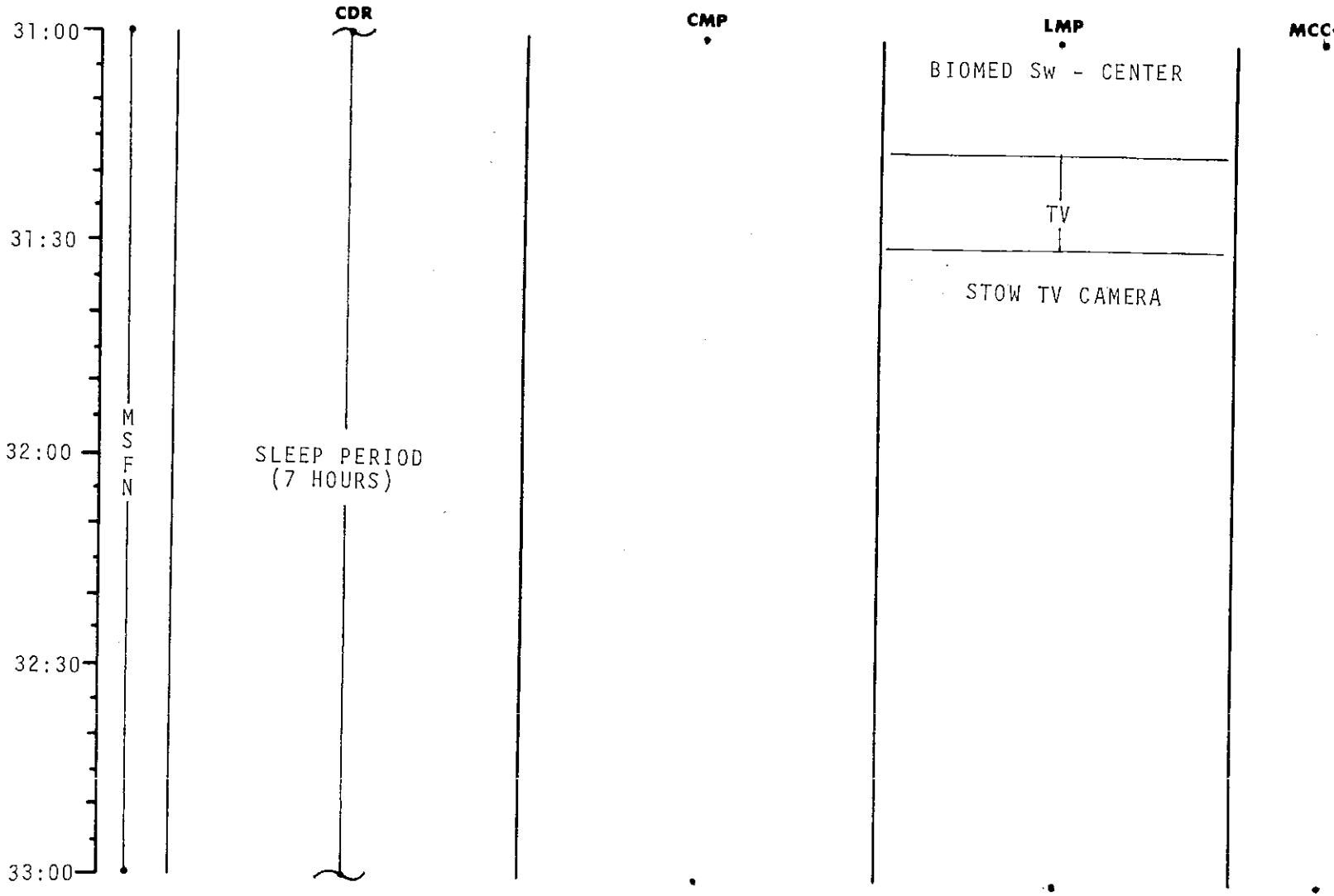


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	29:00 - 31:00	2/TLC	2-23

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

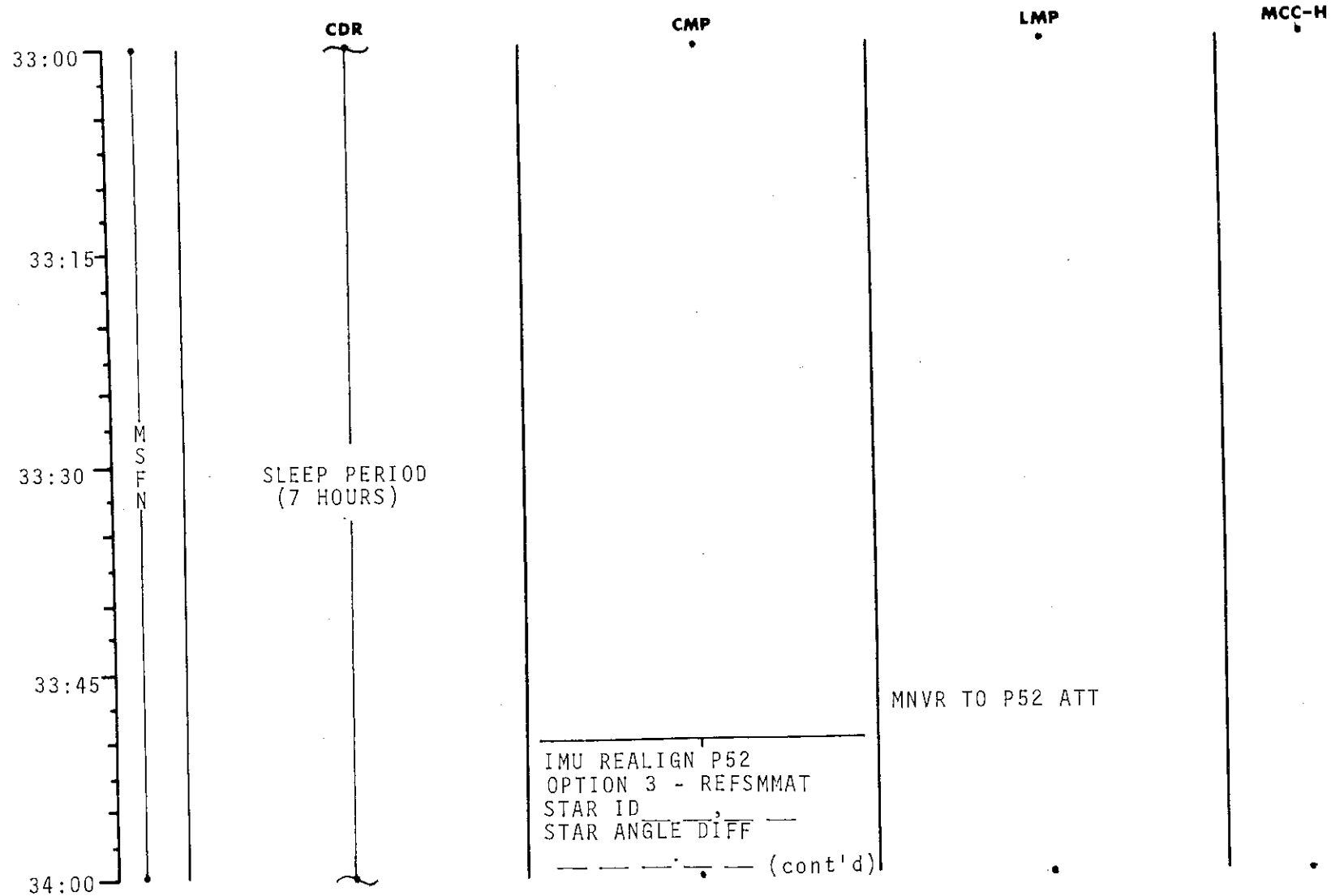


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	31:00 - 33:00	2/TLC	2-24

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

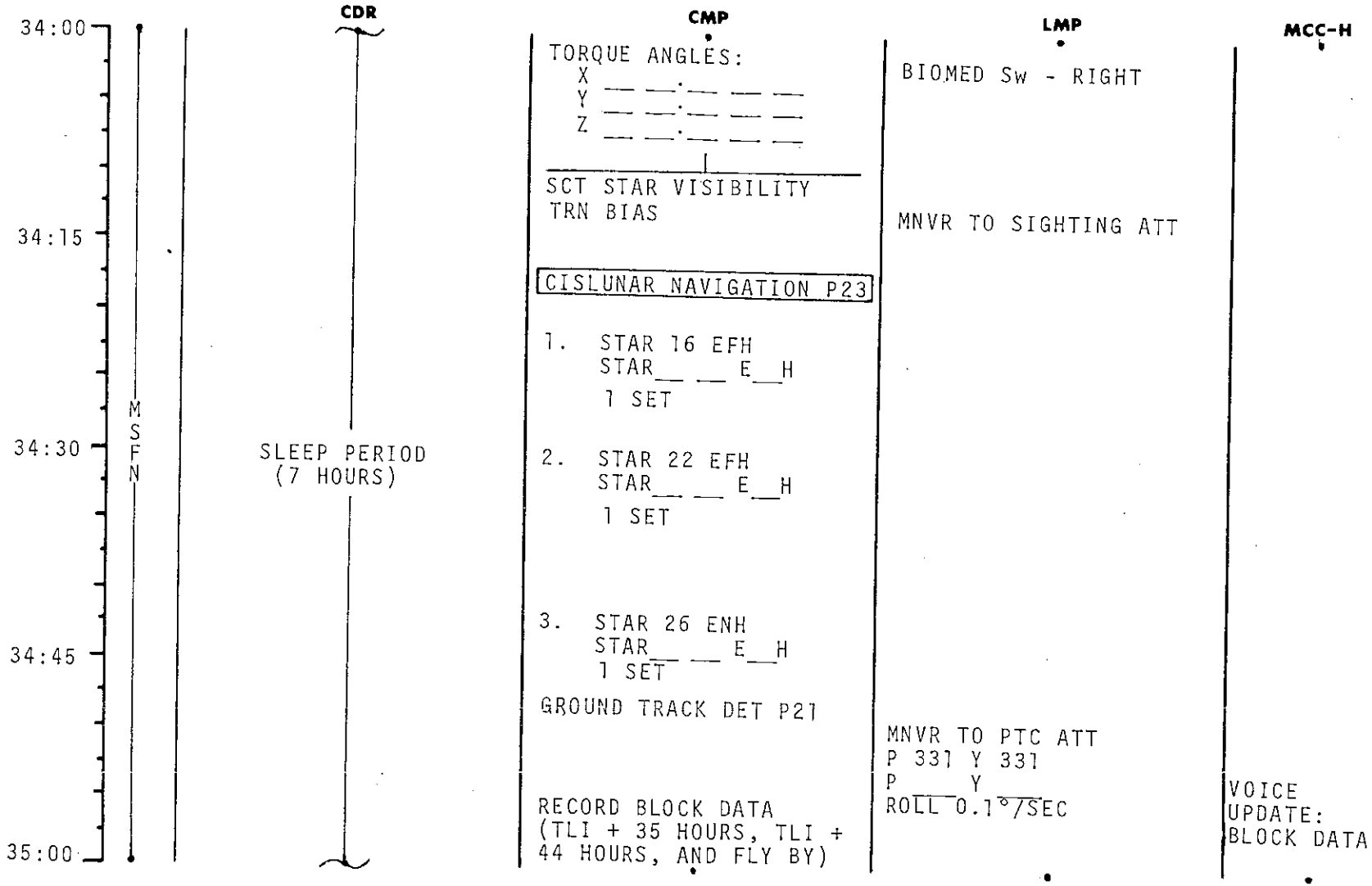


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	33:00 - 34:00	2/TLC	2-25

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

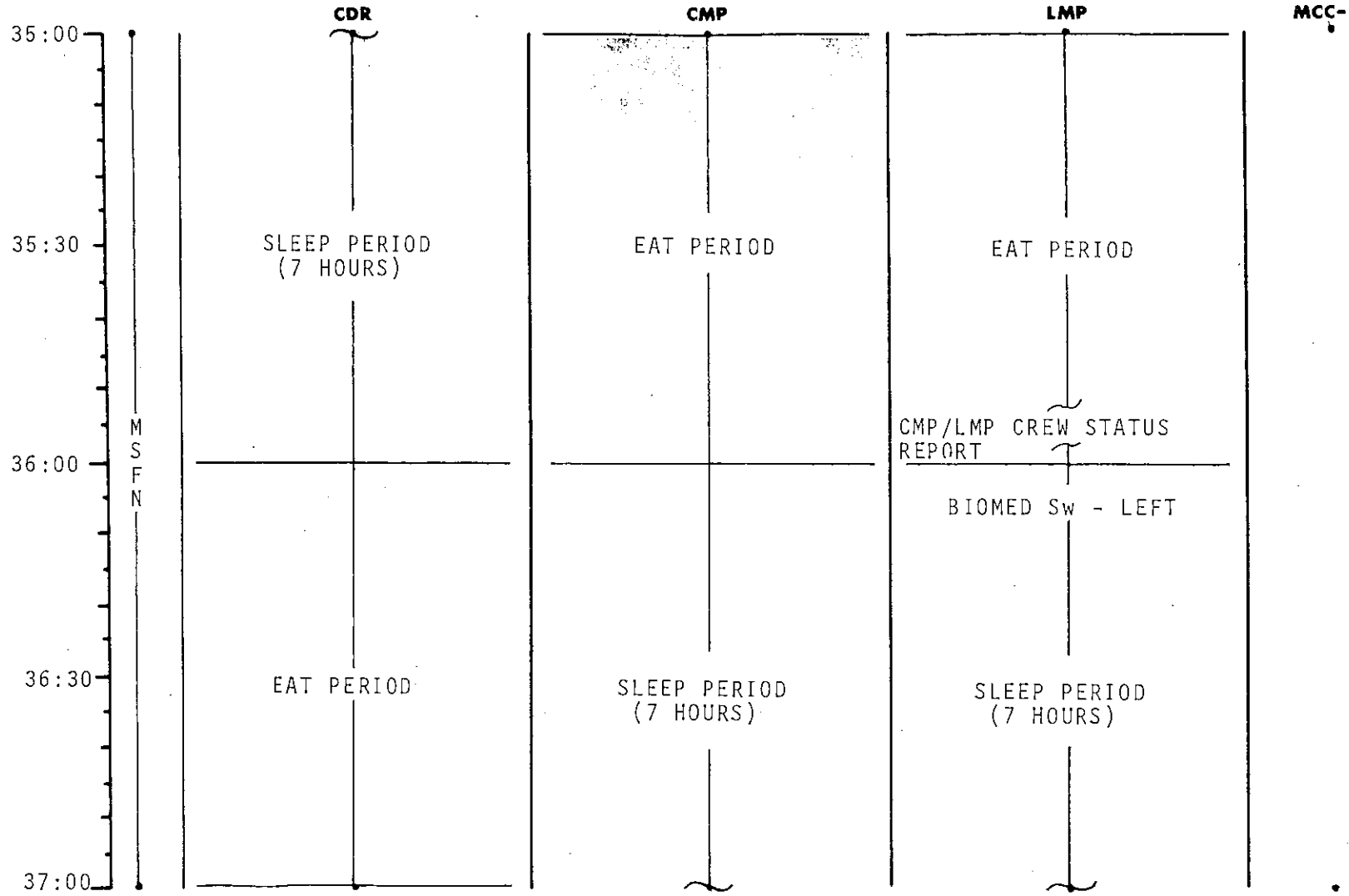


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	34:00 - 35:00	2/TLC	2-26

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

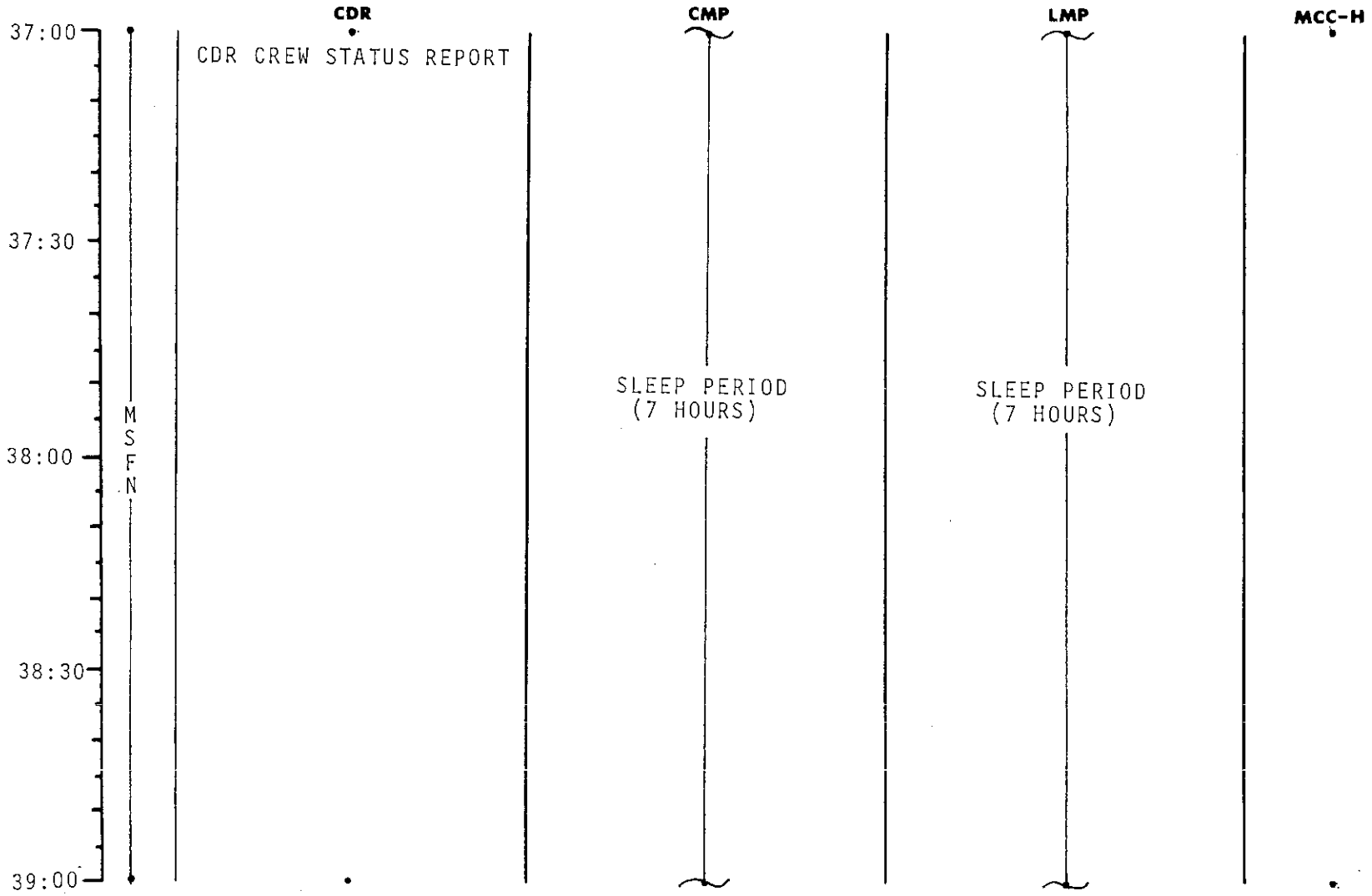


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	35:00 - 37:00	2/TLC	2-27

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

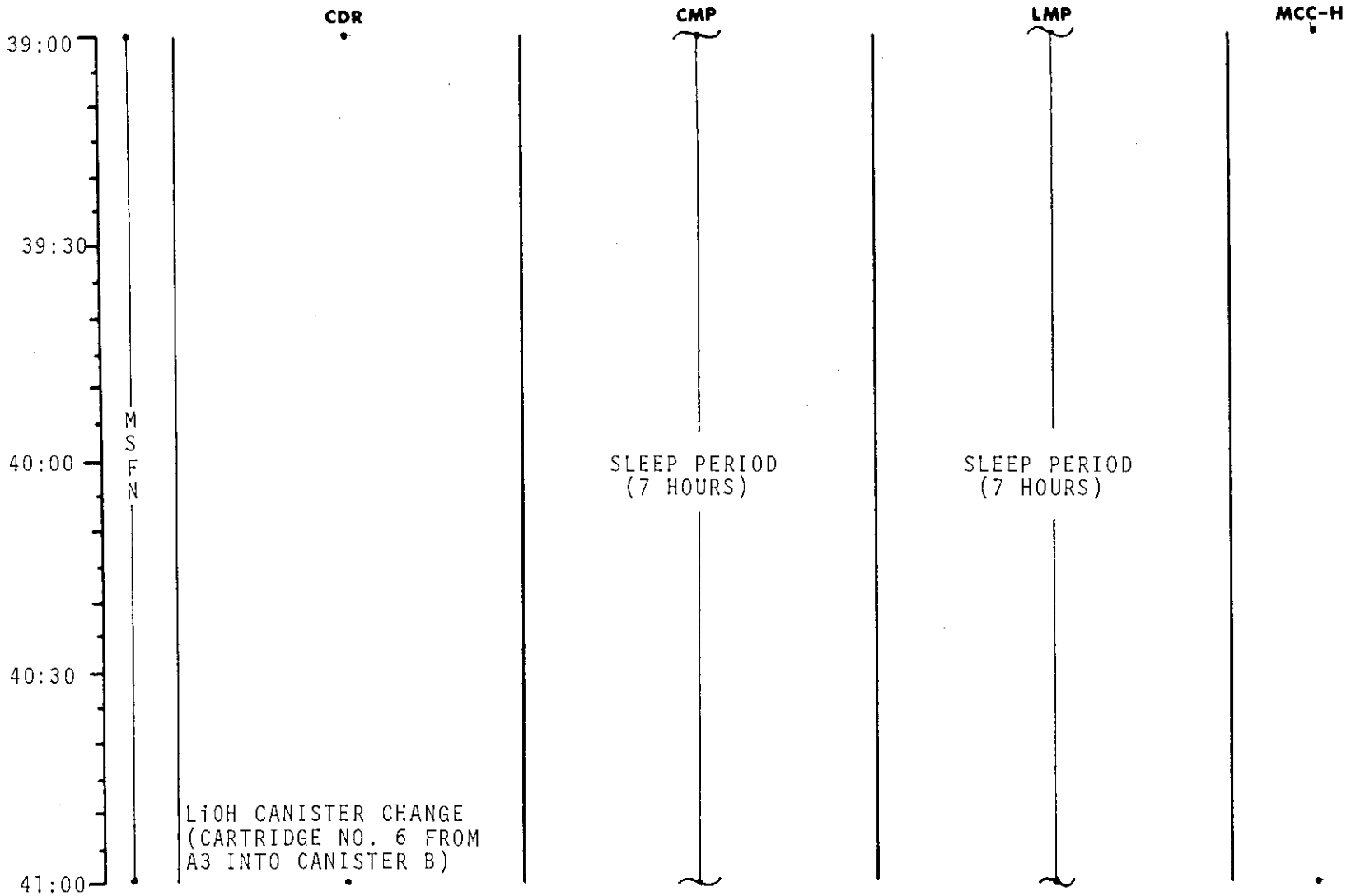


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	37:00 - 39:00	2/TLC	2-28

MSC Form 1910 (Nov 68)

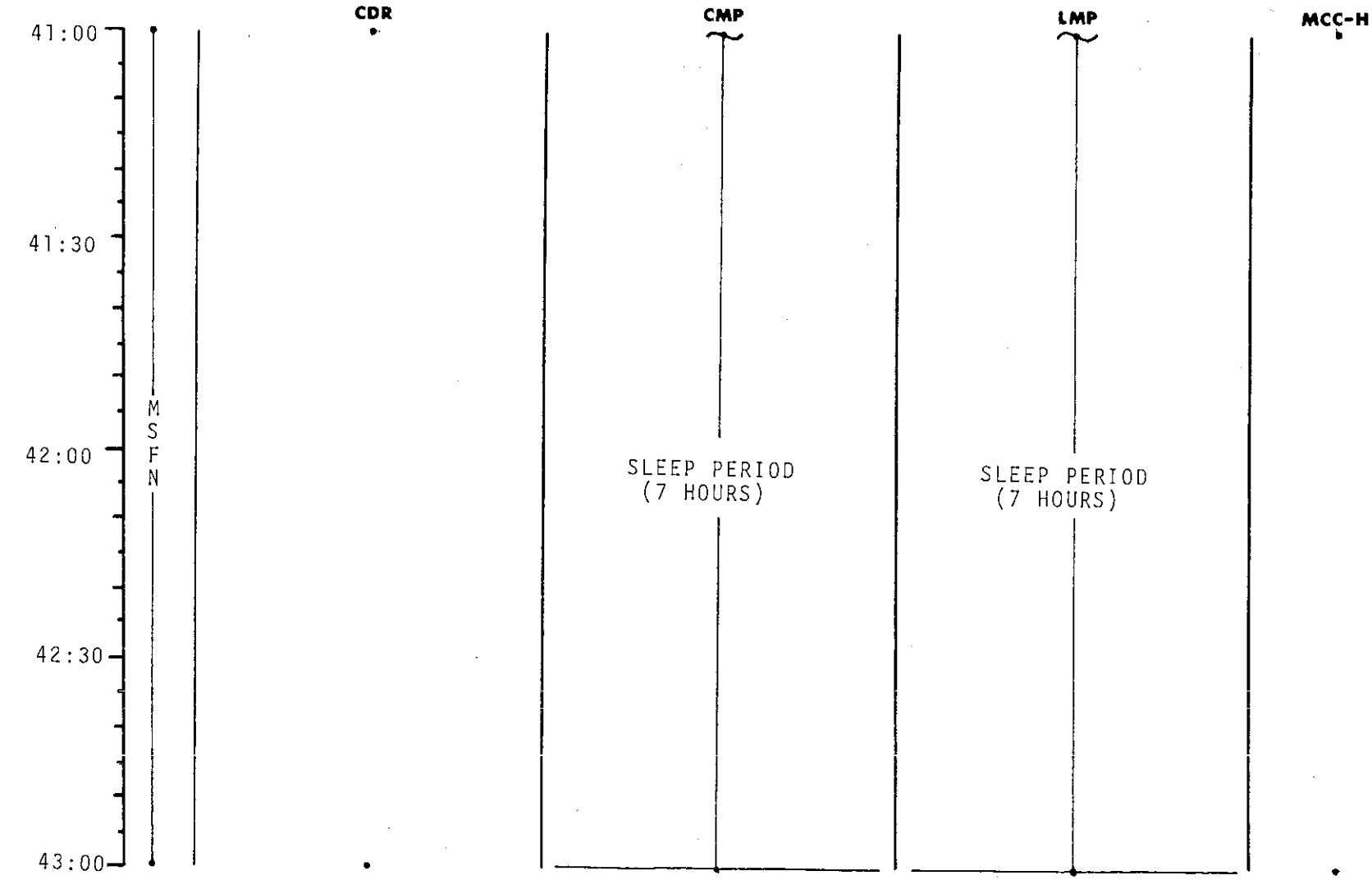
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	39:00 - 41:00	2/TLC	2-29

FLIGHT PLAN

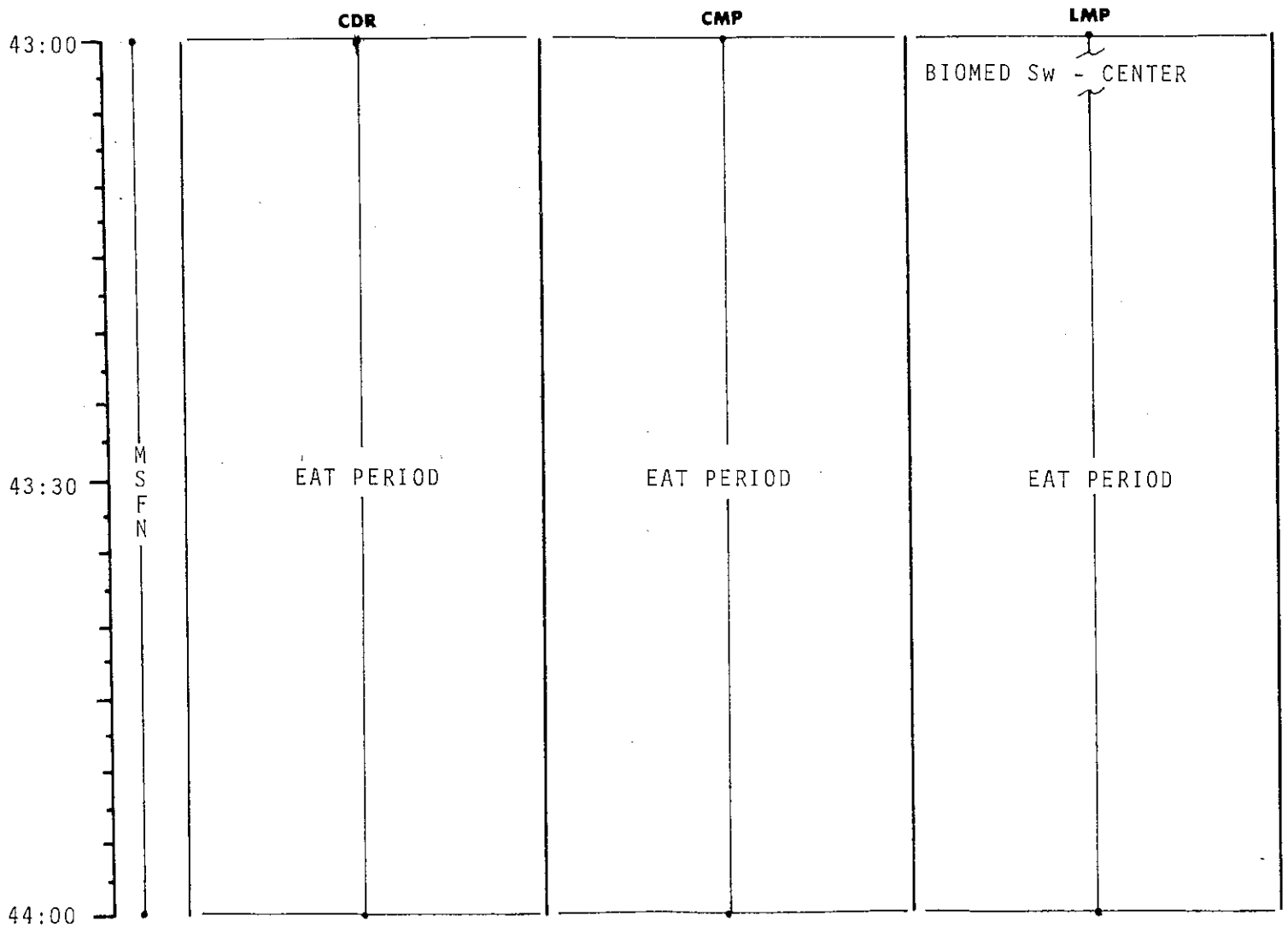


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	41:00 - 43:00	2/TLC	2-30

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	43:00 - 44:00	2/TLC	2-31

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
44:00		RECORD BLOCK DATA (TLI + 44 HOURS, FLY BY, PC + 2 (QUICK RETURN), & PC + 2)	CMP/LMP CREW STATUS REPORT	VOICE UPDATE: BLOCK DATA
44:30 MSFN	MNVR TO P52 ATT	IMU REALIGN P52 OPTION 3 - REFSMMAT STAR ID ___, ___ STAR ANGLE DIFF ___.___ TORQUE ANGLES: X ___ ___.___ ___ ___ Y ___ ___.___ ___ ___ Z ___ ___.___ ___ ___		
45:00	GDC ALIGN TO IMU			

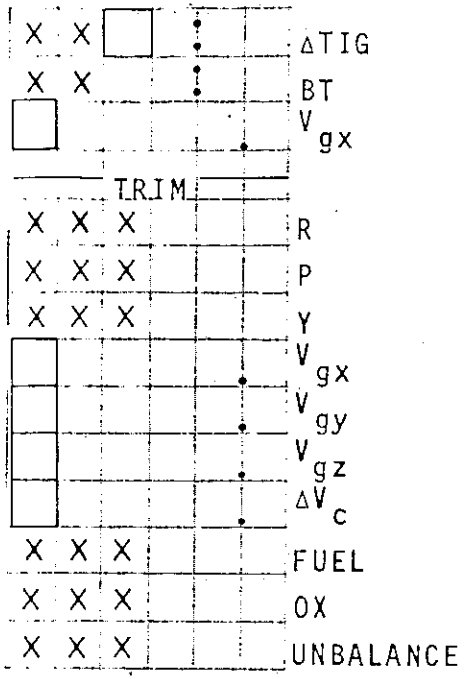
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	44:00 - 45:00	2/TLC	2-32

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
45:00	MNVR TO SIGHTING ATT	TRN BIAS CISLUNAR NAVIGATION P23		
45:15		1. STAR 33 LNH STAR__ __ L__H 2 SETS		
45:30	MSFN	2. STAR 37 LNH STAR__ __ L__H 1 SET		
45:45		3. STAR 45 LFH STAR__ __ L__H 1 SET 4. STAR 42 LFH STAR__ __ L__H 1 SET		
46:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	45:00 - 46:00	2/TLC	2-33

BURN STATUS REPORT



REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
46:00		GROUND TRACK DET P21	BIOMED Sw - RIGHT RECORD MNVR PAD	P27 UPDATE: STATE VECTOR TGT LOAD VOICE UPDATE: MNVR PAD
46:15	V47 TRANS LM STATE VECTOR TO CSM SLOT EXT ΔV P30			
MSFN				
46:30	SPS/RCS THRUST P40/41			
	MNVR TO BURN ATT	SXT STAR CK TRANS TO COUCH		PIPA BIAS CK
46:45	EMS ΔV TEST			
	GDC ALIGN	SM RCS MON CK		
LOI -22 HRS 47:00	MCC_3 ΔV=NOMINALLY ZERO			

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	46:00 - 47:00	2/TLC	2-34

FLIGHT PLAN

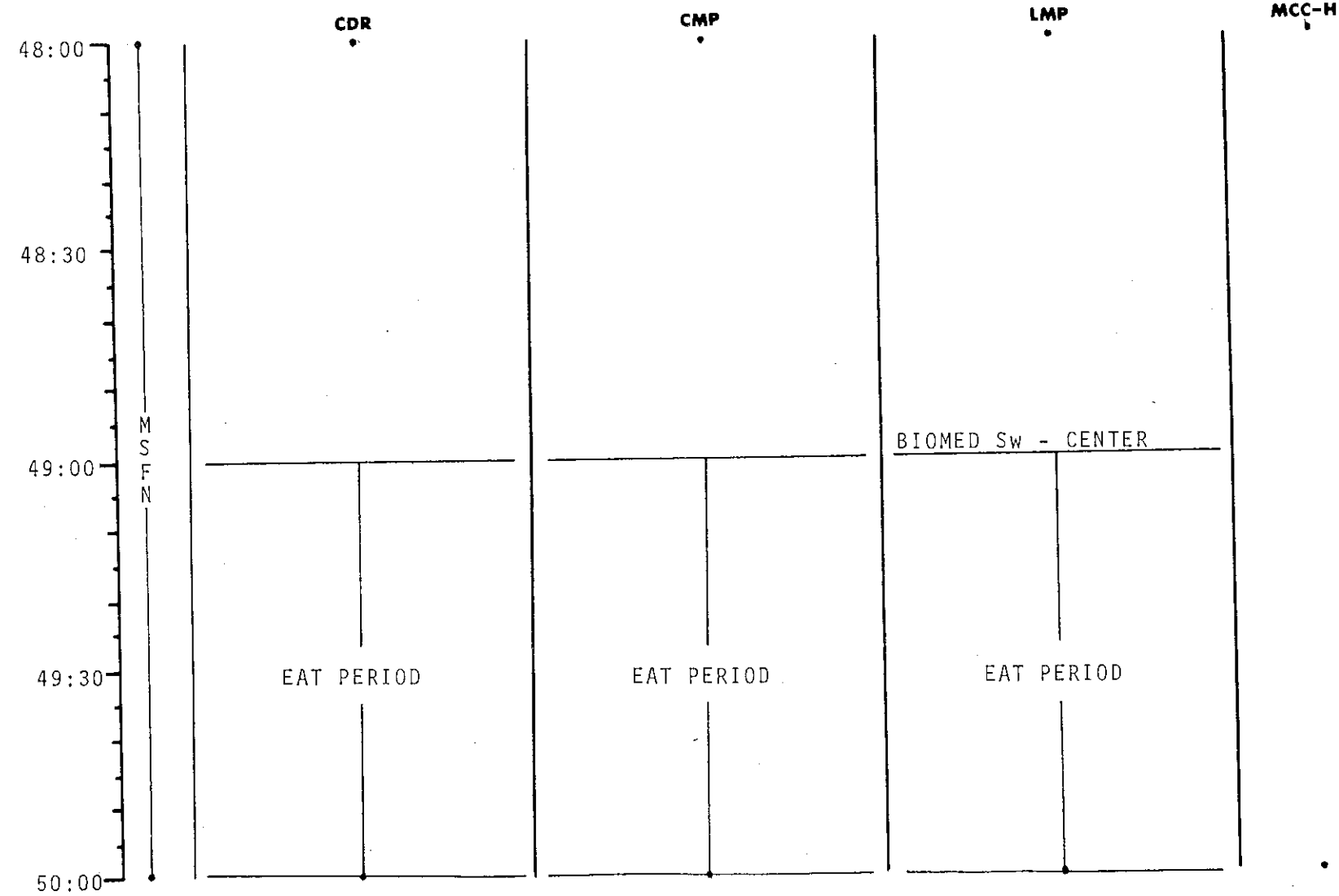
	CDR	CMP	LMP	MCC-H
47:00	MNVR TO SIGHTING ATT V66 TRANS CSM STATE VECTOR TO LM SLOT MCC_3 BURN STATUS REPORT	SM RCS MON CK TRN BIAS CISLUNAR NAVIGATION P23 1. STAR 16 EFH STAR__ __ E__H 1 SET 2. STAR 22 EFH STAR__ __ E__H 1 SET 3. STAR 26 ENH STAR__ __ E__H 1 SET GROUND TRACK DET P21	SPS MON CK INITIATE BAT CHARGE	
47:15				
47:30	MSFN			
47:45	MNVR TO PTC ATT P 331 Y 331 P___ Y___ ROLL 0.1°/SEC			
48:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	47:00 - 48:00	2/TLC	2-35

MSC Form 1910 (Nov 68)

