

15 pull-out charts



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FINAL

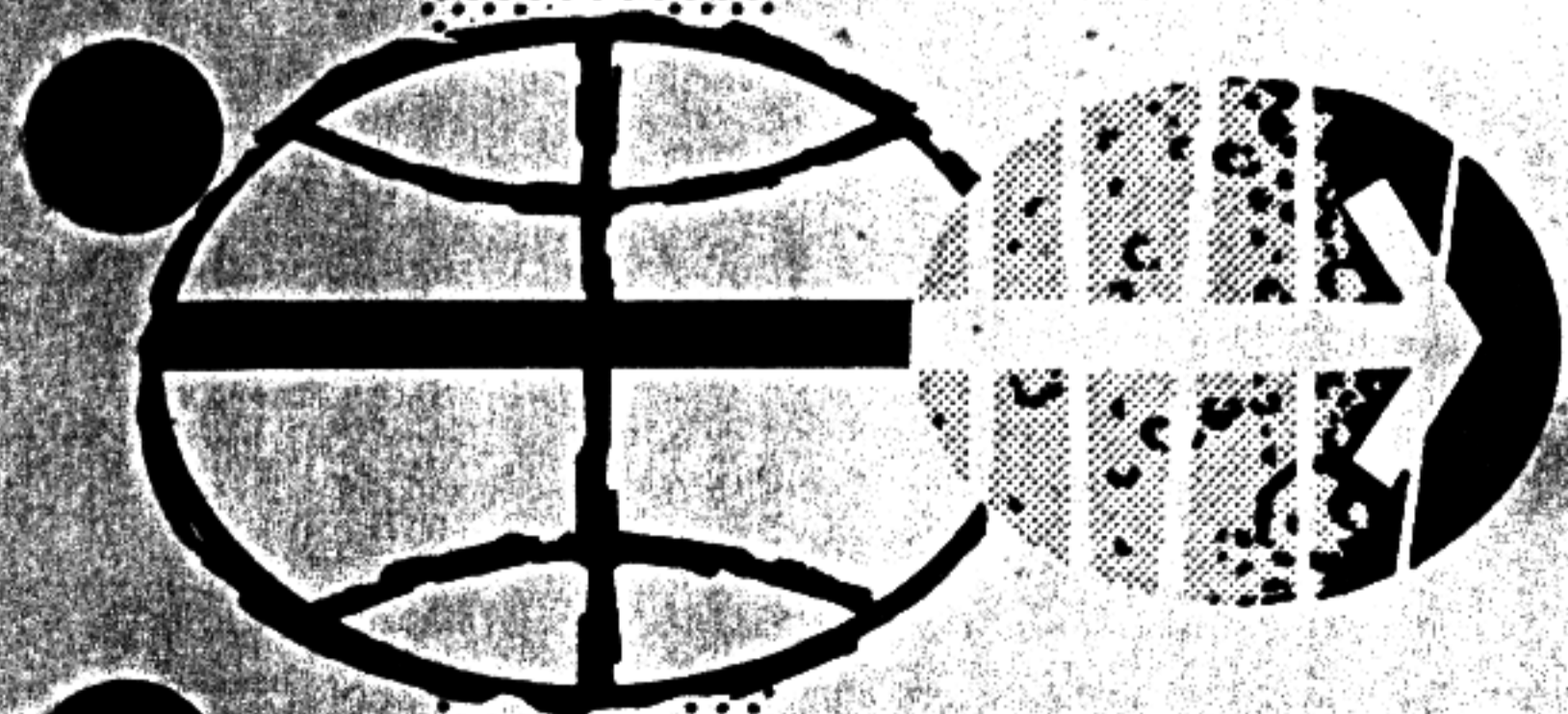
# APOLLO 12 FLIGHT PLAN

## AS-507 / CSM-108 / LM-6

### OCTOBER 15, 1969

FLIGHT PLANNING BRANCH  
FLIGHT CREW SUPPORT DIVISION

MANNED SPACECRAFT CENTER  
HOUSTON, TEXAS



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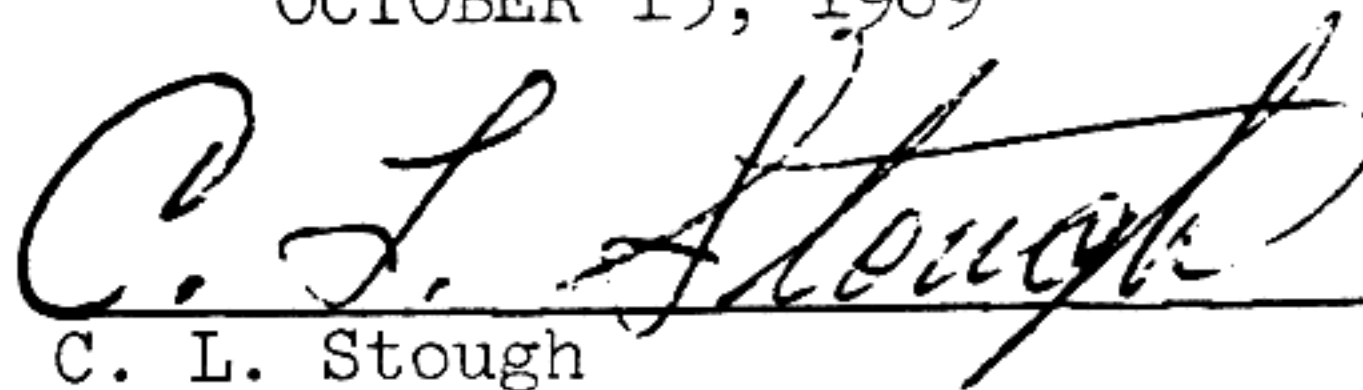
SECTION VI

APOLLO 12  
APOLLO AS-507/CSM-108/LM-6

FINAL FLIGHT PLAN

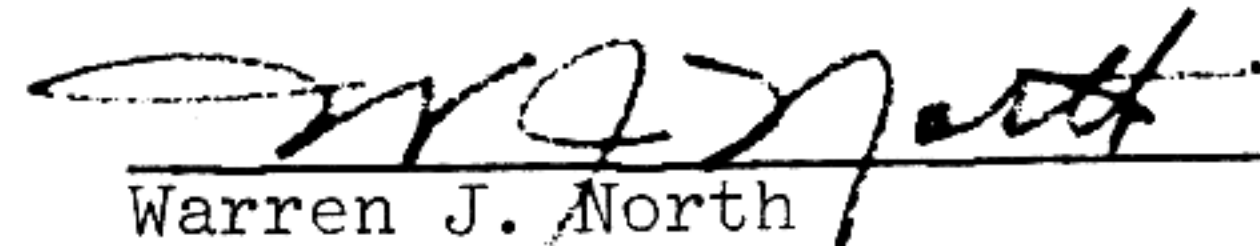
OCTOBER 15, 1969

Submitted by:



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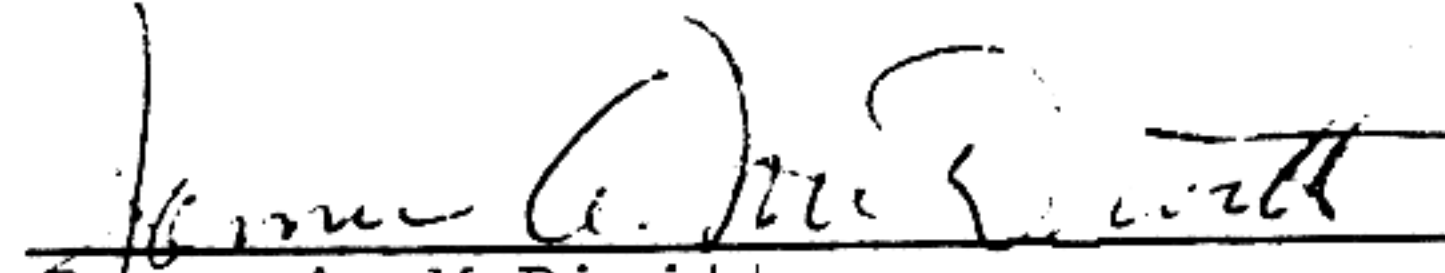


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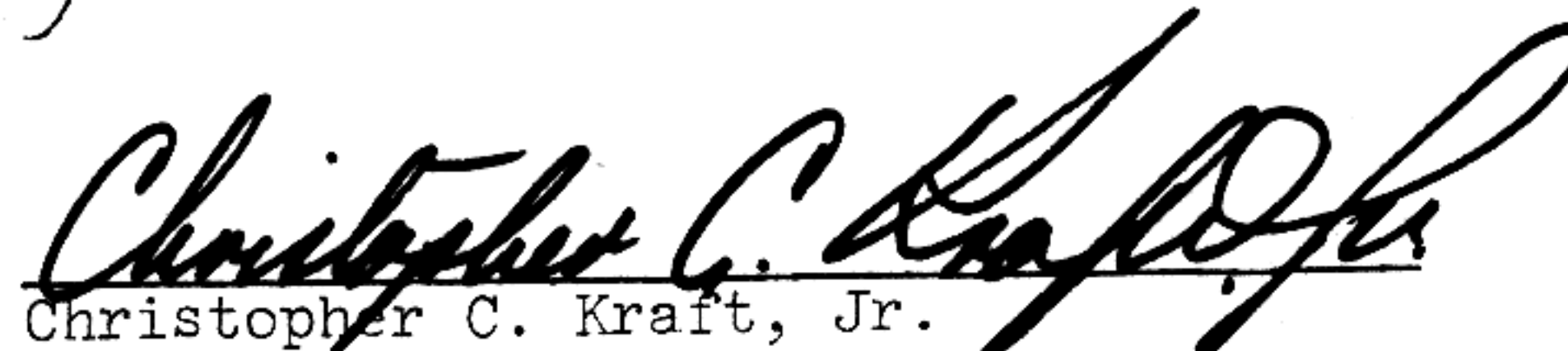


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## INTRODUCTION

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 AS-507/CSM-108/LM-6 operations and crew activities to fulfill, when possible, the test objectives defined in the Mission Requirements, H Type Mission Lunar Landing, Change B dated October 14, 1969.

The trajectory parameters used in this Flight Plan are for November 14, 1969 launch, with 72° launch azimuth and were supplied by Mission Planning and Analysis Division as defined by the Apollo Mission H-1 Spacecraft Operational Trajectory to be published.

The Apollo 12 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 Mission 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. C. L. Stough will act as co-ordinator for all proposed changes to the Apollo 12 Flight Plan.

This Flight Plan is not to be reproduced without the written approval of the Chief, Flight Crew Support Division.

Any requests for additional copies or changes to the distribution lists of this document must be made in writing to Mr. W. J. North, Chief, Flight Crew Support Division, MSC, Houston, Texas.

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Views of the earth shown in the Flight Plan were taken from the document, "Views from the CM and LM during the Flight of Apollo 12 (Mission H-1)."

The CSM and LM attitude information was taken from the document, "Operational Lunar Orbit Attitude Sequence for Apollo 12 (Mission H-1)" to be published.

## ABBREVIATIONS

|            |  |
|------------|--|
| ACCEL      | Accelerometer                                |
| ACN        | Ascension                                    |
| ACT        | Activation                                   |
| ACQ        | Acquisition or Acquire                       |
| AEA        | Abort Electronics Assembly                   |
| AGS        | Abort Guidance Subsystem                     |
| AH         | Ampere Hours                                 |
| ALSCC      | Apollo Lunar Surface Close-up Camera         |
| ALSEP      | Apollo Lunar Surface Experiment Package      |
| ALT        | Altitude                                     |
| AM         | Amplitude Modulation                         |
| AMP or amp | Ampere                                       |
| AMPL       | Amplifier                                    |
| ANG        | Antigua                                      |
| ANT        | Antenna                                      |
| AOH        | Apollo Operations Handbook                   |
| AOS        | Acquisition of Signal or Acquisition of Site |
| AOT        | Alignment Optical Telescope                  |
| APS        | Ascent Propulsion Subsystem                  |
| ARS        | Atmosphere Revitalization System             |
| ASC        | Ascent                                       |
| A/T        | Alignment Technique                          |
| ATT        | Attitude                                     |
| AUX        | Auxiliary                                    |
| AZ         | Azimuth                                      |
|            |  |
| BAT        | Battery                                      |
| BD         | Band   |
| BDA        | Bermuda                                      |
| Bio        | Bio-Medical Data on Voice Downlink           |
| BP         | Barber Pole                                  |
| BRKT       | Bracket                                      |
| BT         | Burn Time                                    |
| BU         | Backup                                       |
| BW         | Black & White (Film 3400)                    |
| BW1        | Black & White (Film 3401)                    |
|            |  |
| CAP COM    | Capsule Communicator                         |
| CAL †      | Calibration Angle                            |
| CAM        | Camera                                       |
| CAN        | CANISTER                                     |
| CB         | Circuit Breaker                              |
| CCIG       | Cold Cathode Ion Gage                        |
| CDH        | Constant Delta Altitude                      |
| CDR        | Commander                                    |
| CDU        | Coupling Data Unit                           |

|        |   |
|--------|---|
| CEX    | Color External Photography              |
| CIN    | Color Internal Photography              |
| CIRC   | Circularization                         |
| CK     | Check                                   |
| C/L    | Centerline or Checklist                 |
| CM     | Command Module                          |
| CMC    | Command Module Computer                 |
| CMD    | Command                                 |
| CMP    | Command Module Pilot                    |
| CNTL   | Control                                 |
| C/O    | Check out                               |
| COAS   | Crew Optical Alignment Sight            |
| COMM   | Communications                          |
| CONFIG | Configuration                           |
| COMP   | Compare                                 |
| CONT   | Continue and Contingency                |
| CP     | Control Point                           |
| CRO    | Carnarvon, Australia                    |
| CRYO   | Cryogenic                               |
| CSC    | Contingency Sample Collection           |
| CSC    | Close-up Stereo Camera                  |
| CSI    | Coelliptic Sequence Initiation          |
| CSM    | Command Service Module                  |
| C&WS   | Caution and Warning System              |
| CWEA   | Caution and Warning Electronic Assembly |
| CYI    | Grand Canary Island                     |

|      |                                 |
|------|---------------------------------|
| DAC  | Data Acquisition Camera         |
| DAP  | Digital Auto Pilot              |
| DB   | Deadband                        |
| DC   | Direct Current                  |
| DCA  | Digital Command Assembly        |
| DEDA | Data Entry and Display Assembly |
| DEGS | Degrees                         |
| DEPL | Depletion                       |
| DES  | Descent                         |
| DET  | Digital Event Timer             |
| DIFF | Difference                      |
| DIR  | Direct                          |
| DK   | Docked                          |
| DO   | Detailed Objective              |
| DOI  | Descent Orbit Insertion         |
| DPS  | Descent Propulsion System       |
| DS   | Documented Sample               |
| DSE  | Data Storage Equipment          |
| DSKY | Display and Keyboard            |
| DTO  | Detailed Test Objective         |
| DUA  | Digital Uplink Assembly         |
| DWN  | Down                            |

|            |  |
|------------|--|
| E          | Erasable or Enter                                |
| ECS        | Environmental Control System                     |
| ED         | Explosive Device                                 |
| EDT        | Eastern Daylight Time                            |
| EFH        | Earth Far Horizon                                |
| EI         | Earth (atmosphere) Interface and Entry Interface |
| EL         | Electric Hasselblad Camera                       |
| ELEV       | Elevation  |
| EMER       | Emergency  |
| EMS        | Entry Monitor System                             |
| EMU        | Extravehicular Mobility Unit                     |
| ENH        | Earth Near Horizon                               |
| EPO        | Earth Parking Orbit                              |
| EPHEM      | EPHEMERIS  |
| EPS        | Electrical Power Subsystem                       |
| EQUIP      | Equipment  |
| EST        | Eastern Standard Time                            |
| ETB        | Equipment Transfer Bag                           |
| EVA        | Extravehicular Activity                          |
| EVAP       | Evaporator                                       |
| EVCS       | Extravehicular Communications System             |
| 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 or fps | Feet per second                                  |
| FT or ft   | Feet   |
| FTO        | Flight Test Objective                            |
| FTP        | Full Throttle Position                           |
| FWD        | Forward  |
|            |  |
| G.A.       | Gas Analysis                                     |
| GA         | Gimbal Angle                                     |
| GBI        | Grand Bahama Islands                             |
| GBM        | Grand Bahama (MSFN)                              |
| 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                                  |

|            |  |
|------------|--|
| H2         | Hydrogen                                 |
| HA         | Apogee Altitude                          |
| HAW        | Hawaii                                   |
| HBR        | High Bit Rate (TLM)                      |
| HD         | Highly Desirable                         |
| HGA        | High Gain Antenna                        |
| HI         | High                                     |
| H2O        | Water                                    |
| HP         | Perigee Altitude                         |
| HSK        | Honeysuckle (Canberra, Australia)        |
| HTC        | Hand Tool Carrier                        |
| HTR        | Heater                                   |
| HTV        | USNS Huntsville                          |
|            |  |
| ICDU       | Inertial Coupling Data Unit              |
| ID         | Identification                           |
| IGA        | Inner Gimbal Angle                       |
| IGN        | Ignition                                 |
| IMU        | Inertial Measurement Unit                |
| IND        | Indicator                                |
| INIT       | Initialization                           |
| INT        | Intervalometer                           |
| IP         | Initial Point                            |
| ISA        | Interim Stowage Assembly                 |
| IU         | Instrumentation Unit                     |
| IVC        | Intervehicular Communications            |
| IVT        | Intravehicular Transfer                  |
|            |  |
| JETT       | Jettison                                 |
|            |  |
| KM         | Kilometer                                |
| kwh        | Kilowatt Hour                            |
|            |  |
| LA         | Launch Azimuth                           |
| LAT        | Latitude                                 |
| LBR        | Low Bit Rate (TLM)                       |
| LBS or lbs | Pounds                                   |
| LCG        | Liquid Cooled Garment                    |
| L/D        | Lift/Drag                                |
| LD         | Lunar Day (TV Lens)                      |
| LDG        | Landing                                  |
| LDMK       | Landmark                                 |
| LEB        | Lower Equipment Bay                      |
| LEC        | Lunar Equipment Conveyor                 |
| LEL        | Lunar Surface Electric Hasselblad Camera |
| 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     |
| LHSSC           | Left Hand Side Storage Container    |
| LiOH            | Lithium Hydroxide                   |
| LLM             | Lunar Landing Mission               |
| LLOS            | Landmark Line of Sight              |
| LM              | Lunar Module                        |
| LMP             | Lunar Module Pilot                  |
| LNH             | Lunar Near Horizon                  |
| L/O             | LIFT OFF                            |
| LOI             | Lunar Orbit Insertion               |
| LONG            | Longitude                           |
| LOS             | Loss of Signal or Loss of Site      |
| LPO             | Lunar Parking Orbit                 |
| LR              | Landing Radar                       |
| LRRR or LR3     | Laser Ranging Retro-Reflector       |
| LS              | Landing Site or Lunar Surface       |
| LSM             | Lunar Surface Magnetometer          |
| LT              | Light                               |
| LTG             | Lighting                            |
| LV              | Launch Vehicle                      |
| L/V             | Local Vertical                      |
| LVPD            | Launch Vehicle Pressure Display     |
|                 |                                     |
| M               | Mandatory                           |
| MAD             | Madrid, Spain                       |
| MAG             | Magazine (Camera)                   |
| MAN             | Manual                              |
| MAX             | Maximum                             |
| MAX Q           | Maximum Dynamic Pressure            |
| MCC             | Midcourse Correction                |
| MCC-H<br>or MCC | Mission Control Center - Houston    |
| MDC             | Main Display Console                |
| MEAS            | Measurement                         |
| MER             | USNS Mercury                        |
| MESA            | Modular Experiment Stowage Assembly |
| MET             | Mission Event Timer                 |
| MGA             | Middle Gimbal Angle                 |
| M/I             | Minimum Impulse                     |
| MIN             | Minimum                             |
| MIR             | Mirror                              |
| MLA             | Merrit Island, Florida              |
| mm              | Millimeter                          |
| MNVR            | Maneuver                            |
| MON             | Monitor                             |
| MPL             | Mid Pacific Landing                 |
| MPS             | Main Propulsion System              |
| MSFN            | Manned Space Flight Network         |
| MTVC            | Manual Thrust Vector Control        |

|        |   |
|--------|---|
| N2     | Nitrogen                                    |
| NAV    | Navigation                                  |
| NM     | Nautical Miles                              |
| NOM    | Nominal                                     |
| NXX    | Noun XX                                     |
|        |   |
| O2     | Oxygen                                      |
| OBS    | Observation                                 |
| O/F    | Oxidizer to Fuel Ratio                      |
| OGA    | Outer Gimbal Angle                          |
| OMNI   | Omnidirectional Antenna                     |
| OPR    | Operate                                     |
| OPS    | Oxygen Purge System                         |
| OPT    | Option                                      |
| ORB    | Orbital                                     |
| ORDEAL | Orbit Rate Display Earth and Lunar          |
| ORIENT | Orientation                                 |
| OVBD   | Overboard                                   |
| OVHD   | Overhead                                    |
|        |   |
| P      | Pitch or Program                            |
| PAD    | Voice Update                                |
| PCM    | Pulse Code Modulation                       |
| PC     | Plane Change or Chamber Pressure            |
| PDI    | Powered Descent Initiation                  |
| PER    | Pericynthian                                |
| PGA    | Pressure Garment Assembly                   |
| PGNS   | Primary Guidance Navigation Control Section |
| PHOTO  | PHOTOGRAPH                                  |
| PIPA   | Pulse Integrating Pendulous Accelerometer   |
| PKG    | Package                                     |
| PLSS   | Portable Life Support Systems               |
| PM     | Phase Modulated                             |
| POL    | Polarity or Polarizing                      |
| PRE    | Pretoria, South Africa                      |
| PREF   | Preferred                                   |
| PREP   | Preparation                                 |
| PRESS  | Pressure                                    |
| PRIM   | Primary                                     |
| PRN    | Pseudo Random Noise                         |
| PROP   | Proportional                                |
| PRPLNT | Propellant                                  |
| PSE    | Passive Seismic Experiment                  |
| PSIA   | Pounds per Square Inch Absolute             |
| PSID   | Pounds per Square Inch Differential         |
| PSIG   | Pounds per Square Inch Gage                 |
| PT     | Point                                       |
| PTC    | Passive Thermal Control                     |
| PU     | Propellant Utilization                      |
| PUGS   | Propellant Utilization and Gaging System    |
| PWR    | Power                                       |
| PXX    | Program XX                                  |
| PYRO   | Pyrotechnic                                 |



| Qty<br>QUAD | Quantity<br>Quadrant                  |
|-------------|---------------------------------------|
| R           | Roll or Range                         |
| R&B         | Red & Blue                            |
| RAD         | Radiator, or Radial, or Radiation     |
| RCDR        | Recorder                              |
| RCS         | Reaction Control System               |
| RCU         | Remote Control Unit                   |
| RCV         | Receiver                              |
| REACQ       | Reacquire                             |
| RED         | USNS Redstone                         |
| REFSMMAT    | Reference Stable Member Matrix        |
| REG         | Regulator                             |
| REQD        | Required                              |
| REV         | Revolution                            |
| RH          | Right-hand                            |
| RING        | Ringsite                              |
| RLS         | Radius of Landing Site                |
| RNDZ        | Rendezvous                            |
| RNG         | Range/Ranging                         |
| RR          | Rendezvous Radar                      |
| RSI         | Roll Stability Indicator              |
| RT          | Real Time                             |
| RTC         | Real Time Command                     |
| RTG         | Radioisotope Thermoelectric Generator |
| RXX         | Routine XX                            |
| 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                  |
| SECS        | Sequential Events Control System      |
| SEL         | Select                                |
| SEP         | Separate                              |
| SEQ         | Sequence                              |
| SIDE        | Suprathermal Ion Detector Experiment  |
| S-IVB       | Saturn IV B(Third Stage)              |
| SLA         | Service Module LM Adapter             |
| SLOS        | Star Line-of-Sight                    |
| SM          | Service Module                        |
| SPOT        | Spot Meter                            |
| SPS         | Service Propulsion System             |
| SR          | Sunrise                               |
| SRC         | Sample Return Container               |
| SRX         | S-Band Receiver Mode No. X            |

|           |                                     |
|-----------|-------------------------------------|
| SS        | Sunset                              |
| STX       | S-Band Transmit Mode No. X          |
| S.V.      | State Vector                        |
| Sw        | Switch                              |
| SWC       | Solar Wind Composition              |
| SWE       | Solar Wind Experiment               |
| SXT       | Sextant                             |
| SYS       | System                              |
|           |                                     |
| T EPHEM   | Time of Ephemeris Update            |
| TA        | Trunnion Angle                      |
| TAN       | Tananarive, Madagascar              |
| TB        | Time Base                           |
| TCA       | Time of Closest Approach            |
| TD        | Touchdown                           |
| TD&E      | Transposition Docking & LM Ejection |
| TEC       | Trans Earth Coast                   |
| TECH      | Technique                           |
| TEI       | Tranearth Insertion                 |
| TEMP      | Temperature                         |
| TERM      | Terminate                           |
| TEX       | Corpus Christi, Texas               |
| TGT       | Target                              |
| TIG       | Time of Ignition                    |
| TLC       | Trans Lunar Coast                   |
| TLI       | Translunar Insertion                |
| TLM or TM | Telemetry                           |
| TPF       | Terminal Phase Final                |
| TPI       | Terminal Phase Initiation           |
| TPM       | Terminal Phase Midcourse            |
| T/R       | Transmitter/Receiver                |
| TRANS     | Translation                         |
| TRN       | Trunion                             |
| TV        | Television                          |
| TVC       | Thrust Vector Control               |
| TWR       | Tower                               |
|           |                                     |
| ULL       | Ullage                              |
| UMB       | Umbilical                           |
| UNDK      | Undock                              |
| US        | United States                       |
|           |                                     |
| V         | Velocity                            |
| VR        | Resultant Velocity                  |
| VX        | Velocity along the X-axis           |
| VY        | Velocity along the Y-axis           |
| VZ        | Velocity along the Z-axis           |

|             |                                   |
|-------------|-----------------------------------|
| VAN         | USNS Vanguard                     |
| VHF         | Very High Frequency               |
| VLV         | Valve                             |
| VOX         | Voice Keying                      |
| VXX         | Verb XX                           |
| W/O         | Without                           |
| WRT         | With Respect to                   |
| WTN         | USNS Watertown                    |
| X           | Time of Closest Approach (Symbol) |
| X-DOT       | Rate of Change along the X axis   |
| XFER        | Transfer                          |
| XMIT        | Transmit or Transmitter           |
| XPONDER     | Transponder                       |
| Y           | Yaw                               |
| YDOT        | Rate of Change along the Y axis   |
| ZDOT        | Rate of Change along the Z axis   |
| $\Delta$ Az | Azimuth Change (Difference)       |
| $\Delta$ H  | Altitude Change (Difference)      |
| $\Delta$ P  | Pressure Change (Difference)      |
| $\Delta$ R  | Position Change (Difference)      |
| $\Delta$ V  | Velocity Change (Difference)      |
| $\Delta$ VC | Velocity Change at Engine Cutoff  |

## Photographic Nomenclature

AAA/BBB/CCC/DDD - EEE, EEE, (GGG, HHH, III) JJJ

AAA - Location from which photography is to be accomplished

BBB - Camera

CCC - Lens

DDD - Film Type

EEE - Photography aids (i.e., brackets, intervalometer,  
Mirror etc.)

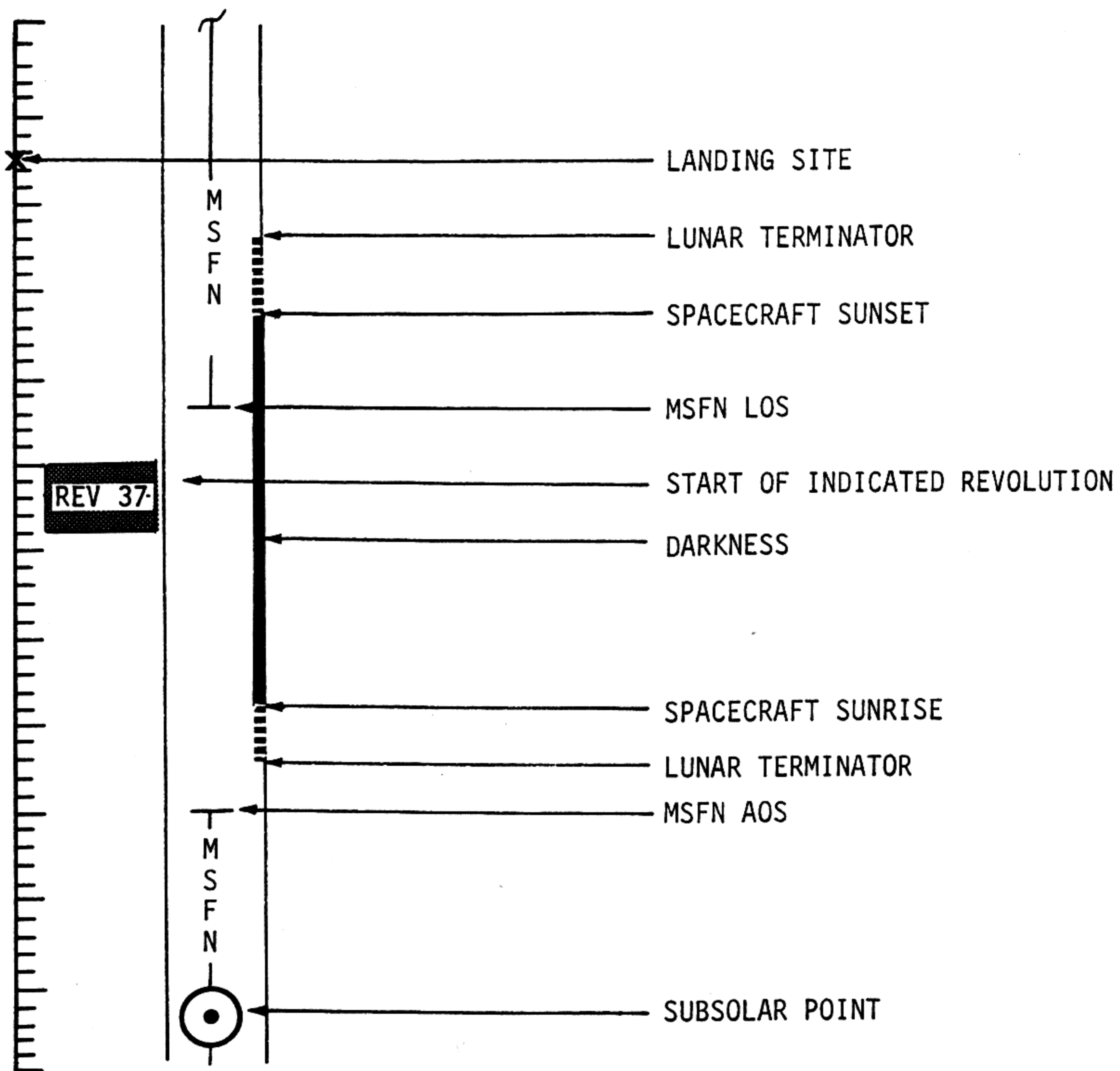
GGG - Lens Aperture Setting

HHH - Shutter Speed

III - Focus distance in feet

JJJ - Number of frames for EL & LEL cameras  
Frame Rate  
Magazine percent  
T Time (minutes)  
Operating time (minutes) for TV

# SYMBOL NOMENCLATURE



SECTION I - GENERAL

## FLIGHT PLAN NOTES

### A. Crew

1. Crew designations are as follows:

| <u>Designation</u>         | <u>Prime</u> | <u>Backup</u> |
|----------------------------|--------------|---------------|
| Commander (CDR)            | Conrad       | Scott         |
| Command Module Pilot (CMP) | Gordon       | Worden        |
| Lunar Module Pilot (LMP)   | Bean         | Irwin         |

2. The nominal CM couch positions are:

| <u>Activity</u> | <u>Left</u> | <u>Center</u> | <u>Right</u> |
|-----------------|-------------|---------------|--------------|
| Launch thru TLI | CDR         | CMP           | LMP          |
| T&D thru Entry  | CMP         | CDR           | LMP          |

3. The PGA's will be worn as follows:

| ACTIVITY                      | PRESSURIZED<br>HARD SUIT   | SUITED<br>(SOFT SUIT) | PARTIAL SUIT<br>W/O HELMET & GLOVES | SHIRT<br>SLEEVES |
|-------------------------------|--|-----------------------|-------------------------------------|------------------|
| LAUNCH                        |  | ALL                   |                                     |                  |
| EARTH ORBIT                   |  |                       | ALL                                 |                  |
| TLI THROUGH<br>SLINGSHOT MNVR |  |                       | ALL                                 |                  |
| TLC & TEC                     |  |                       |                                     | ALL              |
| LM ACTIVATION                 |  |                       | ALL                                 |                  |
| UNDOCKING                     |  | CDR & LMP             | CMP                                 |                  |
| SEPARATION                    |  |                       | ALL                                 |                  |
| PDI & TD                      |  | CDR & LMP             | CMP                                 |                  |
| LUNAR STAY<br>EXCEPT EVA      | VARIES ACCORDING TO CHECKLIST FOR CDR & LMP.<br>CMP WILL BE PARTIALLY SUITED W/O HELMET & GLOVES |                       |                                     |                  |
| SURFACE EVA                   | CDR & LMP  |                       | CMP                                 |                  |
| LIFTOFF<br>THRU DOCKING       |  | CDR & LMP             | CMP                                 |                  |
| POST JETTISON<br>THRU TEI     |  |                       |                                     | ALL              |
| ENTRY                         |  |                       |                                     | ALL              |

4. Crew status reports will be voiced to MCC-H before and after crew sleep periods. After waking the crew will report sleep obtained and radiation doses received during the last 24 hours and before going to sleep the crew will report medication used and any other pertinent information on activities performed.

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

All onboard gauge readings will be read directly from the  
6. gauges with no calibration bias applied.

## B. CSM Systems

### 1. Communications

- (a) The preferred S-Band communication modes are:
  - (1) Uplink Mode 6 (Voice, PRN, and Udata)
  - (2) Downlink Mode 2 (Voice, PRN, TLM-HBR)
- (b) OMNI B and VHF LEFT will be selected for liftoff. OMNI D will be selected by the crew during boost if the launch azimuth is less than  $96^\circ$  or OMNI C if the launch azimuth is greater than  $96^\circ$ . OMNI D will probably be the best antenna for earth orbit.
- (c) VHF Duplex B will be used for launch, and Simplex A for earth orbit operations.
- (d) During TLC and TEC, OMNI antennas will nominally be used. The CSM X-axis will be pitched up  $90^\circ$  (North) for TLC and pitched down  $90^\circ$  (South) for TEC with the Y-Z axes in the plane of the ecliptic. These attitudes permit high gain antenna coverage and simultaneous viewing of the earth and moon through side windows for TV coverage.
- (e) The CSM communications with the LM while the LM is on the lunar surface is via MSFN relay.
- (f) Table 1-1 is a summary of the MSFN coverage available for the CSM.
- (g) Table 1-2 contains a summary of the scheduled CSM TV transmissions.
- (h) During PTC the OMNI antennas will be switched via ground command. During periods of attitude control other than PTC the crew will manage antenna operations.
- (i) The CSM will be configured to relay LM communications prior to undocking.

### 2. DSE

- (a) The DSE will be normally operated via ground command except for special cases where the operation is time limited. In these cases the crew may be asked to rewind the tape.



- (b) During the earth orbit phase, the CSM LBR data will be recorded when the CSM is not within MSFN coverage. The DSE will be dumped during the pass over the US and over CRO prior to TLI if possible.
  - (c) During lunar orbit phase, the CSM LBR data will be recorded when the CSM is not within MSFN coverage. The DSE will normally be dumped at AOS.
  - (d) CSM LBR data will be recorded during all P22 landmark tracking and dumped at completion of tracking.
  - (e) CSM HBR and voice will be recorded during all CSM engine burns when MSFN coverage is not available.
  - (f) All Entry data will be recorded in HBR during the blackout.
3. Electrical Power
- (a) The CSM will normally remain powered up throughout the mission.
  - (b) Table 1-3 lists the Fuel Cell Purges and waste water dumps.
  - (c) Based on cryo purity and performance, fuel cell O<sub>2</sub> purges will be stretched to a maximum of 24 hours to coincide with water dump times. The O<sub>2</sub> purge at 11 hours will allow a judgment to be made on the defined purge schedule.
  - (d) The cryogenic heaters will be in AUTO during the mission and the fans will be operated manually. The O<sub>2</sub> & H<sub>2</sub> fans will be cycled for one minute before and after each sleep cycle and before each SPS burn. The O<sub>2</sub> & H<sub>2</sub> fans will also be cycled prior to CSM LM Ejection.
  - (e) Table 1-9 contains the battery charge schedule.

4. ECS and Water Management

- (a) Potable water will be chlorinated once a day after eat period prior to each sleep period.
- (b) Waste Water dumps and fuel cell purge criteria:
  - 1. During TLC and TEC water dumps and fuel cell purges will be scheduled after the sextant star check and prior to each midcourse maneuver.
  - 2. Waste water dumps and fuel cell purges will not be scheduled during the following periods:
    - a. Between MCC-3 and LOI-1 plus two hours.
    - b. Within three revolutions of pre-DOI undocking.
    - c. Between TEI and sextant star check prior to MCC-5.
    - d. Within one hour prior to optical navigation sightings.
    - e. Between MCC-6 and EI.
  - 3. During lunar orbit waste water dumps and fuel cell purges should be scheduled as close to the LOS midpoint as possible.
  - 4. All waste water dumps will be manual.
- (c) Only one CO<sub>2</sub> absorber filter (LIOH canister) is changed at a time. Table 1-4 list the LIOH canister change schedule. There are 20 filters onboard with 18 stowed at launch.
- (d) At lift-off the cabin will contain 60% O<sub>2</sub> and 40% N<sub>2</sub>. The CM will be purged after launch. The purge is terminated prior to LM pressurization after TLI. After the LM is configured for ejection, it will be isolated and the CM will be purged for eight more hours.

5. Guidance and Navigation

- (a) During lunar orbit, the CSM and LM will utilize the same landing site and lift-off REFSMMATS such that the gimbal angles would be 0,0,0 with the LM sitting face forward on the landing site and the CSM over the landing site pitched up 90° from local horizontal "heads up."

- (b) The CSM tracking light will be on continuously from the undocking to landing and from LM lift-off to docking.
- (c) After each landmark tracking period, the CSM will reacquire MSFN so that N49 ( $\Delta R, \Delta V$ ) is displayed on TLM for data retrieval.
- (d) The time tags on maneuvers in Section 3 indicate the completion time of the maneuver unless otherwise stated. All maneuver angles are the FDAI angles after the completed maneuver.
- (e) CSM/LM and CSM attitude maneuvers will normally be at a rate of  $0.2^\circ/\text{sec}$  or  $0.5^\circ/\text{sec}$  unless other rates are required.
- (f) Undocking will be done radially using the soft-undocking procedure. The probe will be extended its full length with the lm held on by the capture latches. When the rates are nulled, the CSM will then release the LM.

#### 6. Propulsion Systems

- (a) The SPS engine will be used to "back-up" all LM rendezvous burns except CDH to conserve SM RCS. The nominal CDH burn magnitude is small thus it is backed up by the SM RCS. The SPS gimbal motors will not be turned on during the back-up maneuver preparation.
- (b) The SPS will always be started using a single bank, however, the other bank will be opened 2 to 5 seconds after ignition for burns longer than 6 seconds. Bank A will be used for the first engine ignition.
- (c) Table 1-5 lists the CSM propulsion burns.

## C. LM Systems

### 1. Communications

- (a) The preferred S-Band communications are:
  - (1) Uplink Mode 7 (Voice, Updata)
  - (2) Downlink Mode 1 (Voice, TLM-HBR)
- (b) The LM voice recorder will be used to record LM voice during undocked operations. Table 1-8 is a schedule of LM voice recorder usage.
- (c) Figure 1-1 shows the communications mode for the first part of the EVA (CDR EVA only) and the one man contingency EVA. Figure 1-2 shows the nominal two-man EVA comm configuration.

### 2. ECS

- (a) The LM will contain ambient air at lift-off. During launch the pressure will bleed to zero. CSM 02 will be used to pressurize the LM after T&D. After T&D, the LM will be isolated and allowed to bleed down via leakage. For each entry into the LM before undocking the CSM 02 will be used to equalize LM pressure. After each entry, the LM will be isolated and allowed to leak down. This procedure insures a pure oxygen environment in the LM at the first EVA.
- (b) There are a total of six LM repressurizations, three docked and three on the lunar surface.

### 3. Guidance Systems

- (a) The LGC and CMC will use the same landing site and lift-off REFSMMATS.
- (b) The AGS will be placed in standby after the "GO" is given for lunar stay.
- (c) The RR and IMU will be powered down and the LGC placed in standby after TD plus two hours until lift-off preparation.
- (d) The rendezvous radar will be pointed away from the sun and will be turned off when no functional use is required to prevent overheating of the antenna. The LM tracking light will be on continuously between separation and touchdown and between launch and docking.

#### 4. Propulsion Systems

(a) The APS/RCS interconnect will be used during the lunar lift-off and ascent only.

(b) Table 1-6 lists the LM propulsion burns.

#### D. Procedures

##### 1. CSM

Crew procedures called out in the flight plan may be found in the following documents:

- (a) Apollo Operations Handbook - CSM-108 (AOH), Volume 2
- (b) Crew Checklists
- (c) CSM Rendezvous Procedures
- (d) Launch Abort Procedure
- (e) Reentry Procedures
- (f) Photographic Operations Plan
- (g) Lunar Landmark Tracking Attitude Studies
- (h) Lunar Orbit Attitude Sequence for Mission H

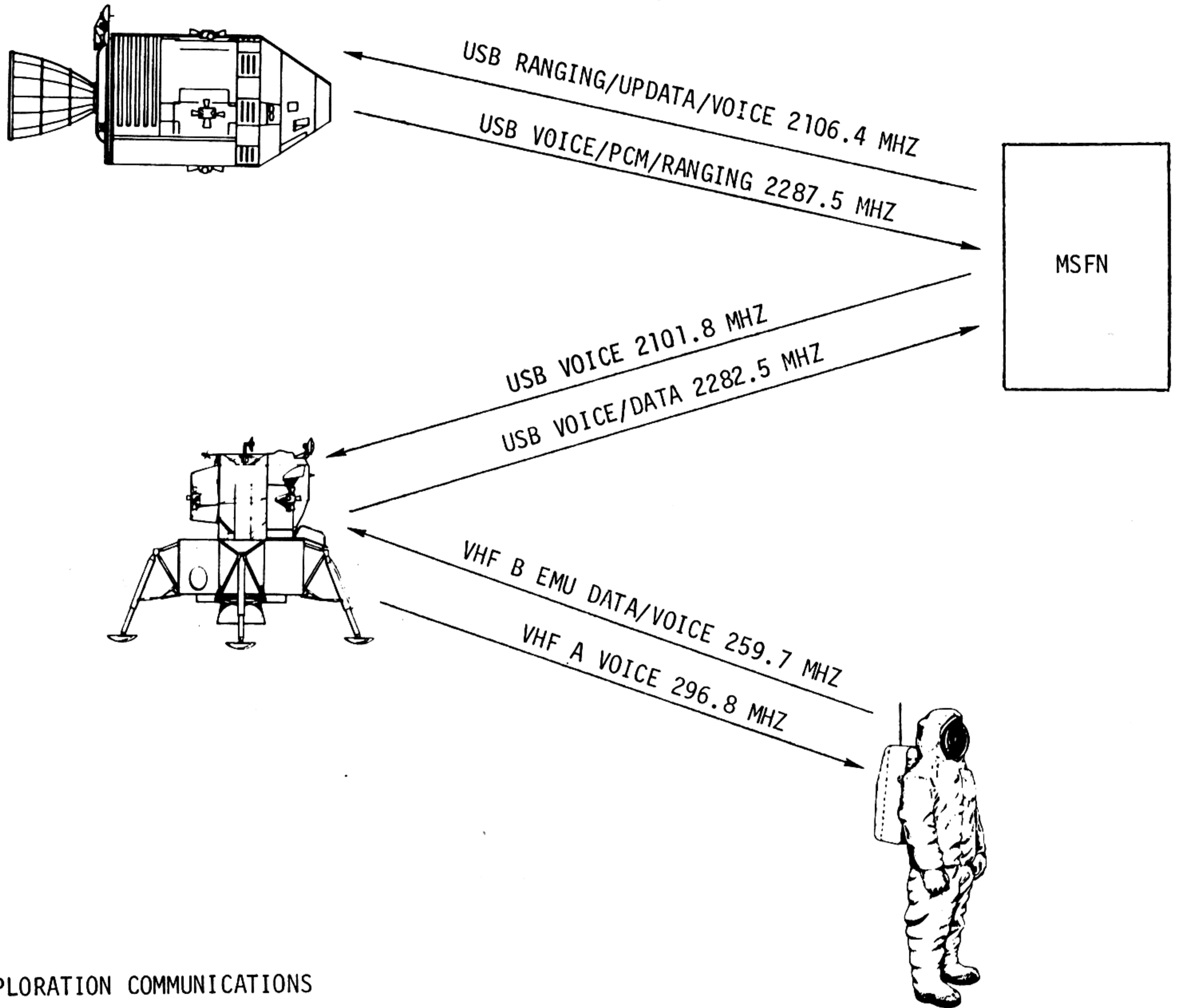
##### 2. LM

Crew procedures called out in the flight plan may be found in the following documents:

- (a) Apollo Operations Handbook LM-6 Volume 2
- (b) Crew Checklists
- (c) LM Rendezvous Procedures
- (d) LM Descent/Ascent Procedures
- (e) Photographic Operations Plan
- (f) Orbital EVA Procedures
- (g) Lunar Surface Procedures

#### E. Summary

- 1. Table 1-7 contains a summary of the expected block data update times.
- 2. Table 1-10 the landmark tracking sites.
- 3. Table 1-11 is the mission activity summary.

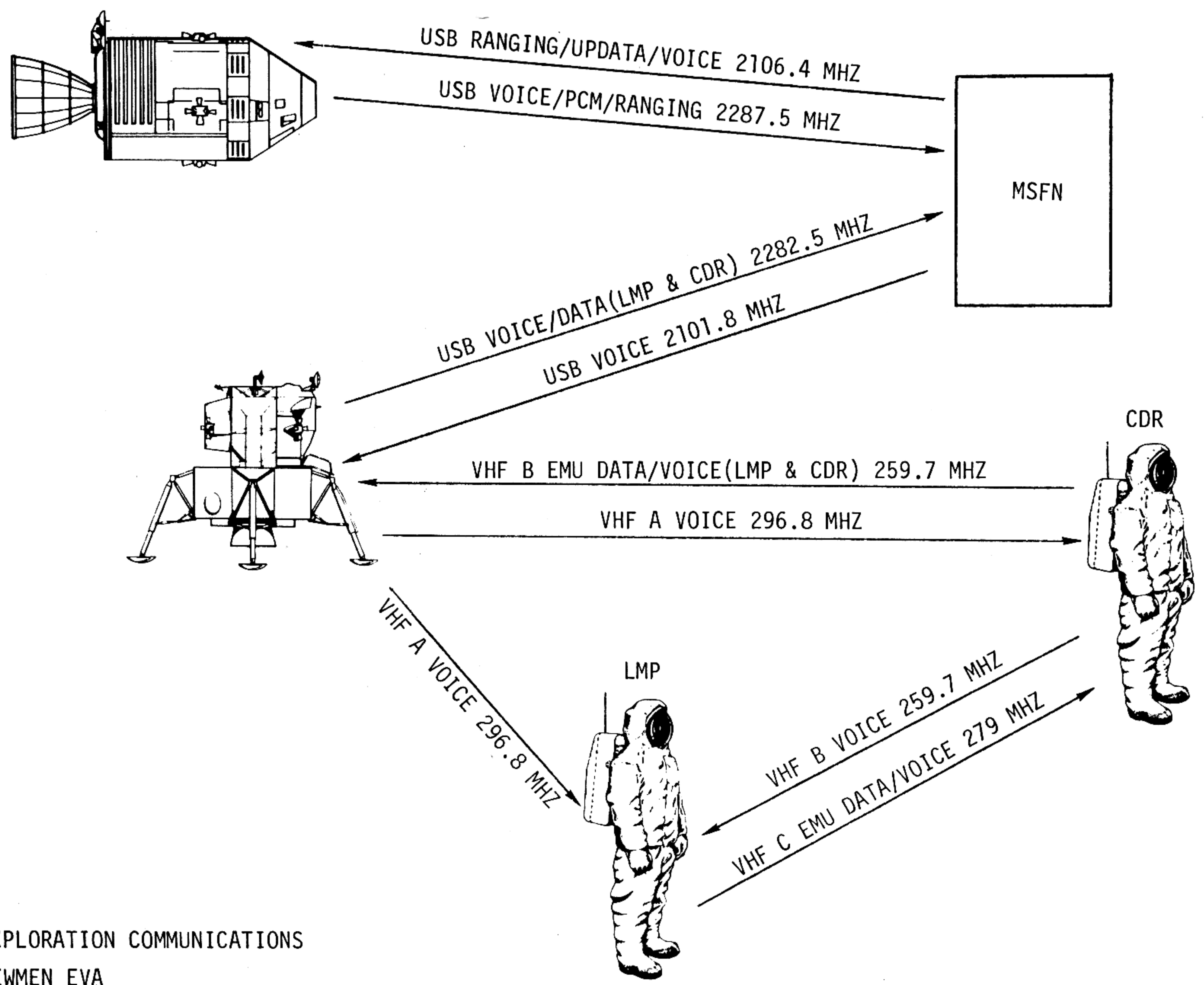


1-8

LUNAR EXPLORATION COMMUNICATIONS  
 ONE CREWMAN EVA  
 PRIMARY MODE

Figure 1-1

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LUNAR EXPLORATION COMMUNICATIONS  
BOTH CREWMEN EVA  
EVCS DUAL MODE (RELAY)

Figure 1-2



TABLE 1-1  
S/C COVERAGE BY MSFN STATIONS USING 85-FT/210-FT DISH/ANTENNA

|                  | *GOLDSTONE (GDS) |           | *PARKS    |           | HONEYSUCKLE (HSK) |           | MADRID (MAD) |           |
|------------------|------------------|-----------|-----------|-----------|-------------------|-----------|--------------|-----------|
|                  | AOS              | LOS       | AOS       | LOS       | AOS               | LOS       | AOS          | LOS       |
| EARTH ORBIT      |                  |           |           |           | 0:59:38           | 1:05:41   |              |           |
| TRANSLUNAR COAST | 1:29:04          | 1:33:44   |           |           |                   |           |              |           |
|                  | 2:55:31          | 16:00:18  |           |           |                   |           | 3:17:35      | 8:00:23   |
|                  |                  |           | 13:10:32  | 19:53:11  | 10:37:17          | 22:22:52  |              |           |
|                  |                  |           |           |           |                   |           | 20:52:49     | 32:45:16  |
|                  | 28:04:35         | 40:20:40  |           |           |                   |           |              |           |
|                  |                  |           | 37:18:16  | 44:31:12  | 34:49:51          | 46:55:10  |              |           |
|                  |                  |           |           |           |                   |           | 45:21:13     | 56:51:14  |
|                  | 52:54:28         | 64:25:17  |           |           |                   |           |              |           |
|                  |                  |           | 61:33:52  | 68:45:47  | 58:52:27          | 71:09:03  |              |           |
|                  |                  |           |           |           |                   |           | 69:33:52     | 80:48:59  |
|                  |                  |           |           |           |                   |           |              |           |
|                  |                  |           |           |           |                   |           |              |           |
|                  |                  |           |           |           |                   |           |              |           |
|                  |                  |           |           |           | 82:47:21          | 83:11:45  |              |           |
|                  |                  |           |           |           |                   |           | 172:34:25    | 180:44:07 |
| TRANSEARTH COAST | 174:41:50        | 188:06:30 |           |           |                   |           |              |           |
|                  |                  |           | 185:25:52 | 190:05:03 | 182:33:22         | 192:51:23 |              |           |
|                  |                  |           |           |           |                   |           | 191:06:11    | 204:50:33 |
|                  | 198:49:51        | 210:16:42 |           |           |                   |           |              |           |
|                  |                  |           | 209:38:10 | 214:16:05 | 206:44:24         | 217:04:01 |              |           |
|                  |                  |           |           |           |                   |           | 215:23:10    | 229:12:33 |
|                  | 223:13:44        | 236:55:11 |           |           |                   |           |              |           |
|                  |                  |           | 234:28:27 | 239:05:44 | 231:22:48         | 244:17:39 |              |           |
|                  |                  |           |           |           |                   |           | 242:02:02    | 242:37:25 |
|                  |                  |           |           |           |                   |           |              |           |

1-10

\*210 FT DISH ANTENNAS

TABLE 1-1 (Cont'd.)  
S/C COVERAGE BY MSFN STATIONS USING 85-FT/210-FT DISH/ANTENNA

| REV. | * GOLDSTONE<br>(GDS) |           | * PARKS<br>AUSTRALIA |           | HONEY SUCKLE<br>(HSK) |           | MADRID<br>(MAD) |           |
|------|----------------------|-----------|----------------------|-----------|-----------------------|-----------|-----------------|-----------|
|      | AOS                  | LOS       | AOS                  | LOS       | AOS                   | LOS       | AOS             | LOS       |
| 1    | 83:44:40             | 85:09:07  |                      |           | 83:44:12              | 85:08:41  |                 |           |
| 2    | 85:52:51             | 87:17:18  | 85:52:27             | 87:16:50  | 85:52:25              | 87:16:50  |                 |           |
| 3    | 88:01:53             | 88:32:43  | 88:01:27             | 89:13:03  | 88:01:26              | 89:13:02  |                 |           |
| 4    |                      |           | 89:59:37             | 91:11:32  | 89:59:35              | 91:11:31  |                 |           |
| 5    |                      |           | 91:58:10             | 93:00:56  | 91:58:09              | 93:09:52  |                 |           |
| 6    |                      |           |                      |           | 93:56:27              | 95:08:05  | 93:56:11        | 95:07:57  |
| 7    |                      |           |                      |           |                       |           | 95:54:34        | 97:06:20  |
| 8    |                      |           |                      |           |                       |           | 97:52:53        | 99:04:36  |
| 9    |                      |           |                      |           |                       |           | 99:51:15        | 101:03:15 |
| 10   | 101:49:19            | 103:00:58 |                      |           |                       |           | 101:49:39       | 103:01:22 |
| 11   | 103:47:32            | 104:59:35 |                      |           |                       |           | 103:47:51       | 104:59:52 |
| 12   | 105:46:01            | 106:57:41 |                      |           |                       |           |                 |           |
| 13   | 107:44:13            | 108:56:00 |                      |           | 107:47:55             | 108:55:34 |                 |           |
| 14   | 109:42:36            | 110:54:40 | 110:25:53            | 110:53:56 | 109:42:13             | 110:53:59 |                 |           |
| 15   | 111:41:04            | 112:52:42 | 111:40:30            | 112:52:12 | 111:40:29             | 112:52:13 |                 |           |
| 16   |                      |           | 113:38:53            | 114:50:51 | 113:38:53             | 114:50:51 |                 |           |
| 17   |                      |           | 115:37:21            | 116:48:58 | 115:37:20             | 116:48:58 |                 |           |
| 18   |                      |           |                      |           | 117:35:31             | 118:47:26 | 118:10:02       | 118:47:22 |
| 19   |                      |           |                      |           | 119:34:02             | 119:50:32 | 119:33:46       | 120:45:25 |
| 20   |                      |           |                      |           |                       |           | 121:32:02       | 122:43:58 |
| 21   |                      |           |                      |           |                       |           | 123:30:35       | 124:42:11 |
| 22   | 125:49:57            | 126:40:20 |                      |           |                       |           | 125:28:42       | 126:40:38 |
| 23   | 127:26:58            | 128:38:34 |                      |           |                       |           | 127:27:21       | 128:38:56 |
| 24   | 129:25:09            | 130:36:58 |                      |           |                       |           | 129:25:34       | 130:37:14 |
|      |                      |           |                      |           |                       |           |                 |           |
|      |                      |           |                      |           |                       |           |                 |           |
|      |                      |           |                      |           |                       |           |                 |           |
|      |                      |           |                      |           |                       |           |                 |           |

1-11

\*210 FT DISH ANTENNAS

TABLE 1-1 (Cont'd.)  
S/C COVERAGE BY MSFN STATIONS USING 85-FT/210-FT DISH/ANTENNA

| REV | * GOLDSTONE (GDS) |           | * PARKS AUSTRALIA |           | HONEYSUCKLE (HSK) |           | MADRID (MAD) |           |
|-----|-------------------|-----------|-------------------|-----------|-------------------|-----------|--------------|-----------|
|     | AOS               | LOS       | AOS               | LOS       | AOS               | LOS       | AOS          | LOS       |
| 25  | 131:23:41         | 132:35:24 |                   |           |                   |           |              |           |
| 26  | 133:22:01         | 134:33:39 |                   |           | 133:21:30         | 134:33:13 |              |           |
| 27  | 135:20:22         | 136:32:13 | 135:34:08         | 136:31:31 | 135:19:55         | 136:31:33 |              |           |
| 28  | 137:18:48         | 138:30:18 | 137:18:15         | 138:29:54 | 137:18:15         | 138:29:54 |              |           |
| 29  |                   |           | 139:16:36         | 140:28:29 | 139:16:37         | 140:28:30 |              |           |
| 30  |                   |           | 141:15:05         | 141:42:56 | 141:15:04         | 142:26:37 |              |           |
| 31  |                   |           |                   |           | 143:13:18         | 144:17:27 | 143:13:06    | 144:24:59 |
| 32  |                   |           |                   |           |                   |           | 145:11:30    | 146:23:07 |
| 33  |                   |           |                   |           |                   |           | 147:09:41    | 148:21:32 |
| 34  | 150:17:19         | 150:19:32 |                   |           |                   |           | 149:08:13    | 150:19:44 |
| 35  | 151:06:00         | 152:17:51 |                   |           |                   |           | 151:06:26    | 152:18:08 |
| 36  | 153:04:30         | 154:15:59 |                   |           |                   |           | 153:04:50    | 154:16:26 |
| 37  | 155:02:40         | 156:14:23 |                   |           |                   |           | 155:03:05    | 156:04:42 |
| 38  | 157:01:05         | 158:12:44 |                   |           | 157:59:50         | 158:12:14 |              |           |
| 39  | 158:59:19         | 159:01:46 |                   |           | 158:58:47         | 159:01:46 |              |           |
| 40  | 159:02:04         | 160:10:45 |                   |           | 159:02:04         | 160:10:17 |              |           |
| 41  | 160:57:35         | 162:09:02 | 160:57:07         | 162:08:27 | 160:57:07         | 162:08:26 |              |           |
| 42  | 162:55:46         | 163:47:51 | 162:55:13         | 164:06:42 | 162:55:14         | 164:06:43 |              |           |
| 43  |                   |           | 164:53:30         | 165:58:52 | 164:53:29         | 166:04:52 |              |           |
| 44  |                   |           |                   |           | 166:51:42         | 168:03:04 | 166:56:03    | 168:02:52 |
| 45  |                   |           |                   |           |                   |           | 168:49:36    | 170:00:54 |
| 46  |                   |           |                   |           |                   |           | 170:47:39    | 171:03:59 |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |
|     |                   |           |                   |           |                   |           |              |           |

1-12

\*21 DISH ANTENNAS

TABLE 1 - 2

## APOLLO 12 TV SCHEDULE

| DAY       | DATE    | CST      | GET    | DURATION    | ACTIVITY/SUBJECT             | VEH | STA       |
|-----------|---------|----------|--------|-------------|------------------------------|-----|-----------|
| FRIDAY    | NOV. 14 | 1:50 PM  | 03:28  | 1 HR 02 MIN | TRANSPOSITION & DOCKING      | CSM | GDS       |
| SATURDAY  | NOV. 15 | 4:47 PM  | 30:25  | 35 MIN      | SPACECRAFT INTERIOR          | CSM | GDS       |
| MONDAY    | NOV. 17 | 1:52 AM  | 63:30  | 50 MIN      | INTERIOR & IVT TRANSFER      | CSM | GDS       |
| MONDAY    | NOV. 17 | 7:52 PM  | 81:30  | 20 MIN      | PRE LOI 1                    | CSM | GDS       |
| MONDAY    | NOV. 17 | 10:22 PM | 84:00  | 30 MIN      | PRE LOI 2                    | CSM | GDS       |
| TUESDAY   | NOV. 18 | 10:12 PM | 107:50 | 40 MIN      | UNDOCKING & FORMATION FLYING | CSM | GDS       |
| WEDNESDAY | NOV. 19 | 5:02 AM  | 114:40 | 3 HR 25 MIN | LUNAR SURFACE ACTIVITIES     | LM  | PARKS/HSK |
| WEDNESDAY | NOV. 19 | 11:32 PM | 133:10 | 6 HR 05 MIN | LUNAR SURFACE ACTIVITIES     | LM  | GDS       |
| THURSDAY  | NOV. 20 | 11:37 AM | 145:15 | 30 MIN      | DOCKING                      | CSM | MAD       |
| FRIDAY    | NOV. 21 | 3:17 PM  | 172:55 | 20 MIN      | POST TEI - LUNAR SURFACE     | CSM | MAD       |
| SUNDAY    | NOV. 23 | 5:37 PM  | 223:15 | 30 MIN      | EARTH & INTERIOR             | CSM | GDS       |

TABLE 1-3  
FUEL CELL PURGE AND WATER DUMP SCHEDULE

| <u>GET</u> | <u>O<sub>2</sub> FUEL CELL PURGE<br/>AND WATER DUMP</u> |              | <u>H<sub>2</sub> FUEL CELL PURGE</u> |              | <u>REMARKS</u>              |
|------------|---|--------------|--------------------------------------|--------------|-----------------------------|
|            | <u>NUMBER</u>   | <u>ΔTIME</u> | <u>NUMBER</u>                        | <u>ΔTIME</u> |                             |
|            |   | 11:30        |                                      |              |                             |
| 11:30      | 1   |              |                                      | 41:10        | MCC 1                       |
|            |   | 19:00        |                                      |              |                             |
| 30:30      | 2   |              |                                      |              | MCC 2                       |
|            |   | 10:10        |                                      |              |                             |
| 41:10      | 3   | —————1       |                                      |              | Presleep                    |
|            |   | 19:50        |                                      |              |                             |
| 61:00      | 4   |              |                                      | 44:20        | MCC 3                       |
|            |   | 24:30        |                                      |              |                             |
| 85:30      | 5   | —————2       |                                      |              | LOI <sub>1</sub> + 2 hrs    |
|            |   | 16:00        |                                      |              |                             |
| 101:30     | 6   |              |                                      |              | LOS Midpoint/<br>Post Sleep |
|            |   | 19:22        |                                      |              |                             |
| 120:52     | 7   |              |                                      | 55:30        | LOS Midpoint/<br>Presleep   |
|            |   | 20:08        |                                      |              |                             |
| 141:00     | 8   | —————3       |                                      |              | LOS Midpoint                |
|            |   | 23:15        |                                      |              |                             |
| 164:15     | 9   |              |                                      | 46:00        | LOS Midpoint                |
|            |   | 22:45        |                                      |              |                             |
| 187:00     | 10  | —————4       |                                      |              | MCC 5                       |
|            |   | 21:00        |                                      | 35:00        |                             |
| 208:00     | 11  |              |                                      |              | Post Sleep                  |
|            |   | 14:00        |                                      |              |                             |
| 222:00     | 12  | —————5       |                                      |              | MCC 6                       |

LiOH CANISTER CHANGE SCHEDULE

TABLE 1-4

| CHG. NO. | APPROX. GET HRS | APPROX. ΔT HRS  | INSTALL |          | REMOVE & STOW |                  |
|----------|-----------------|---|---------|----------|---------------|------------------|
|          |                 |   | CAN NO. | POSITION | CAN NO.       | STOWAGE LOCATION |
| 1        | 9:00            | 9<br>12<br>11<br>14<br>11<br>11<br>11<br>14<br>19<br>25<br>13<br>14<br>12<br>11<br>12<br>13<br>14 | 3       | A        | 1             | B5               |
| 2        | 18:00           |   | 4       | B        | 2             | B5               |
| 3        | 30:00           |   | 5       | A        | 3             | B5               |
| 4        | 41:00           |   | 6       | B        | 4             | B5               |
| 5        | 55:00           |   | 7       | A        | 5             | B6               |
| 6        | 66:00           |   | 8       | B        | 6             | B6               |
| 7        | 77:00           |   | 9       | A        | 7             | B6               |
| 8        | 88:00           |   | 10      | B        | 8             | B6               |
| 9        | 102:00          |   | 11      | A        | 9             | A3               |
| 10       | 121:00          |   | 12      | B        | 10            | A3               |
| 11       | 146:00          |   | 13      | A        | 11            | A3               |
| 12       | 159:00          |   | 14      | B        | 12            | A3               |
| 13       | 173:00          |   | 15      | A        | 13            | A4               |
| 14       | 185:00          |   | 16      | B        | 14            | A4               |
| 15       | 196:00          |   | 17      | A        | 15            | A4               |
| 16       | 208:00          |   | 18      | B        | 16            | A4               |
| 17       | 221:00          |   | 19      | A        | 17            | A6               |
| 18       | 235:00          |   | 20      | B        | 18            | A6               |

TABLE 1-5 CSM BURN SCHEDULE

| BURN/<br>MNVR     | GETI/<br>BURN TIME            | $\Delta V_R$<br>(FPS) | ULLAGE/<br>$\Delta V$ (FPS) | REFSMAT         | REFSMAT<br>HA & HP(NM) | REMARKS       |
|-------------------|-------------------------------|-----------------------|-----------------------------|-----------------|------------------------|---------------|
| TLI               | 2:47:19.8<br>5Min.45.0Sec     | --                    | --                          | --              | --                     | S-IVB<br>BURN |
| CM/LM<br>EJECTION | 4:07:19.8<br>3 Sec            | 0.4                   | NOT<br>REQUIRED             | PAD             | --                     | RCS BURN      |
| MCC-1             | 11:47:19.8                    | --                    | --                          | PTC             | --                     | NOM. ZERO     |
| MCC-2             | 30:52:43.7<br>10.0 Sec        | 68.8                  | NOT<br>REQUIRED             | PTC             |                        | SPS BURN      |
| MCC-3             | 61:25:18.2                    | --                    | --                          | PTC             | --                     | NOM. ZERO     |
| MCC-4             | 78:25:18.2                    | --                    | --                          | LDG SITE        |                        | NOM. ZERO     |
| LOI-1             | 83:25:18.2<br>5 Min.55.4 Sec  | 2889.9                | NOT<br>REQUIRED             | LDG SITE        | HA 168.9<br>HP 58.7    | SPS BURN      |
| LOI-2             | 87:44:10.0<br>17.6 Sec        | 169.6                 | 2 JET<br>19.0 Sec           | LDG SITE        | HA 64.8<br>HP 53.0     | SPS BURN      |
| CSM/LM<br>SEP     | 108:24:21.9<br>15.5 Sec       | 2.5                   | --                          | LDG SITE        | HA 63.0<br>HP 54.5     | RCS BURN      |
| CSM P.C.<br>#1    | 119:47:02.0<br>19.4 Sec       | 372.4                 | 2JET<br>15.0 Sec            | PLANE<br>CHANGE | HA 61.5<br>HP 55.6     | SPS BURN      |
| CSM SEP<br>MNVR   | 147:58:00.7<br>2.7 Sec        | 1.0                   | --                          | LIFT OFF        | HA 59.7<br>HP 58.6     | RCS BURN      |
| CSM P.C.<br>#2    | 159:01:46.0<br>18.0 Sec       | 360.0                 | 4 JET<br>11 Sec             | PLANE<br>CHANGE | HA 58.6<br>HP 56.5     | SPS BURN      |
| TEI               | 172:21:14.7<br>2 Min 08.9 Sec | 3035.9                | 4 JET<br>12 Sec             | TEI             | --<br>--               | SPS BURN      |
| MCC-5             | 187:21:14.7                   | --                    | --                          | PTC             | --                     | NOM. ZERO     |
| MCC-6             | 222:21:48                     | --                    | --                          | PTC             | --                     | NOM. ZERO     |
| MCC-7             | 241:21:48                     | --                    | --                          | ENTRY           | --                     | NOM. ZERO     |

NOTE: HA &amp; HP ARE CALCULATED FROM THE LANDING SITE ELEVATION

TABLE 1-6 LM BURN TABLE

| BURN/<br>MNVR   | GETI/<br>BURN TIME                | $\Delta$ VR<br>(FPS) | ULLAGE/<br>$\Delta$ V(FPS) | REFSMMAT | REFSMMAT<br>HA & HP (NM) | REMARKS               |
|-----------------|-----------------------------------|----------------------|----------------------------|----------|--------------------------|-----------------------|
| DOI             | 109:23:00<br>BT- 28.2 sec         | 72.1                 | 2 JET<br>7.5 Sec           | LDG SITE | HA 59.3<br>HP 8.3        | DPS                   |
| PDI             | 110:20:00<br>BT-11Min.18.5<br>SEC | 6612.6               | 2 JET<br>7.5 Sec           | LDG SITE | --<br>--                 | DPS                   |
| ASCENT          | 142:01:17.9<br>BT-7Min10.0<br>Sec | 6046.2               | None                       | LIFT OFF | HA 44.7<br>HP 8.3        | APS                   |
| CSI             | 142:58:05.2<br>BT - 45.3 Sec      | 50.3                 | --                         | LIFT OFF | HA 45.6<br>HP 44.6       | RCS BURN              |
| PLANE<br>CHANGE | 143:26:27.5                       | 0.0                  | --                         | LIFT OFF | HA 45.6<br>HP 44.6       | RCS<br>BURN NOM. ZERO |
| CDH             | 143:56:27.5                       | 0.0                  | --                         | LIFT OFF | HA 45.6<br>HP 44.6       | RCS<br>BURN NOM. ZERO |
| TPI             | 144:36:25.7<br>BT 22.1 Sec        | 24.6                 | --                         | LIFT OFF | HA 61.9<br>HP 44.2       | RCS BURN              |
| MCC-1           | 144:51:25.7                       | --                   | --                         | LIFT OFF | HA 61.9<br>HP 44.2       | RCS<br>BURN NOM. ZERO |
| MCC-2           | 145:06:25.7                       | --                   | --                         | LIFT OFF | HA 61.9<br>HP 44.2       | RCS<br>BURN NOM. ZERO |
| LM DEORBIT      | 149:24:41.2<br>1 MIN 23.83 SEC    | 189.7                | --                         | ASCENT   | --                       | RCS BURN              |

NOTE: HA & HP ARE CALCULATED FROM THE LANDING SITE



TABLE 1-7

BLOCK DATA UPDATES

| <u>TYPE DATA</u>  |                      | <u>GET</u> | <u>REV</u> |
|-------------------|----------------------|------------|------------|
| TLI + 90 Min      | (P30)                | 01:30      |            |
| L/O + 8 Hrs       | (P37)                | 01:30      |            |
| L/O + 15 Hrs      | (P37) <sup>1</sup>   | 05:55      |            |
| L/O + 25 Hrs      | (P37)                | 14:00      |            |
| L/O + 35 Hrs      | (P37) <sup>2</sup>   | 14:00      |            |
| L/O + 45 Hrs      | (P37) <sup>2</sup>   | 14:00      |            |
| L/O + 60 Hrs      | (P37) <sup>2</sup>   | 14:00      |            |
| LOI - 5 Abort Pad | (P30)                | 35:00      |            |
| PC + 2            | (P30)                | 77:30      |            |
| TEI 1             | (P30) <sup>3,4</sup> | 81:15      |            |
| TEI 4             | (P30) <sup>4,5</sup> | 81:15      |            |
| TEI 5             | (P30) <sup>3,6</sup> | 86:15      | 2          |
| TEI 11            | (P30) <sup>5</sup>   | 91:00      | 4          |
| TEI 34            | (P30) <sup>5</sup>   | 102:30     | 10         |
| TEI 39            | (P30) <sup>5,7</sup> | 149:15     | 34         |
| TEI 41            | (P30) <sup>3</sup>   | 158:00     | 38         |
| TEI 43            | (P30) <sup>5</sup>   | 161:30     | 40         |
| TEI 45            | (P30) <sup>5</sup>   | 165:00     | 42         |
| TEI 45(Prelim.)   | (P30)                | 169:00     | 44         |
| TEI 45 (Nominal)  | (P30 & TGT LOAD)     | 171:20     | 45         |
| TEI 46            | (P30)                | 171:20     | 45         |

(1) Assumes No MCC-1

(2) Assumes MCC-2

(3) Abbreviated P30 Pad: Includes - Purpose, Propulsion, Weight, Pitch & Yaw Trim, Time,  $\Delta V_x$ ,  $\Delta V_y$ ,  $\Delta V_z$ , and Pitch

(4) Assumes No LOI-2

(5) Abbreviated P30 Pad: Includes - Purpose, Propulsion, Time,  $\Delta V_x$ ,  $\Delta V_y$ ,  $\Delta V_z$ , and Pitch

(6) Assumes LOI-2 Accomplished

(7) Assumes No Plane Change

APOLLO 12/LM-6

DSEA SCHEDULE

TABLE 1-8

| GET    | DSEA MODE | Tape Time |       | Activity                                      |
|--------|-----------|-----------|-------|---|
|        |           | Activity  | Total |   |
| 90:40  | ICS/PTT   | *100%     | 00:15 | S-Band/VHF Simplex Voice & TM Test            |
| 90:55  | OFF       | 00:15     |       |   |
| 107:51 | ICS/PTT   | *100%     | 3:00  | Prep for Undocking<br>Post Lunar Touchdown    |
| 110:36 | OFF       | 2:45      |       |   |
| 113:52 | VOX       | *33%      | 4:26  | PLSS Comm Act. (Pre-EVA1)<br>Post EVA-1 Comm  |
| 118:11 | OFF       | 1:26      |       |   |
| 132:28 | VOX       | *33%      | 5:53  | PLSS Comm Act. (Pre-EVA 2)<br>Post EVA-2 Comm |
| 136:50 | OFF       | 1:27      |       |   |
| 141:45 | ICS/PTT   | *100%     | 9:53  | Liftoff Comm<br>Post Docking                  |
| 145:45 | OFF       | 4:00      |       |   |

\*Estimated duty cycle in mode indicated

10 October 1969

TABLE 1-9  
BATTERY CHARGE SCHEDULE

| GET<br>HR:MIN | BATTERY |
|---------------|---------|
| 04:30         | B       |
| 11:30         | A       |
| 62:00         | B       |
| 76:30         | A       |
| 88:10         | B       |
| 131:30        | A       |
| 137:25        | B       |
| 186:00        | B       |
| 193:15        | A       |

LANDMARK TRACKING TABLE

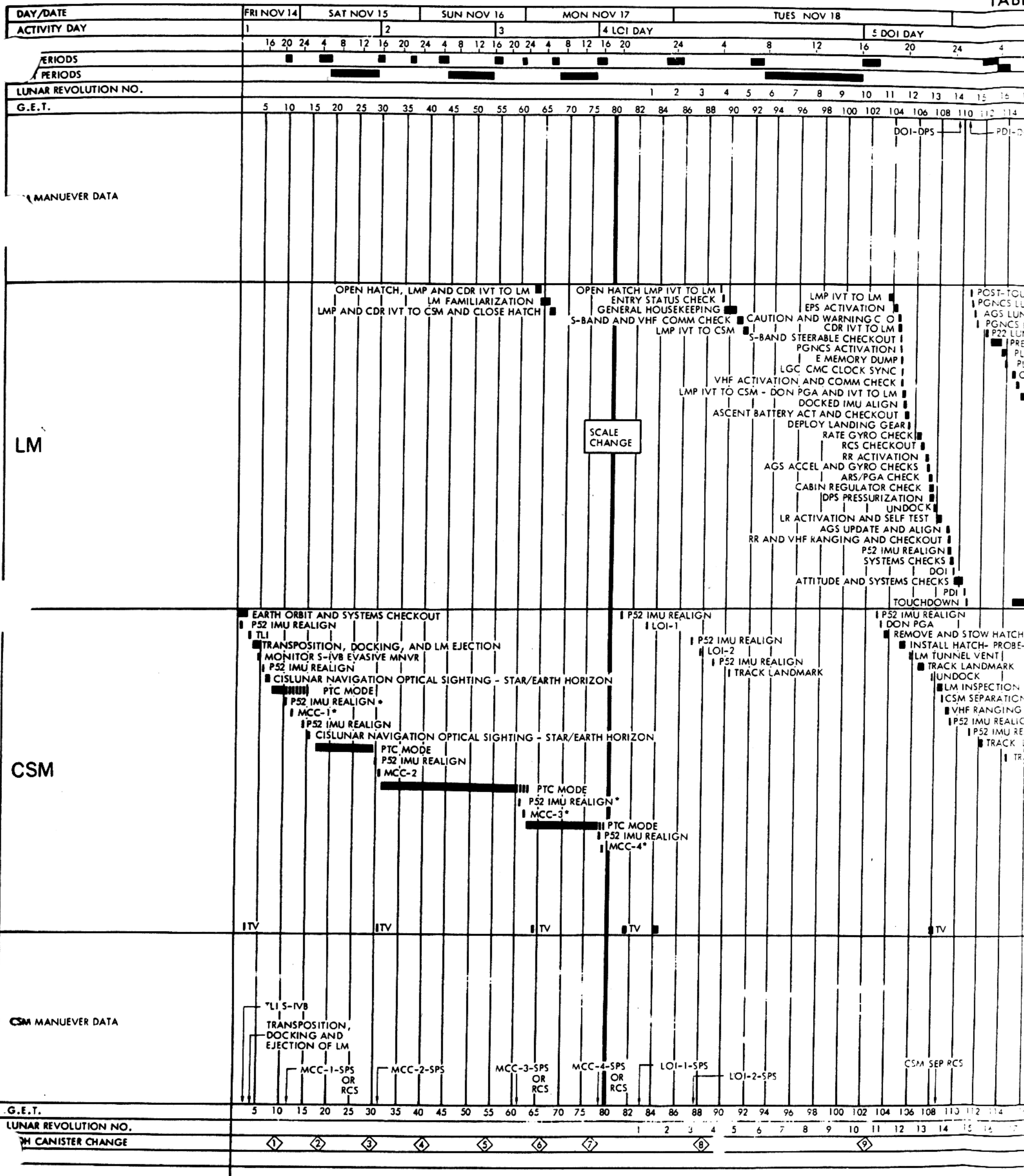
TABLE 1-10

| <u>LANDMARKS</u>  | <u>LATITUDE</u>         | <u>LONGITUDES</u>          | <u>ELEVATIONS (N.M.)</u> |
|-------------------|-------------------------|----------------------------|--------------------------|
| H1*               | 1.517° S                | 15.250° W                  | -1.9438 n.m.             |
| SITE 7*           | 2°58'56" S<br>(2.9822°) | 23°23'31" W<br>(23.39194°) | -1.28164 n.m.            |
| 190               | 2.957° S                | 23.024° W                  | -1.23 n.m.               |
| 191               | 3.437° S                | 23.202° W                  | -1.36 n.m.               |
| 193*              | 3.437° S                | 23.229° W                  | -1.37 n.m.               |
| 194               | 3.009° S                | 23.573° W                  | -1.38 n.m.               |
| 195               | 3.377° S                | 24.008° W                  | -1.53 n.m.               |
| Lalande Site **   | 4.783° S                | 8.667° W                   | -0.3239 n.m.             |
| CP 1*             | 5.667° S                | 112.000° E                 | 0.00 n.m.                |
| CP 2*             | 10.250° S               | 56.183° E                  | -0.81 n.m.               |
| Descartes Site ** | 8.858° S                | 15.517° E                  | -1.7 n.m.                |
| DE 1*             | 8.883° S                | 15.550° E                  | -1.7 n.m.                |
| DE 2              | 9.333° S                | 15.067° E                  | -1.7 n.m.                |
| DE 3              | 8.767° S                | 14.983° E                  | -1.7 n.m.                |
| Fra Mauro Site ** | 3.617° S                | 17.550° W                  | -1.8628 n.m.             |
| FM 1*             | 3.228° S                | 17.3305° W                 | -1.5631 n.m.             |
| FM 2              | 4.117° S                | 16.908° W                  | -1.8088 n.m.             |
| FM 3              | 4.567° S                | 17.517° W                  | -1.7818 n.m.             |
| Lansberg A *      | 0.150° N                | 31.150° W                  | -0.54 n.m.               |

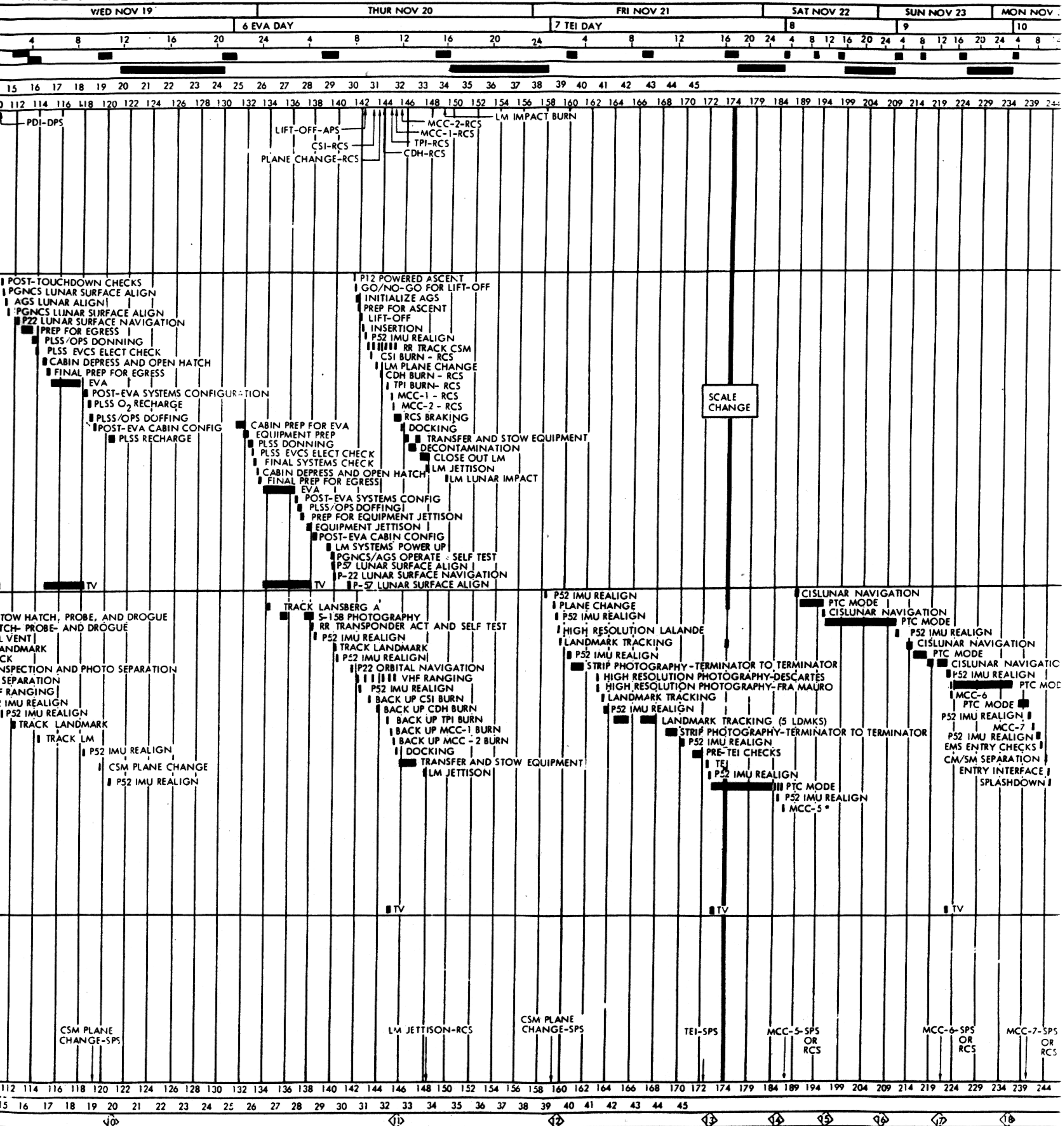
\*Used in the nominal mission

\*\*Future Landing Site

Note: Data was provided by the Mapping Sciences Laboratory.  
Elevations are based on a mean lunar radius of  
938.4449184 n m (1738.09 K M)



APOLLO 12  
TABLE 1 - 11



\*MAY NOT BE REQUIRED

SECTION 2 - MISSION OBJECTIVES

## SECTION 2

### MISSION OBJECTIVES

This section contains an activity summary, reflecting the objectives for Mission H as described in "Mission Requirements H-1 Type Mission". Table 2-1 provides a functional breakdown of the objectives and indicates the page in the timeline where the activity occurs. The alpha numeric listing presented in Table 2-1 is not intended to represent a priority or a sequential listing.

All of the test requirements have been implemented into the timeline. Details of the implemented test requirements are adequately covered in the Lunar Surface Operation Plan and the Photographic and TV Operations Plan.



TABLE 2-1  
MISSION OBJECTIVE/ACTIVITY  
REFERENCE

| NUMBER                        | OBJECTIVE  | ACTIVITY  | PAGE NO.                                       |
|-------------------------------|--|---|--|
| A<br>A-1                      | Contingency Sample Collection<br>Provide a contingency sample for postflight scientific investigations   | EVA-1   | 3-93   |
| B<br>B-1<br>B-2<br>B-3<br>B-4 | Lunar Surface EVA Operations<br>Evaluate walking pace on typical terrain<br>Evaluate the capability of the crew to lift and maneuver large packages<br>Evaluate the capability of the crew to unstow and deploy the erectable S-band antenna<br>Evaluate the adequacy of the preflight estimates of time required to perform specific EVA activities | EVA-1, EVA2 }<br>EVA 1 }<br>EVA-1<br>EVA-1, EVA-2 | 3-93<br>3-94<br>3-109<br>3-94<br>3-93<br>3-109 |
| C<br>C-1                      | PLSS Recharge<br>Demonstrate the capability to recharge the PLSS while in the LM on the lunar surface  | POST EVA-1  | 3-97<br>3-100                                  |
| F<br>F-1<br>F-2<br>F-3        | Selected Sample Collection<br>Collect rock samples and fine-grained fragmental material<br>Collect one large rock<br>Collect a core tube sample  | EVA-1<br>EVA-1<br>EVA-1                           | 3-96<br>3-96<br>3-96                           |

2-2

TABLE 2-1 (CONT'D)  
MISSION OBJECTIVE/ACTIVITY  
REFERENCE

| NUMBER | OBJECTIVE   | ACTIVITY              | PAGE NO.                |
|--------|---|-----------------------|-------------------------|
| G      | Photographs of Candidate Exploration Sites  |                       |                         |
| G-1    | Obtain stereoscopic photographs of selected lunar sites   | POST LM JETTISON      | 3-137                   |
| G-2    | Obtain high resolution photographs of selected lunar sites  | POST LM JETTISON      | 3-139<br>3-141<br>3-153 |
| H      | Lunar Surface Characteristics   |                       |                         |
| H-1    | Obtain data on the mechanical behavior and terrain characteristics of the lunar surface   | EVA-1, EVA-2          | 3-93<br>3-109           |
| H-2    | Determine the LM landing gear stroking, footpad lunar surface interaction, LM attitude and ground clearance after landing                       | TOUCHDOWN, EVA-1      | 3-87<br>3-94            |
| H-3    | Determine the extent of lunar surface erosion and the effects of surface ejecta on the LM resulting from DPS exhaust impingement during landing | EVA-1                 |                         |
| I      | Lunar Environment Visibility  |                       |                         |
| I-1    | Deleted   |                       |                         |
| I-2    | Obtain data on the ability to perform visual tasks while on the lunar surface   | EVA-1                 | 3-93<br>3-109           |
| I-3    | Obtain data on the ability to observe contrast in the lunar shadow and on the lunar terrain   | EVA-2                 | 3-109                   |
| J      | Landed LM Location  |                       |                         |
| J-1    | Determine the position of the landed LM in real time  | DOI THROUGH TOUCHDOWN | 3-88                    |
| J-2    | Obtain data to permit a postflight determination of the landed LM location  | DOI THROUGH TOUCHDOWN | 3-90                    |

TABLE 2-1 (CONT'D)  
MISSION OBJECTIVE/ACTIVITY  
REFERENCE

| NUMBER | OBJECTIVE  | ACTIVITY              | PAGE NO       |
|--------|--|-----------------------|---------------|
| L      | Photographic Coverage  |                       |               |
| L-1    | Obtain photographs of the lunar surface during LM descent  | PDI THROUGH TOUCHDOWN | 3-87          |
| L-2    | Obtain photographs of the lunar surface after touch-down and prior to cabin depressurization                                       | POST TOUCHDOWN        | 3-88          |
| L-3    | Obtain photographs of the landed LM, of various EVA evaluation tasks and of operations related to geologic inspection and sampling | EVA-1, EVA-2          | 3-93<br>3-109 |
| M      | Television Coverage  |                       |               |
| M-1    | Provide TV camera coverage of an astronaut descending to the lunar surface   | EVA-1, EVA 2          | 3-93<br>3-109 |
| M-2    | Provide TV camera coverage of an external view of the landed LM  | EVA-1                 | 3-94          |
| M-3    | Provide TV camera coverage of the lunar surface in the general vicinity of the LM  | EVA-1                 | 3-94          |
| M-4    | Provide TV camera panoramic coverage of distant terrain features   | EVA-1                 | 3-94          |
| M-5    | Provide TV camera coverage of an astronaut during lunar surface activities   | EVA-1, EVA 2          | 3-93<br>3-109 |
| N      | Surveyor III Investigation   |                       |               |
| N-1    | Obtain photographs of lunar material in vicinity of Surveyor III   | EVA-2                 | 3-113         |
| N-2    | Obtain samples of lunar material in the crater containing the Surveyor III   | EVA-2                 | 3-113         |
| N-3    | Obtain photographs of Surveyor III   | EVA-2                 | 3-113         |
| N-4    | Obtain parts of the Surveyor III   | EVA-2                 | 3-113         |
| N-5    | Obtain data on the extent of mirror debonding on Surveyor III  | EVA-2                 | 3-113         |

TABLE 2-1 (CONT'D)  
MISSION OBJECTIVE/ACTIVITY  
REFERENCE

| NUMBER                      | OBJECTIVE   | ACTIVITY        | PAGE NO.       |
|-----------------------------|---|-----------------|----------------|
| 0<br>0-1                    | Selenodetic Reference Point Update<br>Obtain lunar landmark tracking data to permit an update of the selenodetic coordinates of a selected lunar reference point  | CSM SOLO-REV 26 | 3-111          |
| ALSEP<br>ALSEP-1<br>ALSEP-2 | Apollo Lunar Surface Experiments Package<br>Deploy the Lunar Passive Seismic Experiment (S-031)<br>Deploy the Lunar Surface Magnetometer Experiment (S-034)   | EVA-1<br>EVA-1  | 3-95<br>3-95   |
| ALSEP-3<br>ALSEP-4          | Deploy the Solar Wind Spectrometer Experiment (S-035)<br>Deploy the Suprathermal Ion Detector Experiment (S-036) and the Cold Cathode Ion Gauge Experiment (S-058)  | EVA-1<br>EVA-1  | 3-95<br>3-95   |
| S-059<br>S-059-1<br>S-059-2 | Lunar Field Geology<br>Deleted<br>Examine, describe, photograph and collect lunar geologic samples for return to earth  | EVA-2           | 3-109          |
| S-159-3                     | Collect a lunar environment sample of lunar surface material  | EVA-2           | 3-109          |
| S-059-4                     | Collect a gas analysis sample of lunar surface material   | EVA-2           | 3-109          |
| S-059-5<br>S-059-6          | Obtain core samples of lunar material<br>Study and describe field relationships (such as shape, size, range, patterns of alignment or distribution) of all accessible types of lunar topographic features | EVA-2<br>EVA-2  | 3-109<br>3-109 |

TABLE 2-1 (CONT'D)

MISSION OBJECTIVE/ACTIVITY  
REFERENCE

| NUMBER           | OBJECTIVE   | ACTIVITY                              | PAGE NO.       |
|------------------|---|---------------------------------------|----------------|
| S-080<br>S-080-1 | Solar Wind Composition<br>Conduct the Solar Wind Composition Experiment (S-080) | EVA-1, EVA-2                          | 3-94<br>3-113  |
| S-158            | Multispectral photography   | CSM SOLO                              | 3-113<br>3-116 |
| T-029            | Pilot Describing Function Experiment<br>(No crew activity required)             | Post Mission Debriefing<br>& Analysis | -----          |
| M-515            | Lunar Dust Detector Experiment<br>(no crew activity required)                   | EVA-1                                 | 3-95           |

# FLIGHT PLAN

| TIME   | EVENT  | REMARKS   |
|--------|--|---|
| -00:09 | LCC: <u>REPORT</u> IGNITION                  | <u>CREW POSITIONS @ L/O</u><br>CDR - LH COUCH<br>CMP - CENTER COUCH<br>LMP - RH COUCH |
| 00:00  | LCC: CDR: <u>REPORT</u> LIFT-OFF             |   |
| 00:02  | CDR: <u>REPORT</u> YAW MNVR                  |   |
| 00:11  | CDR: <u>REPORT</u> ROLL AND PITCH PROGRAM    | LIFTOFF 1022 CST<br>NOVEMBER 14, 1969, 72.1° L.A.<br>TARGETED FOR LANDING SITE 7.     |
| 00:30  | CDR: <u>REPORT</u> ROLL COMPLETE             |   |
| 00:42  | MCC: <u>REPORT</u> MARK MODE IB              | PROP DUMP TO RCS CMD  |
| 00:50  | LMP: <u>REPORT</u> CABIN PRESS DECREASING    | ALTITUDE 14,000 ft  |
| 01:24  | MAX Q  |   |
| 01:57  | MCC: <u>REPORT</u> MARK MODE IC              | ALTITUDE 100,000 ft   |
| 02:00  | MCC: CDR: <u>REPORT</u> GO/NO-GO FOR STAGING |   |
| 02:16  | CDR: <u>REPORT</u> INBOARD ENGINES CUTOFF    |   |
| 02:42  | CDR: <u>REPORT</u> OUTBOARD ENGINES CUTOFF   |   |
| 02:43  | CDR: <u>REPORT</u> STAGING                   |   |
| 02:44  | CDR: <u>REPORT</u> S-II IGNITION             |   |
| 03:13  | CDR: <u>REPORT</u> S-II SEP LT OUT           |   |
| 03:18  | CMP: <u>REPORT</u> TOWER JETT                |   |
|        | MCC: <u>REPORT</u> MODE II                   |   |
|        | CDR: <u>REPORT</u> S/C GO/NO-GO              |   |

**MISSION**

APOLLO 12

**EDITION**

FINAL (NOV 14)

**DATE**

OCTOBER 15, 1969

**PAGE** 3-1

# FLIGHT PLAN

| TIME  | EVENT  | REMARKS |
|-------|--|---------|
| 03:23 | CDR: <u>REPORT</u> GUIDANCE INITIATE                       |         |
| 03:53 | MCC: <u>REPORT</u> TRAJECTORY GO/NO-GO                     |         |
| 04:00 | CMP: <u>REPORT</u> S/C GO/NO-GO                            |         |
| 05:00 | LMP: <u>REPORT</u> S/C GO/NO-GO                            |         |
| 05:25 | MCC: <u>REPORT</u> S-IVB TO COI CAPABILITY                 |         |
| 06:00 | CDR: <u>REPORT</u> S/C GO/NO-GO                            |         |
| 06:25 | MCC: <u>REPORT</u> S/C GO/NO-GO                            |         |
|       | MCC: <u>REPORT</u> TIME OF LEVEL SENSE ARM AND S-II CUTOFF |         |
| 07:00 | CDR: <u>REPORT</u> S/C GO/NO-GO                            |         |
| 08:00 | CDR: <u>REPORT</u> S/C GO/NO-GO                            |         |
| 08:30 | MCC & CDR: <u>REPORT</u> S/C GO/NO-GO FOR STAGING          |         |
| 09:00 | MCC: <u>REPORT</u> MARK MODE IV                            |         |
| 09:11 | CDR: <u>REPORT</u> S-II CUTOFF                             |         |
| 09:14 | CDR: <u>REPORT</u> S-II S-IVB STAGING                      |         |
| 09:17 | CDR: <u>REPORT</u> S-IVB IGNITION                          |         |
| 10:00 | MCC & CDR: REPORT GO/NO-GO FOR ORBIT                       |         |
|       | MCC: <u>REPORT</u> PREDICTED SECO                          |         |

# FLIGHT PLAN

| TIME            | EVENT  | REMARKS   |
|-----------------|--|-----------|
| 11:00           | CDR: <u>REPORT</u> S/C GO/NO-GO  |           |
| 11:29           | CDR: <u>REPORT</u> SECO <span style="float: right;">TB<sub>5</sub> = 0</span><br>S-IVB MAINTAINS COMMANDED CUTOFF<br>INERTIAL ATTITUDE |           |
| SECO<br>+10 SEC | MCC: <u>REPORT</u> ORBITAL GO/NO-GO  | INSERTION |
| SECO<br>+20 SEC | S-IVB MANEUVERS TO LH AND INITIATES<br>ORB RATE (HEADS DOWN)   |           |
| SECO<br>+59 SEC | S-IVB INITIATES CONTINUOUS LH <sub>2</sub><br>VENTING (TERMINATES AT TB <sub>6</sub> + 42.2 SEC<br>GET = 2:38:24)                      |           |
|                 | V66-TRANSFER CSM STATE VECTOR TO LM SLOT<br>V45-RESET LUNAR SURFACE FLAG   |           |
| 12:50           | BDA LOS<br><br>INSERTION CHECKLIST   |           |
| 16:04           | VAI LOS  |           |
| 16:37           | CYI AOS<br><br><u>MCC UPDATE:</u> Z TORQUING ANGLE   |           |
| 23:44           | CYI LOS<br>SYSTEM MONITORING & CHECKING<br>POST INSERTION ECS CONFIGURATION  |           |



# FLIGHT PLAN

| TIME  | EVENT   | REMARKS  |
|-------|---|--|
| 31:31 | CONFIGURE CAMERA FOR T&D AND S-IVB PHOTO<br><div style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px; margin: 5px 0;">             CM2/DAC/18/CEX-BRKT, MIR (f8,250,7) 6fps, 0.3<br/>             MAG (5 MIN)           </div> <div style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px; margin: 5px 0;">             CM2/EL/80/CEX (f8,250,30) 10           </div><br>UNSTOW TV CAMERA<br><br>PRE-TLI SYSTEM VERIFICATION AND MONITORING<br><br><br>CDR INSTALL COAS<br><br>CMP JETTISON OPTICS COVERS<br><br>P52 IMU REALIGN<br>Option 3-REFSMAT<br><br>REPORT GYRO TORQUING ANGLES | LMP HOLDS CAMERA<br><br><br><br><br><br><br><br><br><br>REALIGNS TO PAD ORIENTATION  |
| 52:20 | CRO AOS<br> <br>DUMP DSE<br><br>GDC ALIGN TO IMU  |  |
| 58:11 | CRO LOS   | <div style="border: 1px solid black; padding: 5px; margin-top: 20px;">             IMU REALIGN P52<br/>             N71: _____<br/>             N05: _____<br/>             N93: _____<br/>             X    _____.<br/>             Y    _____.<br/>             Z    _____.<br/>             GET  _____ : _____ : _____           </div> |

**MISSION**    APOLLO 12

**EDITION**    FINAL (NOV 14)

**DATE**        OCTOBER 15, 1969

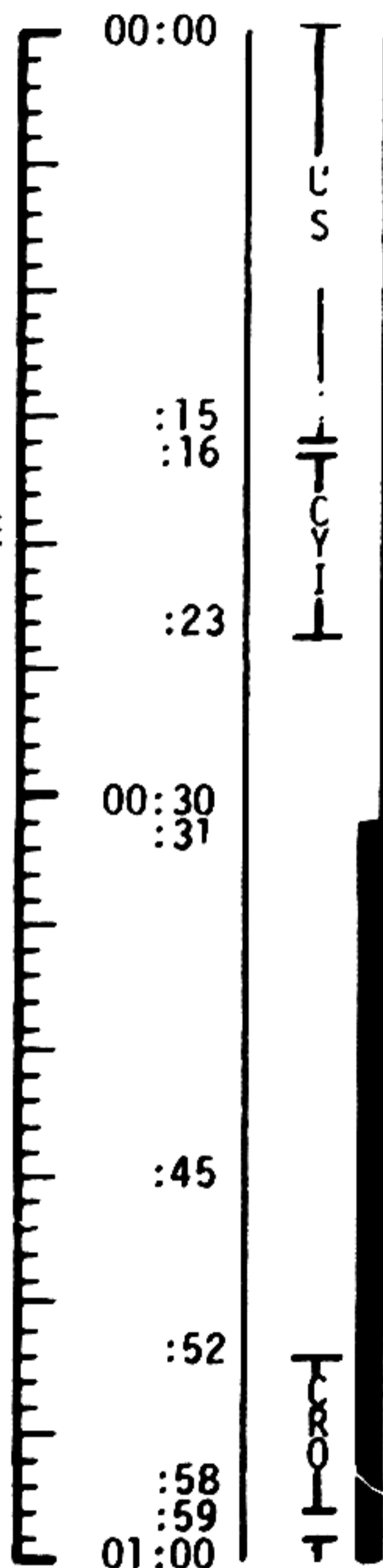
**PAGE**        3-iv

MCC-H

1022 CST

# FLIGHT PLAN

## NOTES



LIFTOFF 14 NOV 1969

SECO

INSERTION CK LIST

SYSTEMS MONITORING & CHECKING

PRE-TLI SYSTEM VERIFICATION  
AND MONITORING

SETUP CAMERA EQUIPMENT

IMU REALIGN - P52  
(OPTION 3 - REFSMMAT)

REPORT GYRO TORQUING ANGLES  
GDC ALIGN TO IMU

UPDATE TO CSM  
Z TORQUING ANGLE

DUMP DSE

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

COOLANT CONTROL ATTEN-  
UATION PANEL NOT  
OPENED

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

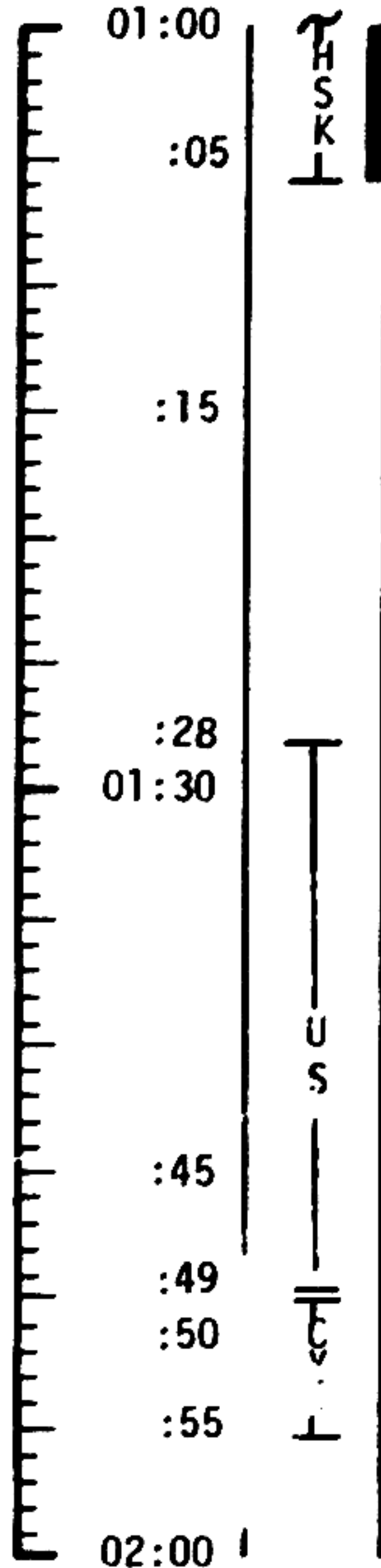
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 00:00 - 01:00 | 1/1     | 3-1  |

MCC-H

1122 CST

# FLIGHT PLAN

NOTES



DUMP DSE

UPLINK TO CSM  
STATE VECTOR & V66

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

GO/NO-GO FOR PYRO  
ARM

SCS ATT REF COMPARISON CK  
EXTEND DOCKING PROBE

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

EMS ΔV TEST

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

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

# FLIGHT PLAN

TLI  
BURN TABLE

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

TABLE 3-1  
3-3

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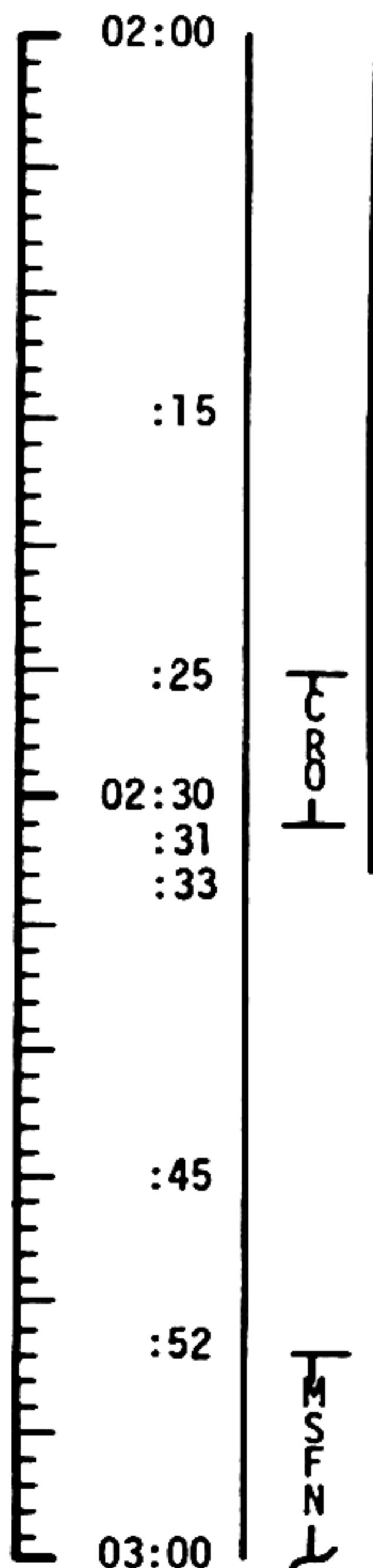
MCC-H

1222 CST

# FLIGHT PLAN

NOTES

GO/NO GO



PYRO ARM

GDC ALIGN TO IMU

SET ORDEAL

GO/NO GO FOR TLI

TB-6 (02:37:41.8)

P47 - THRUST MONITOR

TLI

P00 - CMC IDLING

V66 - TRANS CSM SV TO LM SLOT

TLI BURN STATUS REPORT

CDR - TRANS TO CENTER COUCH, CMP - LEFT COUCH

LMP - RIGHT COUCH

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

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

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

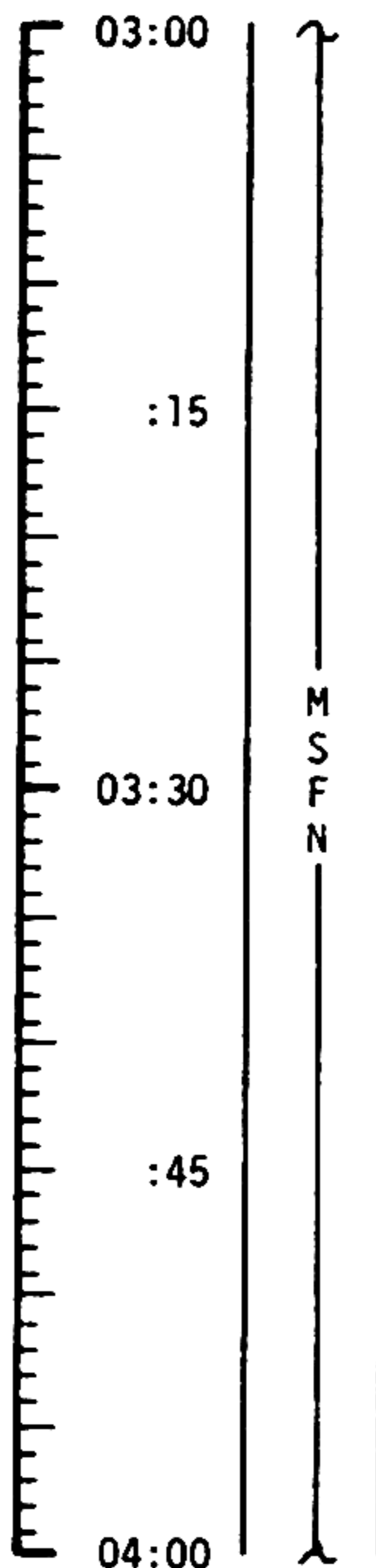
MCC-H

1322 CST

# FLIGHT PLAN

NOTES

GO/NO GO FOR T&D



WASTE STOWAGE VENT - CLOSED  
 DIRECT O<sub>2</sub> VLV-OPEN UNTIL CAB ~ 5.7 PSI, THEN CLOSE  
 GDC ALIGN TO IMU  
 SIVB MNVRS TO CSM/SIVB SEP ATT BY 03:11  
 S-BAND ANT - OMNI  
 S-BAND ANT OMNI - B  
 ACTIVATE AND LOAD DAP (11102, 01111)

R 356  
 P 92  
 Y 332

LOAD DOCKING GIMBAL ANGLES  
 CSM SEP PREPARATION

R 304 HGA  
 P 272 P-20  
 Y 28 Y290

**CSM/SIVB SEP** GET: 03:23  
 CSM MNVR TO DOCK ATT BY 03:28

HGA TRACK - REACQ  
 HGA BEAM - WIDE  
 TV (GDS) 03:28 TO 04:30 CM4-IN, BRKT (f22)  
 VISUALLY INSPECT AND PHOTOGRAPH SIVB AND LM

**DOCK** GET: 03:33

BEGIN CSM/LM CABIN PRESSURE EQUALIZATION

CDR: CONFIGURE FOR LM EJECTION  
 TUNNEL PRESSURE INTEGRITY CHECK  
 WASTE STOWAGE VENT VALVE - VENT  
 REMOVE AND TEMPORARILY STOW TUNNEL HATCH  
 CHECK DOCKING LATCHES  
 VENT DOCKING PROBE  
 LM UMBILICAL CONNECTION  
 REINSTALL TUNNEL HATCH  
 LM TUNNEL VENT VLV - LM/CM ΔP  
 LEAVE TUNNEL EQUALIZATION VALVE CLOSED  
 CYCLE O<sub>2</sub> & H<sub>2</sub> FANS

SWITCH TO OMNI C  
 DURING THE MNVR  
 TO THE DOCKING  
 ATTITUDE

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

CAMERA SETTINGS FOR  
 LM EJECTION:

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

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

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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

REVISION A

MCC-H

1422 CST

# FLIGHT PLAN

NOTES

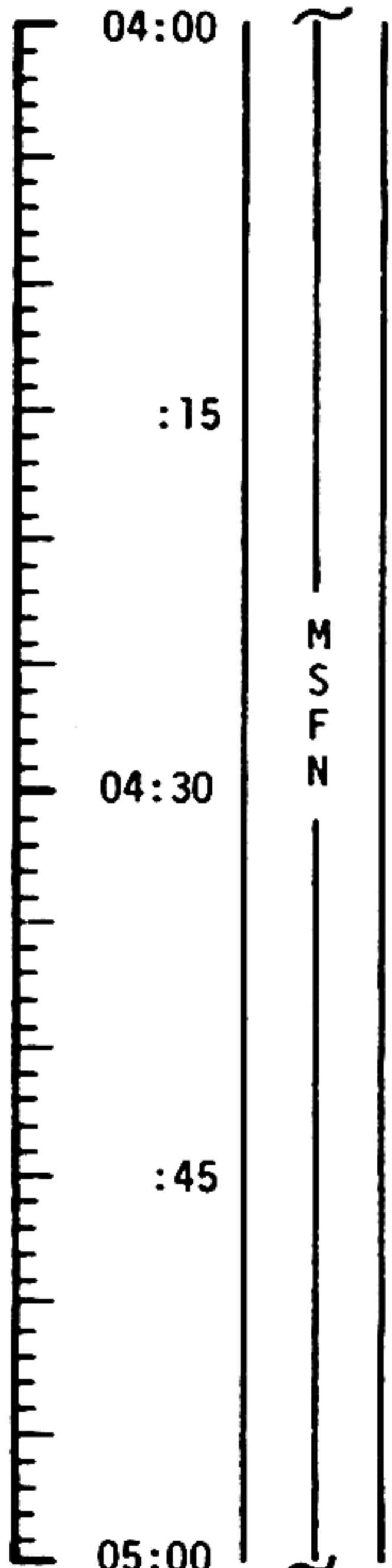
GO/NO GO FOR  
PYRO ARM AND  
CSM/LM EJECTION

(TLI CUTOFF +  
1 HR 20 MIN)

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

DUMP DSE

(TLI CUTOFF +  
1 HR 53 MIN)



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

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

|   |            |
|---|------------|
| R | <u>96</u>  |
| P | <u>277</u> |
| Y | <u>344</u> |

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

OMNI D

**S-IVB APS EVASIVE MNVR** GET = 04:25

ΔV ≈ 9.6 FPS

BATTERY CHARGE, BATTERY B

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

**S-IVB SLINGSHOT MNVR** GET = 04:46

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

SLINGSHOT ΔV  
= 68.7 FPS

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



MCC-H

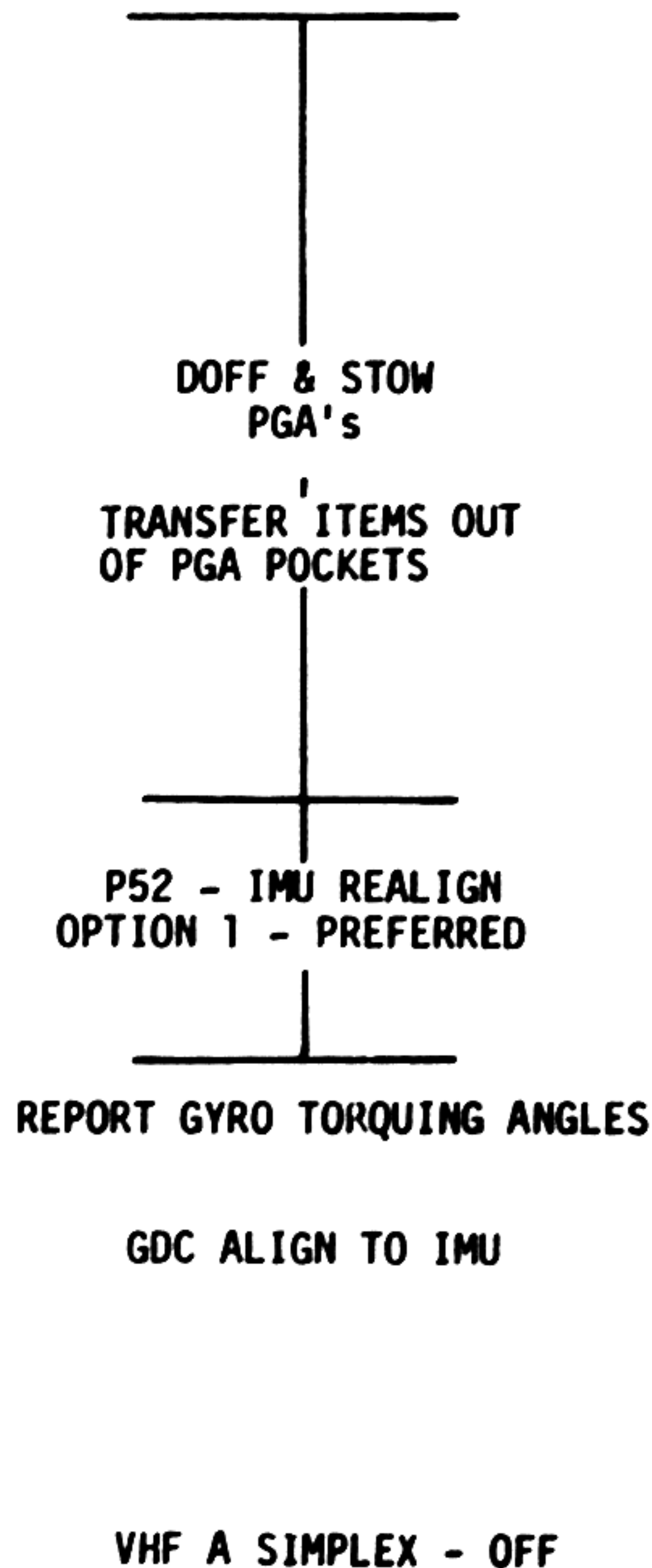
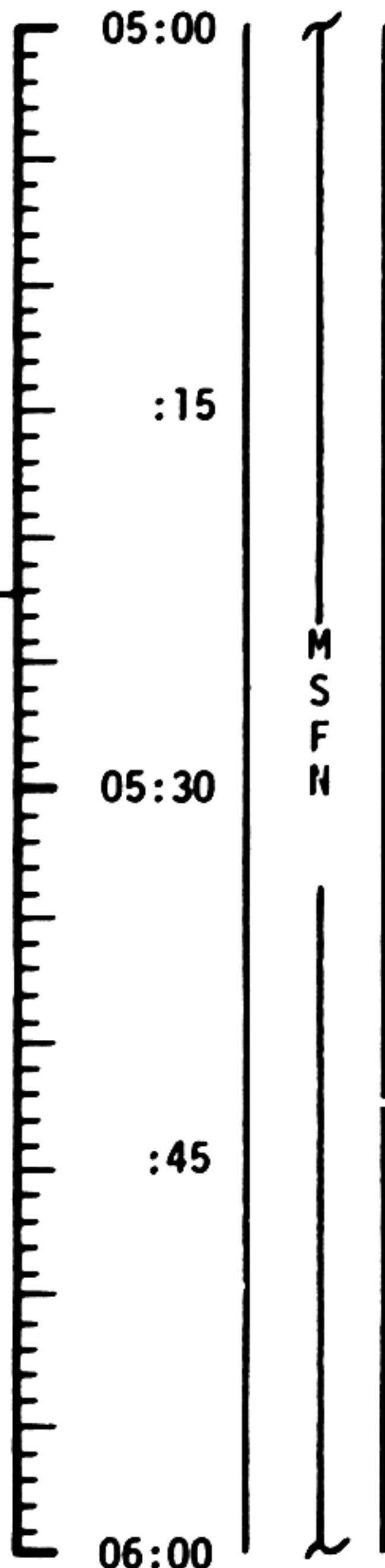
1522 CST

# FLIGHT PLAN

NOTES

UPLINK TO CSM  
DESIRED ORIENTATION  
(PTC)  
ZERO TRUNION BIAS

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



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

P 37 PAD ASSUMES  
NO MCC-1

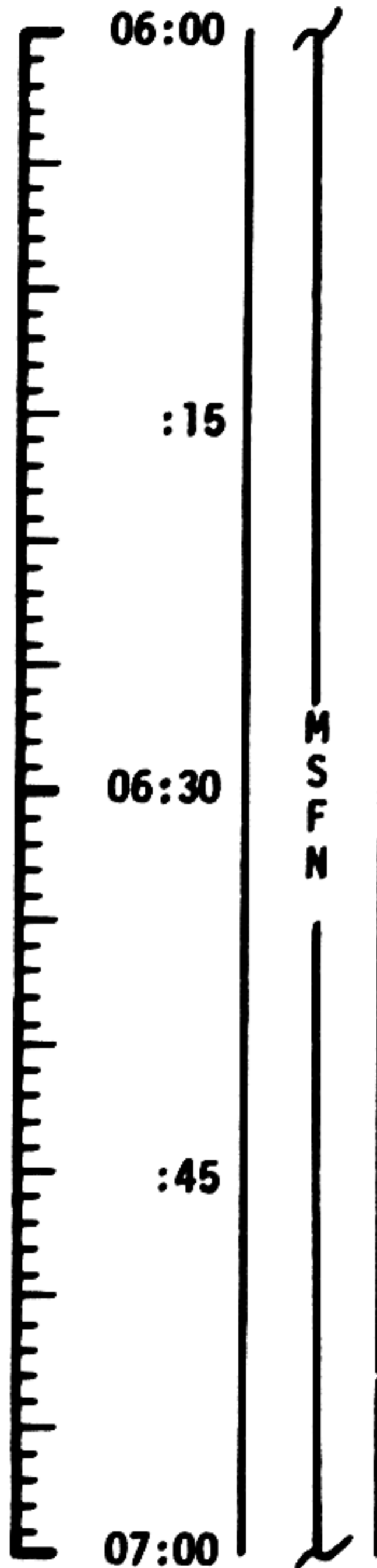
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 05:00 - 06:00 | 1/TLC   | 3-7  |

MCC-H

1622 CST

# FLIGHT PLAN

NOTES



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

R 204  
 P 262  
 Y 0

P00  
 V49 - MNVR TO SIGHTING ATT  
 STAR/EARTH HORIZON

R 159  
 P 282  
 Y 0

P23 - CISELUNAR NAVIGATION

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

3 MARKS ON EACH STAR

INCORPORATE P23  
 MARK DATA AND  
 UPDATE ONBOARD  
 STATE VECTOR

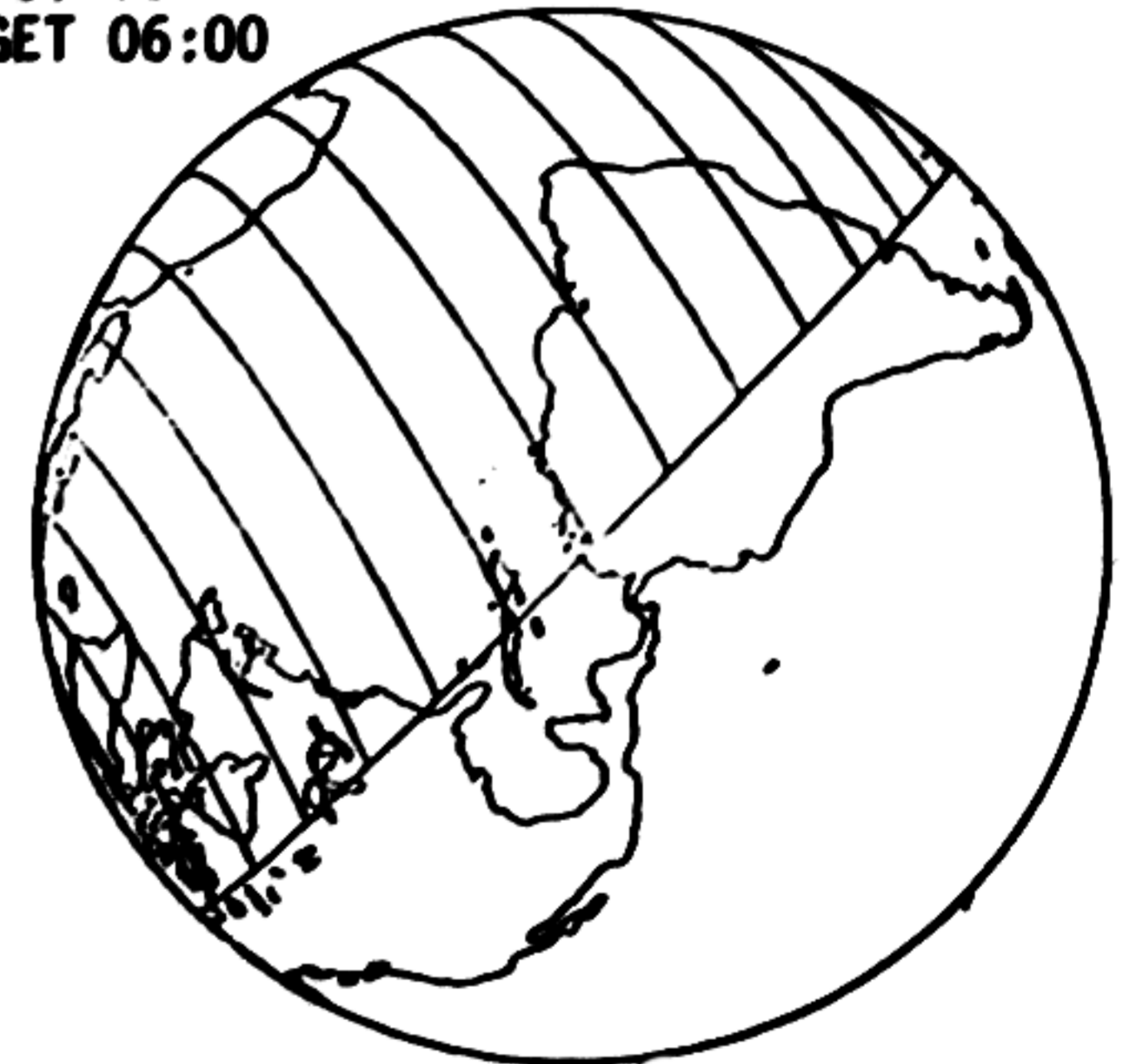
2. STAR 1 5 E F H (R3 = 0 0 1 2 0)

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

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

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

FOV 16°  
 GET 06:00



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

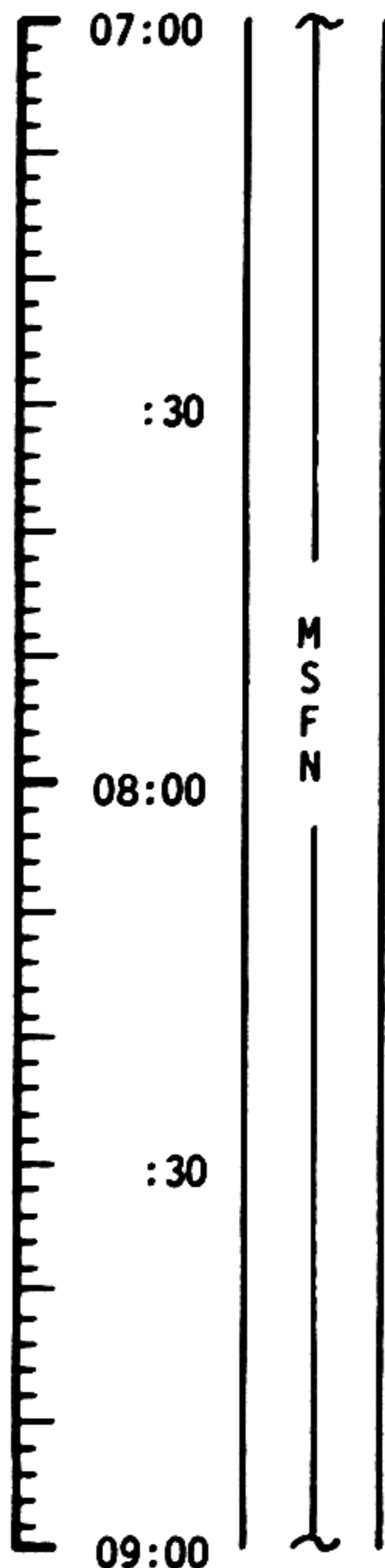
MCC-N

1722 CST

# FLIGHT PLAN

NOTES

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



MNVR TO PTC ATTITUDE

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

ESTABLISH PTC

DEACTIVATE PRIMARY EVAPORATOR  
 GLY EVAP H<sub>2</sub>O FLOW - OFF ~~(GRT)~~ (CTR)  
 GLY EVAP STM PRESS AUTO - MAN  
 GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

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

PTC

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

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

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

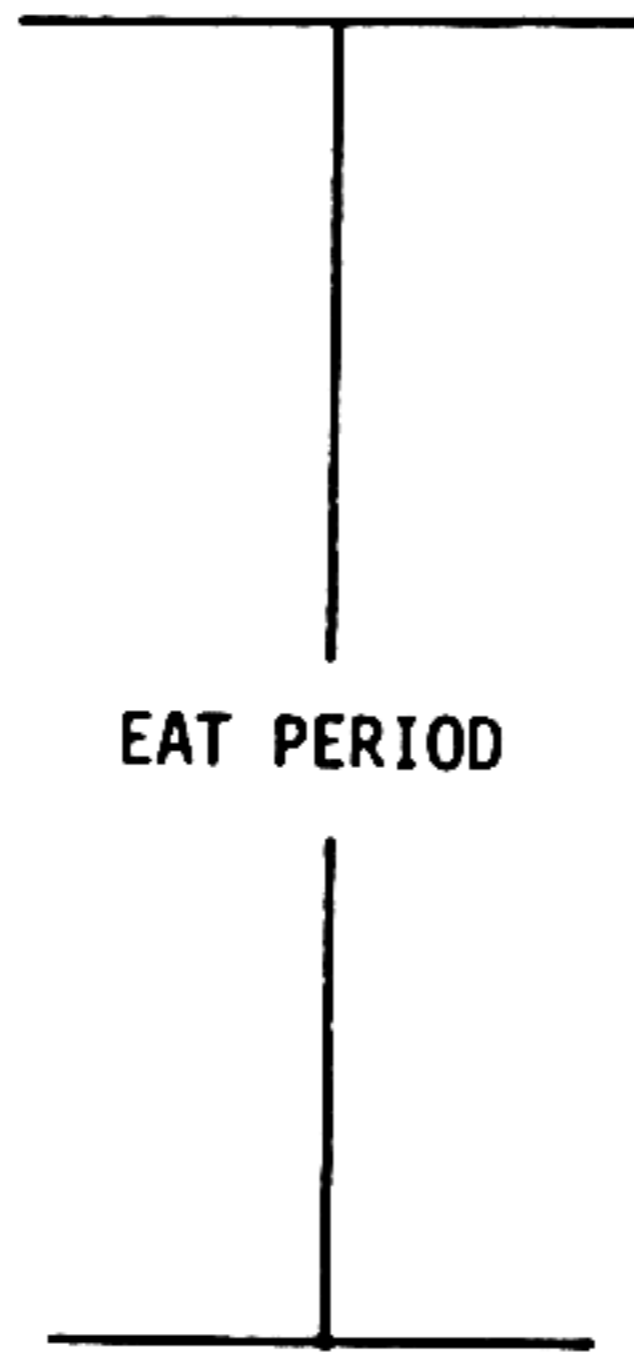
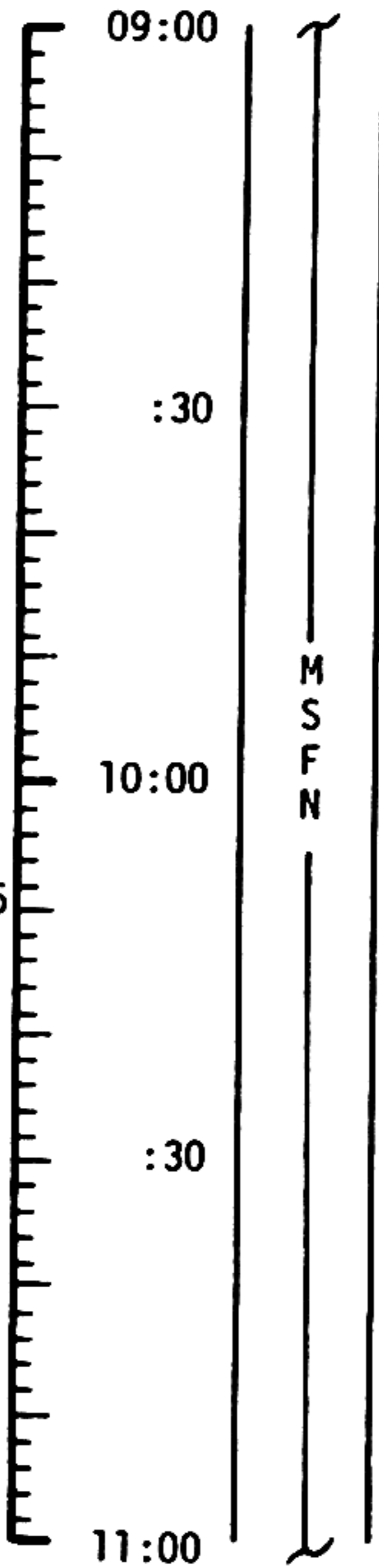
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 07:00 - 09:00 | 1/TLC   | 3-9  |

MCC-H

1922 CST

# FLIGHT PLAN

NOTES



PTC  
P 90 Y 0

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

UPDATE TO CSM  
MCC-1 MNVR PAD

CONTINUE PTC IF MCC-1 IS NOT PERFORMED

P52 IMU REALIGN  
OPTION 3 - REFSMMAT  
REPORT GYRO TORQUING ANGLES

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

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

# FLIGHT PLAN

## MCC-1 BURN TABLE

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

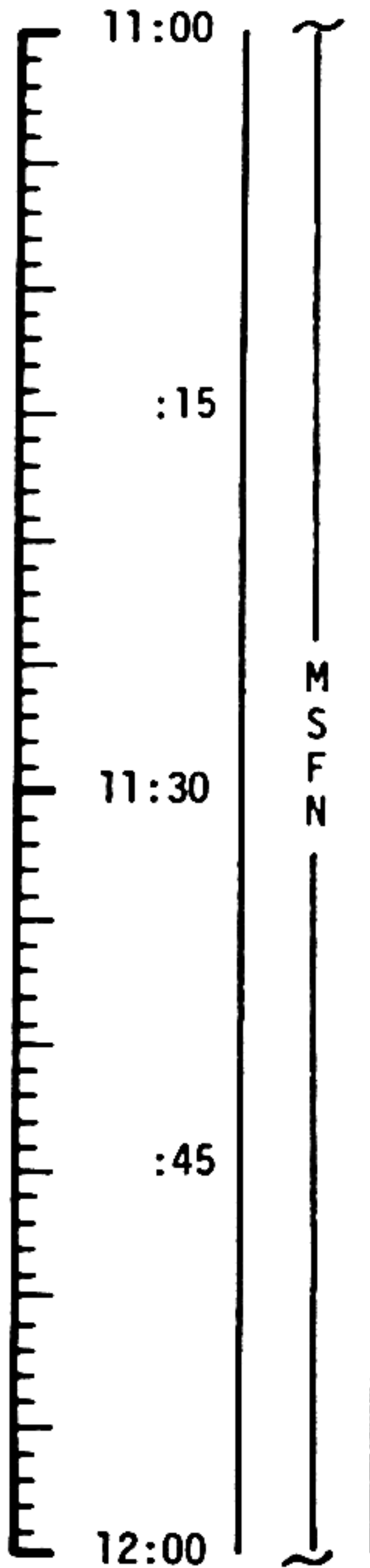
TABLE 3-2  
3-11

MCC-H

2122 CST

# FLIGHT PLAN

NOTES



P30 - EXTERNAL  $\Delta V$

V49 - MNVR TO BURN ATT

SXT STAR CHECK  
 BATTERY CHARGE, BATTERY A  
 O<sub>2</sub> FUEL CELL PURGE  
 WASTE WATER DUMP  
 P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