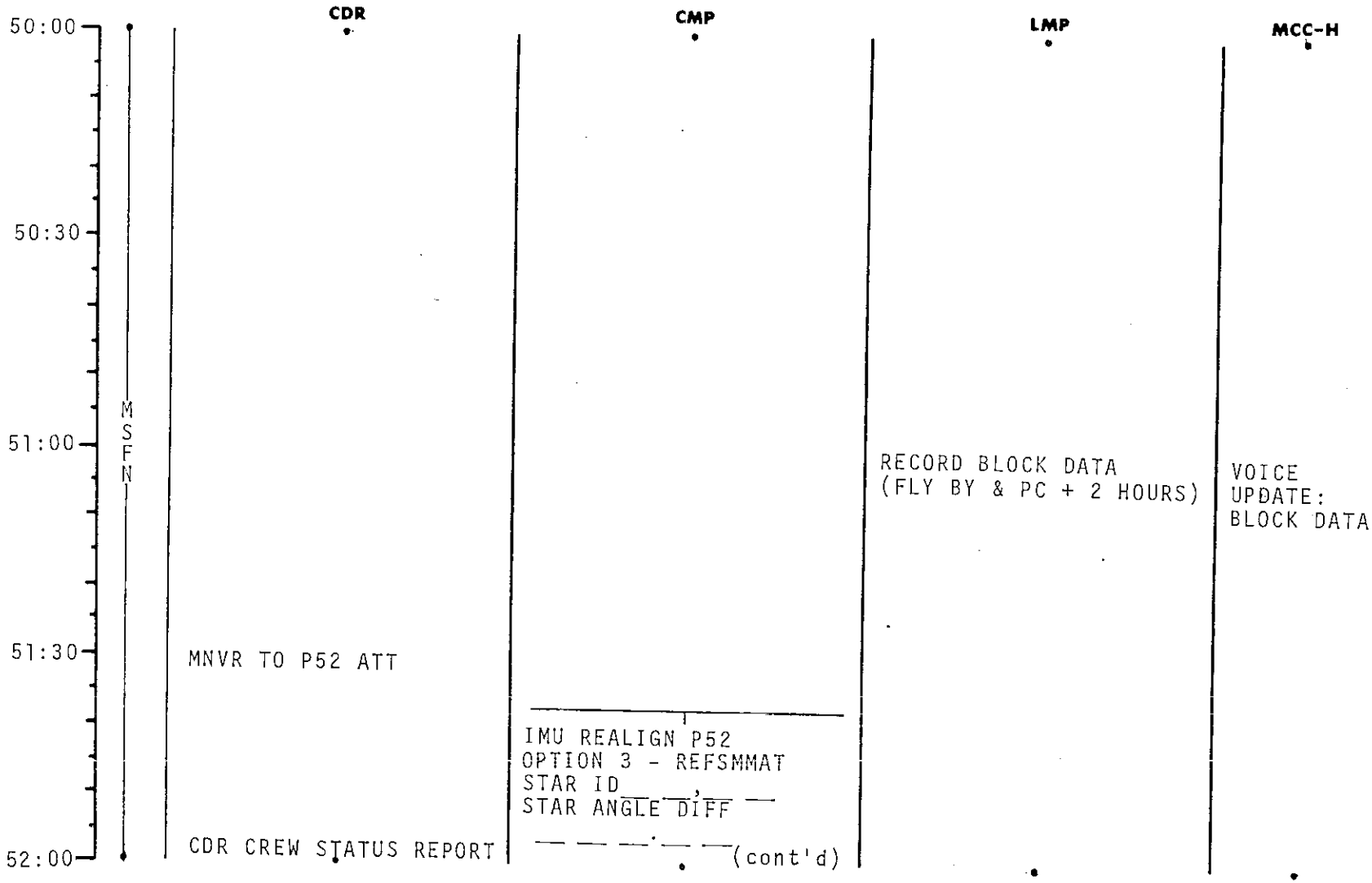
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	48:00 - 50:00	3/TLC	2-36

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	50:00 - 52:00	3/TLC	2-37

MSC Form 1910 (Nov 68)

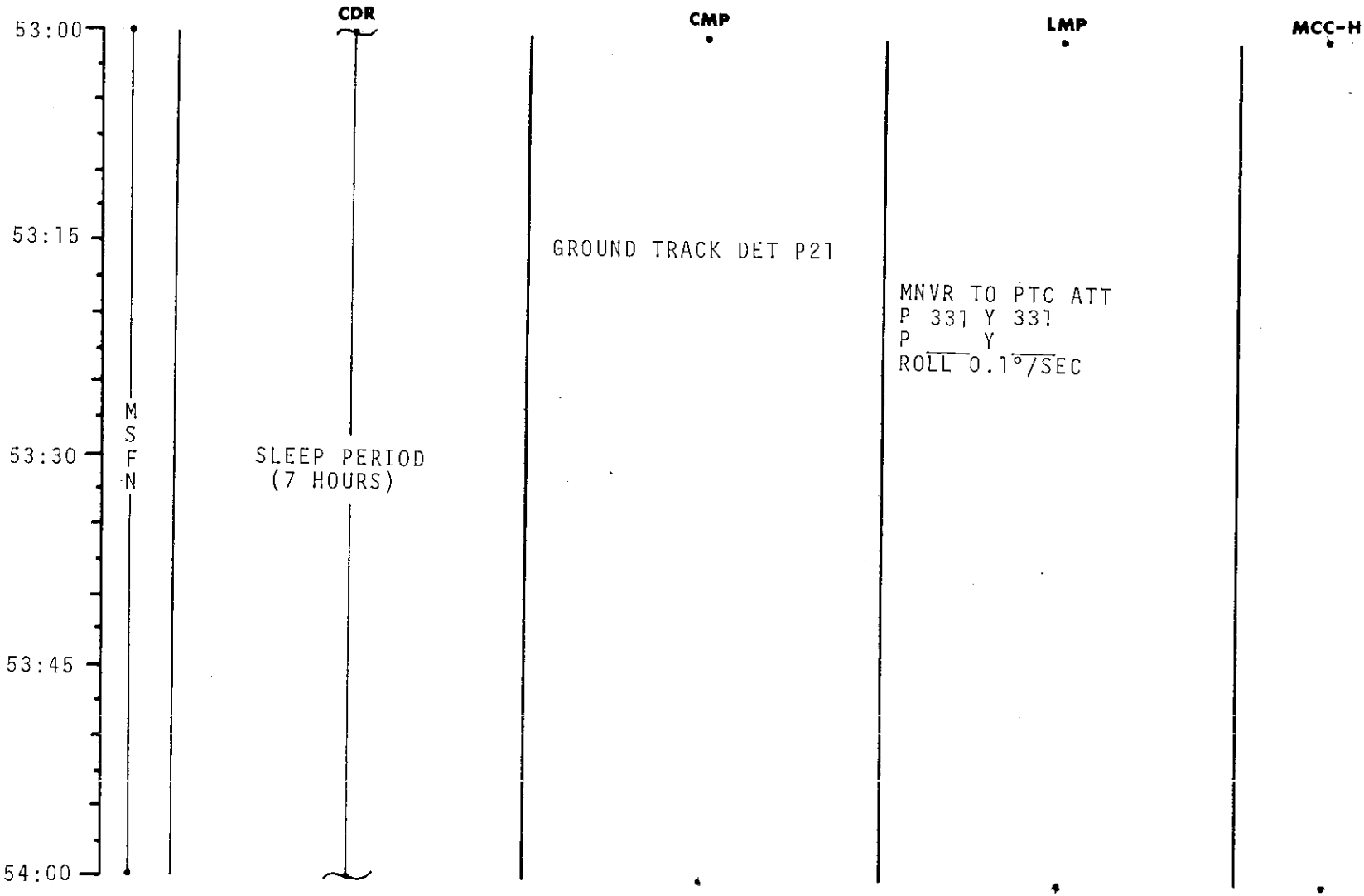
FLIGHT PLANNING BRANCH

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
52:00		TORQUE ANGLES: X ___ ___.___ ___ ___ Y ___ ___.___ ___ ___ Z ___ ___.___ ___ ___	BIOMED Sw - RIGHT	
52:15			TRANS TO LH COUCH MNVR TO SIGHTING ATT GDC ALIGN TO IMU	
		TRN BIAS CISLUNAR NAVIGATION P23		
52:30	MSFN SLEEP PERIOD (7 HOURS)	1. STAR 37 LNH STAR__ __ L__H 2 SETS		
52:45		2. STAR 33 LNH STAR__ __ L__H 3 SETS		
53:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	52:00 - 53:00	3/TLC	2-38

FLIGHT PLAN

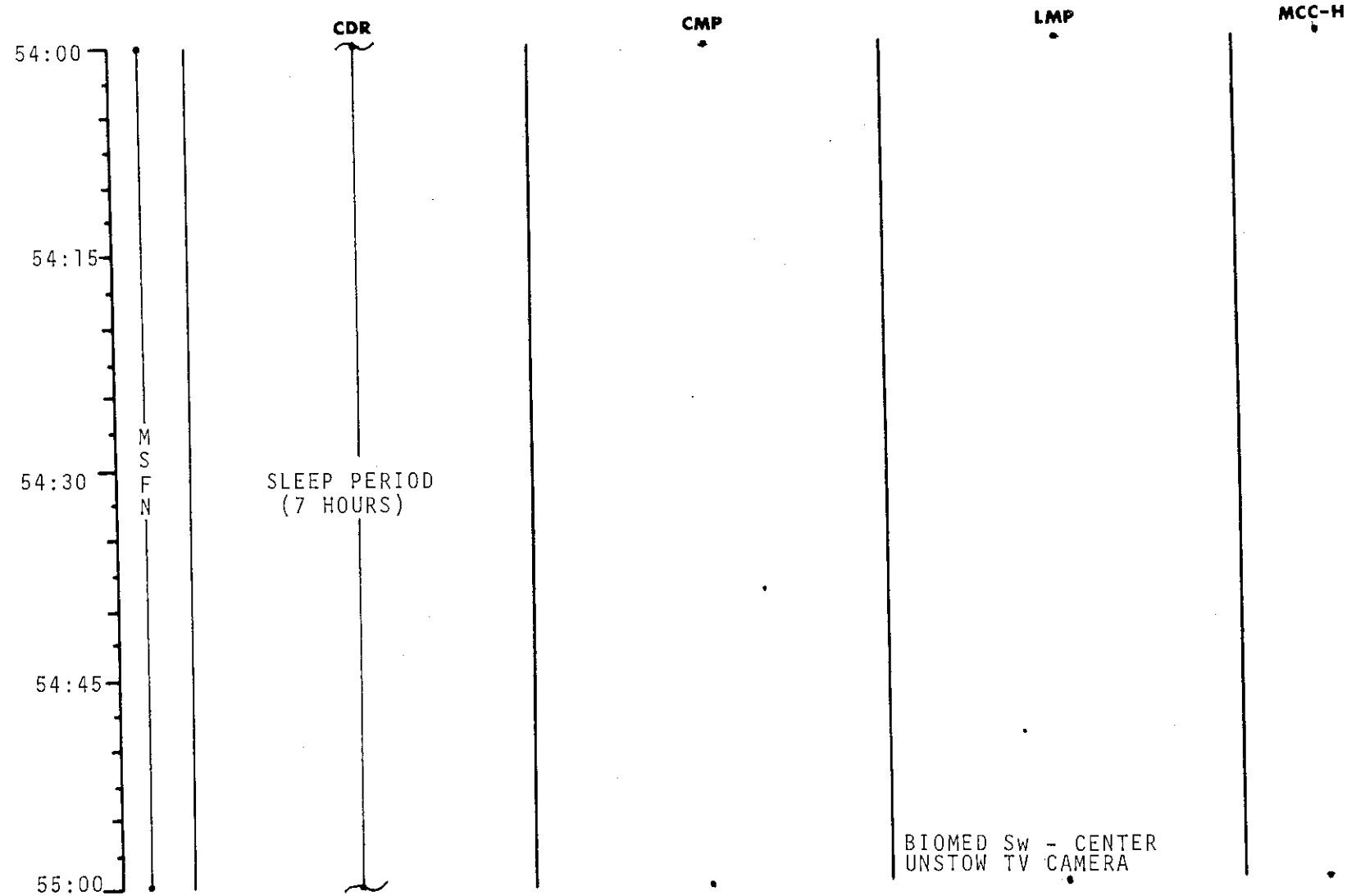


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	53:00 - 54:00	3/TLC	2-39

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

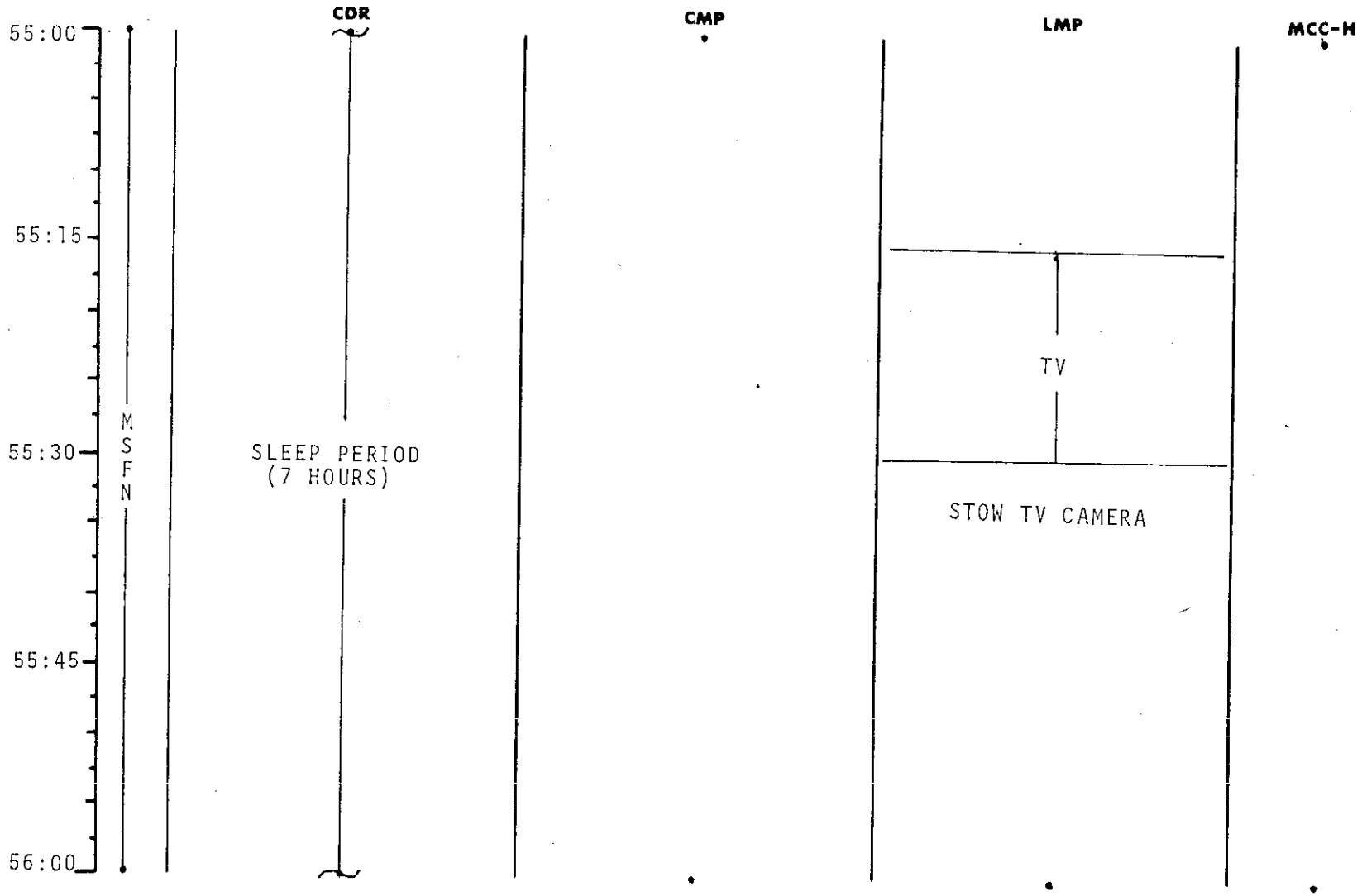


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	54:00 - 55:00	3/TLC	2-40

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



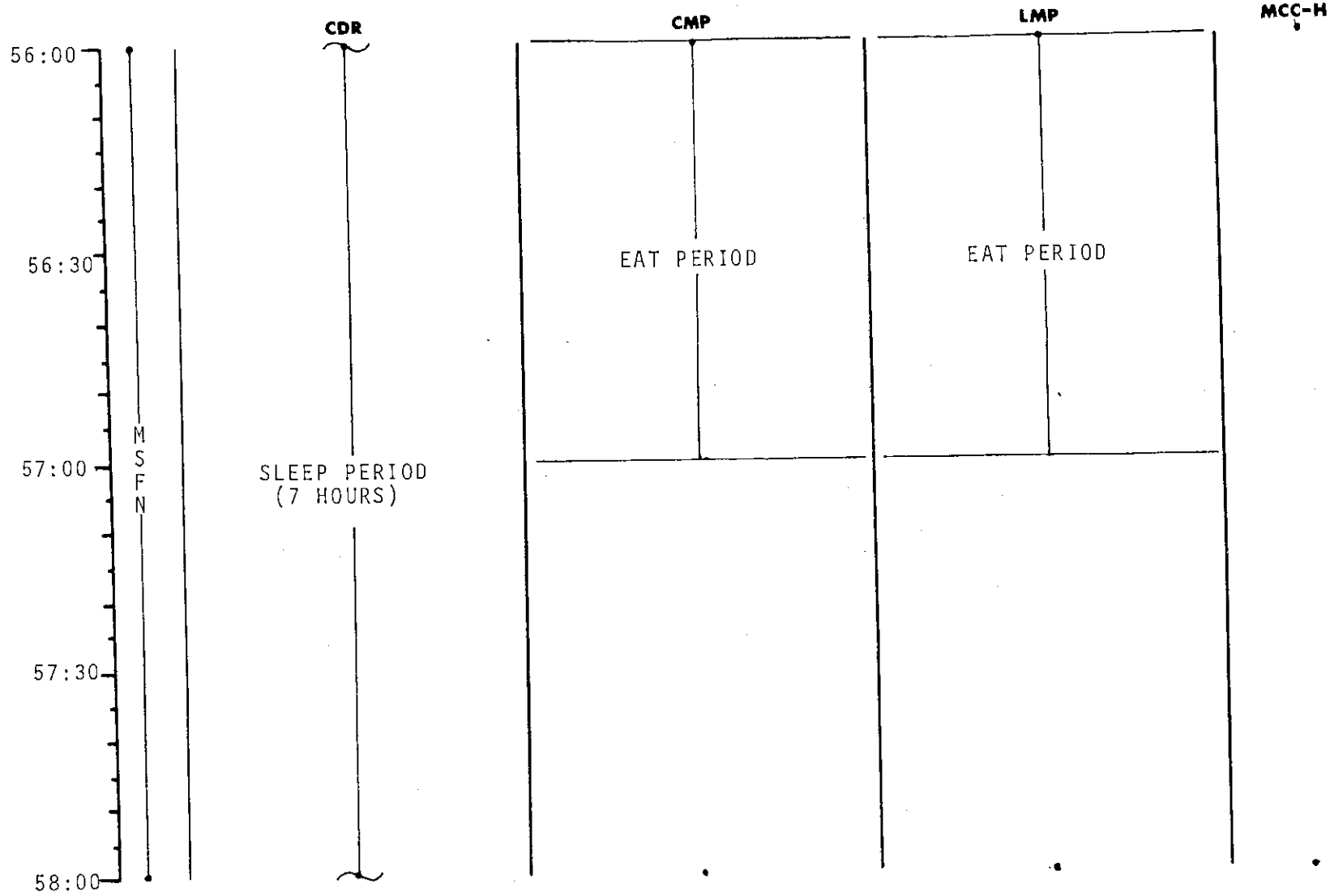
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	55:00 - 56:00	3/TLC	2-41

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

MCC-H

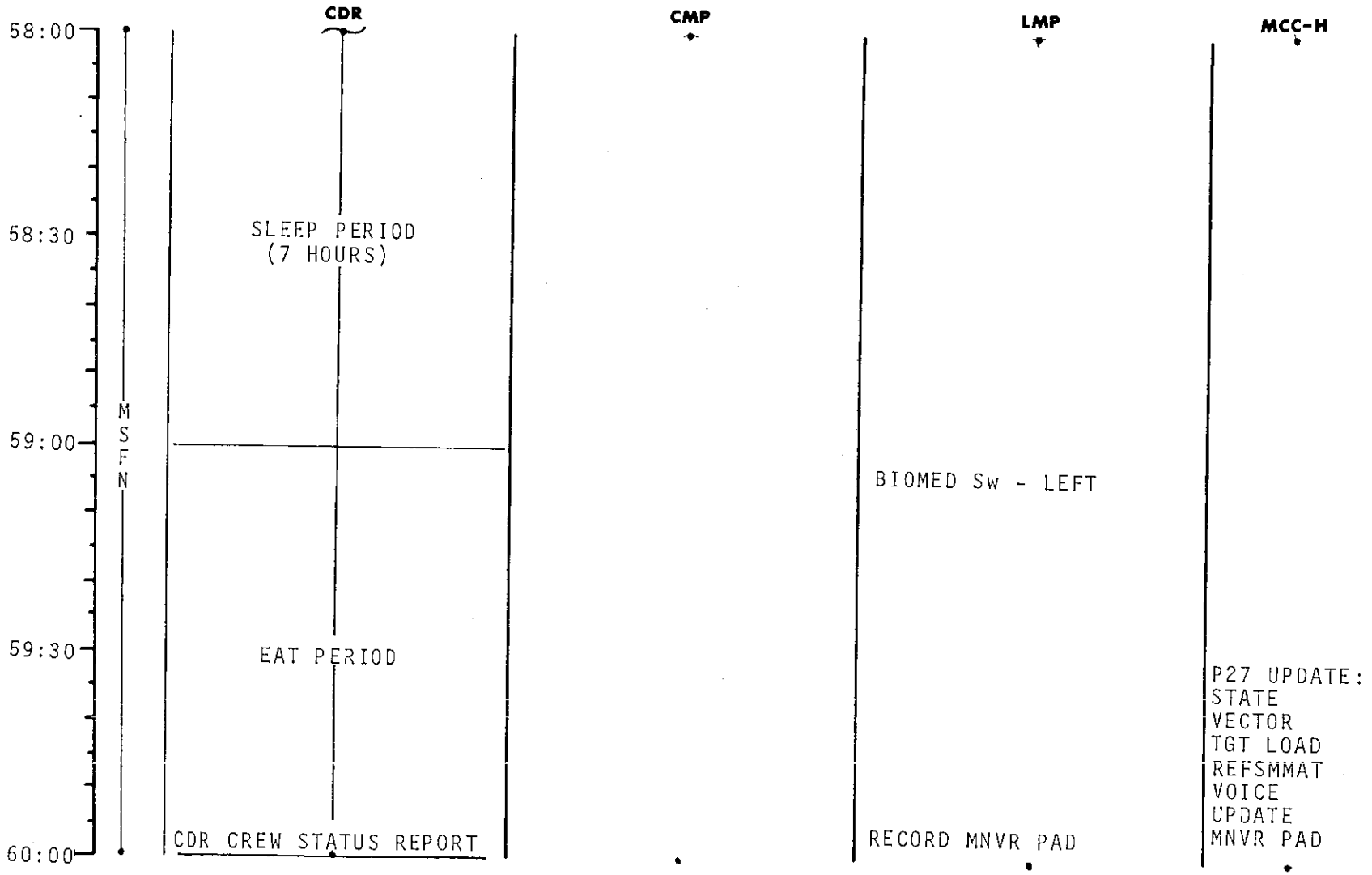


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	56:00 - 58:00	3/TLC	2-42

FLIGHT PLANNING BRANCH

MSC Form 1910 (Nov 68)

FLIGHT PLAN

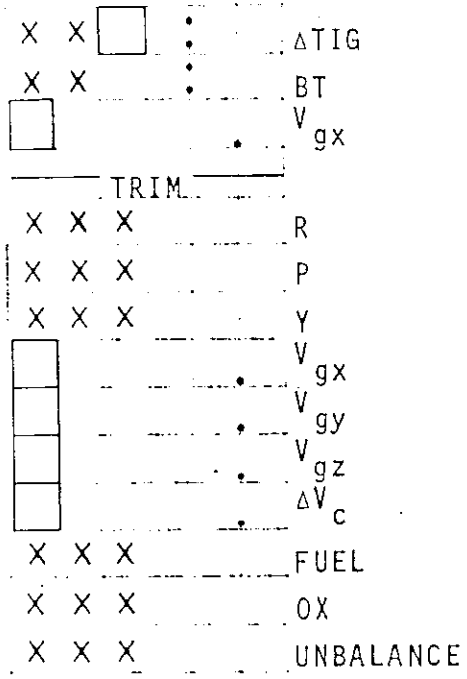


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	58:00 - 60:00	3/TLC	2-43

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

BURN STATUS REPORT



REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
60:00	MNVR TO P52 ATT			
		IMU REALIGN P52 OPTION 1 - PREFERRED STAR ID __ __ , __ __ STAR ANGLE DIFF __ __ __ . __ __ TORQUE ANGLES: X __ __ . __ __ __ Y __ __ . __ __ __ Z __ __ . __ __ __		
60:15				
60:30	EXT ΔV P30 SPS/RCS THRUST P40/41 MNVR TO BURN ATT			
		SXT STAR CK		PIPA BIAS CK
60:45	EMS ΔV TEST	TRANS TO COUCH		
	GDC ALIGN TO IMU	SM RCS MON CK		
61:00	MCC_4 ΔV = NOMINALLY ZERO			

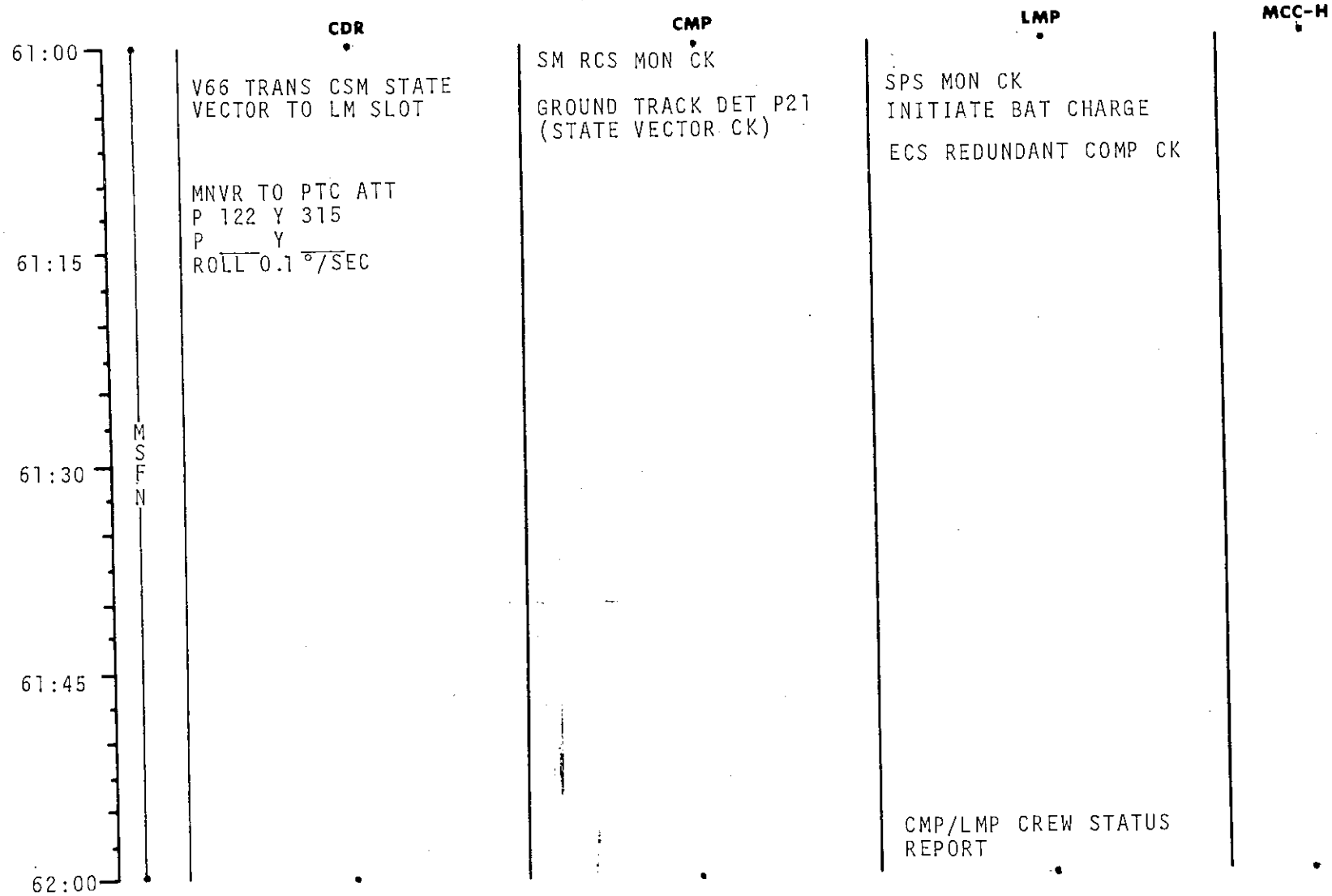
MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	60:00 - 61:00	3/TLC	2-44