**MCC-1**

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

TIG: 11:47:19.8  
 $\Delta V$ : NOMINALLY ZERO

PTC

| BURN STATUS REPORT       |   |                          |   |                 |
|--------------------------|---|--------------------------|---|-----------------|
| X                        | X | <input type="checkbox"/> | • | $\Delta TIG$    |
| X                        | X |                          | • | BT              |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub> |
| TRIM                     |   |                          |   |                 |
| X                        | X | X                        |   | R               |
| X                        | X | X                        |   | P               |
| X                        | X | X                        |   | Y               |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub> |
| <input type="checkbox"/> |   |                          | • | V <sub>gy</sub> |
| <input type="checkbox"/> |   |                          | • | V <sub>gz</sub> |
| <input type="checkbox"/> |   |                          | • | $\Delta V_c$ *  |
| X                        | X | X                        |   | FUEL *          |
| X                        | X | X                        |   | OX *            |
| X                        | X | X                        |   | UNBAL           |

\* ITEMS TO BE REPORTED IN MSFN

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

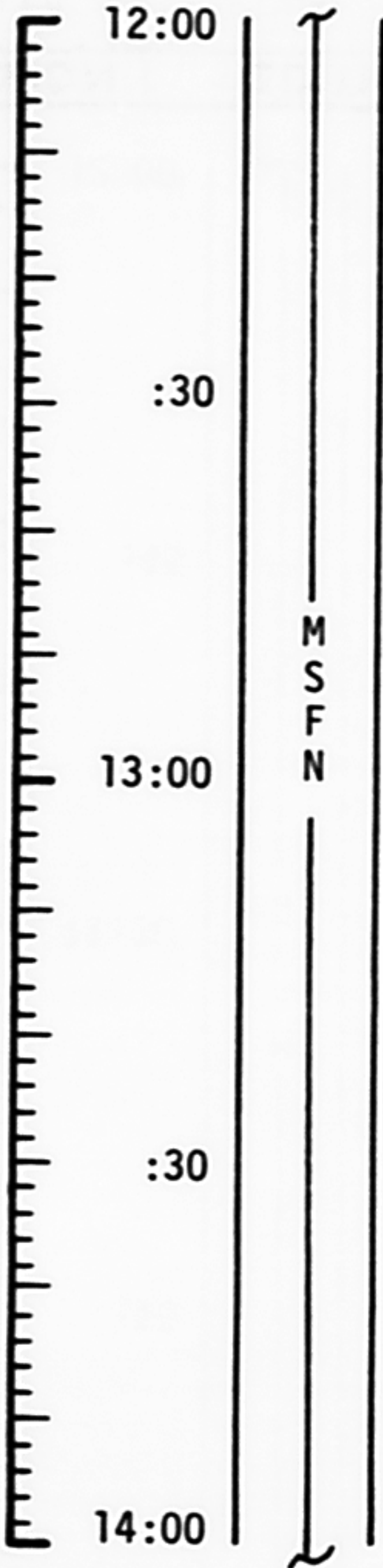
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 11:00 - 12:00 | 1/TLC   | 3-12 |

MCC-H

2222 CST

# FLIGHT PLAN

NOTES



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

MNVR TO PTC ATT P 90  
 Y 0

PTC  
 P 90 Y 0

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

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

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

MSC Form 29 (May 69)

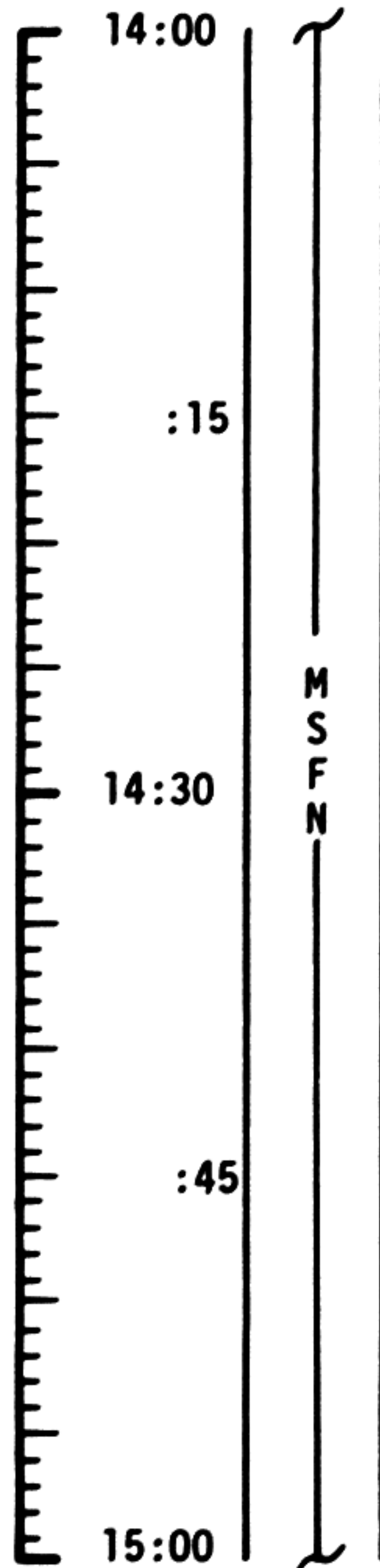
FLIGHT PLANNING BRANCH

MCC-H

0022 CST

# FLIGHT PLAN

NOTES



P52 IMU REALIGN  
OPTION 3 REFSMMAT  
(OPTIONAL)

PTC  
P 90 Y 0

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

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

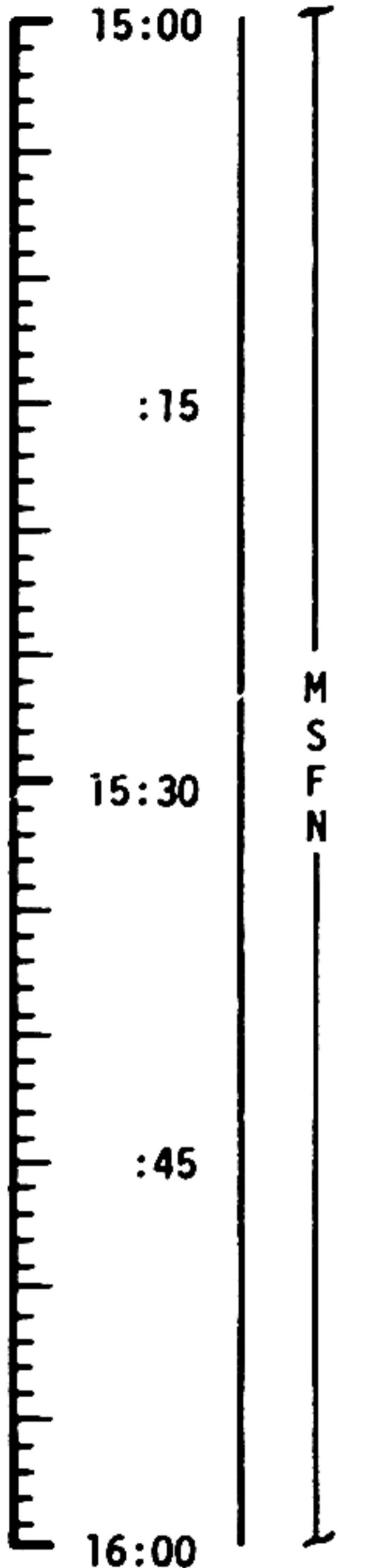


MCC-H

0122 CST

# FLIGHT PLAN

NOTES



REPORT GYRO TORQUING ANGLES  
GDC ALIGN TO IMU

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

P00

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

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

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

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

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

3 MARKS EACH STAR

INCORPORATE P23  
MARK DATA AND  
UPDATE ONBOARD  
STATE VECTOR

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

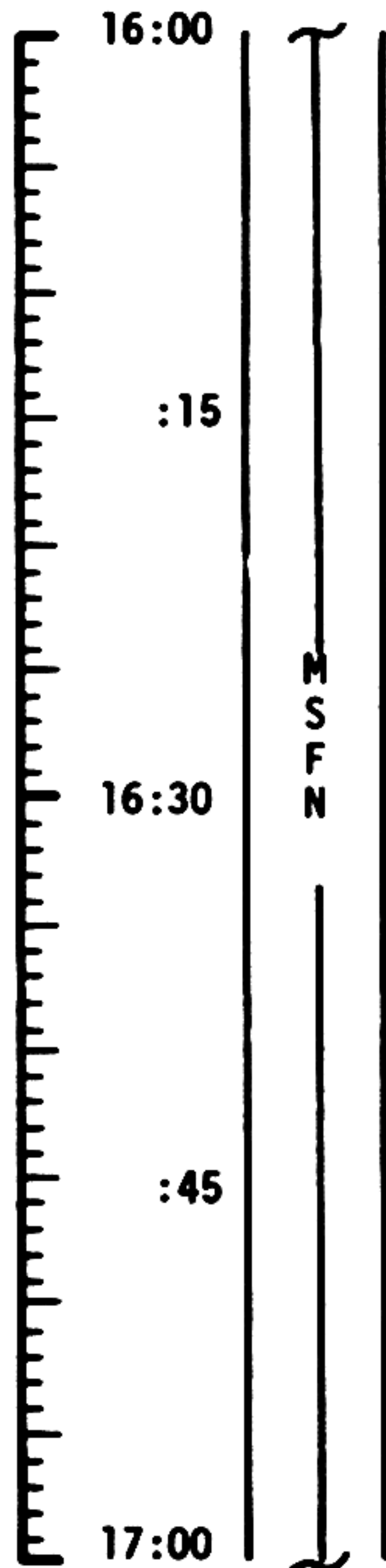
MCC-N

0222 CST

# FLIGHT PLAN

NOTES

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



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

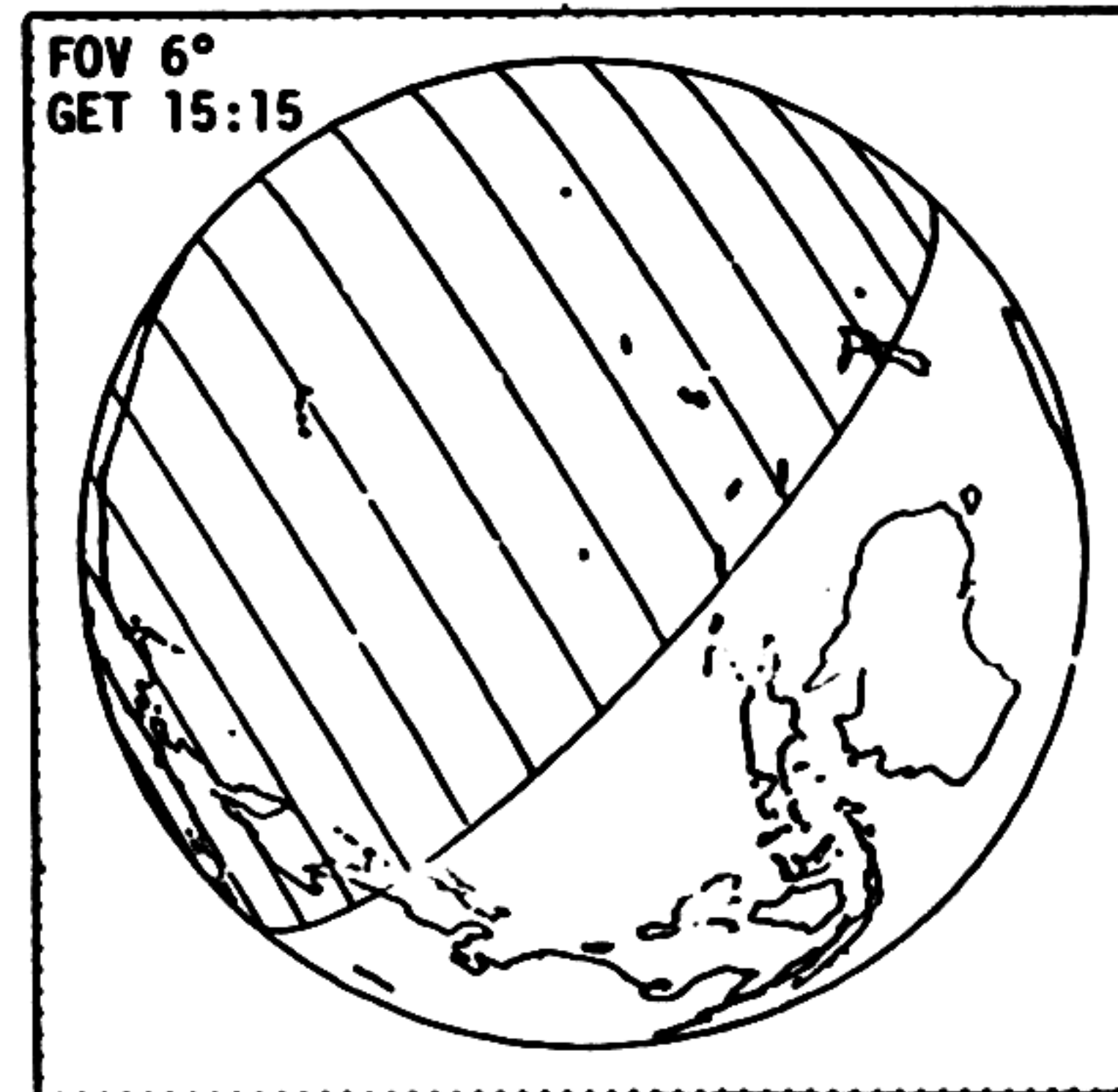
5. STAR 2 3 E N H (R3 = 0 0 1 1 0)

MNVR TO PTC ATTITUDE P 90  
START PTC Y 0

EAT PERIOD

PTC

P 90 Y 0



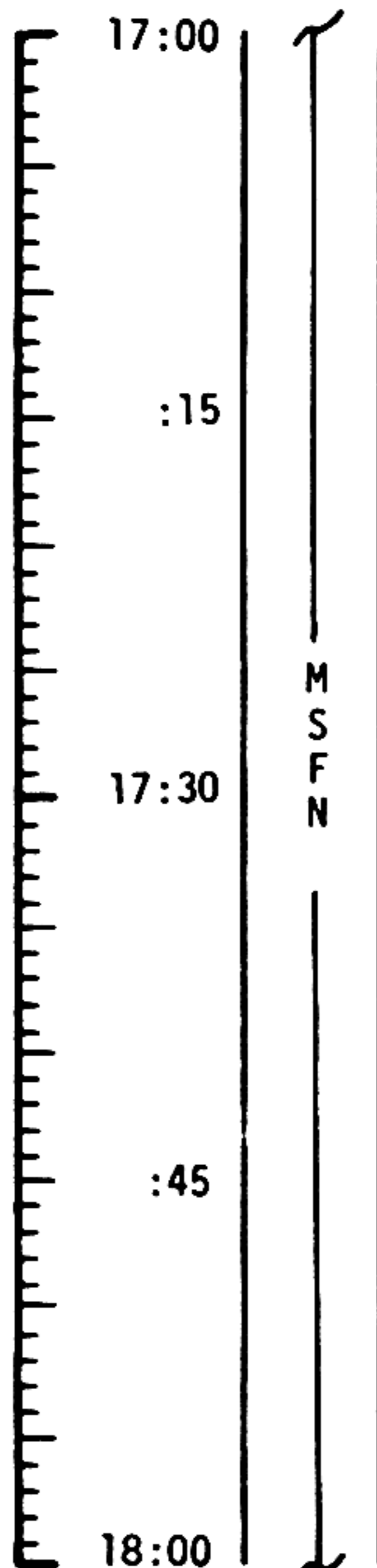
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 16:00 - 17:00 | 1/TLC   | 3-16 |

MCC-H

0322 CST

# FLIGHT PLAN

NOTES



EAT PERIOD

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

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

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

PTC  
P 90 Y 0

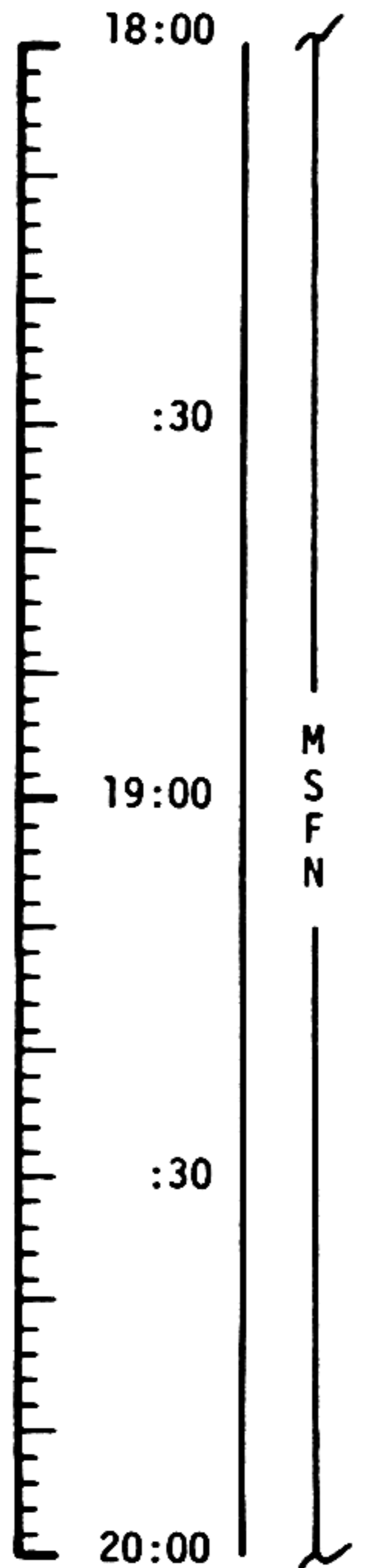
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 17:00 - 18:00 | 1/TLC   | 3-17 |

MCC-H

0422 CST

# FLIGHT PLAN

## NOTES



M  
S  
F  
N

REST PERIOD  
(10 HOURS)

PTC  
P 90 Y 0

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

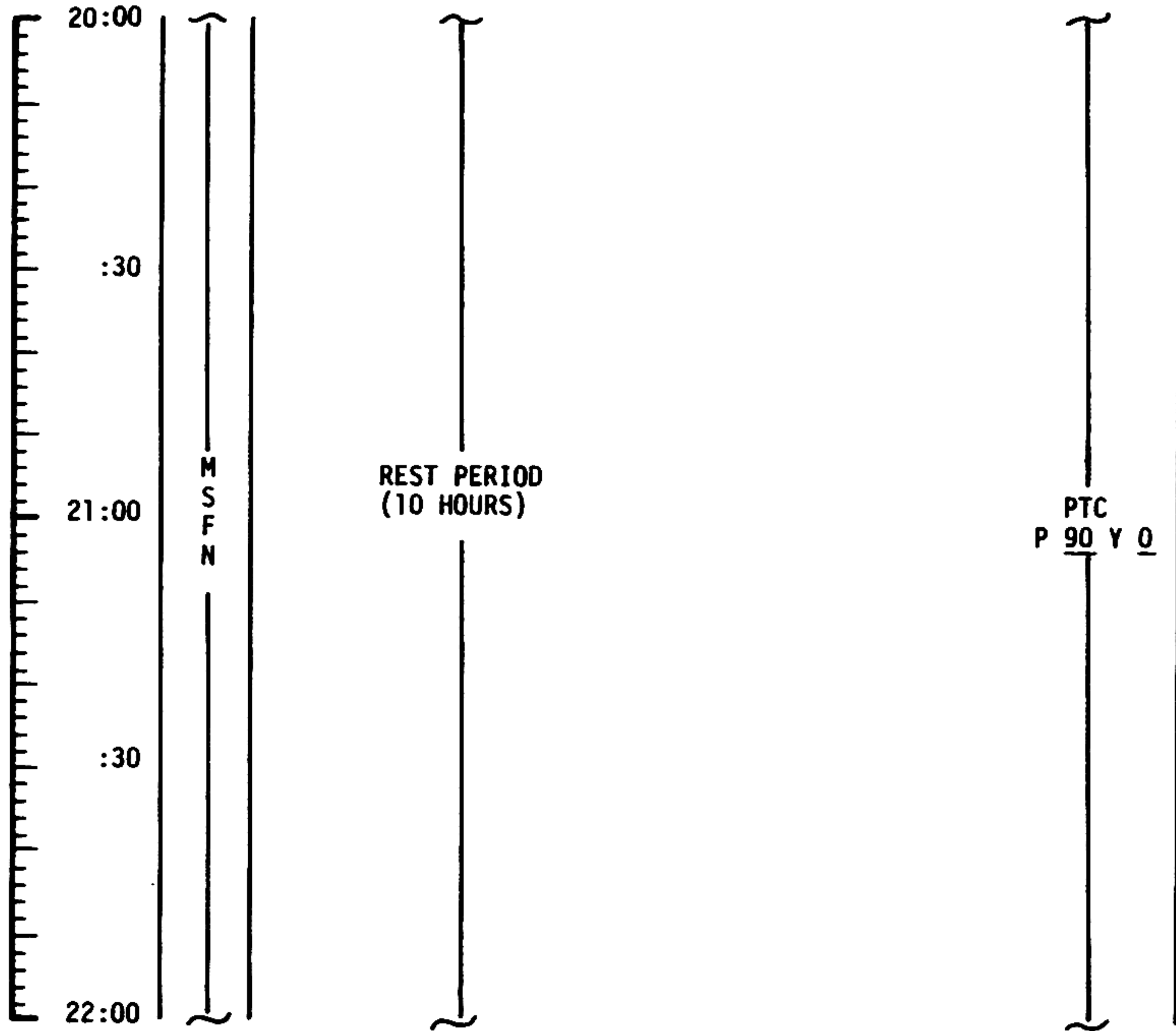
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 18:00 - 20:00 | 1/TLC   | 3-18 |

MCC-H

0622 CST

# FLIGHT PLAN

NOTES



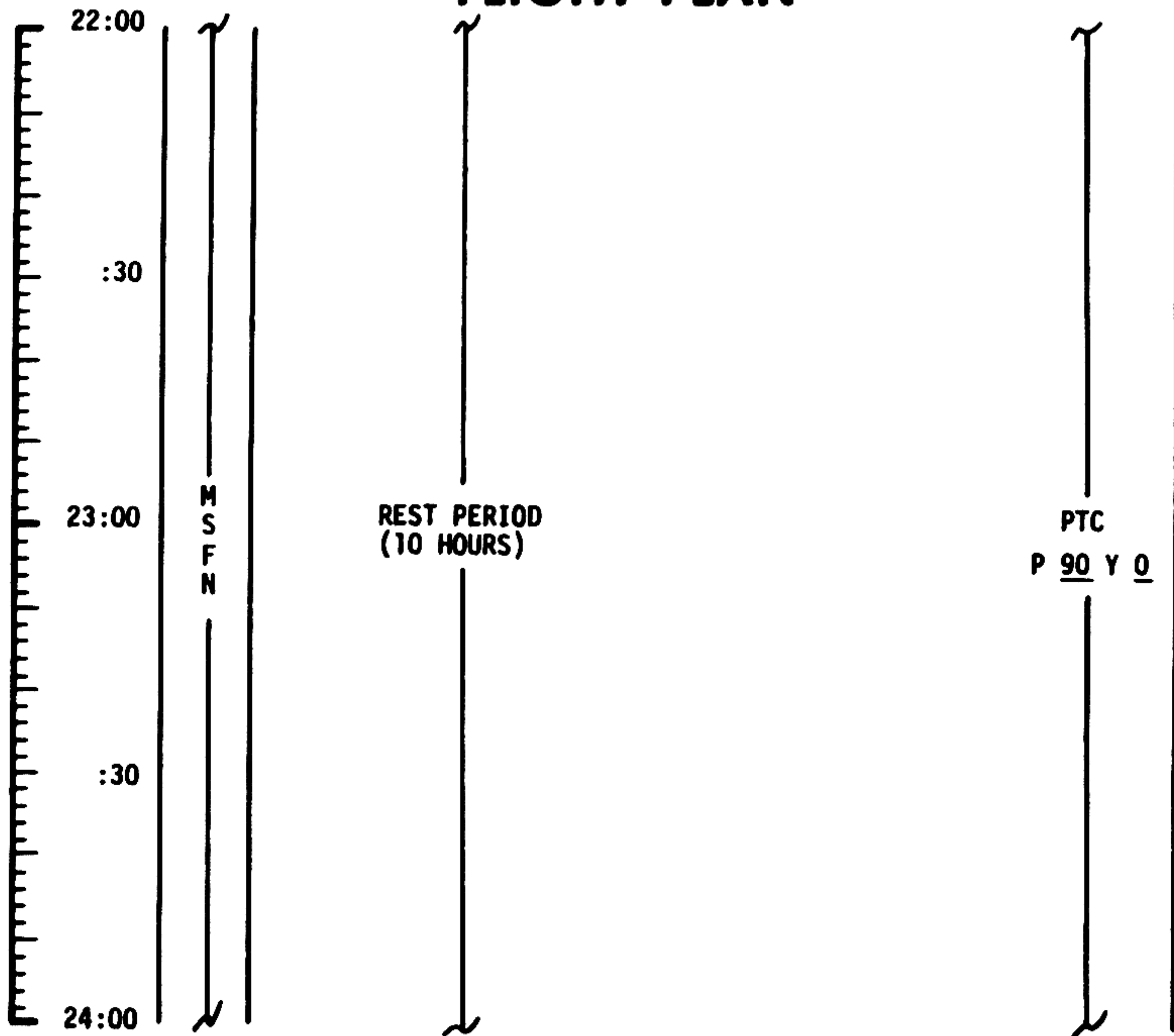
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 20:00 - 22:00 | 1/TLC   | 3-19 |

MCC-H

0822 CST

# FLIGHT PLAN

NOTES



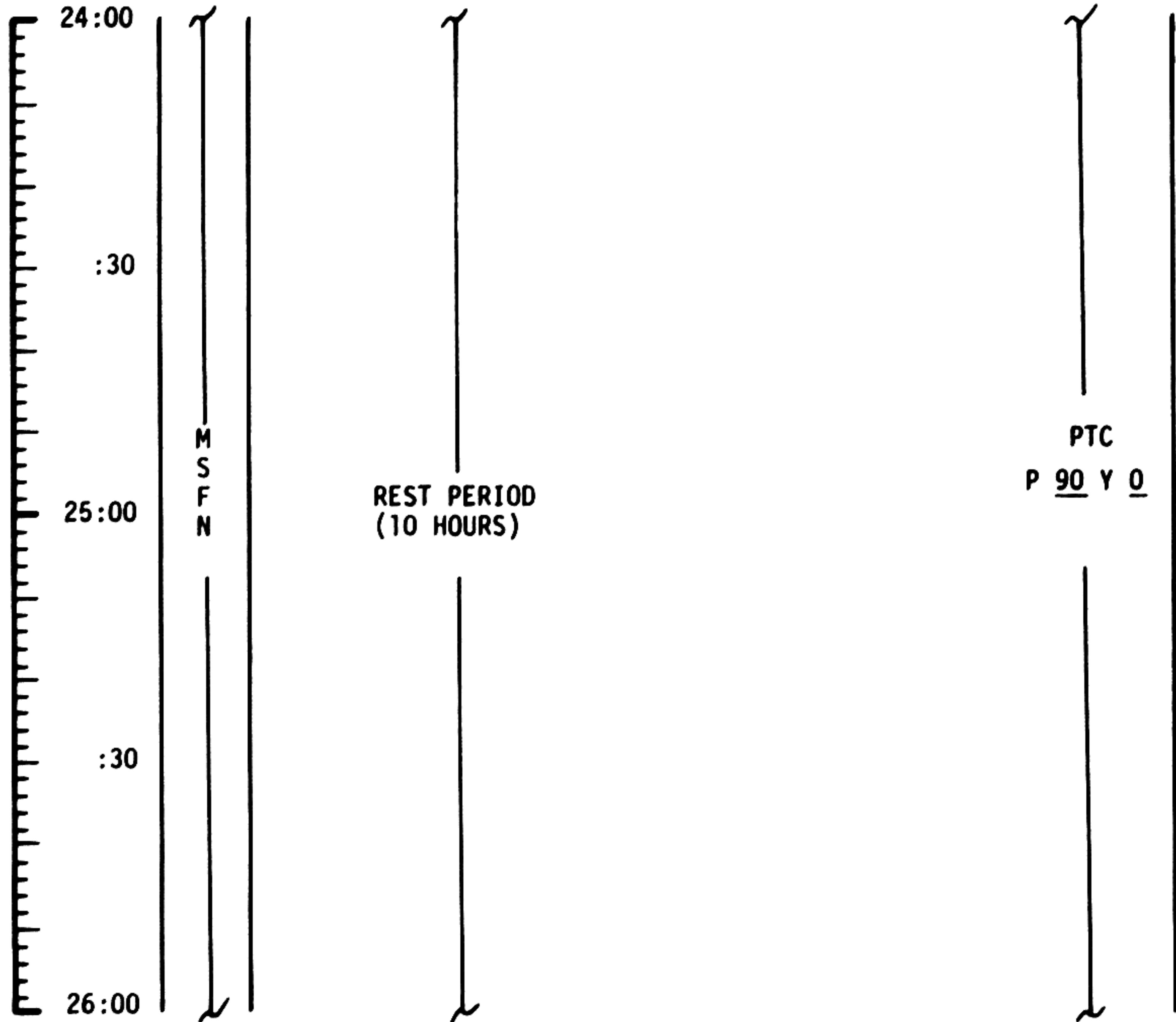
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 22:00 - 24:00 | 1/TLC   | 3-20 |

MCC-H

1022 CST

# FLIGHT PLAN

NOTES



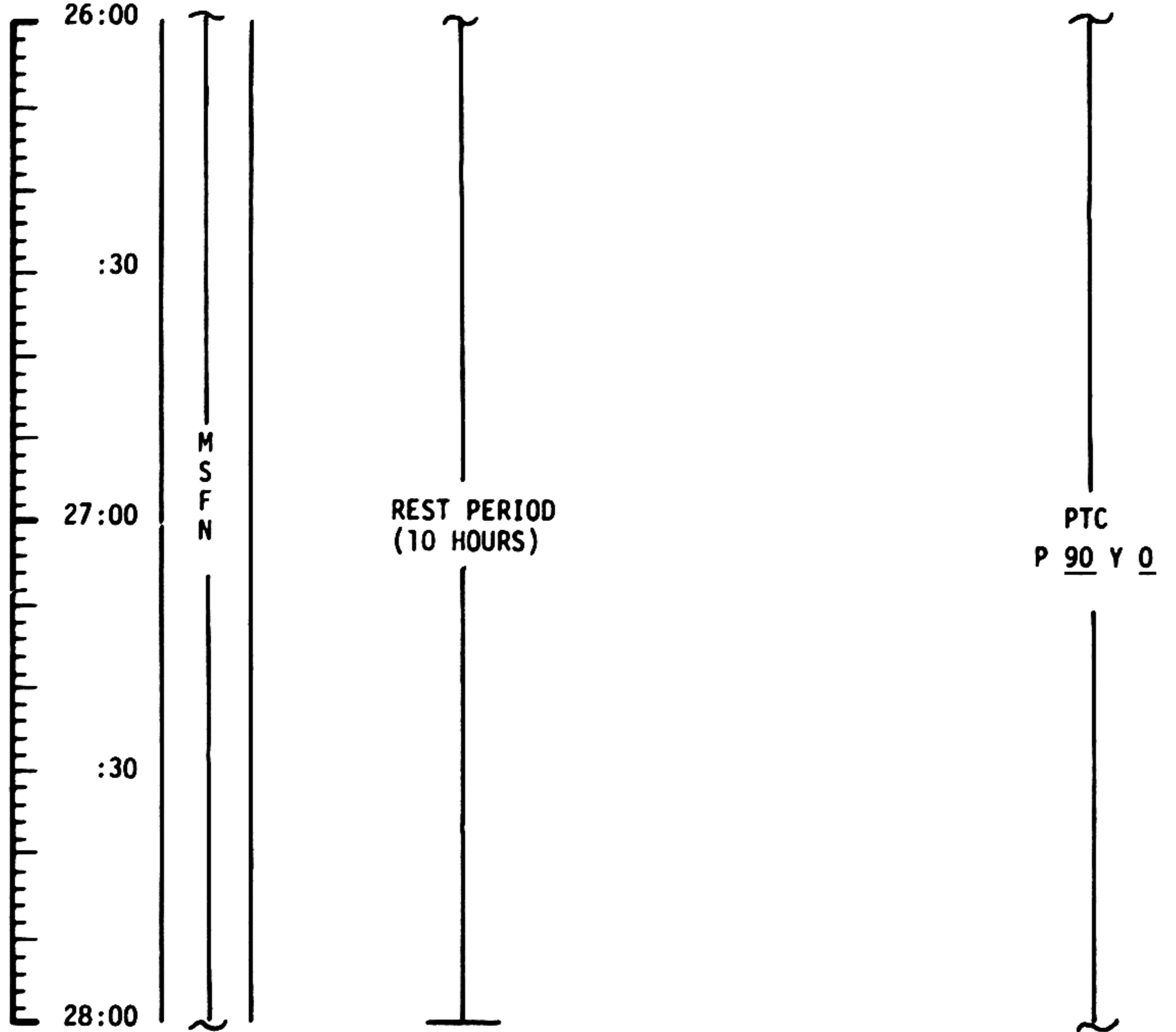
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 24:00 - 26:00 | 1/TLC   | 3-21 |

MCC-H

1222 CST

# FLIGHT PLAN

NOTES



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

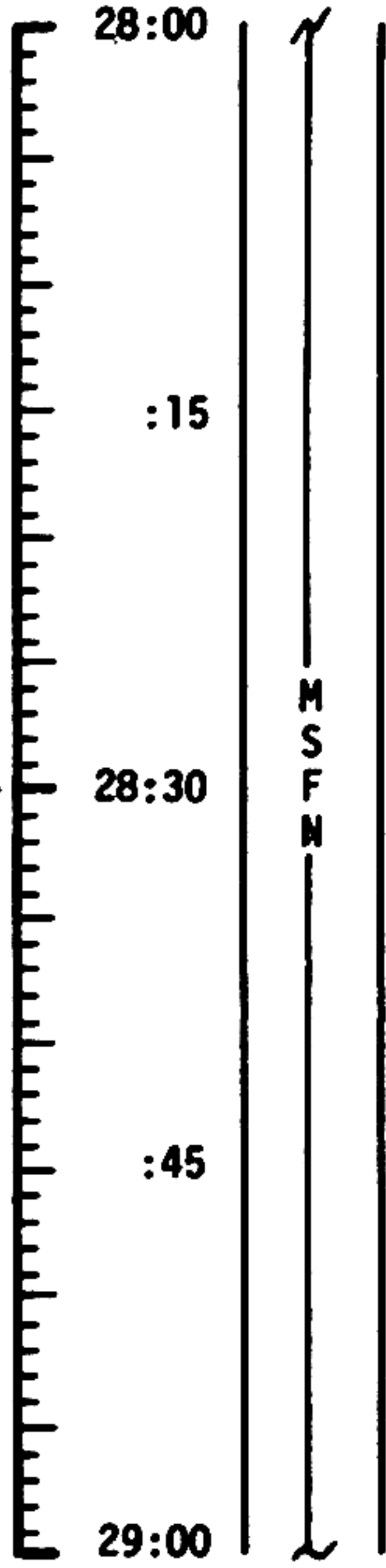


MCC-N

1422 CST

# FLIGHT PLAN

NOTES



UPDATE TO CSM  
CONSUMABLES  
FLIGHT PLAN

EAT PERIOD

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

PTC  
P 90 Y 0

**CSM CONSUMABLES UPDATE**  
 GET: \_\_\_\_ : \_\_\_\_  
 RCS TOTAL \_\_\_\_\_ %  
 QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %  
 C \_\_\_\_\_ % D \_\_\_\_\_ %  
 H<sub>2</sub> TOTAL \_\_\_\_\_ %  
 O<sub>2</sub> TOTAL \_\_\_\_\_ %

**CREW STATUS REPORT**

|       | CDR   | CMP   | LMP   |
|-------|-------|-------|-------|
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

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





MCC-H

1522 CST

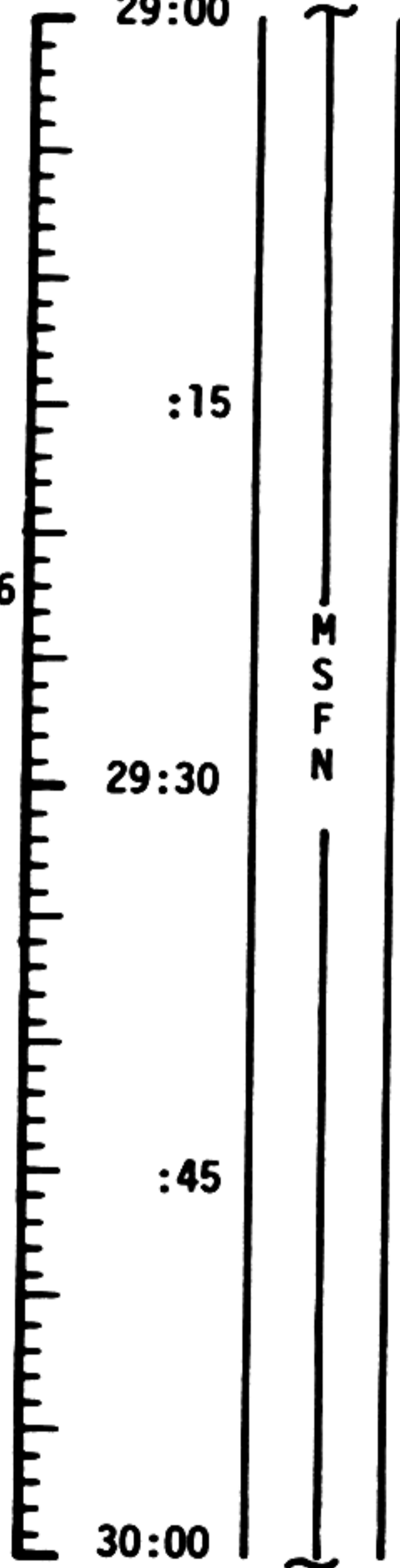
# FLIGHT PLAN

NOTES

UPLINK TO CSM  
STATE VECTOR &  
MCC-2 TGT LOAD

V66

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



M  
S  
F  
N

EAT PERIOD

REPORT LM/CM ΔP

P52 - IMU REALIGN  
OPTION 3 - REFSMMAT

REPORT GYRO TORQUING ANGLES

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

PTC  
P 90 Y 0

|                  |         |
|------------------|---------|
| P52 (PTC ORIENT) |         |
| N71:             | — — — — |
| N05:             | — — — — |
| N93:             |         |
| X                | — — — — |
| Y                | — — — — |
| Z                | — — — — |
| GET              | — — — — |

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

# FLIGHT PLAN

MCC-2  
BURN TABLE

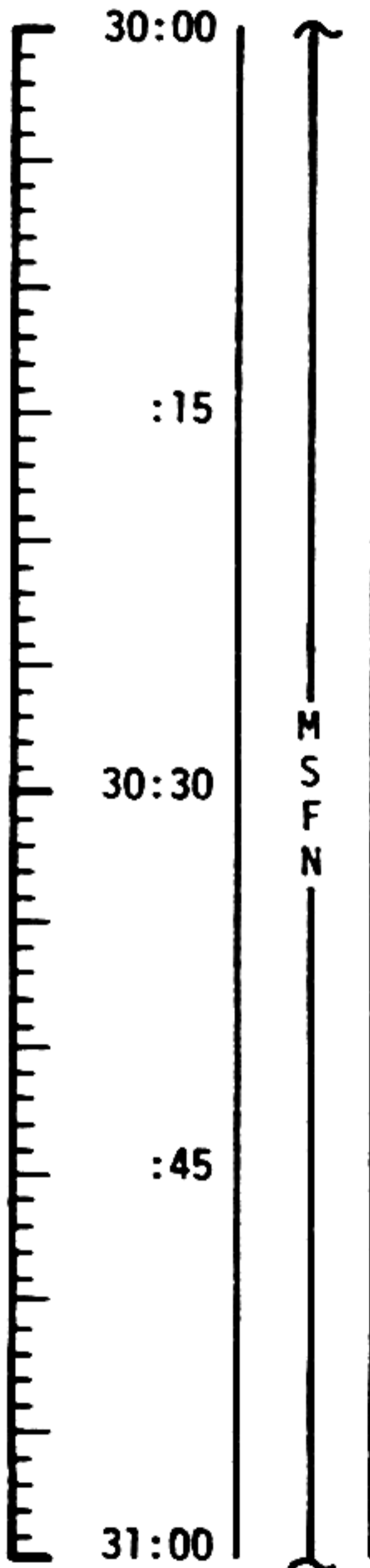
| P OR Y<br>RATES     | ATT<br>DEVIATION | SHUTDOWN<br>TIME | RESIDUALS   |
|---------------------|------------------|------------------|---|
| 10°/SEC<br>TAKEOVER | +10°<br>TAKEOVER | BT + 1 SEC       | IF < 2FPS, TRIM<br>X AXIS TO 0.2FPS<br>IF > 2FPS, NO TRIM |

TABLE 3-3  
3-25

MCC-H

1622 CST

# FLIGHT PLAN



P30 EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK

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

O<sub>2</sub> FUEL CELL PURGE  
WASTE WATER DUMP

P40 - SPS THRUST

GDC ALIGN TO IMU

**MCC-2**

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

R \_\_\_\_\_ HGA  
P \_\_\_\_\_ P \_\_\_\_\_  
Y \_\_\_\_\_ Y \_\_\_\_\_

| BURN STATUS REPORT       |   |                          |   |                   |
|--------------------------|---|--------------------------|---|-------------------|
| X                        | X | <input type="checkbox"/> | • | ΔTIG              |
| X                        | X |                          | • | BT                |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| TRIM                     |   |                          |   |                   |
| X                        | X | X                        |   | R                 |
| X                        | X | X                        |   | P                 |
| X                        | X | X                        |   | Y                 |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gy</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gz</sub>   |
| <input type="checkbox"/> |   |                          | • | ΔV <sub>c</sub> * |
| X                        | X | X                        |   | FUEL*             |
| X                        | X | X                        |   | OX*               |
| X                        | X | X                        |   | UNBAL             |

\*ITEMS TO BE REPORTED TO MSFN

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

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

TLI + 28 HRS

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

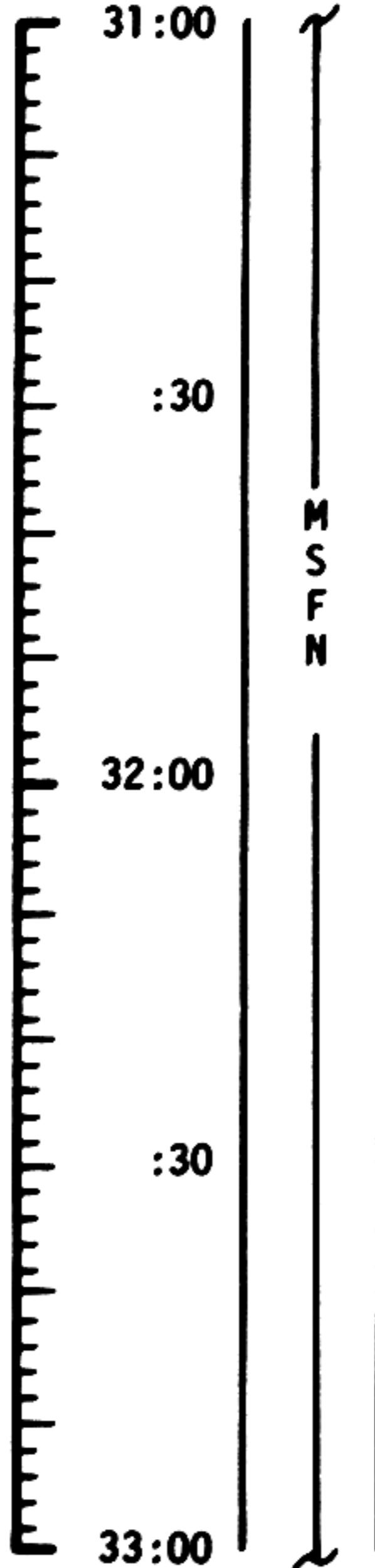
MCC-H

1722 CST

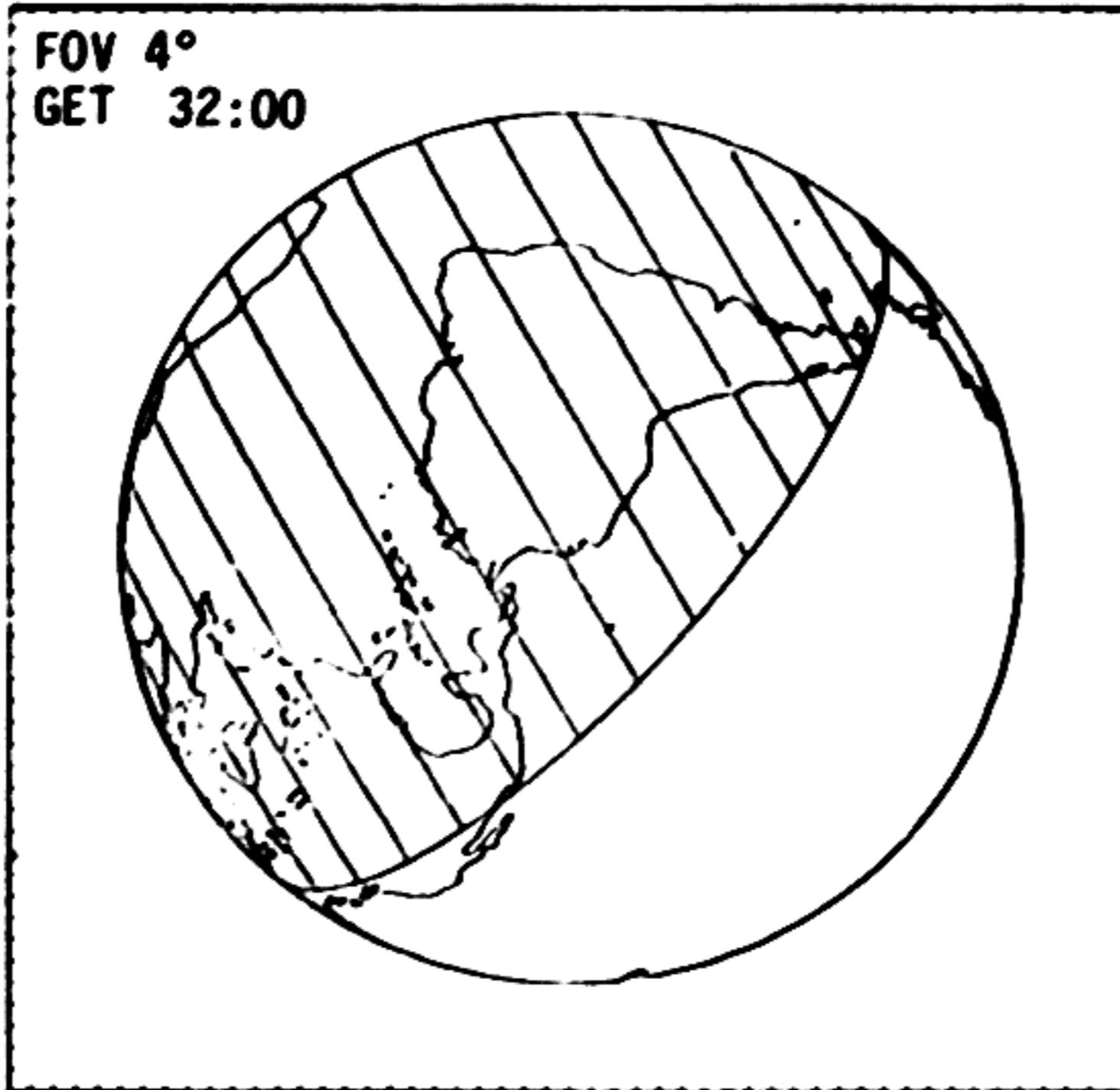
# FLIGHT PLAN

NOTES

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



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



PTC  
 P 90 Y 0

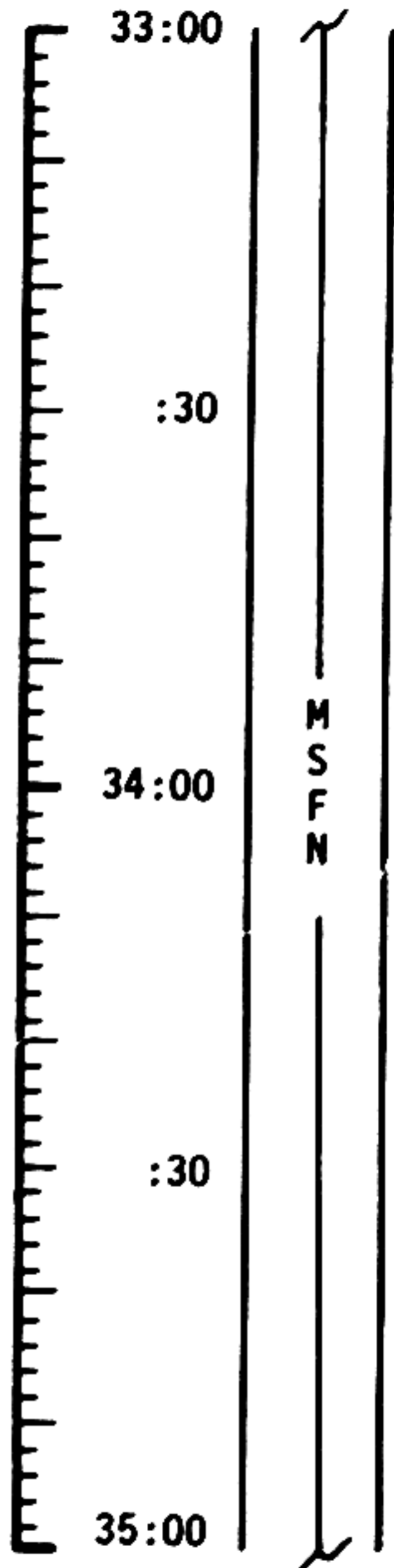
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 31:00 - 33:00 | 2/TLC   | 3-27 |

MCC-N

1922 CST

# FLIGHT PLAN

NOTES



PTC  
P 90 Y 0

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

UPDATE TO CSM  
LOI-1 MINUS 5 HR  
ABORT PAD

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

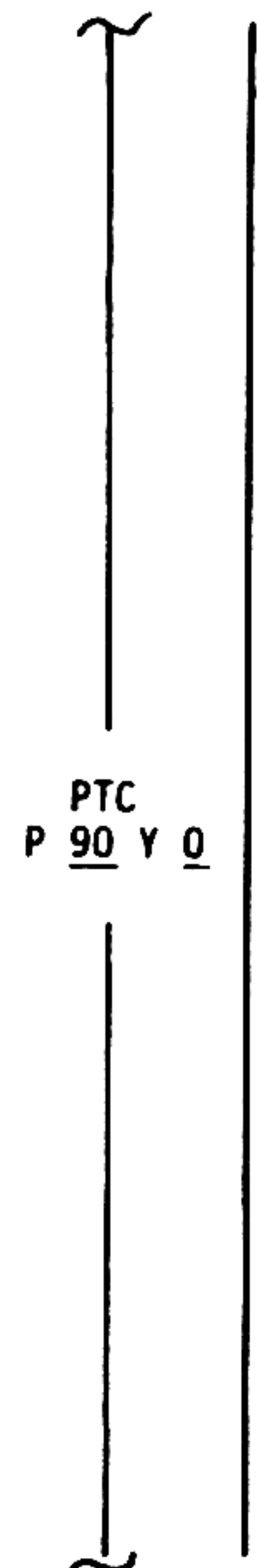
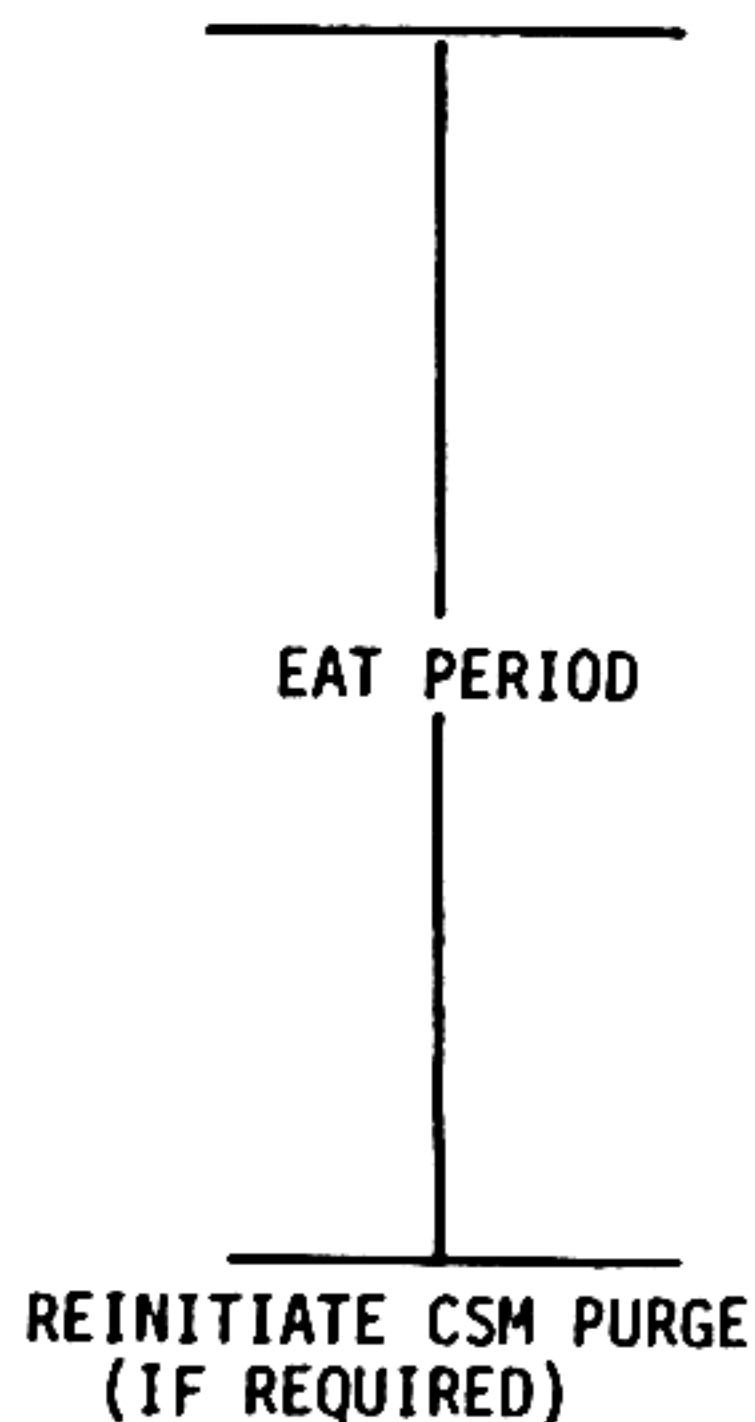
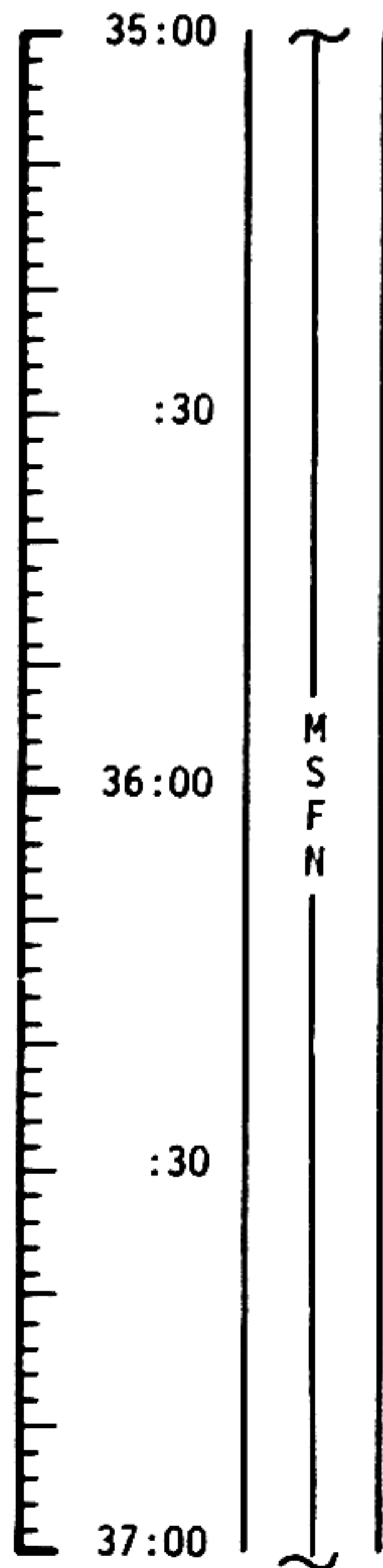


MCC-H

2122 CST

# FLIGHT PLAN

NOTES



THE LENGTH OF THE SECOND CSM CABIN PURGE WILL BE DETERMINED REAL TIME BASED ON THE LM LEAK RATE INSURING LM O<sub>2</sub> PURITY REQUIREMENTS ON THE LUNAR SURFACE

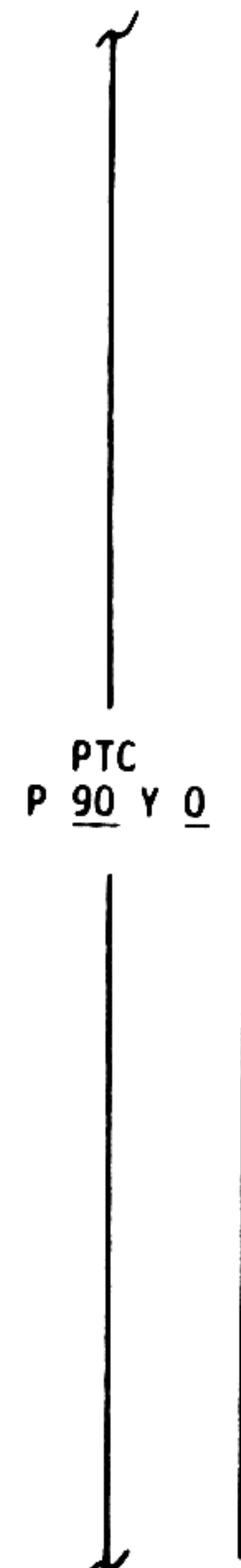
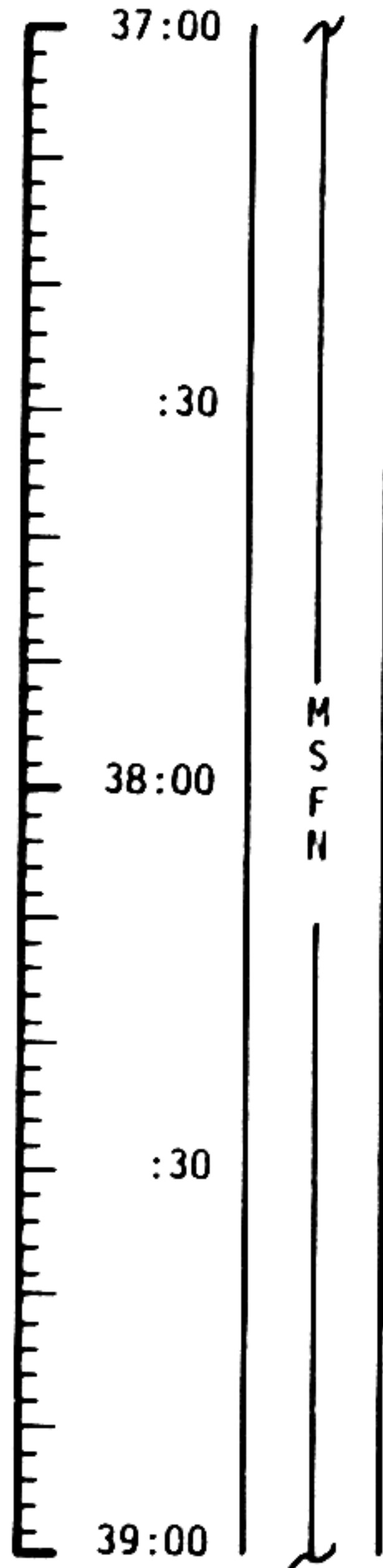
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 35:00 - 37:00 | 2/TLC   | 3-29 |

MCC-H

2322 CST

# FLIGHT PLAN

NOTES



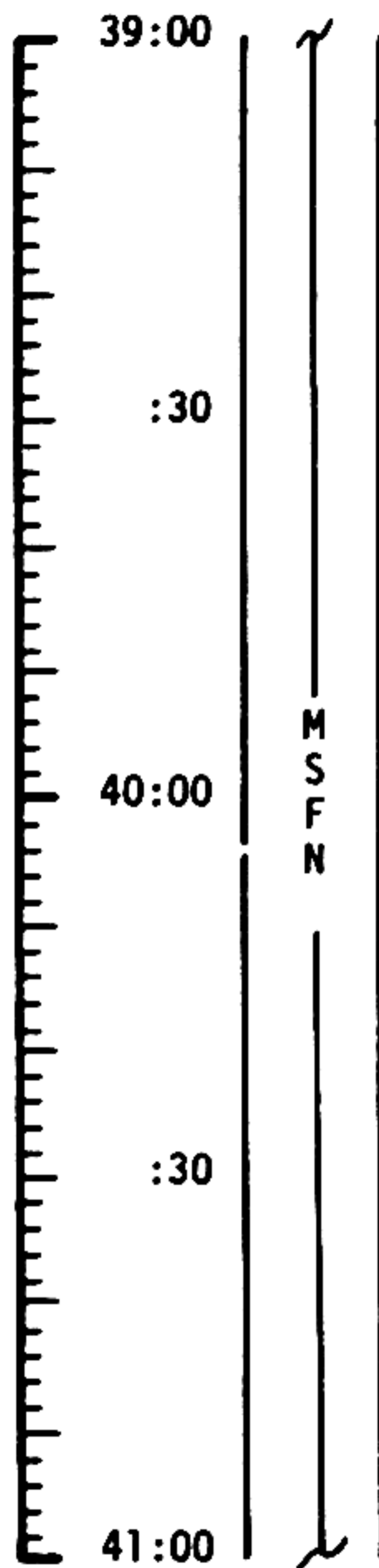
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 37:00 - 39:00 | 2/TLC   | 3-30 |

MCC-N

0122 CST

# FLIGHT PLAN

NOTES



M  
S  
F  
N

REPORT LM/CM ΔP

PTC  
P 90 Y 0

H<sub>2</sub> PURGE LINE HTRS - ON

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

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

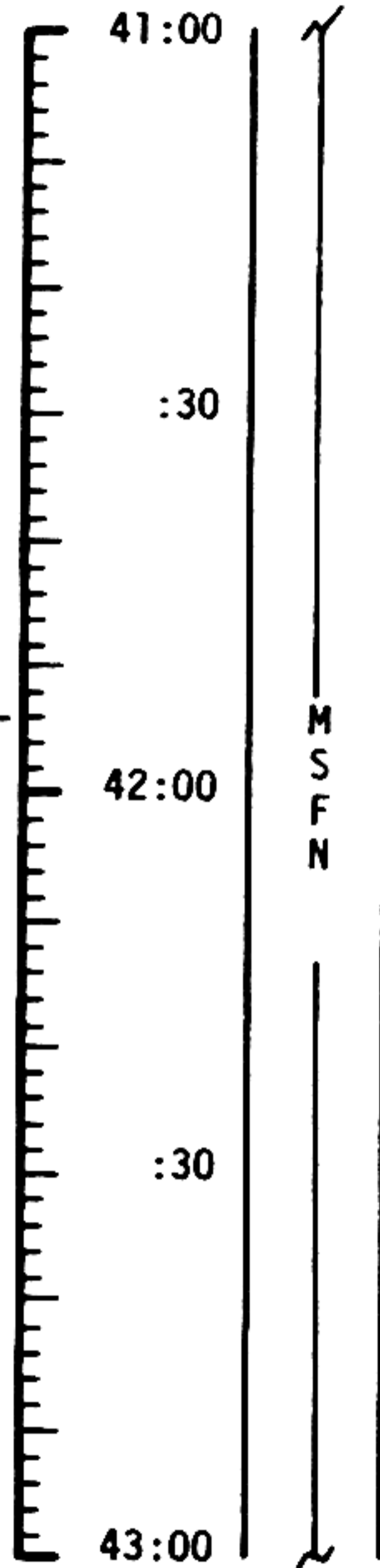
MCC-H

0322 CST

# FLIGHT PLAN

## NOTES

UPLINK TO CSM  
STATE VECTOR & V66



M  
S  
F  
N

WASTE WATER DUMP  
 H<sub>2</sub> & O<sub>2</sub> FUEL CELL PURGE  
 LiOH CANISTER CHANGE NO. 4  
 (6 INTO B, STOW 4 IN B5)

EAT PERIOD

**PRESLEEP CHECKLIST:**  
 CREW STATUS REPORT (MED)  
 ONBOARD READOUTS  
 CYCLE O<sub>2</sub> & H<sub>2</sub> FANS  
 CHLORINATE POTABLE WATER  
 VERIFY:  
 WASTE MNGT OVBD DRAIN - OFF  
 WASTE STOW VENT VLV - CLOSED  
 EMER CABIN PRESS VLV - BOTH  
 SURGE TK O<sub>2</sub> VLV - ON  
 REPRESS O<sub>2</sub> VLV - OFF  
 LM TUNNEL VENT - LM/CM ΔP  
 "E" MEMORY DUMP  
 NORMAL LUNAR COMM EXCEPT:  
 S-BD NORMAL MODE VOICE - OFF  
 S-BD SQUELCH - ENABLE  
 S-BD AUX TAPE - OFF  
 S-BD ANT - OMNI  
 S-BD ANT OMNI - B  
 TAPE RCDR FWD - OFF

PTC  
P 90 Y 0

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

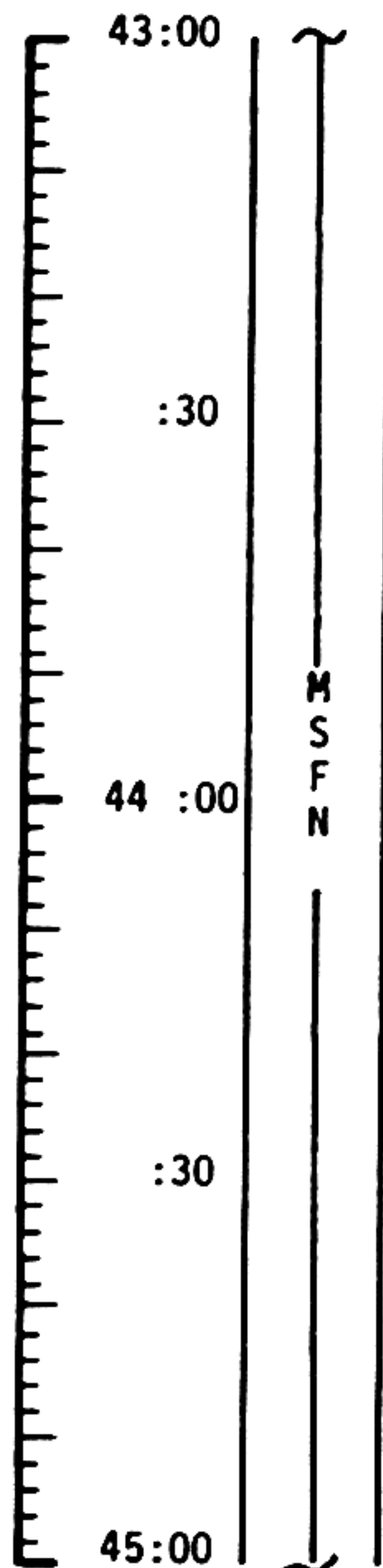
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 41:00 - 43:00 | 2/TLC   | 3-32 |

MCC-H

0522 CST

# FLIGHT PLAN

## NOTES



M  
S  
F  
N

REST PERIOD  
(10 HOURS)

PTC  
P 90 Y 0

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

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

MSC Form 29 (May 69)

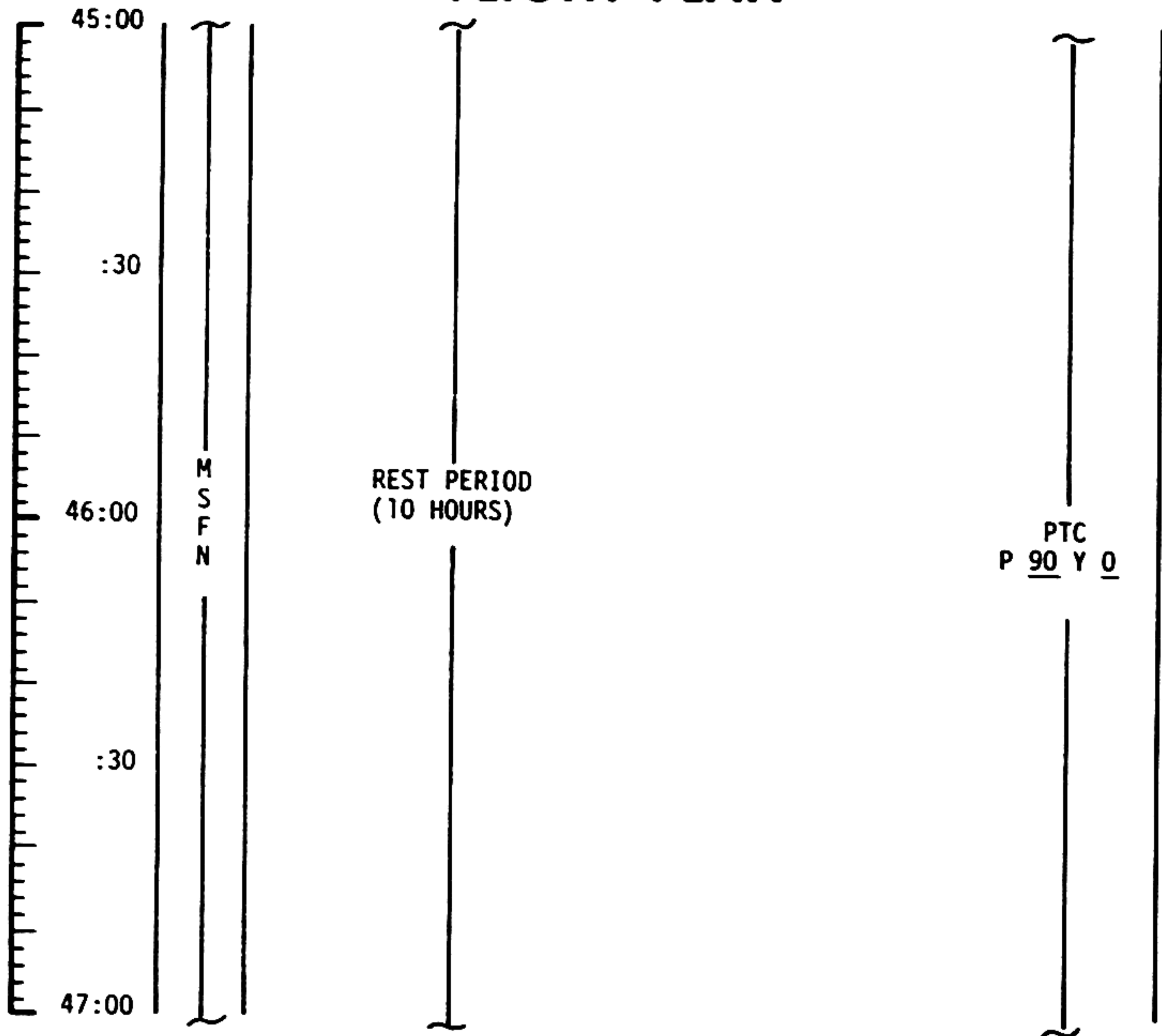
FLIGHT PLANNING BRANCH

MCC-H

0722 CST

# FLIGHT PLAN

NOTES



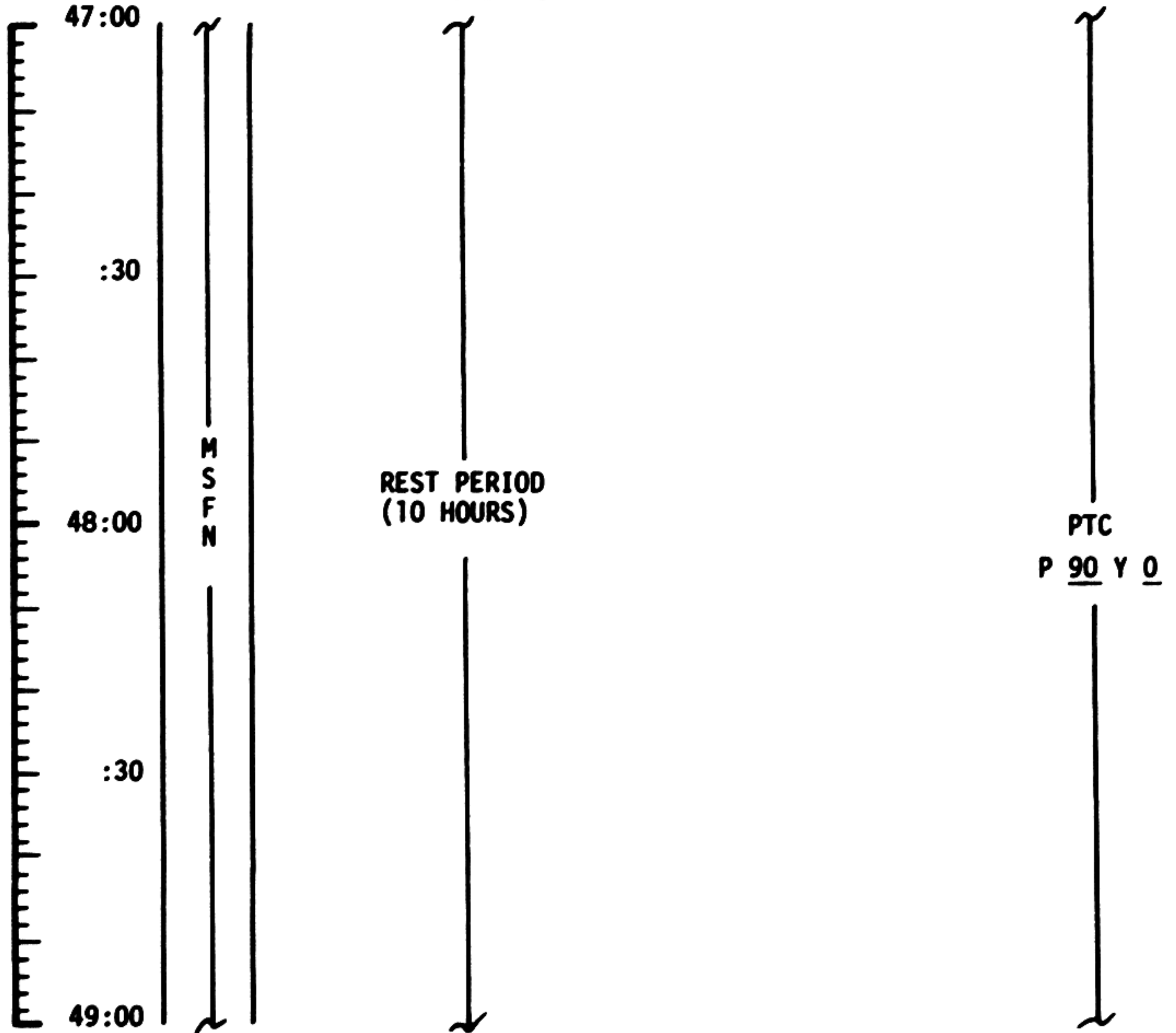
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 45:00 - 47:00 | 2/TLC   | 3-34 |

MCC-N

0922 CST

# FLIGHT PLAN

NOTES



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

MSC Form 29 (May 68)

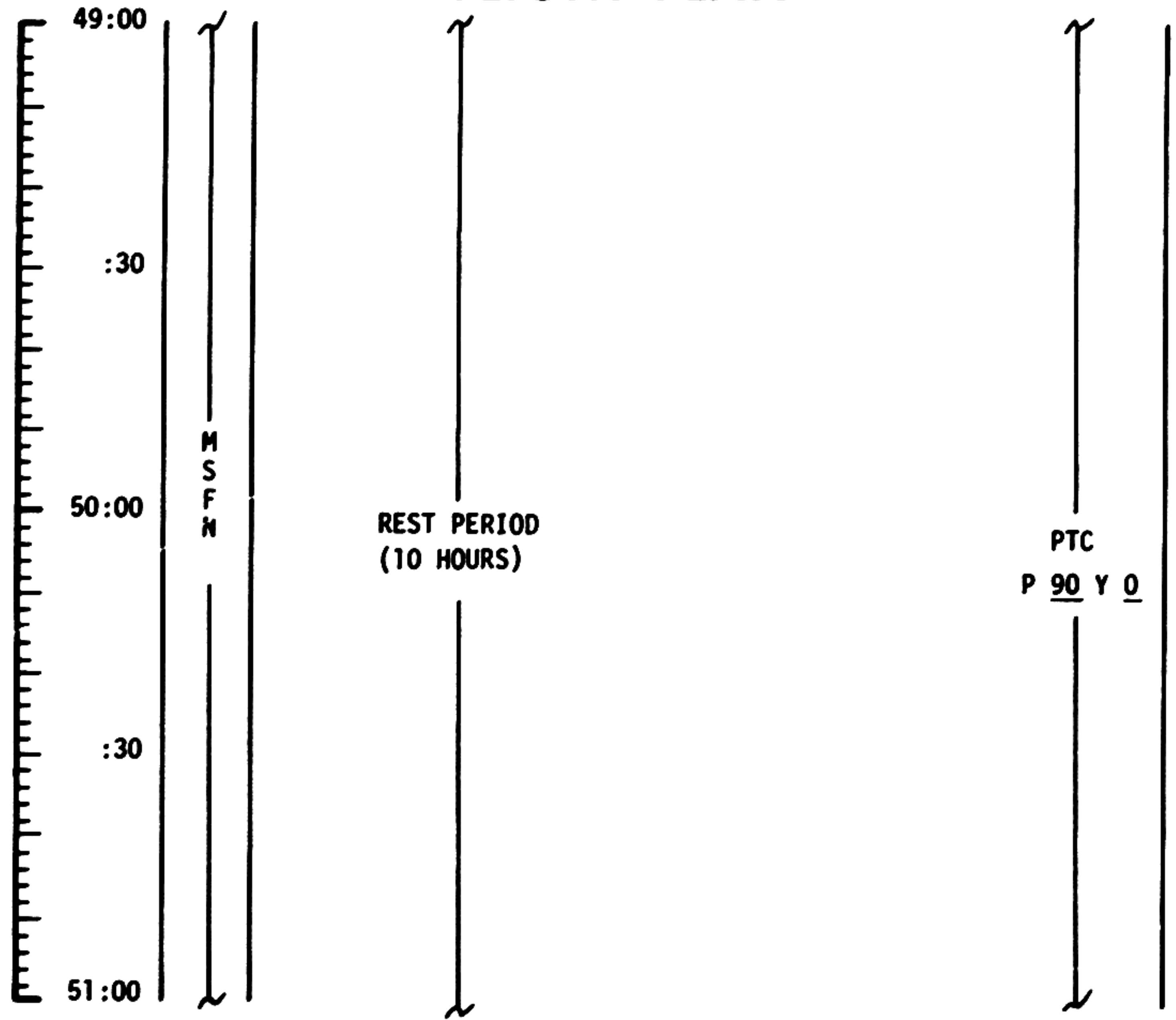
FLIGHT PLANNING BRANCH

MCC-H

1122 CST

# FLIGHT PLAN

NOTES



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

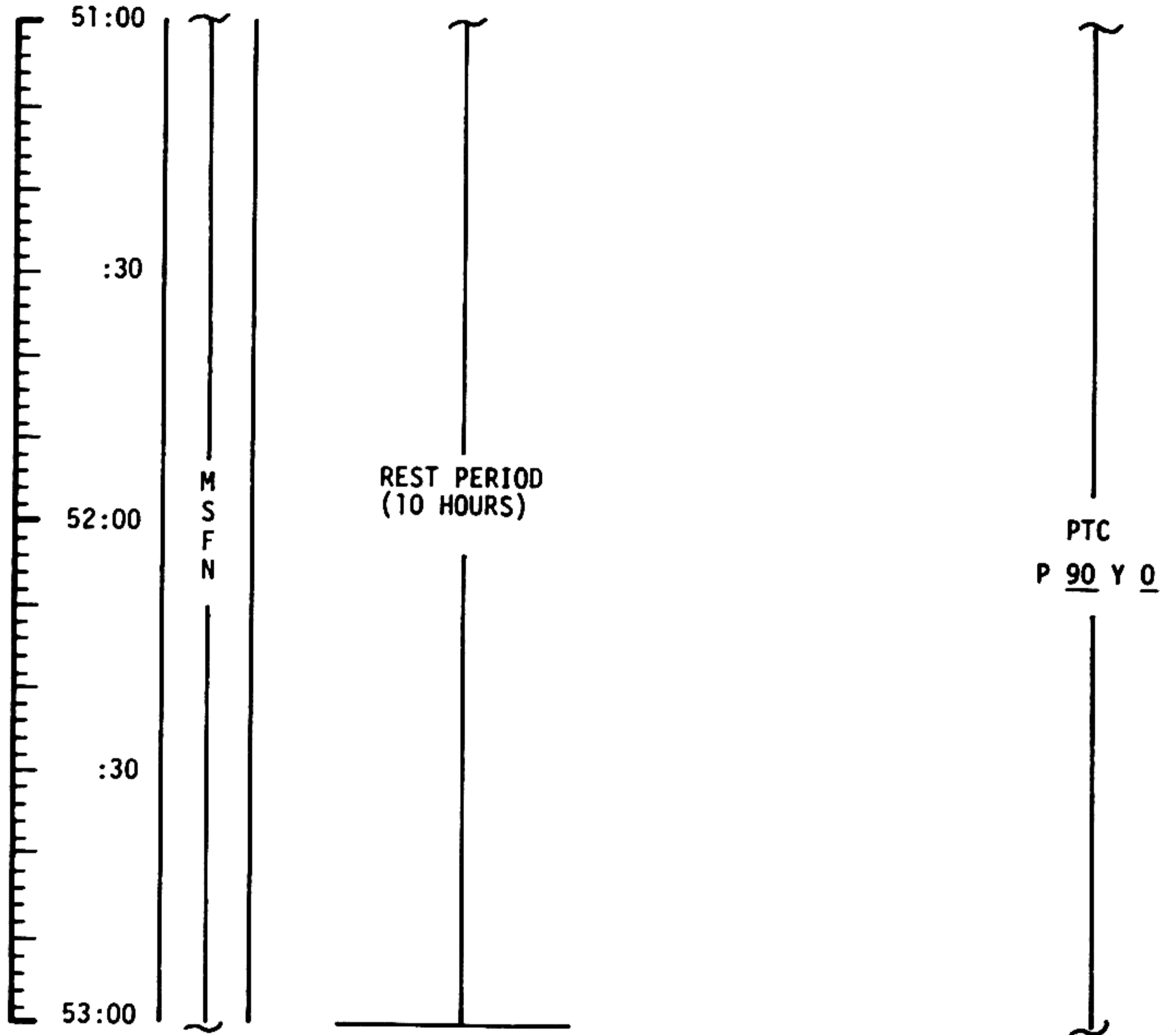


MCC-H

1322 CST

# FLIGHT PLAN

NOTES



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

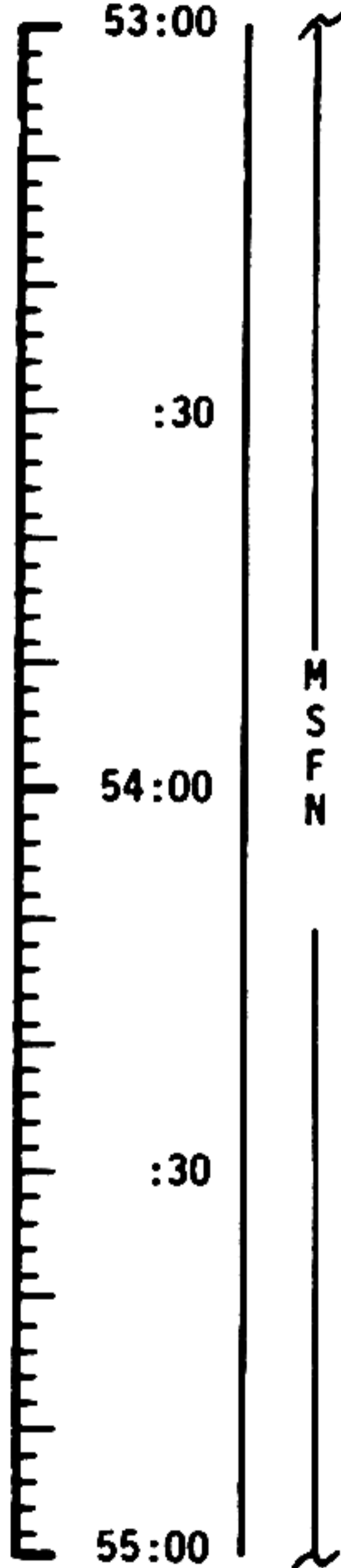
MCC-H

1522 CST

# FLIGHT PLAN

NOTES

UPDATE TO CSM  
CONSUMABLES  
FLIGHT PLAN



M  
S  
F  
N

EAT PERIOD

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

CSM CONSUMABLES UPDATE  
 GET: \_\_\_\_\_ : \_\_\_\_\_  
 RCS TOTAL \_\_\_\_\_ %  
 QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %  
 C \_\_\_\_\_ % D \_\_\_\_\_ %  
 H<sub>2</sub> TOTAL \_\_\_\_\_ %  
 O<sub>2</sub> TOTAL \_\_\_\_\_ %

L10H CANISTER CHANGE  
 NO. 5 (7 INTO A, STOW  
 5 IN B6)  
 REPORT LM/CM ΔP

CREW STATUS REPORT

|       | CDR   | CMP   | LMP   |
|-------|-------|-------|-------|
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

PTC  
P 90 Y 0

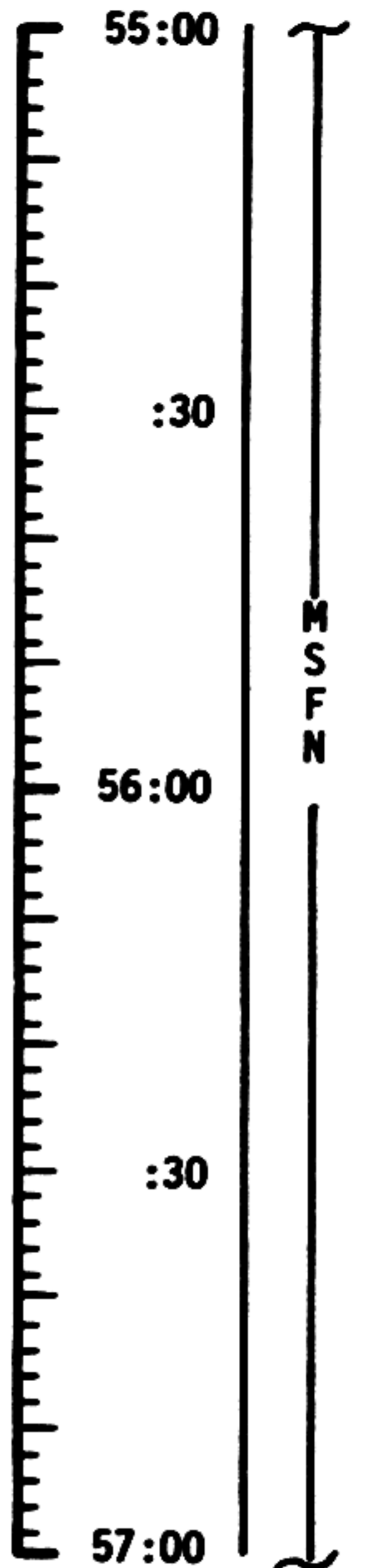
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 53:00 - 55:00 | 3/TLC   | 3-38 |

MCC-N

1722 CST

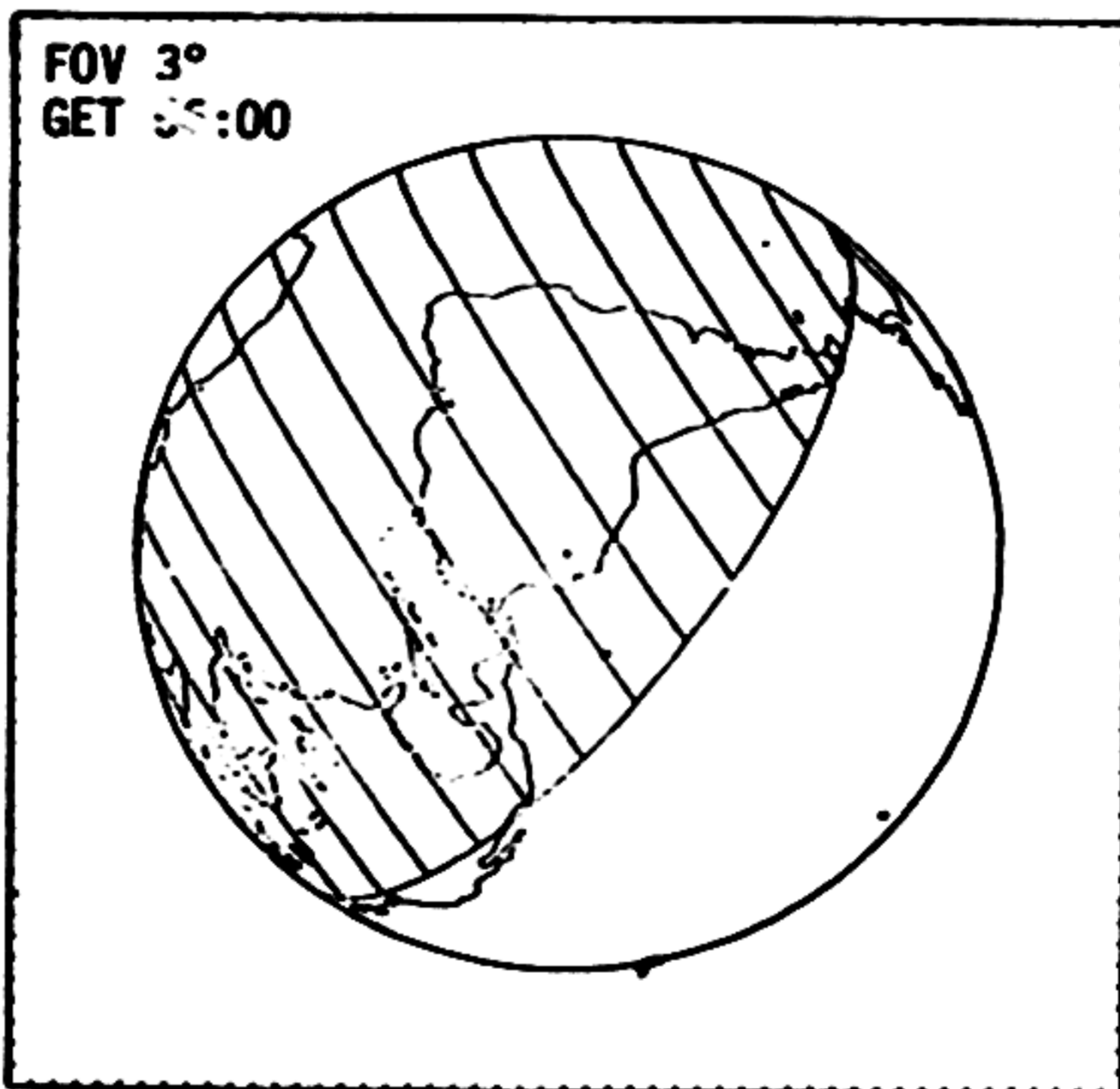
# FLIGHT PLAN

NOTES



P52 IMU REALIGN  
OPTION 3 REFSMAT  
(OPTIONAL)

REPORT GYRO TORQUING ANGLES



P52 (PTC ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

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

PTC  
P 90 Y 0

UPLINK TO CSM  
ΔH (IF REQUIRED)

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

MSC Form 29 (May 69)

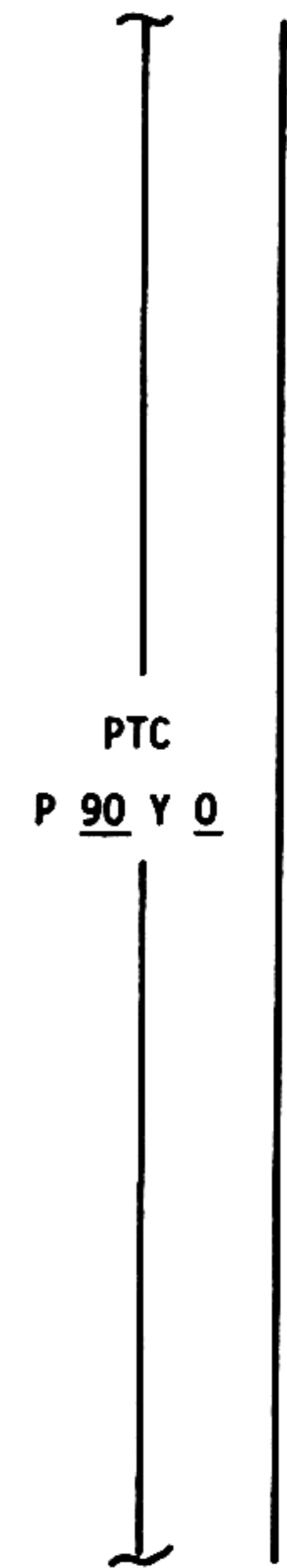
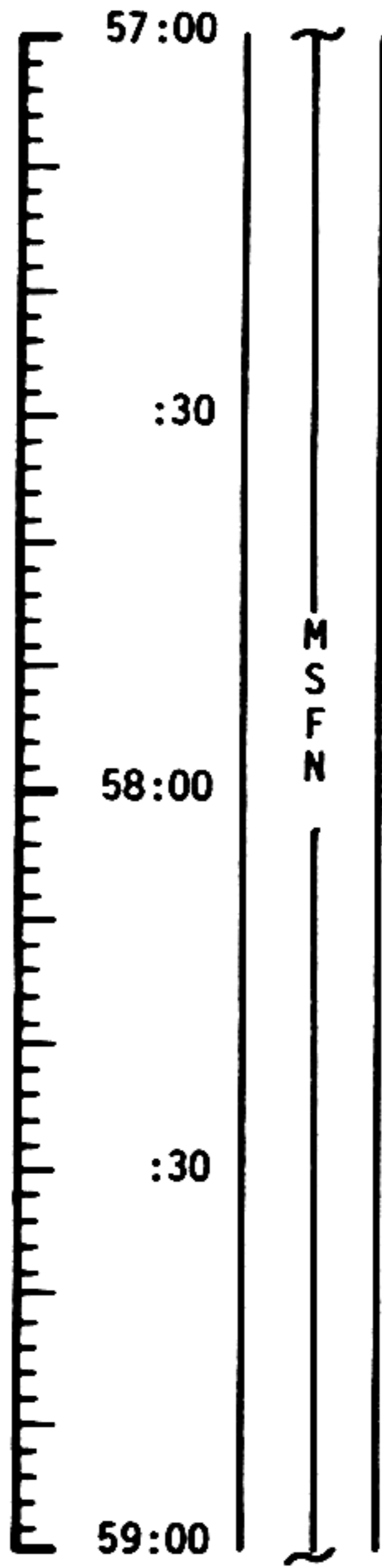
FLIGHT PLANNING BRANCH

MCC-N

1922 CST

# FLIGHT PLAN

NOTES



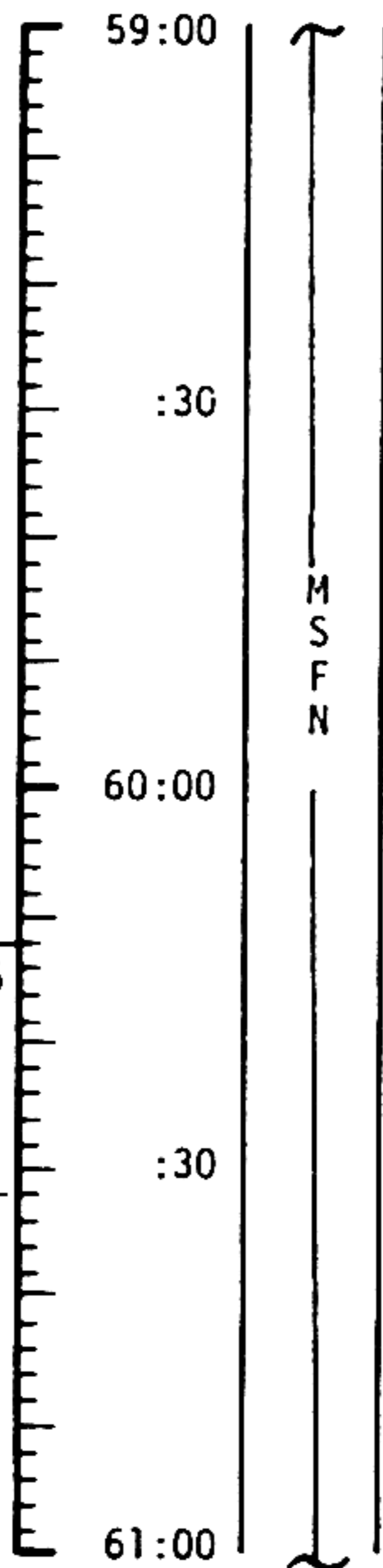
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 57:00 - 59:00 | 3/TLC   | 3-40 |

MCC-M

2122 CST

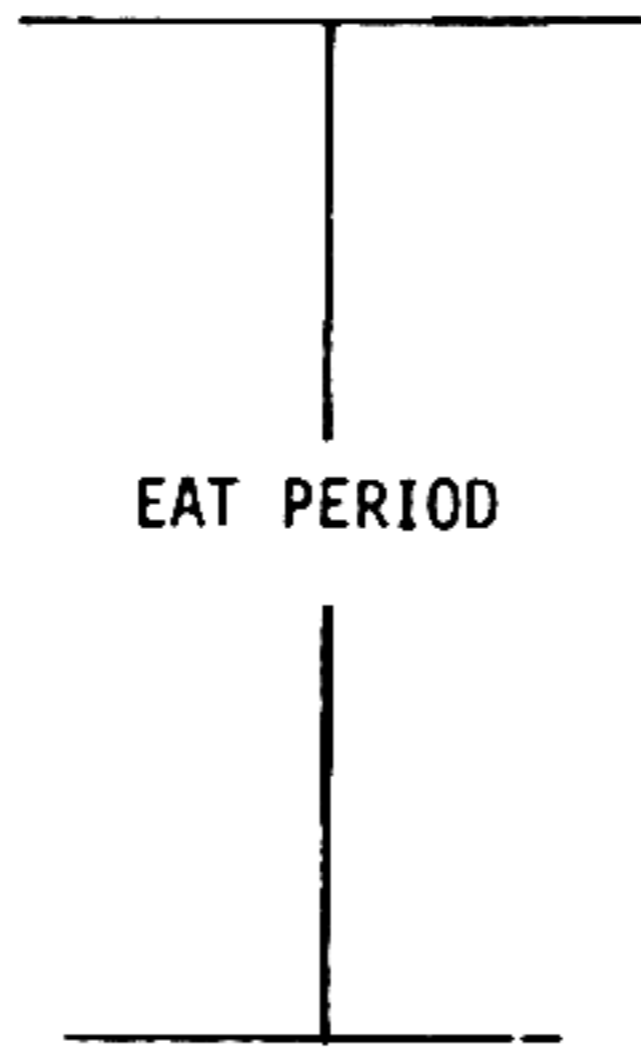
# FLIGHT PLAN

NOTES



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

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



~~H<sub>2</sub> PURGE LINE HTRS - ON~~

CONTINUE PTC IF MCC-3 IS NOT PERFORMED

P52 - IMU REALIGN  
OPTION 3 - REFSMMAT

REPORT GYRO TORQUING ANGLES

PTC  
P 90 Y 0

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

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

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# FLIGHT PLAN

## MCC-3 BURN TABLE

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

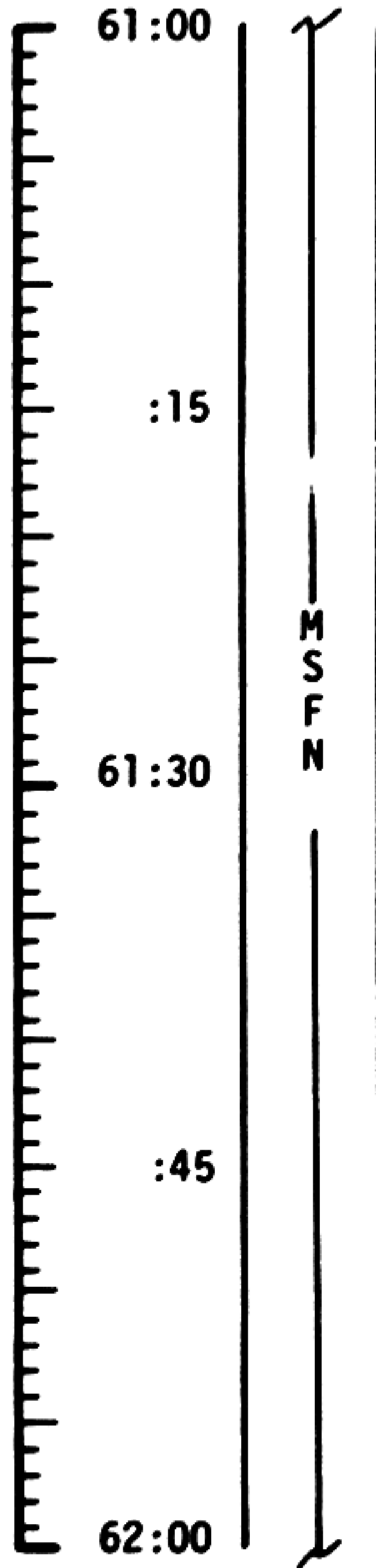
TABLE 3-4  
3-42

2322 CST

# FLIGHT PLAN

## NOTES

MCC-H



P30 - EXTERNAL  $\Delta V$

V49 - MNVR TO BURN ATT

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

GDC ALIGN TO IMU

MCC-3

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

MNVR TO PTC ATTITUDE

P 90  
 Y 0

START PTC

TIG: 61:25:18.2  
 $\Delta V$ : NOMINALLY ZERO

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

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

$\Delta TIG$   
 BT  
 $V_{gx}$   
 R  
 P  
 Y  
 $V_{gx}$   
 $V_{gy}$   
 $V_{gz}$   
 $\Delta V_c$  \*  
 FUEL \*  
 OX \*  
 UNBAL

\* ITEMS TO BE REPORTED TO MSFN

(LOI<sub>1</sub> - 22 HRS)

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

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

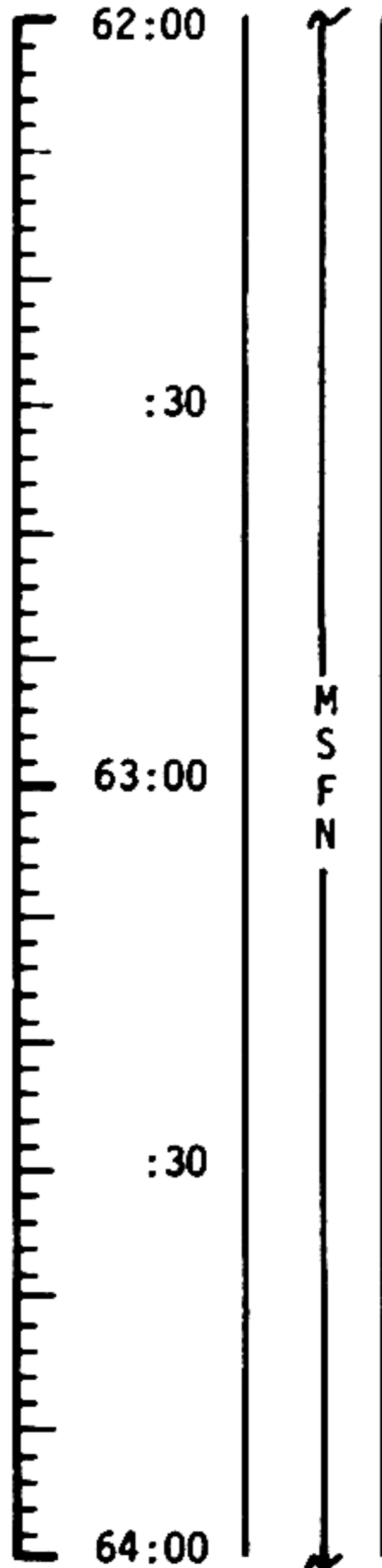


MCC-N

0022 CST

# FLIGHT PLAN

NOTES



BATTERY CHARGE, BATTERY B

PRESSURIZE CSM TO 5.7 PSIA THEN:  
PRESSURIZE LM

STOP PTC AT TV ATTITUDE

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

R \_\_\_\_\_  
HGA: P \_\_\_\_\_ Y \_\_\_\_\_

PTC  
P 90 Y 0

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

# FLIGHT PLAN

**CSM**

0222 CST

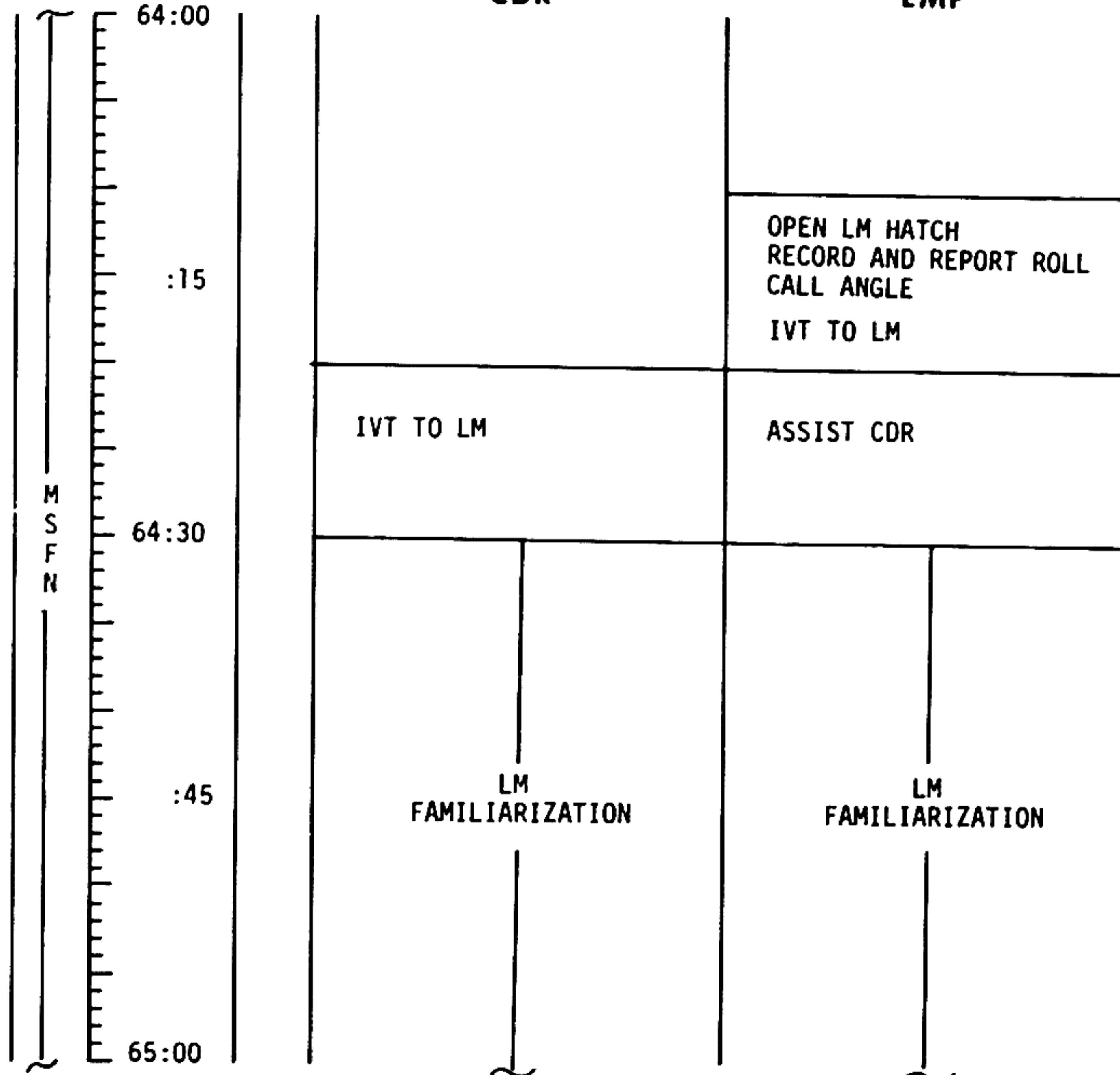
**LM**

**MCC-H**

**CMP**

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

TEMPORARILY STOW  
PROBE & DROGUE



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

**CSM**

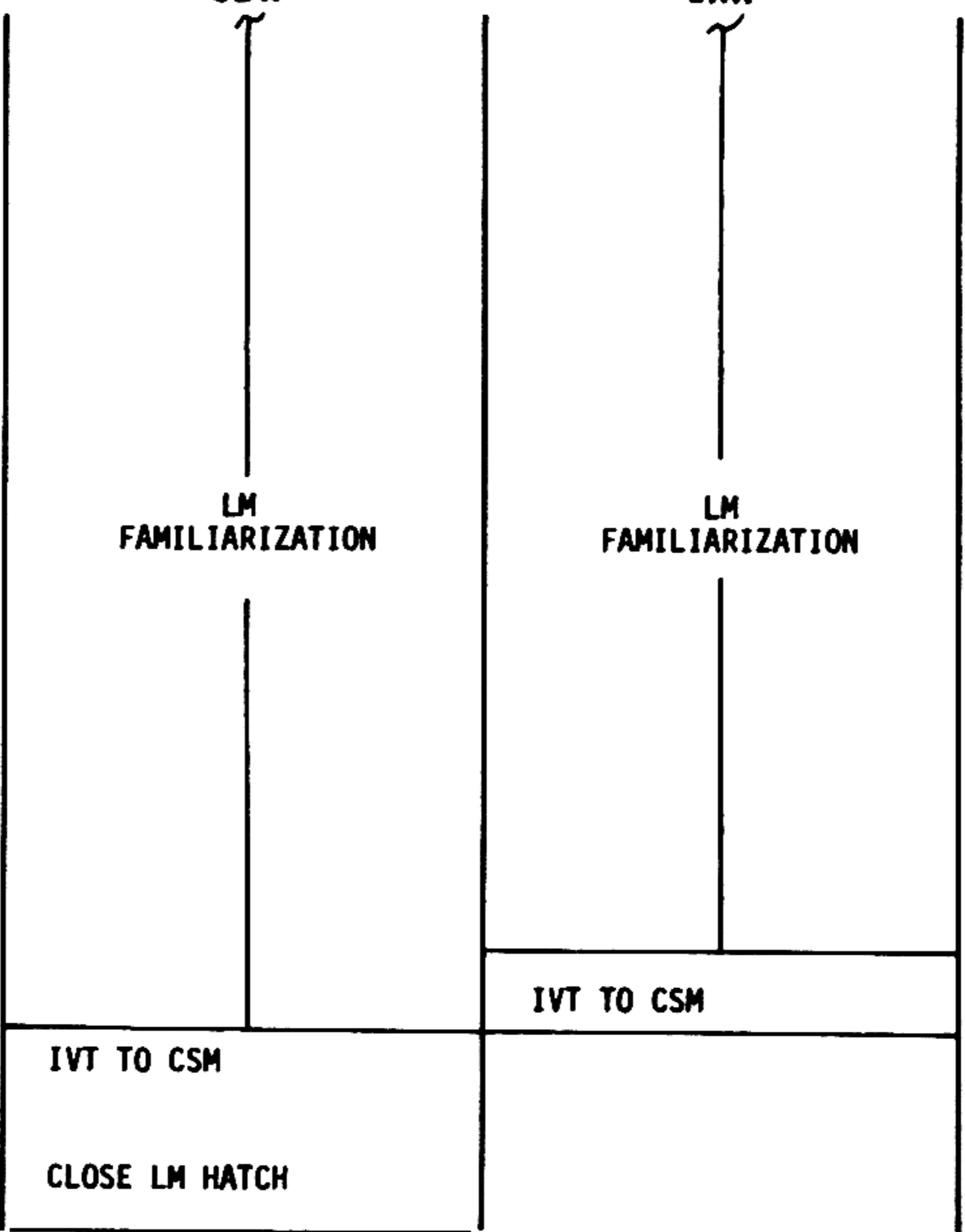
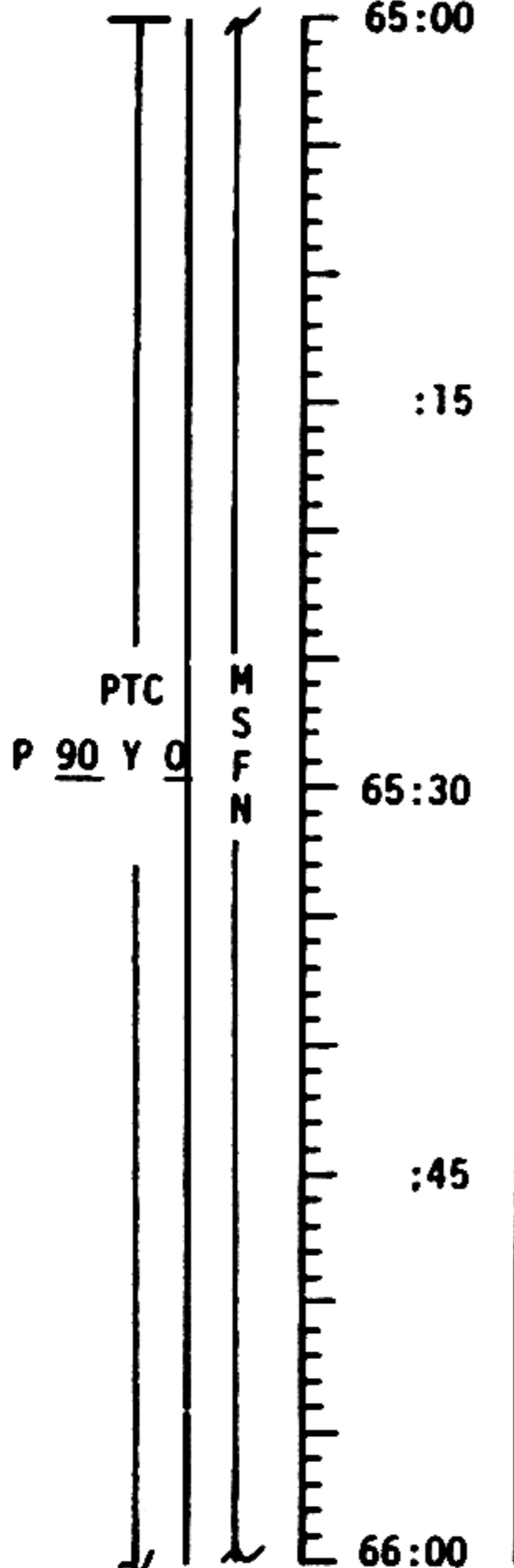
**CMP**

0322 CST

**LM**

**MCC-H**

START PTC



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

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

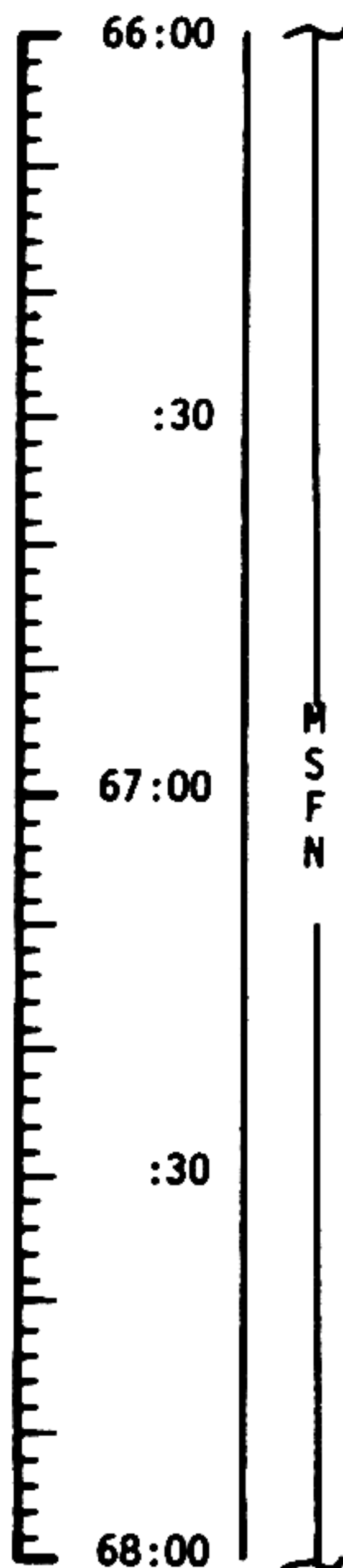
FLIGHT PLANNING BRANCH

MCC-H

0422 CST

# FLIGHT PLAN

NOTES



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

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

EAT PERIOD

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

| ONBOARD READOUT                   |       |
|-----------------------------------|-------|
| BAT C                             | _____ |
| PYRO BAT A                        | _____ |
| PYRO BAT B                        | _____ |
| RCS A                             | _____ |
| B                                 | _____ |
| C                                 | _____ |
| D                                 | _____ |
| DC IND SEL - MN <sup>A</sup> OR B |       |

PTC  
 P 90 Y Q

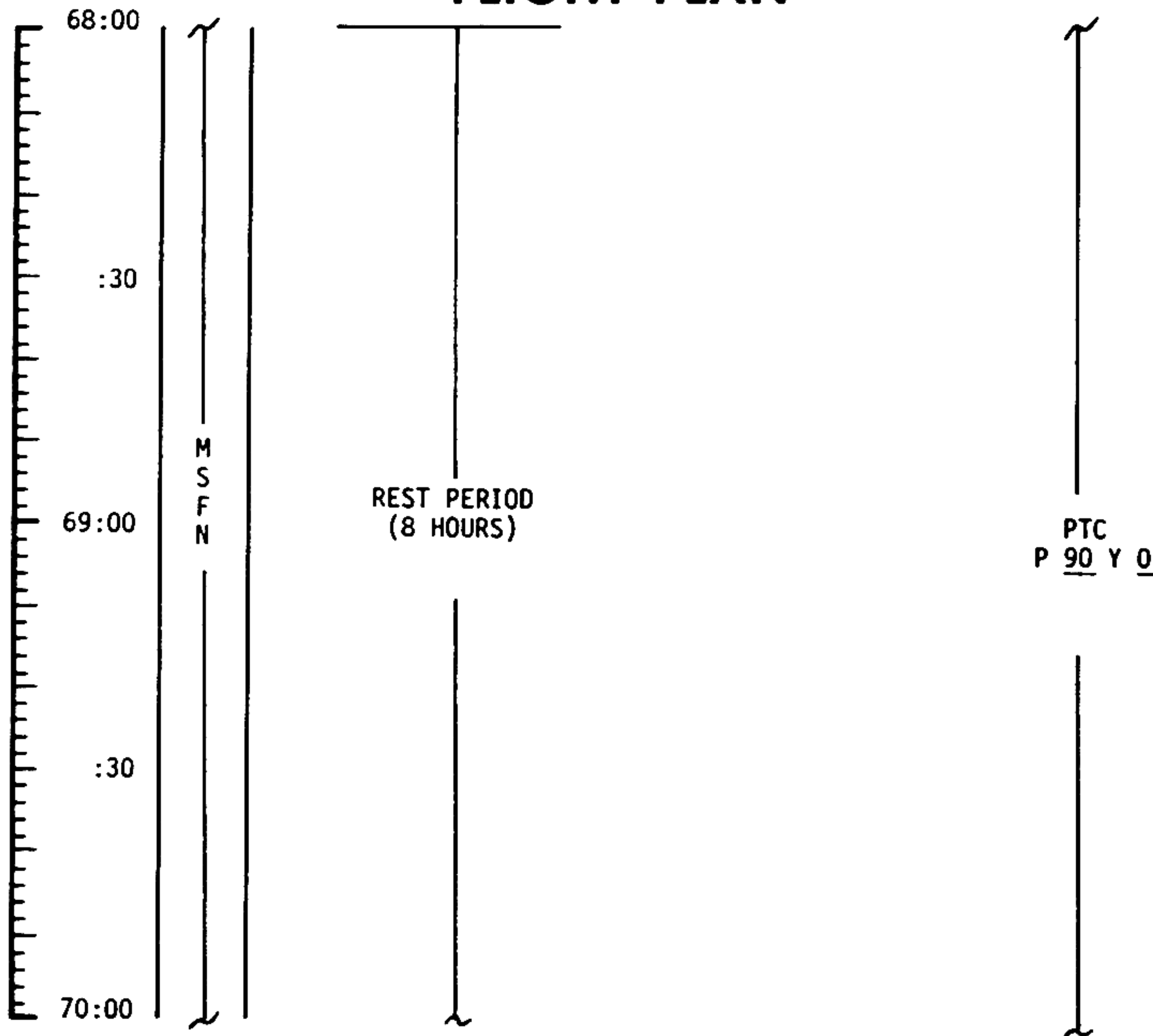
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 66:00 - 68:00 | 3/TLC   | 3-47 |

MCC-H

0622 CST

# FLIGHT PLAN

## NOTES



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

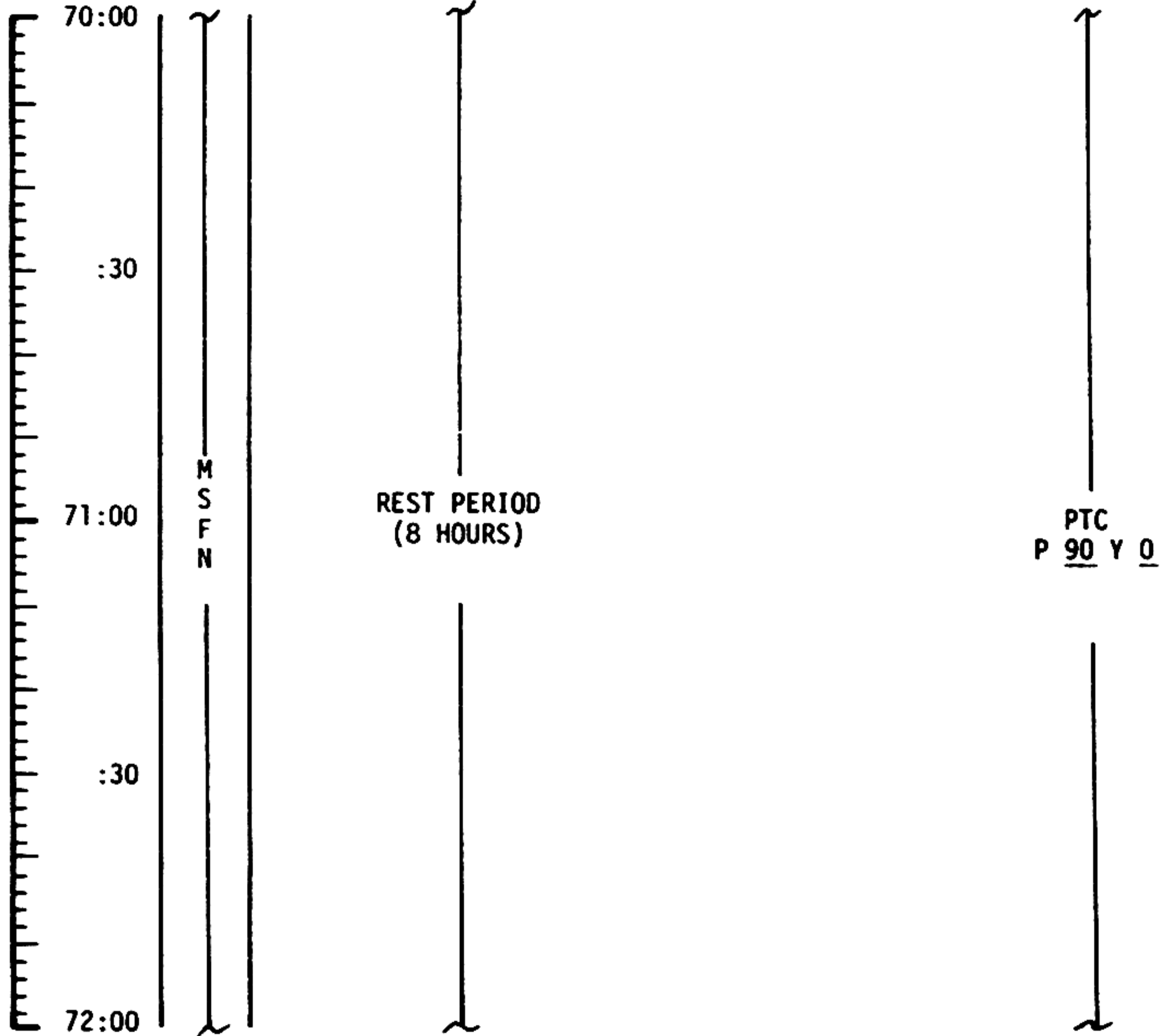
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 68:00 - 70:00 | 3/TLC   | 3-48 |

MCC-H

0822 CST

# FLIGHT PLAN

NOTES



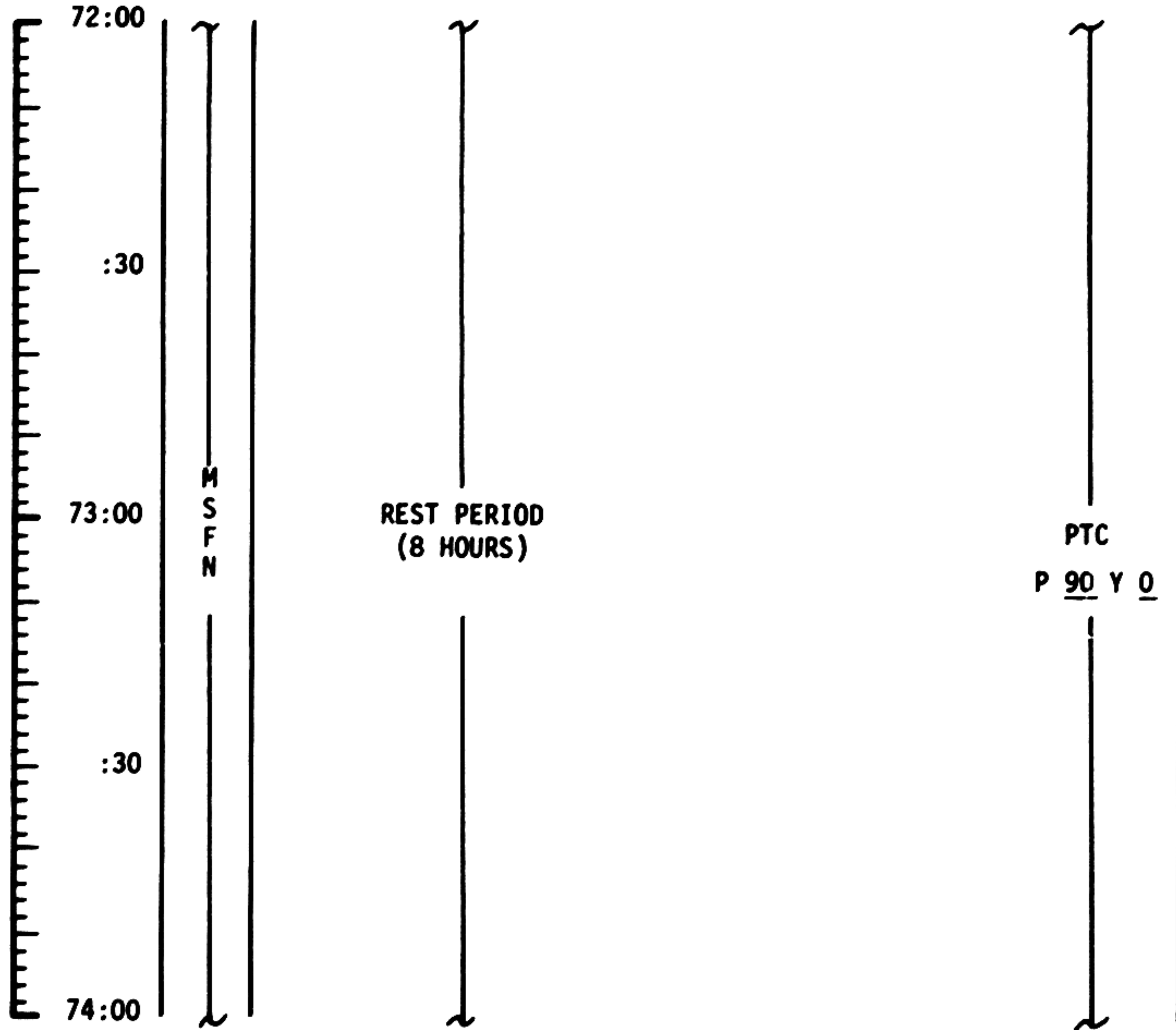
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 70:00 - 72:00 | 3/TLC   | 3-49 |

MCC-H

1022 CST

# FLIGHT PLAN

NOTES



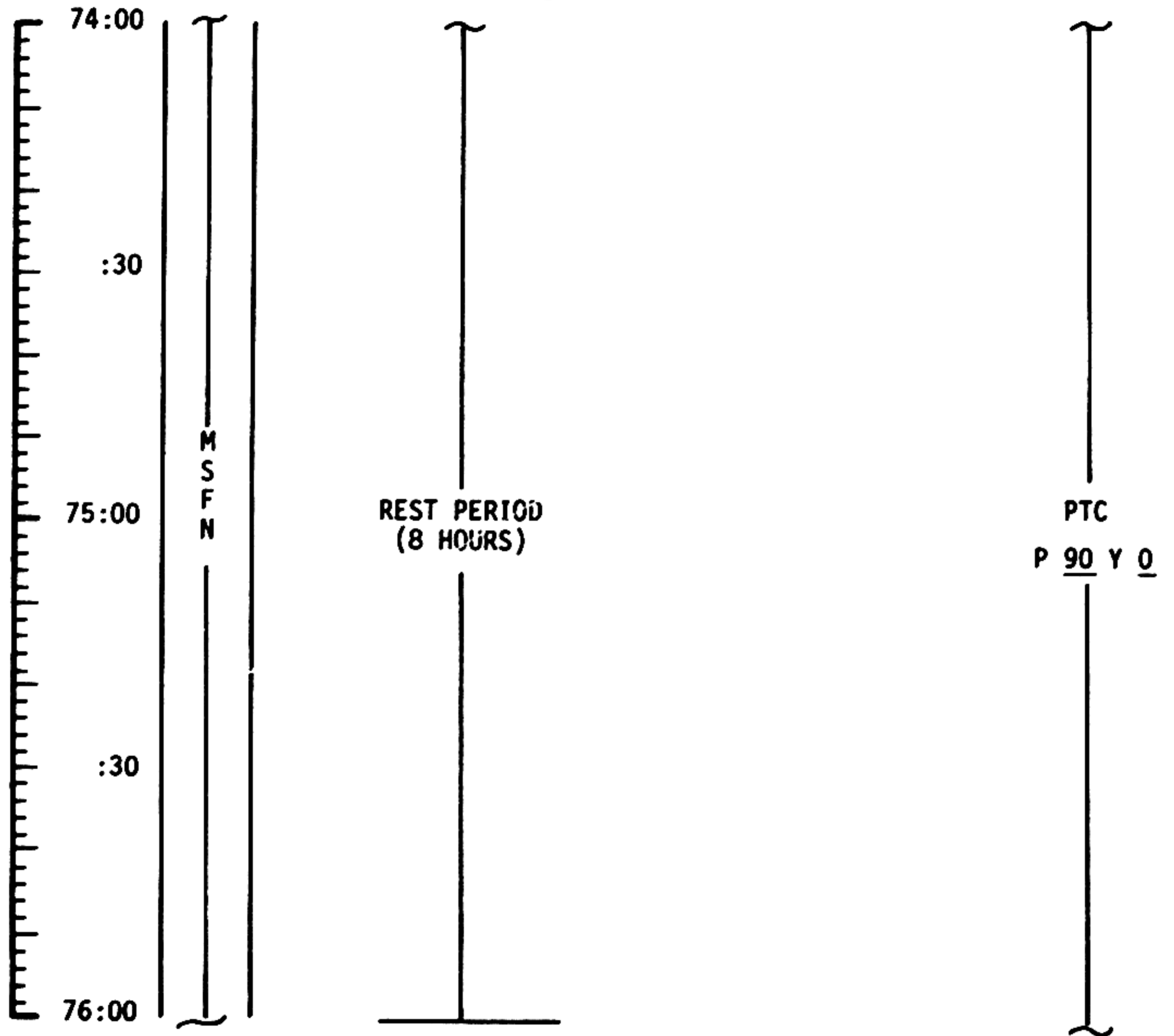
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 72:00 - 74:00 | 3/TLC   | 3-50 |

MCC-H

1222 CST

# FLIGHT PLAN

NOTES



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

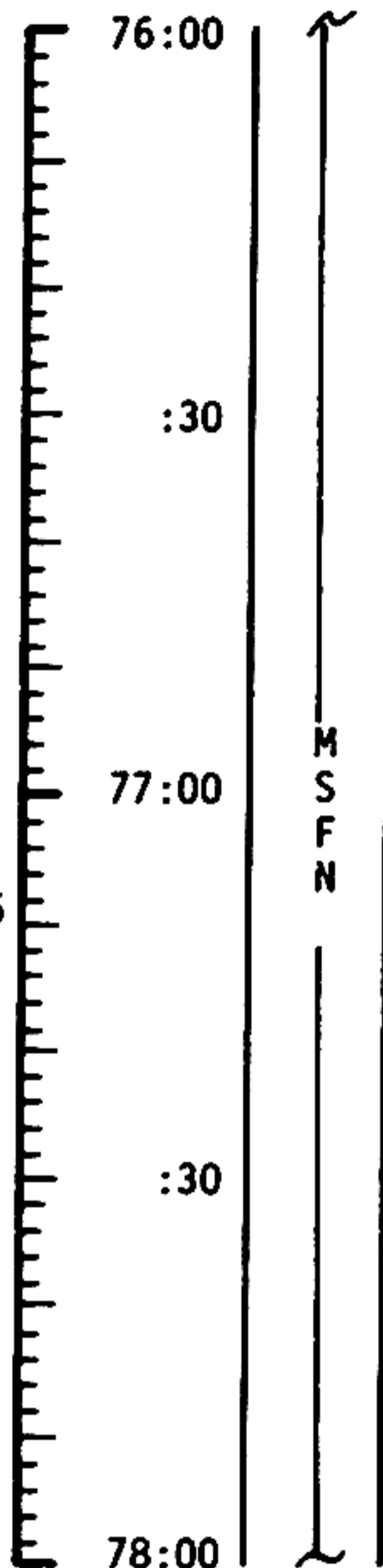


MCC-H

1422 CST

# FLIGHT PLAN

## NOTES



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

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

BATTERY CHARGE,  
BATTERY A

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

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

EAT PERIOD

CSM CONSUMABLES UPDATE

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

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

QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %

          C \_\_\_\_\_ % D \_\_\_\_\_ %

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

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

PTC  
P 90 Y 0

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

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

P52 IMU REALIGN  
OPTION 1 - PREFERRED  
REPORT GYRO TORQUING ANGLES

P52 (LDG SITE ORIENT)  
OPTION 1 - PREFERRED

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

P30 - EXTERNAL ΔV

CREW STATUS REPORT

|       |       |       |       |
|-------|-------|-------|-------|
|       | CDR   | CMP   | LMP   |
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