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

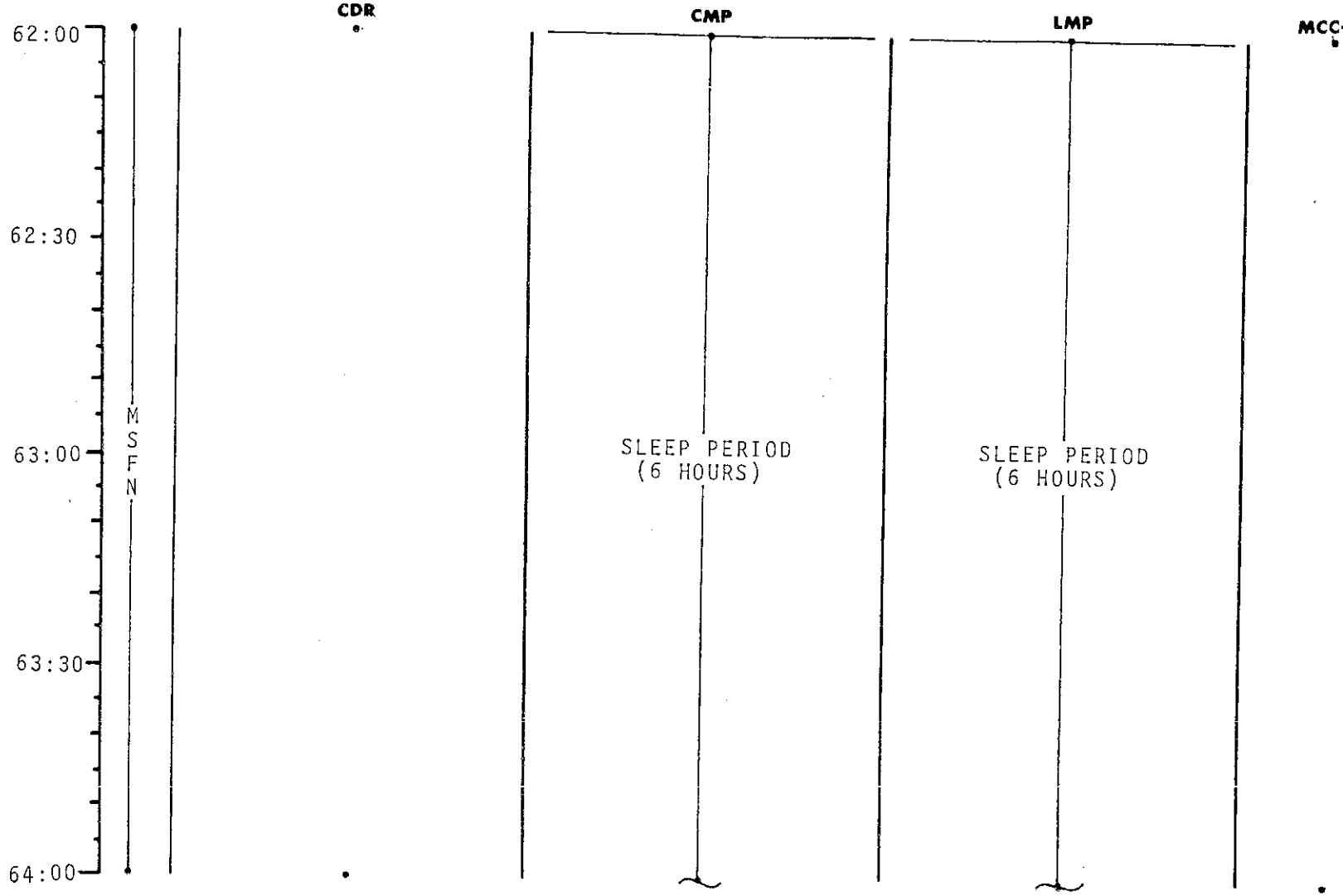


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	61:00 - 62:00	3/TLC	2-45

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

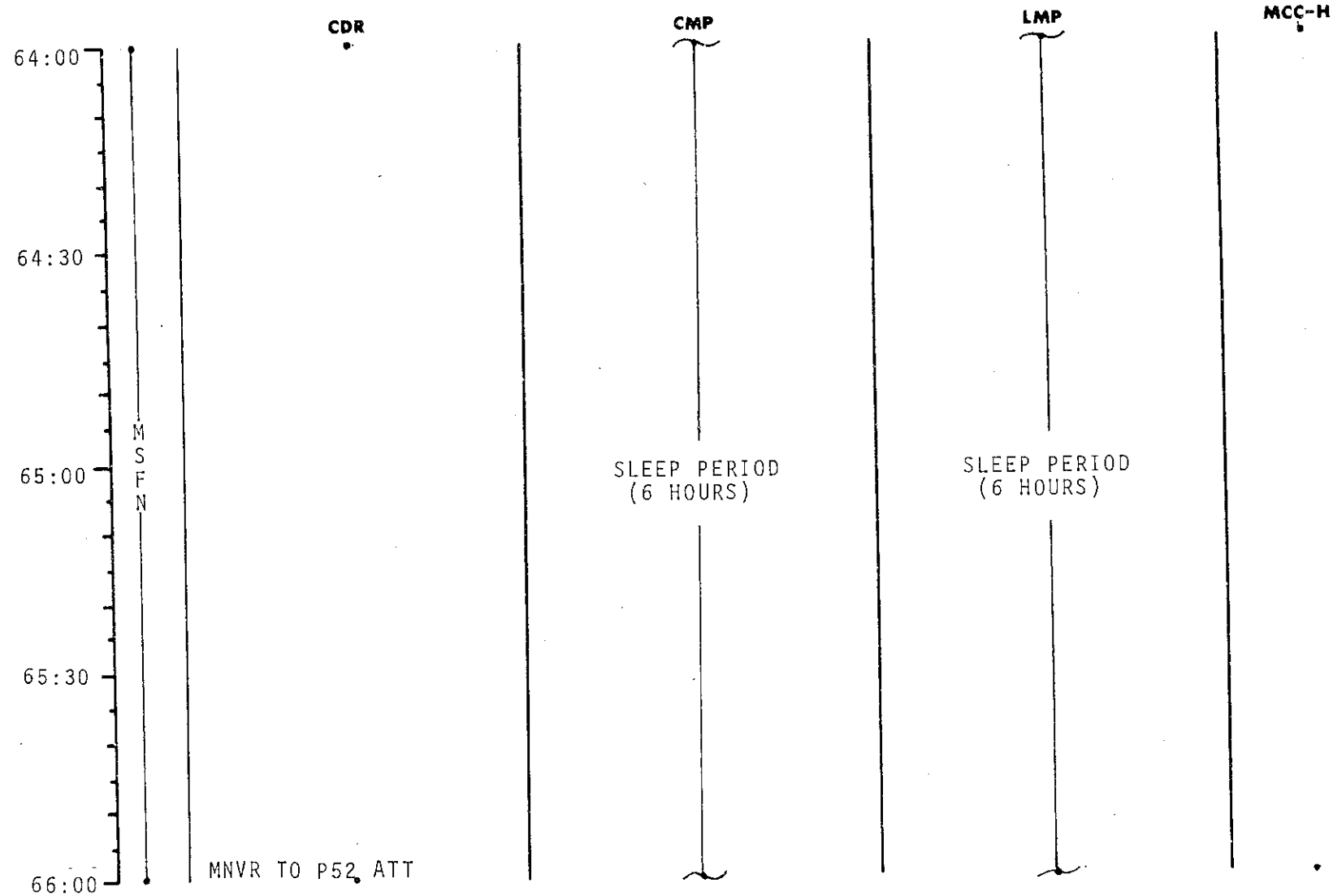


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	62:00 - 64:00	3/TLC	2-46

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

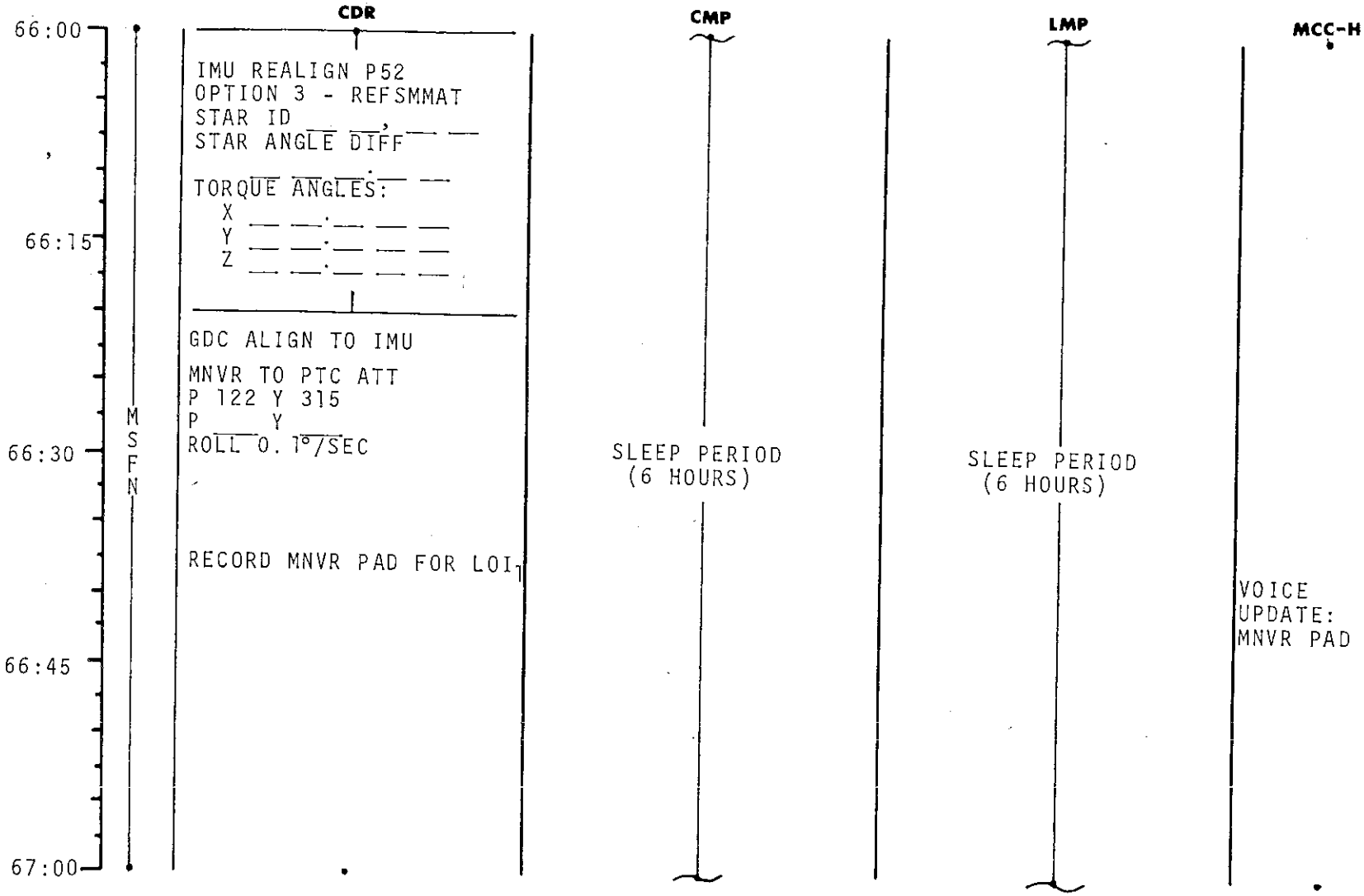


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	64:00 - 66:00	3/TLC	2-47

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

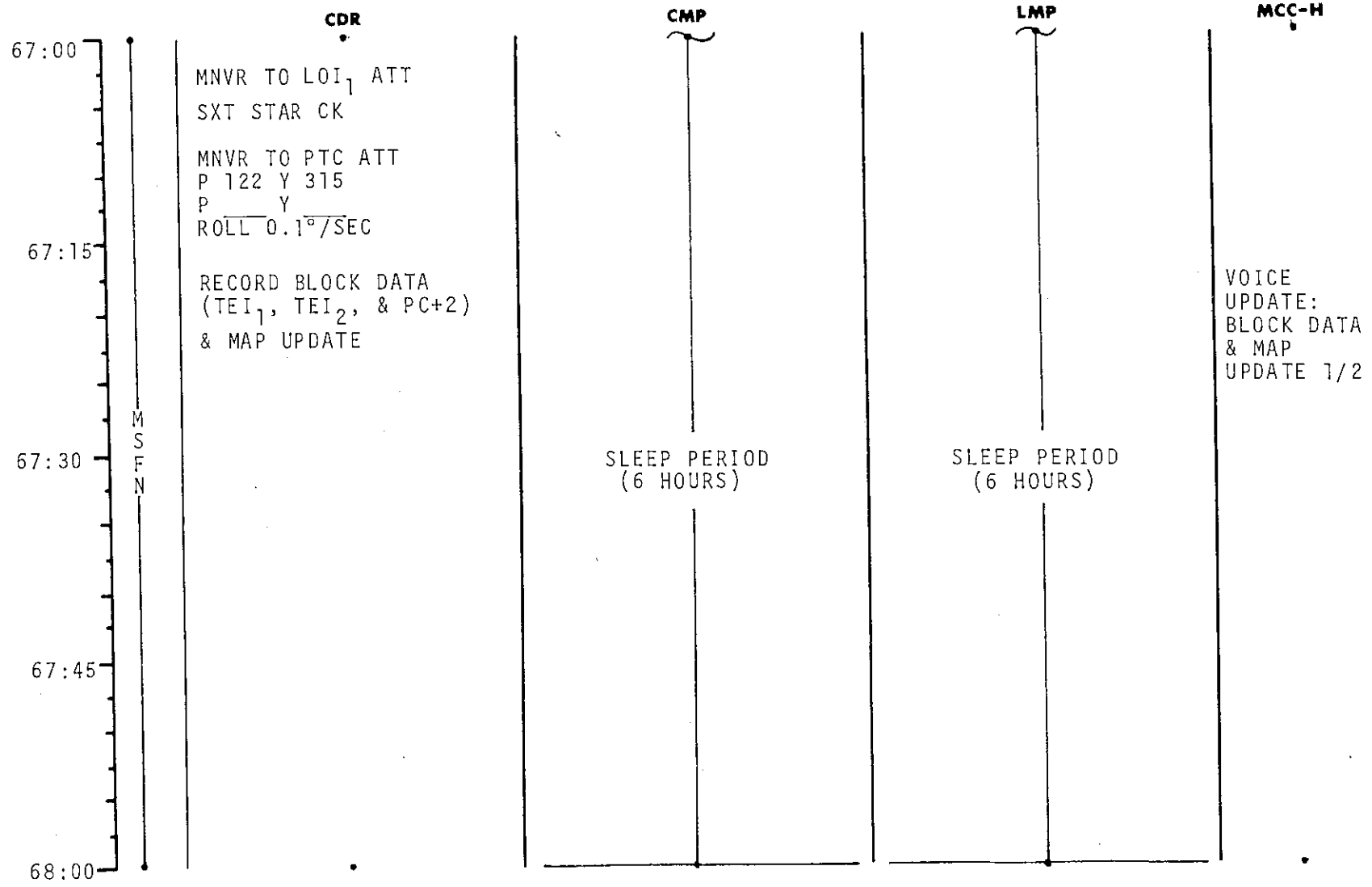


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	66:00 - 67:00	3/TLC	2-48

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

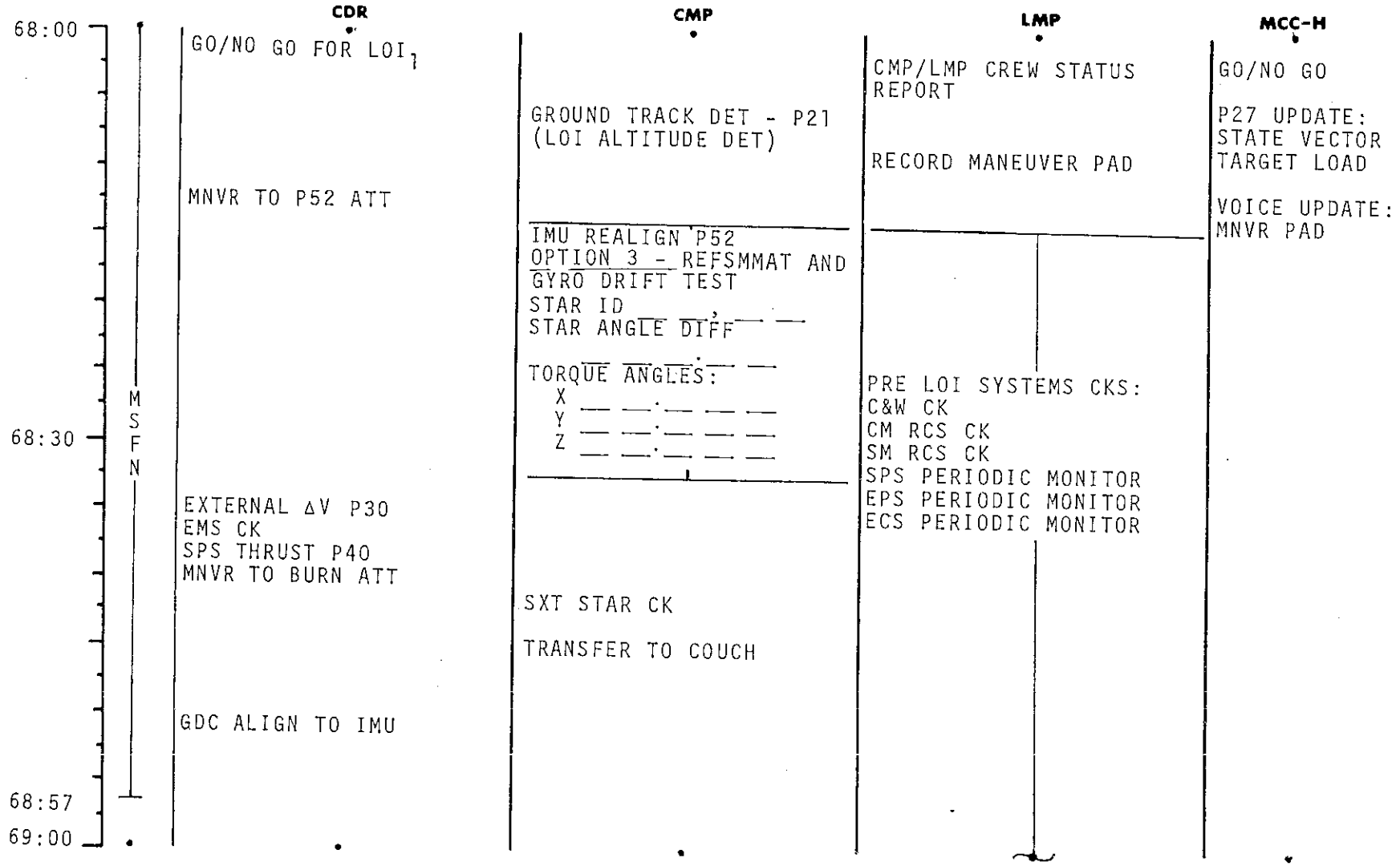


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	67:00 - 68:00	3/TLC	2-49

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	68:00 - 69:00	3/TLC	2-50

MSC Form 1910 (OT) (Oct 68)

FLIGHT PLANNING BRANCH

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		UNBALANCE

REMARKS:

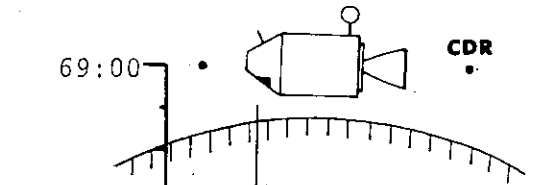
LOI_1 BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
LOI_1	10°/SEC TAKEOVER	10° TAKEOVER	B/T+6 SEC	NO TRIM

LOI_1 ABORT MODES

LOI V_{go}	B/T	TRAJECTORY	ABORT MODE
3050-2100	0 -1:20	HYPERBOLIC	COAST OUT OF SPHERE-P37
2100-1650	1:20-2:00	UNSTABLE	5 HR COAST. MODE I ABORT
1650-0	2:00-4:06	LUNAR ORBIT	MODE III ABORT AFTER 1 REV

FLIGHT PLAN



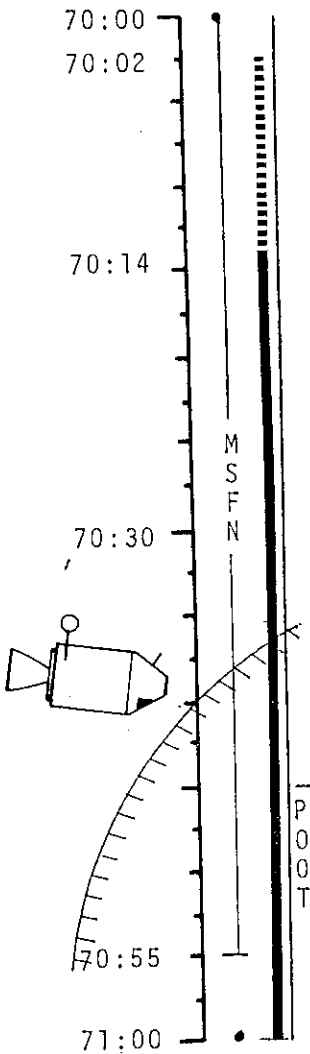
69:00	CDR	CMP	LMP	MCC-H
		SM RCS MONITOR CK	BIOMED Sw - CENTER	
	LOI$_1$	GETI = 69:07:30 ΔV = 2991 fps BT = 4 MIN 5.8 SEC		
BEGIN REV 1	GDC ALIGN TO IMU/ORB RATE (115 nm)	V66 TRANS CSM STATE VECTOR TO LM SLOT	SPS MONITOR CK	
	GO INERTIAL	SM RCS MONITOR CK		
			INITIATE BAT CHARGE CAMERA PREP	
	ROLL RIGHT 180° AT 2°/SEC, CONT INERTIAL ATT HOLD	2/80/B3 + 1/150/A8, R&B FILTER/U4, SPOT/ R13, INT/U4, 2 B&W FILM PACKS 1A8		
69:30	LOI$_1$ BURN STATUS REPORT	UNSTOW ORBITAL CHARTS, 16/18/NEW C-EX/CABLE/ BRKT/U3	V64 ACQUIRE MSFN ON HGA	ACQUIRE S/C
				DUMP DSE
MSFN	16/18/NEW C EX, 1/250, SPOT, 1 FPS, (1 MAG)	2/80/NEW B&W	2/150/NEW B&W 1/250 1/80/B&W, 1/250	PIPA BIAS CK
	EAT PERIOD	EAT PERIOD	EAT PERIOD	
70:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	69:00 - 70:00	3/LPO	2-51

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

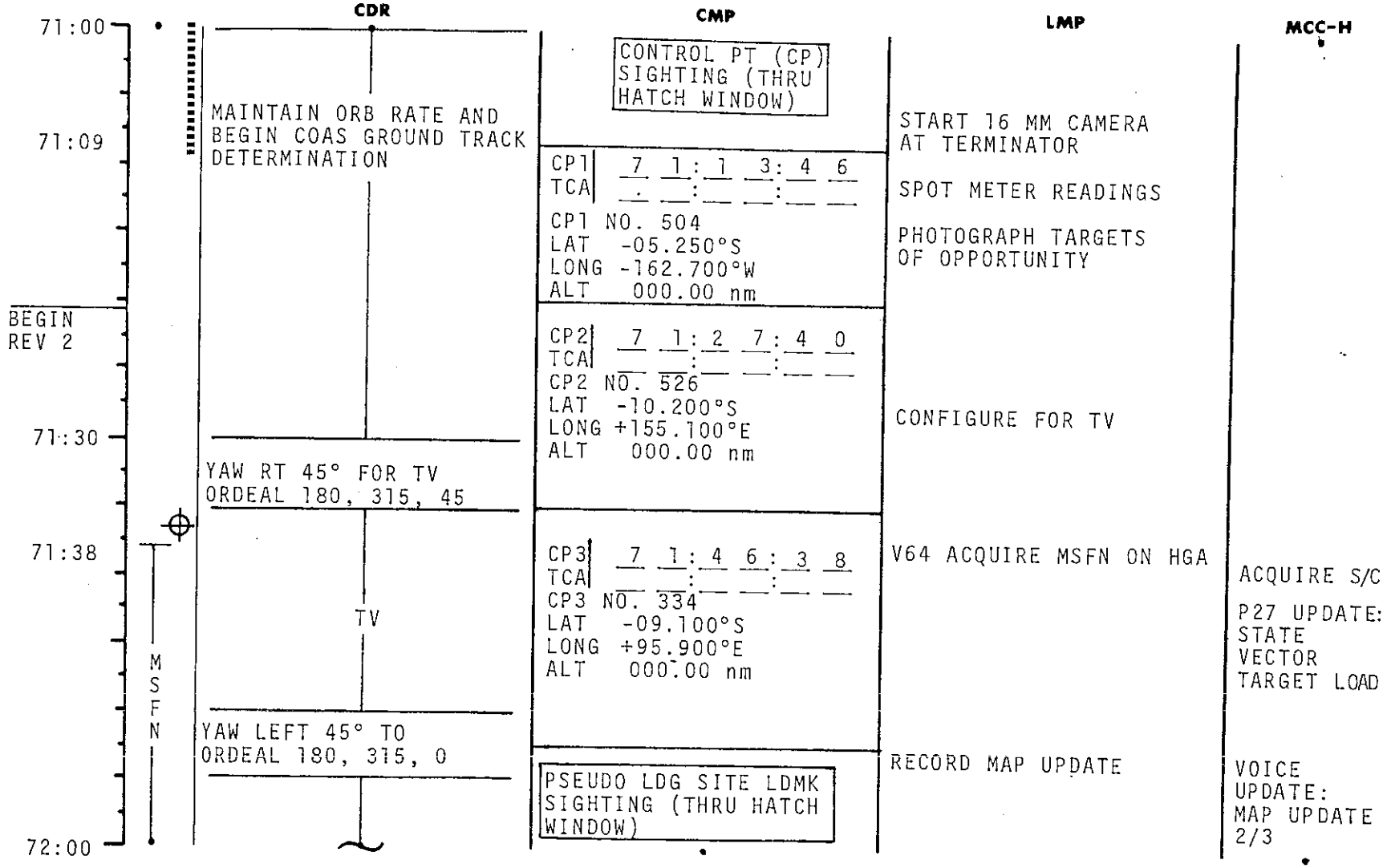


CDR	CMP	LMP	MCC-H
70:00			
70:02			
	EAT PERIOD		
70:14		1/50/HS, 1/4 F 2.8 VERIFY SYSTEMS STATUS	
	IMU REALIGN P52 OPTION 3 - REFSMMAT AND GYRO DRIFT TEST STAR ID ___, ___ STAR ANGLE DIFF ___.___ ___ TORQUE ANGLES: X ___.___ ___ ___ Y ___.___ ___ ___ Z ___.___ ___ ___	EAT PERIOD UNSTOW TV CAMERA & BRKT & TELEPHOTO LENS (A) TEMP STOW INT	
		RECORD BLOCK DATA (TEI_1 & TEI_2)	VOICE UPDATE: BLOCK DATA
EAT PERIOD	EAT PERIOD		
70:30			
GDC ALIGN TO IMU			
	PREPARE AND REVIEW CNTL POINT AND LDMK CHARTS 1/150/B&W	1/80/B&W, 1/250, F 2.8, INT 2/150/B&W, 1/250, F 2.8	
70:55		16/18/NEW C EX, 1/250, F 2.8, 1 fps (1 MAG)	
PITCH UP TO ORDEAL 180, 315, 0 AT 0.2°/SEC (HEADS DWN COAS TRACK ATT) BEGIN ORB RATE			
71:00			

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	70:00 - 71:00	3/LPO	2-52

FLIGHT PLAN

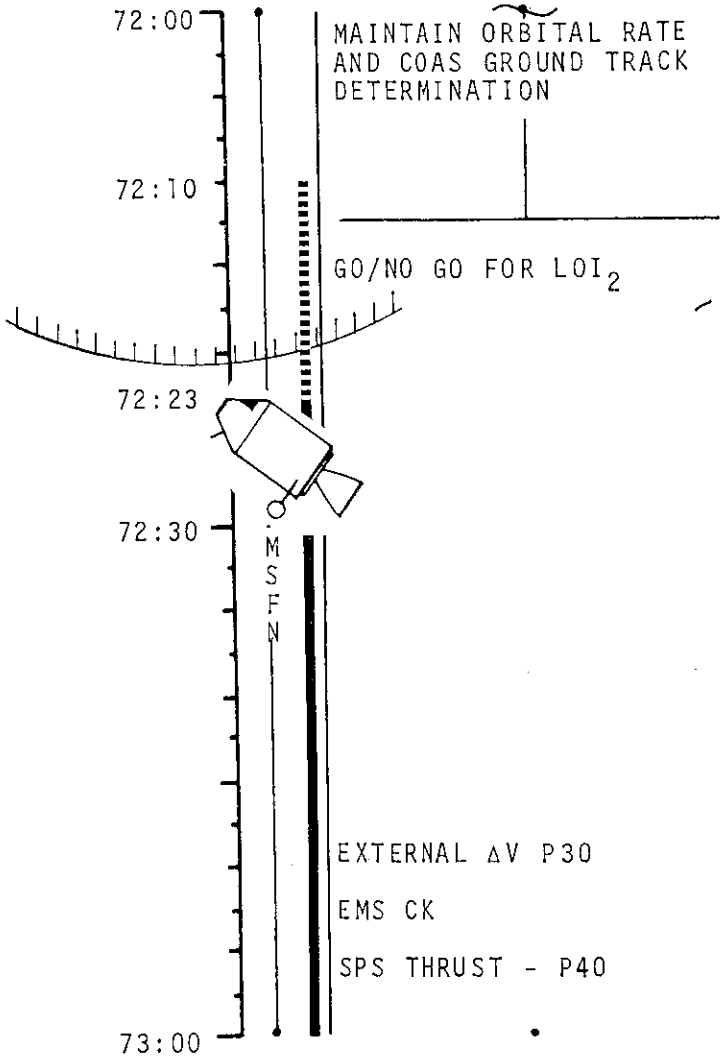


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	71:00 - 72:00	3/LPO	2-53

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR

MAINTAIN ORBITAL RATE AND COAS GROUND TRACK DETERMINATION

GO/NO GO FOR LOI_2

EXTERNAL ΔV P30

EMS CK

SPS THRUST - P40

CMP

B-1 TCA 72:09:10

LDMK NO. B1
LAT +02.675°N
LONG +35.025°E
ALT -000.99 nm

LiOH CANISTER CHANGE (CARTRIDGE 9 FROM B5 INTO CANISTER A)

IMU REALIGN P52
OPTION 3 - REFSMMAT AND GYRO DRIFT TEST
STAR ID __ __, __ __
STAR ANGLE DIFF __ __.__ __

TORQUE ANGLES:
X __ __.__ __ __
Y __ __.__ __ __
Z __ __.__ __ __

LMP

BIOMED Sw - LEFT

STOP 16 MM CAMERA

RECORD MNVR PAD, BLOCK DATA (TEI_3, TEI_3 NO LOI_2).

1/80/HS, 1/4, F 2.8

PRE LOI SYSTEMS CKS:

C&W CK
CM RCS CK
SPS PERIODIC MONITOR
EPS PERIODIC MONITOR
ECS PERIODIC MONITOR

MCC-H

GO/NO GO

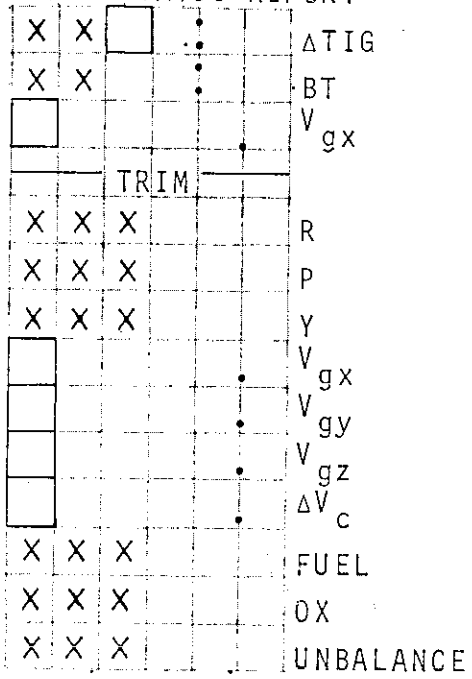
VOICE UPDATE: MNVR PAD BLOCK DATA

DUMP DSE

PIPA BIAS CK

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	72:00 - 73:00	4/LPO	2-54

BURN STATUS REPORT



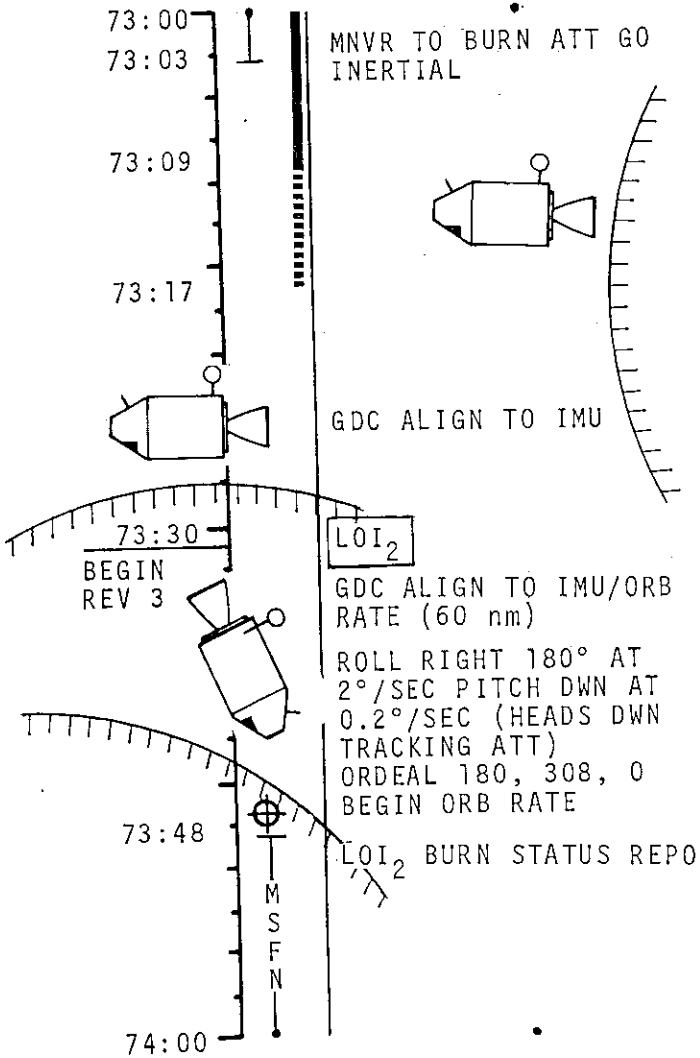
REMARKS:

LOI_2

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
LOI_2	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	NO TRIM

FLIGHT PLAN



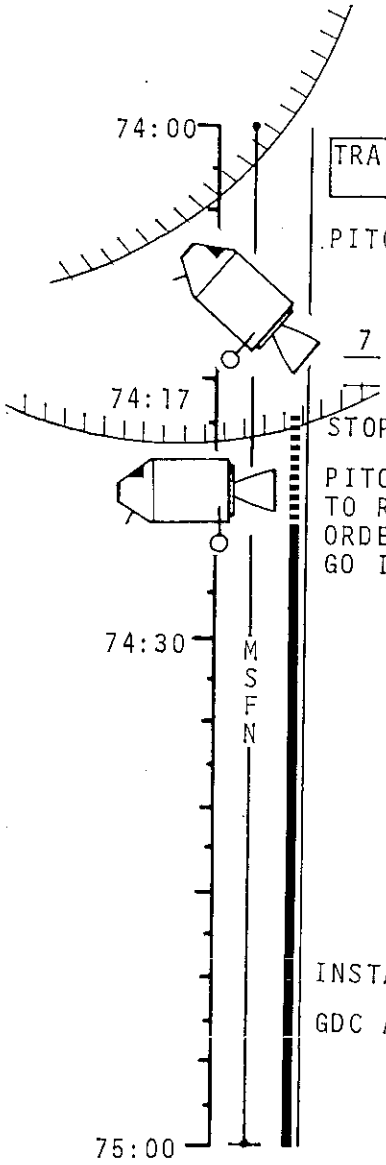
CDR	CMP	LMP	MCC-H
MNVR TO BURN ATT GO INERTIAL	SXT STAR CK	2/80/B&W, 1/250 16/18/C EX, 1/250 F CHART, 6 fps, BRACK	
	TRANSFER TO COUCH	1/150/B&W, 1/60, CHART, BRKT	
		PRE LOI SYSTEMS CKS	
GDC ALIGN TO IMU	SM RCS MONITOR CK		
	GETI = 73:30:54 ΔV = 138.5 fps BT = 9.7 SEC		
		SPS MONITOR CK	
LOI_2	V66 TRANS CSM STATE VECTOR TO LM SLOT		
GDC ALIGN TO IMU/ORB RATE (60 nm)	SM RCS MONITOR CK	INITIATE BAT CHARGE	
ROLL RIGHT 180° AT 2°/SEC PITCH DWN AT 0.2°/SEC (HEADS DWN TRACKING ATT) ORDEAL 180, 308, 0 BEGIN ORB RATE			
		V64 ACQUIRE MSFN ON HGA	ACQUIRE S/C PIPA BIAS CK
LOI_2 BURN STATUS REPORT	REST PERIOD (2 HOURS)		
		BIOMED Sw - RIGHT	

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	73:00 - 74:00	4/LPO	2-55

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR

TRAINING PHOTOGRAPHY

PITCH UP TO TRACK LDMK

7 4 : 1 5 : _ _
_ _ : _ _ : _ _

STOP CAMERA

PITCH DWN TO HEADS DWN
TO REACQUIRE MSFN
ORDEAL 180, 0, 0
GO INERTIAL

INSTALL 16 MM CAMERA

GDC ALIGN TO IMU

CMP

REST PERIOD
(2 HOURS)

LMP

TRAINING PHOTOGRAPHY
70mm & 16mm

START CAMERAS 7 MIN PRIOR
LDMK 70mm - 20 SEC INT
UNTIL TRACKING - THEN
5 SEC F STOP FROM CHART

STOP CAMERAS

1/80/HS, 1/4, F 2.8

VERIFY SYSTEMS STATUS

RECORD MAP UPDATE

IMU REALIGN P52
OPTION 3 - REFSMMAT
AND GYRO DRIFT TEST
STAR ID _ _,
STAR ANGLE DIFF _ _ . _ _

TORQUE ANGLES:
X _ _ _ . _ _ _
Y _ _ _ . _ _ _
Z _ _ _ . _ _ _

RECORD BLOCK DATA
(TEI_3 & TEI_4)

MCC-H

VOICE
UPDATE:
MAP UPDATE
3/4

DUMP DSE

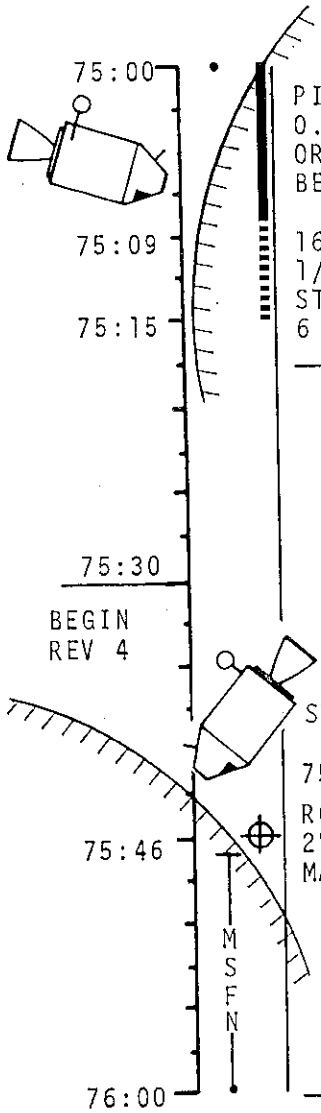
VOICE
UPDATE:
BLOCK DATA

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	74:00 - 75:00	4/LPO	2-56

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR

PITCH UP TO VERTICAL AT 0.2°/SEC (+Z FWD)
ORDEAL 180, 270, 0.
BEGIN ORB RATE

16/18/NEW C EX/1 fps
1/250, F 2, 1 fps
START CAMERA S/S SR + 6 MIN

SUBSOLAR POINT

75:46 __ __ : __ __
ROLL RIGHT 180° AT 2°/SEC (-Z FWD)
MAINTAIN ORB RATE

CMP

REST PERIOD
(2 HOURS)

INSTALL SXT BRKT & 16mm CAMERA. TAKE PHOTOS AS TIME PERMITS.

SA 0° TA 0°

LMP

1/80/NEW B&W, 1/250, F 2.8 BRKT/INT

2/150/B&W

START CAMERA 1 S/C SR + 6 MIN

VERTICAL STEREO PHOTOGRAPHY
EXTRA EXP EACH 5 MIN - NOTE TIME

ACQUIRE MSFN ON OMNI ANT

MCC-H

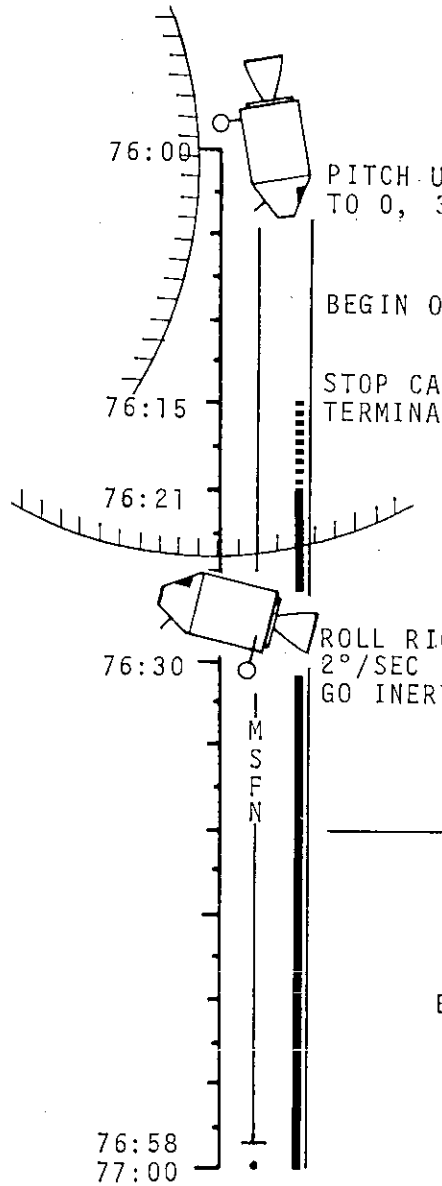
ACQUIRE S/C

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	75:00 - 76:00	4/LPO	2-57

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

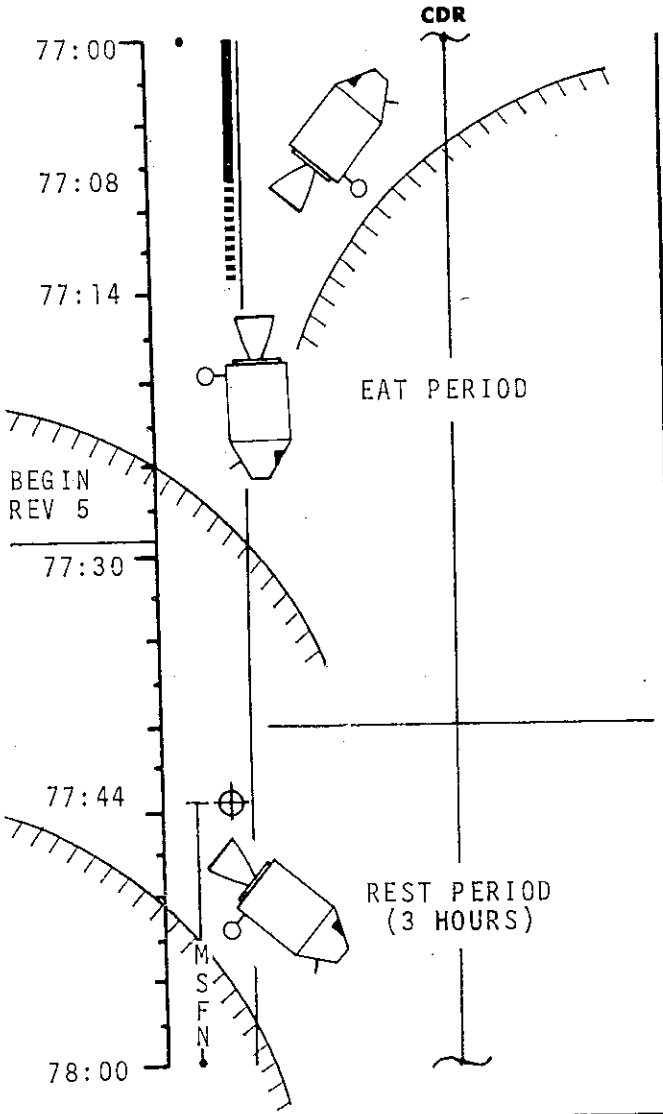
FLIGHT PLAN



CDR	CMP	LMP	MCC-H
PITCH UP AT 0.2°/SEC TO 0, 35, 5, 0	IPI ACQ __ __:__ __:__ __ IPII ACQ __ __:__ __:__ __	AT PITCH UP 1/80/B&W, 1/250, F 11	
BEGIN ORB RATE	LDMK LIGHTING EVALUATION (THRU OPTICS) OF LDMK B1		
STOP CAMERAS AT TERMINATOR		STOP CAMERA 1 AT TERM	
		RECORD MAP UPDATE	VOICE UPDATE: MAP UPDATE 4/5 P27 UPDATE: STATE VECTOR
ROLL RIGHT 180° AT 2°/SEC (HEADS DWN) GO INERTIAL	IMU REALIGN P52 OPTION 3 - REFSMMAT AND GYRO DRIFT TEST STAR ID __ __,__ __ STAR ANGLE DIFF __ __.__ TORQUE ANGLES: X __ __:__ __ __ Y __ __:__ __ __ Z __ __:__ __ __	V64 ACQUIRE MSFN ON HGA	ACQUIRE S/C
		1/80/HS, 1/4, F 2.8 (20 SEC STRIP - 20 EXP)	DUMP DSE
		VERIFY SYSTEMS STATUS	
		RECORD BLOCK DATA: (TEI_4 & TEI_5)	VOICE UPDATE: BLOCK DATA
EAT PERIOD		TRANS TO LEFT COUCH	
GDC ALIGN TO IMU			
		1/80/B&W, 1/250, F 2.8 INT (CDR)	
		BIOMED Sw - CENTER	

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	76:00 - 77:00	4/LPO	2-58

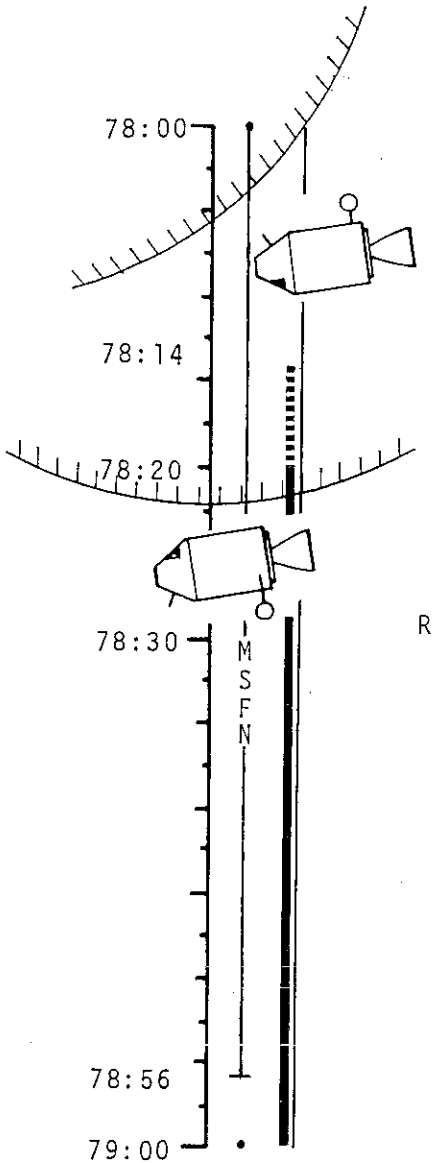
FLIGHT PLAN



CMP	LMP	MCC-H
MAP REVIEW	ROLL LEFT 180° AT 2°/SEC PITCH DWN AT 0.2°/SEC TO ORDEAL 0, 5, 0. BEGIN ORB RATE.	
	2/150/B&W, 1/250 F 2.8	
P22 MANUAL ACQ SA 0°, TA 10°		
CNTL POINT SIGHTING		
IPI ACQ — — : — — : — —	2/150/B&W, 1/250 (CDR)	
CP2 NO. 526 LAT -10.200°S LONG/2 +77.550° ALT +000.00 nm	PITCH DWN AT 0.3°/SEC AT ACQ	
NEW COORDINATES LAT — — ·— — — ° LONG/2 — — ·— — — ° ALT — — —·— — nm		
	ACQUIRE MSFN ON OMNIS AT LOSS PITCH UP AT 0.2°/SEC TO ORDEAL 0, 5, 0. BEGIN ORB RATE.	ACQUIRE S/C
REVIEW LDMK MAP	REPORT NEW CP COORDINATES	

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	77:00 - 78:00	4/LPO	2-59

FLIGHT PLAN



CDR

REST PERIOD
(3 HOURS)

CMP

PSEUDO LDG SITE SIGHTINGS
P22 - AUTO OPTICS
IPI
TCA __ __ : __ __ : __ __
LDMK NO. B1
LAT +02.675°N
LONG/2 +17.512°
ALT -000.99 nm
NEW COORDINATES
LAT + __ __ . __ __ __ °
LONG/2 + __ __ . __ __ __ °
ALT __ __ __ . __ __ nm

IMU REALIGN P52
OPTION 3 - REFSMMAT
AND GYRO DRIFT TEST
STAR ID __ __, __ __
STAR ANGLE DIFF
__ __ . __ __
TORQUE ANGLES:
X __ __ . __ __ __
Y __ __ . __ __ __
Z __ __ . __ __ __

LMP

PITCH DWN 0.3°/SEC AT ACQ

AT LOSS ROLL RIGHT 180°
AT 2°/SEC TO HEADS DWN
GO INERTIAL

V64 ACQUIRE MSFN ON HGA
1/80/HS, 1/4, F 2.8

REPORT NEW COORDINATES

RECORD BLOCK DATA
(TEI_6), & MAP UPDATE

VERIFY SYSTEMS STATUS

GDC ALIGN TO IMU
16/18/ C EX, 1/250, 1 fps
(____ MAGS)

2/150/C121/1/250 SPOT
GENERAL OBSERVATIONS

MCC-H

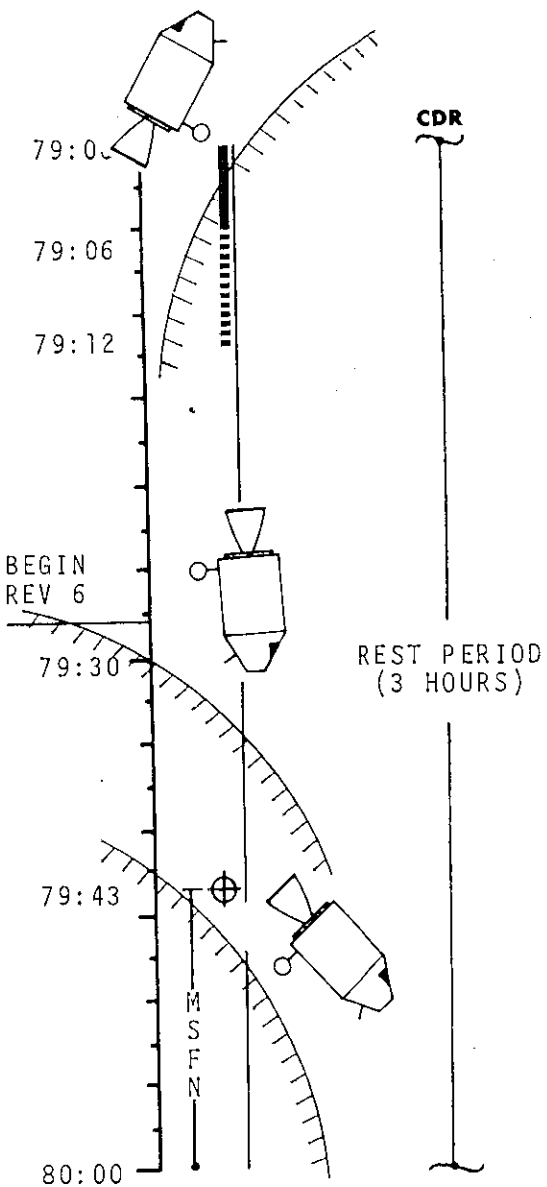
ACQUIRE S/C

P27 UPDATE:
STATE
VECTOR
VOICE
UPDATE:
BLOCK DATA
& MAP
UPDATE
5/6

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	78:00 - 79:00	4/LPO	2-60

FLIGHT PLAN



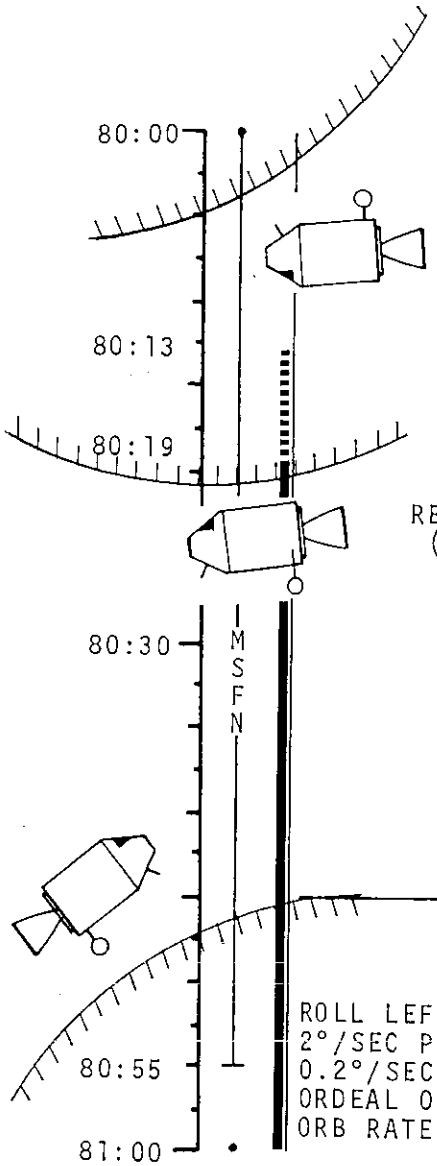
CMP	LMP	MCC-H
REVIEW CONTROL POINT MAP	ROLL 180° AT 2°/SEC PITCH DWN AT 0.2°/SEC TO ORDEAL 0, 5, 0. BEGIN ORB RATE	
CNTL POINT SIGHTING		
P22 - AUTO OPTICS IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ CP2 NO. 526 LAT -10.200°S LONG/2 +77.550° ALT +000.00 nm	PITCH DWN 0.3°/SEC AT ACQ	
NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __ nm	AT LOSS PITCH UP AT 0.2°/SEC TO ORDEAL 0, 5, 0. BEGIN ORB RATE	
REVIEW LDMK MAP	ACQUIRE MSFN ON OMNIS REPORT NEW COORDINATES	ACQUIRE S/C
PSEUDO LDG SITE SIGHTING		

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	79:00 - 80:00	4/LPO	2-61

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR

REST PERIOD
(3 HOURS)

ROLL LEFT 180° AT
2°/SEC PITCH UP AT
0.2°/SEC TO
ORDEAL 0, 5, 0. BEGIN
ORB RATE

CMP

P22 AUTO OPTICS
IPI
TCA
LDMK NO. B1
LAT +02.675°N
LONG/2 +17.512°
ALT -000.99 nm
NEW COORDINATES
LAT °
LONG/2 °
ALT nm

IMU REALIGN P52
OPTION 3 - REFSMMAT
AND GYRO DRIFT TEST
STAR ID
STAR ANGLE DIFF

TORQUE ANGLES:
X
Y
Z

16/SXT/NEW C XT,
6 fps

LMP

PITCH DWN 0.3°/SEC AT ACQ

AT LOSS ROLL RIGHT 180°
AT 2°/SEC. GO INERTIAL

V64 ACQUIRE MSFN ON HGA

REPORT NEW COORDINATES

RECORD BLOCK DATA
(TEI$_7$) & MAP UPDATE

VERIFY SYSTEMS STATUS

1/80/B&W, 1/250 F 2.8 INT

2/150/B&W, 1/250 (R&B)

TRANS TO RIGHT COUCH

EAT PERIOD

MCC-H

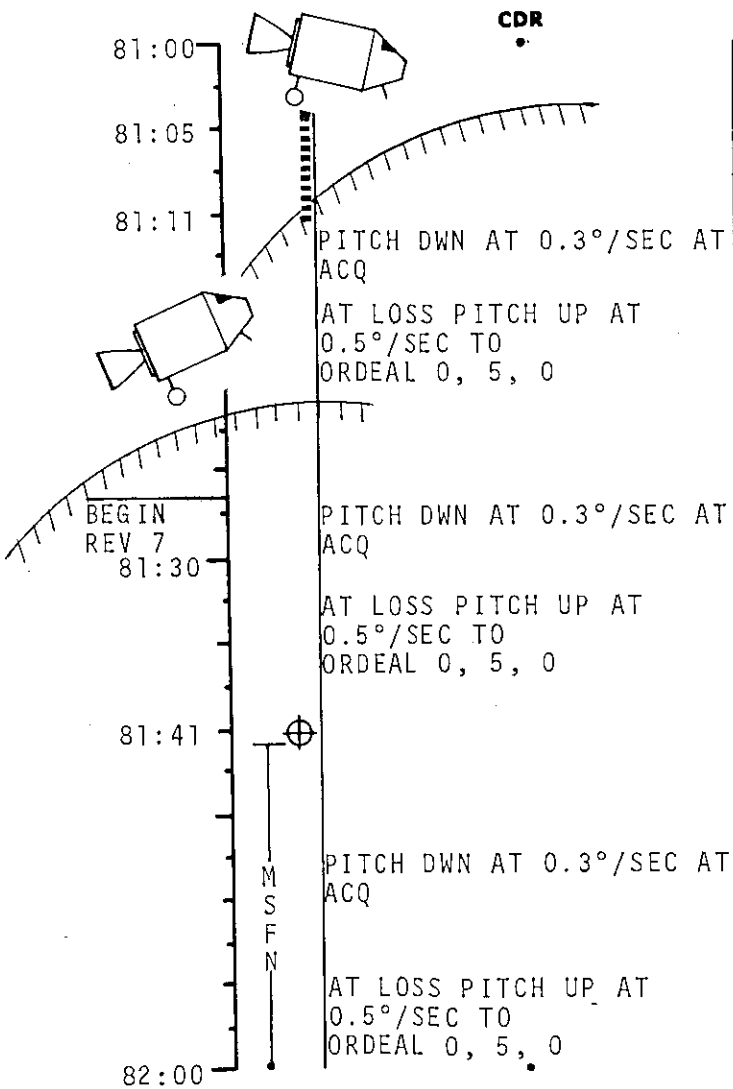
ACQUIRE S/C
P27 UPDATE:
STATE
VECTOR
VOICE
UPDATE:
BLOCK DATA
& MAP
UPDATE 6/7
DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	80:00 - 81:00	4/LPO	2-62

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

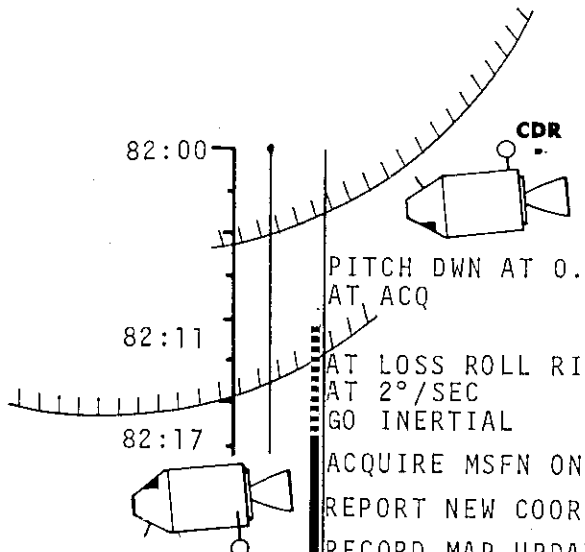
FLIGHT PLAN



CDR	CMP	LMP	MCC-H
81:00	CNTL PT SIGHTINGS (3)	BIOMED Sw - LEFT	
81:05		EAT PERIOD	
81:11 PITCH DWN AT 0.3°/SEC AT ACQ AT LOSS PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0	P22 MAN ACQ SA 0° TA 10° IPI __ __:__ __:__ __ ACQ __ __:__ __:__ __ CP1 NO. 504 LAT -05.250°S LONG/2 -81.350° ALT +000.00 nm	NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __nm	
BEGIN REV 7 81:30 PITCH DWN AT 0.3°/SEC AT ACQ AT LOSS PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0	P22 AUTO OPTICS IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ CP2 NO. 526 LAT -10.200°S LONG/2 +77.550° ALT +000.00 nm	EAT PERIOD NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __nm	
81:41 MSFN PITCH DWN AT 0.3°/SEC AT ACQ AT LOSS PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0	P22 MAN ACQ SA 0° TA 10° IPI __ __:__ __:__ __ ACQ __ __:__ __:__ __ CP3 NO. 334 LAT -09.100°S LONG/2 +47.950° ALT +000.00 nm	NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __nm	ACQUIRE S/C
82:00	PSEUDO LDG SITE SIGHTING P22 AUTO OPTICS		

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	81:00 - 82:00	4/LP0	2-63

FLIGHT PLAN



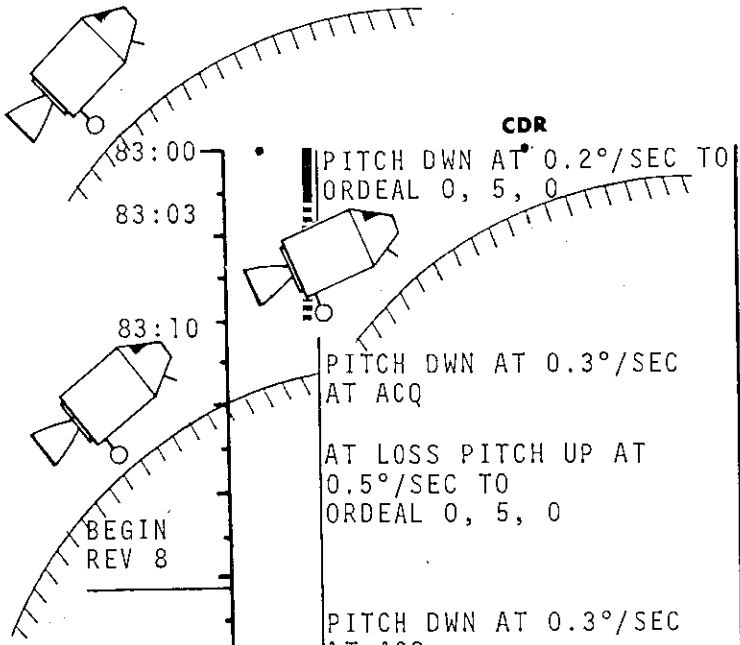
CDR	CMP	LMP	MCC-H
82:00 PITCH DWN AT 0.3°/SEC AT ACQ	IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ LDG SITE NO. B1 LAT +02.675°N LONG/2 +17.512° ALT -000.99 nm NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __ nm		
82:11 AT LOSS ROLL RIGHT 180° AT 2°/SEC GO INERTIAL			
82:17 ACQUIRE MSFN ON HGA REPORT NEW COORDINATES RECORD MAP UPDATE & BLOCK DATA (TEI_8)			
MSFN	IMU REALIGN P52 OPTION 3 - REFSMMAT AND GYRO DRIFT TEST STAR ID __ __,__ __ STAR ANGLE DIFF __ __.__ __ TORQUE ANGLES: X __ __.__ __ __ Y __ __.__ __ __ Z __ __.__ __ __	REST PERIOD (2 HOURS)	ACQUIRE S/C P27 UPDATE: STATE VECTOR VOICE UPDATE: MAP UPDATE 7/8 BLOCK DATA DUMP DSE
82:30 GDC ALIGN TO IMU			
82:53 ROLL LEFT 180° AT 2°/SEC TO HEADS UP			
83:00	16/SXT/CXT,____,6 fps		

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	82:00 - 83:00	4/LPO	2-64

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



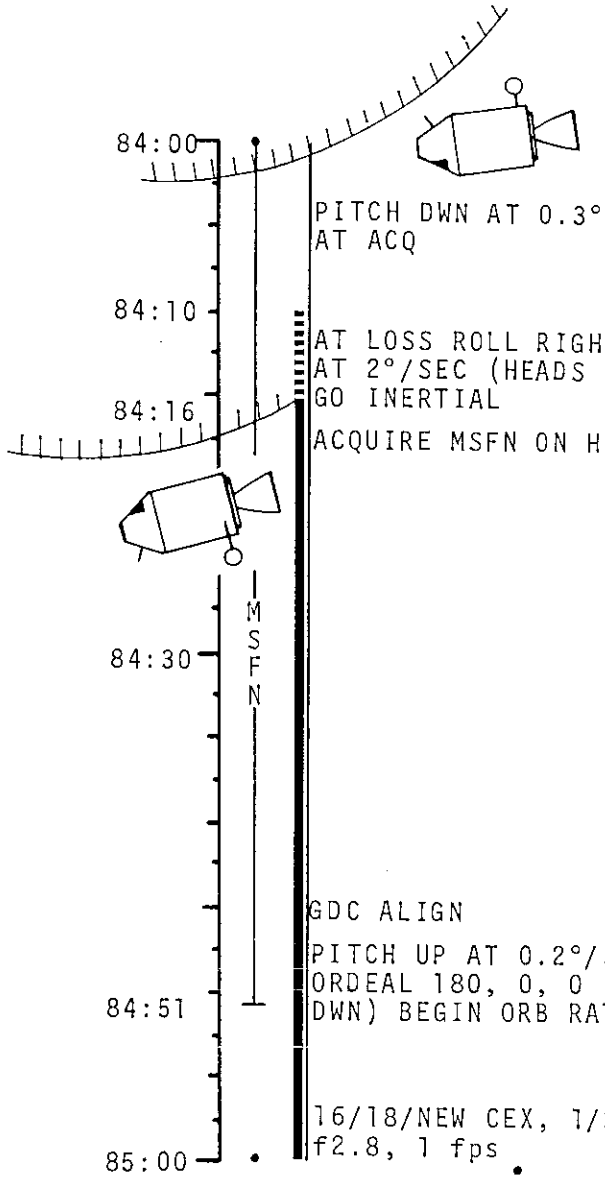
CDR	CMP	LMP	MCC-H
83:00 PITCH DWN AT 0.2°/SEC TO ORDEAL 0, 5, 0	CNTL PT SIGHTINGS (3) P22 AUTO OPTICS IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ CP1 NO. 504 LAT -05.250°S LONG/2 -81.350° ALT +000.00 nm	REST PERIOD (2 HOURS) NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __ nm	
83:03			
83:10 PITCH DWN AT 0.3°/SEC AT ACQ AT LOSS PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0	P22 AUTO OPTICS IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ CP2 NO. 526 LAT -10.200°S LONG/2 +77.550° ALT +000.00 nm	NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __ nm	
BEGIN REV 8			
PITCH DWN AT 0.3°/SEC AT ACQ			
83:30 PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0			
83:39 ACQUIRE MSFN ON OMNIS	P22 AUTO OPTICS IPI __ __:__ __:__ __ TCA __ __:__ __:__ __ CP3 NO. 334 LAT -09.100°S LONG/2 +47.950° ALT +000.00 nm	NEW COORDINATES LAT __ __.__ __ __° LONG/2 __ __.__ __ __° ALT __ __ __.__ __ nm	ACQUIRE S/C
MSFN PITCH DWN AT 0.3°/SEC AT ACQ			
PITCH UP AT 0.5°/SEC TO ORDEAL 0, 5, 0			
	PSEUDO LDG SITE SIGHTING P22 AUTO OPTICS		
84:00			

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	83:00 - 84:00	4/LPO	2-65

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



PITCH DWN AT 0.3°/SEC AT ACQ

AT LOSS ROLL RIGHT 180° AT 2°/SEC (HEADS DWN) GO INERTIAL

ACQUIRE MSFN ON HGA

GDC ALIGN

PITCH UP AT 0.2°/SEC TO ORDEAL 180, 0, 0 (HEADS DWN) BEGIN ORB RATE

16/18/NEW CEX, 1/250, f2.8, 1 fps

CMP

IPI ___ ___:___ ___:___ ___
TCA ___ ___:___ ___:___ ___
LDMK NO. B1
LAT +02.512°N
LONG/2 +17.512°
ALT +000.99 nm

LiOH CANISTER CHANGE (CARTRIDGE 10 FROM B5 INTO CANISTER B)

IMU REALIGN P52
OPTION 3 - REFSMMAT AND GYRO DRIFT TEST
STAR ID ___ ___, ___ ___
STAR ANGLE DIFF

TORQUE ANGLES:
X ___ ___.___ ___ ___
Y ___ ___.___ ___ ___
Z ___ ___.___ ___ ___

REST PERIOD (2 HOURS)

LMP

NEW COORDINATES
LAT ___ ___.___ ___ ___°
LONG/2 ___ ___.___ ___ ___°
ALT ___ ___.___ ___nm

REST PERIOD (2 HOURS)

2/150/NEW B&W, 1/250 (R&B)

BIOMED Sw - RIGHT

VERIFY SYSTEMS STATUS

RECORD MAP UPDATE & BLOCK DATA (TEI_9)

1/80/H.S. B, f2.8, POL

SR -12 MIN START DARK

1/80 B&W, 1/4, f4, POL

SR -4 MIN START CORONA

MCC-H

ACQUIRE S/C

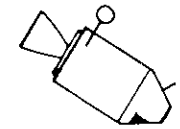
P27 UPDATE: STATE VECTOR

DUMP DSE

VOICE UPDATE: MAP UPDATE 8/9 BLOCK DATA

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	84:00 - 85:00	4/LPO	2-66

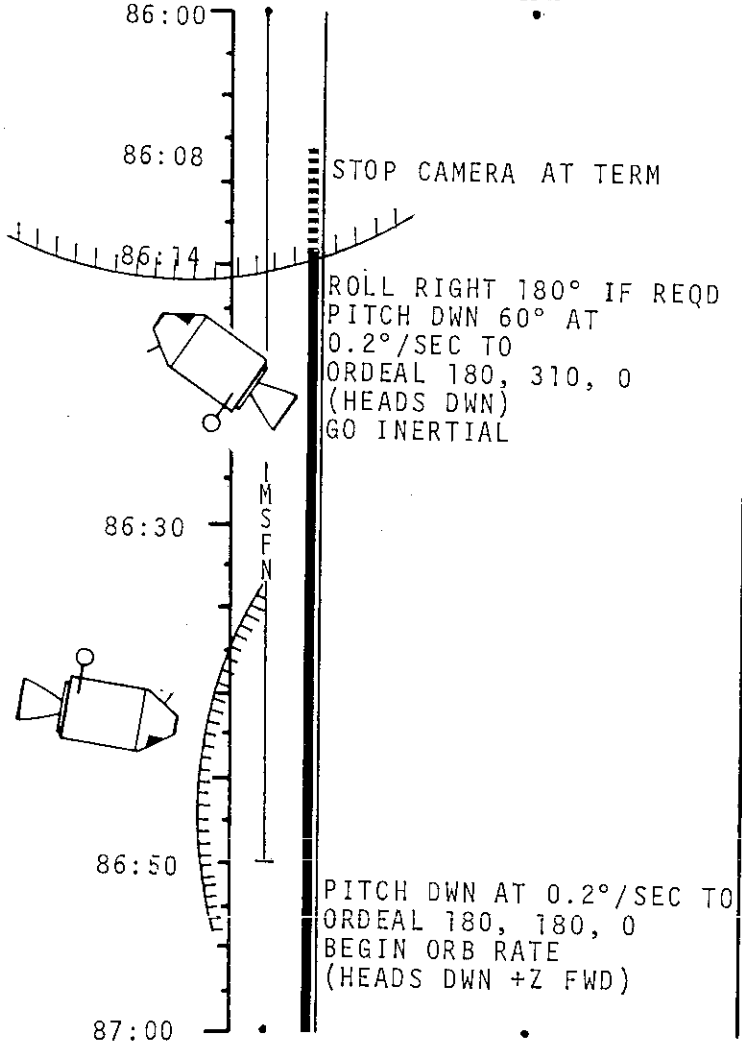
FLIGHT PLAN



CDR	CMP	LMP	MCC-H
85:00		1/80/NEW C BRKT INT	
85:02 AT S/C SR PITCH UP 60° AT 0.5°/SEC TO ORDEAL 180, 300, 0 CONTINUE ORB RATE START CAMERA AT S/C SR +12 MIN		START CAMERA 1 AT SR +12 MIN	
85:08 ZERO PHASE TARGETS OF OPPORTUNITY		CONVERGENT STEREO PHOTOGRAPHY-EXTRA EXP EACH 5 MIN - NITE TIME	
BEGIN REV 9			
85:30	REST PERIOD (2 HOURS)	ACQUIRE MSFN ON HGA	ACQUIRE S/C
85:37 PITCH UP 40° AT 0.2°/SEC TO ORDEAL 180, 260, 0		RECORD MAP UPDATE	VOICE UPDATE: MAP UPDATE 9/10
ROLL RT AS REQD TO SHADE WINDOWS-KEEP X-AXIS +10° ON TRACK			
MSFN TV		2/80 B&W/R&B 4 STOPS WIDER	
86:00			

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	85:00 - 86:00	4/LPO	2-67

FLIGHT PLAN



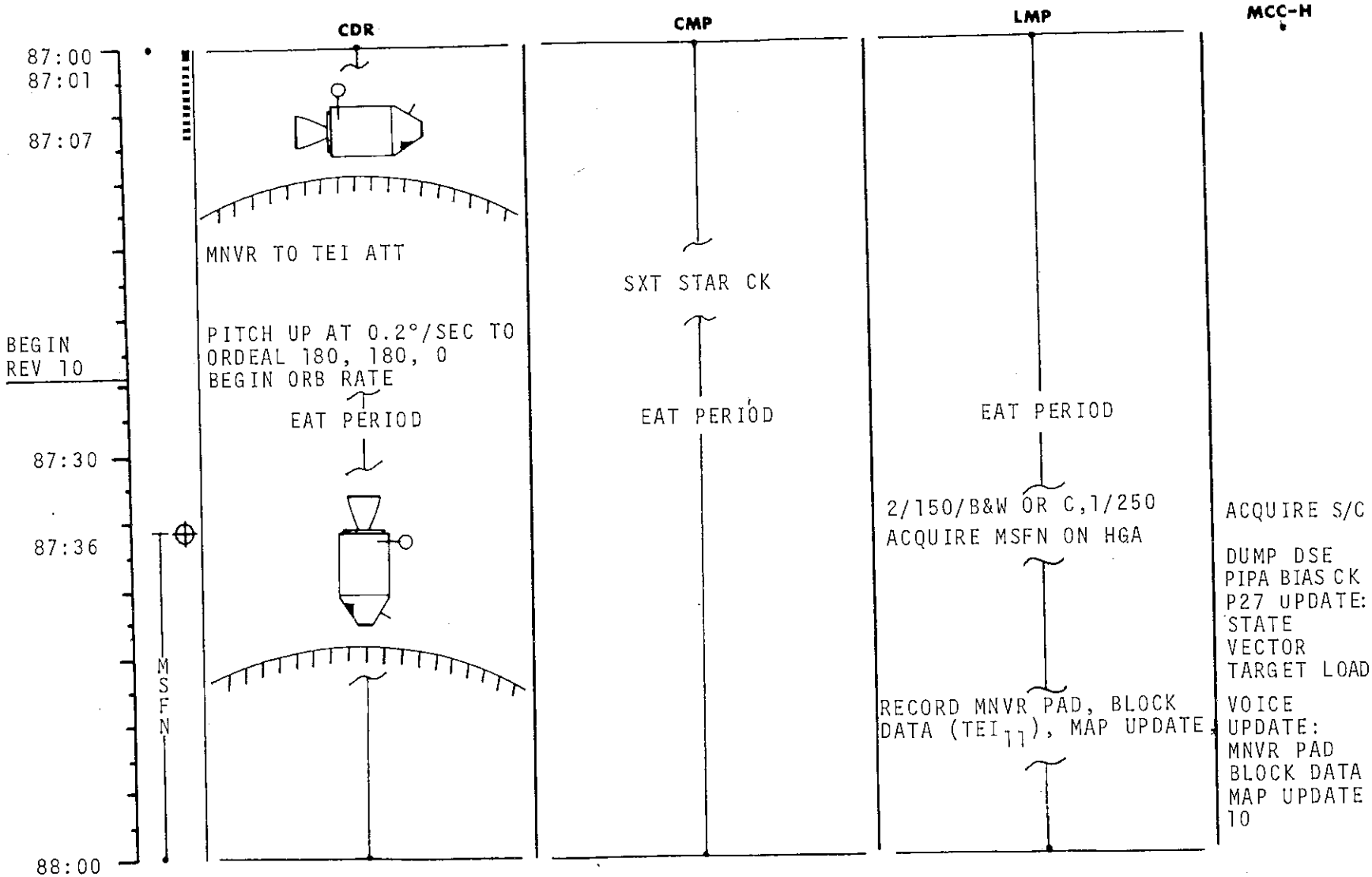
CDR	CMP	LMP	MCC-H
STOP CAMERA AT TERM	REST PERIOD (2 HOURS)	STOP CAMERA AT TERM 2/80/HS, 1/4 f2.8	
ROLL RIGHT 180° IF REQD PITCH DWN 60° AT 0.2°/SEC TO ORDEAL 180, 310, 0 (HEADS DWN) GO INERTIAL			P27 UPDATE: STATE VECTOR
		RECORD BLOCK DATA (TEI_{10}) & MNVR PAD	VOICE UPDATE: BLOCK DATA MNVR PAD
	IMU REALIGN P52 OPTION 3 - REFSMMAT AND GYRO DRIFT TEST STAR ID ___ ___, STAR ANGLE DIFF ___.___ TORQUE ANGLES: X ___ ___.___ ___ ___ Y ___ ___.___ ___ ___ Z ___ ___.___ ___ ___		DUMP DSE
		VERIFY SYSTEMS STATUS	
PITCH DWN AT 0.2°/SEC TO ORDEAL 180, 180, 0 BEGIN ORB RATE (HEADS DWN +Z FWD)			
		1/80/NEW B&W 1/250, f2.8 INT (CDR) 2/150/C, 1/250	

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	86:00 - 87:00	4/LPO	2-68

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

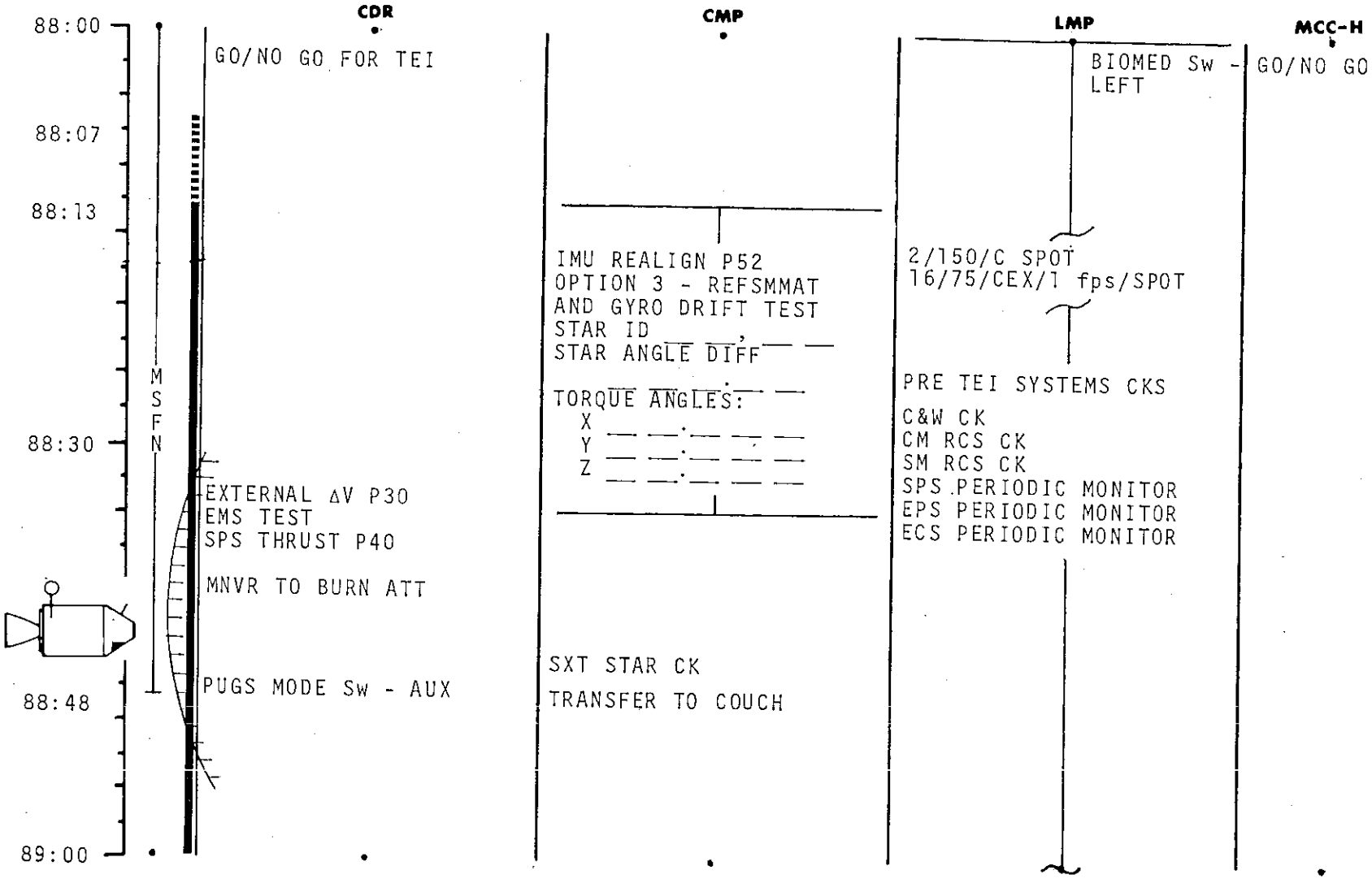


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	87:00 - 88:00	4/LPO	2-69

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

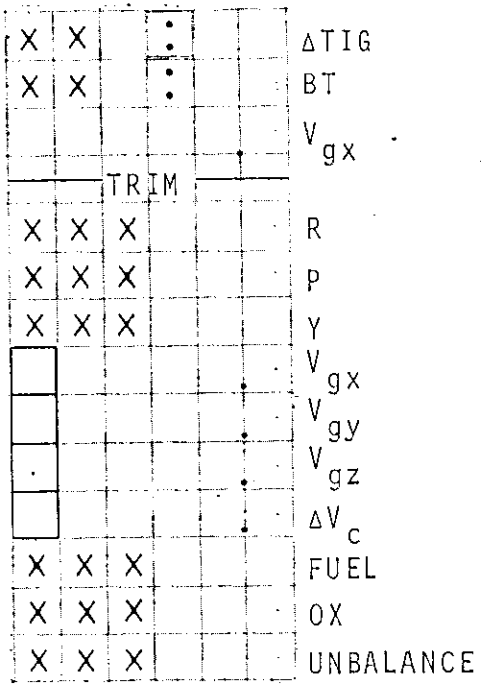


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	88:00 - 89:00	4/LPO	2-70

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

BURN STATUS REPORT



REMARKS:

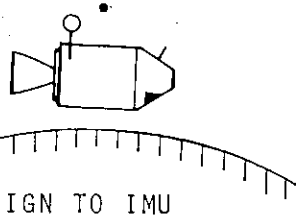
TEI
BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
TEI	10°/SEC TAKEOVER	10° TAKEOVER	B/T+2 SEC & ΔV_c=-40 fps	TRIM TO 2.0 fps

TEI ABORT MODES-SYSTEMS PROBLEMS:15-MIN ABORT CHART OTHERWISE

TEI V_{go}	B/T	TRAJECTORY	ABORT MODE
2850-950	0 -2:00	LUNAR ORBIT	MODE III AFTER 1 REV
950-600	2:00-2:20	UNSTABLE	5-HR COAST, MODE I
600-0	2:20-2:54	HYPERBOLIC	COAST OUT OF SPHERE - P37

FLIGHT PLAN

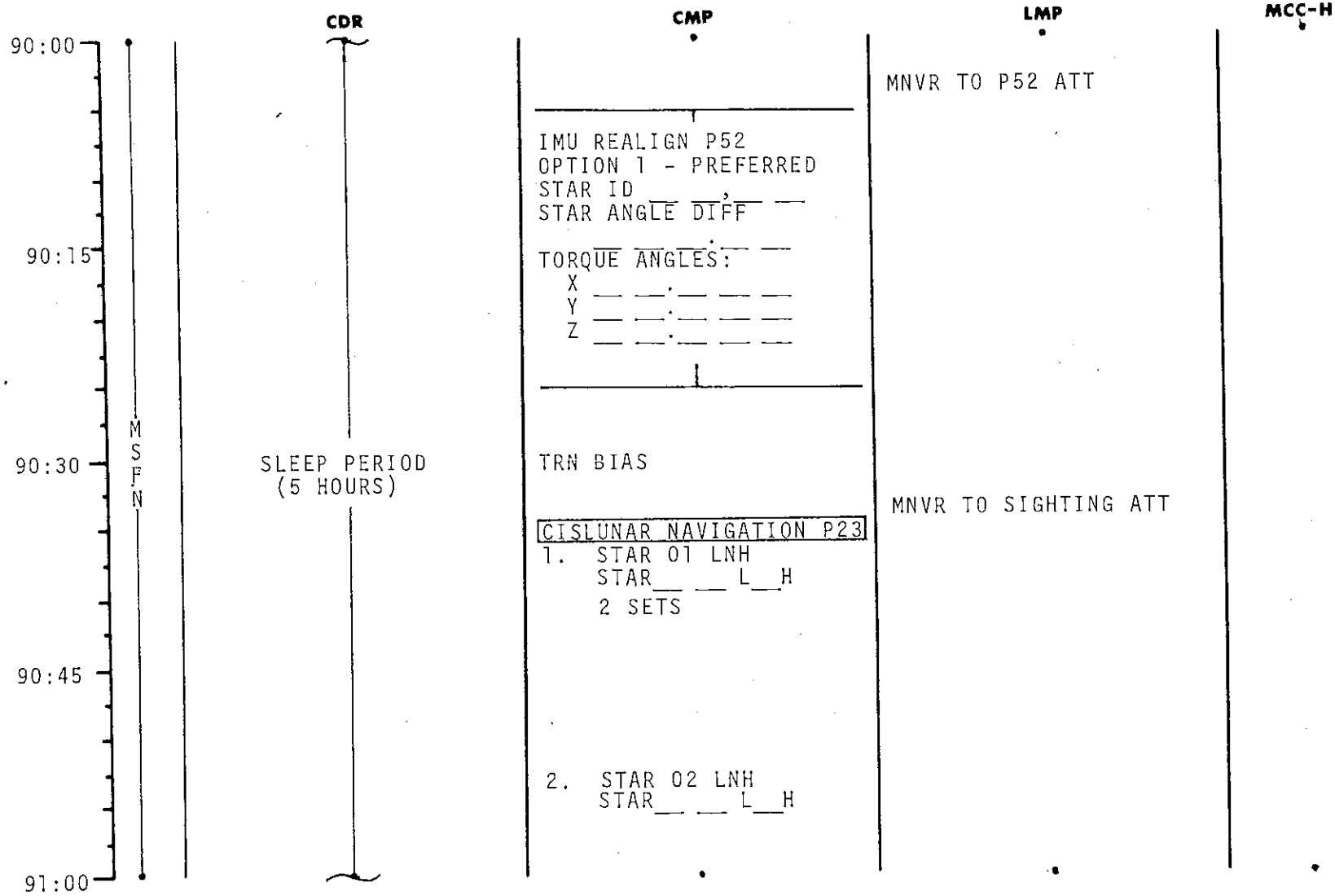
	CDR	CMP	LMP	MCC-H
89:00	 GDC ALIGN TO IMU	SM RCS MON CK		
89:15	TEI PITCH UP TO VERTICAL (+Z FWD) TO ACQ MOON IN WINDOW CDR CREW STATUS REPORT	GETI = 89:15:07 ΔV = 3532 fps BT = 3 MIN 26 SEC SM RCS MON CK	SPS MON CK ACQUIRE MSFN WITH HGA TEI BURN STATUS REPORT INITIATE BAT CHARGE	ACQUIRE S/C
89:30	SLEEP PERIOD (5 HOURS)	TRANS CSM STATE VECTOR TO LM SLOT REINITIALIZE W MATRIX R_1 +00094 R_2 +00571 R_3 +00003	BIOMED Sw - CENTER	
89:45				
90:00				DUMP DSE UPDATE ENTRY REFSMMAT