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

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# FLIGHT PLAN

MCC-4  
BURN TABLE

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

TABLE 3-5  
3-53

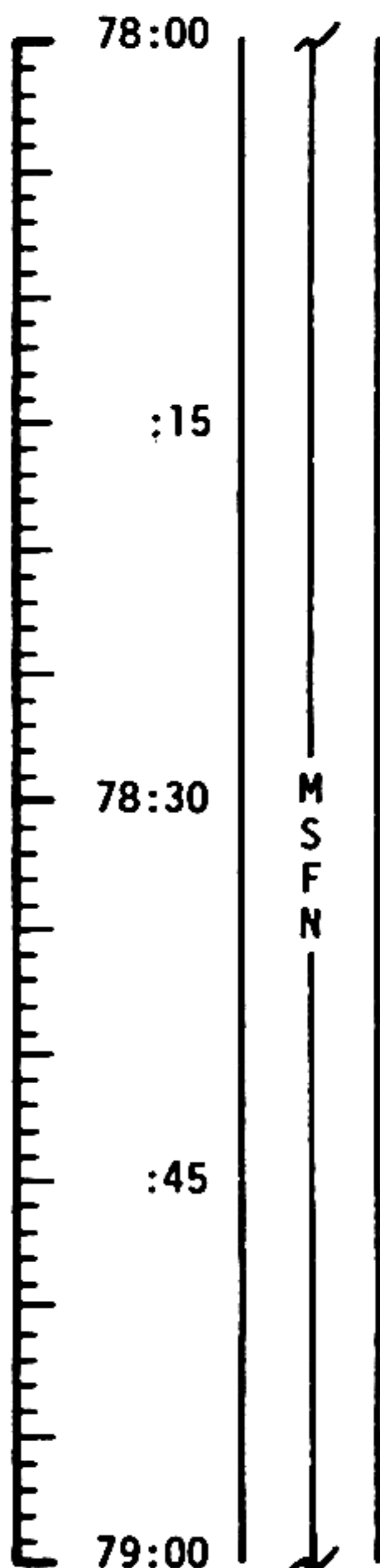
MCC-N

1622 CST

# FLIGHT PLAN

NOTES

(LOI-1 - 5 HRS)



V49 - MNVR TO BURN ATT

SXT STAR CHECK

P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-4

V66 - TRANSFER CSM SV TO LM SLOT

MCC-4 BURN STATUS REPORT

REPORT LM/CM ΔP

TIG: 78:25:18.2  
ΔV: NOMINALLY ZERO

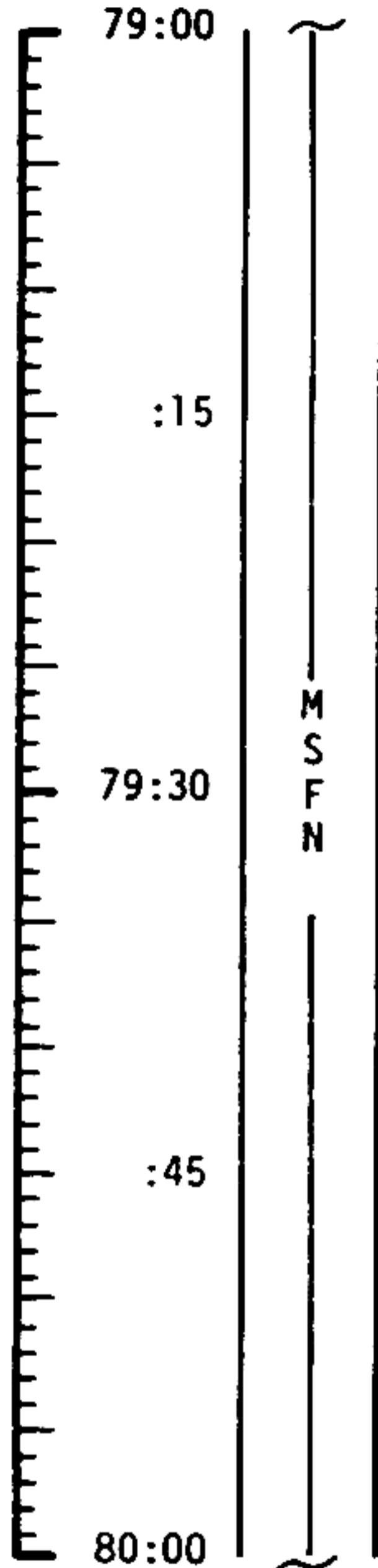
MCC-4 WILL BE EXECUTED WITH THE SPS IF THE BURN TIME >3 SEC

| BURN STATUS REPORT       |   |                          |   |                   |
|--------------------------|---|--------------------------|---|-------------------|
| X                        | X | <input type="checkbox"/> | • | ΔTIG              |
| X                        | X |                          | • | BT                |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| TRIM                     |   |                          |   |                   |
| X                        | X | X                        |   | R                 |
| X                        | X | X                        |   | P                 |
| X                        | X | X                        |   | Y                 |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gy</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gz</sub>   |
| <input type="checkbox"/> |   |                          | • | ΔV <sub>c</sub> * |
| X                        | X | X                        |   | FUEL *            |
| X                        | X | X                        |   | OX *              |
| X                        | X | X                        |   | UNBAL             |

\* ITEMS TO BE REPORTED TO MSFN

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

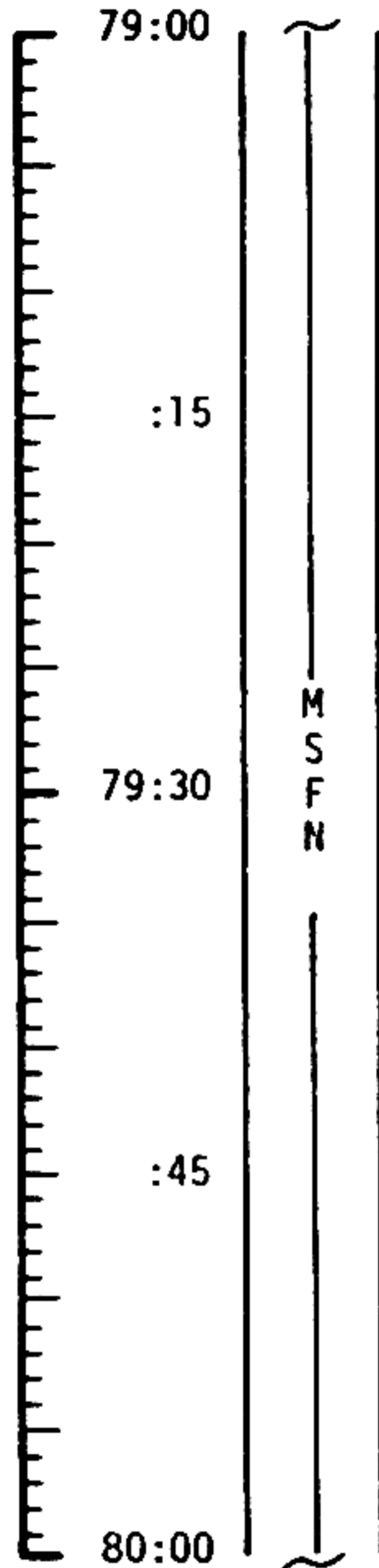
# FLIGHT PLAN



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

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

# FLIGHT PLAN



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

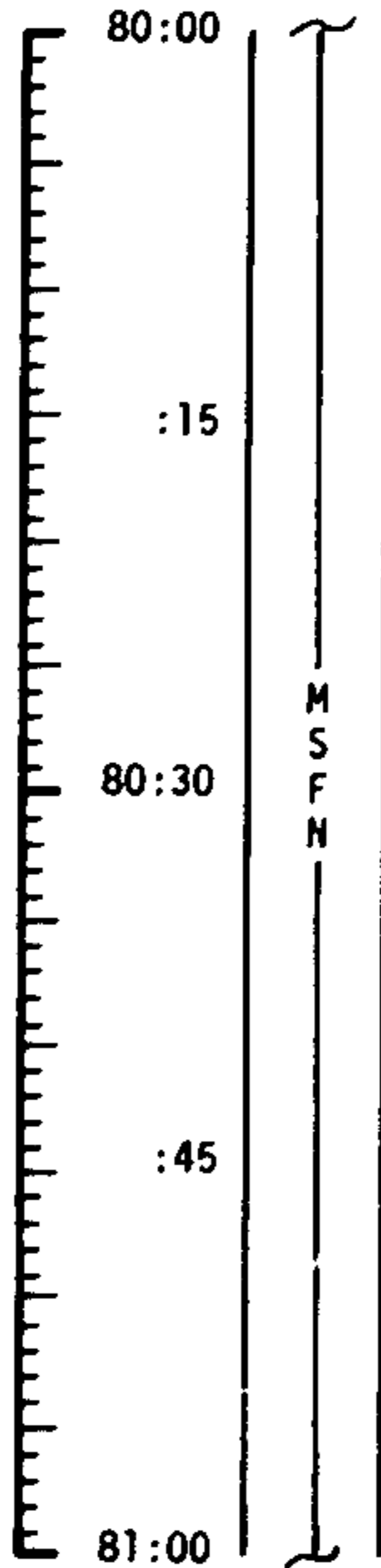
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 79:00 - 80:00 | 4/TLC   | 3-55 |

MCC-N

1822 CST

# FLIGHT PLAN

NOTES



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

LM TUNNEL VENT VLV - CM/LM ΔP

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

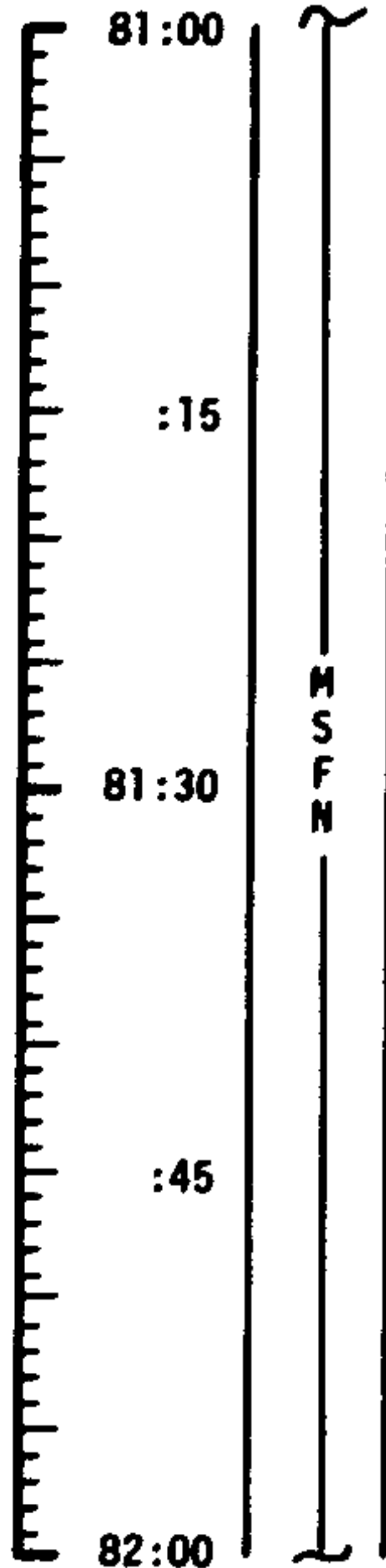
MCC-N

1922 CST

# FLIGHT PLAN

## NOTES

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



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

P52 - IMU REALIGN  
 OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES

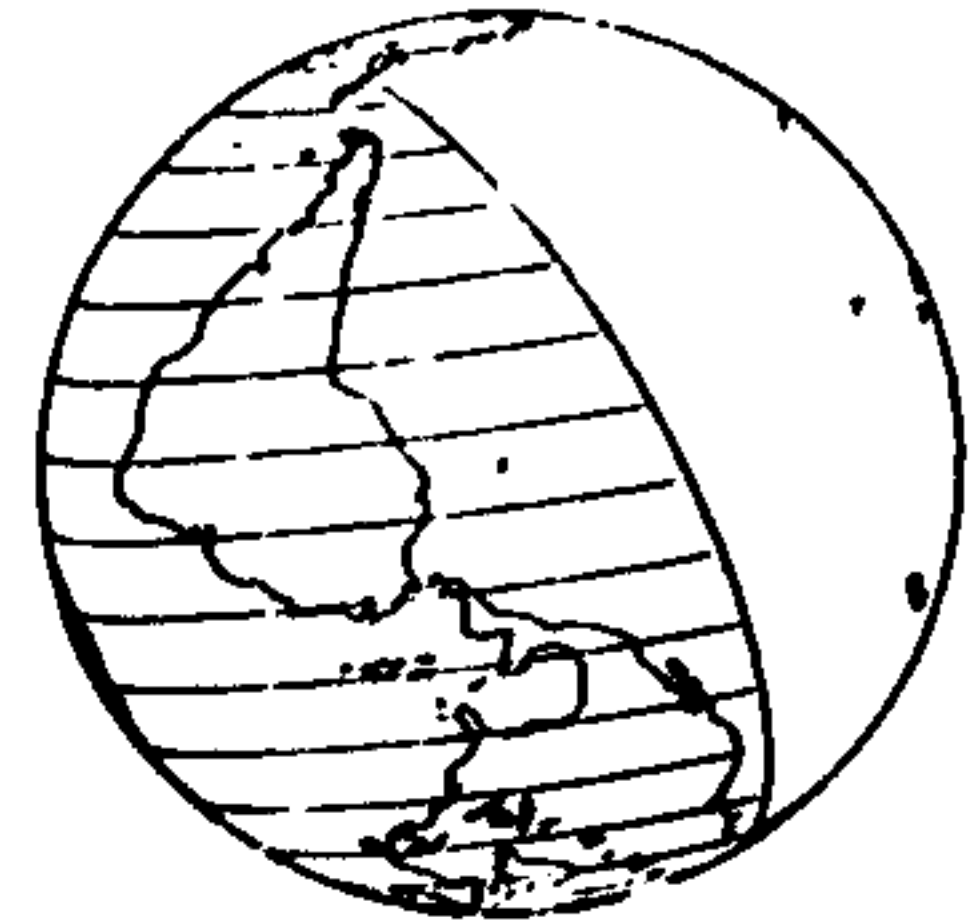
TV (GDS) 81:30 TO 81:50  
 CM4/TV-IN (f22)

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

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

TEI 1 & 4 PADS  
 ASSUME NO LOI-2

FOV 3°  
 GET 81:10



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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

REVISION A





## NO MCC-4 ALTERNATE TIMELINE

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

- The crew rest period is extended two more hours making a total of ten hours for rest.
- A P52 IMU Realign to REFSMMAT to the PTC orientation is performed just after wake up for a drift check.
- A second P52 IMU Realign is performed to the landing site orientation and is used for the LOI<sub>1</sub> burn.

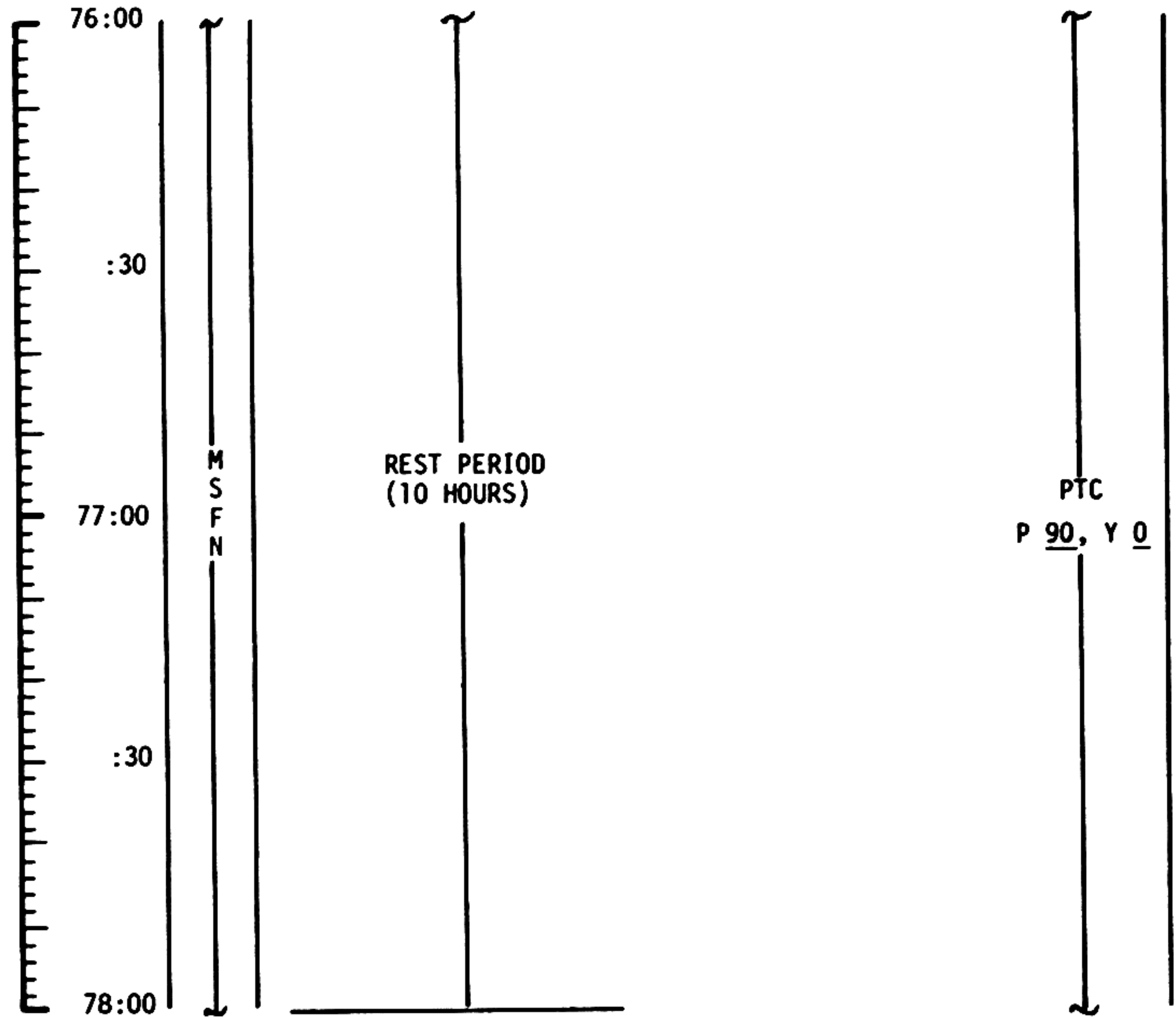
TLC WITHOUT  
MCC 4

MCC-H

1422 CST

# FLIGHT PLAN

NOTES



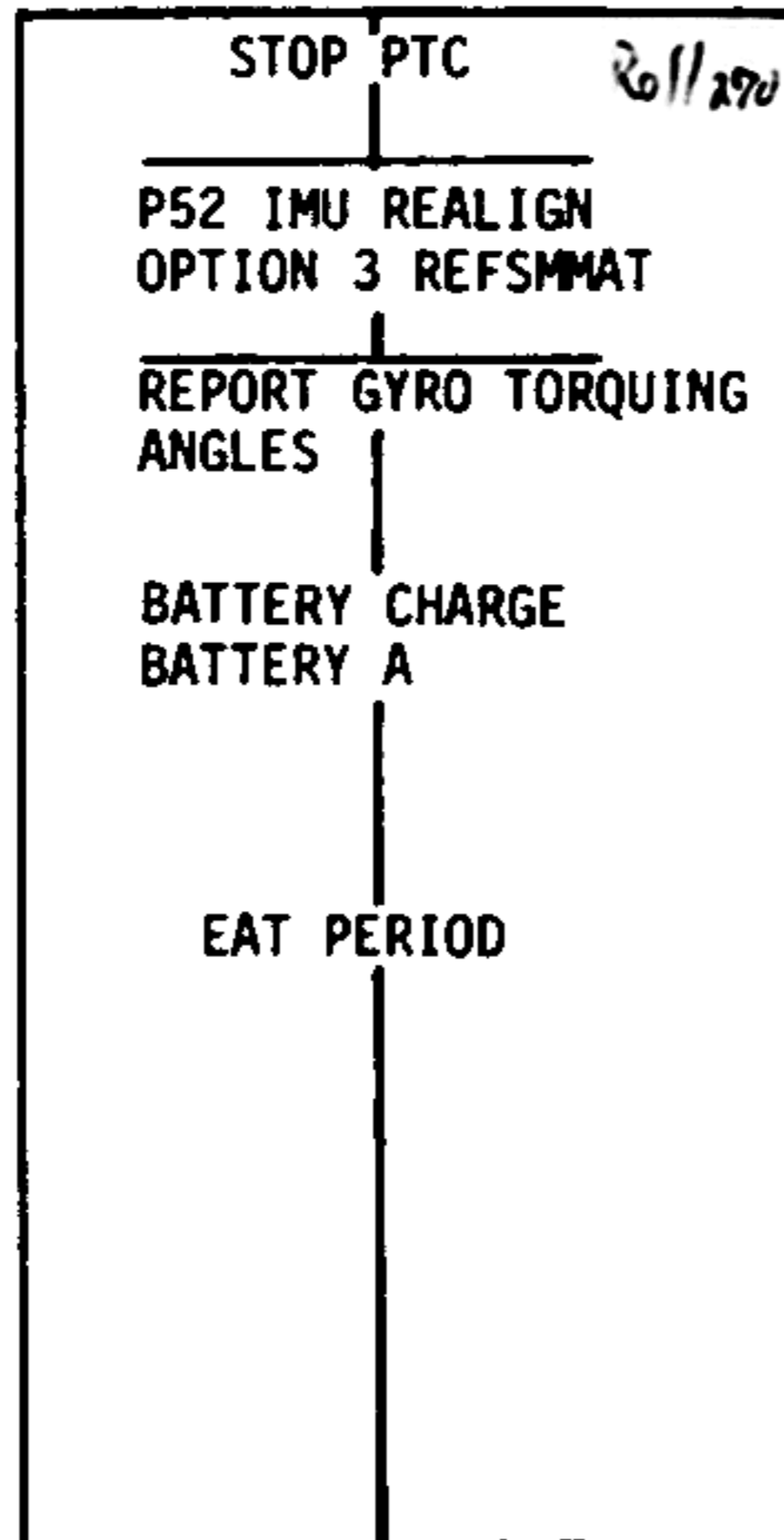
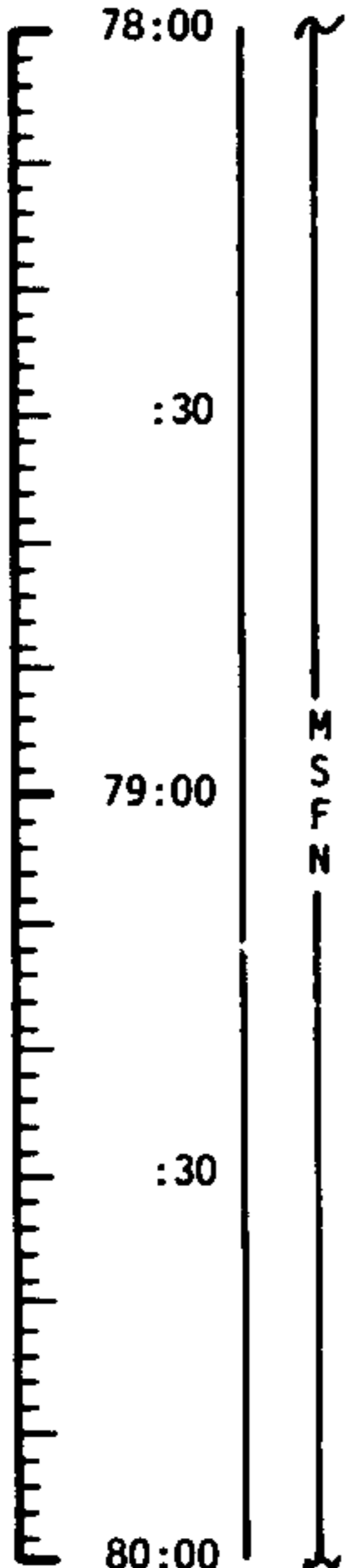
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 76:00 - 78:00 | 4/TLC   | 6-6  |

MCC-11

1622 CST

# FLIGHT PLAN

NOTES



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

CSM CONSUMABLES UPDATE

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

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

QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %

          C \_\_\_\_\_ % D \_\_\_\_\_ %

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

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

CREW STATUS REPORT

|       | CDR   | CMP   | LMP   |
|-------|-------|-------|-------|
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

P52 (PTC ORIENT)  
OPTION 3 - REFSMMAT

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

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

UPLINK TO CSM  
STATE VECTOR & V66

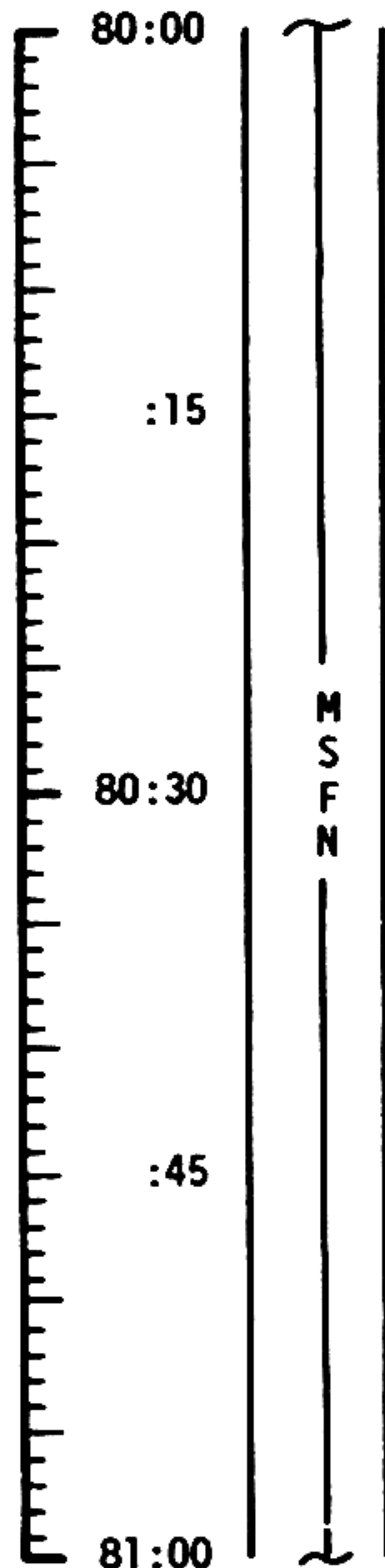
UPDATE TO CSM  
CONSUMABLES  
FLIGHT PLAN  
PERICYNTHION +2  
ABORT PAD

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

1822 CST

# FLIGHT PLAN

NOTES



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

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

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

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

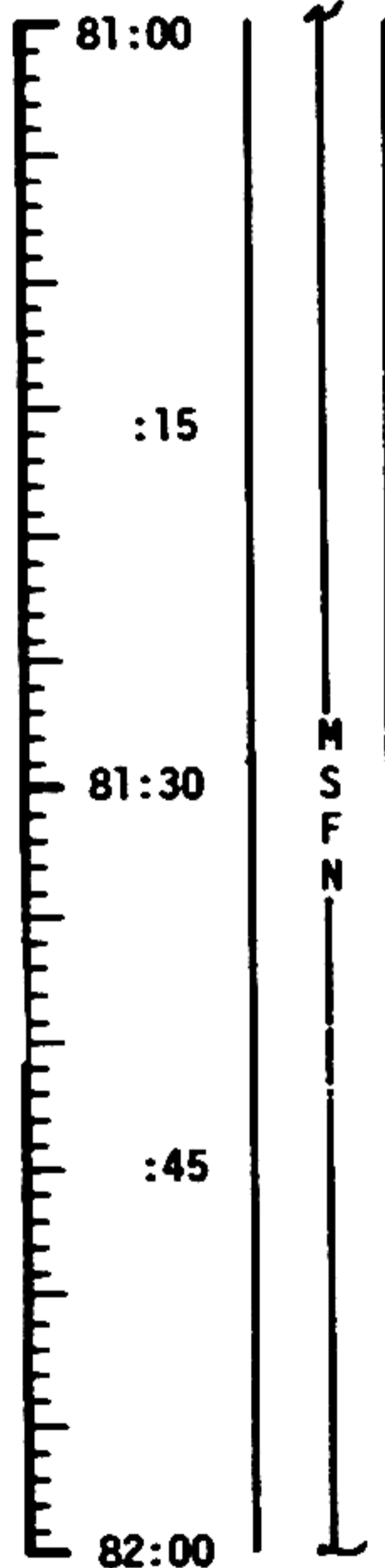
MCC-N

1922 CST

# FLIGHT PLAN

## NOTES

UPLINK TO CSM  
STATE VECTOR & V66  
(PRELIMINARY)  
LOI<sub>1</sub> TGT LOAD  
(PRELIMINARY)  
DESIRED ORIENT  
(LDG SITE)  
UPDATE TO CSM  
LOI<sub>1</sub> MNVR PAD  
(PRELIMINARY)  
TEI 1 & 4 PAD



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

P 154 P 4

Y 20 Y 207

P52 - IMU REALIGN  
OPTION 1 - PREFERRED

REPORT GYRO TORQUING ANGLES

TV (GDS) 81:30 TO 81:50

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

P 261 P -18

Y 19 Y 251

P52 (LDG SITE ORIENT)

N71: \_ \_ . \_ \_

N05: \_ \_ . \_ \_

N93: \_ \_ . \_ \_

X \_ \_ . \_ \_

Y \_ \_ . \_ \_

Z \_ \_ . \_ \_

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

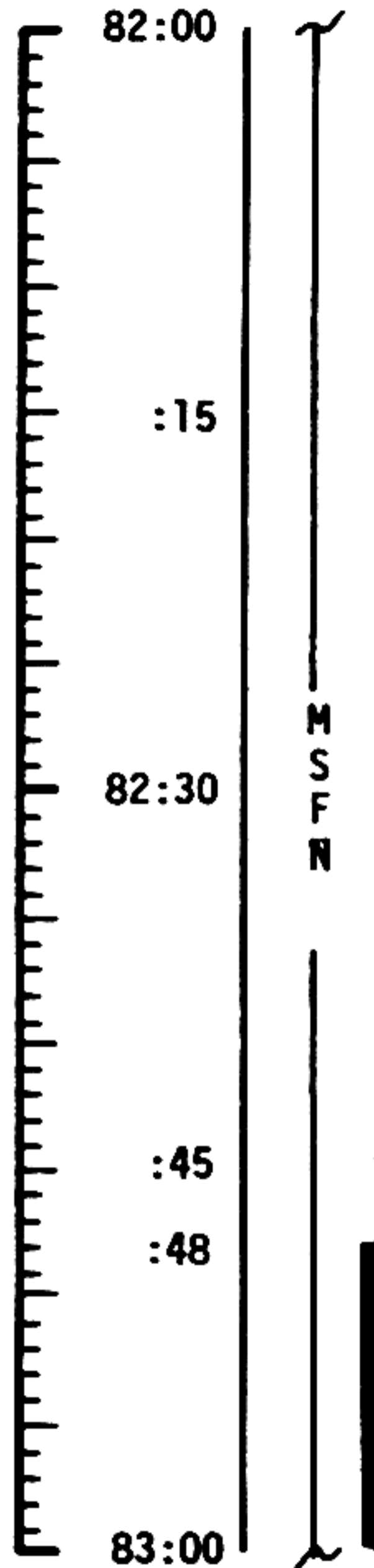
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 81:00 - 82:00 | 4/TLC   | 6-9  |

MCC-H

2022 CST

# FLIGHT PLAN

NOTES



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

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

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

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

P30 - EXTERNAL ΔV

P40 - SPS THRUST

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

# FLIGHT PLAN

LOI-1  
BURN TABLE  
TABLE 3-6

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

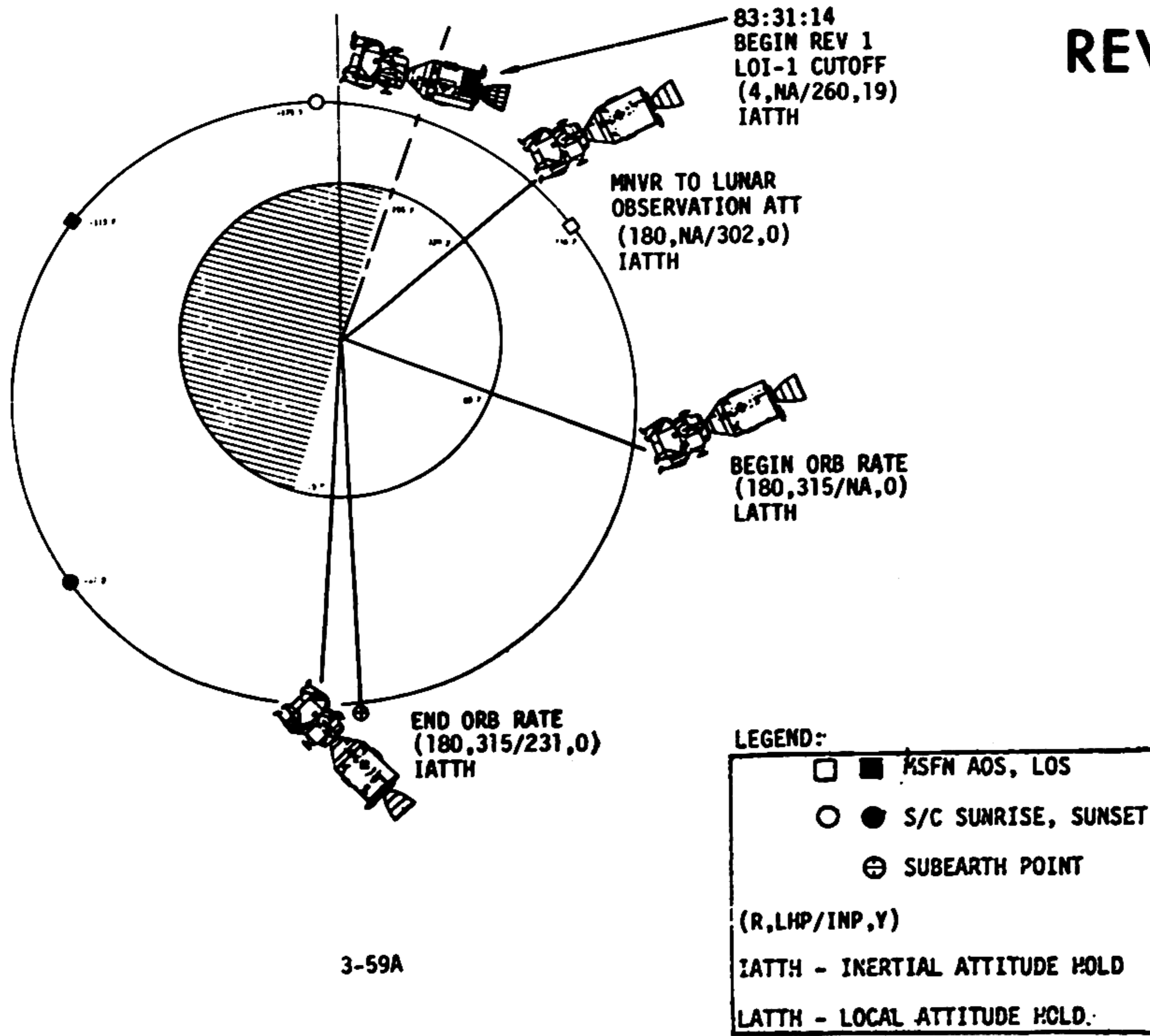
LOI-1 ABORT TABLE  
TABLE 3-7

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

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# REV 1



REVISION B

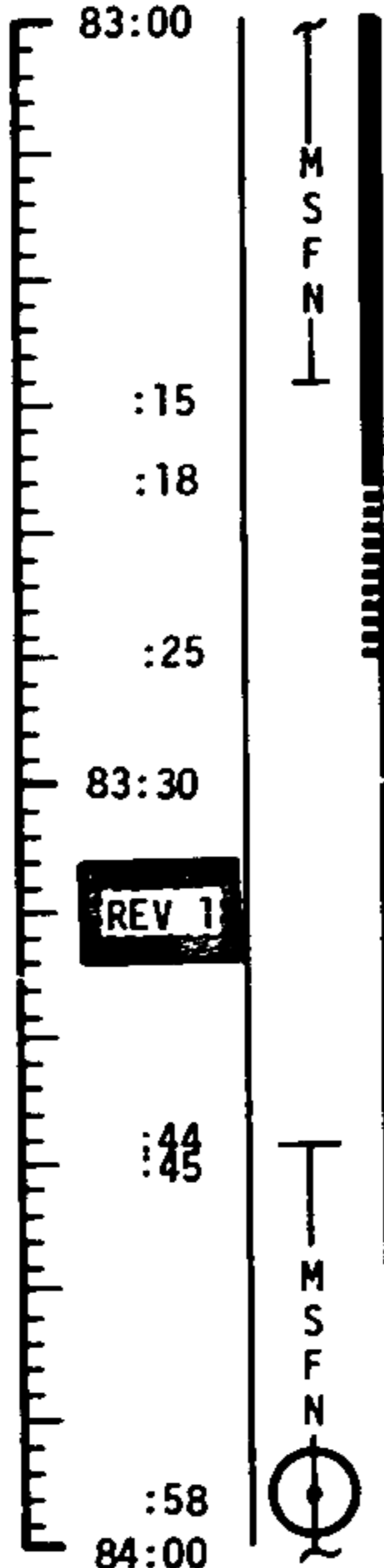
MCC-M

2122 CST

# FLIGHT PLAN

NOTES

UPDATE TO CSM  
GO/NO-GO LOI-1



ROLL TO BURN ATT R 4 OMNI D  
P 261

SXT STAR CHECK Y 19  
VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU

**LOI-1**

TIG: 83:25:18.2  
BT: 5 MIN 55.4 SEC  
 $\Delta V_R$ : 2889.9 FPS  
ULLAGE: NONE  
ORBIT: 58.7 x 168.9 NM

V66 - TRANSFER CSM STATE VECTOR TO LM SLOT

MNVR TO COMM ATT AND  
GO INERTIAL BY 83:40

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

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

| BURN STATUS REPORT       |   |                          |   |                     |
|--------------------------|---|--------------------------|---|---------------------|
| X                        | X | <input type="checkbox"/> | • | $\Delta$ TIG **     |
| X                        | X |                          | • | BT **               |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>     |
| TRIM                     |   |                          |   |                     |
| X                        | X | X                        |   | R                   |
| X                        | X | X                        |   | P                   |
| X                        | X | X                        |   | Y                   |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub> *** |
| <input type="checkbox"/> |   |                          | • | V <sub>gy</sub> *** |
| <input type="checkbox"/> |   |                          | • | V <sub>gz</sub> *** |
| <input type="checkbox"/> |   |                          | • | $\Delta V_C$ *      |
| X                        | X | X                        |   | FUEL *              |
| X                        | X | X                        |   | OX *                |
| X                        | X | X                        |   | UNBAL               |

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

DUMP DSE

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

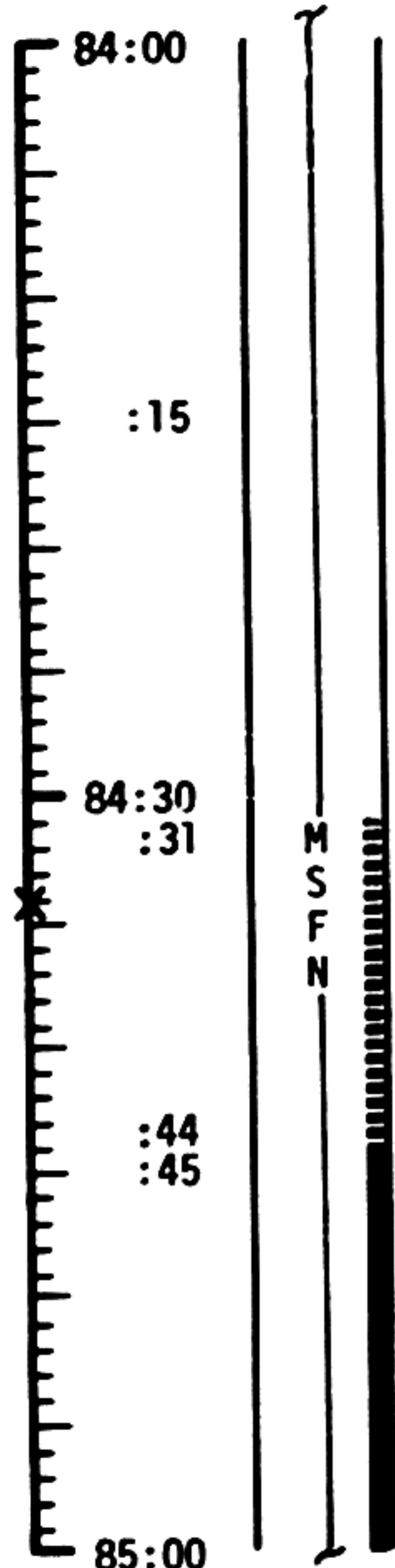
MCC-H

2222 CST

# FLIGHT PLAN

NOTES

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



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

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

UPDATE TO CSM  
MAP UPDATE REV 2

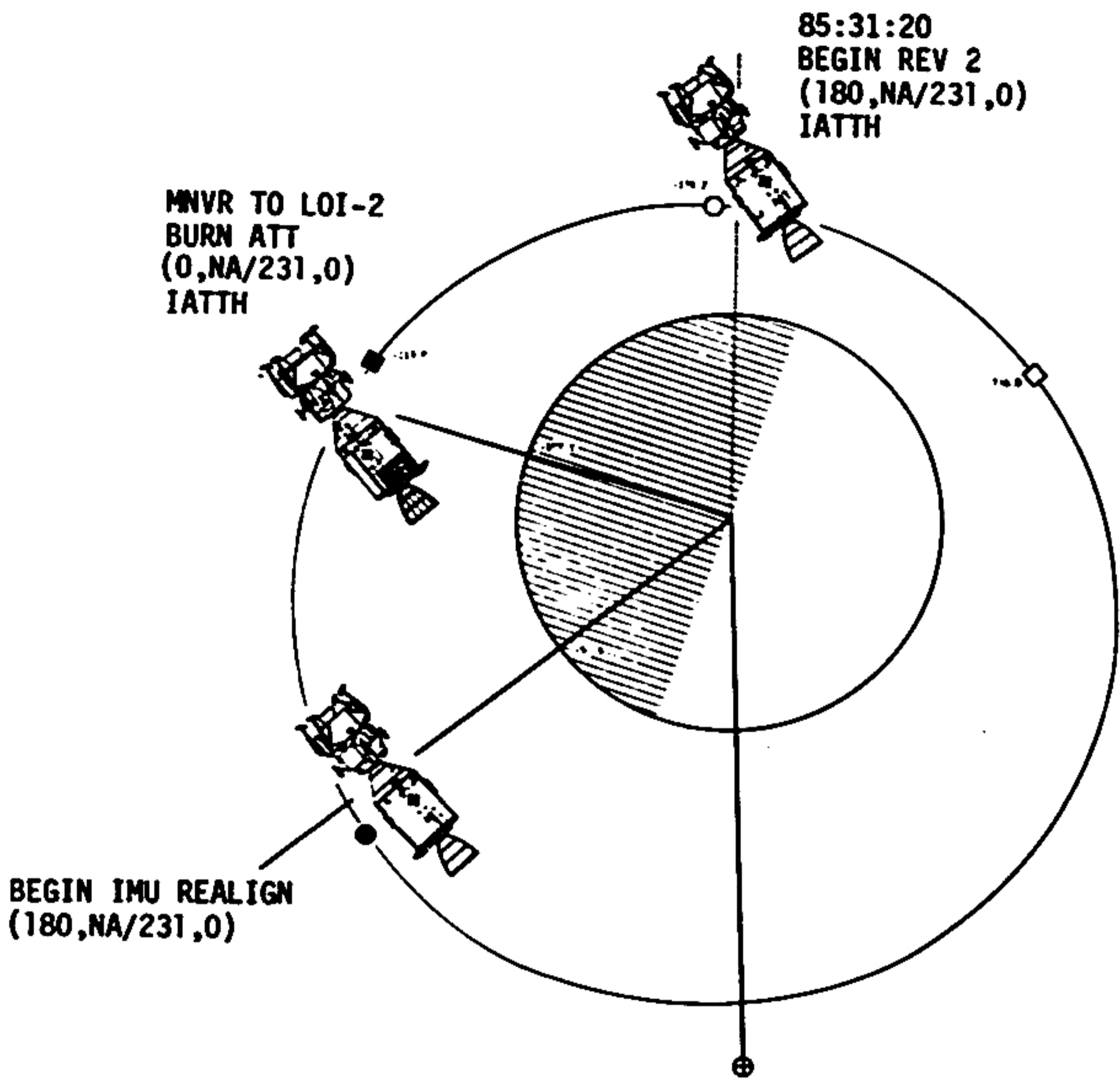
M  
S  
F  
N

EAT PERIOD

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

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

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85:31:20  
 BEGIN REV 2  
 (180,NA/231,0)  
 IATTH

MNVR TO LOI-2  
 BURN ATT  
 (0,NA/231,0)  
 IATTH

BEGIN IMU REALIGN  
 (180,NA/231,0)

**LEGEND:**

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

3-61A

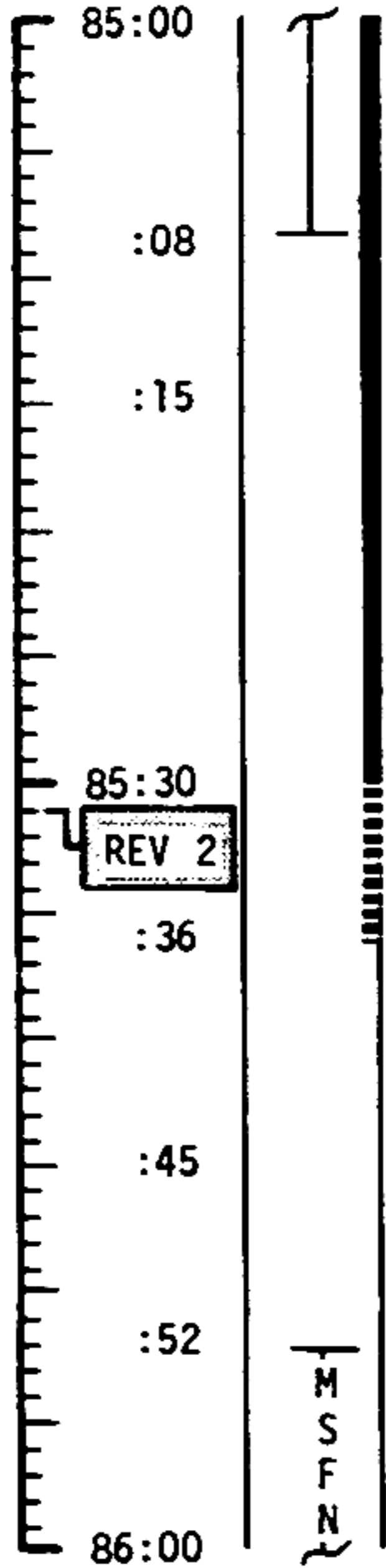
REVISION B

MCC-H

2322 CST

# FLIGHT PLAN

NOTES



H<sub>2</sub> PURGE LINE HTRS - ON  
 VERIFY DSE MOTION AT LOS  
 EAT PERIOD

H<sub>2</sub> AND O<sub>2</sub> FUEL CELL PURGE  
 WASTE WATER DUMP

REACQUIRE MSFN  
 HGA P -38 Y 189

DUMP DSE

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

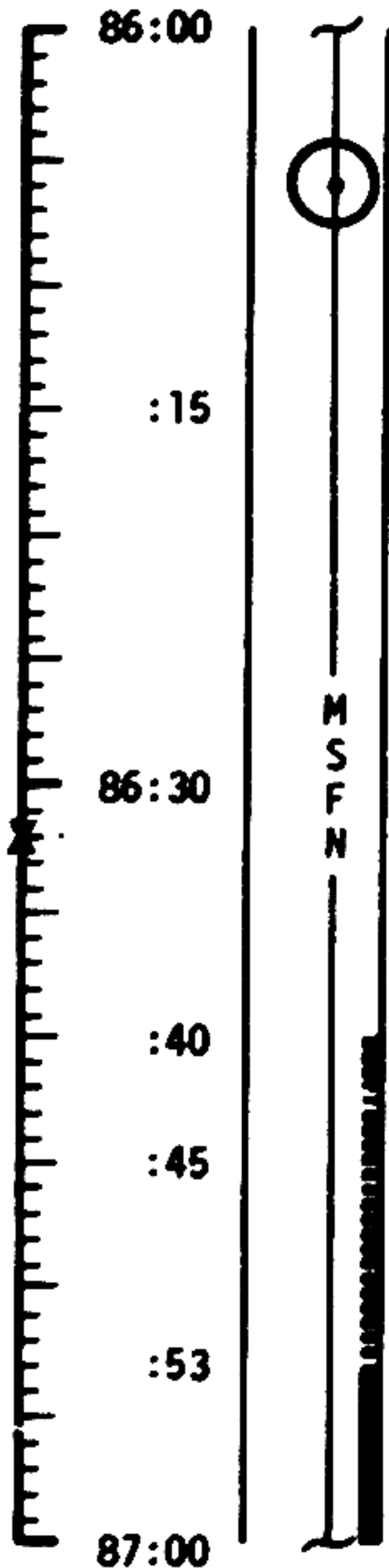
MCC-H

0022 CST

# FLIGHT PLAN

NOTES

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



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

P52 IMU REALIGN  
 OPTION 3 REFSMAT

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

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

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

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

MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

REVISION A

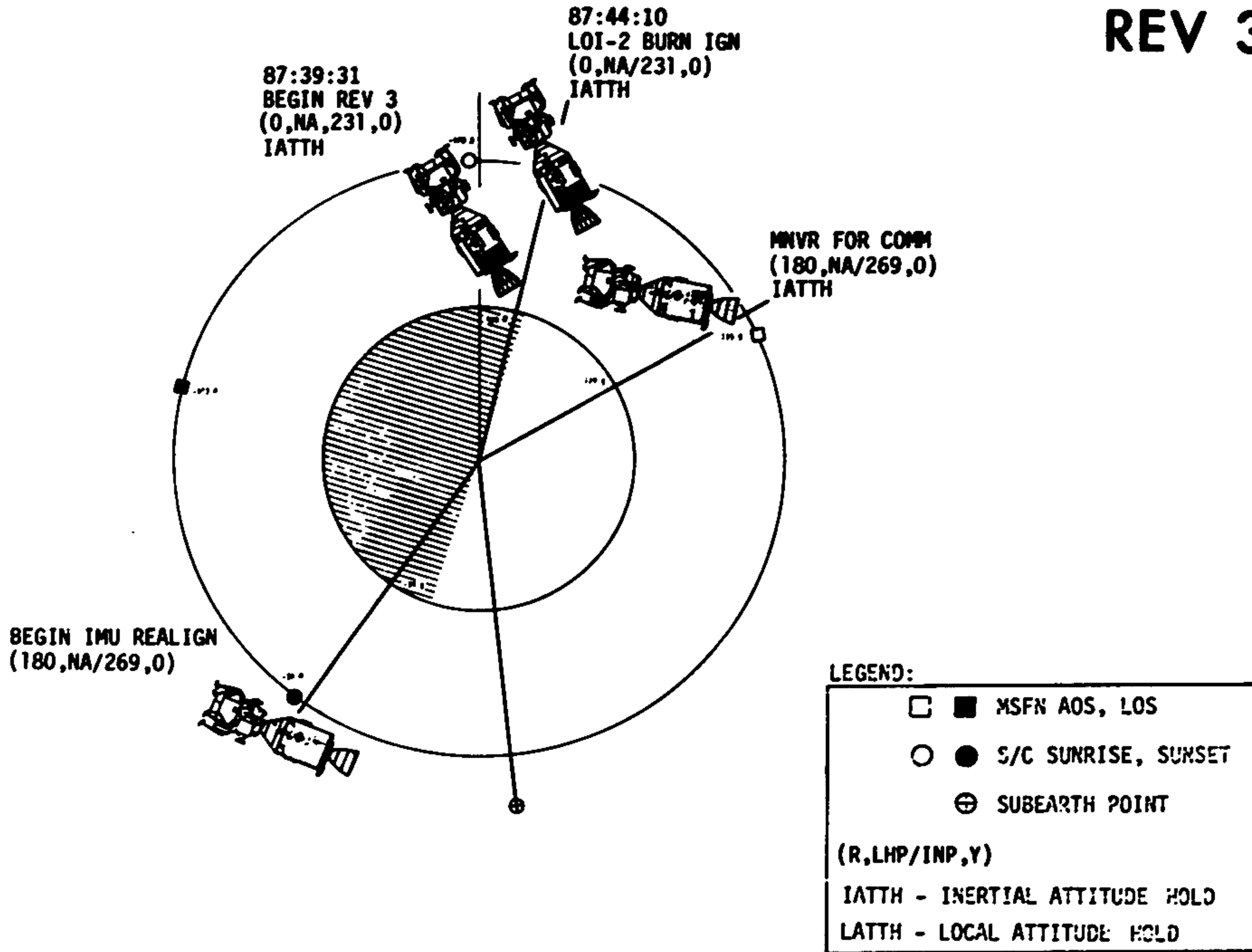
# FLIGHT PLAN

## LOI-2 BURN TABLE

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

TABLE 3-8  
3-64





3-64A

REVISION B

MCC-M

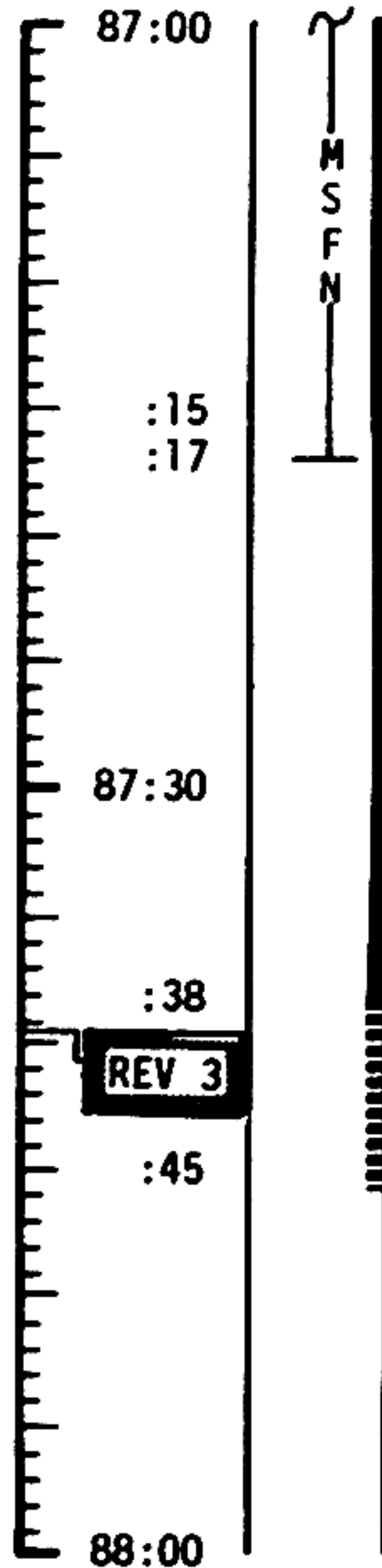
0122 CST

# FLIGHT PLAN

NOTES

PIPA BIAS CHECK

GO/NO GO FOR LOI-2



M  
S  
F  
N

DRIFT CHECK

REPORT GYRO TORQUING ANGLES

P30 EXTERNAL ΔV

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

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

SXT STAR CHECK R 0

OMNI 0

P40 - SPS THRUST P 231

VERIFY DSE MOTION AT LOS v 0

P52 (LDG SITE ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

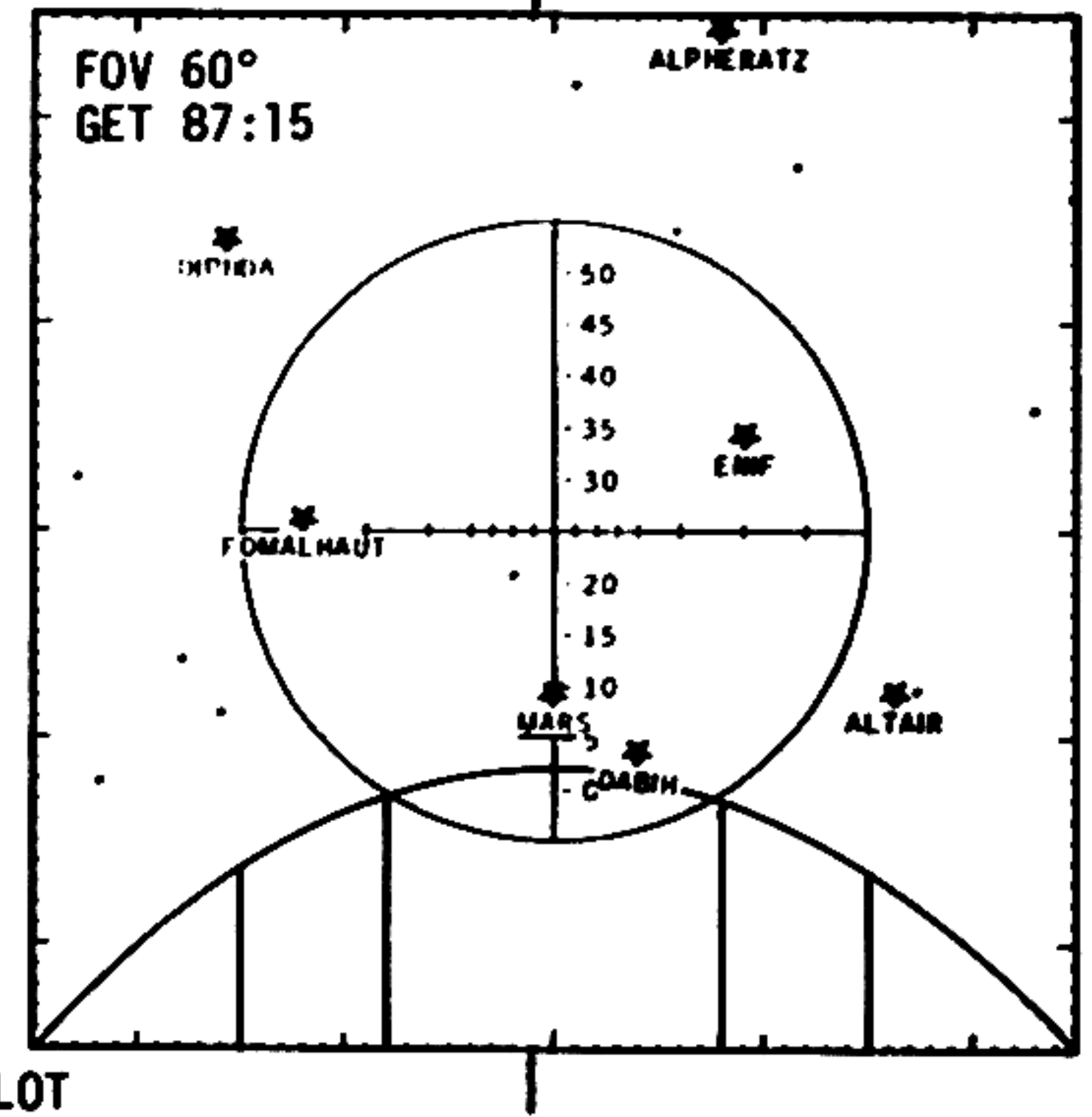
Z \_\_\_\_\_

GET \_\_\_\_\_

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

GDC ALIGN TO IMU

LOI-2



V66 TRANSFER CSM STATE VECTOR TO LM SLOT

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

MCC-H

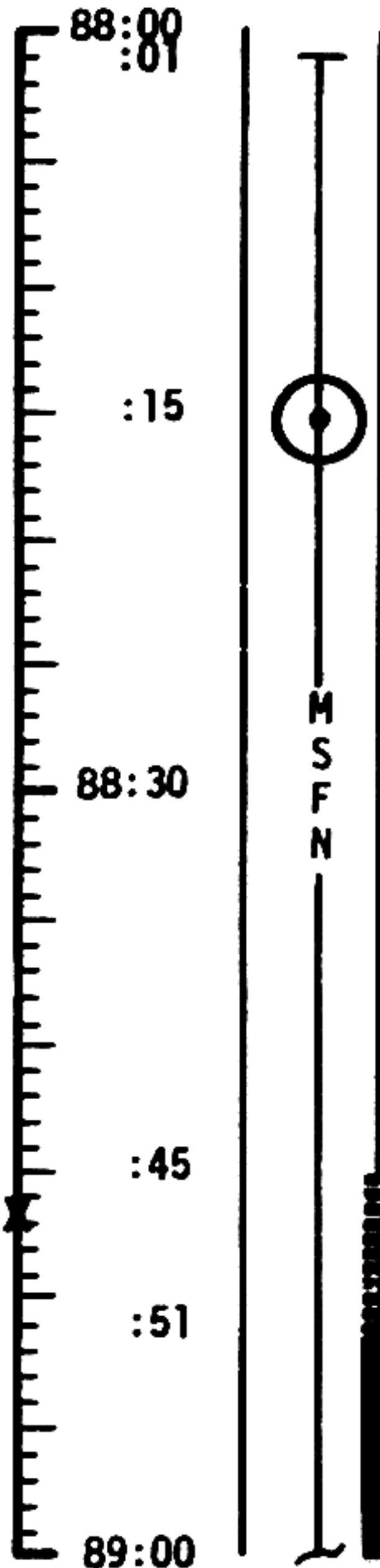
0222 CST

# FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM  
LDMK TRACK PAD  
MAP UPDATE REV 4



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

BATTERY CHARGE, BATTERY B

LOI -2 BURN STATUS REPORT

EQUALIZE CM/LM PRESSURE  
TUNNEL VENT VALVE - LM PRESS

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

P52 IMU REALIGN  
OPTION 3 REFSMAT

P52 (LDG SITE ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

| BURN STATUS REPORT       |   |                          |   |                     |
|--------------------------|---|--------------------------|---|---------------------|
| X                        | X | <input type="checkbox"/> | ● | ΔTIG**              |
| X                        | X |                          | ● | BT**                |
| <input type="checkbox"/> |   |                          | ● | V <sub>gx</sub>     |
| TRIM                     |   |                          |   |                     |
| X                        | X | X                        |   | R                   |
| X                        | X | X                        |   | P                   |
| X                        | X | X                        |   | Y                   |
| <input type="checkbox"/> |   |                          | ● | V <sub>gx</sub> *** |
| <input type="checkbox"/> |   |                          | ● | V <sub>gy</sub> *** |
| <input type="checkbox"/> |   |                          | ● | V <sub>gz</sub> *** |
| <input type="checkbox"/> |   |                          | ● | ΔV <sub>c</sub> *   |
| X                        | X | X                        |   | FUEL*               |
| X                        | X | X                        |   | OX*                 |
| X                        | X | X                        |   | UNBAL               |

MAP UPDATE REV 4

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

180° : \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_

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

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

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

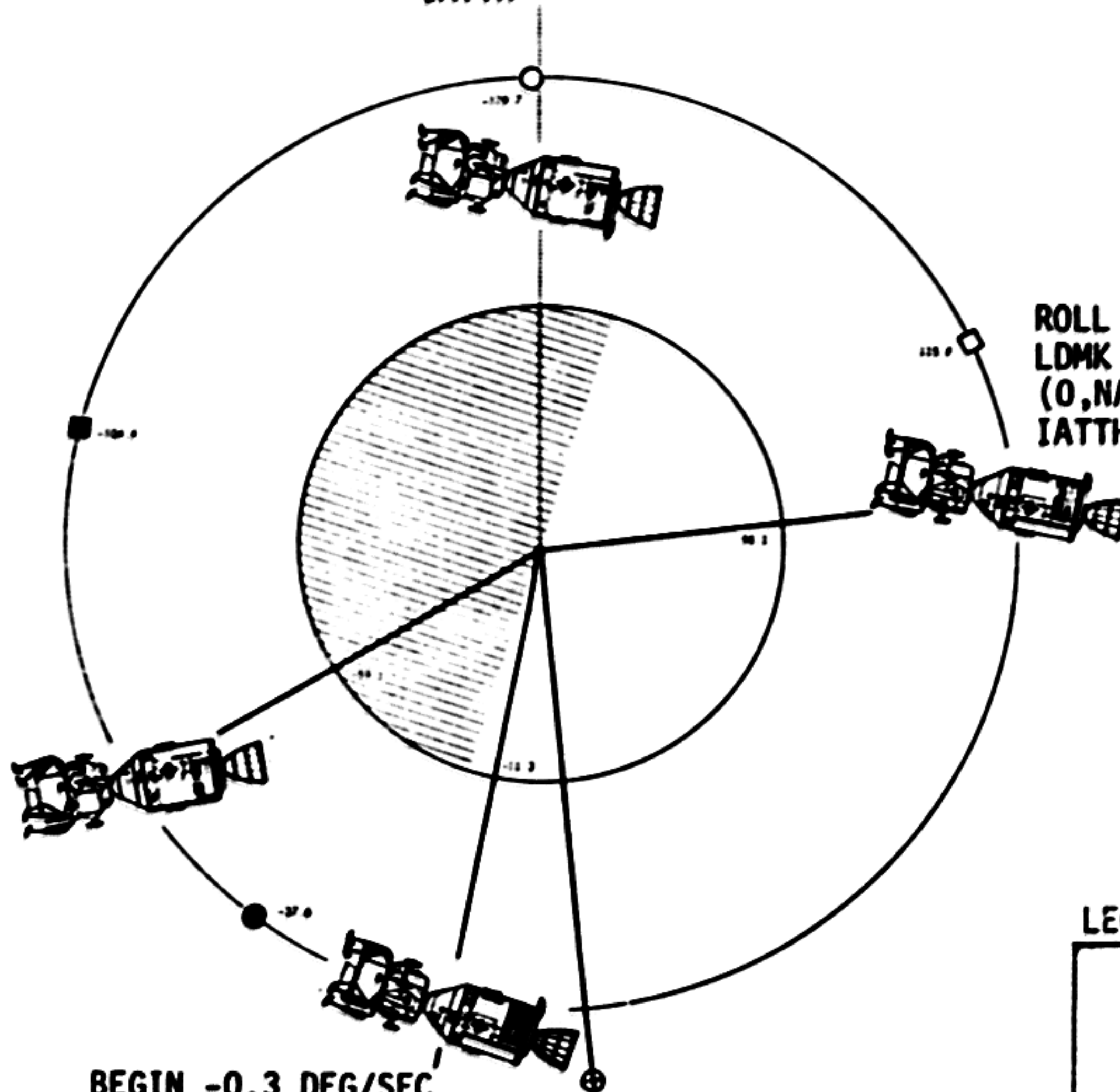
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89:37:41  
 BEGIN REV 4  
 (180,NA/269,0)  
 IATTH