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	89:00 - 90:00	4/TEC	2-71

MSC Form 1910 (Nov 68) FLIGHT PLANNING BRANCH

FLIGHT PLAN

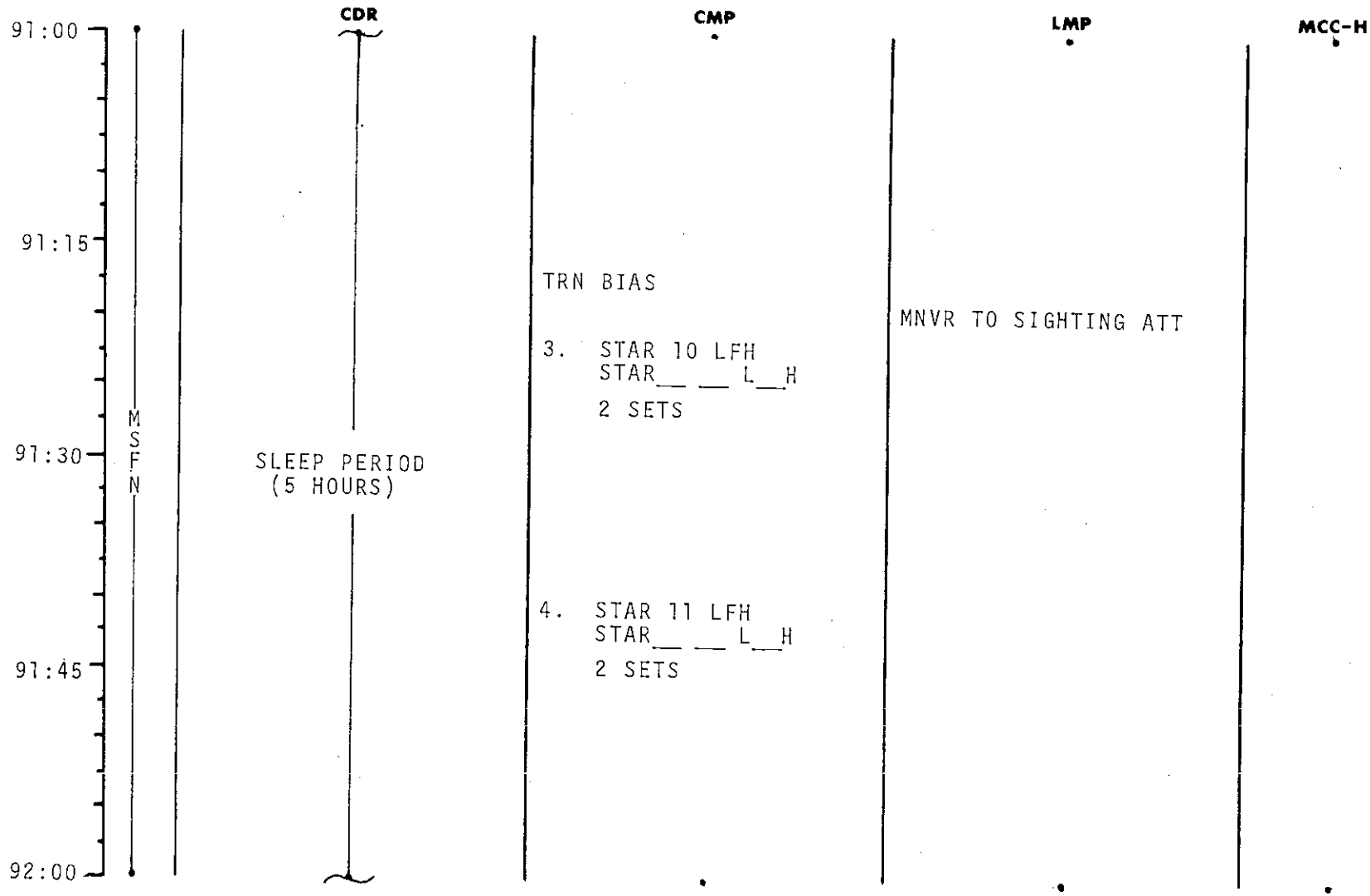


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	90:00 - 91:00	4/TEC	2-72

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

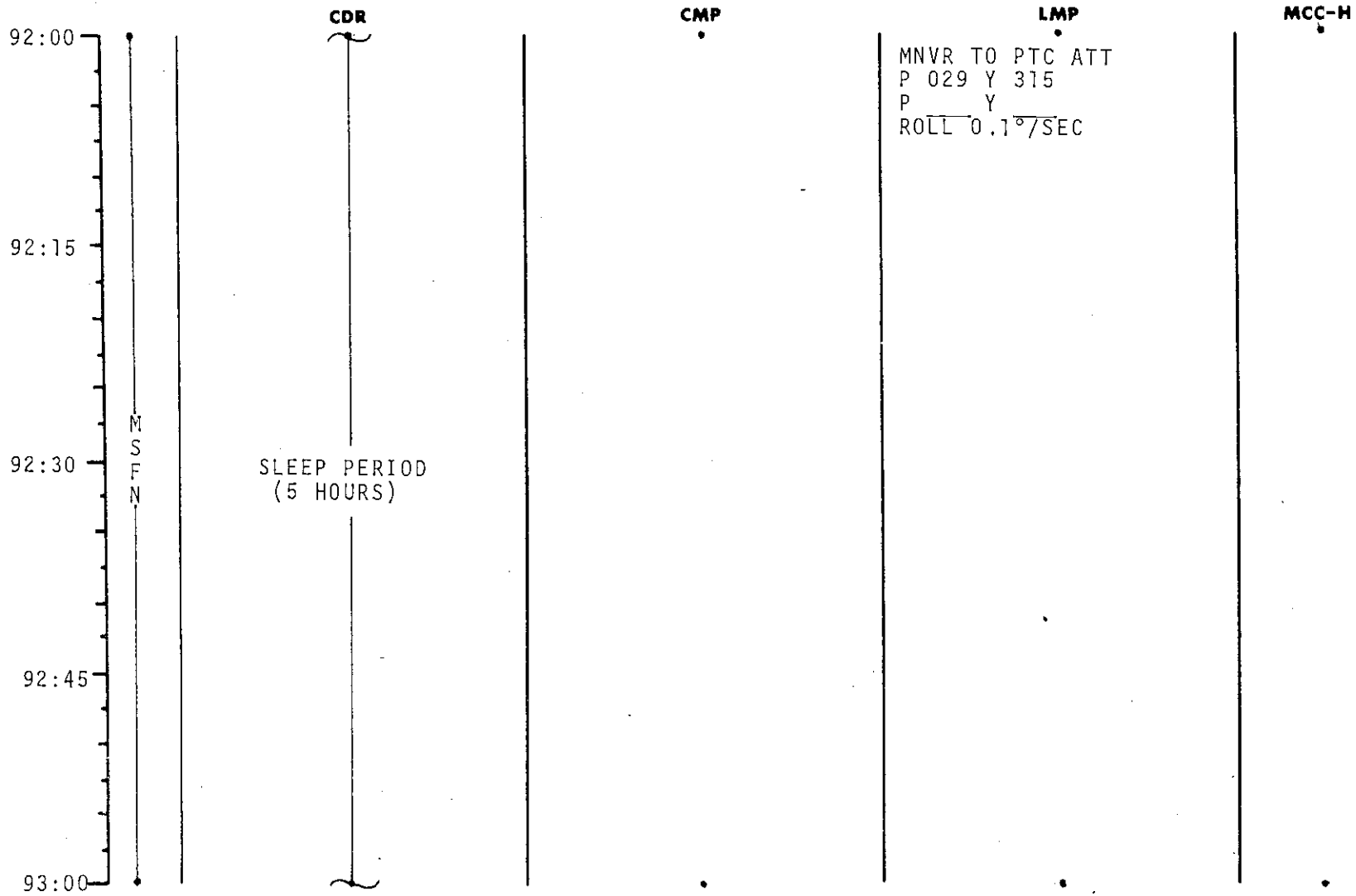


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	91:00 - 92:00	4/TEC	2-73

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

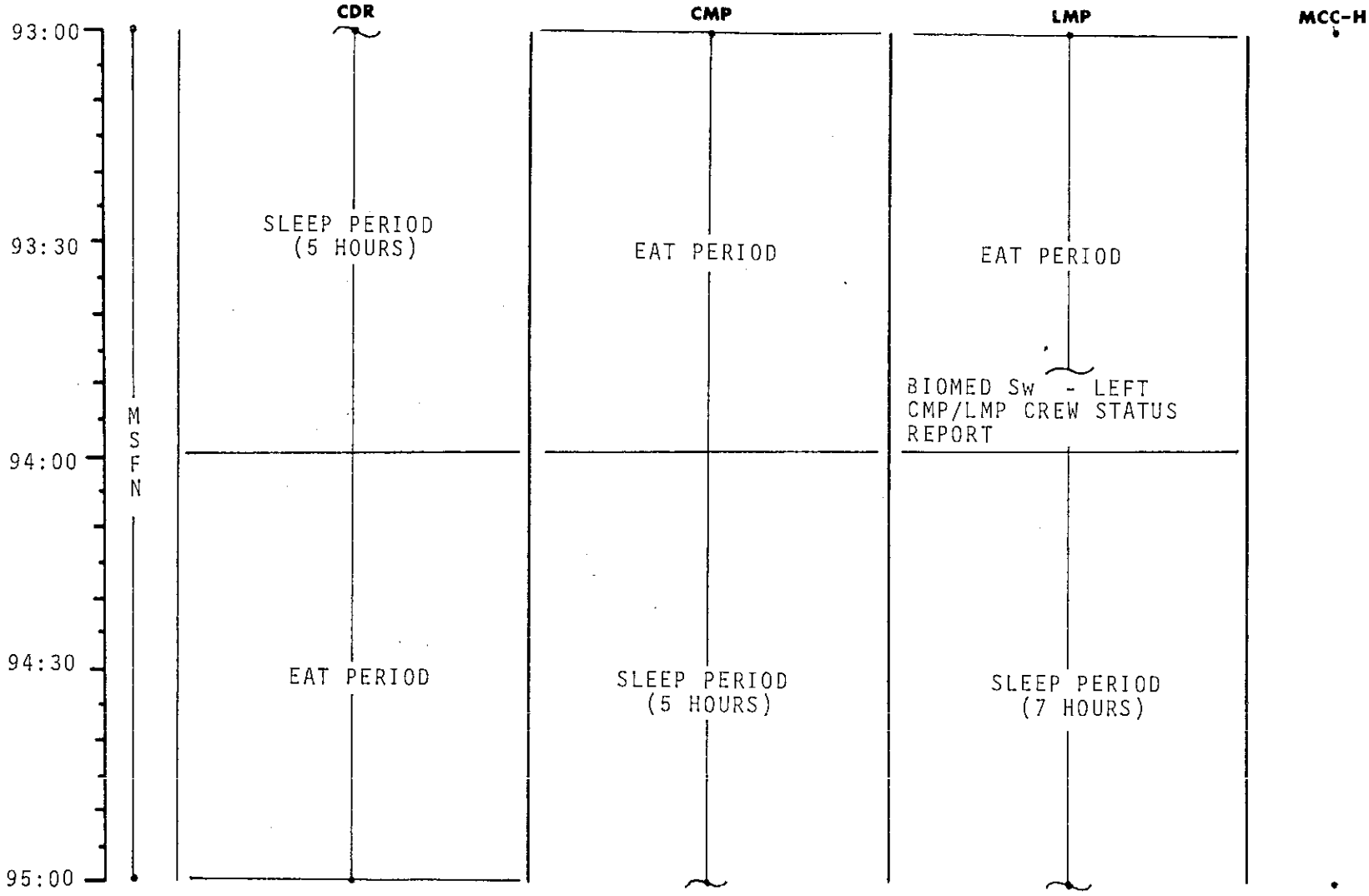


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	92:00 - 93:00	4/TEC	2-74

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

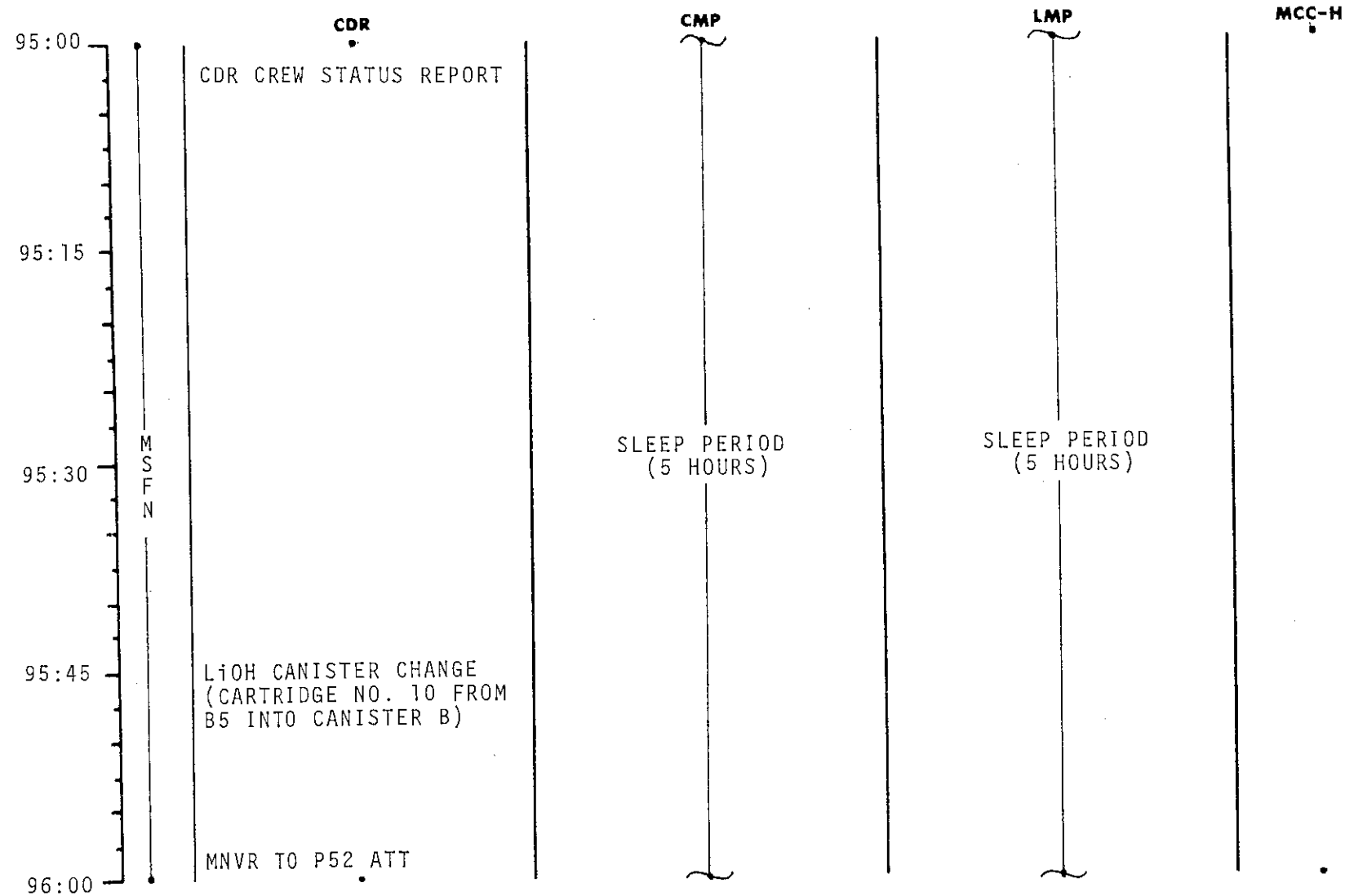


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	93:00 - 95:00	4/TEC	2-75

MSC Form 1910 (Nov 68)

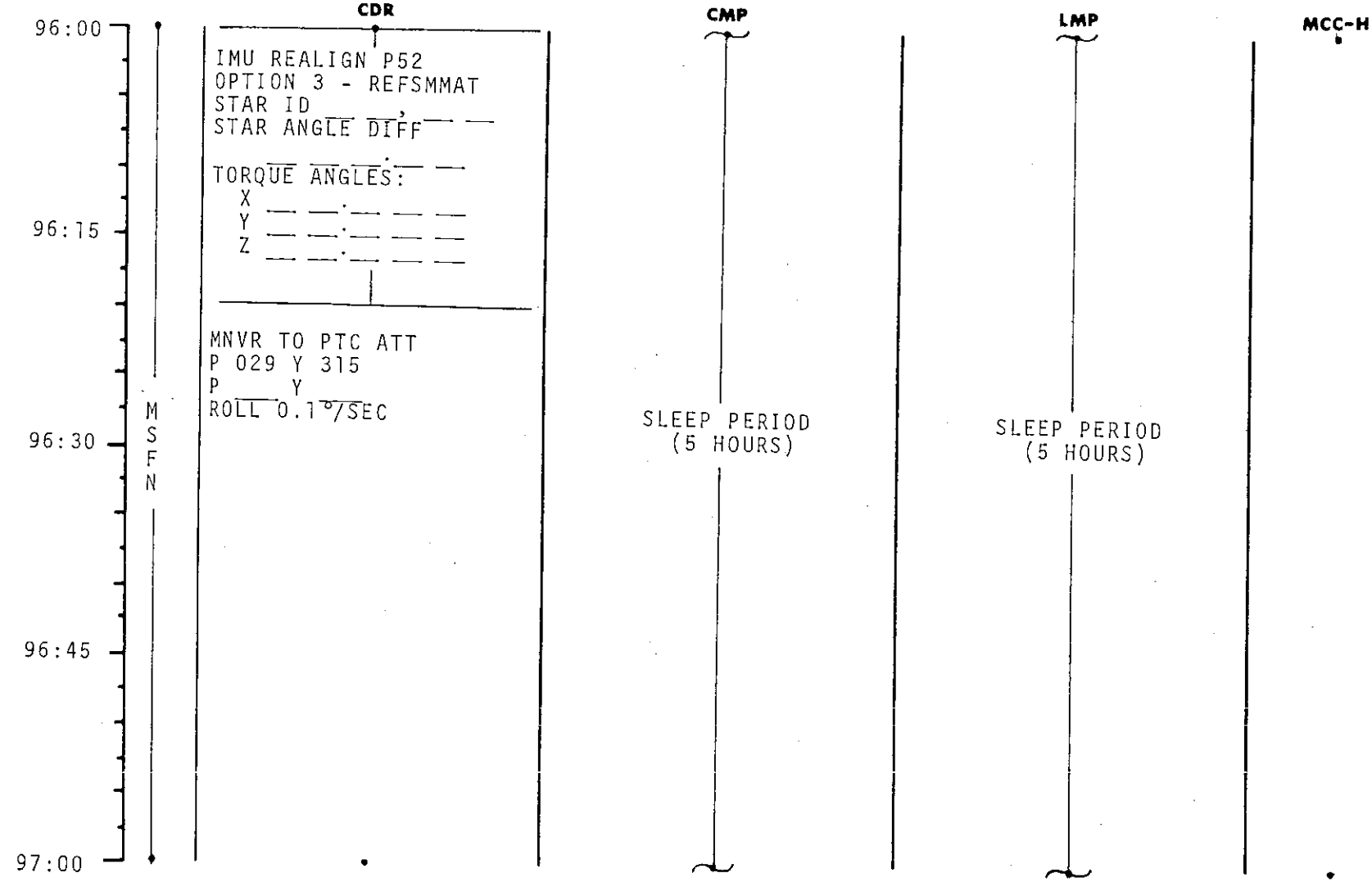
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	95:00 - 96:00	4/TEC	2-76

FLIGHT PLAN

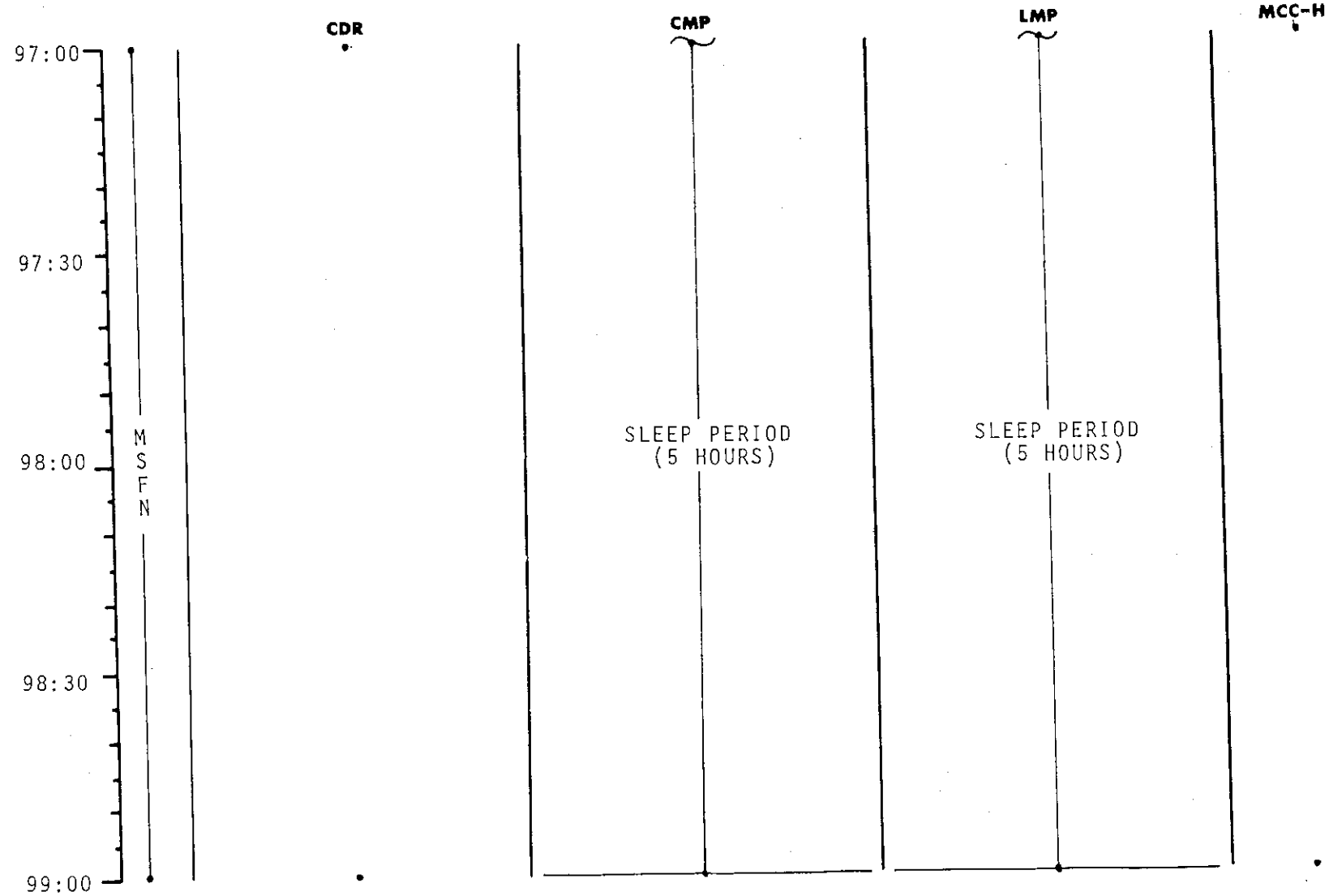


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	96:00 - 97:00	5/TEC	2-77

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

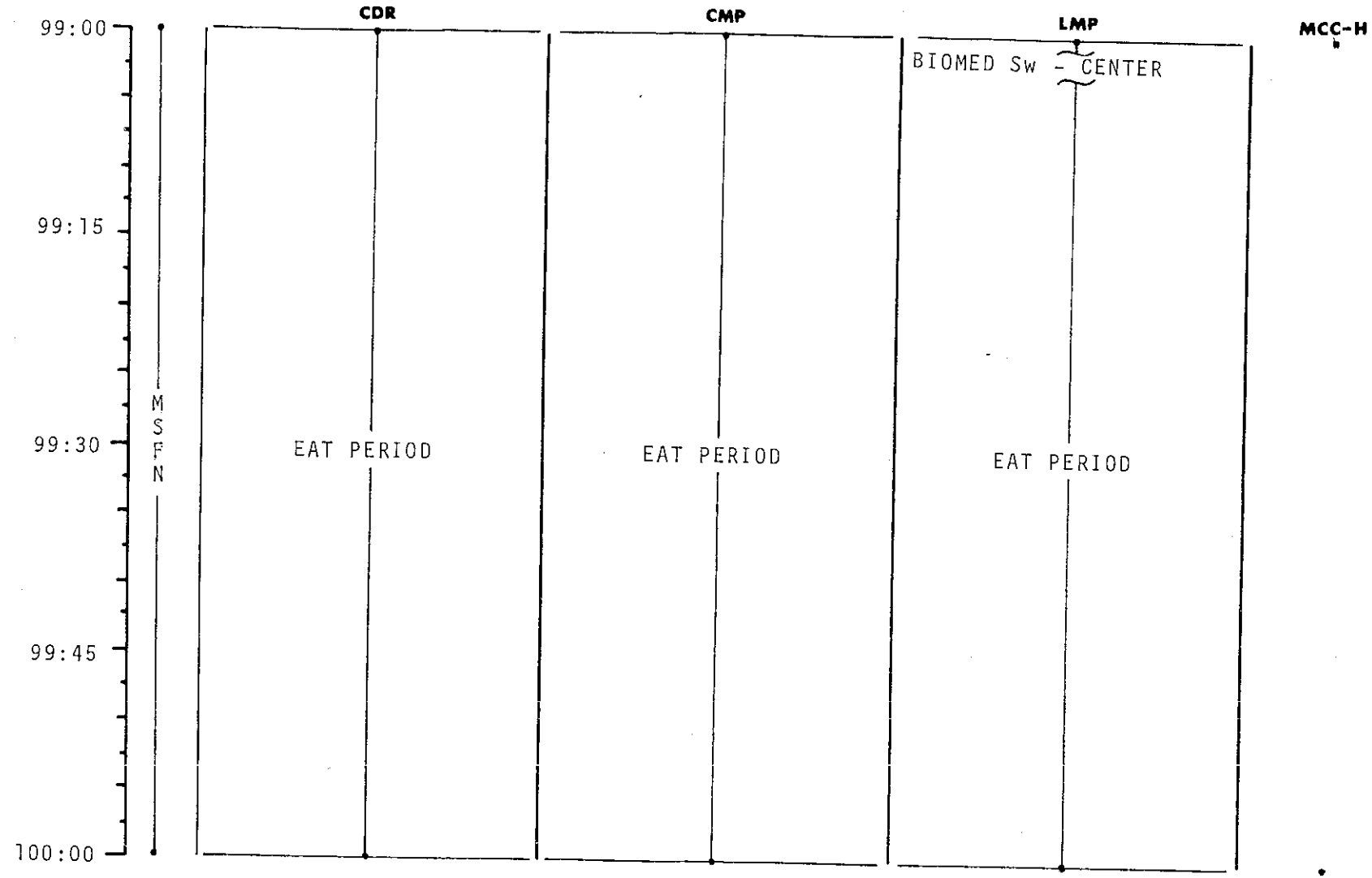


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	97:00 - 99:00	5/TEC	2-78

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

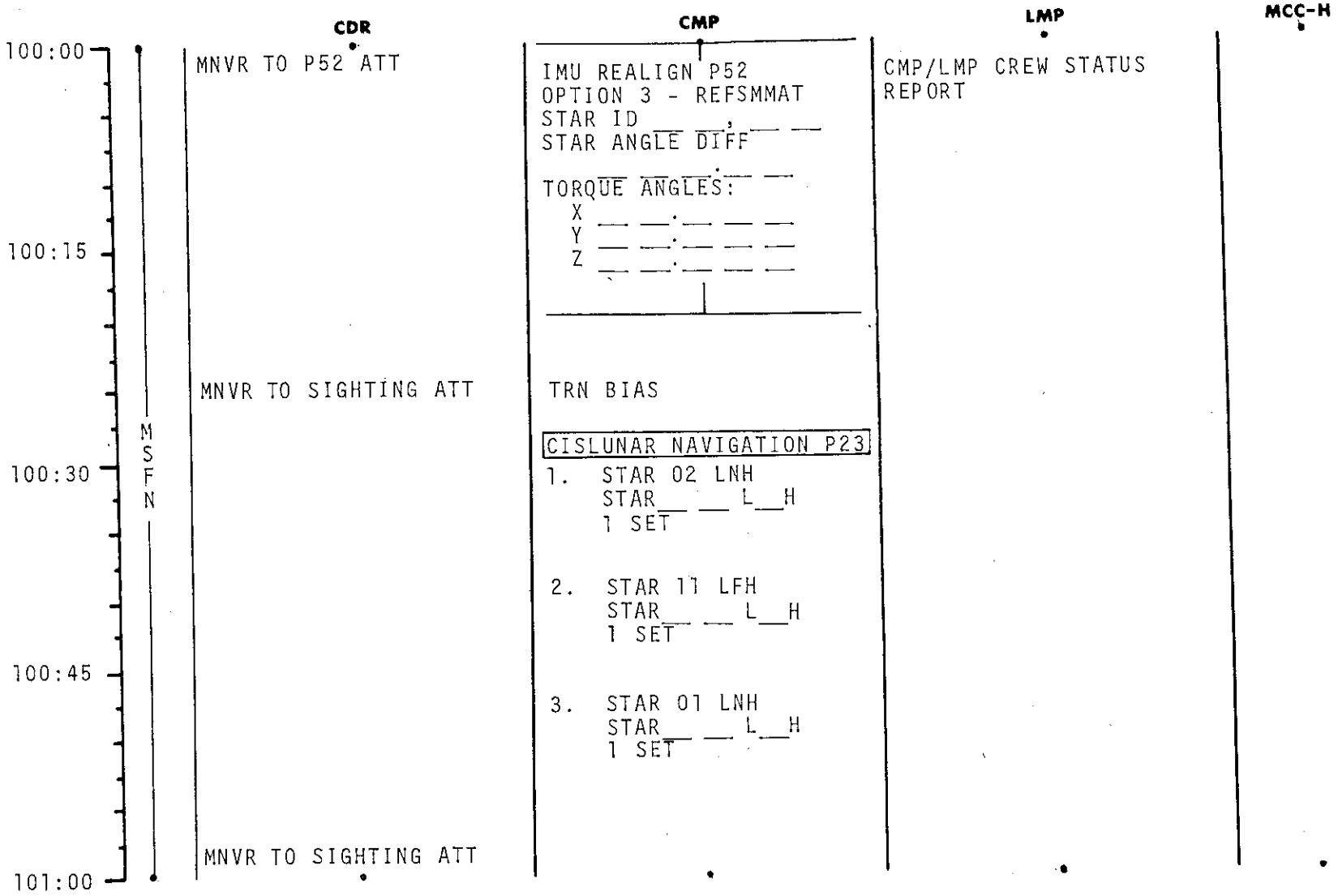


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	99:00 - 100:00	5/TEC	2-79

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

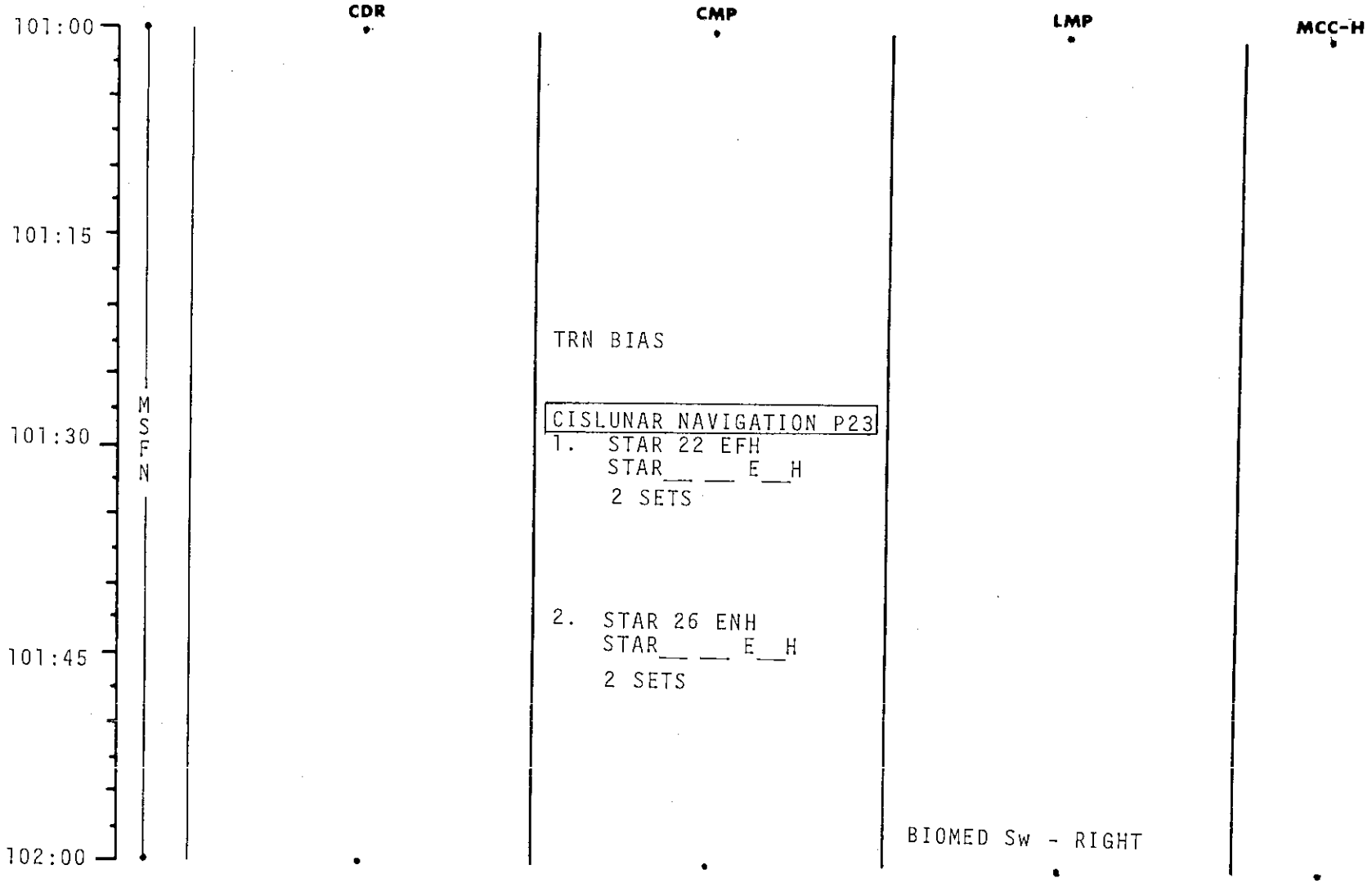


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	100:00 - 101:00	5/TEC	2-80

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	101:00 - 102:00	5/TEC	2-81

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
102:00		3. STAR 31 ENH STAR__ __ E__H 2 SETS		
102:15				
102:30	MNVR TO P52 ATT		RECORD MNVR PAD	P27 UPDATE STATE VECTOR TGT LOAD REFSMMAT VOICE UPDATE: MNVR PAD
102:45		IMU REALIGN P52 OPTION 3 - RESFMMAT STAR ID __ __, __ __ STAR ANGLE DIFF __ __.__ __ TORQUE ANGLES: X __ __.__ __ __ Y __ __.__ __ __ Z __ __.__ __ __		
103:00				

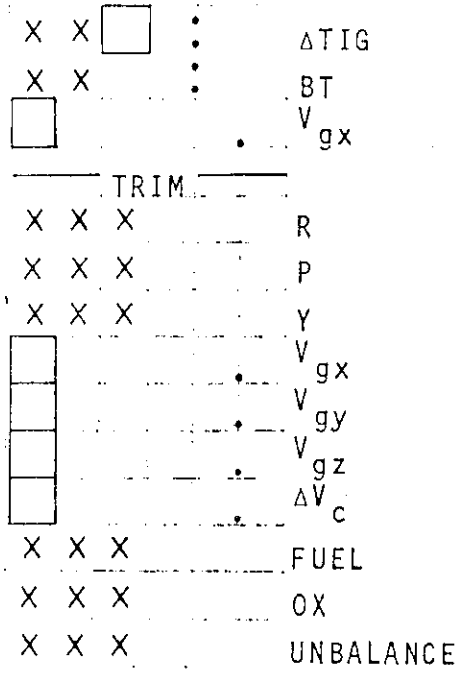
MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	102:00 103:00	5/TEC	2-82

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

BURN STATUS REPORT



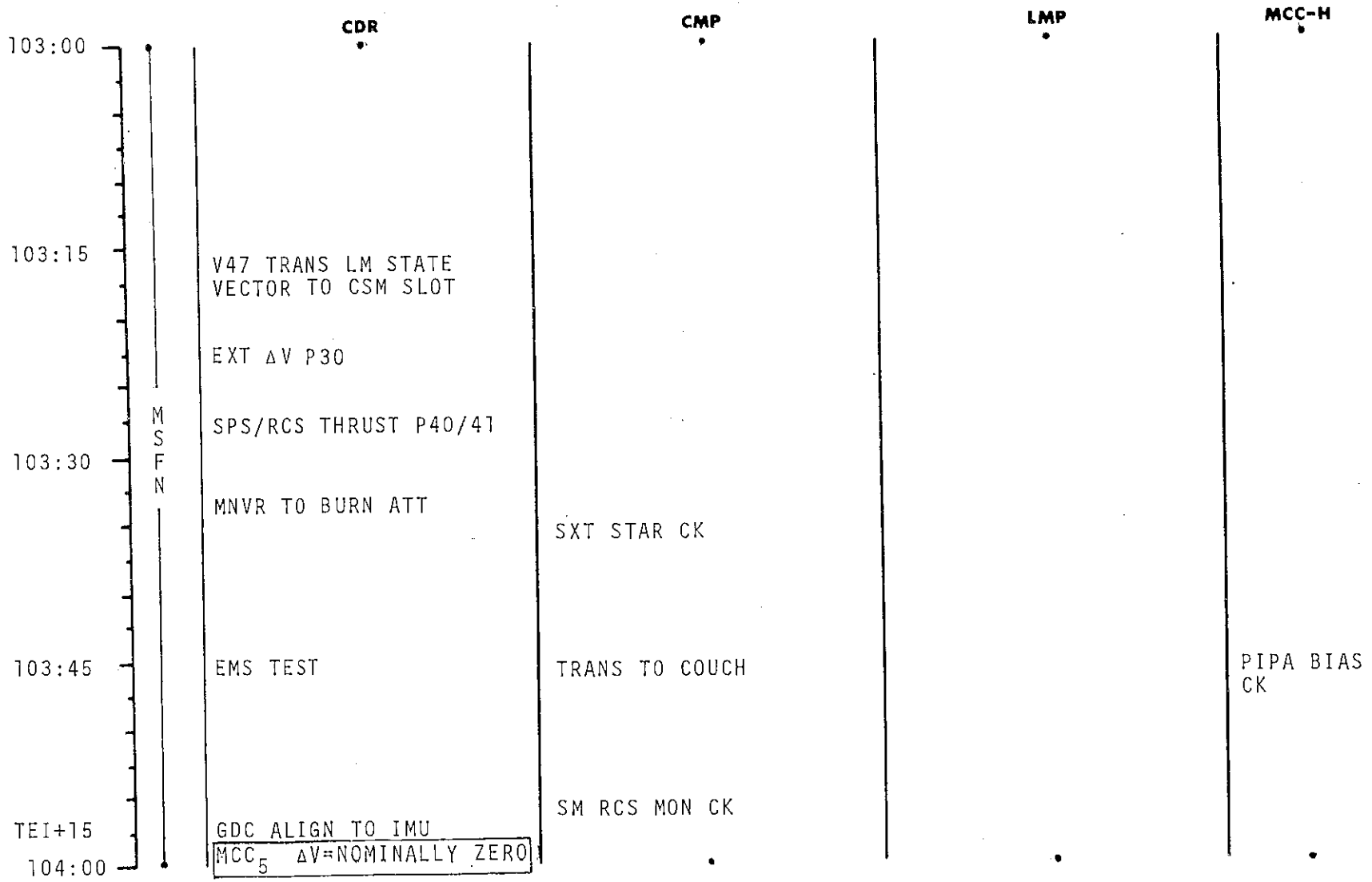
REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN

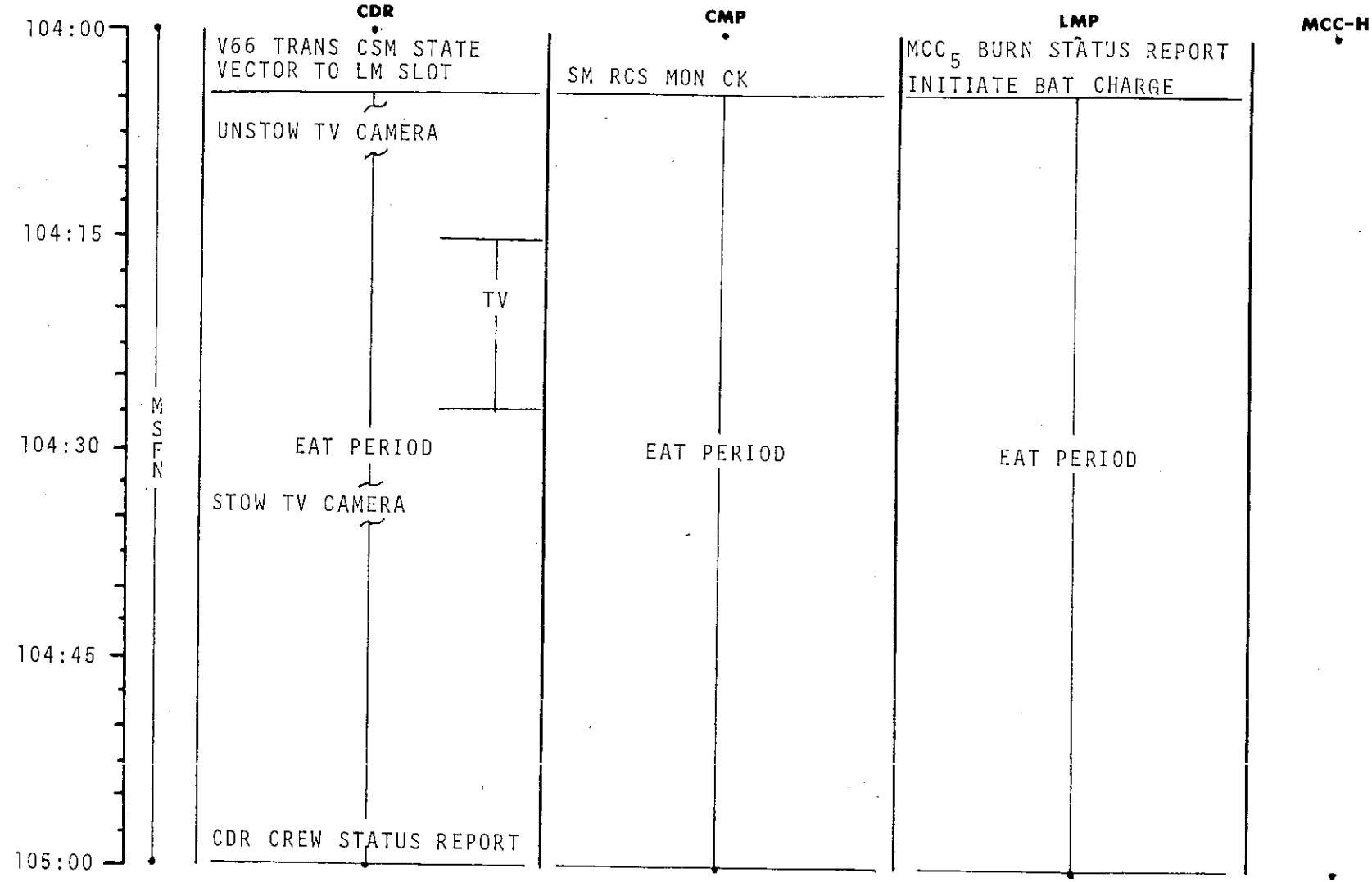


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	103:00 - 104:00	5/TEC	2-83

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

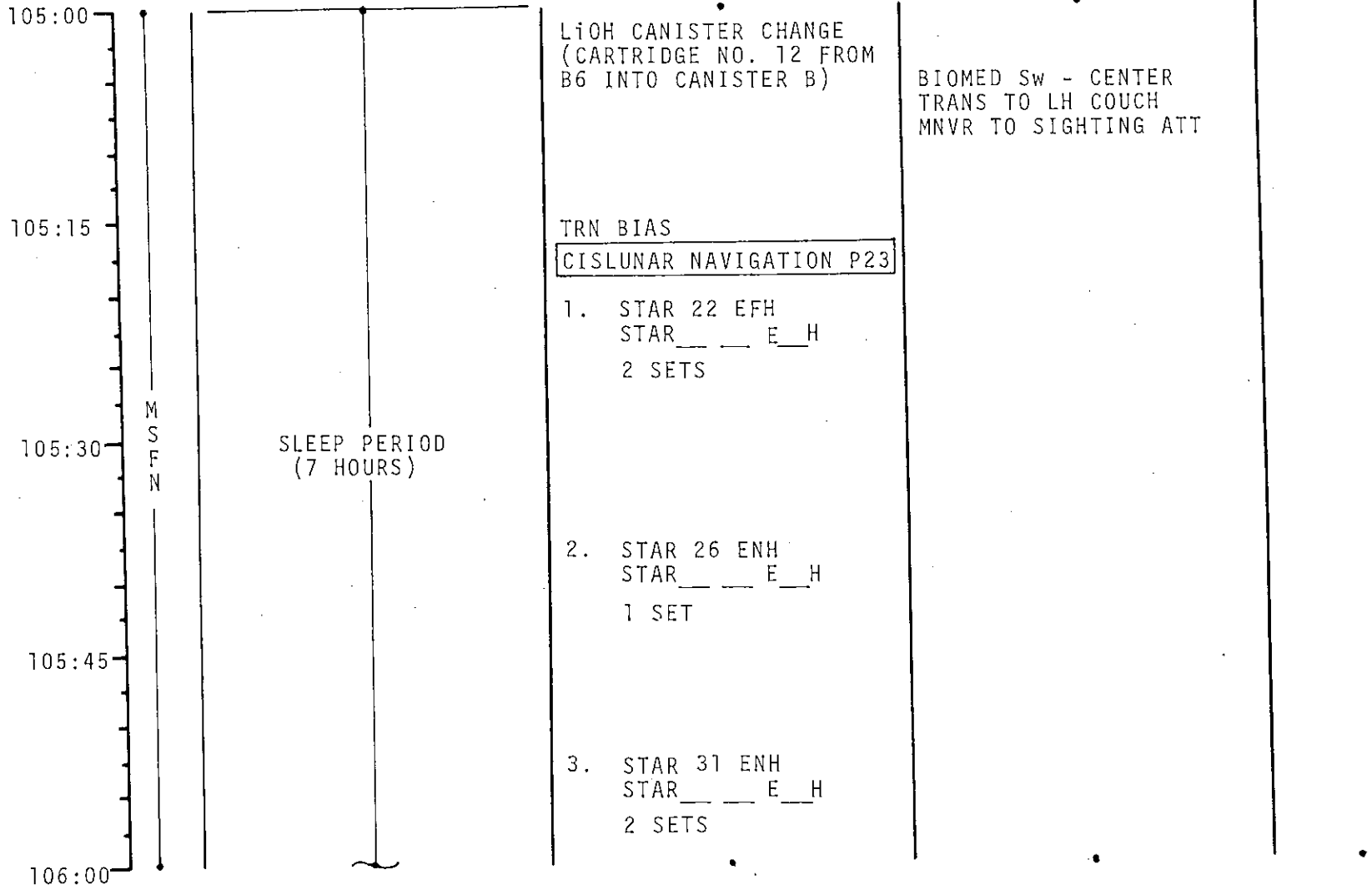


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	104:00 - 105:00	5/TEC	2-84

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

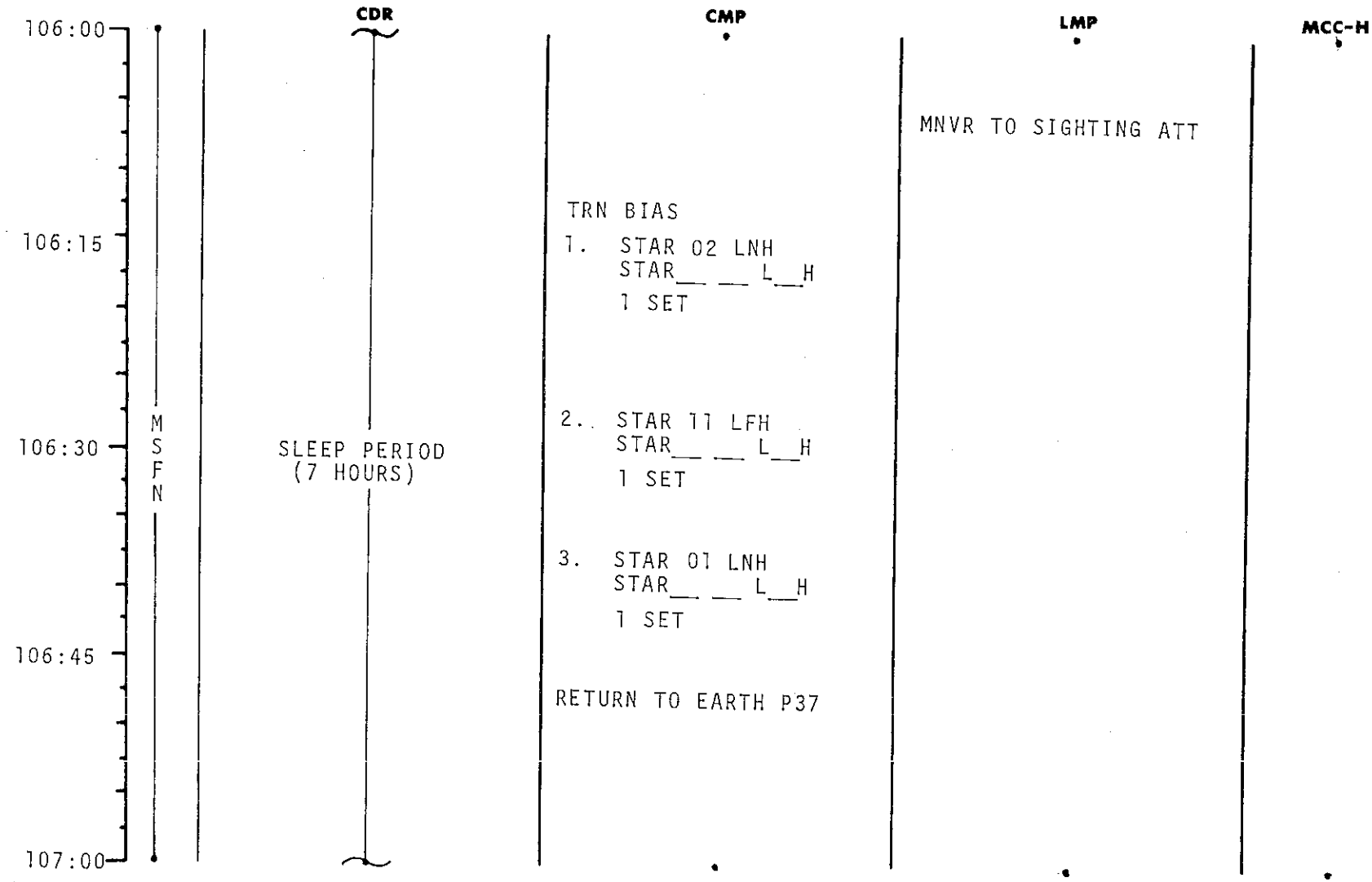


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	105:00 - 106:00	5/TEC	2-85

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

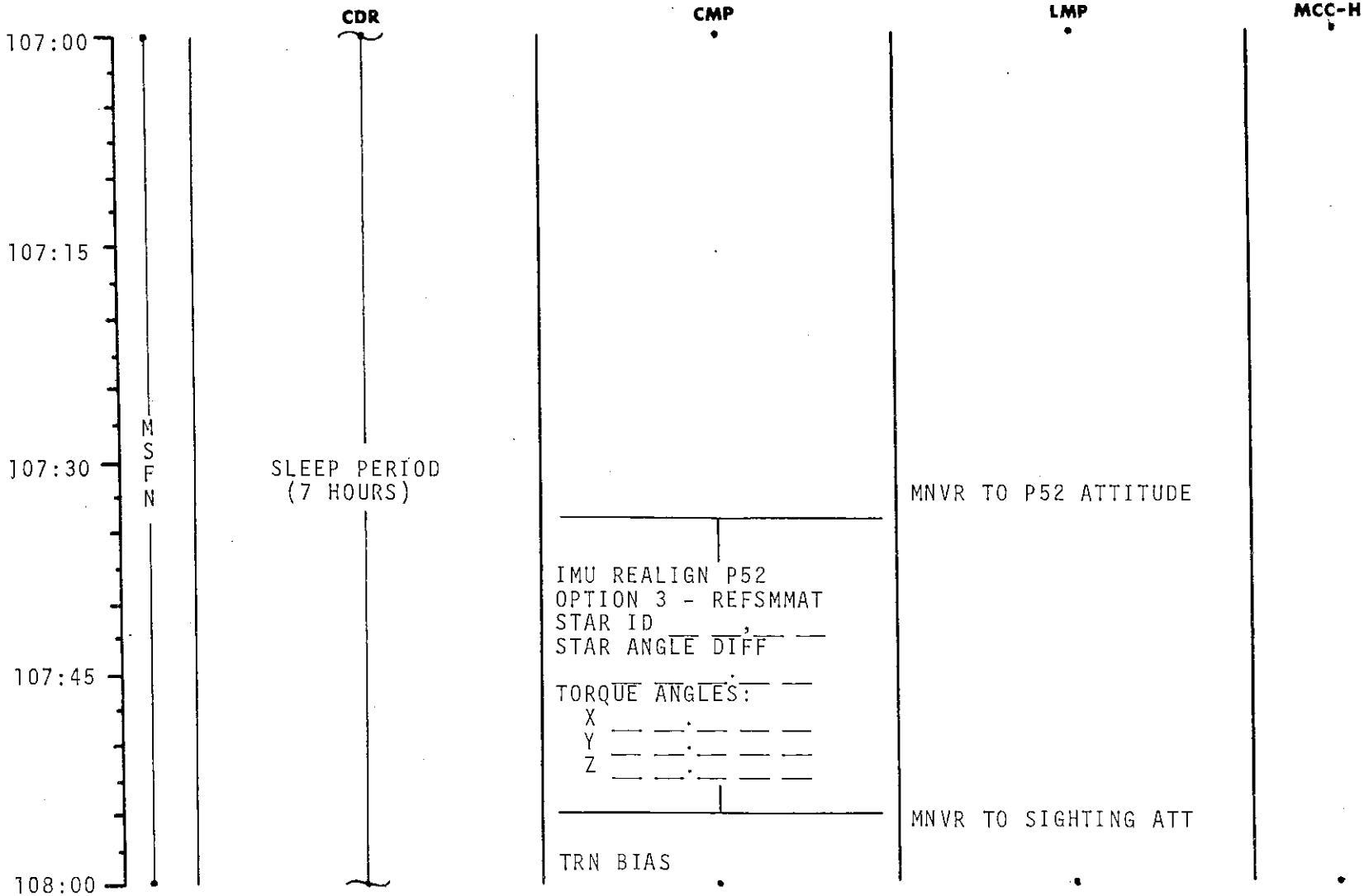


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	106:00 - 107:00	5/TEC	2-86

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	107:00 - 108:00	5/TEC	2-87

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

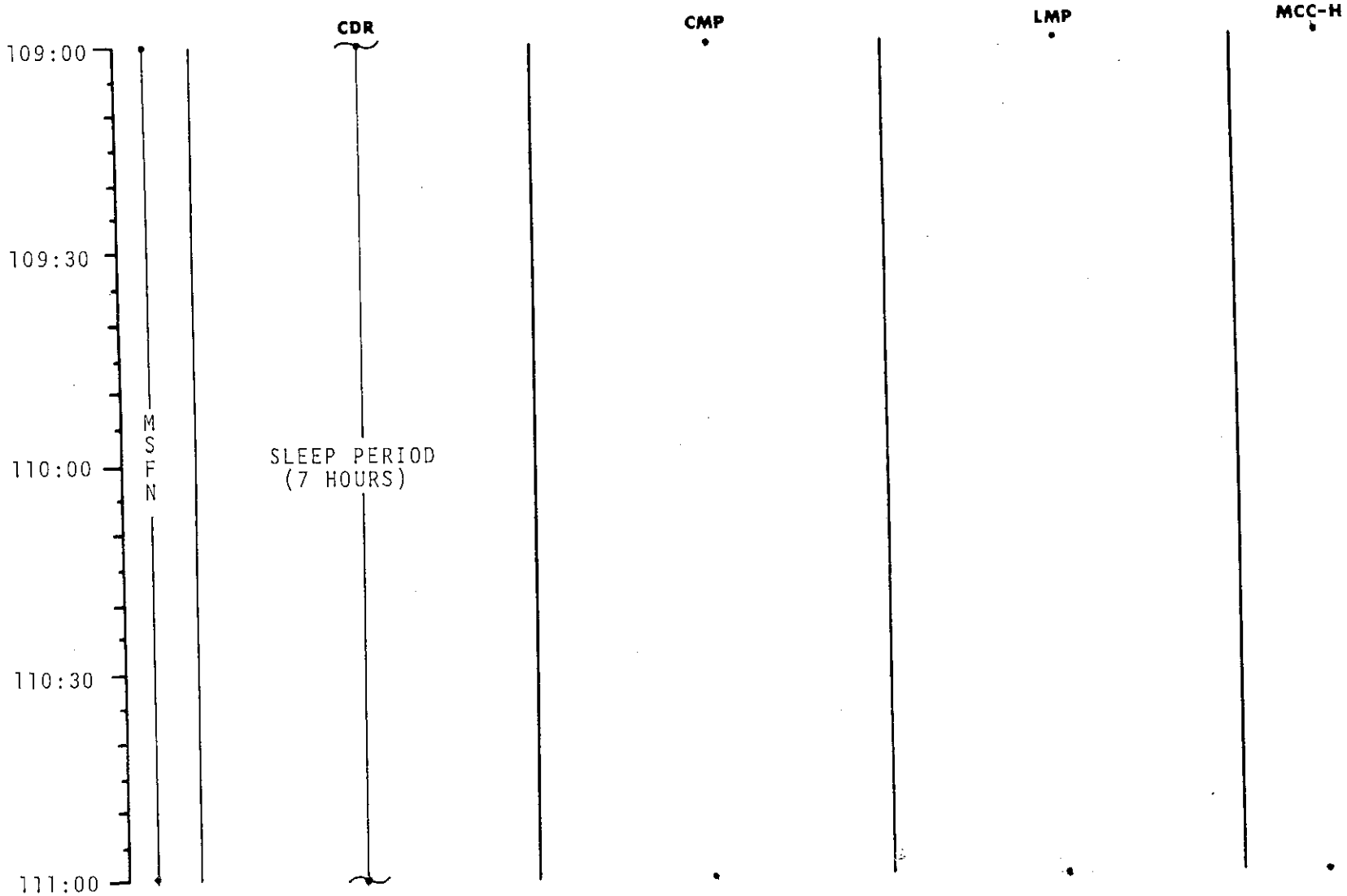
	CDR	CMP	LMP	MCC-H
108:00		CISLUNAR NAVIGATION P23	BIOMED Sw - RIGHT	
		1. STAR 22 EFH STAR__ __ E__H 1 SET		
108:15				
		2. STAR 26 ENH STAR__ __ E__H 2 SETS		
108:30	MSFN SLEEP PERIOD (7 HOURS)			
		3. STAR 31 ENH STAR__ __ E__H 2 SETS		
108:45			MNVR TO PTC ATT P 029 Y 315 P___ Y___ ROLL 0.1°/SEC P&Y FREE REESTABLISH PTC AT +15° IN P OR Y AND RECORD GET	
		RETURN TO EARTH P37		
109:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	108:00 - 109:00	5/TEC	2-88

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

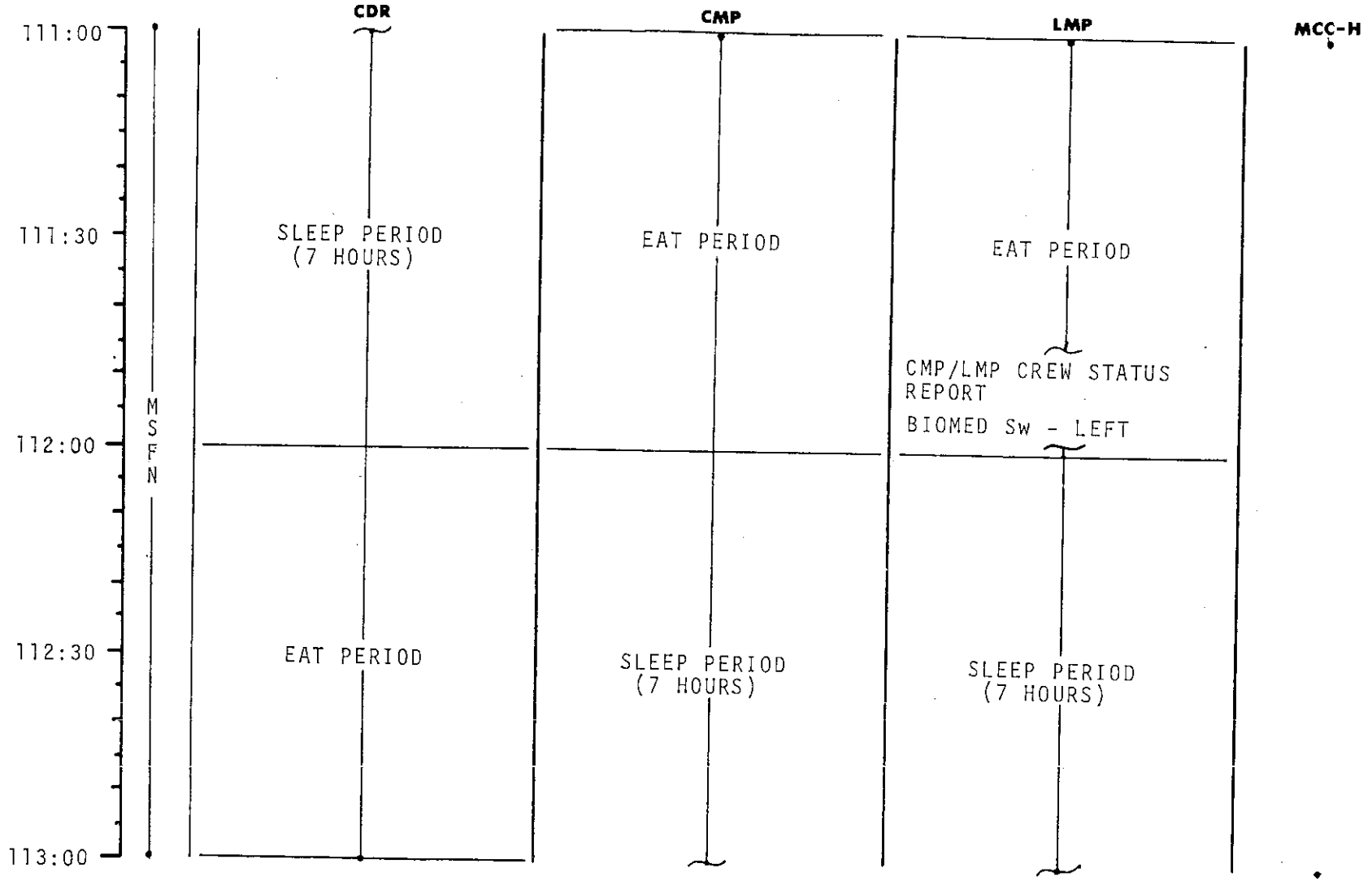


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	109:00 - 111:00	5/TEC	2-89

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

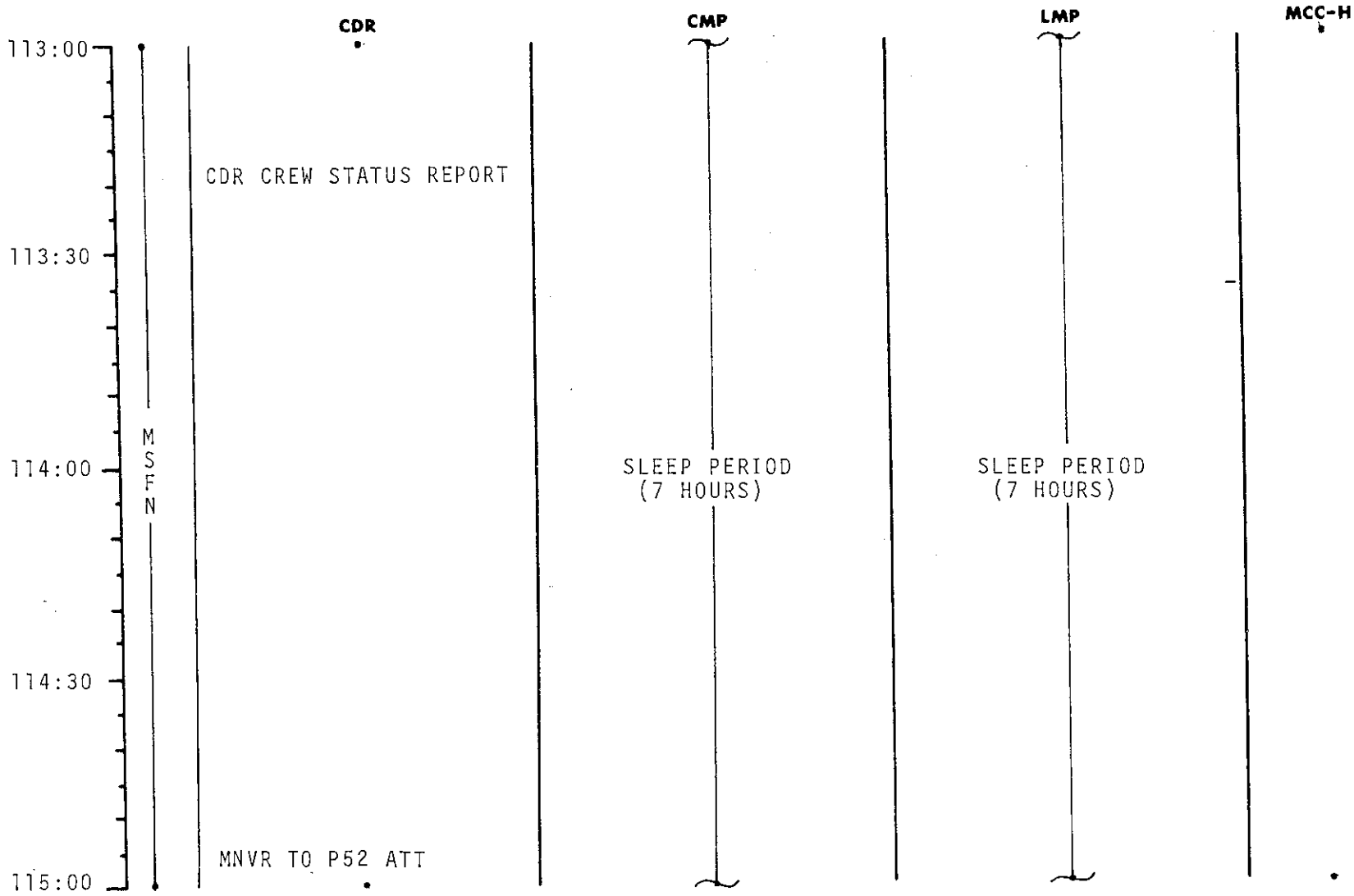


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	111:00 - 113:00	5/TEC	2-90

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

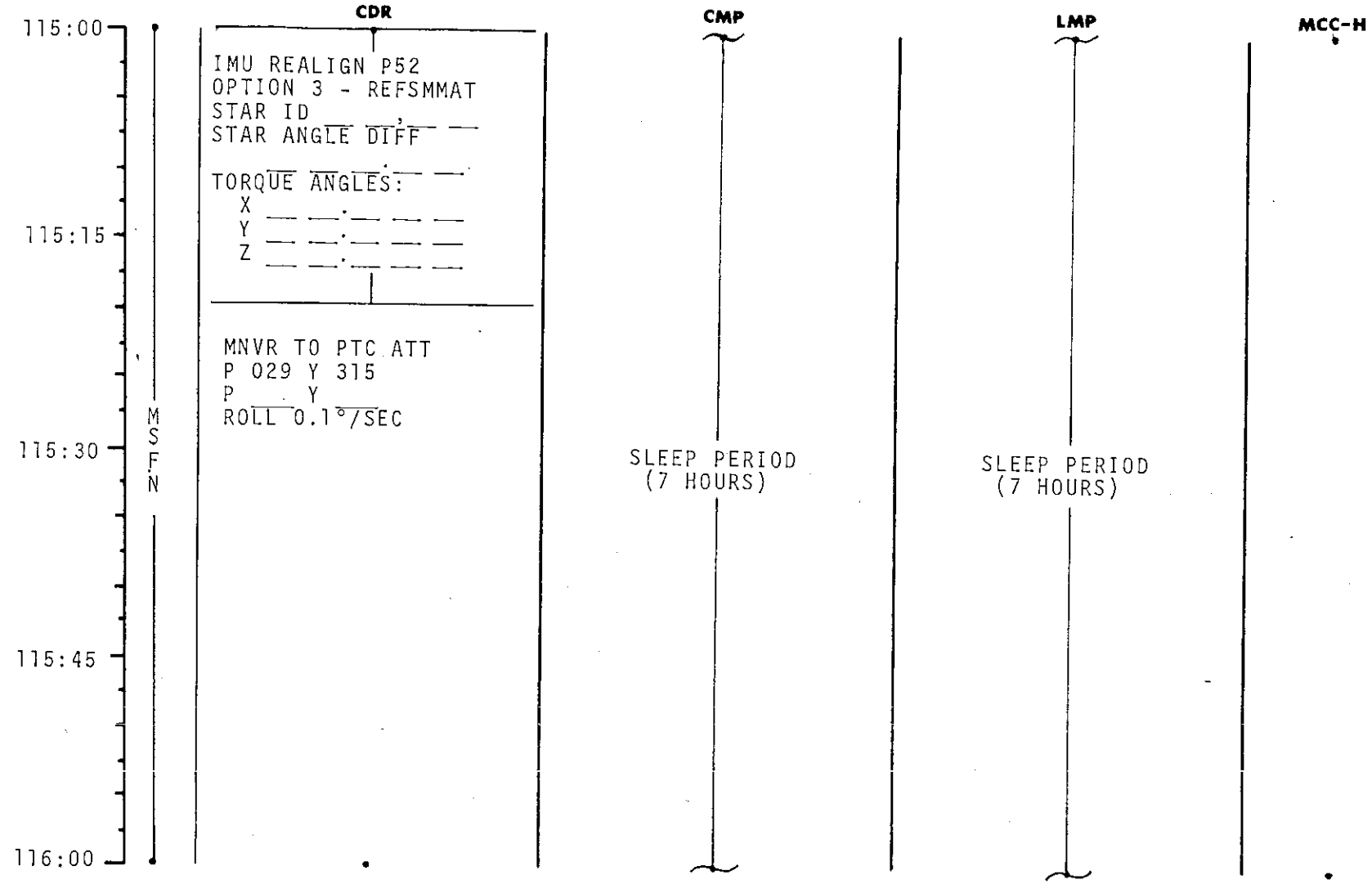


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	113:00 - 115:00	5/TEC	2-91

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

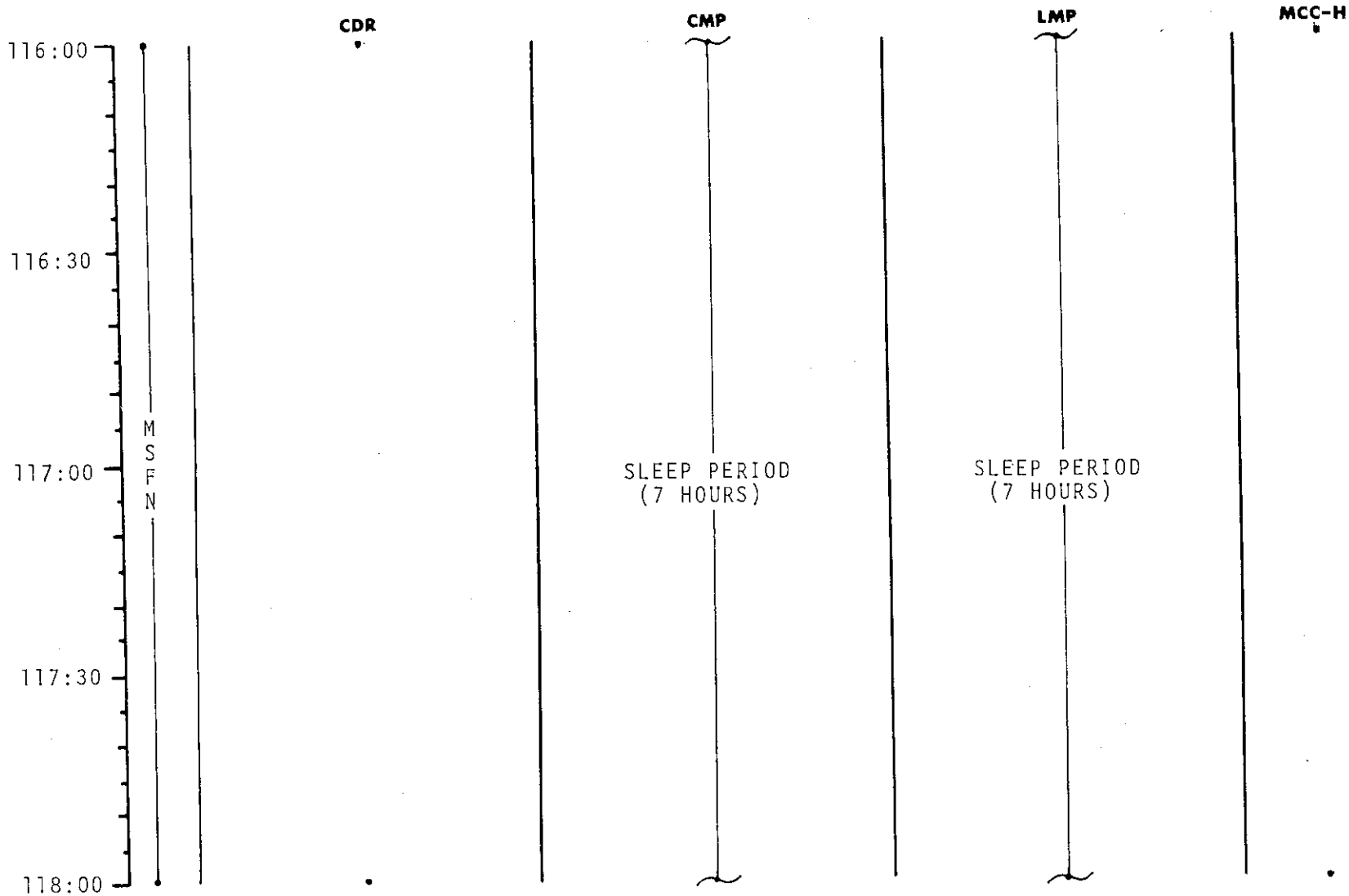


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	115:00 - 116:00	5/TEC	2-92

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

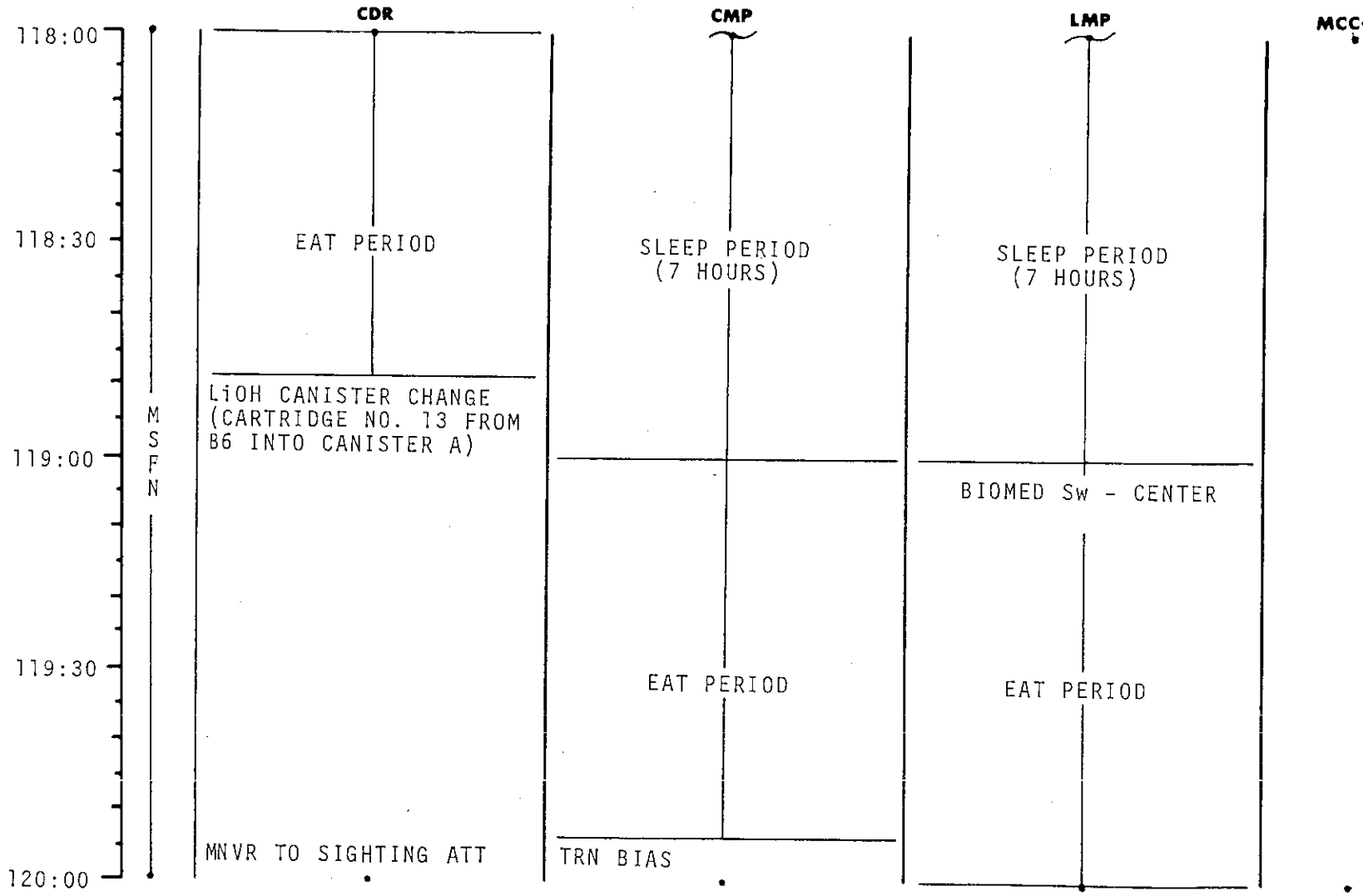


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	116:00 - 118:00	5/TEC	2-93

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

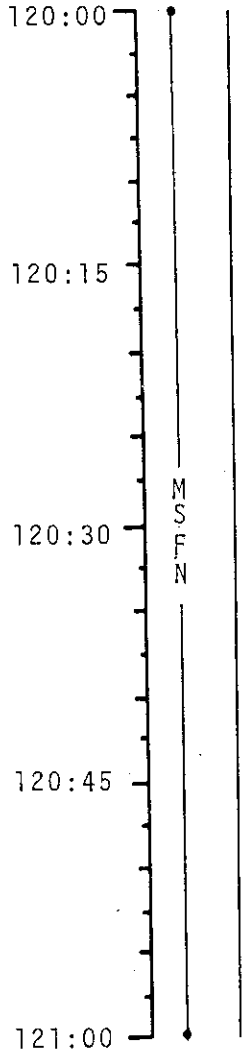


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	118:00 - 120:00	5/TEC	2-94

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



CDR

CMP

CISLUNAR NAVIGATION P23

1. STAR 22 EFH
   STAR__ __ E__H
   1 SET

2. STAR 26 ENH
   STAR__ __ E__H
   1 SET

3. STAR 31 ENH
   STAR__ __ E__H
   1 SET

LMP

CMP/LMP CREW STATUS REPORT

RECORD MNVR PAD

MCC-H

P27 UPDATE:
STATE
VECTOR
TGT LOAD
VOICE
UPDATE:
MNVR PAD

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	120:00 - 121:00	6/TEC	2-95

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 UNBALANCE

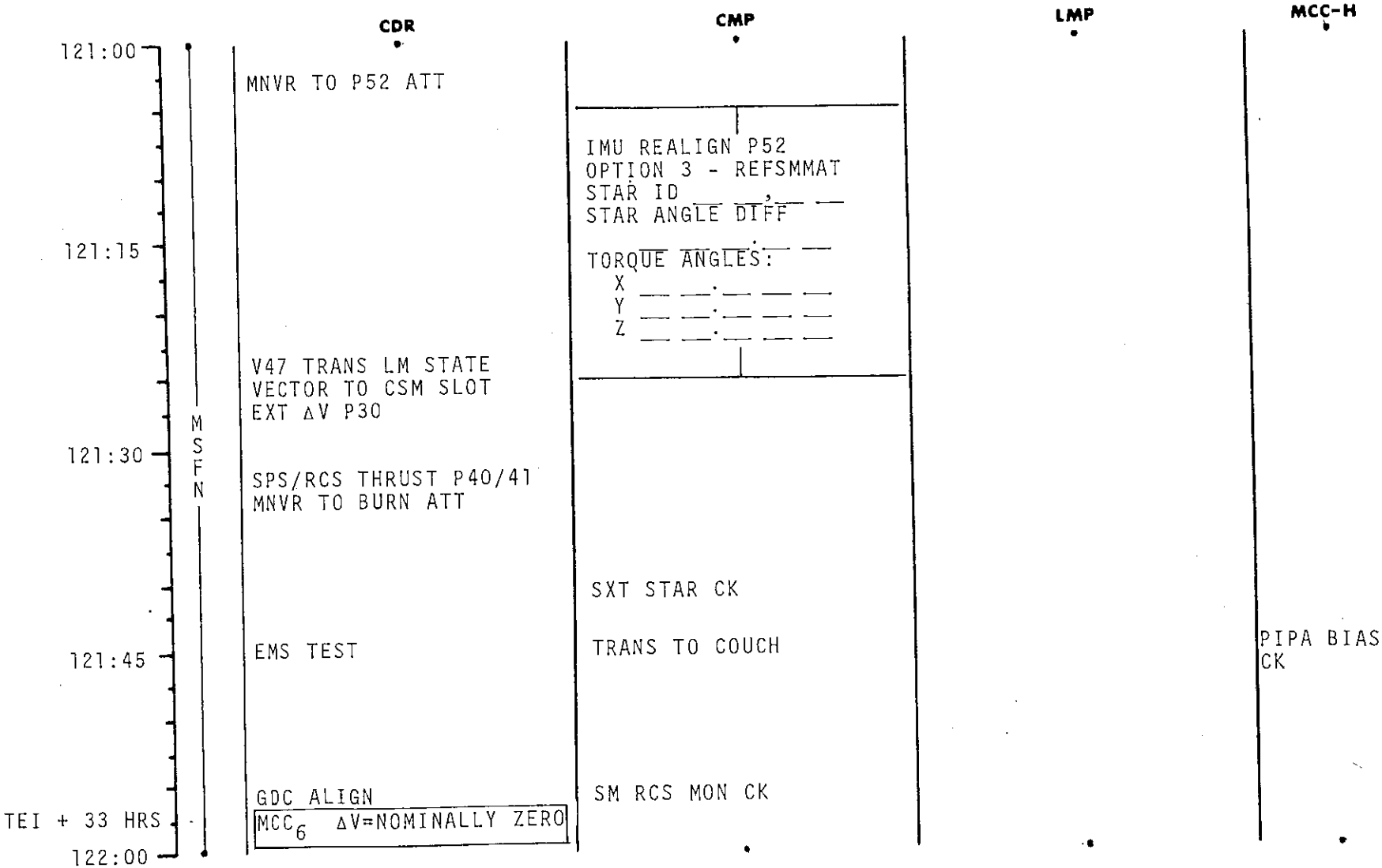
REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	121:00 - 122:00	6/TEC	2-96