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

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

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



**LEGEND:**

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

3-66A

REVISION B

# FLIGHT PLAN

**CSM**

**LM**

**M. C-H**

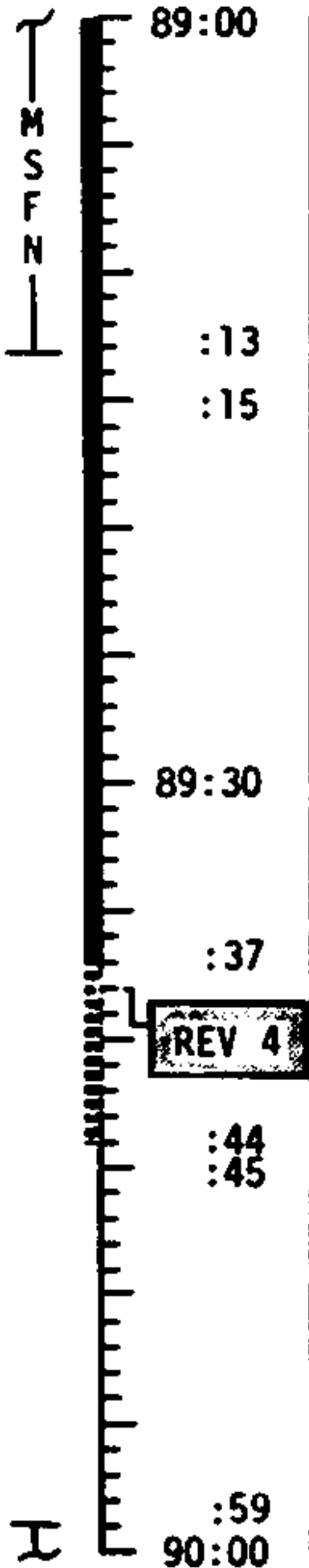
**CMP**

**CDR**

**LMP**

0322 CST

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



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

REACQUIRE MSFN  
 HGA P -71 Y 206

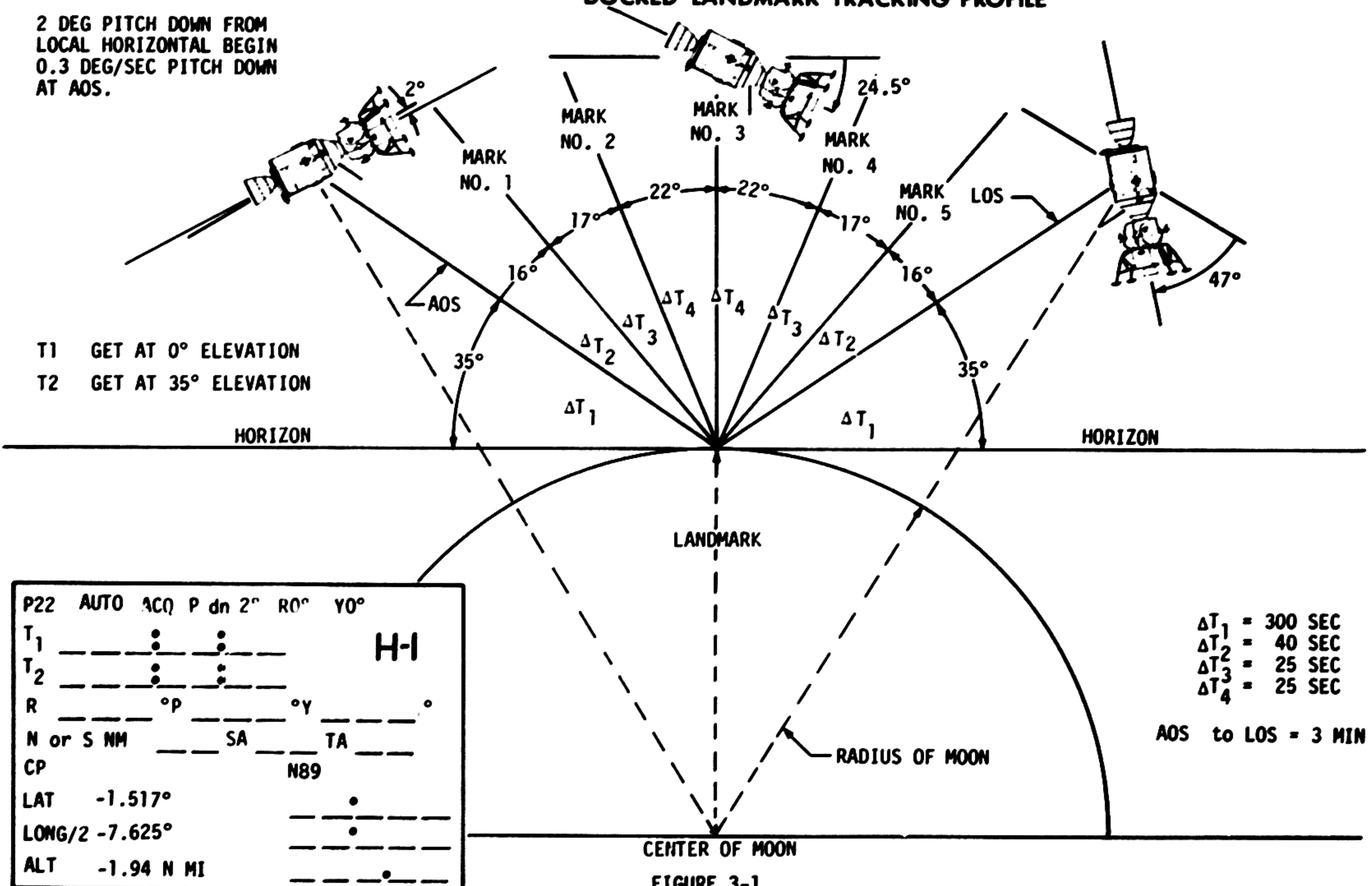
| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 89:00 - 90:00 | 4/3-4   | 3-67 |

FLIGHT PLANNING BRANCH

REVISION B

# DOCKED LANDMARK TRACKING PROFILE

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



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

|                |            |     |         |     |     |
|----------------|------------|-----|---------|-----|-----|
| P22            | AUTO       | ACQ | P dn 2° | RO° | YO° |
| T <sub>1</sub> | ---        | •   | ---     | --- | H-I |
| T <sub>2</sub> | ---        | •   | ---     | --- |     |
| R              | ---        | °p  | ---     | °y  | --- |
| N or S         | NM         | --- | SA      | --- | TA  |
| CP             | ---        | --- | N89     | --- | --- |
| LAT            | -1.517°    | --- | ---     | --- | --- |
| LONG/2         | -7.625°    | --- | ---     | --- | --- |
| ALT            | -1.94 N MI | --- | ---     | --- | --- |

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

AOS to LOS = 3 MIN

FIGURE 3-1  
3-68

# FLIGHT PLAN

**CSM**

**CMP**

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

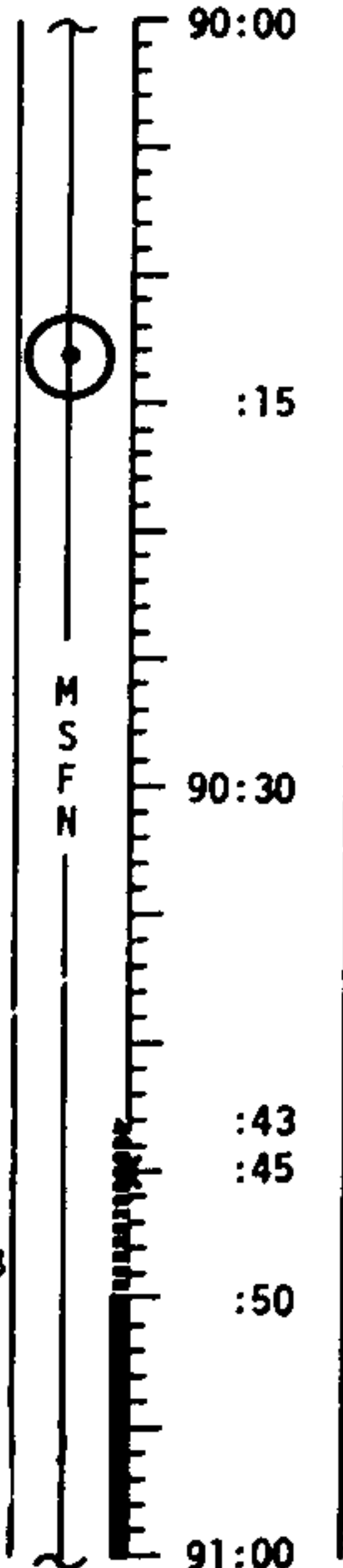
GO INERTIAL  
SELECT OMNI D

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

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

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

0422 CST



**LM**

**CDR**

AID LMP AS REQUIRED

**MCC-H**

**LMP**

TRANSFER TO LMP POWER

COMM ACTIVATION

S-BAND/VHF SIMPLEX

VOICE & TM TEST

REPORT OPS SOURCE  
PRESSURE

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



# FLIGHT PLAN

**CSM**

0522 CST

**LM**

**MCC-H**

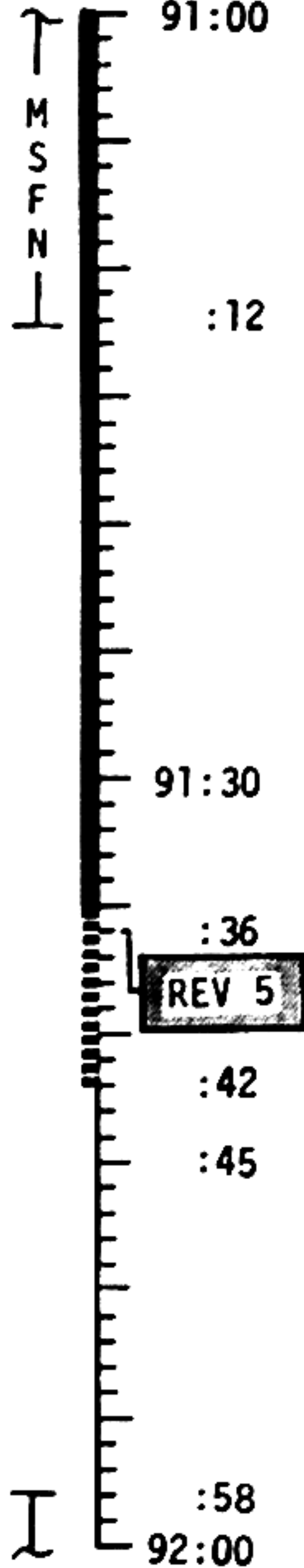
**CMP**

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

VERIFY DSE MOTION  
AT LOS  
INSTALL DROGUE & PROBE

INSTALL CM HATCH

EAT PERIOD



**CDR**

AID LMP AS REQUIRED

IVT TO CSM

**LMP**

COMM DEACTIVATION

TRANSFER TO CSM POWER

LMP IVT TO CSM  
CLOSE LM HATCH

UPDATE TO CSM  
TEI TT PAD  
MAP UPDATE REV 5

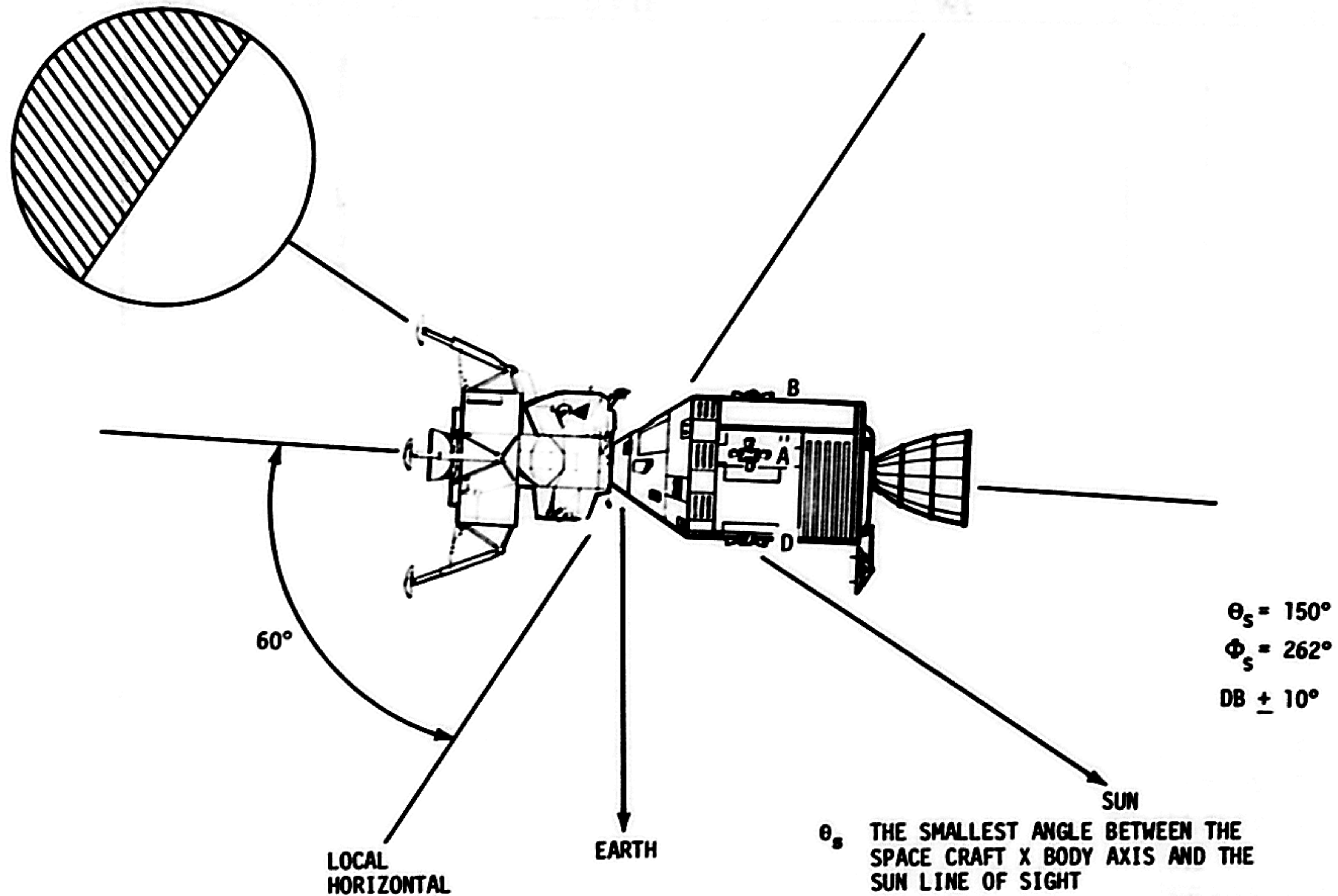
UPLINK TO CSM  
STATE VECTOR & V66

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

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

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

# LUNAR ORBIT REST PERIOD ATTITUDE



$\theta_s$  THE SMALLEST ANGLE BETWEEN THE SPACE CRAFT X BODY AXIS AND THE SUN LINE OF SIGHT

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

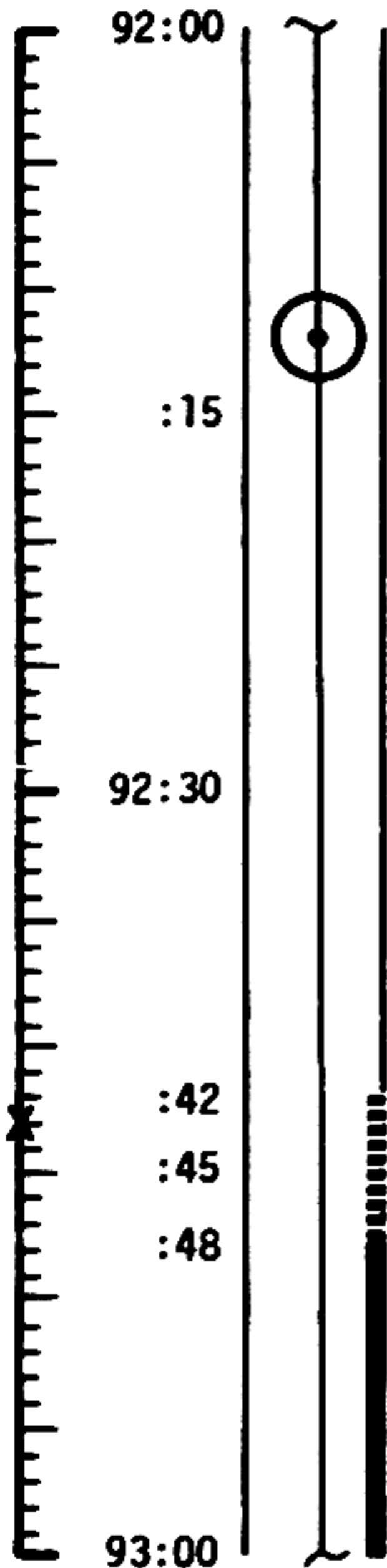
FIGURE 3-2  
3-71

MCC-M  
DUMP DSE

0622 CST

# FLIGHT PLAN

NOTES



EAT PERIOD

REST PERIOD  
(8.5 HOURS)

REST  
ATT

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

| MISSION   | EDITION        | DATE             | TIME          | DAY/REV | PAGE |
|-----------|----------------|------------------|---------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 92:00 - 93:00 | 4/5     | 3-72 |

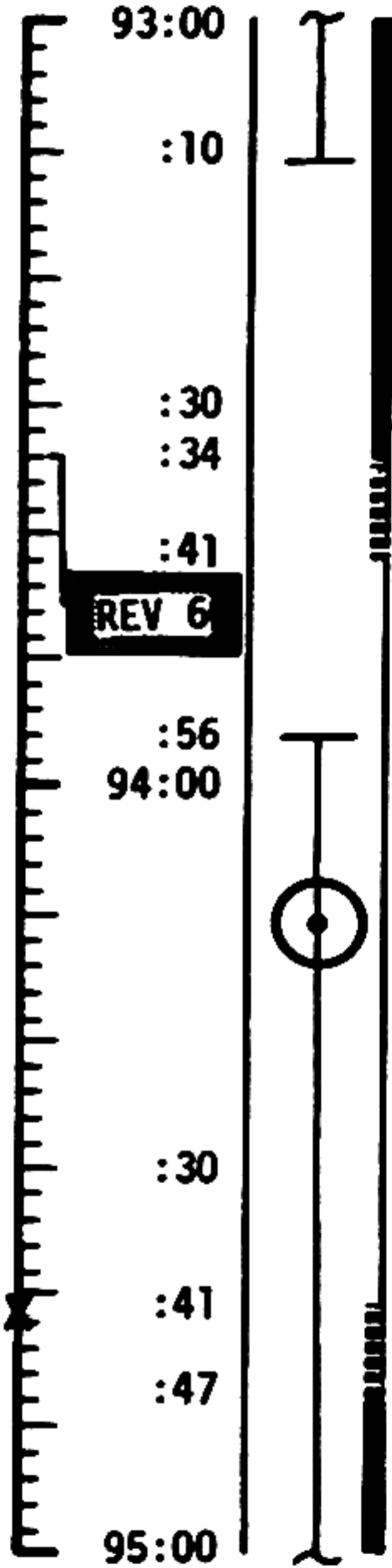
MCC-H

0722 CST

# FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD  
(8.5 HOURS)

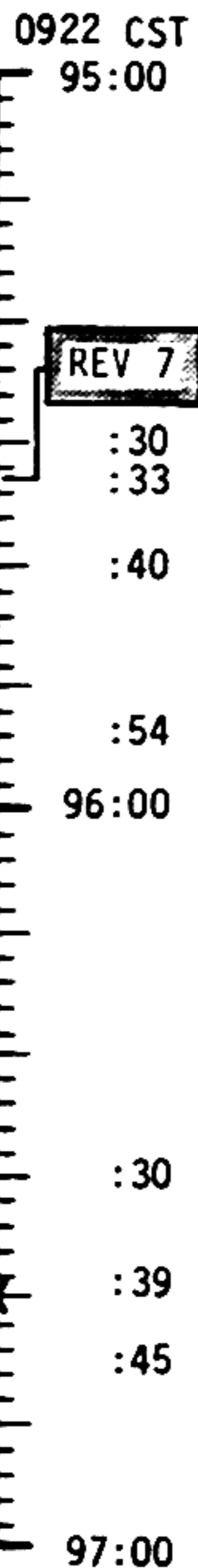
REST  
ATT

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

MCC-M

# FLIGHT PLAN

NOTES



DUMP DSE

REST PERIOD  
(8.5 HOURS)

REST  
ATT

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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

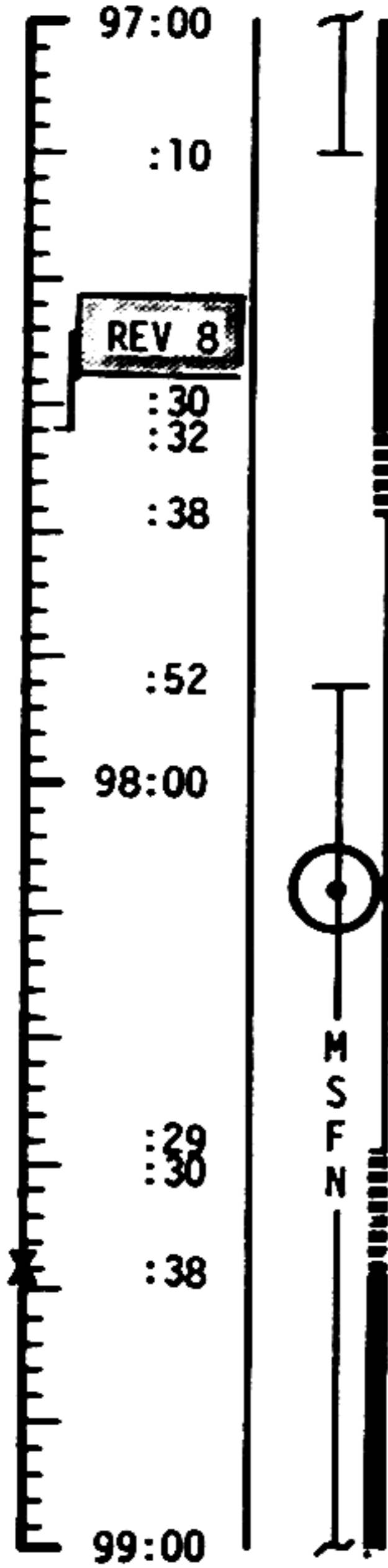
MCC-H

1122 CST

# FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD  
(8.5 HOURS)

REST  
ATT

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

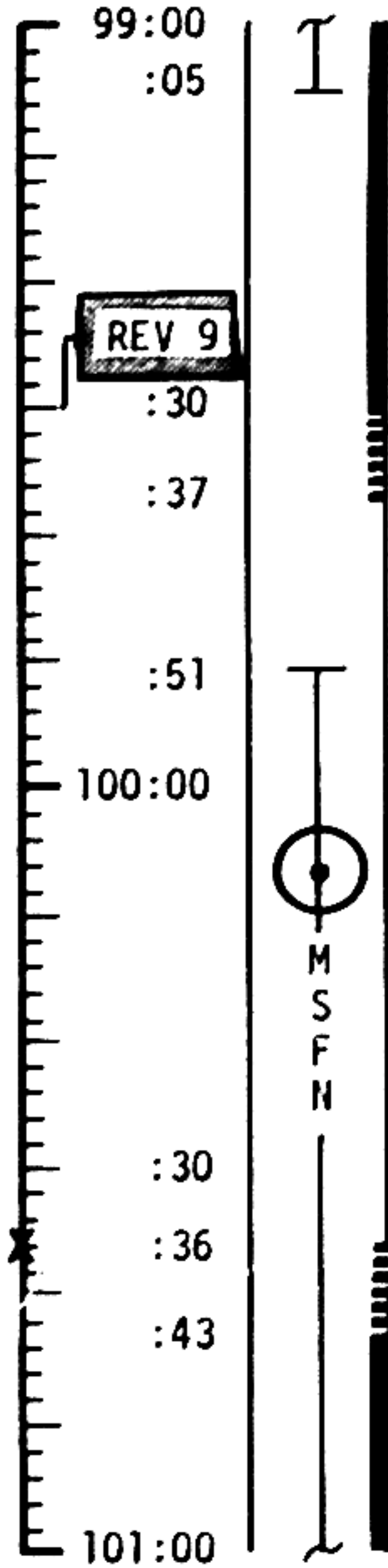
MCC-H

1322 CST

# FLIGHT PLAN

NOTES

DUMP DSE



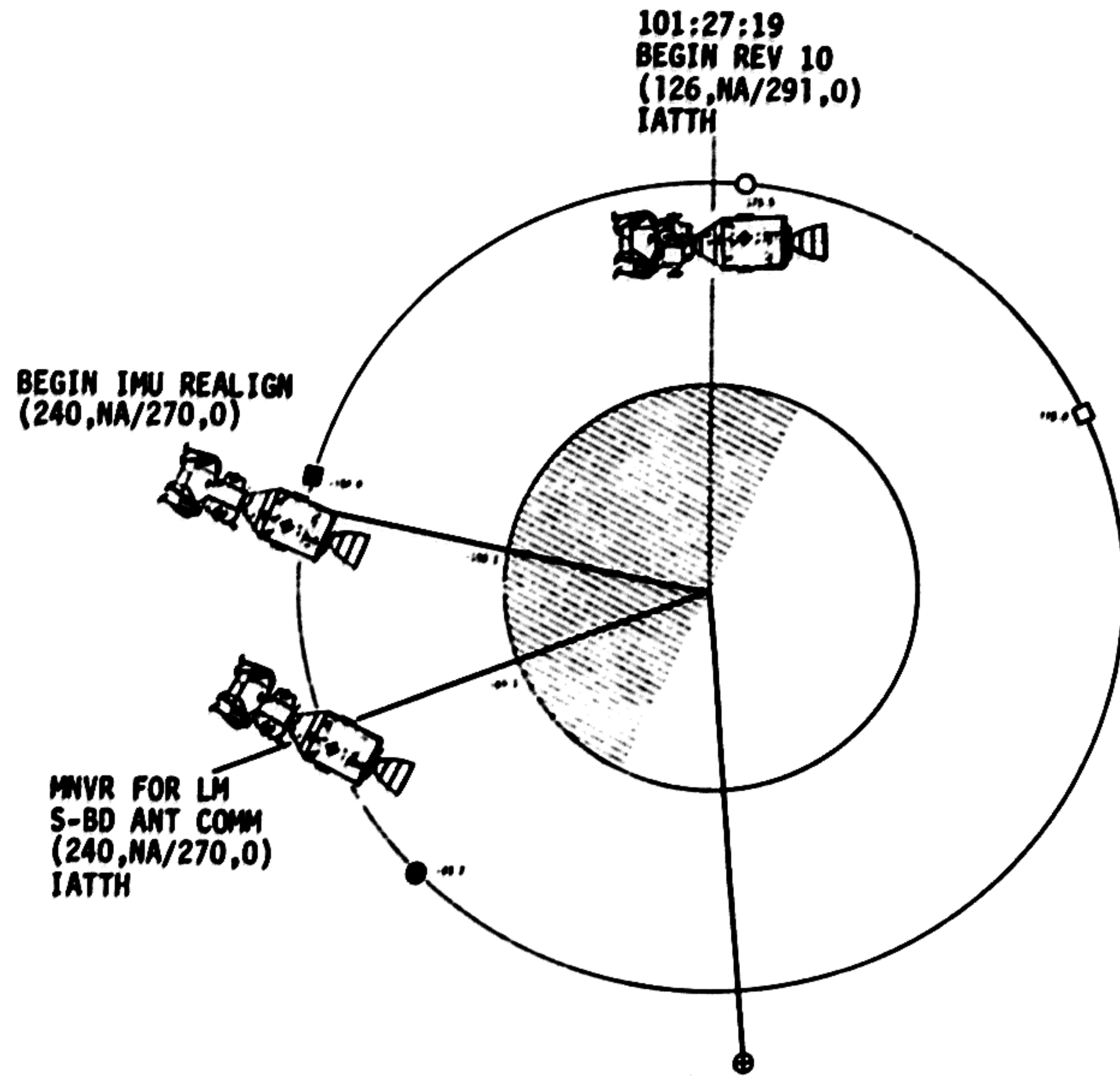
REST PERIOD  
(8.5 HOURS)

REST  
ATT

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

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**LEGEND:**

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

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

3-76A

REVISION B

MCC-M

# FLIGHT PLAN

NOTES

1522 CST

101:00

:03

:15

REV 10

:29  
:01:30

:35

:45

:49

102:00

VERIFY DSE MOTION AT LOS

WASTE WATER DUMP  
O2 FUEL CELL PURGE  
EAT PERIOD

### POSTSLEEP CHECKLIST

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

### CSM CONSUMABLES UPDATE

GET: \_\_\_\_\_ : \_\_\_\_\_  
RCS TOTAL \_\_\_\_\_ %  
QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %  
C \_\_\_\_\_ % D \_\_\_\_\_ %  
H<sub>2</sub> TOTAL \_\_\_\_\_ %  
O<sub>2</sub> TOTAL \_\_\_\_\_ %

### CREW STATUS REPORT

|       | CDR   | CMP   | LMP   |
|-------|-------|-------|-------|
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

DUMP DSE

M  
S  
F  
N

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

1622 CST

# FLIGHT PLAN

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



| CMP   | CDR        | LMP        | MCC-H |
|---|------------|------------|-------|
| EAT PERIOD  | EAT PERIOD | EAT PERIOD |       |
| LiOH CANISTER CHANGE<br>NO. 9-11 INTO A, STOW 9<br>IN A3  |            |            |       |
| TARGET OF OPPORTUNITY<br>PHOTOS OF FRA MAURO<br>OUT RT-HAND SIDE WINDOW<br>CM4/EL/80/BW<br>(f2.8,250,INF)10<br>T1 _____ : _____ : _____<br>T2 _____ : _____ : _____ |            |            |       |
|   |            | DON LCG    |       |
|   | DON LCG    |            |       |

<sup>CSM</sup>  
UPDATE TO ~~HM~~  
UPDATE T1 & T2  
TIMES FOR FRA  
MAURO PHOTOS

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

|                          |   |                       |
|--------------------------|---|-----------------------|
| MAP UPDATE REV <u>11</u> |   |                       |
| LOS                      | : | _____ : _____ : _____ |
| 180°                     | : | _____ : _____ : _____ |
| AOS                      | : | _____ : _____ : _____ |

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

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

1722 CST

# FLIGHT PLAN

103:00  
:01

**CMP**

**CDR**

**LMP**

**MCC-H**

P52 - IMU REALIGN  
OPTION 1 - (PREFERRED)

VERIFY DSE MOTION AT LOS

:15

DON PGA  
W/O HELMET & GLOVES

P52 (LDG SITE ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

REV 11

:27

103:30

EQUALIZE CM/LM PRESSURE

:34

OPEN & STOW CM HATCH  
REMOVE & STOW PROBE & DROGUE

CHECK LATCHES  
REACQUIRE MSFN  
HGA: P-35, Y117

:45

:47

REPORT DOCKING TUNNEL  
INDEX ANGLE

VERIFY DOCKING TUNNEL  
INDEX ANGLE

MAP UPDATE REV 12

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

180° : \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_

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

DUMP DSE

104:00

DON PGA W/O HELMET & GLOVES

OPEN LM HATCH

IVT TO LM

UPDATE TO CSM  
MAP UPDATE REV 12

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

1822 CST

# FLIGHT PLAN

104:00

**CMP**

**CDR**

**LMP**

**MCC-H**

CSM POWER TO LM  
OFF AT LMP'S REQUEST

DON PGA  
W/O HELMET & GLOVES

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

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

UPDATE TO CSM  
P22 LDMK  
TRACKING PAD

:15

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

DISCONNECT & STOW  
LM POWER UMBILICAL

CAUTION/WARNING C/O  
CB ACTIVATION  
TB VERIFICATION

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

104:30

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

IVT TO LM  
TRANSFER HELMET & GLOVES

SEC S-BAND T/R &  
POWER AMPL CHECK

:33

~~INHIBIT B38C4 CSM THRUSTERS~~

ECS ACTIVATION & C/O  
CONNECT TO LM ECS

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

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

:40

LM CLOCK SYNC: V06N65  
T EPHEM: V05N07E 1706E

PGNCS TURN-ON & SELF TEST

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

:45

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

LGC/CMC CLOCK SYNC  
T EPHEM UPDATE  
E MEMORY DUMP

GLYCOL PUMP CHECK

VHF CHECKOUT

:59

105:00

(ON CDR'S MARK)  
MIN DB FOR LM ALIGN  
VERIFY DSE MOTION AT LOS  
RECORD LM PCM DATA

DOCKED IMU COARSE ALIGN  
REPORT GIMBAL ANGLES  
& TIME TO MSFN

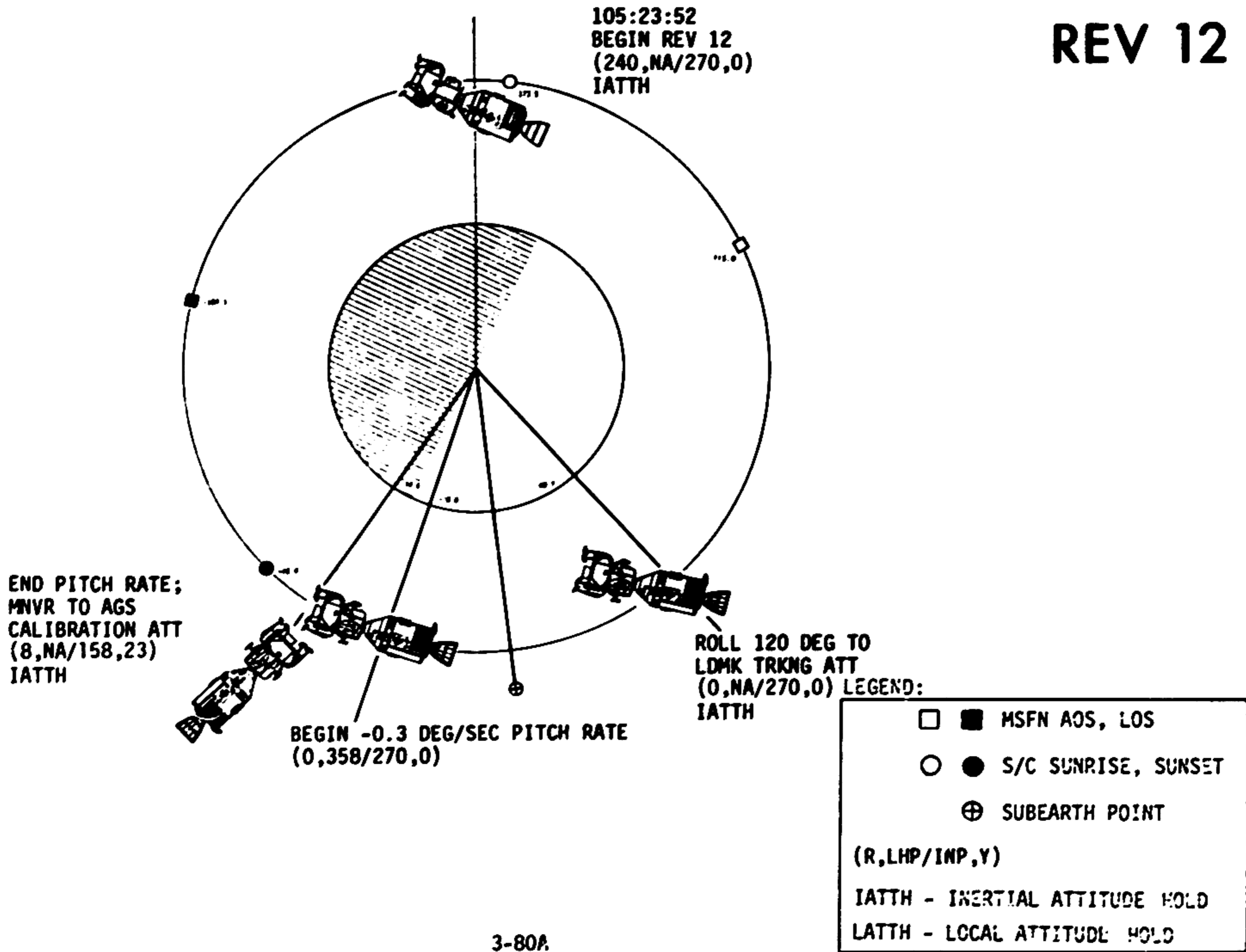
IVT TO CSM

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

DON PGA

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

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3-80A

REVISION B

# FLIGHT PLAN

**CSM**

1922 CST

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

105:00

DON PGA  
IN CSM

DON HELMET & GLOVES  
PGA PRESSURE INTEGRITY  
CHECK

:15

IVT TO LM  
TRANSFER HELMET & GLOVES

CONNECT TO LM ECS  
& COMM

**REV 12**

:26

VERIFY DROGUE  
& PROBE  
INSTALLATION

ASCENT BATTERY  
ACTIVATION  
AND C/O

RECORD ED BAT  
VOLTS

AGS ACT & SELF TEST

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

105:30

INSTALL DROGUE & PROBE  
PRELOAD PROBE

:32

COCK LATCHES (12)  
INSTALL HATCH

VENT TUNNEL  
HATCH INTEGRITY  
CHECK

CONFIGURE PANEL 10  
FOR CSM RELAY

CLOSE AND SECURE  
HATCH

:45

REACQUIRE MSFN

HGA: P-35, Y 117

V06N20E  
DOFF HELMET & GLOVES

DEPLOY LANDING GEAR

STEERABLE ANTENNA:  
P 68, Y 19

DUMP DSE

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

BIOMED SW - LEFT

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

V47-AGS INITIALIZATION

106:00

M  
S  
F  
N

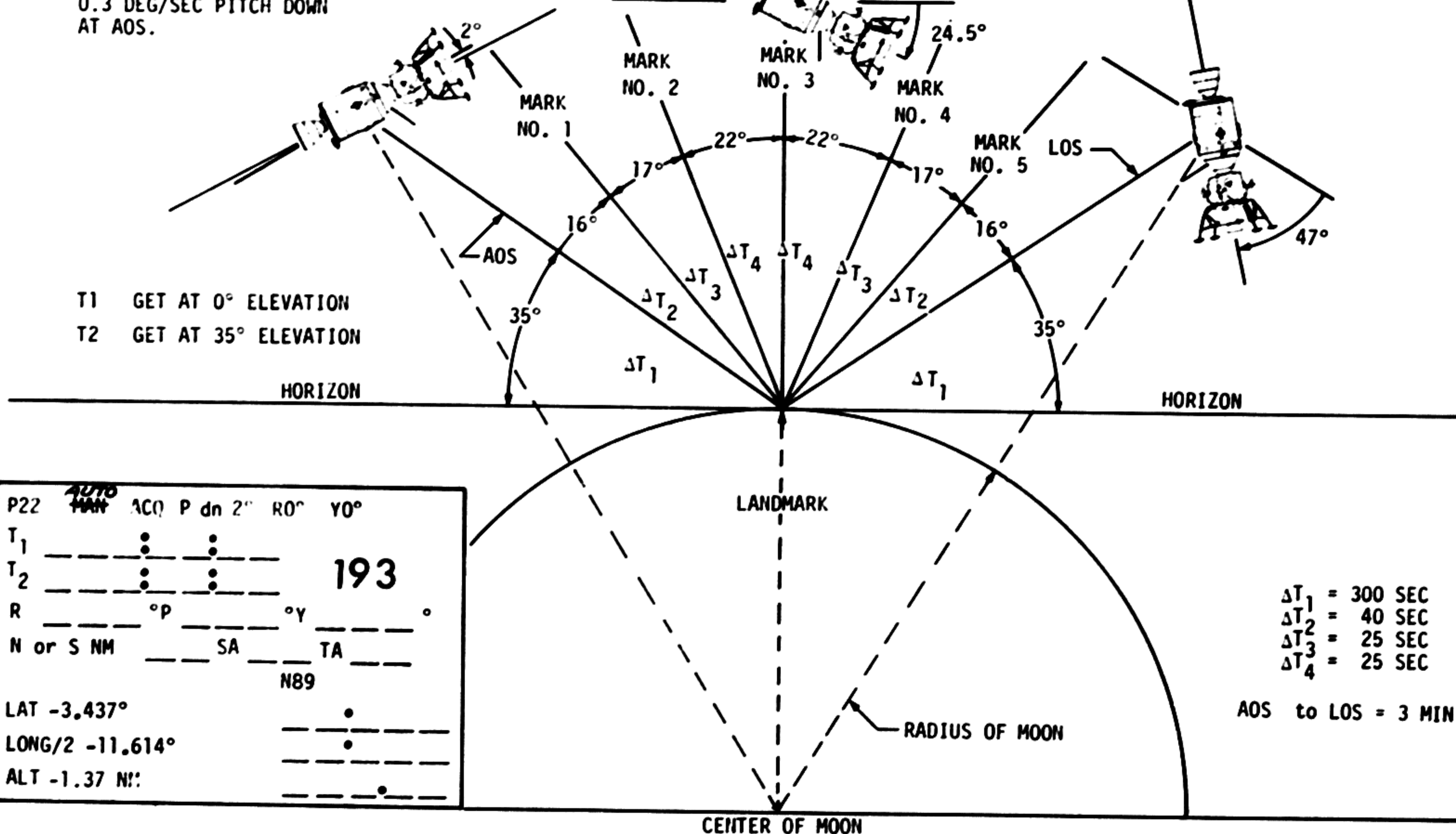
M  
S  
F  
N

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



# DOCKED LANDMARK TRACKING PROFILE

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



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

HORIZON

HORIZON

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

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

AOS to LOS = 3 MIN

CENTER OF MOON

FIGURE 3-1

# FLIGHT PLAN

**CSM**

2022 CST

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

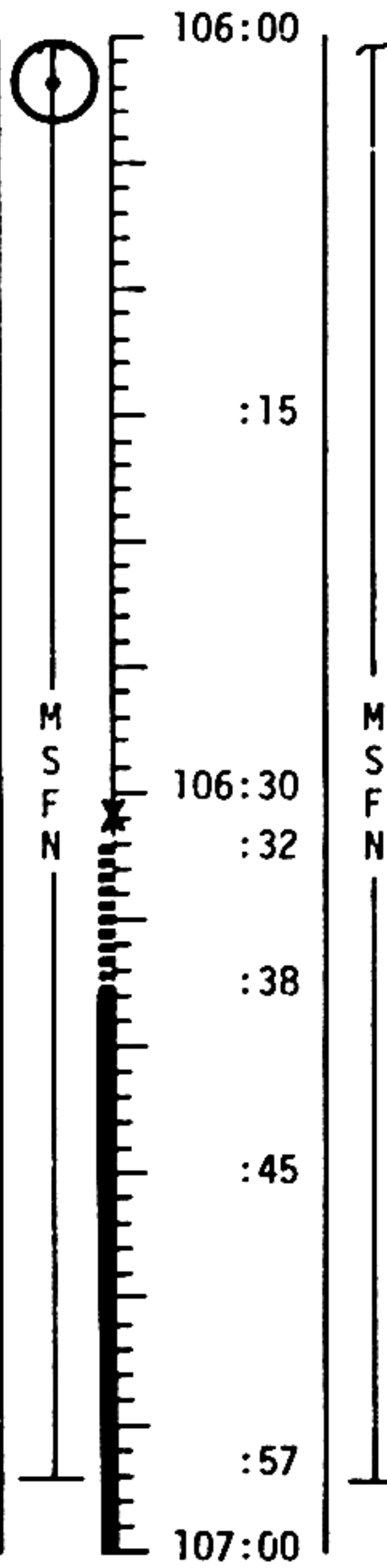
SELECT OMNI D  
ROLL 120° TO TRACKING  
ATT AT 106:10  
R 0, P270, Y 0

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

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

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

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



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

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

MAP UPDATE REV 13

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

180° : \_\_\_ : \_\_\_ : \_\_\_

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

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

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

CSM

2122 CST

LM

MCC-H

CMP

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

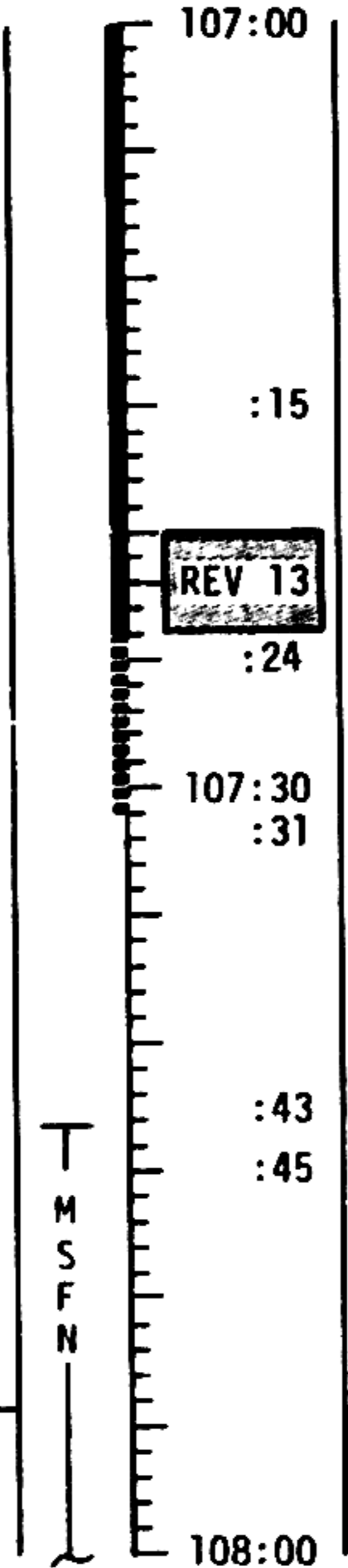
RR TRANSPONDER ACT  
 & SELF TEST

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

SOFT UNDOCK

S/C CONTROL - CMC  
 STATION KEEP @ 40'

~~RE-ENABLE B3&G4 JETS~~



CDR

LMP

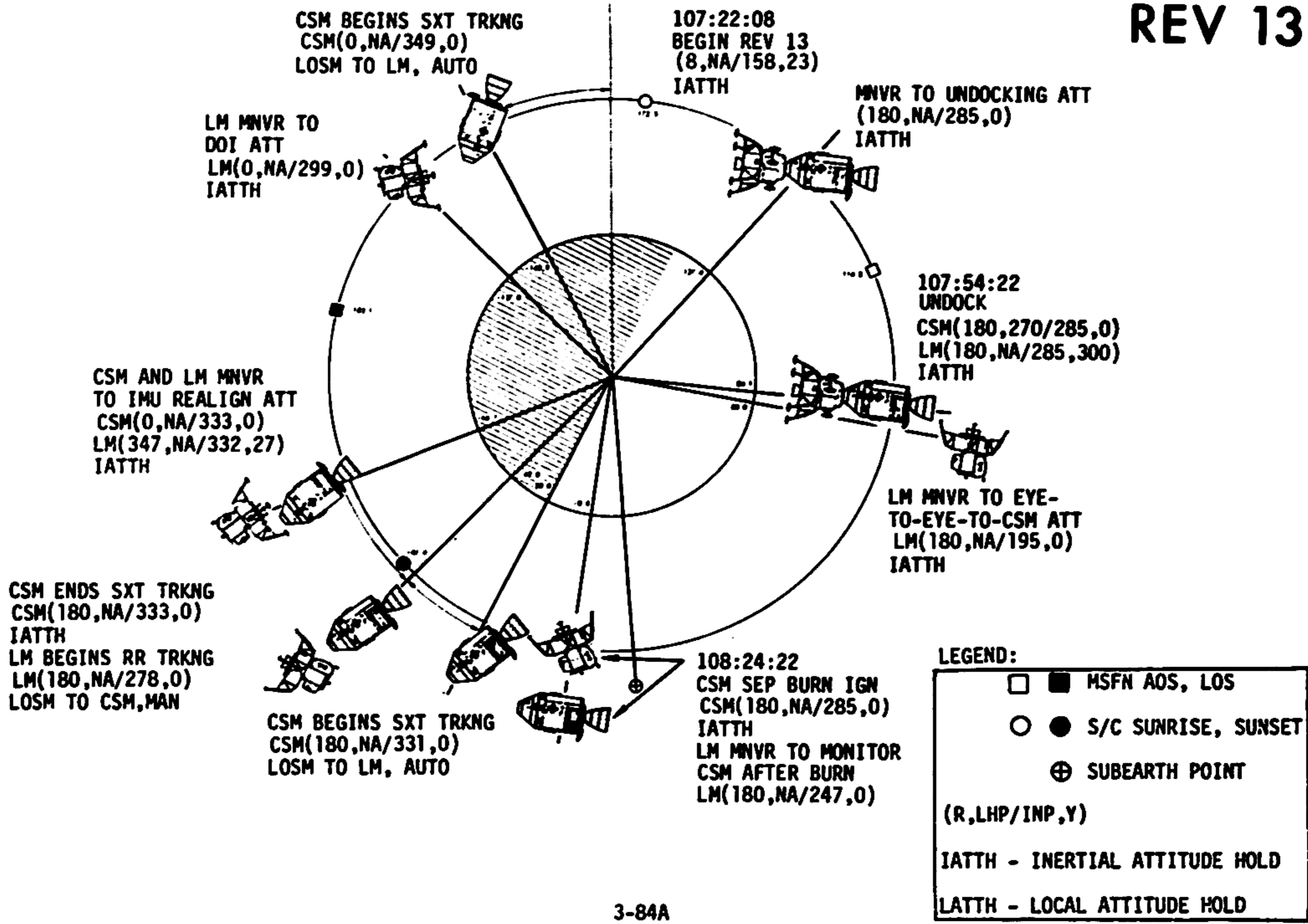
|   |  |
|---|--|
| RR ACT & SELF TEST                                      | AGS ACCELEROMETER & GYRO CALIBRATION   |
| DON HELMET & GLOVES                                     | DON HELMET & GLOVES  |
| ARS/PGA PRESSURE INTEGRITY CHECK                        |  |
| CABIN REGULATOR CHECK            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

DUMP DSE  
 GO/NO-GO FOR UNDOCKING

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

FLIGHT PLANNING BRANCH

REVISION A



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# FLIGHT PLAN

**CSM**

**CMP**

SEQ CAMERA - OFF

P30/P41

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

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

MAP UPDATE REV 14  
LOS : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
180° : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
AOS : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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

VHF A-SIMPLEX/DATA  
VERIFY DSE MOTION AT LOS

2222 CST

108:00

:15

108:30

:37

:45

:55

109:00

MSFN

MSFN

**LM**

**CDR**

V83 - SET ORDEAL

LR ACTIVATION  
& SELF TEST

DOFF HELMETS & GLOVES

SEPARATION

P00 & DATA

P30-EXT  $\Delta V$   
P40-DPS THRUST  
(UNTIL MSFN GO)  
RR & VHF RANGING  
AND CHECKOUT

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

**LMP**

BIOMED SW - RIGHT

V47-AGS UPDATE & ALIGN  
LOAD AGS EXT  $\Delta V$

DESIGNATE RR TO  
CLEAR AOT IF REQ'D

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

**MCC-H**

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

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

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

# FLIGHT PLAN

**CSM**

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

GDC ALIGN TO IMU  
V83-VERIFY ORDEAL

P20-AUTO MNVR TO  
SXT TRACK ATT

CONFIRM DOI  
P76-LOAD TARGET ΔV'S

P20-AUTO MNVR  
SXT & VHF  
TRACKING OF LM

V64-ACQUIRE MSFN

2322 CST  
109:00

:15

REV 14

:23

:29  
109:30

:41

:43

:45

110:00

MSFN

MSFN

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

DOI

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

ENABLE MSFN RELAY

DUMP USE

UPDATE TO CSM  
MAP UPDATE REV 15

MAP UPDATE REV 15

|      |   |     |   |     |   |     |
|------|---|-----|---|-----|---|-----|
| LOS  | : | --- | : | --- | : | --- |
| 180° | : | --- | : | --- | : | --- |
| AOS  | : | --- | : | --- | : | --- |

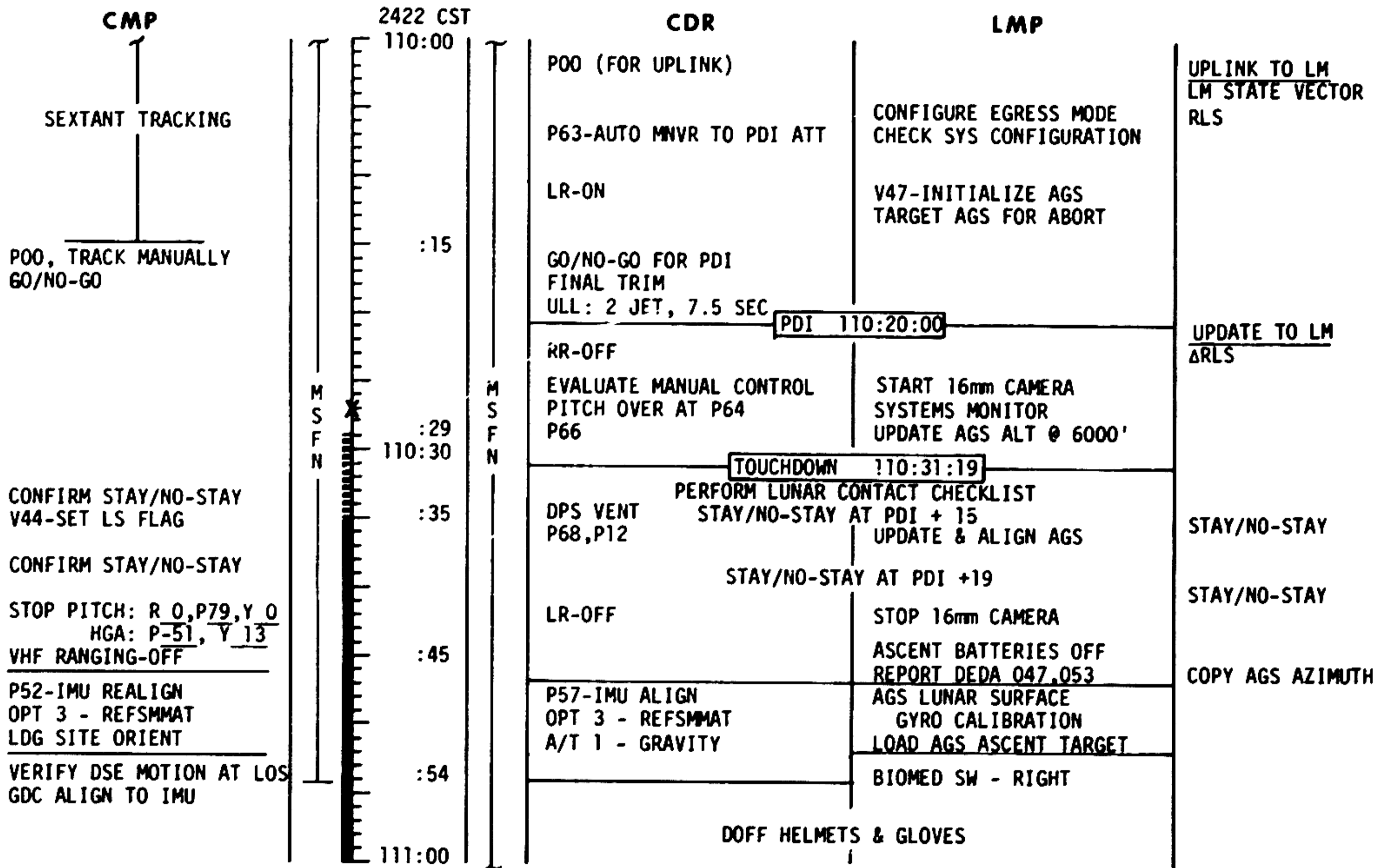
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE |
|-----------|----------------|------------------|-----------------|---------|------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 109:00 - 110:00 | 5/13-14 | 3-86 |

# FLIGHT PLAN

CSM

LM

MCC-H



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



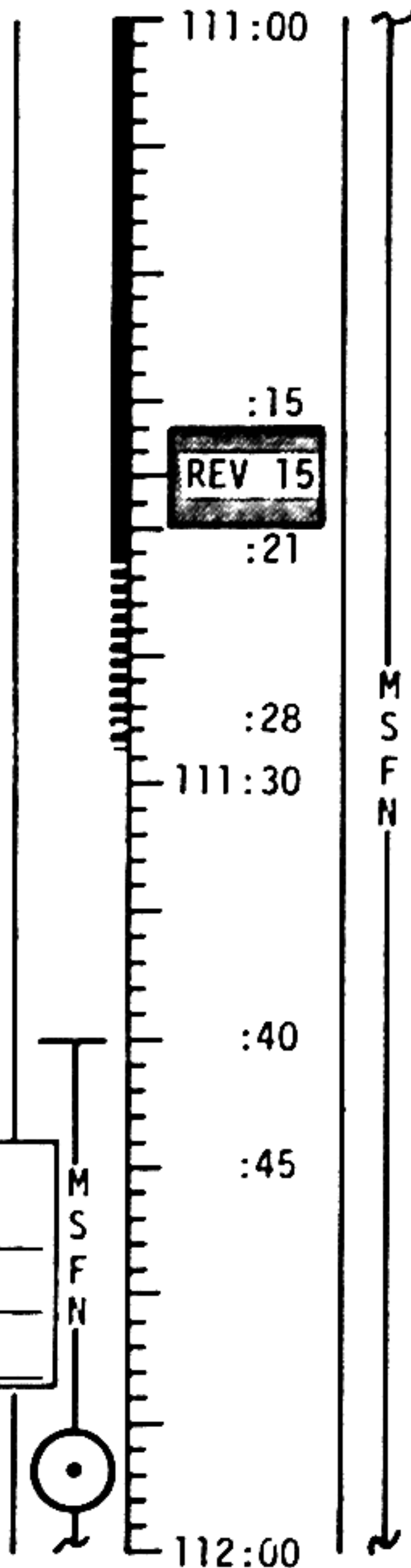
CSM

LM

MCC-H

0122 CST

CMP



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

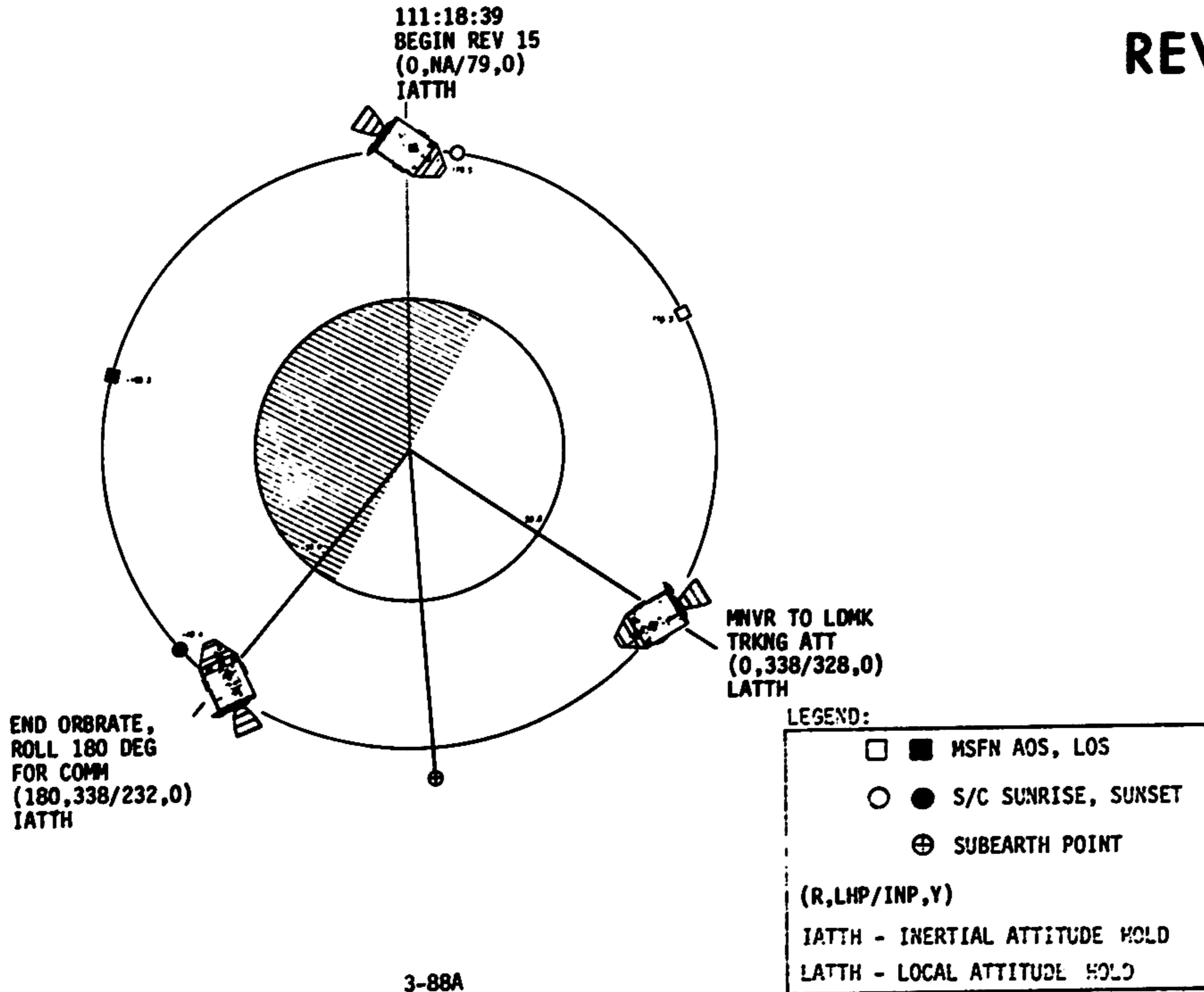
UPLINK TO LM  
RLS  
CSM STATE VECTOR  
STAY/NO-STAY FOR POWER DOWN  
UPLINK TO CSM  
CSM STATE VECTOR  
DUMP DSE  
UPDATE TO CSM  
P22 - TRACKING PAD  
MAP UPDATE REV 16  
UPDATE TO LM  
LM CONSUMABLES

REACQUIRE MSFN  
HGA P-51 Y 13

|                   |   |                       |
|-------------------|---|-----------------------|
| MAP UPDATE REV 16 |   |                       |
| LOS               | : | _____ : _____ : _____ |
| 180°              | : | _____ : _____ : _____ |
| AOS               | : | _____ : _____ : _____ |

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

FI GHT PLANNING BRANCH

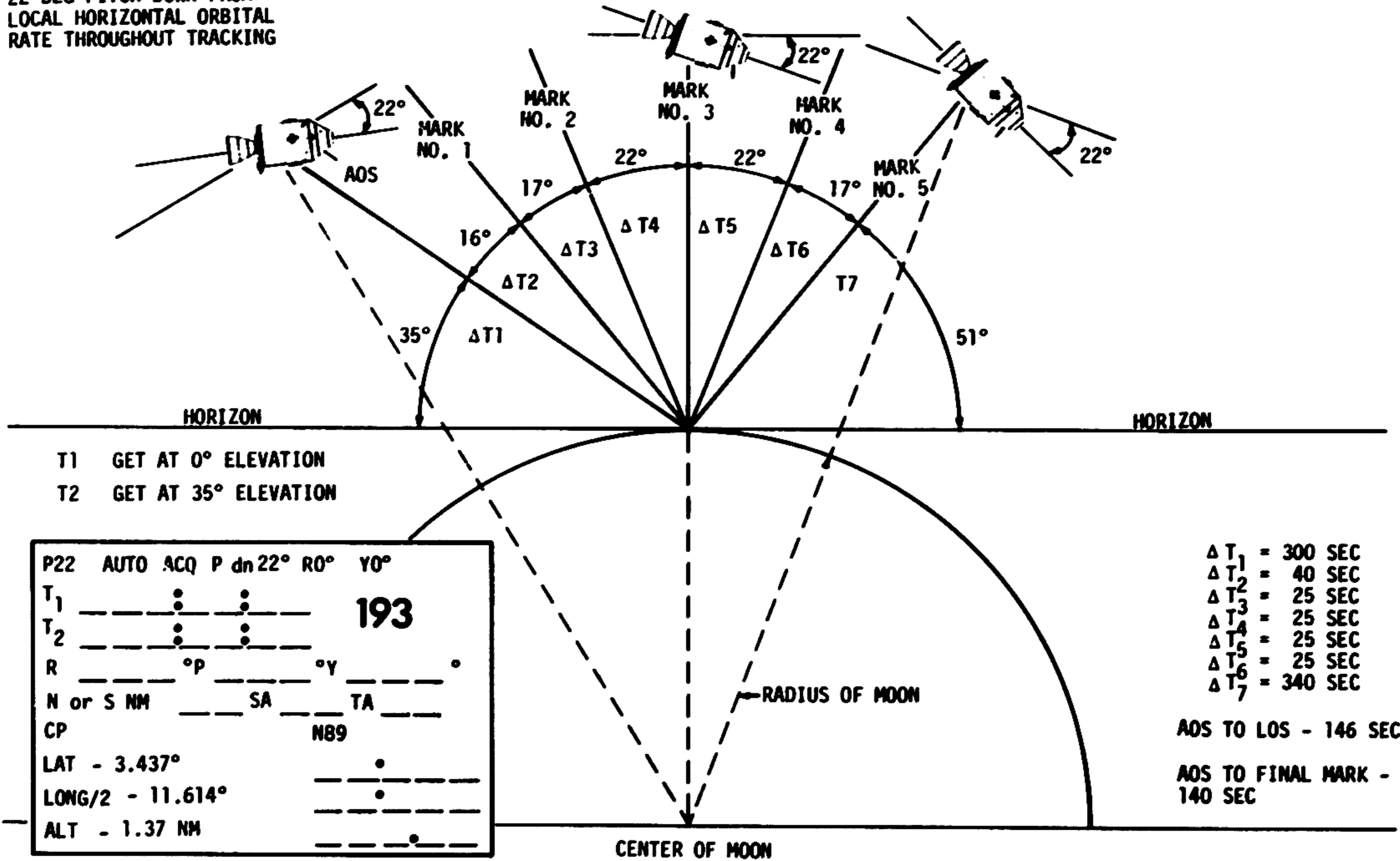


3-88A

REVISION B

# CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



- Δ T<sub>1</sub> = 300 SEC
- Δ T<sub>2</sub> = 40 SEC
- Δ T<sub>3</sub> = 25 SEC
- Δ T<sub>4</sub> = 25 SEC
- Δ T<sub>5</sub> = 25 SEC
- Δ T<sub>6</sub> = 25 SEC
- Δ T<sub>7</sub> = 340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3

# FLIGHT PLAN

**CSM**

**CMP**

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

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

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

EAT PERIOD

VERIFY DSE MOTION @ LOS

0222 CST  
112:00

MSFN

:15

:28

112:30

:34

:45

:52

113:00

MSFN

**CDR**

**LM**

**LMP**

**MCC-H**

EAT PERIOD

RR-ON

P22 - LUNAR SURFACE NAVIGATION

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

POWER DOWN IMU  
LGC TO STANDBY

CREW STATUS REPORT (DOSIMETER, MEDICATION)