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
122:00	V66 TRANS CSM STATE VECTOR TO LM SLOT	SM RCS MON CK	MCC_6 BURN STATUS REPORT INITIATE BAT CHARGE BIOMED Sw - RIGHT	
122:15				
122:30	MNVR TO SIGHTING ATT	TRN BIAS CISLUNAR NAVIGATION P23 1. STAR 02 LNH STAR__ __ L__H 2 SETS		
122:45				
123:00		2. STAR 01 LNH STAR__ __ L__H 1 SET		

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	122:00 - 123:00	6/TEC	2-97

MSC Form 1910 (Nov 68)

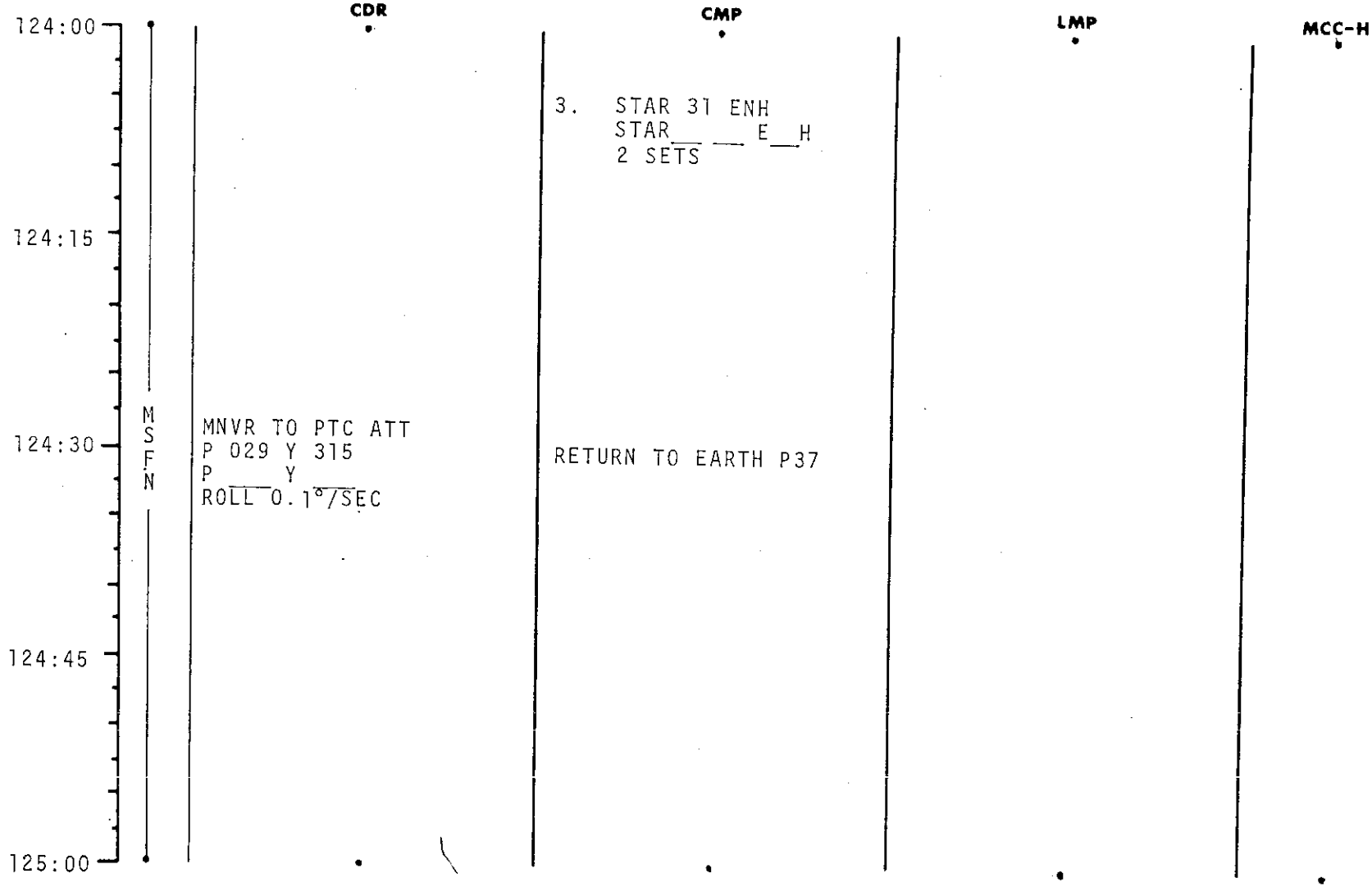
FLIGHT PLANNING BRANCH

FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
123:00		RETURN TO EARTH P37		
	MNVR TO SIGHTING ATT			
123:30				
	M S F N			
123:30		TRN BIAS		
		CISLUNAR NAVIGATION P23		
		1. STAR 22 EFH STAR__ __ E__H 2 SETS		
123:45				
		2. STAR 26 ENH STAR__ __ E__H 1 SET		
124:00				

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	123:00 - 124:00	6/TEC	2-98

FLIGHT PLAN

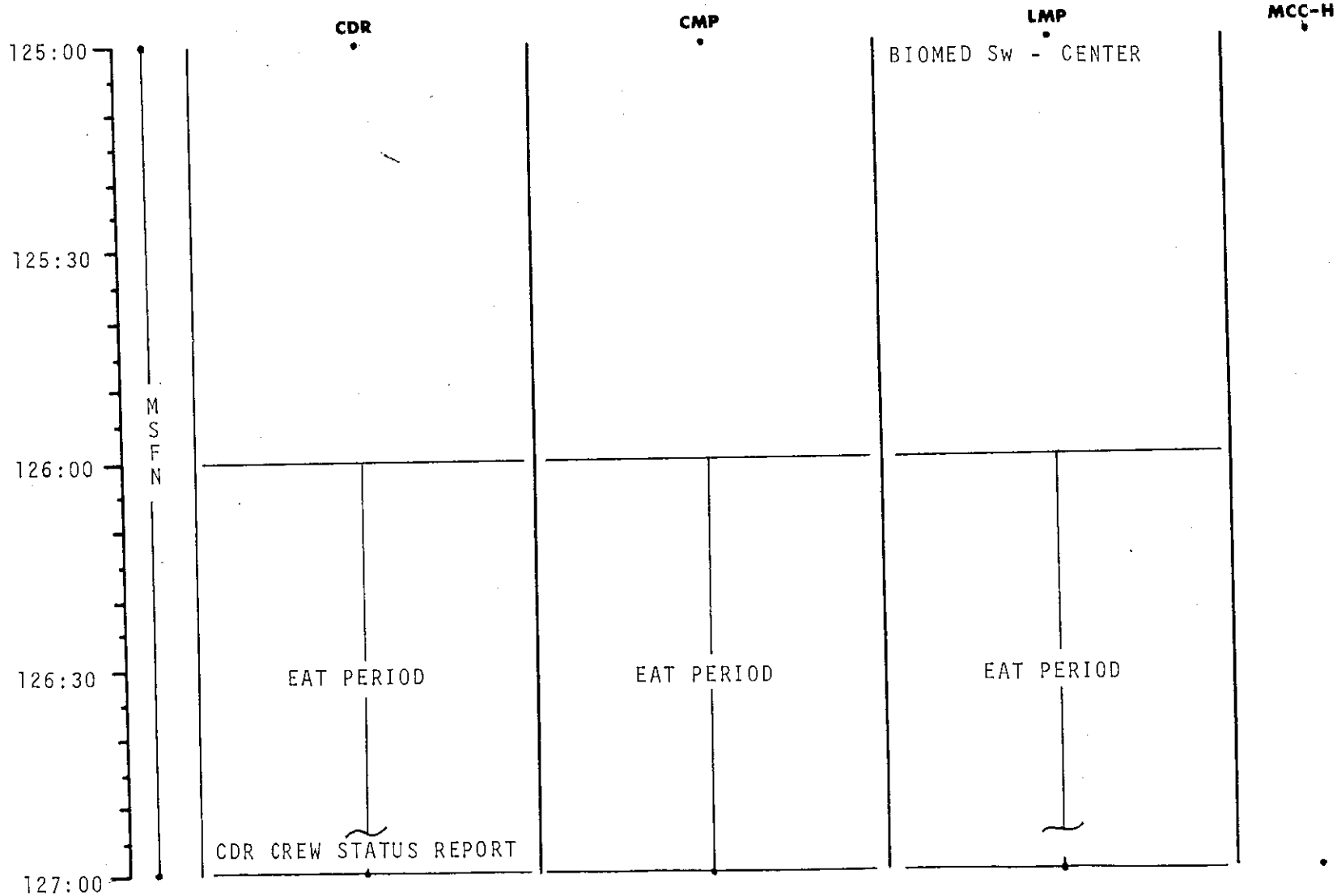


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	124:00 - 125:00	6/TEC	2-99

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

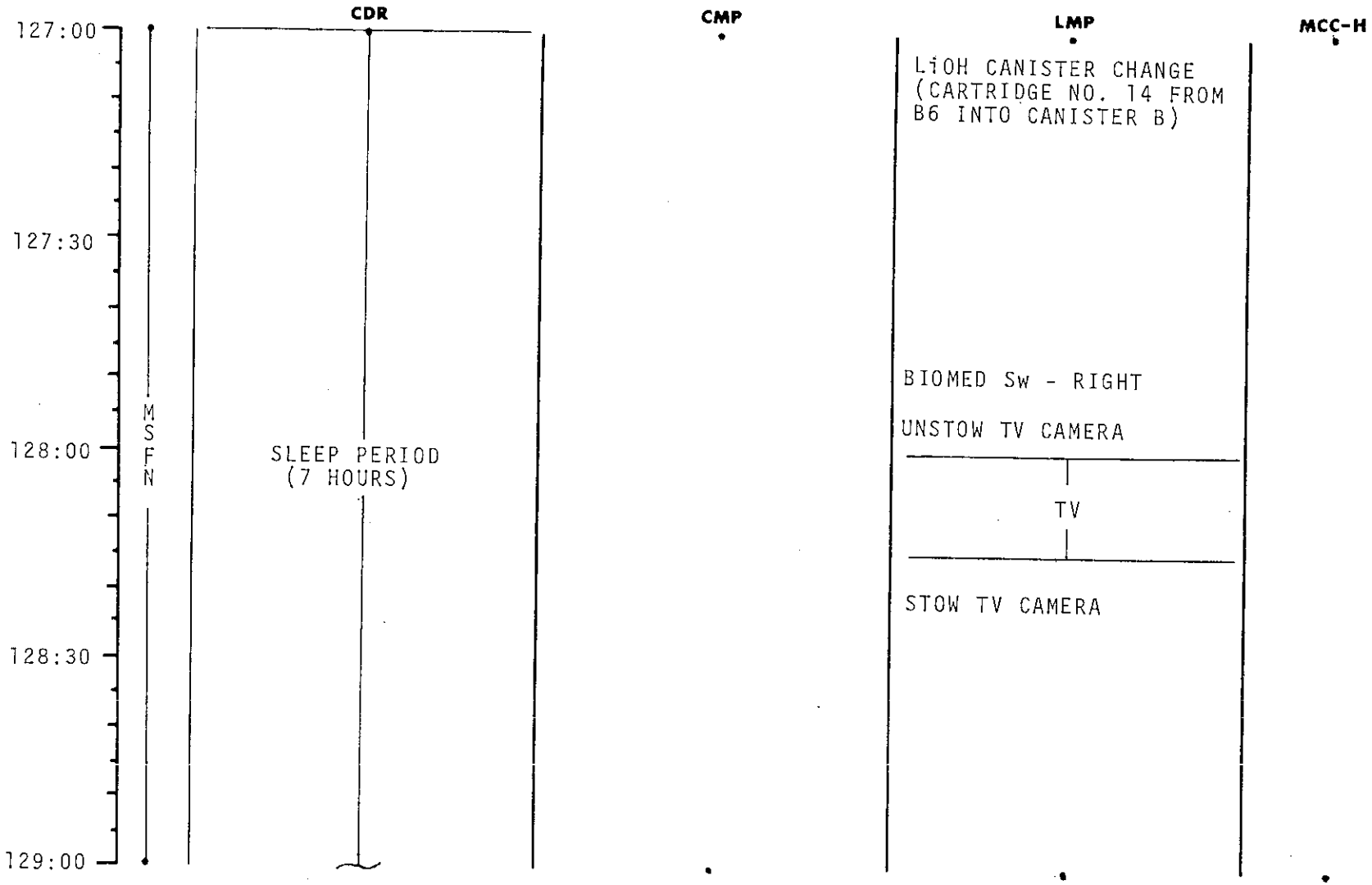


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	125:00 - 127:00	6/TEC	2-100

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

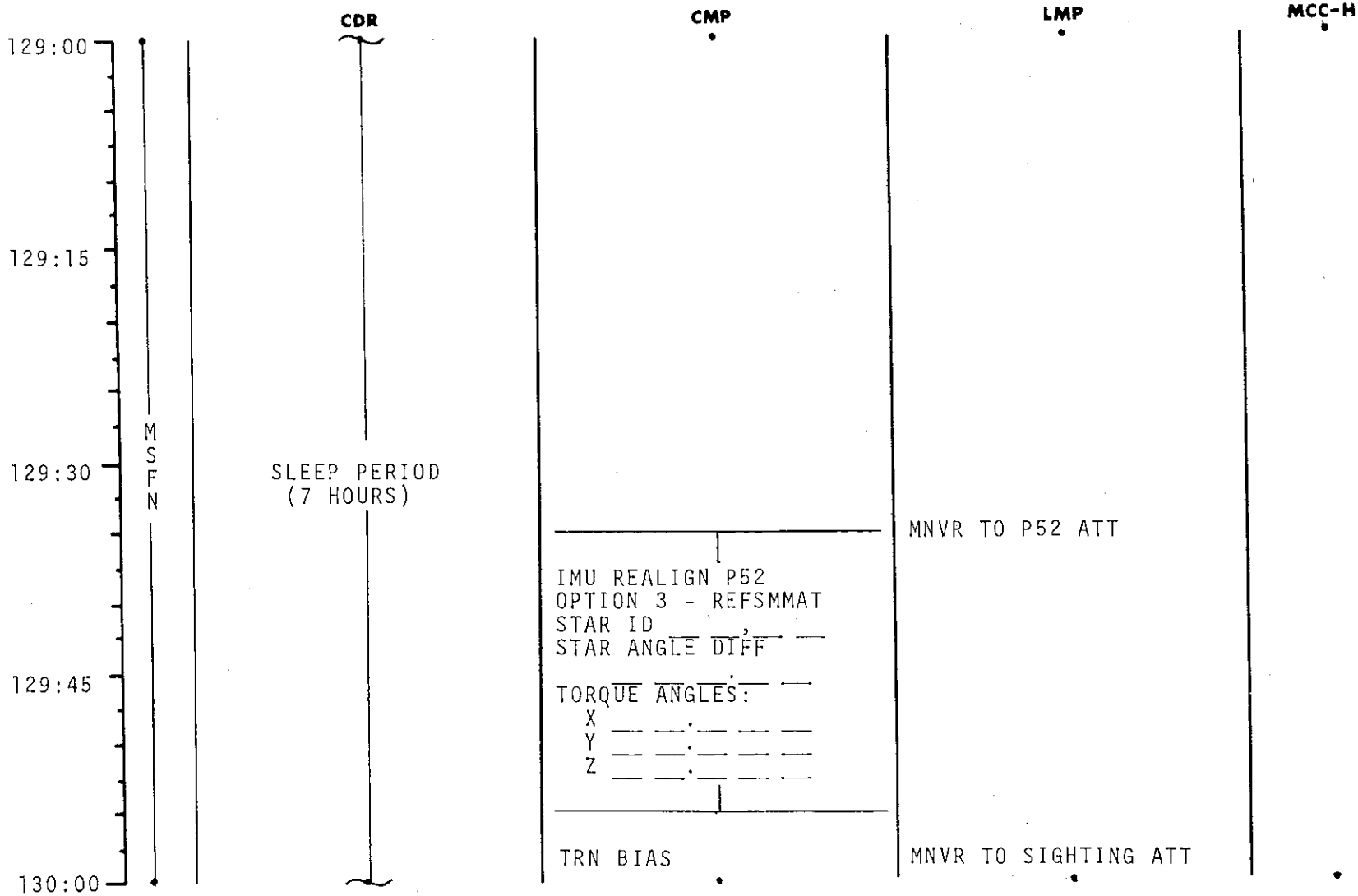


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	127:00 - 129:00	6/TEC	2-101

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

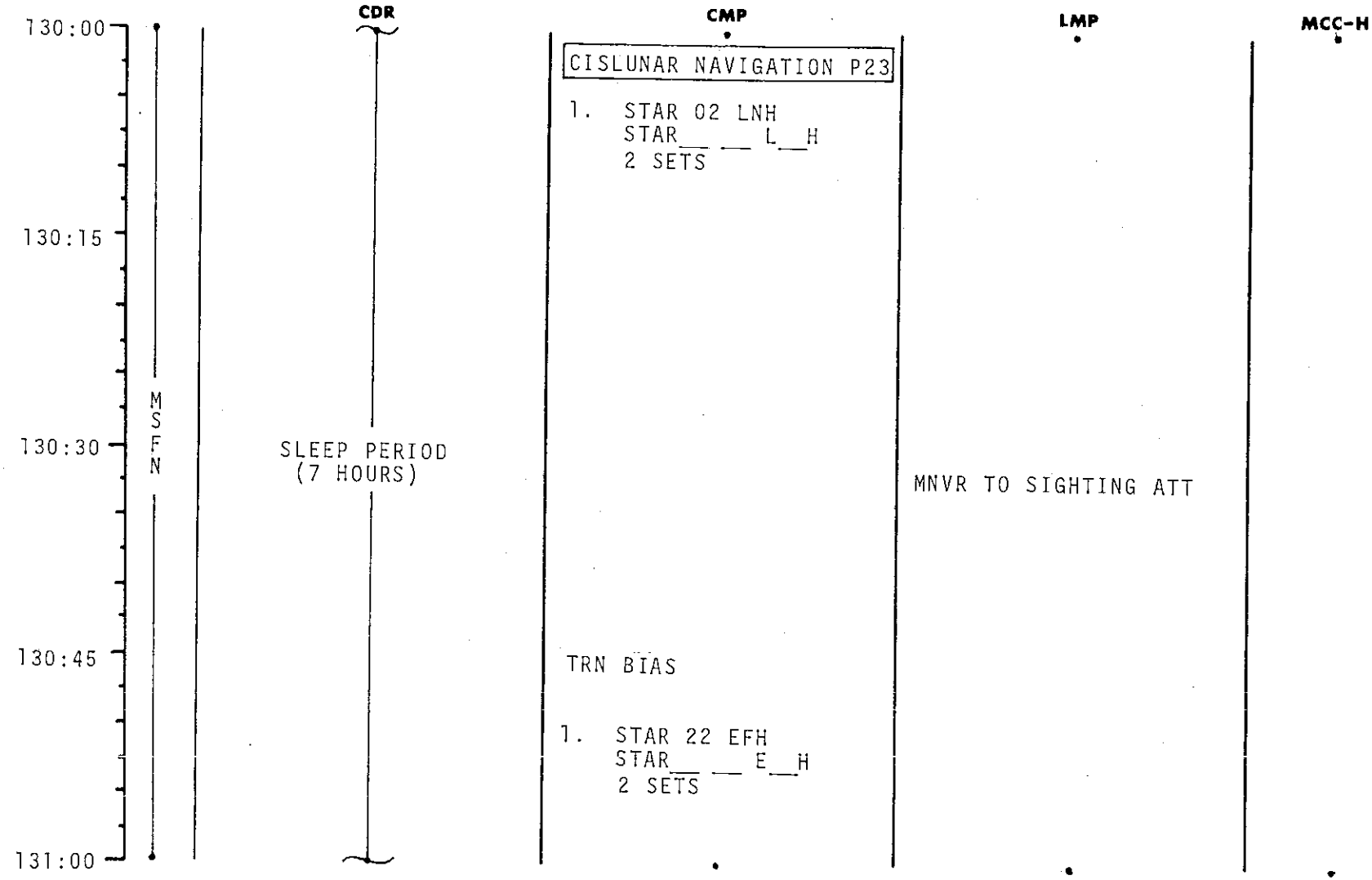


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	129:00 - 130:00	6/TEC	2-102

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

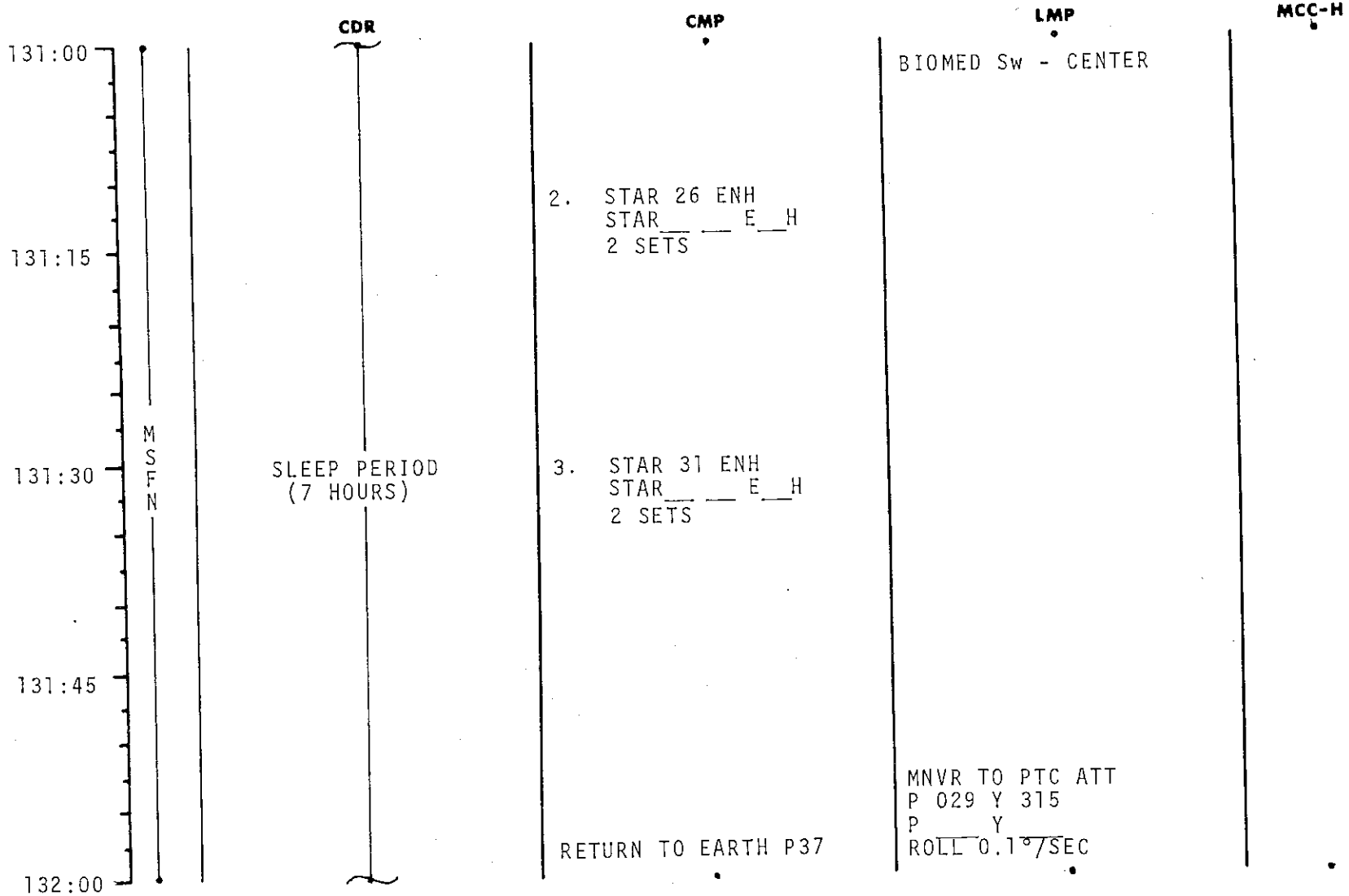


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	130:00 - 131:00	6/TEC	2-103

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

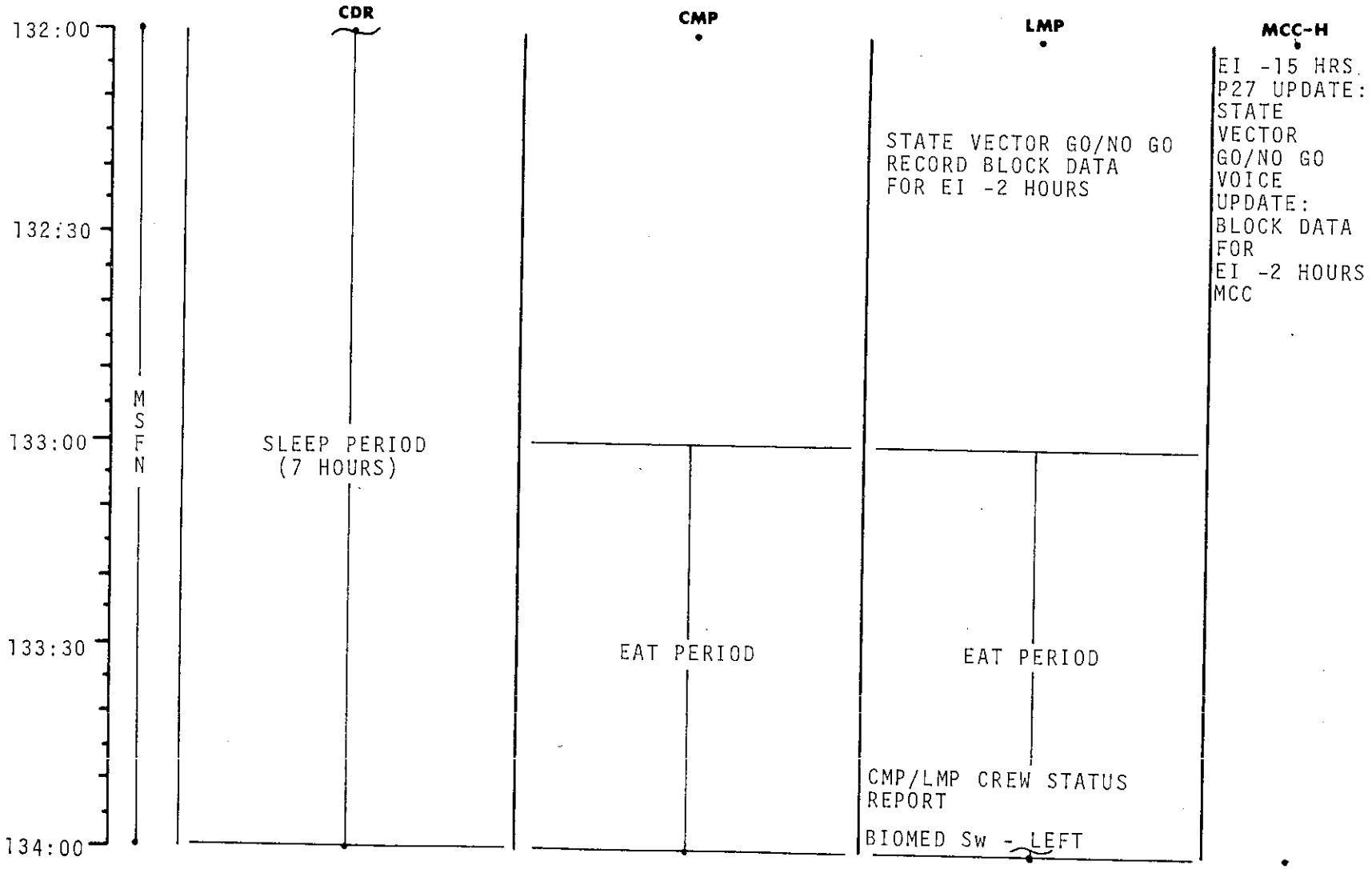


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	131:00 - 132:00	6/TEC	2-104

FLIGHT PLANNING BRANCH

MSC Form 1910 (Nov 68)

FLIGHT PLAN

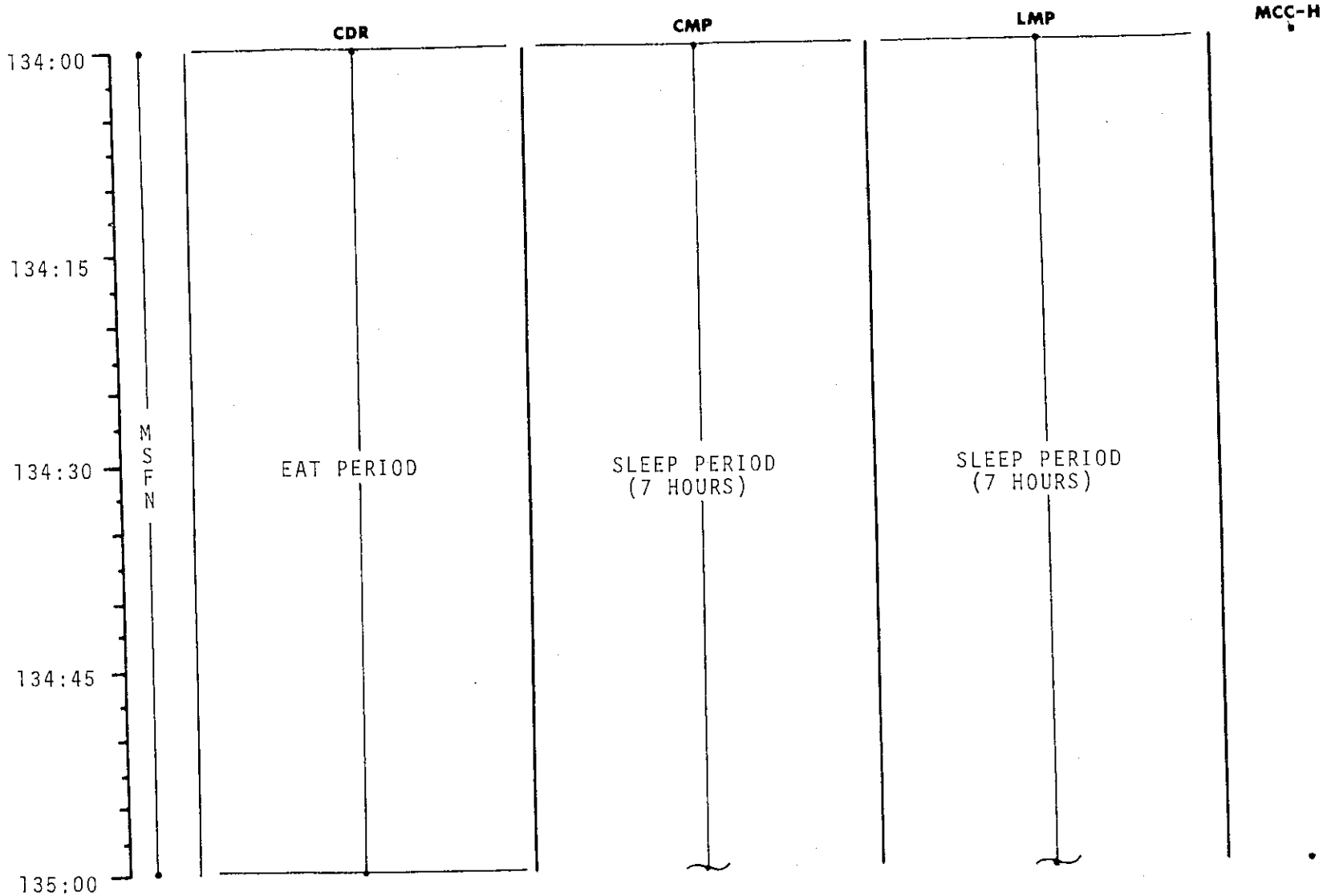


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	132:00 - 134:00	6/TEC	2-105

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

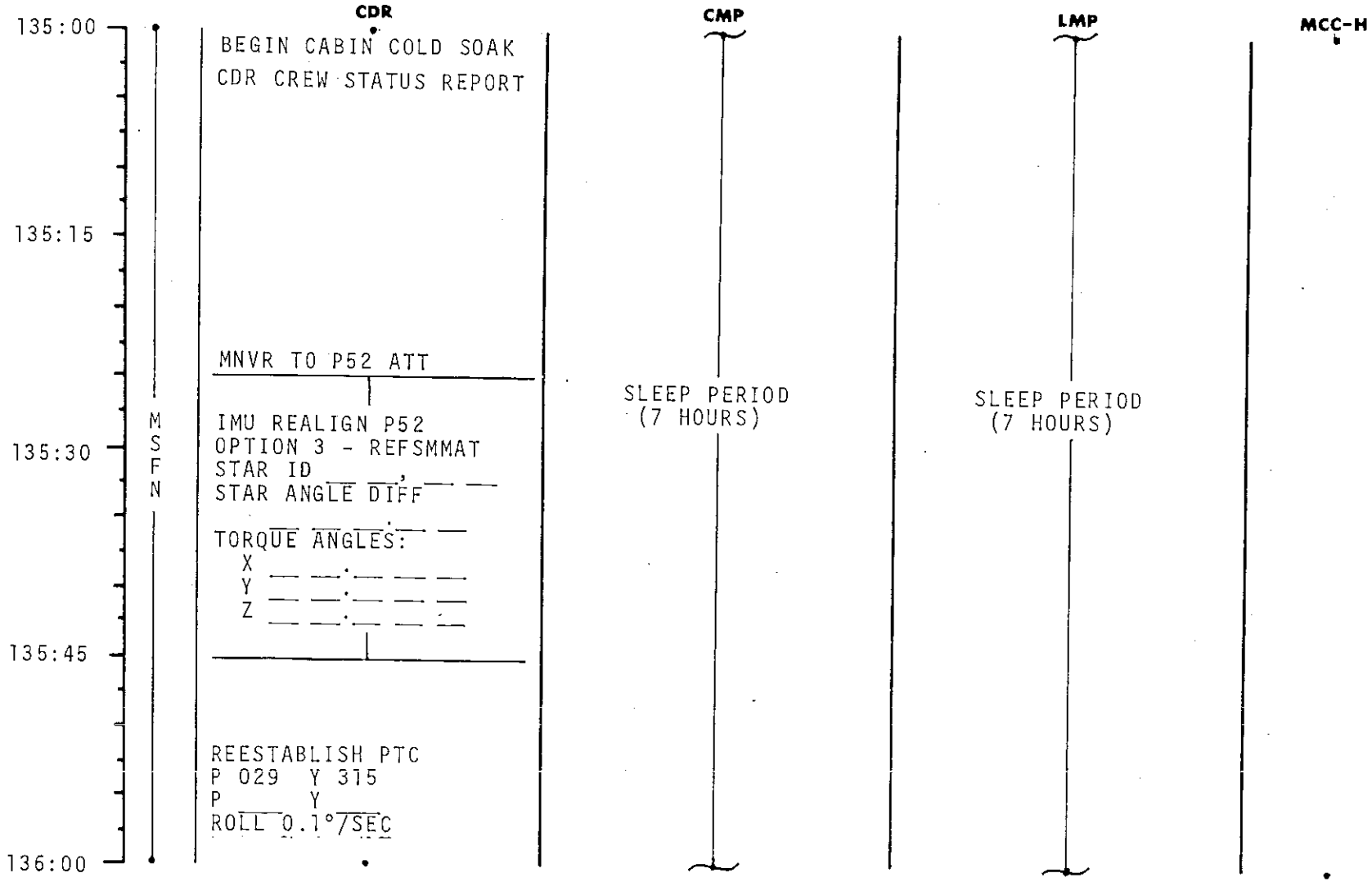


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	134:00 - 135:00	6/TEC	2-106