CABIN PREP FOR EVA

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

STOW LUNAR CHECKLIST

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

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

# FLIGHT PLAN

CSM

LM

MCC-H

CMP

CDR

LMP

0322 CST  
113:00

EAT PERIOD

CABIN PREP FOR EVA (CONT)

-1:20

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

-1:10

:15

REV 16

:20

:27

113:30

MSFN

-1:00

PLSS DONNING

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

DUMP USE

-:50

UPDATE TO CSM

P22 - TRACKING PAD  
MAP UPDATE REV 17

REACQUIRE MSFN

HGA P -23 , Y 189

:38

MAP UPDATE REV 17

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

180°W: \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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

MSFN

:45

-:40

PLSS COMM CHECK

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

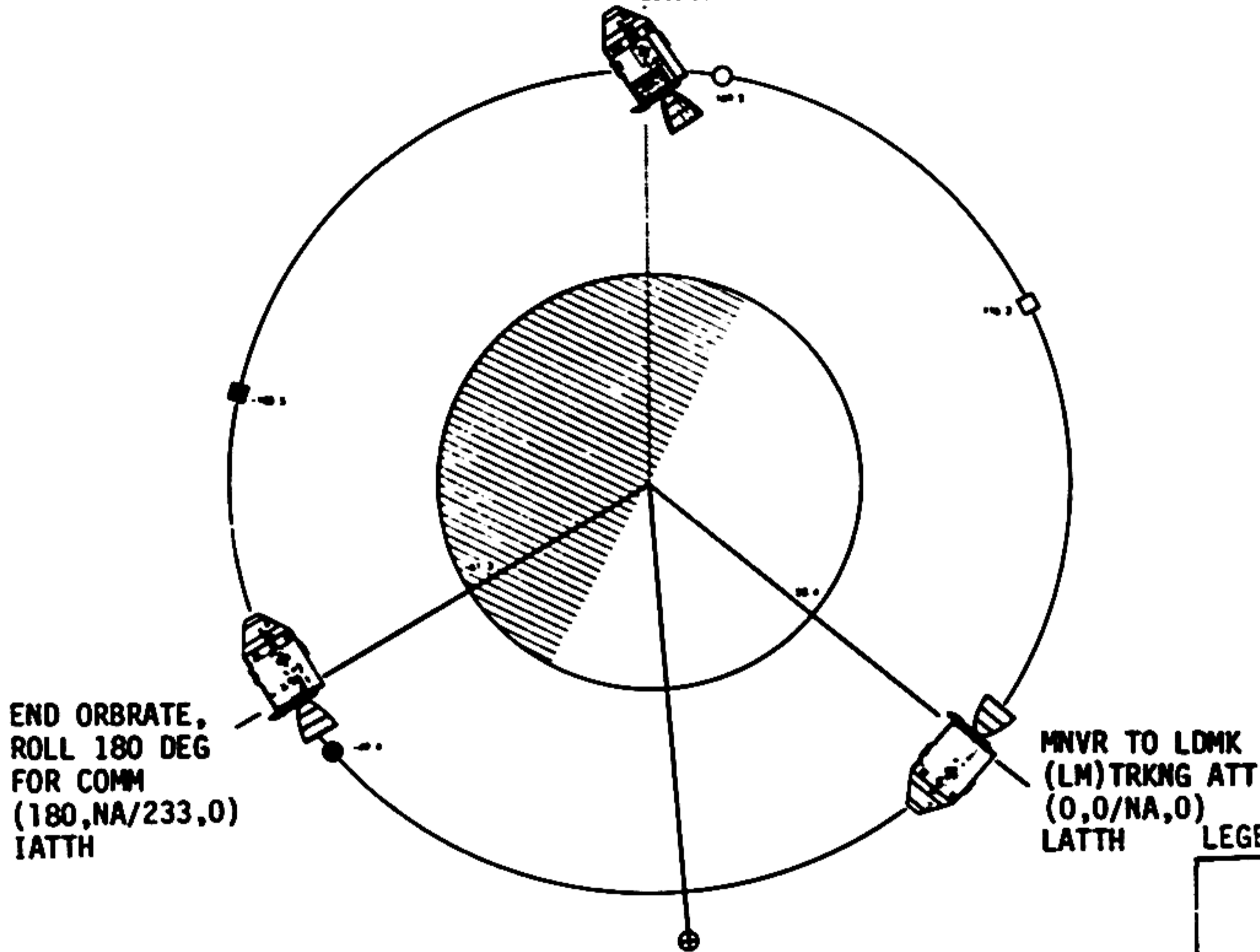
FINAL SYSTEMS PREP

-:30

114:00

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

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



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

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

LEGEND:

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

(R,LHP/INP,Y)

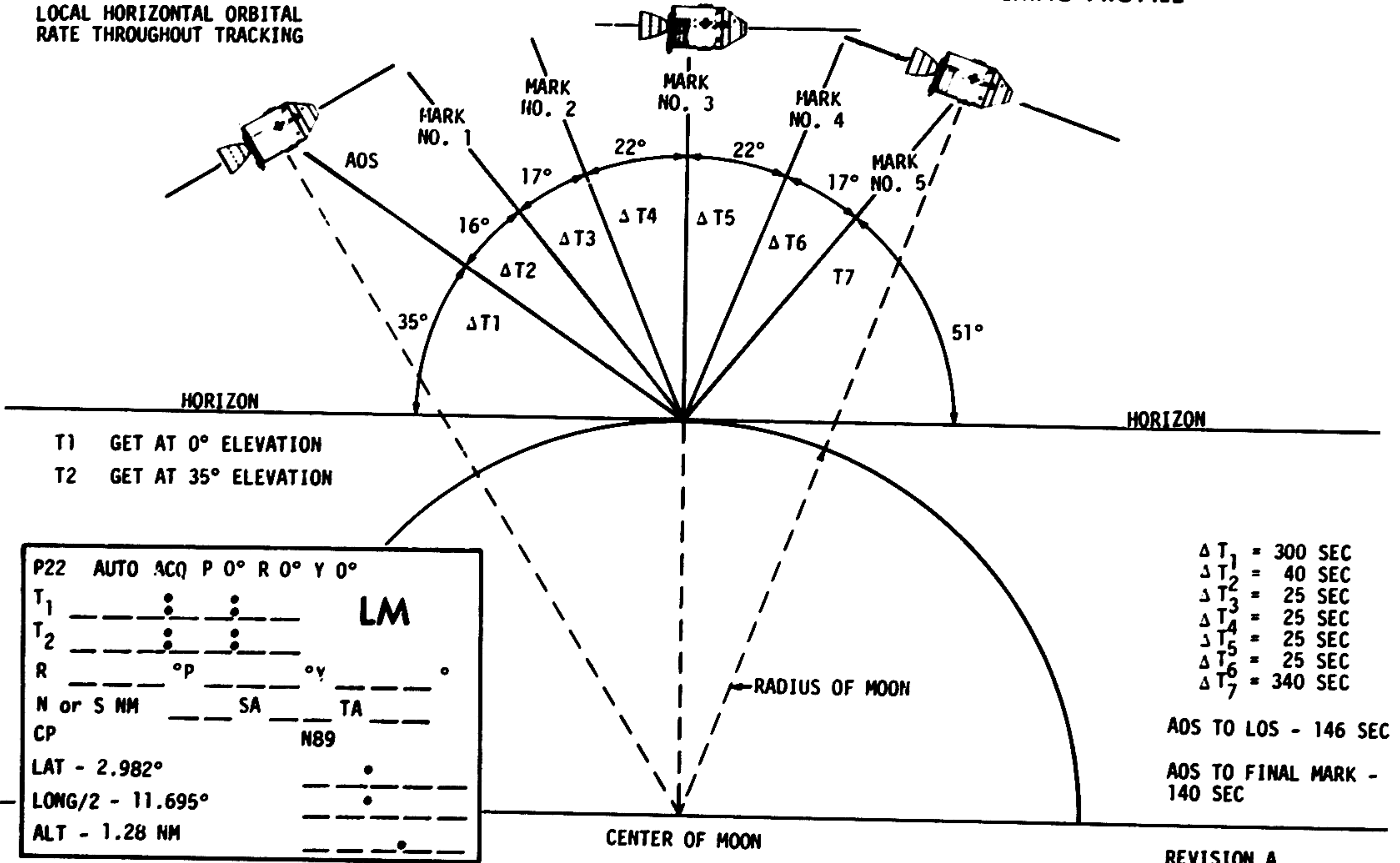
IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-91A

# CSM LANDMARK TRACKING PROFILE

LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



CENTER OF MOON

FIGURE 3-3  
3-92

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

REVISION A

# FLIGHT PLAN

**CSM**

**CMP**

MNVR TO TRACKING  
ATTITUDE BY 114:00

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

VERIFY DSE MOTION

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

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

VERIFY DSE MOTION @ LOS

0422 CST  
114:00



:15

:26

114:30

:33

:45

:50

115:00

**LM**

**CDR**

**LMP**

CONNECT OPS O<sub>2</sub> HOSES  
DON HELMETS  
CONNECT PLSS H<sub>2</sub>O HOSES  
LCG PUMP CB-OPEN  
DON GLOVES

VERIFY CB & VALVE CONFIGURATION

PRESSURE INTEGRITY CHECK  
PLSS O<sub>2</sub> ON

CABIN DEPRESS

CONFIRM "GO" FOR EVA  
DEPRESS CABIN TO 3.5 PSIA

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

FINAL PREP FOR EGRESS  
PLSS H<sub>2</sub>O ON, FINAL SYSTEMS CHECK,  
TURN TV ON, VERIFY CB CONFIGURATION

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

ASSIST & MONITOR CDR  
ACTIVATE 16MM SEQ CAMERA

ENVIRONMENTAL FAM  
CK BALANCE, CK LM STABILITY

MONITOR & PHOTO CDR  
WITH 70 MM CAMERA

CONT. SAMPLE COLLECTION  
COLLECT & STOW SAMPLE

PERFORM FINAL LM & EMU CK

ETB TRANSFER  
DEPLOY MESA & ETB

CONFIRM "GO" FOR EVA

:30

:20

:10

START EVA  
0:00

0:10

0:20

0:30

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



CSM

CMP

LM

MCC-H

0522 CST

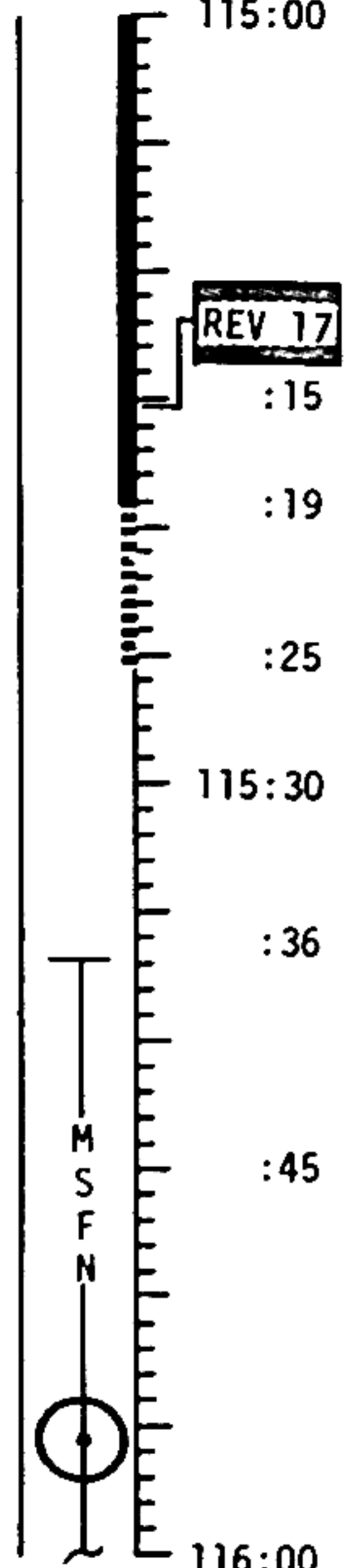
115:00

CDR

LMP

EVA GO

0:30



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

ASSIST CDR WITH ETB  
 TRANSFER

0:40

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

LMP EGRESS  
 MOVE THROUGH HATCH  
 DESCEND TO SURFACE

ENVIRONMENTAL FAM  
 CHECK BALANCE & STABILITY

0:50

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

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

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

1:00

FLAG DEPLOY

FLAG DEPLOY

REACQUIRE MSFN  
 HGA P -23, Y 190

:36

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

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

1:10

DUMP OSE

:45

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

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

1:20

REMOVE SIDE SUBPALLET  
 FROM PKG #2

DEPLOY FUEL CASK  
 EXTRACT FUEL ELEMENT  
 FUEL RTG

116:00

1:30

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

# FLIGHT PLAN

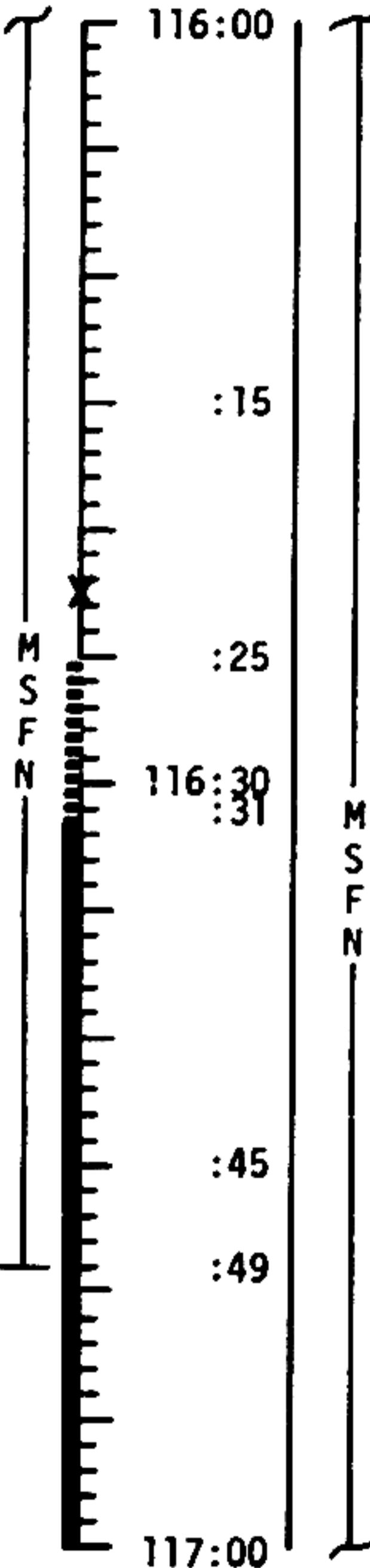
CSM  
CMP

LM

MCC-H

0622 CST  
116:00

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



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

1:30  
1:40  
1:50  
UPDATE TO CSM  
MAP UPDATE REV 18  
2:00  
2:10  
2:20  
2:30

VERIFY DSE MOTION @ LOS

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

CSM

CMP

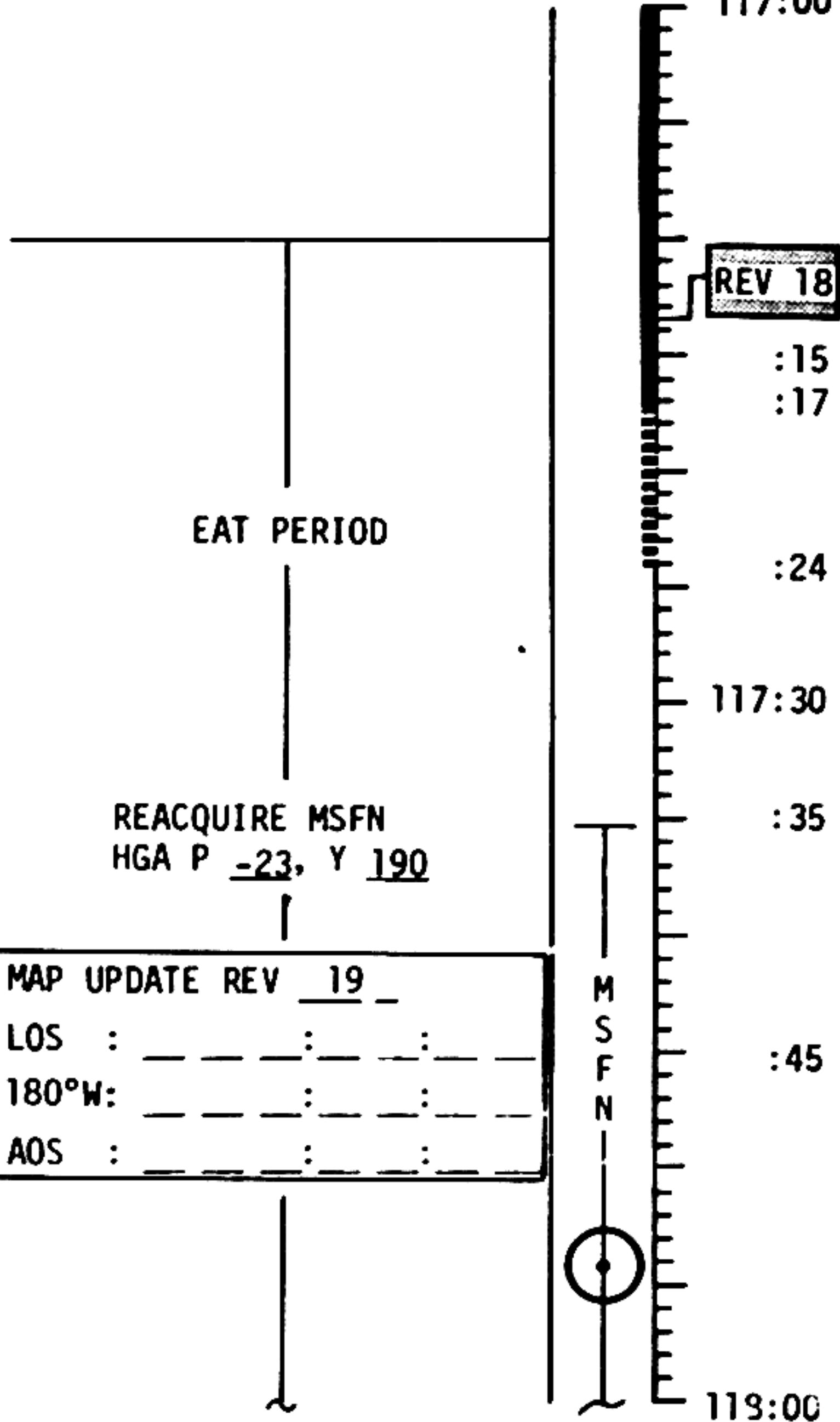
LM

MCC-H

0722 CST  
117:00

CDR

LMP



|  |  |
|--|--|
| RETURN TRAVERSE<br>TRAVERSE TO LM COLLECTING<br>SAMPLES<br>REST ENROUTE  | RETURN TRAVERSE<br>TRAVERSE TO LM COLLECT-<br>ING SAMPLES<br>REST ENROUTE<br>RETURN TV TO LM AREA<br>& POSITION TO VIEW MESA/<br>LADDER<br>PHOTOGRAPH ALSEP SITE         |
| SRC #1 PACKING<br>STOW 70 MM CAM IN ETB<br>STOW TOOLS<br>UNSTOW & UNPACK SRC #1<br>SEAL ORGANIC CONTROL SAMPLE<br>REMOVE LMP SADDLE BAG &<br>FINISH FILLING<br>PACK SAMPLES IN SRC & SEA | CORE TUBE SAMPLE COLLECTION<br>COLLECT CORE & STOW IN SRC<br>REMOVE CDR SADDLE BAG   |
| LEC TRANSFERS<br>STOW 70MM CAM IN ETB,<br>CLOSE ETB & TRANSFER<br>INTO LM<br>REST/CHECK EMU<br>ATTACH LEC TO SRC<br>TRANSFER SRC INTO LM   | EVA TERMINATION<br>STOW 70MM CAM IN ETB<br>CLEAN EMU & CHECK CDR<br>INGRESS<br>CHECK EMU & LM SYSTEMS<br>S-BD ANT-LUNAR STAY<br>ASSIST CDR<br>REMOVE ETB FROM LEC & STOW |
| EVA TERMINATION<br>PLACE SRC #2 ON +Y PAD<br>CLEAN EMU<br>ASCEND TO PLATFORM<br>STOW LEC & INGRESS   | ASSIST CDR<br>REMOVE SRC FROM LEC<br>STOW SRC ON ENG COVER   |
| JETTISON EQUIPMENT & CLOSE HATCH<br>REPRESS CABIN  |  |

2:30

GO/NO GO FOR  
EVA EXTENSION  
2:40

2:50

3:00

DUMP DSE  
3:10

UPDATE TO CSM  
MAP UPDATE REV 19

3:20

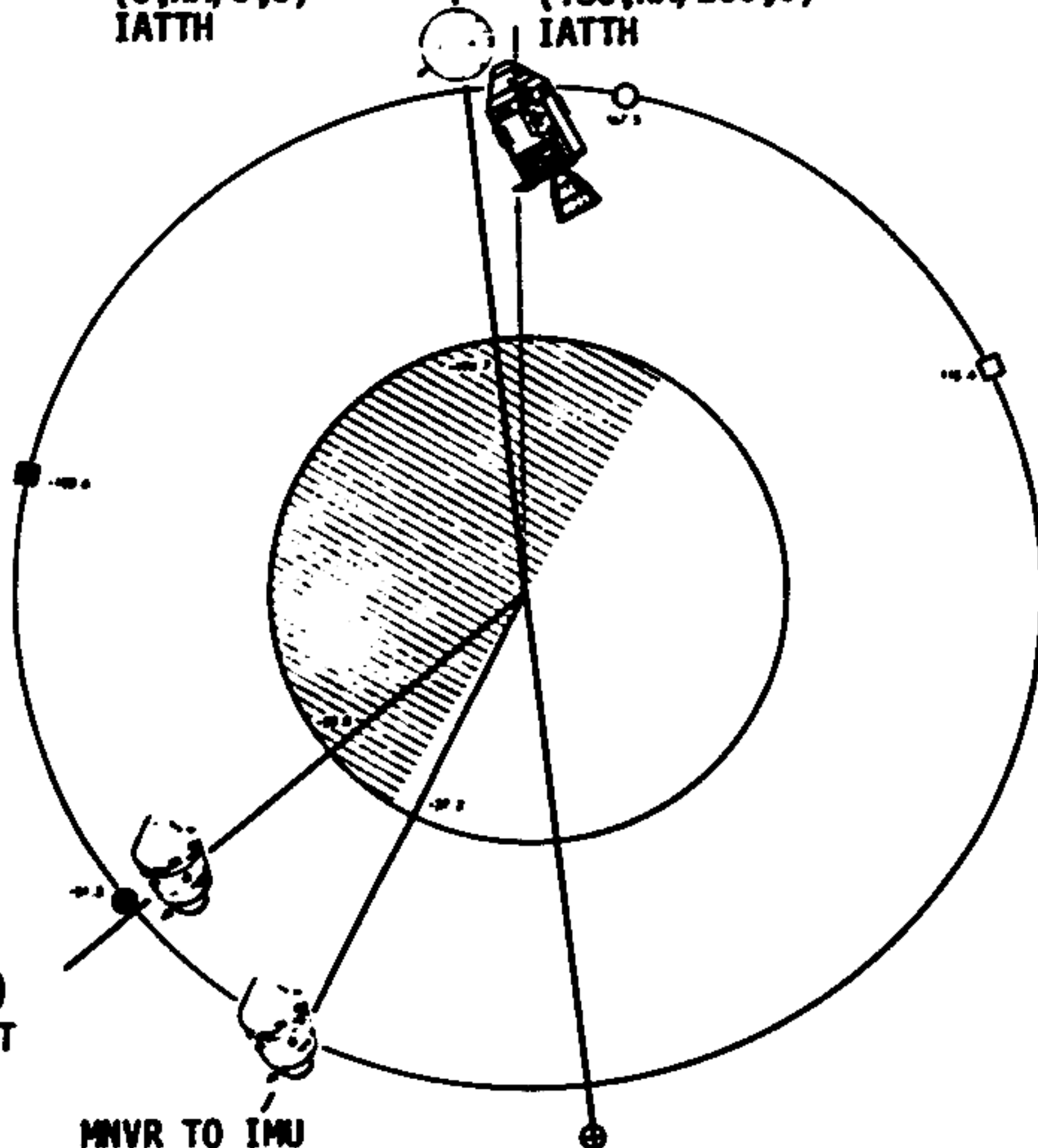
3:30

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

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MNVR TO PC 1  
 BURN ATT  
 (0,NA/0,0)  
 IATTH

117:13:29  
 BEGIN REV 18  
 (180,NA/233,0)  
 IATTH



AFTER IMU  
 REALIGN  
 (49,NA/331,29)  
 LOPC #1 ORIENT

MNVR TO IMU  
 REALIGN ATT  
 (180,NA/233,45)  
 IATTH

**LEGEND:**

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

3-96A

REVISION B

# FLIGHT PLAN

CSM

LM

MC-H

CMP

0822 CST

CDR

LMP

3:30

EAT PERIOD

118:00

POST EVA SYSTEMS CONFIGURATION  
CONFIGURE VALVES AND CIRCUIT BREAKERS  
TV-OFF

UPDATE TO CSM  
MNVN PAD  
(PLANE CHANGE)

MNVR TO P52 ATT BY 118:22

:15

DOFF HELMETS & GLOVES  
DISCONNECT OPS O2 & PLSS H<sub>2</sub>O HOSES & CONNECT LM O2 & H<sub>2</sub>O HOSES, LCG PUMP CB-CLOSE  
SWITCH TO LM COMM SYSTEM, BIO MED-LEFT

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

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

M  
S  
F  
N

:24

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

118:30

M  
S  
F  
N

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

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

POST EVA CABIN CONFIGURATION

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

:45

:47

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

GDC ALIGN TO IMU

VERIFY DSE MOTION @ LOS

119:00

EAT PERIOD

EAT PERIOD

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

# FLIGHT PLAN

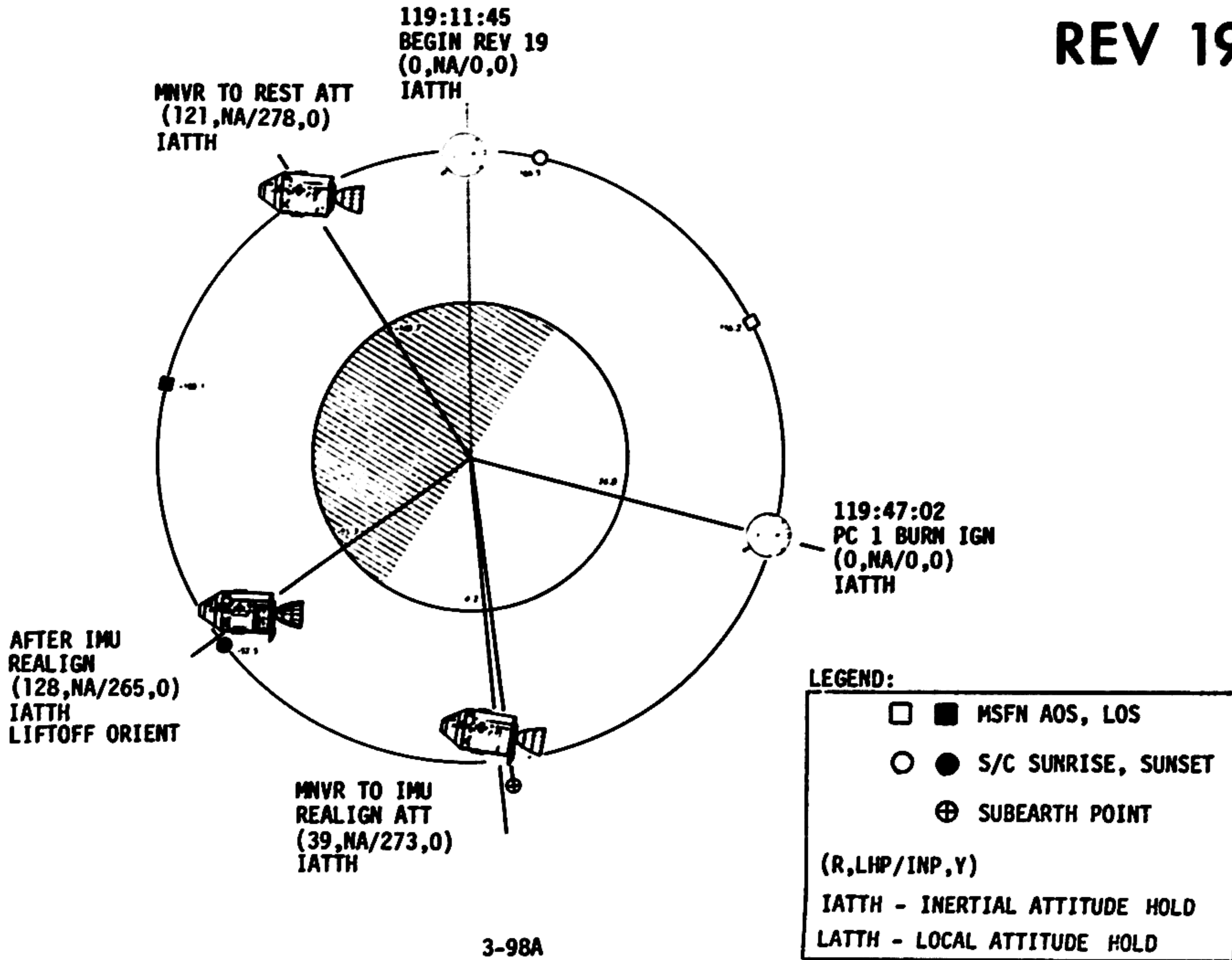
## CSM PLANE CHANGE #1 BURN TABLE

| P OR Y<br>RATES     | ATT<br>DEVIATION | SHUTDOWN<br>TIME | RESIDUALS |
|---------------------|------------------|------------------|-----------|
| 10°/SEC<br>TAKEOVER | +10°<br>TAKEOVER | BT + 1 SEC       | NO TRIM   |

TABLE 3-9  
3-98

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# FLIGHT PLAN

**CSM**

**LM**

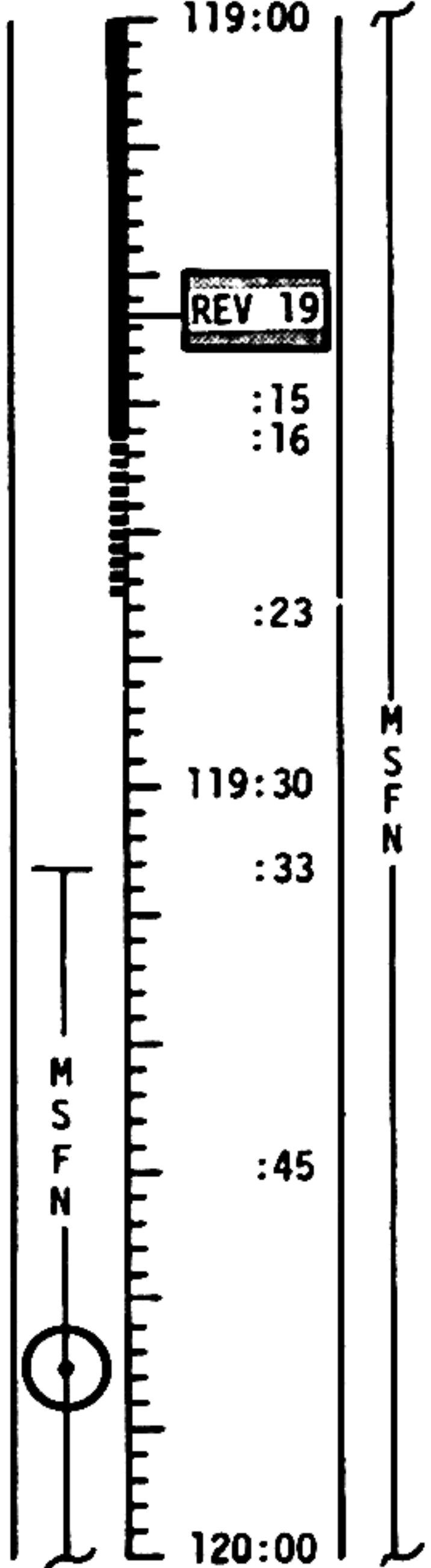
**MCC-H**

0922 CST

**CMP**  
 P30 - EXT ΔV  
 V49 - MNVR TO BURN  
 ATTITUDE BY 119:10  
 R 0, P 0, Y 0  
 HGA P 20, Y 276  
 SEXTANT STAR CHECK

P40 - SPS THRUSTING  
 REACQUIRE MSFN

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



**CDR**

**LMP**

EAT PERIOD

EAT PERIOD

| BURN STATUS REPORT       |                          |                          |   |                   |
|--------------------------|--------------------------|--------------------------|---|-------------------|
| X                        | X                        | <input type="checkbox"/> | • | ΔTIG              |
| X                        | X                        | <input type="checkbox"/> | • | BT                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | V <sub>gx</sub>   |
| TRIM                     |                          |                          |   |                   |
| X                        | X                        | X                        |   | R                 |
| X                        | X                        | X                        |   | P                 |
| X                        | X                        | X                        |   | Y                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | V <sub>gx</sub>   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | V <sub>gy</sub>   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | V <sub>gz</sub>   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | ΔV <sub>c</sub> * |
| X                        | X                        | X                        |   | FUEL *            |
| X                        | X                        | X                        |   | OX *              |
| X                        | X                        | X                        |   | UNBAL             |

\*ITEMS TO BE REPORTED TO MSFN

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

DUMP DSE

PLSS RECHARGE

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

CSM

CMP

MNVR TO P52 ATT BY 120:10

R 39, P 273, Y 0

HGA P 30, Y 245

MAP UPDATE REV 20

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

180°W: \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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

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

GDC ALIGN TO IMU

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

O<sub>2</sub> FUEL CELL PURGE  
WASTE WATER DUMP

M  
S  
F  
N

1022 CST

120:00

:15

:23

:29  
120:30

:45

121:00

M  
S  
F  
N

LM

CDR

LMP

PLSS FEEDWATER COLLECTION (BOTH)

REPORT PLSS FEEDWATER QUANTITIES

CONNECT LM O<sub>2</sub> SUPPLY TO PLSS & FILL (10 MIN)

CONNECT LM H<sub>2</sub>O SUPPLY TO PLSS & FILL (3 MIN)

CONNECT LM O<sub>2</sub> SUPPLY TO 2ND PLSS & FILL (10 MIN)

CONNECT LM H<sub>2</sub>O SUPPLY TO 2ND PLSS & FILL (3 MIN)

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

CONFIGURE SLEEP STATIONS

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS

UPLINK TO CSM  
DESIRED ORIENT  
(LIFT OFF)

UPDATE TO CSM  
REV 20 MAP UPDATE

P52 (LIFT-OFF ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

GET \_\_\_\_\_

GO/NO-GO FOR  
SECOND EVA  
EXTENSION

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

MSC Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

REVISION A

# FLIGHT PLAN

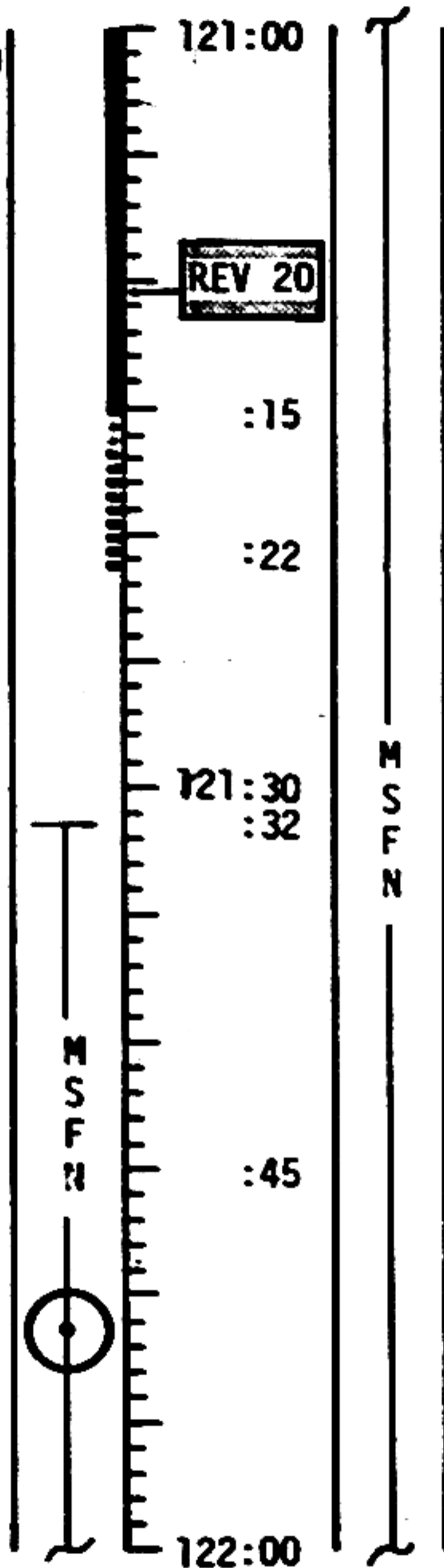
**CSM**

**CMP**

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

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

1122 CST



**CDR**

**LM**

**LMP**

**MCC-H**

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS

|   |
|---|
| <p><b>CSM PRESLEEP CHECKLIST</b><br/>                 E-MEMORY DUMP<br/>                 CREW STATUS REPORT<br/>                 (medication)<br/>                 ONBOARD READOUTS to MSFN<br/>                 CYCLE H2, O2, FANS<br/>                 CHLORINATE WATER<br/>                 VERIFY:<br/>                 WASTE MNGT OVBD DRAIN - OFF<br/>                 WASTE STOW VENT vlv - CLOSED<br/>                 EMER CABIN PRESS vlv - BOTH<br/>                 SURGE TK O2 vlv - ON<br/>                 REPRESS O2 vlv - OFF<br/>                 LM TUNNEL VENT vlv - OFF<br/>                 NORMAL LUNAR COMM EXCEPT:<br/>                 S BD SQUELCH - ENABLE<br/>                 HI GAIN ANTENNA TRACK - REACQ<br/>                 HI GAIN ANTENNA BEAM - NARROW<br/>                 S BD ANT - HI GAIN<br/>                 VHF AM B - DUPLEX<br/>                 DSE DUMP</p> |
|---|

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

# FLIGHT PLAN

**CSM**

**LM**

**MCC-H**

**CMP**

**CDR**

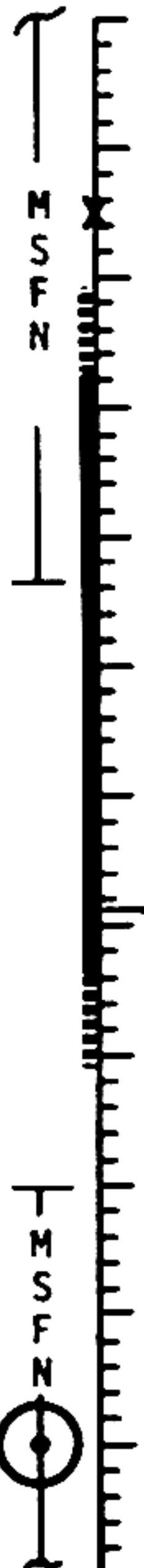
**LMP**

1222 CST  
122:00

REST PERIOD  
9 1/2 HOURS

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS



**REV 21**

DUMP DSE

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

# FLIGHT PLAN

**CSM**

**LM**

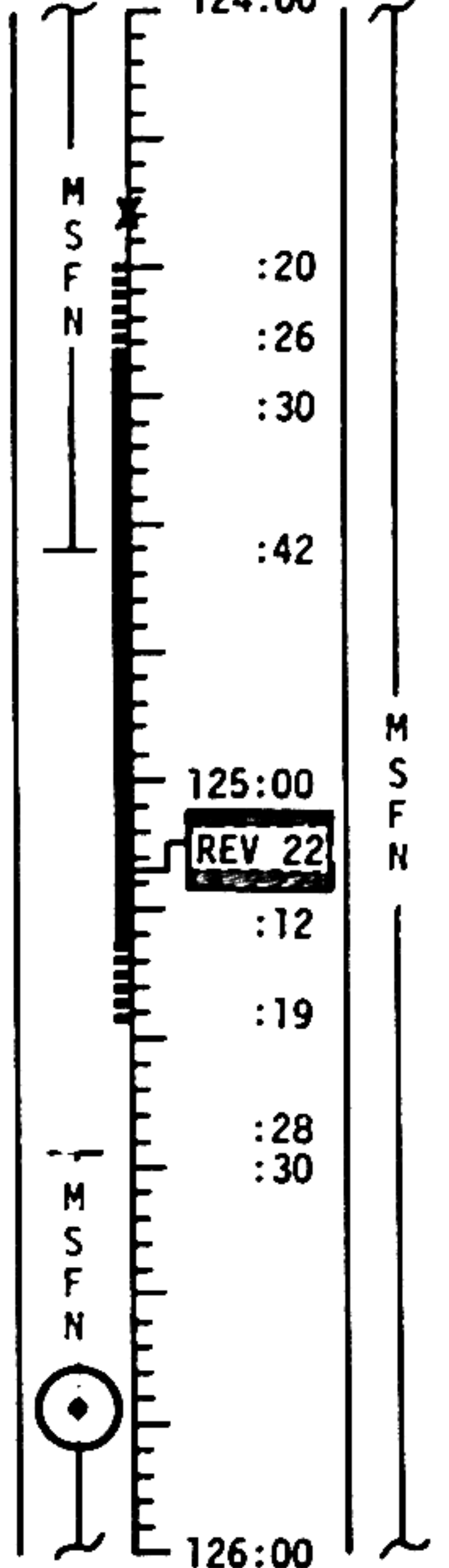
**MCC-H**

**CMP**

**CDR**

**LMP**

1422 CST  
124:00



REST PERIOD  
9 1/2 HOURS

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS

DUMP DSE

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

# FLIGHT PLAN

CSM  
CMP

LM

MCC-H

1622 CST  
126:00

CDR

LMP

M  
S  
F  
N

:18

:25

:30

:40

127:00

REV 23

M  
S  
F  
N

:11

:17

:26

:30

M  
S  
F  
N

128:00

REST PERIOD  
9 1/2 HOURS

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS

DUMP DSE

FWB

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

Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

# FLIGHT PLAN

CSM

LM

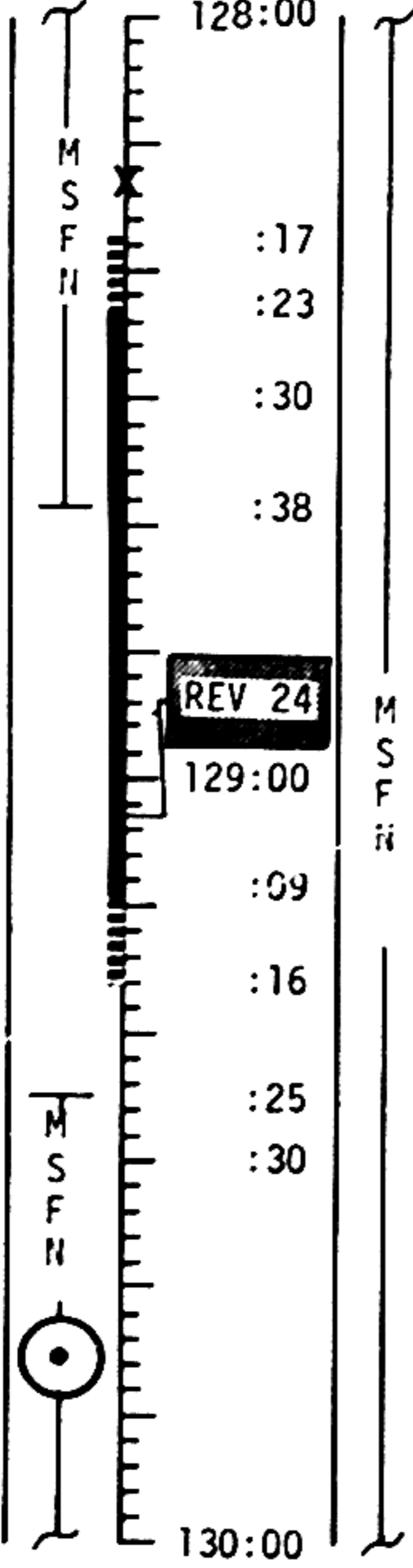
MCC-H

CMP

CDR

LMP

1822 CST  
128:00



REST PERIOD  
9 1/2 HOURS

REST PERIOD  
9 HOURS

REST PERIOD  
9 HOURS

CONFIGURE HAMMOCKS FOR JETTISON, LCG PUMP CB-CLOSE

DUMP DSE

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



CSM

LM

MCC-H

CMP

2022 CST  
130:00

CDR

LMP

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

M  
S  
F  
N

:15

:22

130:30

M  
S  
F  
N

:37

:45

131:00

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

EAT PERIOD

EAT PERIOD

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

REST PERIOD  
9 1/2 HOURS

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

# FLIGHT PLAN

**CSM**

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

2122 CST  
131:00

REV 25

EAT PERIOD

EAT PERIOD

REST PERIOD  
9 1/2 HOURS

:08

EVA PLANNING PERIOD

:15

CABIN PREP FOR EVA

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

:23

DUMP DSE

BATTERY CHARGE, BATTERY A  
HGA P-24, Y254

131:30

|                    |       |
|--------------------|-------|
| CREW STATUS REPORT |       |
| CMP                |       |
| SLEEP?             | _____ |
| PRD                | _____ |

**POSTSLEEP CHECKLIST**

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

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

VHF AM B - DUPLEX

M  
S  
F  
N

M  
S  
F  
N

:45

EQUIPMENT PREP

SET DET FOR CABIN DEPRESS

PREPARE CAMERAS  
COLLECT ITEMS FOR JETTISON  
UNSTOW AND CHECK BOTH OPS

132:00

UPDATE TO CSM  
CONSUMABLES

**CSM CONSUMABLES UPDATE**

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

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

QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %

          C \_\_\_\_\_ % D \_\_\_\_\_ %

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

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

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

**CSM**

**LM**

**MCC-H**

**CMP**

**CDR**

**LMP**

2222 CST

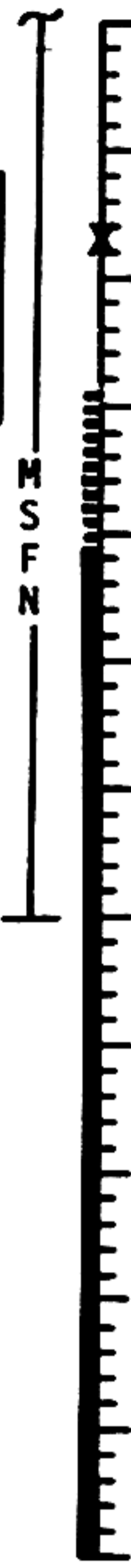
132:00

MAP UPDATE REV 26

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

180° : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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



:14  
:15

:21

132:30

:35

:45

133:00

EQUIPMENT PREP (CONT)

PLSS DONNING

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

PLSS COMM CHECK

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

FINAL SYSTEMS PREP

CONNECT OPS O<sub>2</sub> HOSES  
DON HELMETS  
CONNECT PLSS H<sub>2</sub>O HOSES  
LCG PUMP CB-OPEN  
DON GLOVES  
VERIFY ITEMS PREPARED FOR JETTISON  
VERIFY EVA CB CONFIGURATION

PRESSURE INTEGRITY CHECK

PLSS O<sub>2</sub> ON  
CABIN DEPRESS  
CONFIRM "GO" FOR EVA  
DEPRESS CABIN TO 3.5 PSIA

UPLINK TO CSM  
CSM STATE VECTOR

-1:00

UPDATE TO CSM  
MAP UPDATE REV 26

--:50

--:40

P52 (LIFT-OFF ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

GET \_\_\_\_\_

--:10

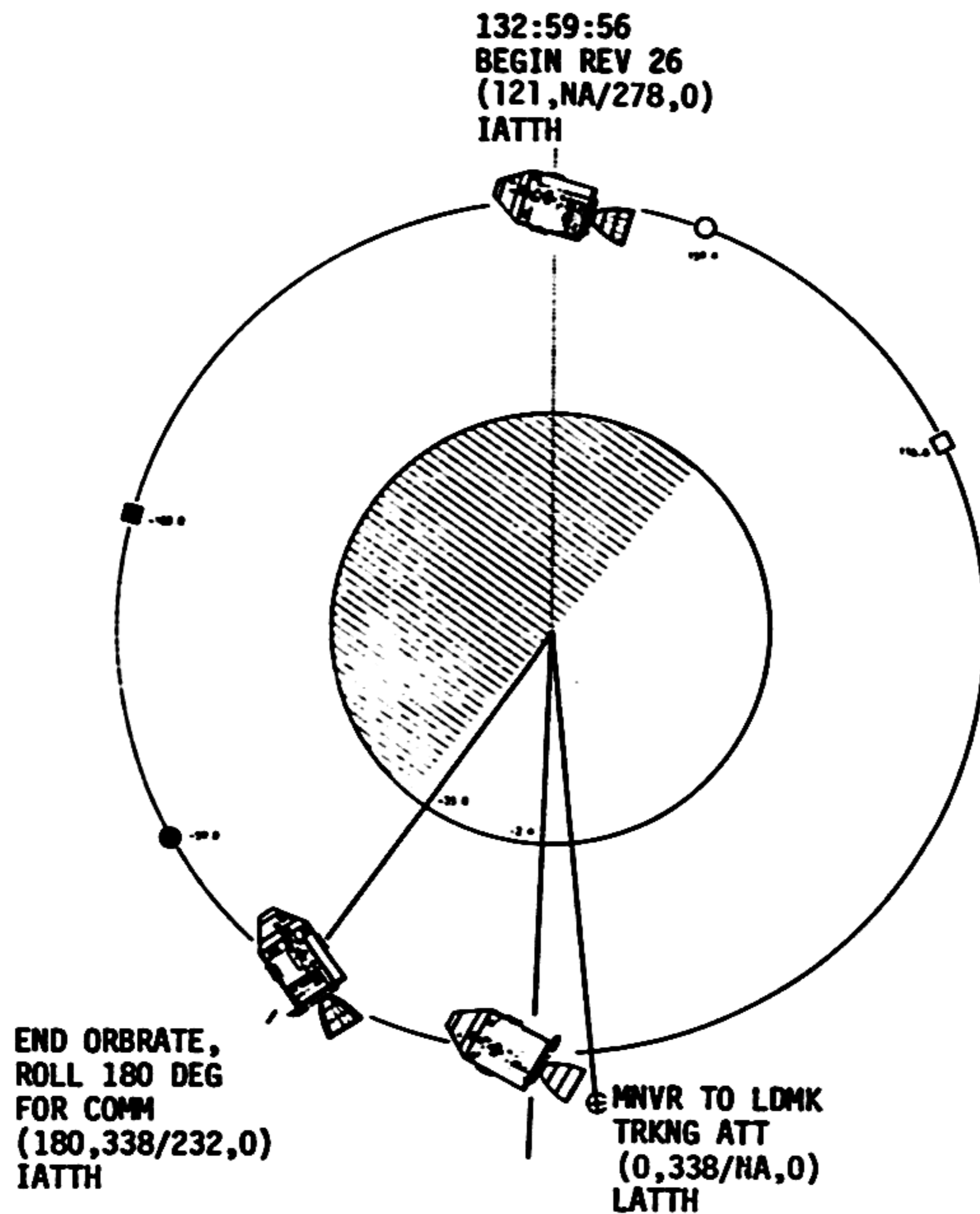
EAT PERIOD

VERIFY DSE MOTION @ LOS

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

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

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3-108A

**LEGEND:**

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

REVISION B

# FLIGHT PLAN

**CSM**

**CMP**

P52 - IMU REALIGN (CONT)

UNSTOW S-158

REACQUIRE MSFN

HGA P -24, Y 254

SET UP DAC FOR LDMK TRACKING PHOTOS THRU SXT

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

MAP UPDATE REV 27

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

180° : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

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

VERIFY DSE MOTION  
MNR TO TRACK ATT  
BY 134:00

R 0, P 338N/A, Y 0

OMNI D  
GO ORB RATE

2322 CST

133:00

REV 26

:07

:13

:15

:21

133:30

:45

134:00

M  
S  
F  
N

M  
S  
F  
N

**CDR**

**LM**

**LMP**

**MCC-H**

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

OPEN FWD HATCH

FINAL PREP FOR EGRESS

PLSS H<sub>2</sub>O ON, FINAL SYSTEMS CHECK, TURN TV ON  
VERIFY CB CONFIGURATION, JETTISON BAG & LHSSC

CDR EGRESS

ETB TRANSFER  
TRANSFER ETB TO SURFACE

ASSIST CDR

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

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

GEOLOGY TRAVERSE

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

START EVA  
0:00

0:10

DUMP DSE  
0:20

0:30

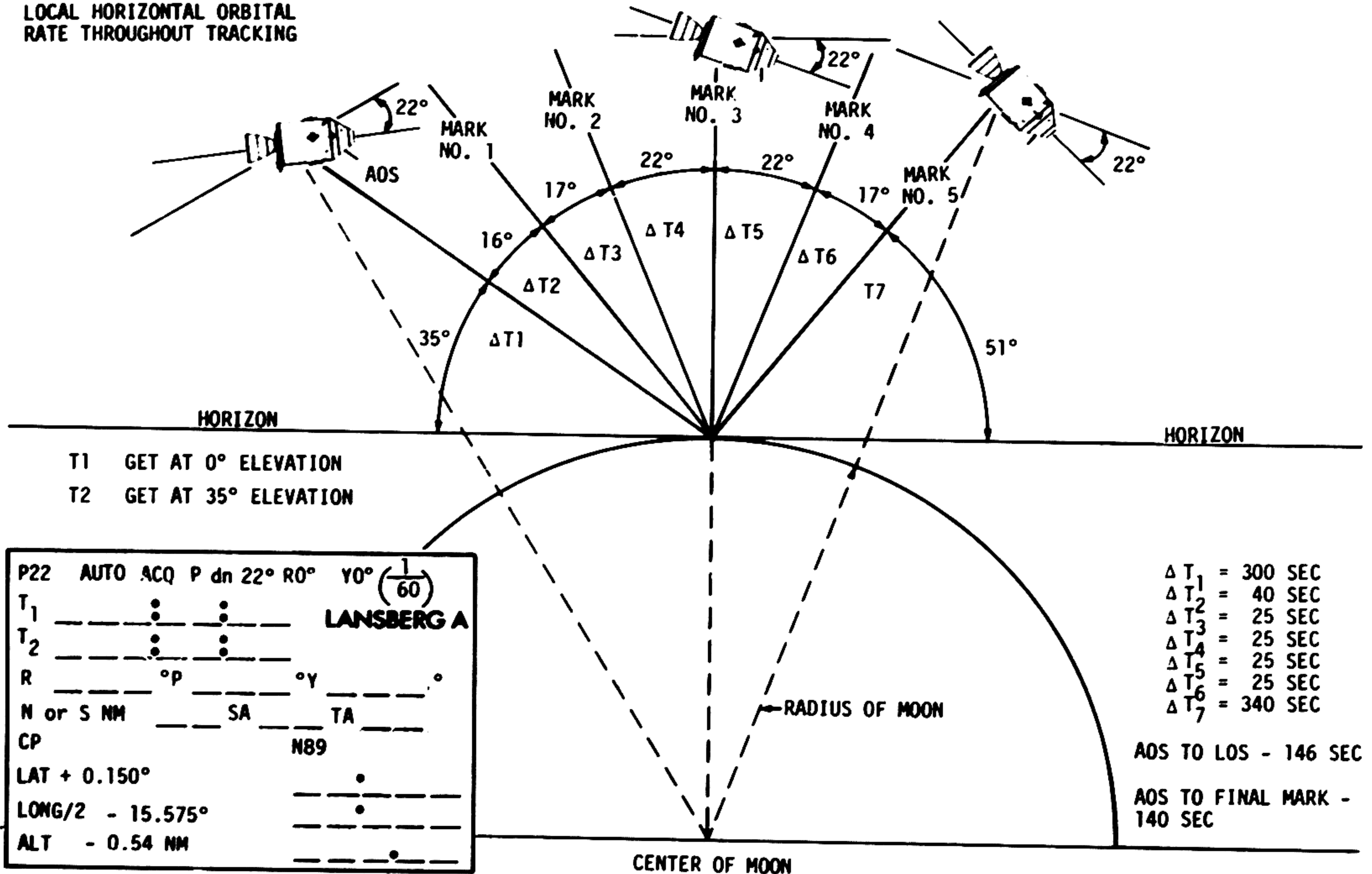
UPDATE TO CSM  
MAP UPDATE REV 27  
P22 TRACKING PAD  
0:40

0:50

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

22 DEG PITCH DOWN FROM  
LOCAL HORIZONTAL ORBITAL  
RATE THROUGHOUT TRACKING

### CSM LANDMARK TRACKING PROFILE



CENTER OF MOON

FIGURE 3-3  
3-110

# FLIGHT PLAN

**CSM**

**CMP**

**LM**

**MCC-H**

0022 CST

**CDR**

**LMP**

134:00

START DAC T2(-) 1 MIN

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

STOP DAC AFTER MARK 5

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

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

VERIFY DSE MOTION @ LOS

MSFN

:12

:15

:19

134:30

:33

:45

REV 27

135:00

MSFN

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

1:00

UPDATE TO CSM  
S-158 PAD (REV 27)

1:10

1:20

1:30

1:40

1:50

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



S-158 REV 27

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

T<sub>1</sub> START BLUE, GREEN & RED CAMERAS @ 135:19:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
START BLACK CAMERA @ T<sub>1</sub> + 5 MIN

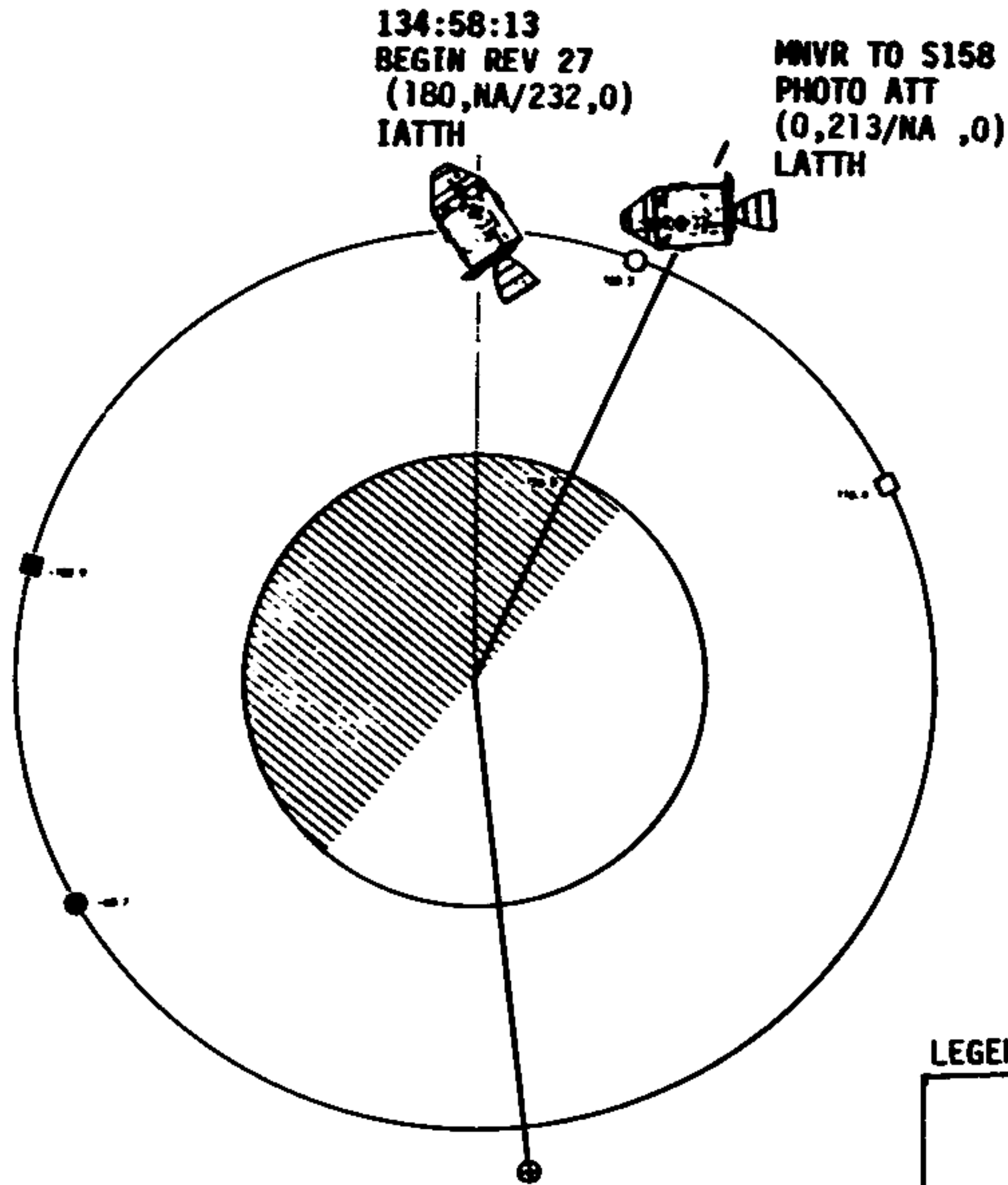
T<sub>2</sub> STOP ALL CAMERAS @ 135:30:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)

T<sub>3</sub> START BLUE, GREEN & RED CAMERAS @ 135:40:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
START BLACK CAMERA @ T<sub>3</sub> + 7 MIN

T<sub>4</sub> STOP ALL 4 CAMERAS @ 136:02:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)

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

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**LEGEND:**

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

3-112A

REVISION B

# FLIG'T PLAN

**CSM**  
**CMP**

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

START BLU, GRN&RED CAMERAS

S-158 PHOTOGRAPHY

START BLK CAMERA

STOP ALL CAMERAS

SW TO OMNI A  
@ 135:36

START BLU, GRN&RED CAMERAS

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

START BLK CAMERA

S-158 PHOTOGRAPHY

0122  
~~0222~~ CST

135:00

:05

:11

:15

:19

135:30

:45

136:00



MSFN

**LM**

**MCC-H**

**CDR**

**LMP**

SURVEYOR SITE ACTIVITIES

PHOTOGRAPH AND COLLECT SAMPLES  
PHOTOGRAPH SURVEYOR  
COLLECT GLASS SAMPLES

COLLECT WITH LMP ASSISTANCE:

STERILE CABLE SAMPLE  
ALUMINUM TUBE SAMPLE  
TV CAMERA

GEOLOGY RETURN TRAVERSE

GEOLOGY RETURN TRAVERSE

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

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

2:00

2:10

2:20

2:30

DUMP DSE

2:40

2:50

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

# FLIGHT PLAN

**CSM**

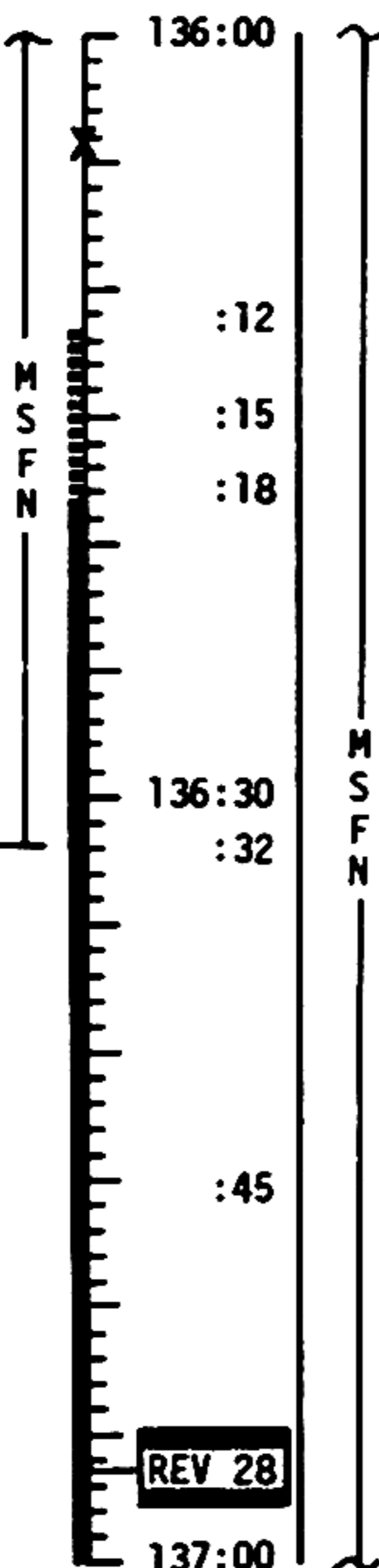
**LM**

**MCC-H**

**CMP**  
 STOP ALL CAMERAS  
 CONTINUE ORB RATE

0222 CST

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



VERIFY DSE MOTION @ LOS

**CDR**  
 CHECK & CLEAN LMP EMU  
 CLOSE & SEAL SRC

**LEC TRANSFERS**  
 CHECK 70MM(2) IN ETB  
 CLOSE & TRANSFER ETB  
 REST/CHECK EMU  
 ATTACH LEC TO SRC  
 TRANSFER SRC INTO LM  
 REST/CHECK EMU  
 TRANSFER SURVEYOR PARTS BAG

**EVA TERMINATION**  
 CLEAN EMU, ASCEND TO  
 PLATFORM  
 INGRESS

CLOSE HATCH & REPRESS CABIN

**POST EVA SYSTEMS CONFIGURATION**  
 CONFIGURE VALVES AND CIRCUIT BREAKERS

DOFF GLOVES  
 DISCONNECT OPS O2 HOSES & CONNECT LM O2 HOSES  
 DISCONNECT PLSS H2O HOSES & CONNECT LM H2O HOSES  
 LCG PUMP CB-CLOSE  
 SWITCH TO LM COMM SYSTEM