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

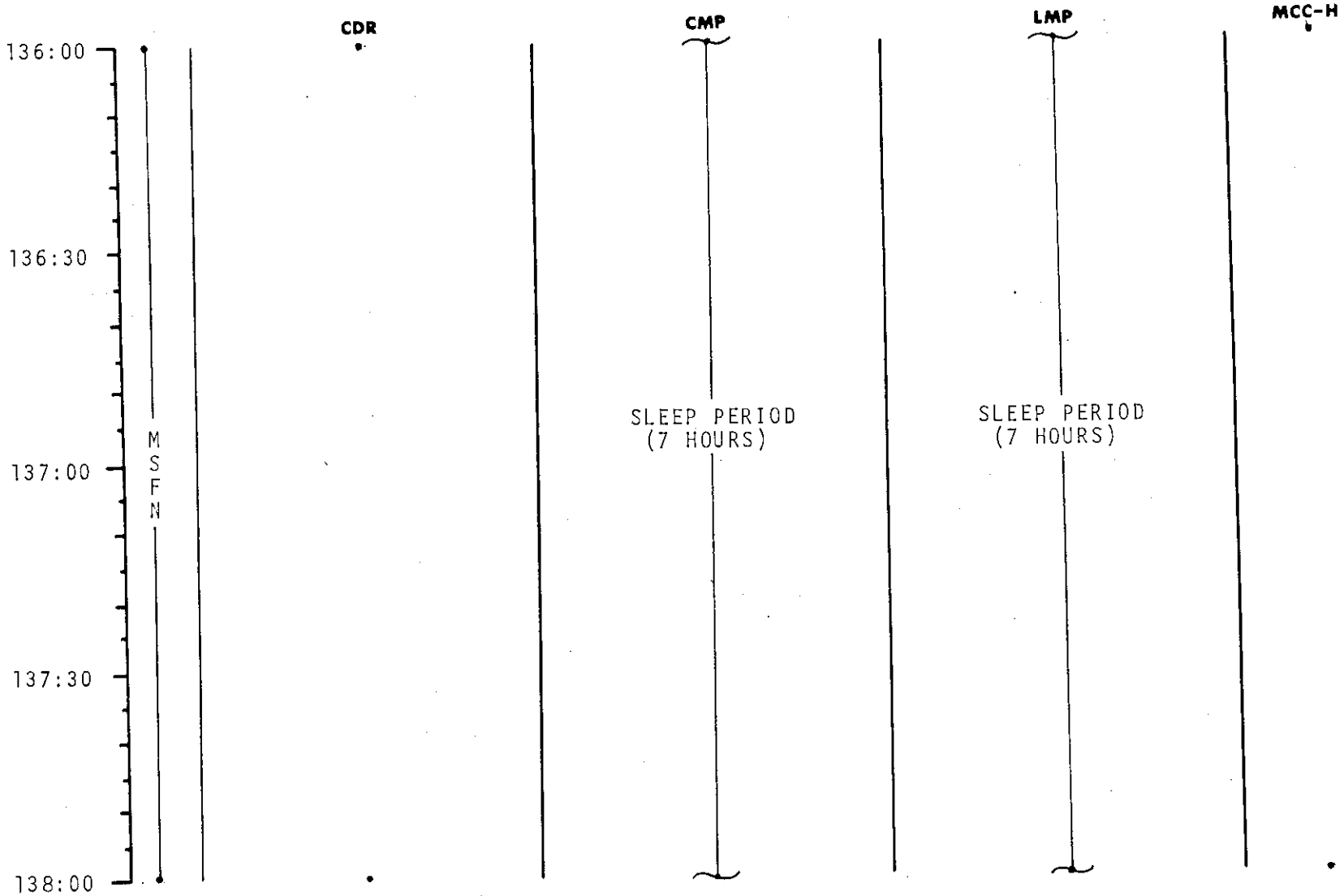


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	135:00 - 136:00	6/TEC	2-107

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

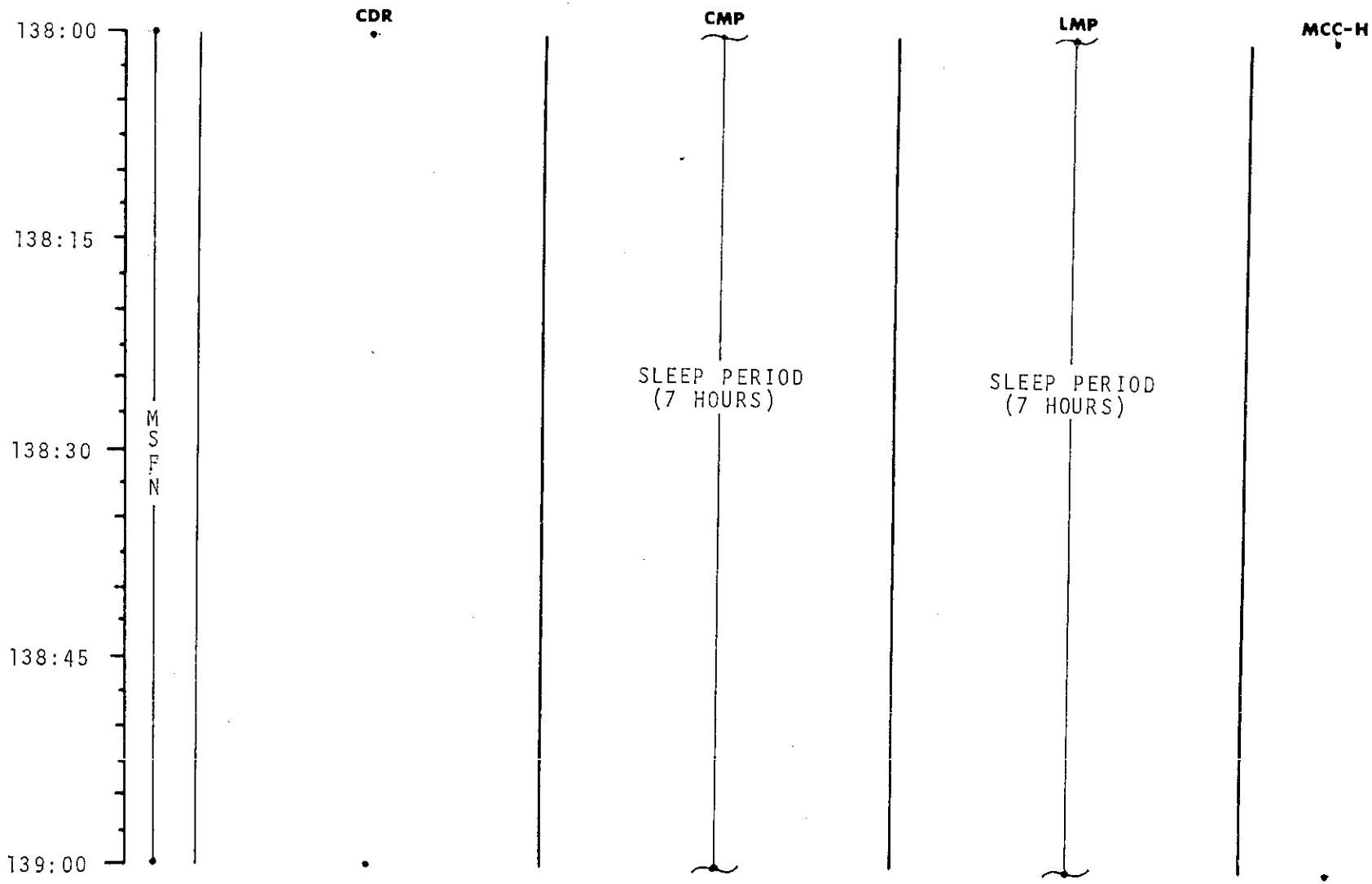


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	136:00 - 138:00	6/TEC	2-108

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	138:00 - 139:00	6/TEC	2-109

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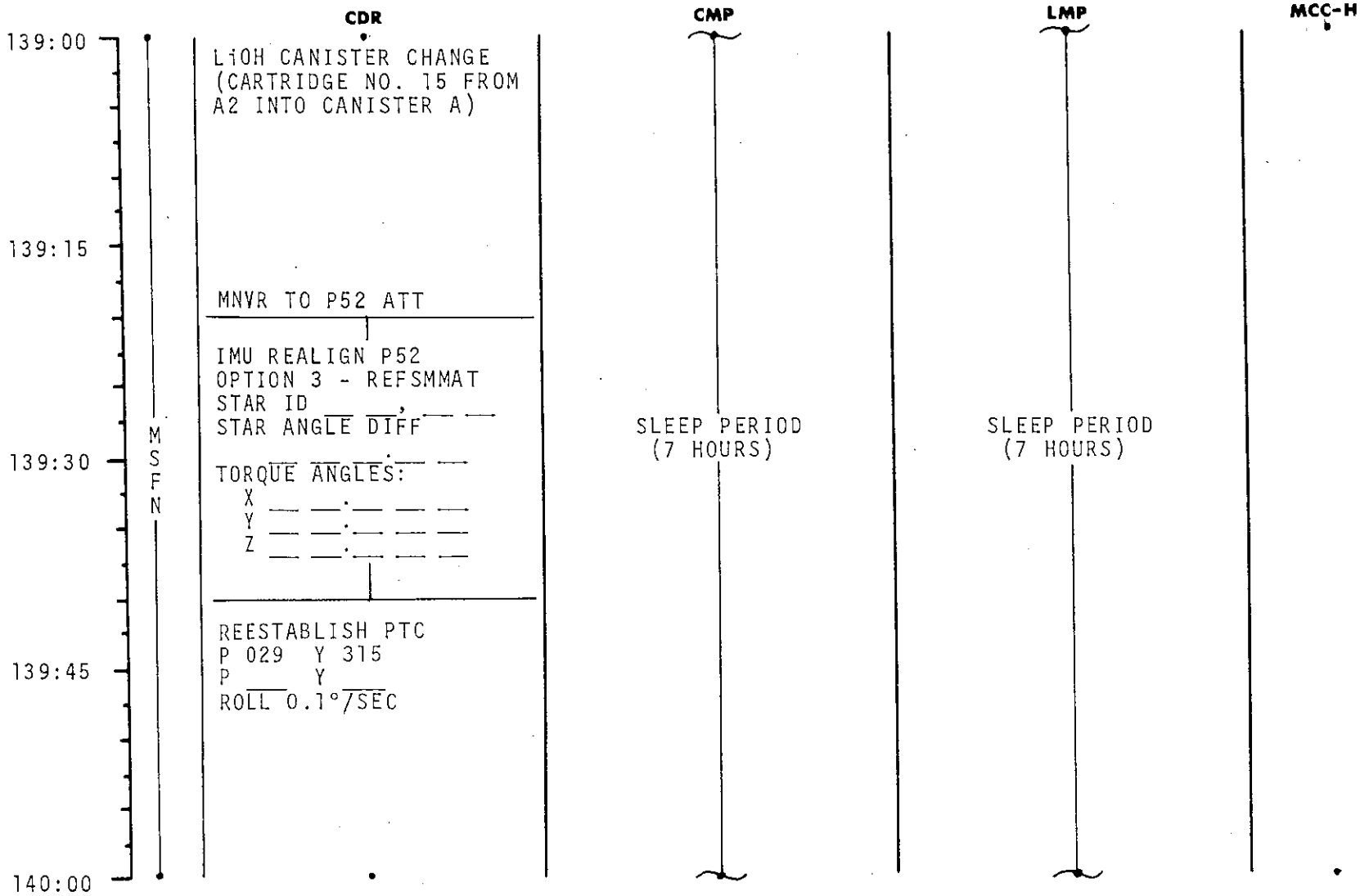
FLIGHT PLANNING BRANCH

FLIGHT PLAN

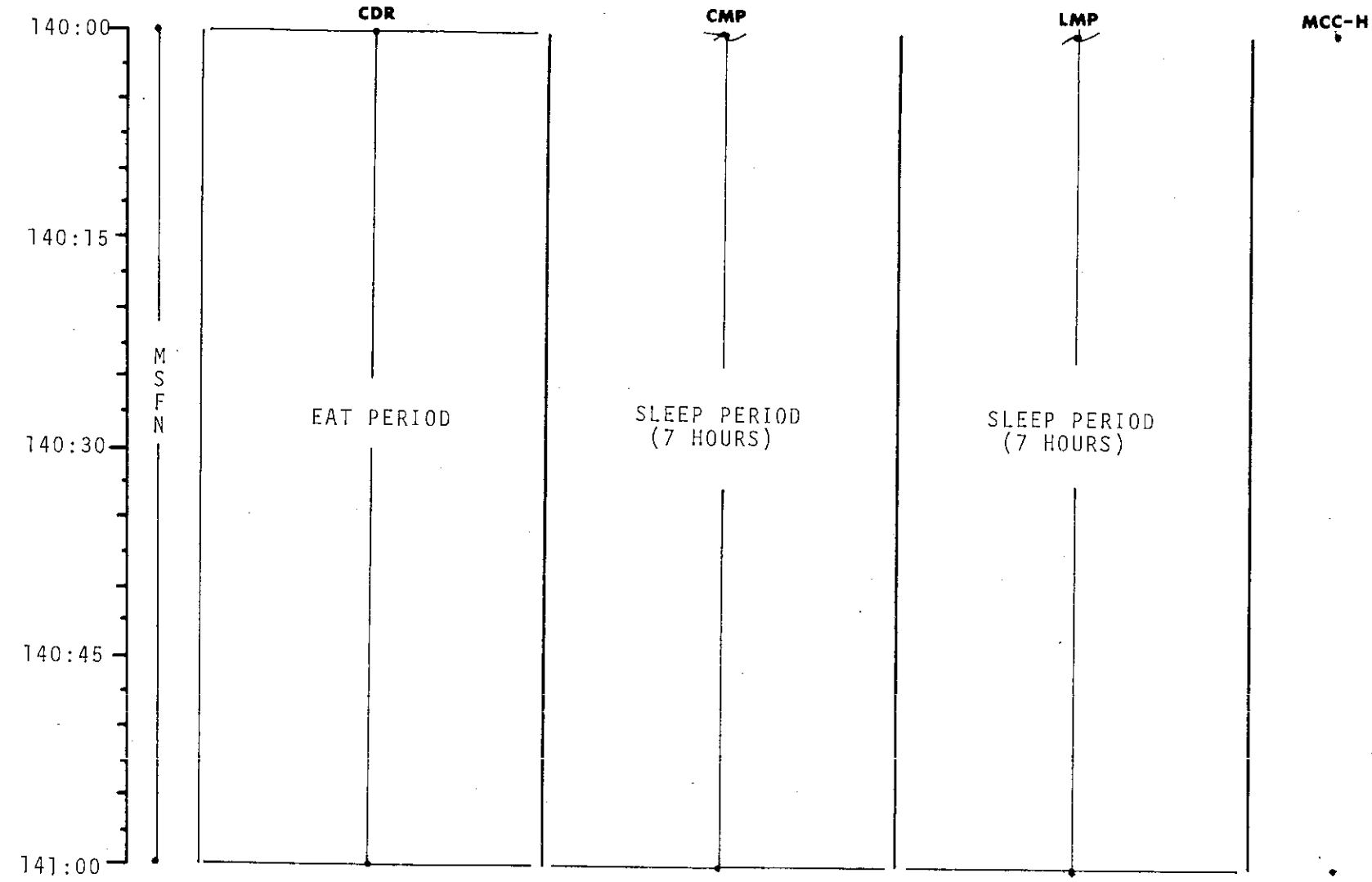


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	139:00 - 140:00	6/TEC	2-110

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN

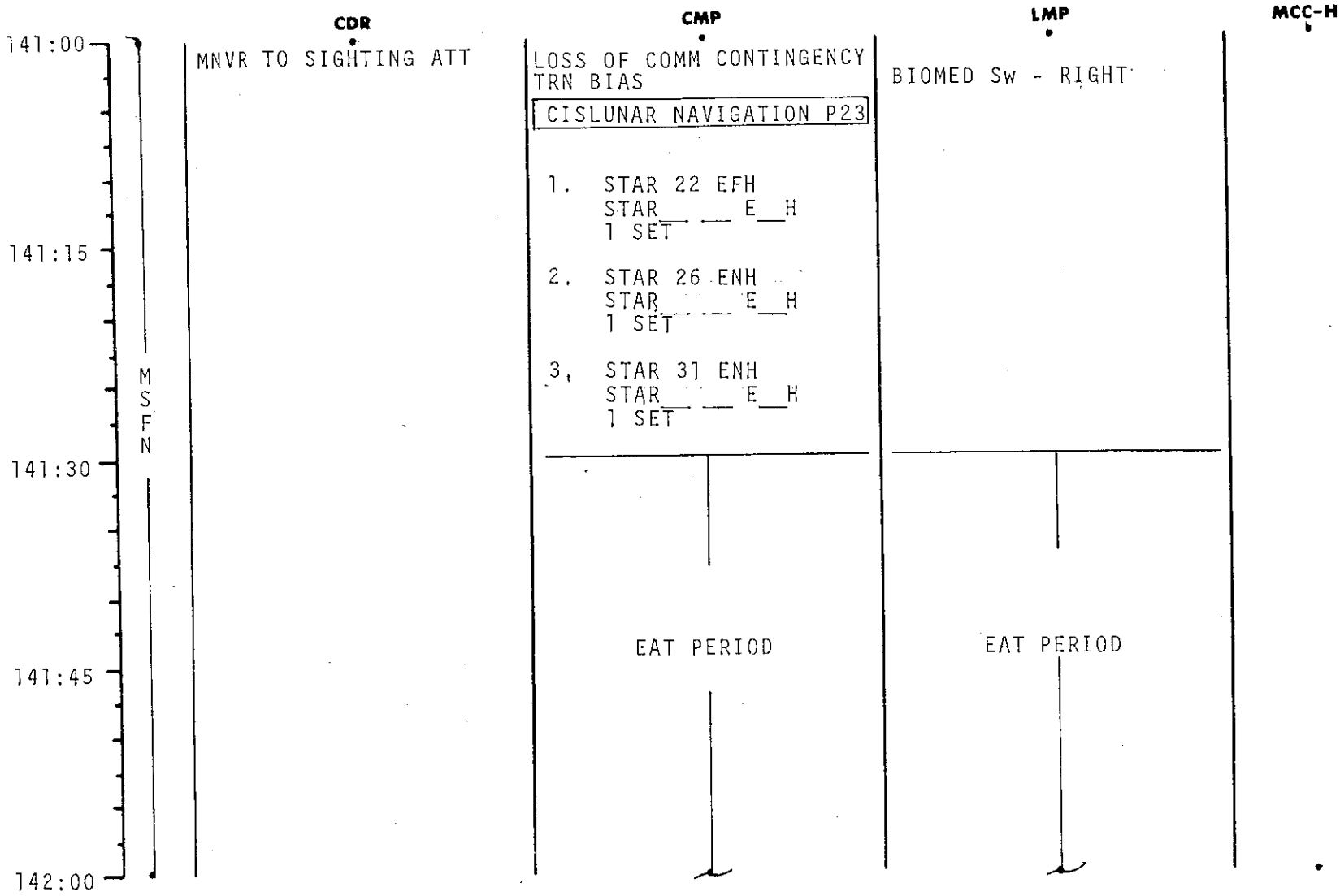


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	140:00 - 141:00		2-111

MSC Form 1910 (Nov 68)

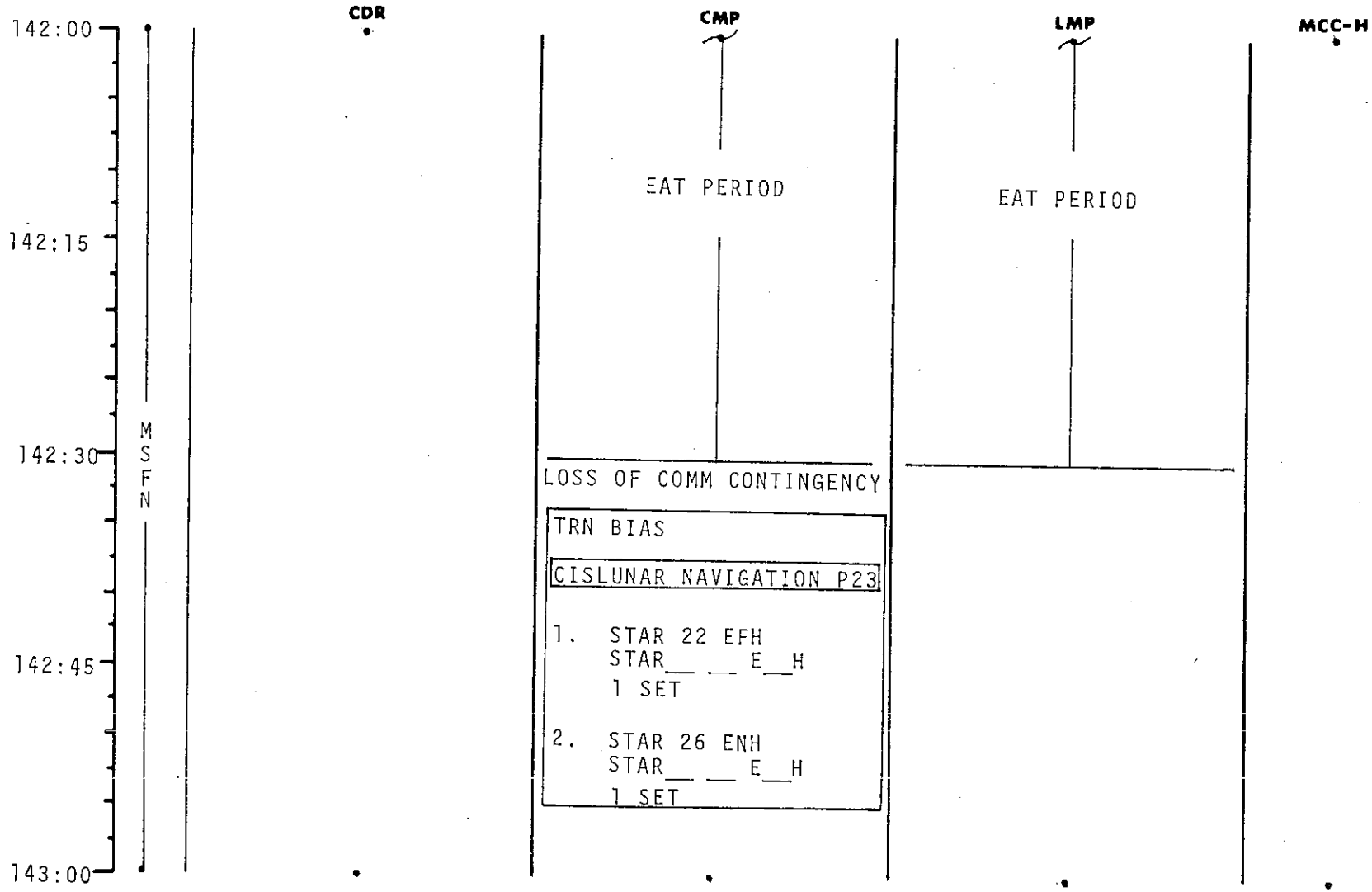
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	141:00 - 142:00		2-112

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22,1968	142:00 - 143:00		2-113

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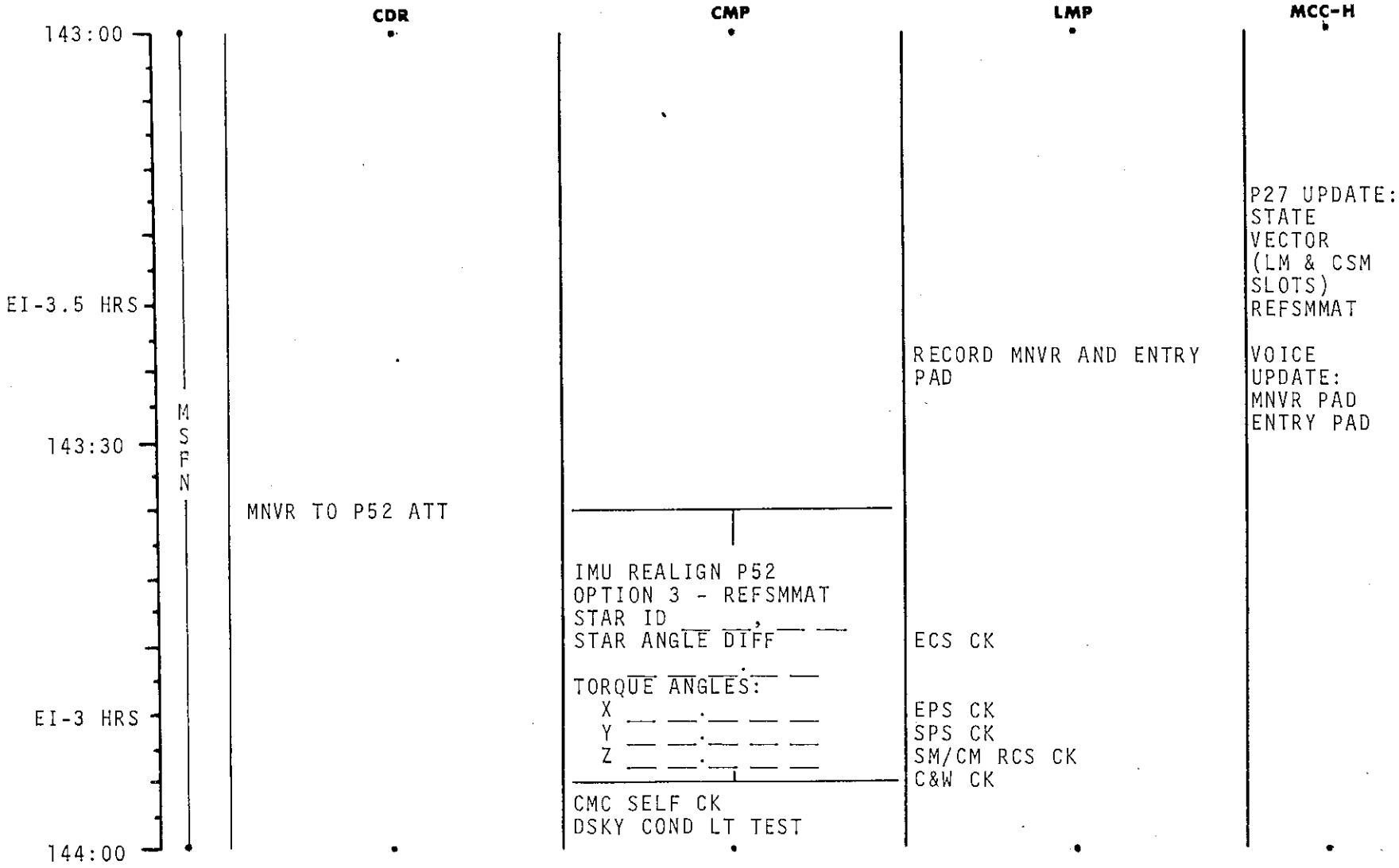
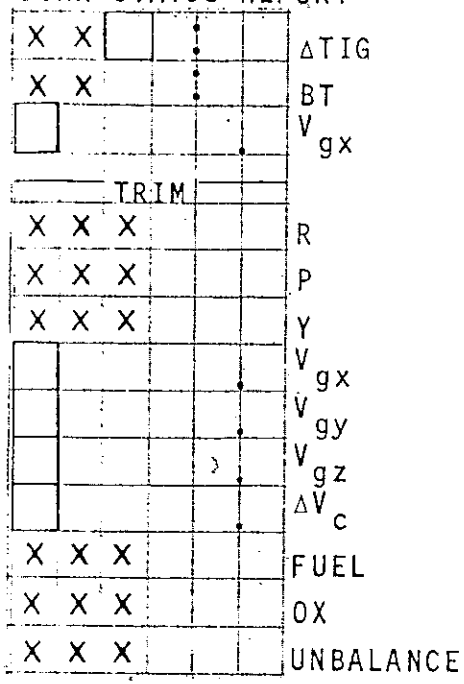
FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	143:00 - 144:00	6/TEC	2-114

BURN STATUS REPORT



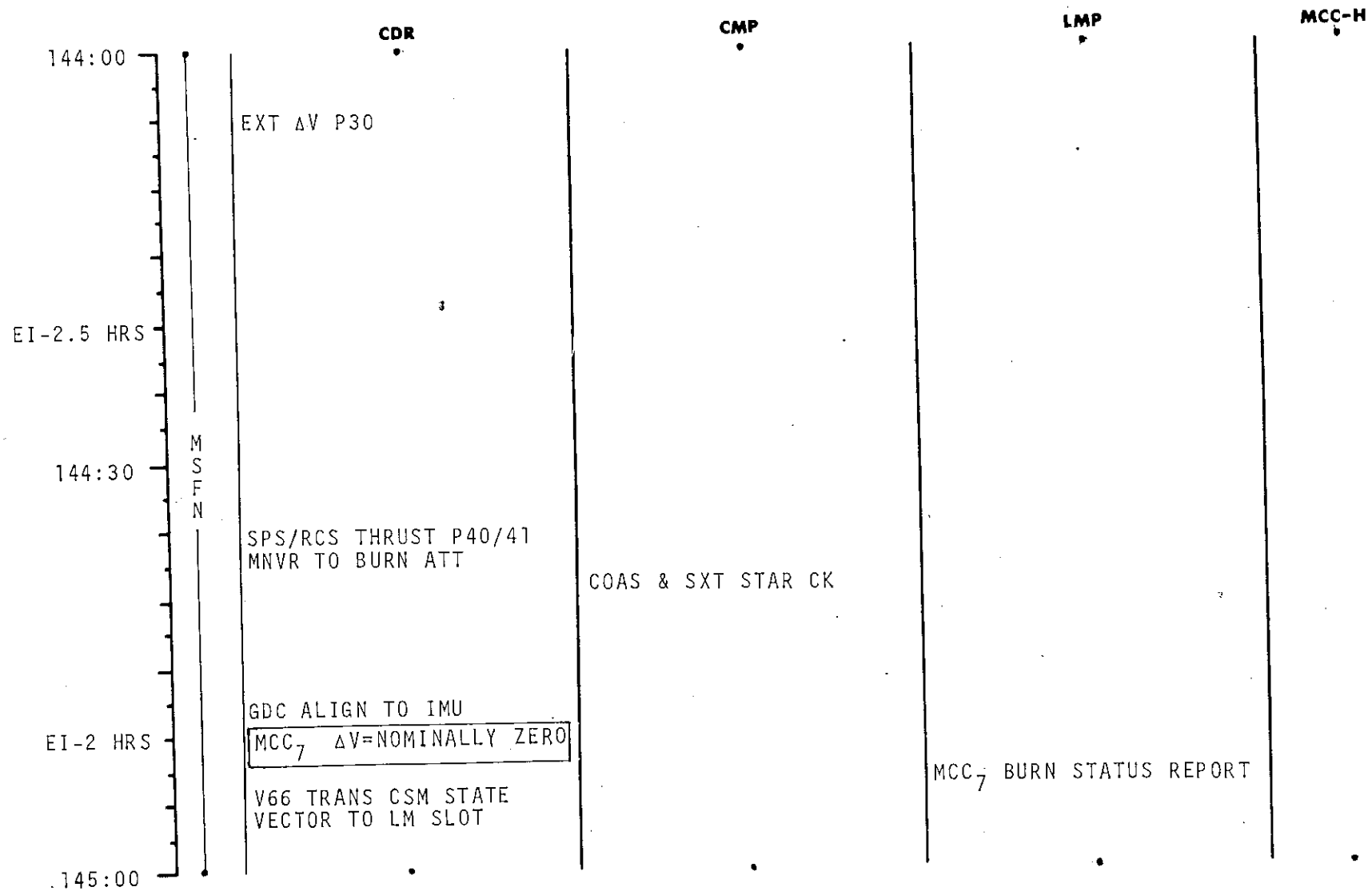
REMARKS:

MCC'S

BURN CHART

	P or Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
MCC(ALL)	10°/SEC TAKEOVER	10° TAKEOVER	B/T +1 SEC	TRIM TO 0.2 fps

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	144:00 - 145:00	7/TEC	2-115

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

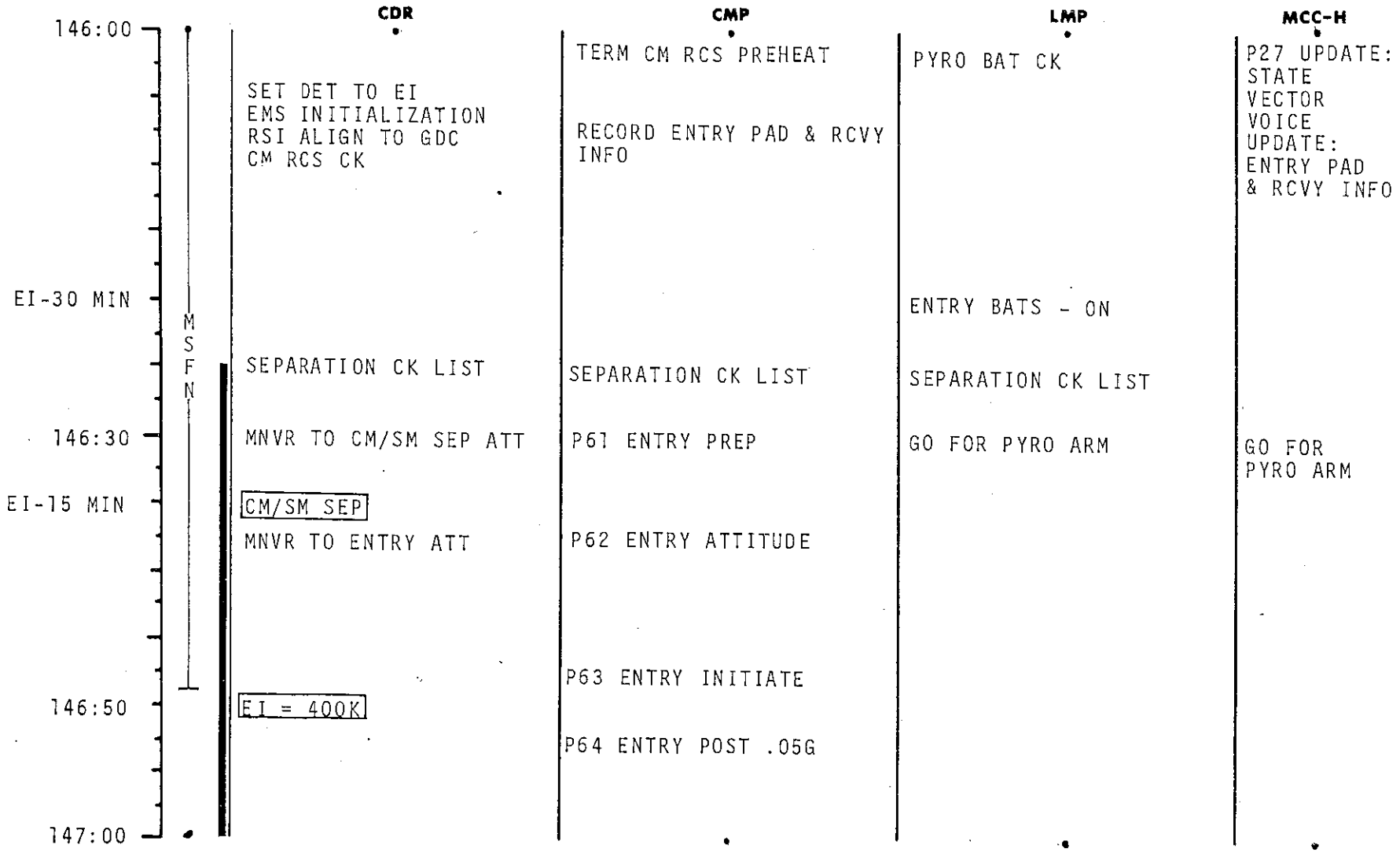
FLIGHT PLAN

	CDR	CMP	LMP	MCC-H
145:00	MNVR TO ENTRY ATT COAS STAR CK	LOSS OF COMM CONTINGENCY CISLUNAR NAVIGATION P23 1. STAR 33 ENH STAR__ __ E__H 1 SET SXT STAR CK	BIOMED Sw - LEFT	
EI-1.5 HR		IMU REALIGN P52 OPTION 3 - REFSMMAT AND GYRO DRIFT TEST STAR ID __ __,__ __ STAR ANGLE DIFF __ __.__ __ TORQUE ANGLES: X __ __.__ __ __ Y __ __.__ __ __ Z __ __.__ __ __		PIPA BIAS CK
145:30	GDC ALIGN TO IMU FINAL STOWAGE	FINAL STOWAGE INITIATE CM RCS PREHEAT WASTE H_2O DUMP - OFF UR DUMP HT - OFF	FINAL STOWAGE	
EI-1 HR	EMS CK			
146:00	FINAL GDC DRIFT CK			

MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	145:00 - 146:00	7/TEC	2-116

FLIGHT PLAN

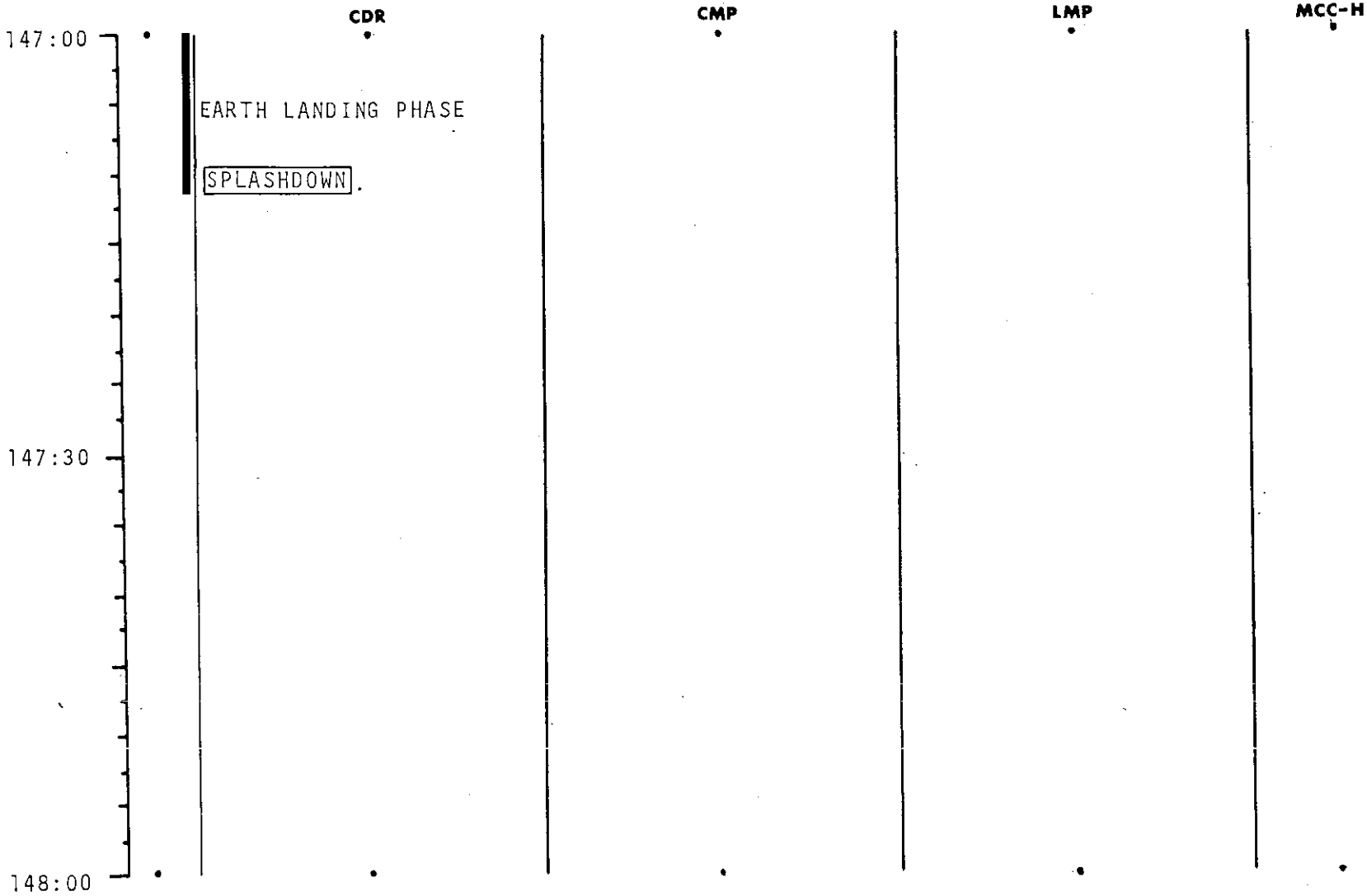


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	146:00 - 147:00	7/TEC	2-117

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
AS503/103	FINAL	November 22, 1968	147:00 - 148:00	7/TEC	2-118

MSC Form 1910 (Nov 68)

FLIGHT PLANNING BRANCH