**PLSS/OPS DOFFING**  
 REMOVE RCU'S DISCONNECT PLSS O2 HOSES

DOFF PLSS/OPS  
 REMOVE OPS & CHECKOUT

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

ASSIST CDR WITH TRANSFERS

DISCARD LEC

3:00

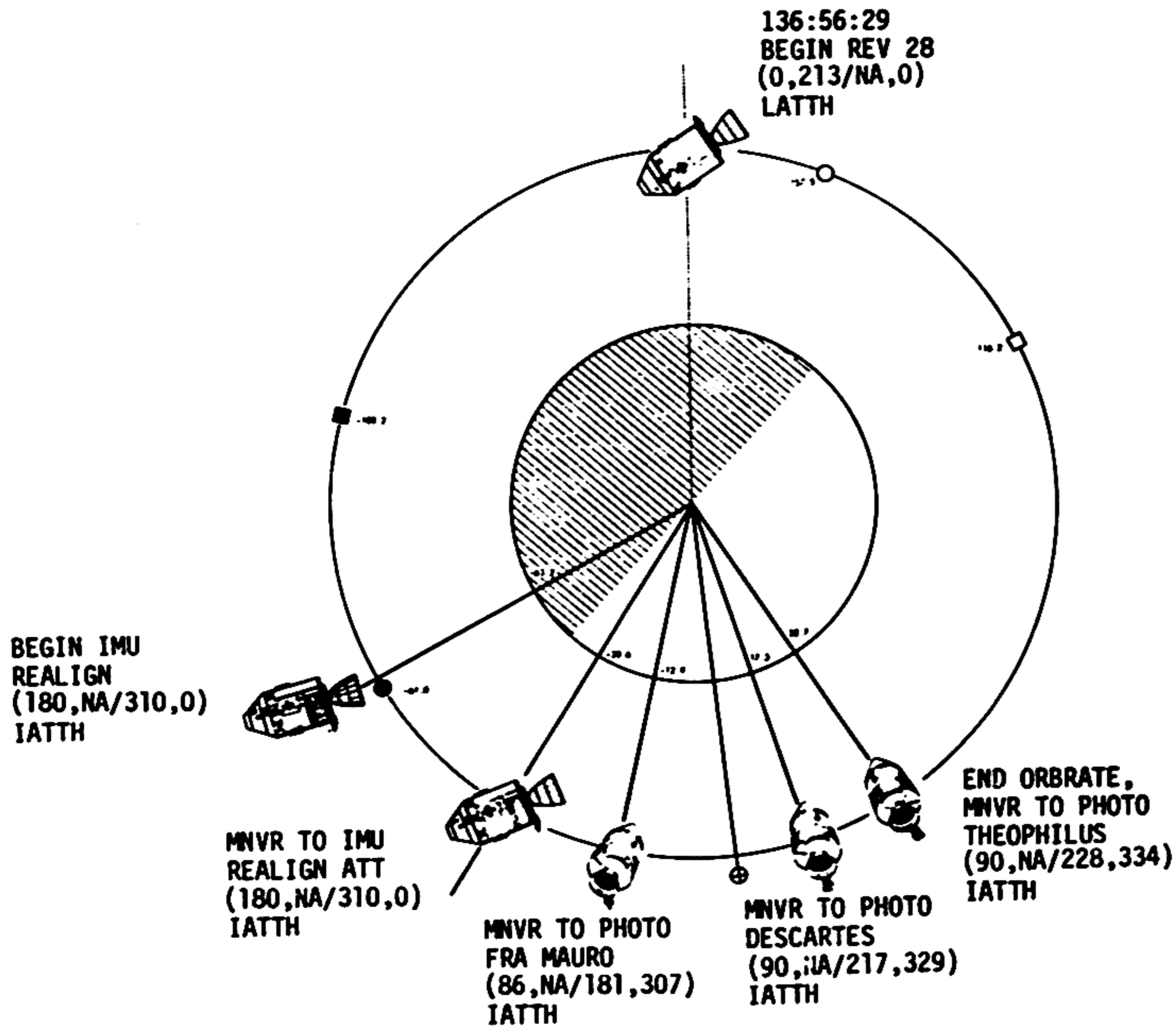
UPDATE TO CSM  
 MAP UPDATE REV 28  
 S-158 PAD (REV 28)

3:10

3:20

3:30

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



**LEGEND:**

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

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

S-158 REV 28

BLUE, GREEN, BLACK (f8.0) \_\_\_\_\_, RED (f5.6) \_\_\_\_\_  
T<sub>1</sub> START ALL CAMERAS @ 137:27:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
T<sub>2</sub> STOP ALL CAMERAS @ 137:40:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)

SELECTED TARGETS

NORTH WALL OF THEOPHILUS

R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_  
BLUE, GREEN, BLACK (f5.6) \_\_\_\_\_, RED(f4.0) \_\_\_\_\_  
T<sub>1</sub> START ALL CAMERAS @ 137:47:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
T<sub>2</sub> STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

DESCARTES

R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_  
NO CHANGE IN f STOPS  
T<sub>1</sub> START ALL CAMERAS @ 137:51:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
T<sub>2</sub> STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

FRA MAURO

R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_  
ALL CAMERAS (f2.8) \_\_\_\_\_  
T<sub>1</sub> START ALL CAMERAS @ 138:01:00 (\_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_)  
T<sub>2</sub> STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

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

# FLIGHT PLAN

**CSM**

**LM**

**MCC-H**

**CMP**

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

0322 CST

**CDR**

**LMP**

137:00

:04

:10

:15

:18

BATTERY CHARGE, BATTERY B

START ALL CAMERAS

S-158 PHOTOGRAPHY

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

R 90, P 228, Y 334

S-158 THEOPHILUS

V49-MNVR BY 137:50

R 90, P 217, Y 329

S-158 DESCARTES

V49-MNVR BY 138:00

R 86, P 181, Y 307

137:30

:45

138:00

M  
S  
F  
N

M  
S  
F  
N

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

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

UPDATE TO CSM  
MAP UPDATE REV 29

MAP UPDATE REV 29

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

PRESSURE INTEGRITY CHECK  
CHECK VALVE POSITIONS  
VERIFY GAGE READINGS

CABIN DEPRESS  
OPEN DUMP VALVE

HATCH OPENING  
OPEN HATCH  
JETTISON EQUIPMENT

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



CSM

LM

MCC-H

CMP

0422 CST

CDR

LMP

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

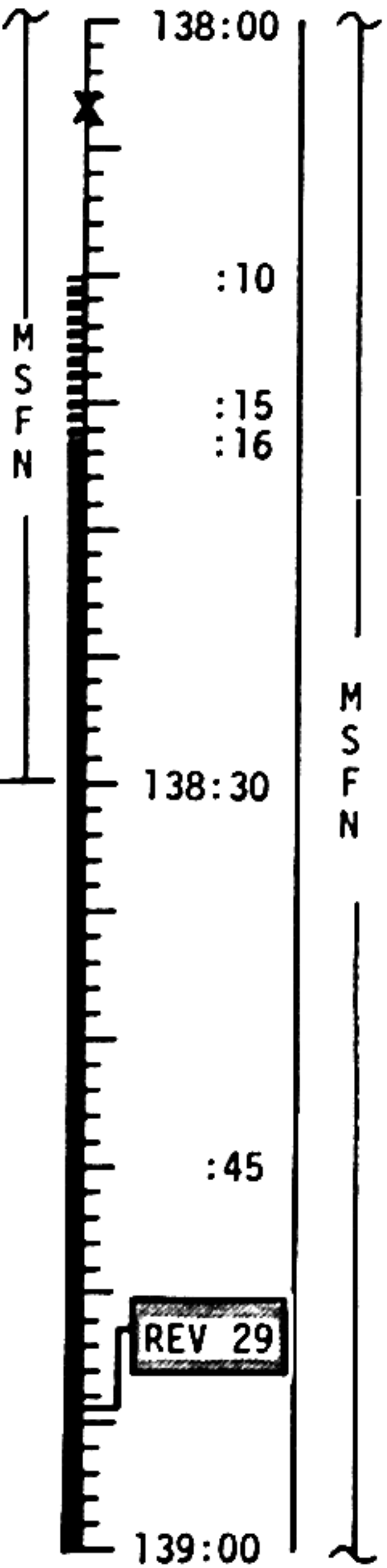
R180, P310, Y 0  
HGA P-74, Y337  
GO INERTIAL  
RR TRANSPONDER ACTIVATION  
AND SELF TEST

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

VERIFY DSE MOTION @ LOS

STOW S-158

EAT PERIOD



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

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

EVA DEBRIEFING

CREW STATUS REPORT (MEDICATION, DOSIMETER)

EAT PERIOD

EAT PERIOD

EAT PERIOD

DUMP DSE

P52 (LIFT OFF-ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

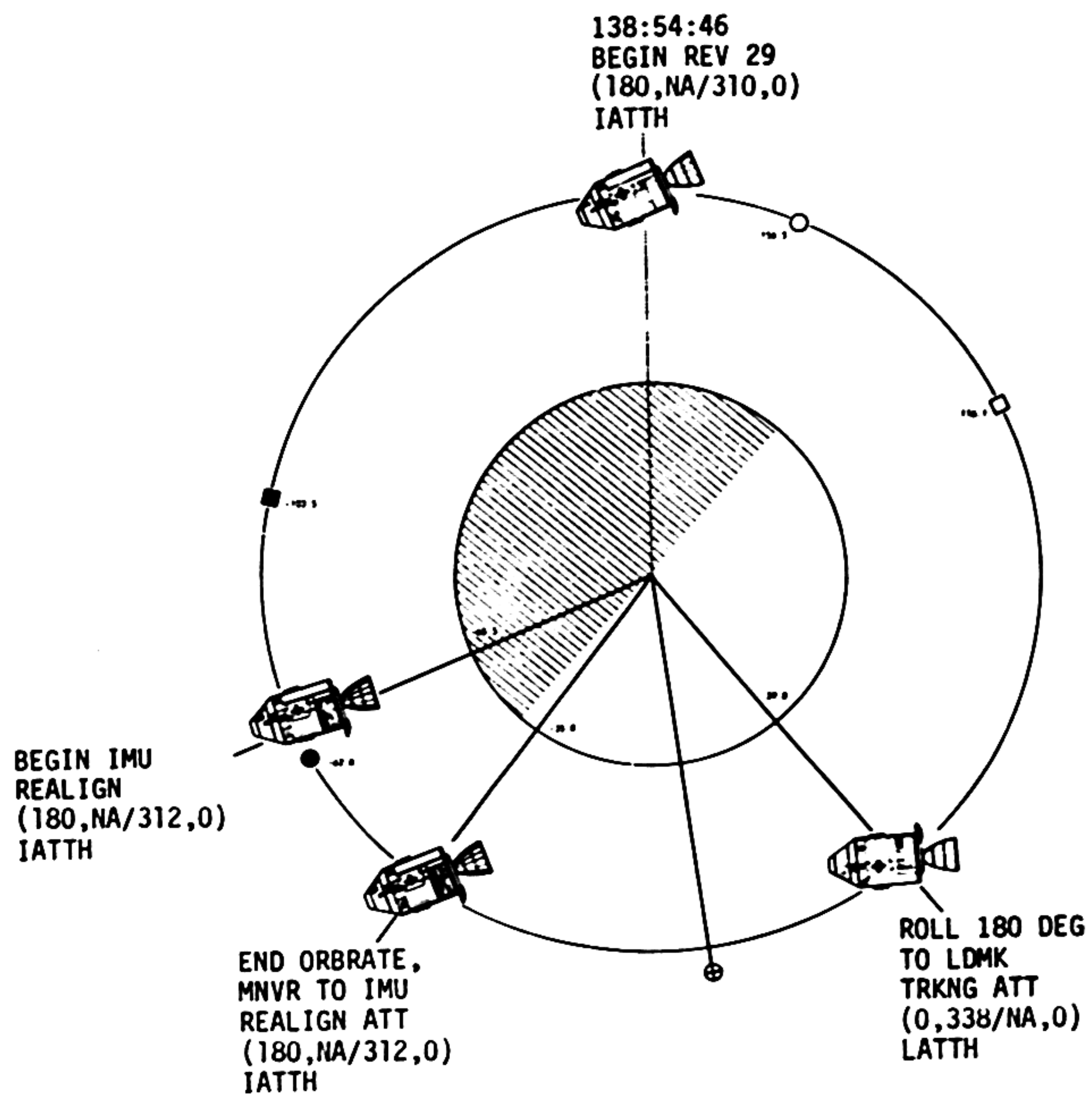
Z \_\_\_\_\_

GET \_\_\_\_\_

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

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

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**LEGEND:**

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

(R,LHP/INP,Y)

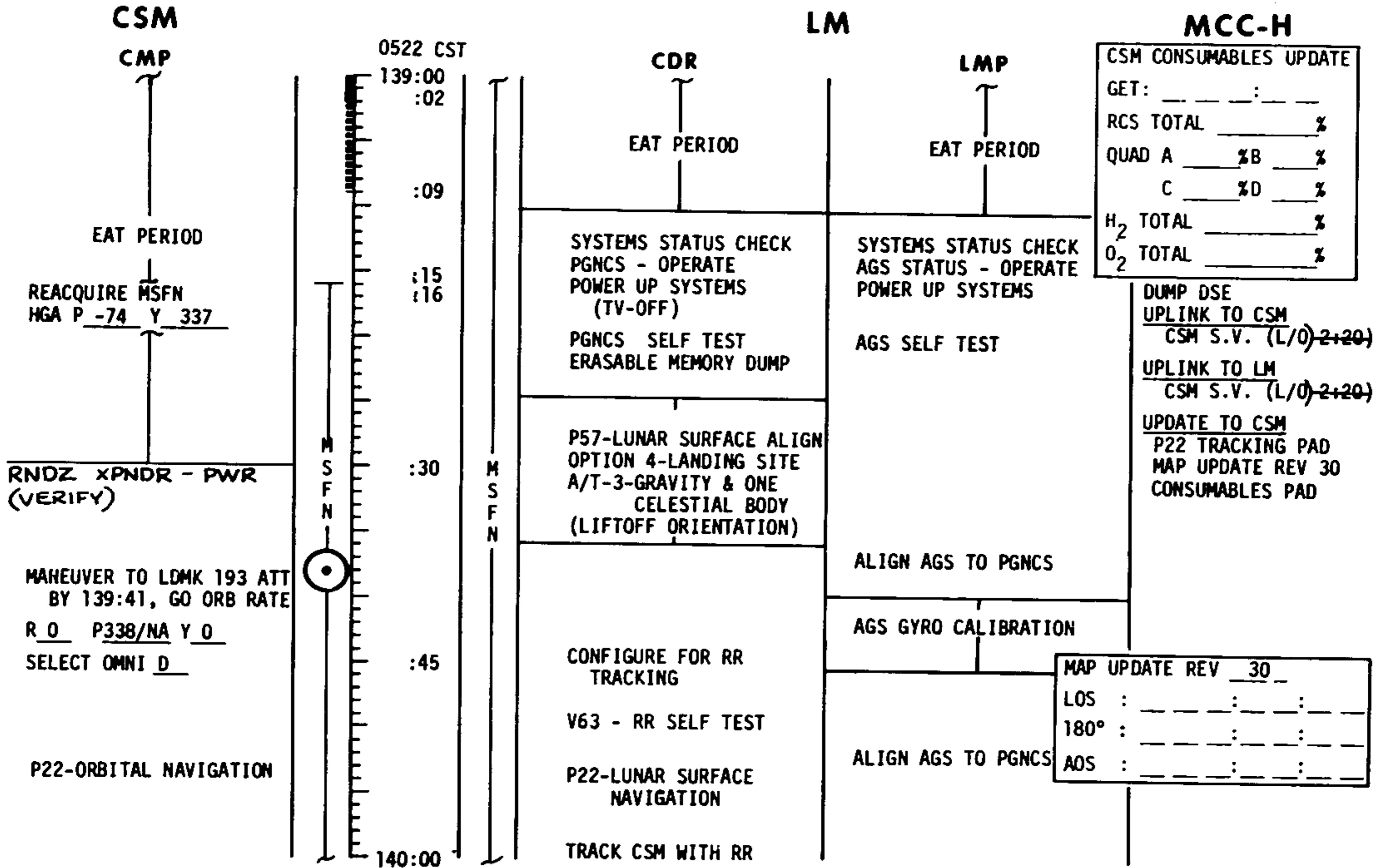
IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-117A

REVISION B

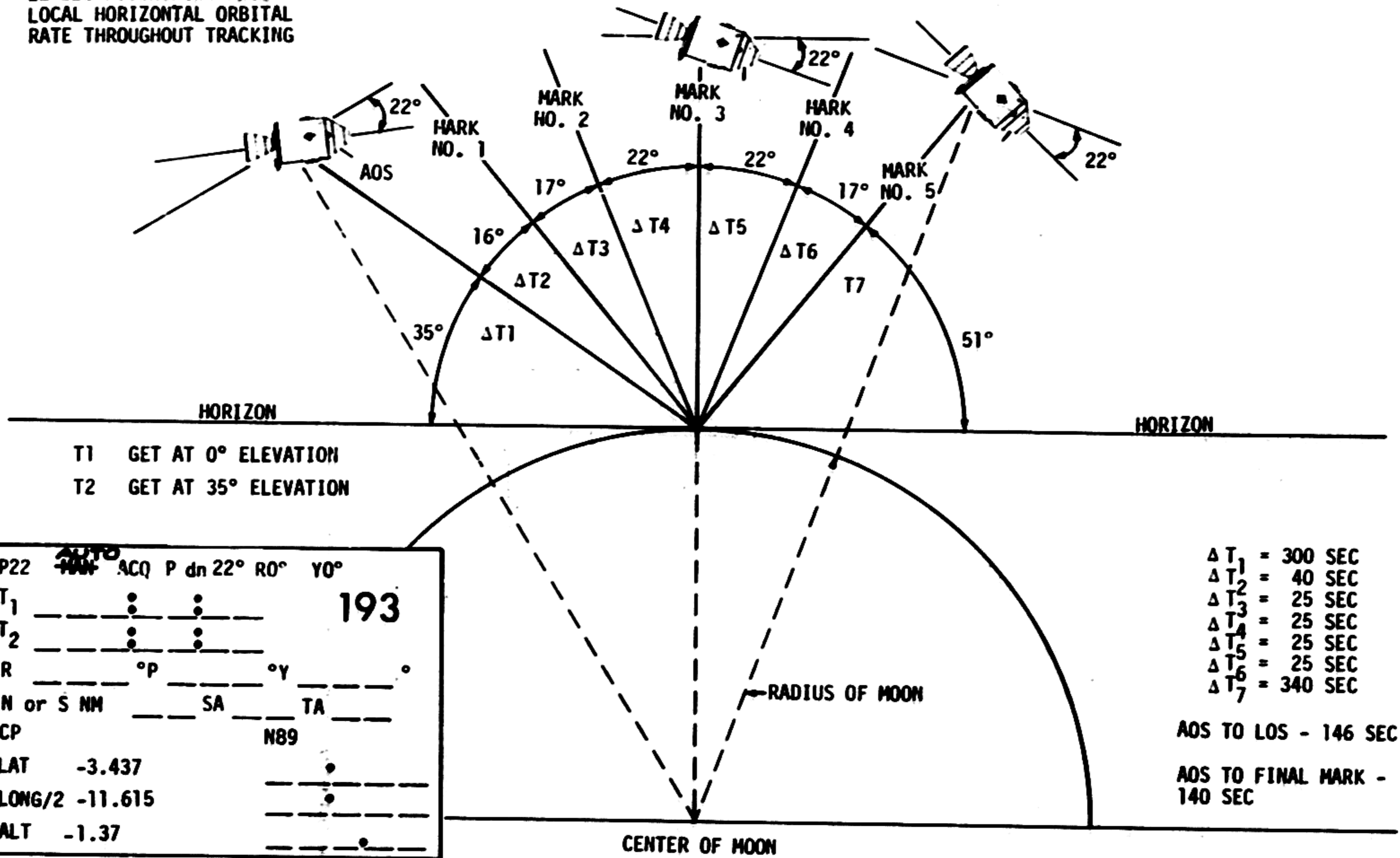
# FLIGHT PLAN



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

# CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



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

|                |                                |       |          |       |       |
|----------------|--------------------------------|-------|----------|-------|-------|
| P22            | <del>MAN</del> <sup>AUTO</sup> | ACQ   | P dn 22° | RO°   | YO°   |
| T <sub>1</sub> | _____                          | _____ | _____    | _____ | 193   |
| T <sub>2</sub> | _____                          | _____ | _____    | _____ |       |
| R              | _____                          | °p    | _____    | °y    | _____ |
| N or S         | NM                             | _____ | SA       | _____ | TA    |
| CP             | _____                          | _____ | _____    | _____ | N89   |
| LAT            | -3.437                         | _____ | _____    | _____ | _____ |
| LONG/2         | -11.615                        | _____ | _____    | _____ | _____ |
| ALT            | -1.37                          | _____ | _____    | _____ | _____ |

- ΔT<sub>1</sub> = 300 SEC
- ΔT<sub>2</sub> = 40 SEC
- ΔT<sub>3</sub> = 25 SEC
- ΔT<sub>4</sub> = 25 SEC
- ΔT<sub>5</sub> = 25 SEC
- ΔT<sub>6</sub> = 25 SEC
- ΔT<sub>7</sub> = 340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3

3-118a

# FLIGHT LAN

**CSM**

**CMP**

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

STOP PITCH AND MANEUVER  
TO P52 ATTITUDE BY  
140:06

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

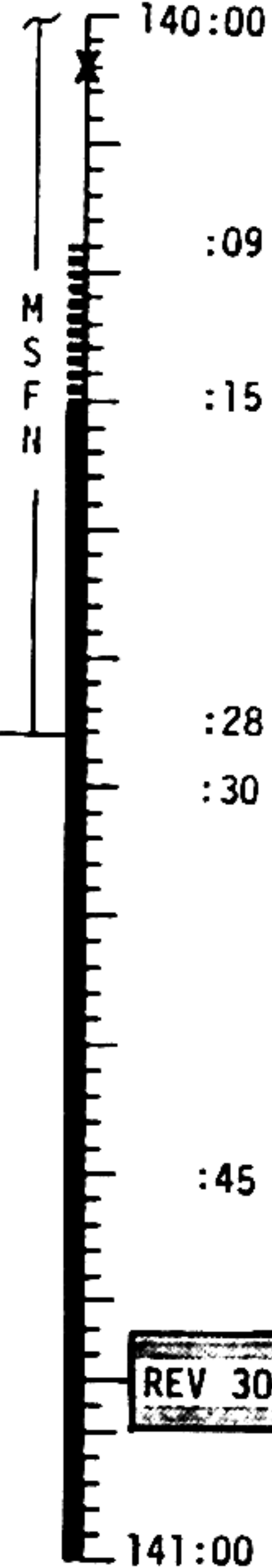
P52 - IMU REALIGN  
OPTION 3- REFSMMAT  
(LIFTOFF ORIENTATION)

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

H<sub>2</sub> PURGE LINE HTR-ON

O<sub>2</sub> & H<sub>2</sub> FUEL CELL PURGE  
WASTE WATER DUMP

0622 CST



**LM**

**CDR**

TRACK CSM WITH RR

RATE GYRO CHECK

RCS CHECKOUT

**LMP**

V47-AGS INITIALIZATION

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

**MCC-H**

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

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

P52 (LIFT-OFF ORIENT)

N71: \_ \_ \_ \_

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

N93:

X \_ \_ . \_ \_ \_

Y \_ \_ . \_ \_ \_

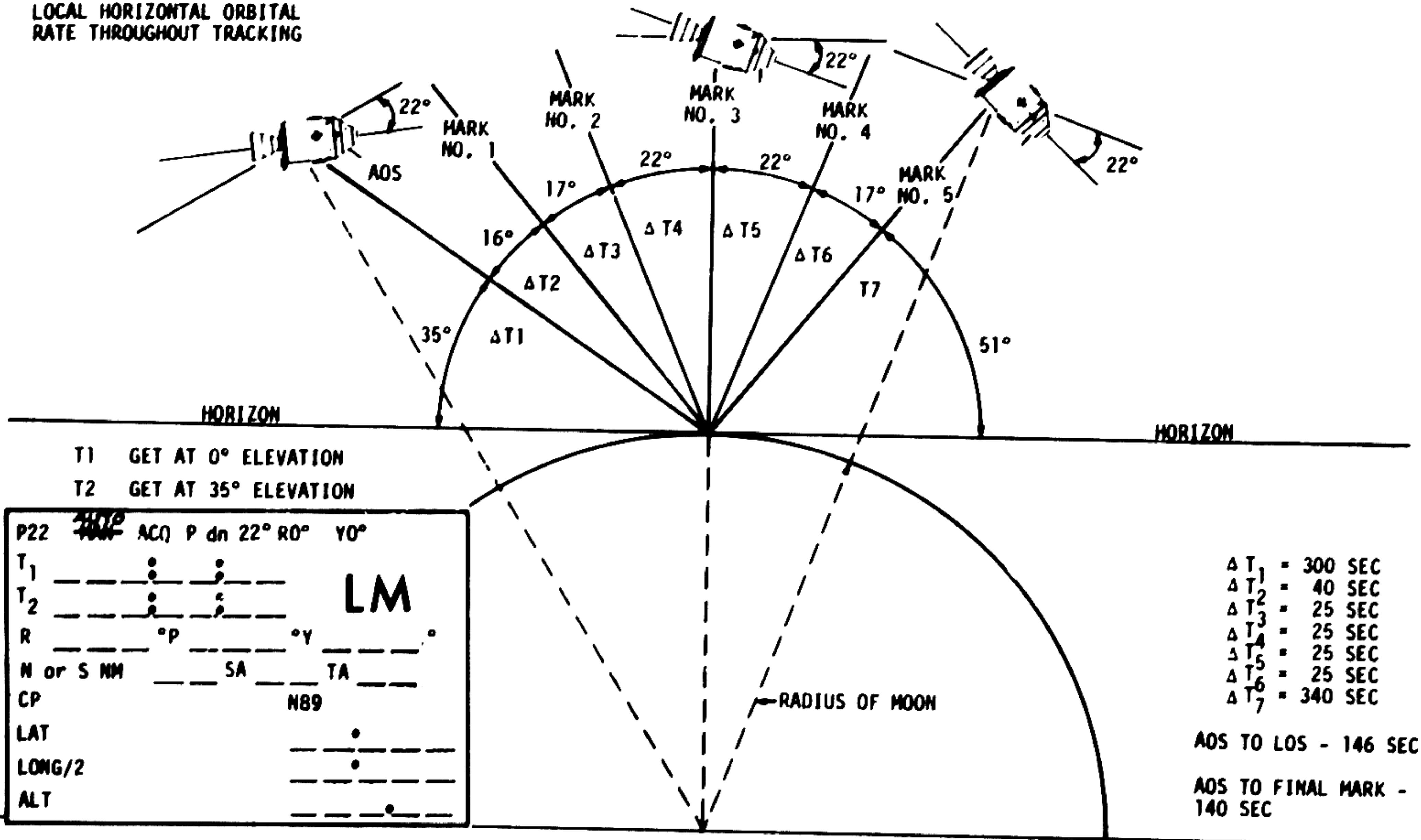
Z \_ \_ . \_ \_ \_

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

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

# CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



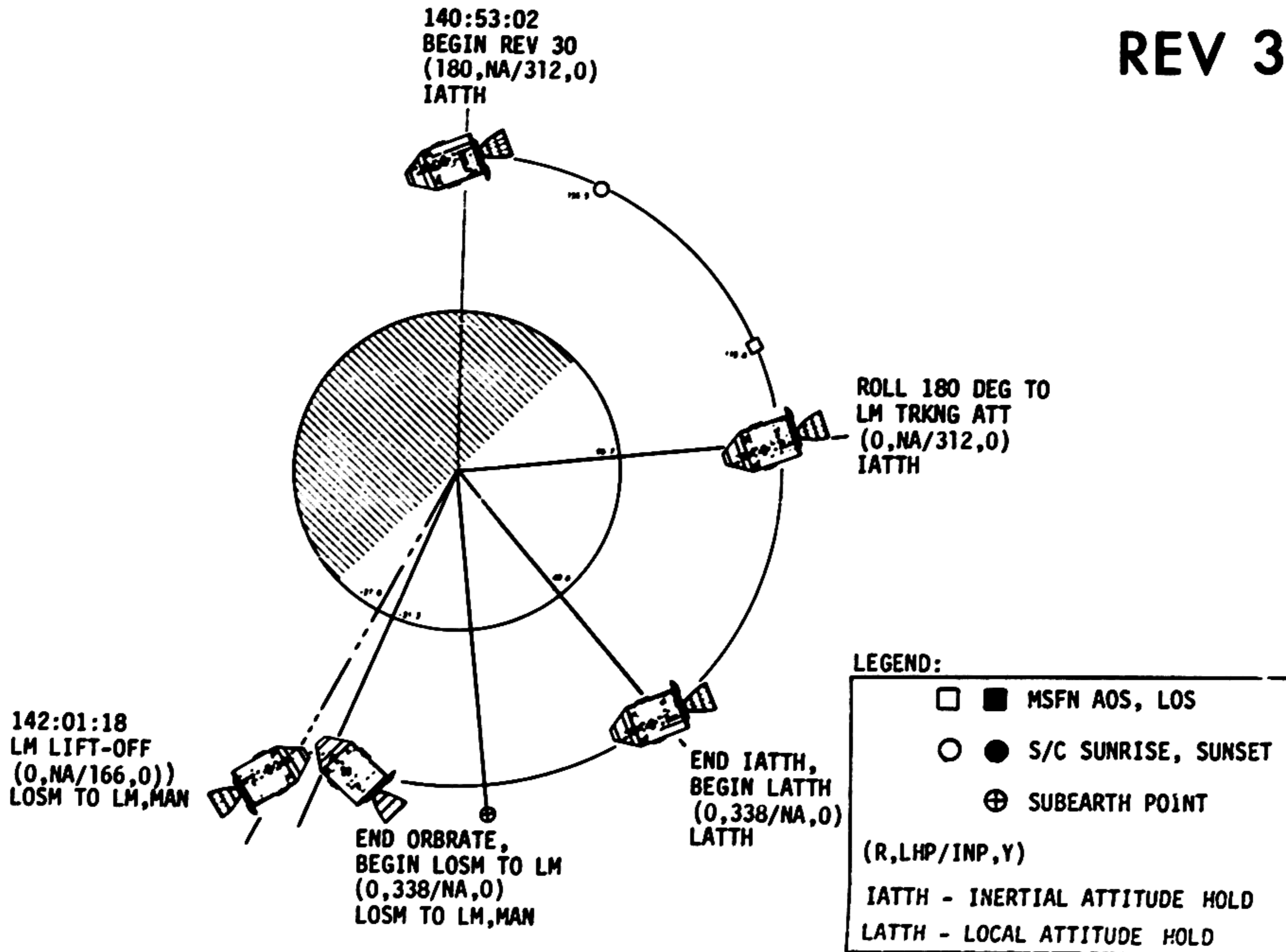
NOTE: Coordinates of LM to be updated Real time

CENTER OF MOON

FIGURE 3-3

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3-120A

REVISION B

# FLIGHT PLAN

**CSM**

**CMP**

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

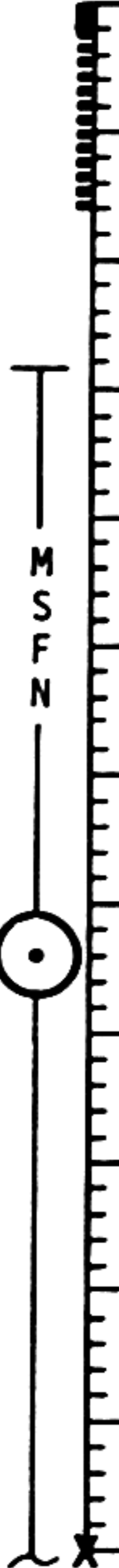
V49-MNVR TO LM TRACK  
 ATT BY 141:21  
 R 0 P 312 Y 0  
 OMNI D

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

TRACK LM @ AOS

0722 CST

141:00  
:01



:08

:14

:15

:30

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

:45

**CDR**

**LM**

**LMP**

**MCC-1.**

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

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

VERIFY CB STATUS  
 CHECK APS BURN CARD

CHECK APS, RCS, EPS, ECS

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

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

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

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

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

L/O - 6 MINUTES:  
 DISABLE MSFN RELAY

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

FLIGHT PLANNING BRANCH

REVISION A



# FLIGHT PLAN

**CSM**

**LM**

**MCC-H**

**CMP**

0922 CST  
143:00

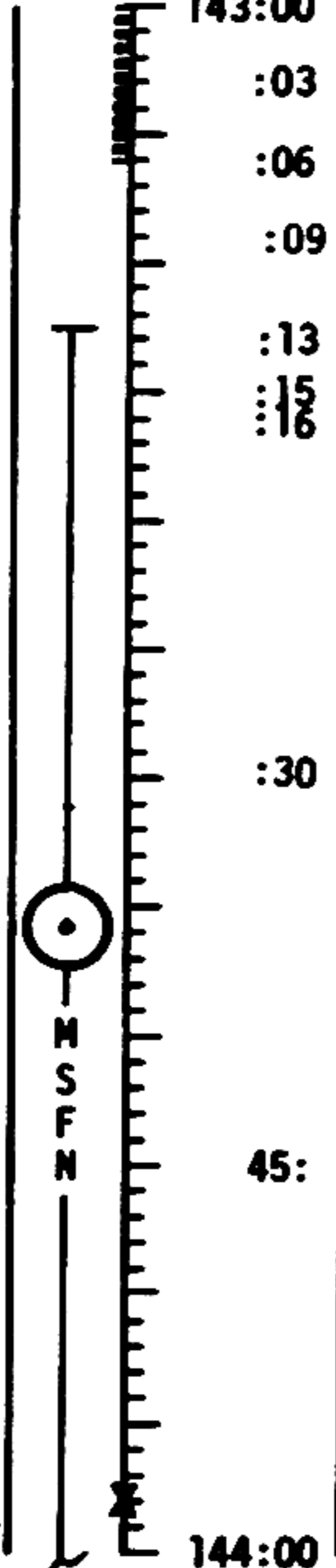
P20 AUTO MNVR TO  
TRACK ATTITUDE  
SXT & VHF TRACKING

OMNI D

CONFIRM LM PC  
P33 - TARGET CDH  
SXT & VHF TRACKING

FINAL CDH COMP  
P41 - RCS THRUSTING  
RCS CHECKLIST

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



**CDR**

**LMP**

P33-TARGET CDH  
RNDZ RADAR TRACKING

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

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

P41-RCS THRUSTING

RCS PLANE CHANGE

GET: 143:26:27.5  
ΔV<sub>R</sub>: NOM ZERO

P33 TARGET CDH  
RNDZ RADAR TRACKING

CHECK RCS, EPS, ECS

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

P41-RCS THRUSTING

LOAD AGS CDH EXT ΔV

RCS CDH

GET: 143:56:27.5  
ΔV<sub>R</sub>: NOM ZERO

NULL RESIDUALS  
P34-TARGET TPI

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

FLIGHT PLANNING BRANCH

REVISION A

**CSM**

1022 CST

**LM**

**MCC-H**

**CMP**

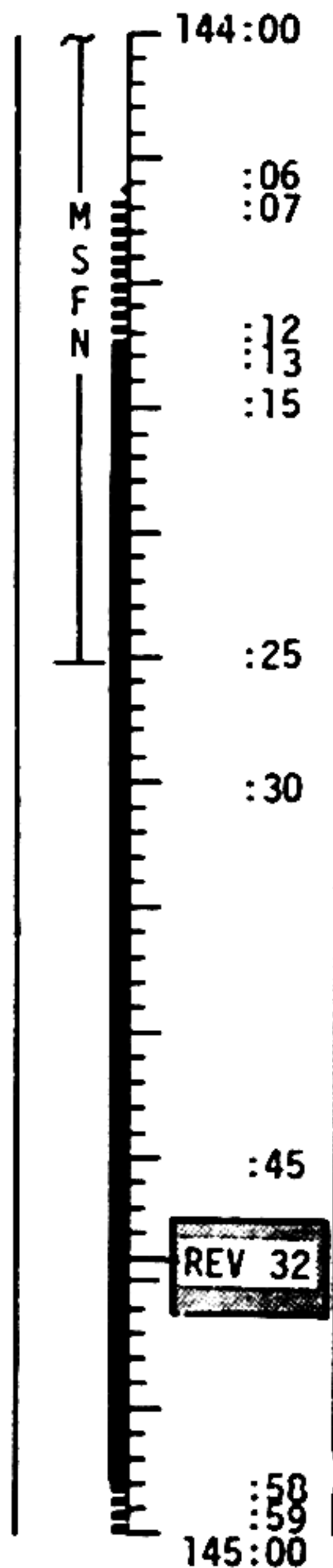
P34-TARGET TPI  
SXT & VHF TRACKING

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

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

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

P35-TARGET MCC-2  
SXT & VHF TRACKING



**CDR**

RNDZ RADAR TRACKING

FINAL TPI COMPUTATION

P41-RCS THRUSTING

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

P41-RCS THRUSTING

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

**LMP**

CHECK RCS, EPS, ECS

OMNI-AFT, BIOMED-OFF  
PCM-LO

LOAD AGS TPI EXT ΔV

LOAD AGS MCC-1 EXT ΔV

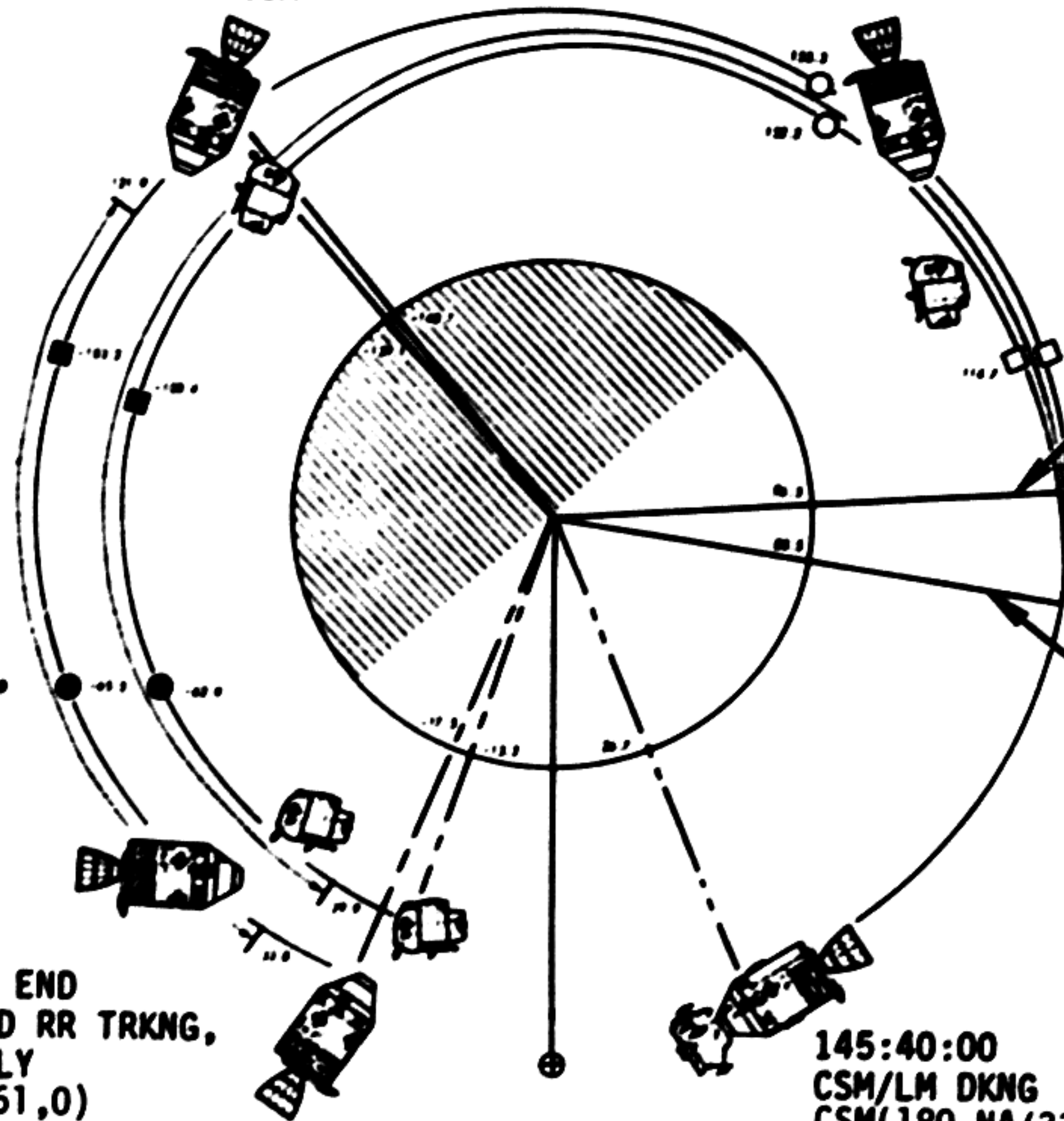
TIG: 144:36:25.7  
BT: 22.1 SEC  
ΔV<sub>R</sub>: 24.6 FT/SEC  
ORBIT: 61.9x44.2

GET: 144:51:25.7

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

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



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

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

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

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

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

LEGEND:

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

# FLIGHT PLAN

**CSM**

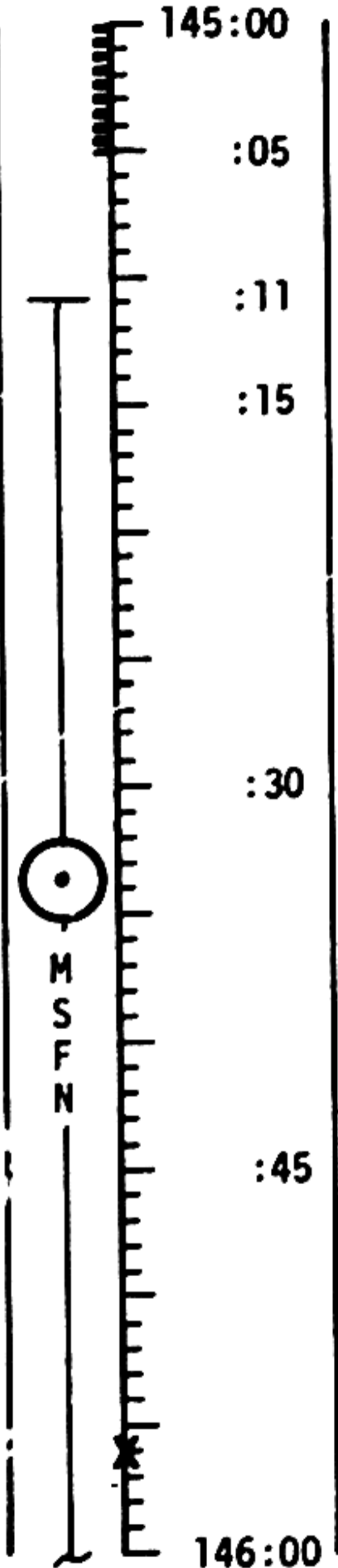
**LM**

**MCC-H**

**CMP**

1122 CST

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



**CDR**

**LMP**

P41 - RCS THRUSTING

LOAD AGS MCC-2 EXT ΔV

**RCS MCC-2**

**TIG: 145:06:25.7**

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

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

RR-OFF

DOCKING ATTITUDE  
 R 180 P 336 Y 300

STEERABLE ANGLES  
 P 181  
 Y 61

GO/NO GO FOR PYRO  
 ARM

**DOCKING**

**GET: 145:40**

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

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

DOFF HELMET & GLOVES  
 ASSIST CDR

DUMP DSE

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



**CSM**

**CMP**

TRANSFER BAGS, VACUUM BRUSH, AND HOSE TO LM

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

STOW LM EQUIPMENT

VERIFY DSE MOTION @ LOS

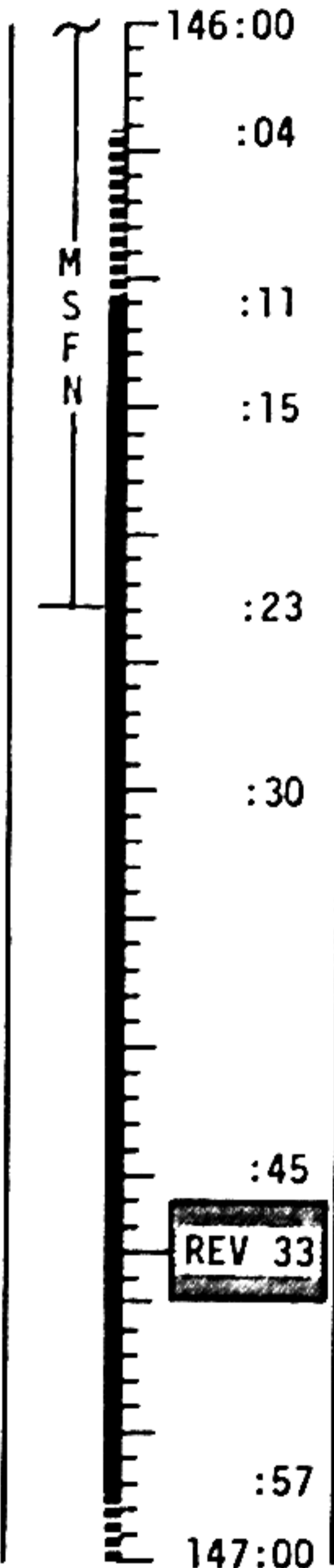
TRANSFER B5 AND B6 CONTAINERS TO LM

MANEUVER TO LM JETTISON ATTITUDE BY 146:51

R 219 P 358 Y 342

HGA P -41 Y +5

1222 CST



**CDR**

CONFIGURE SUIT LOOP FOR VACUUMING

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

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

VACUUM PGA'S

STOW VACUUM BRUSH AND HOSE

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

**LM**

**LMP**

ASSIST CUR (DECONTAMINATION)

**MCC-H**

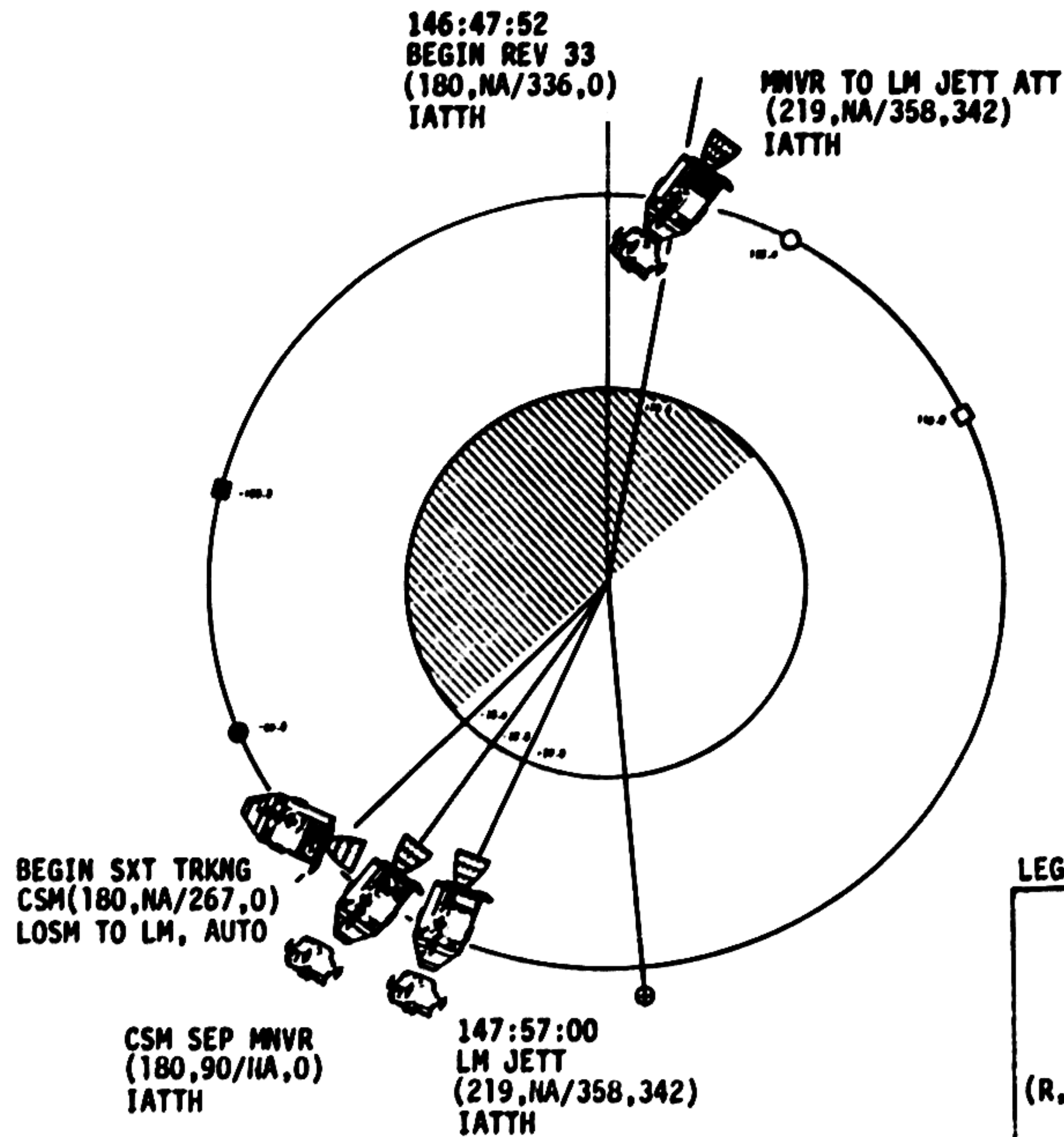
UPDATE TO CSM  
 MAP UPDATE REV33  
 SEP BURN PAD  
 LM JETT ATT  
 LM JETT TIME  
 UPLINK TO CSM  
 CSM S.V. (TIG-10)\*  
 LM S.V. (TIG-10)\*  
 UPLINK TO LM  
 LM S.V. (TIG-10)\*  
 P30 TARGET LOAD  
 UPDATE TO LM  
 DEORBIT BURN PAD

\*TIG OF LM DEORBIT BURN

|                   |   |     |   |
|-------------------|---|-----|---|
| MAP UPDATE REV 33 |   |     |   |
| LOS               | : | --- | : |
| 180°W:            | : | --- | : |
| AOS               | : | --- | : |

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

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**LEGEND:**

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

3-126A

REVISION B

# FLIGHT PLAN

**CSM**

**CMP**

1322 CST

**LM**

**MCC-H**

**CDR**

**LMP**

REACQUIRE MSFN  
HGA P-41 Y 5

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

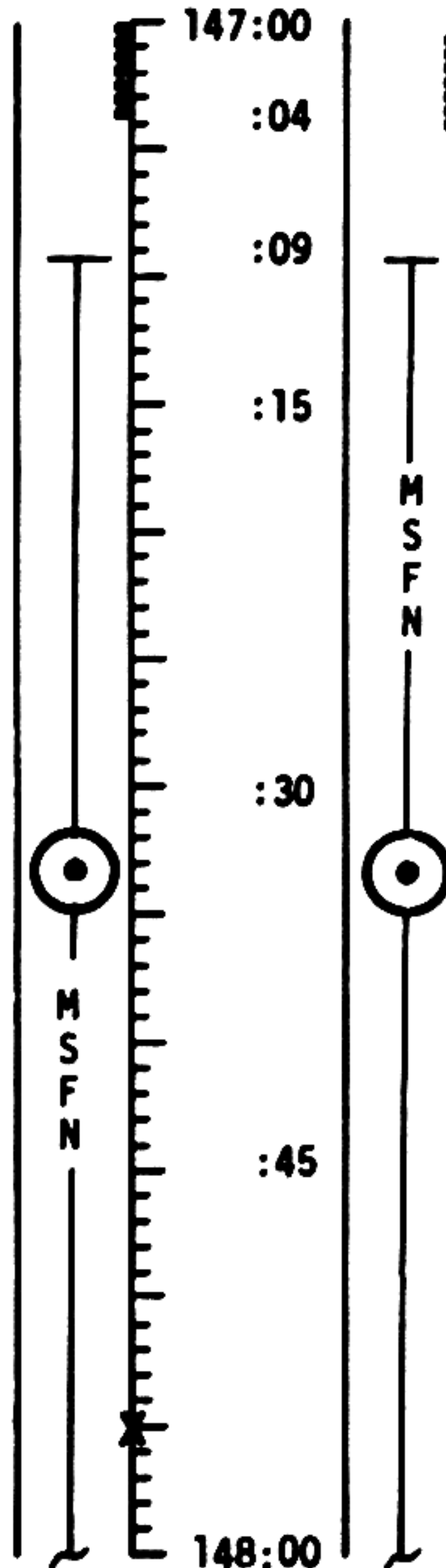
CONFIGURE CSM FOR JETT  
SET UP CAMERA FOR JETT  
CM4/DAC/18/CEX-BRKT,  
MIR(f8,250,7)12FPS,  
0.5 MAG, 4 MIN

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

P47-THRUST MONITOR

**LM JETTISON**

SET ORDEAL



DISCONNECT FROM LM  
IVT TO CM

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

DUMP DSE  
UPDATE TO CSM  
P76 PAD  
MAP UPDATE REV 34

GO/NO-GO FOR LM  
JETT & PYRO ARM

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

|                    |            |
|--------------------|------------|
| <b>LM JETTISON</b> |            |
| GET:               | 147:57:00  |
| ΔV <sub>B</sub> :  | 0.5 FT/SEC |
| ORBIT:             | 59.9x59.1  |

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

FLIGHT PLANNING BRANCH

REVISION A

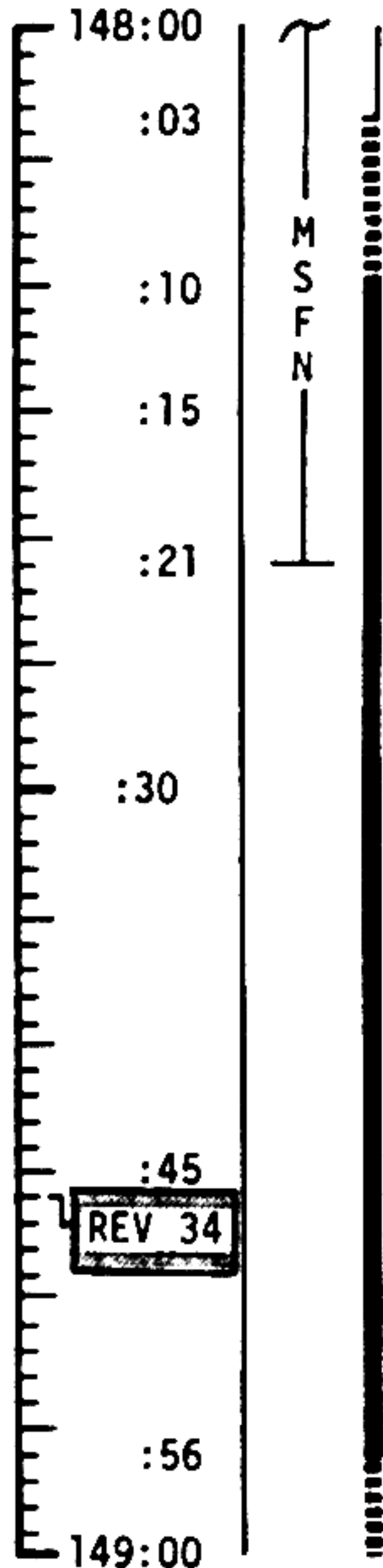
MCC-M

1422 CST

# FLIGHT PLAN

NOTES

UPLINK TO LM  
P42-APS THRUSTING



**CSM SEPARATION**

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

SET ORDEAL

P20-RENDEZVOUS NAVIGATION  
AUTO MNVR TO LM TRACK ATT  
SET UP CAMERA FOR LM IMPACT  
CM/DAC/SXT/CEX  
(FIXED,250,FIXED) 1 FPS,0.5MAG,46 MIN  
TRACK LM AND PHOTOGRAPH THROUGH SEXTANT  
VERIFY DSE MOTION @ LOS  
VACUUM, DOFF, BAG, AND STOW PGA'S

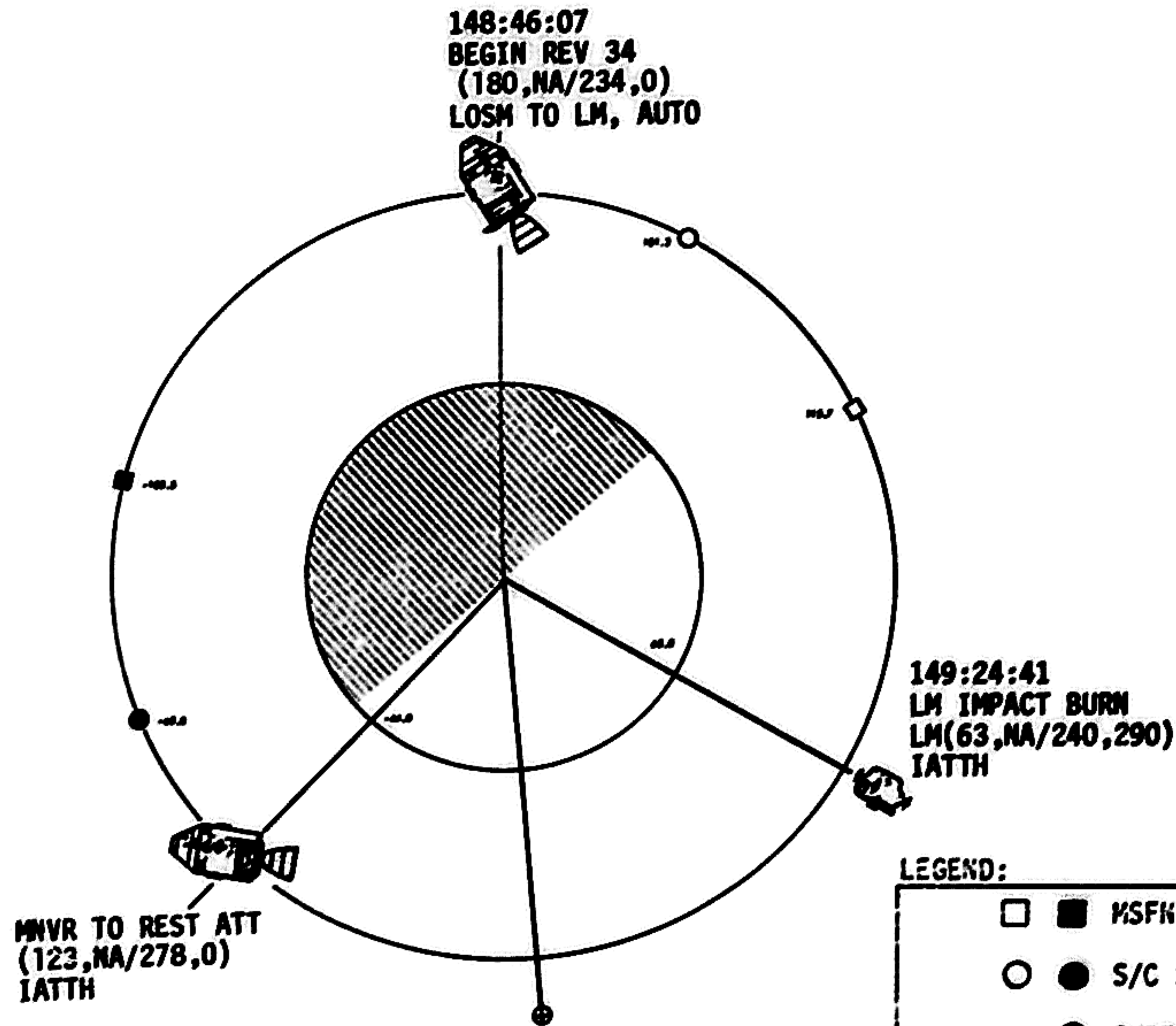
EAT PERIOD

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

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

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

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**LEGEND:**

|   |   |                     |
|---|---|---------------------|
| □ | ■ | MSFN AOS, LOS       |
| ○ | ● | S/C SUNRISE, SUNSET |
| ⊙ |   | SUBEARTH POINT      |

(R,LHP/INP,Y)

IATTH - INERTIAL ATTITUDE HOLD

LATTH - LOCAL ATTITUDE HOLD

3-128A

REVISION B

MCC-H

# FLIGHT PLAN

NOTES

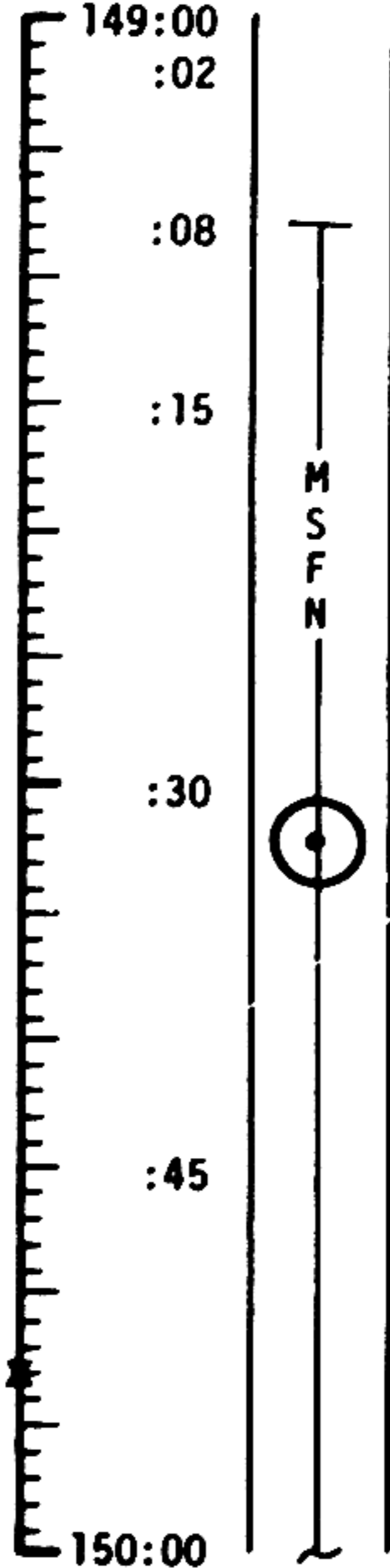
1522 CST

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

UPDATE TO CSM  
TEI 39 PAD

UPLINK TO LM  
COMMAND ULLAGE OFF

DUMP DSE



OMNI D  
EAT PERIOD  
P76 - TARGET ΔV

PHOTOGRAPH LM  
THROUGH SEXTANT

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

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

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

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

TEI 39 PAD ASSUMES  
NO PLANE CHANGE 2

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

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

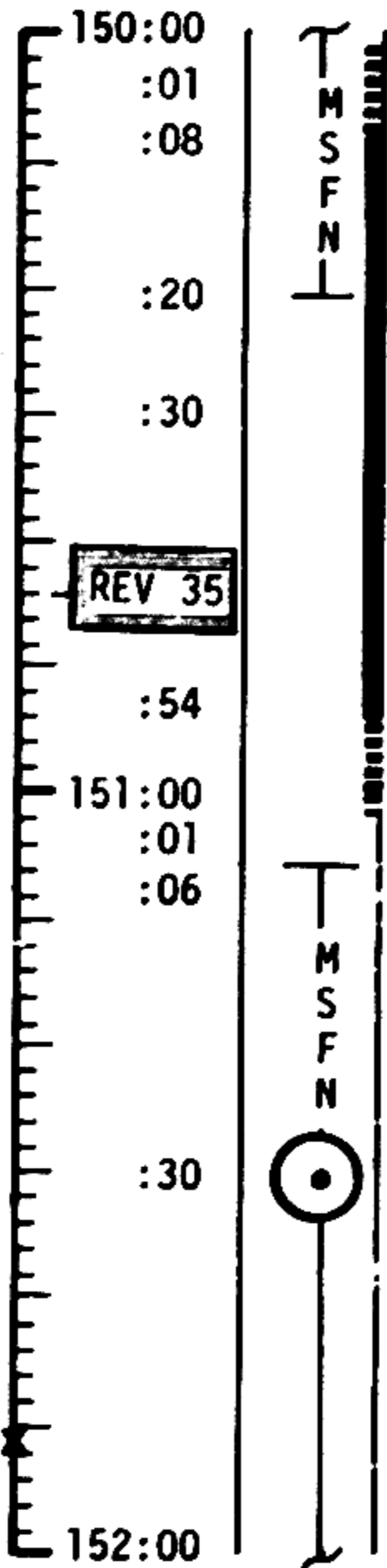


MCC-H

1622 CST

# FLIGHT PLAN

NOTES



REST PERIOD  
(7.5 HOURS)

REST  
ATT

DUMP DSE

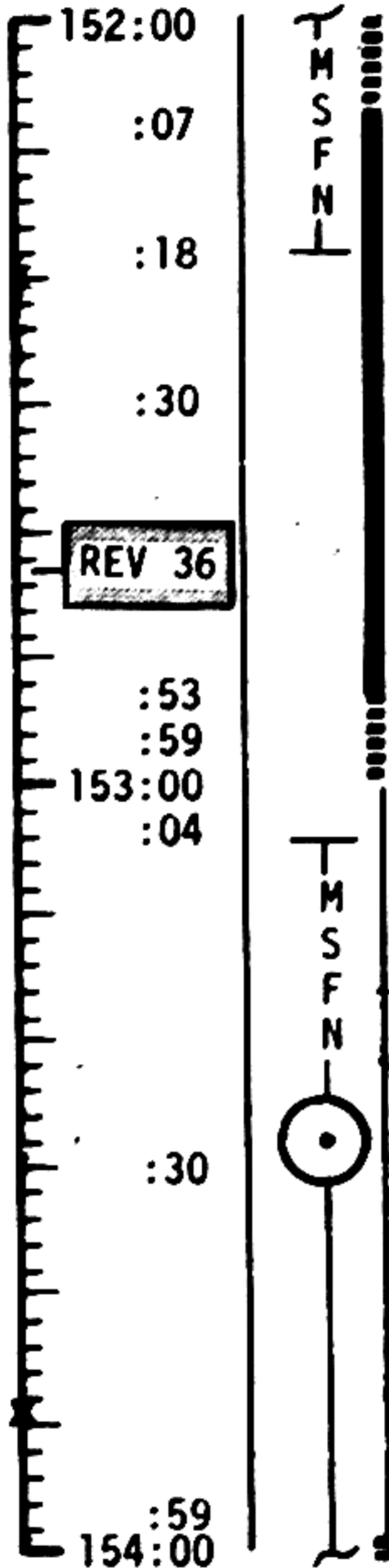
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 150:00 - 152:00 | 6/34-35 | 3-130 |

MCC-H

1822 CST

# FLIGHT PLAN

NOTES



REST PERIOD  
(7.5 HOURS)

REST  
ATT

DUMP DSE

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

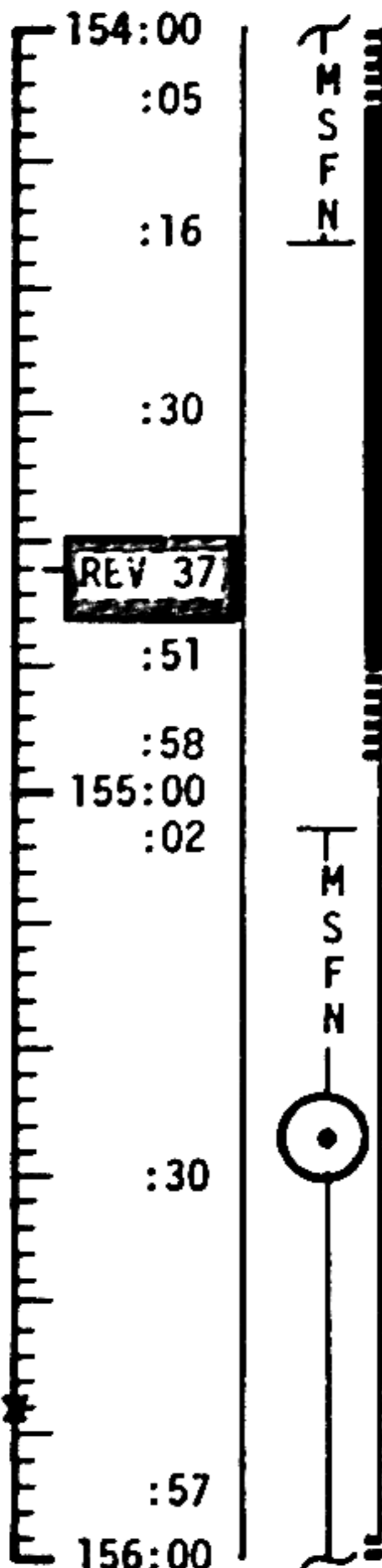
MCC-M

2022 CST

# FLIGHT PLAN

NOTES

DUMP DSE



REST PERIOD  
(7.5 HOURS)

REST  
ATT

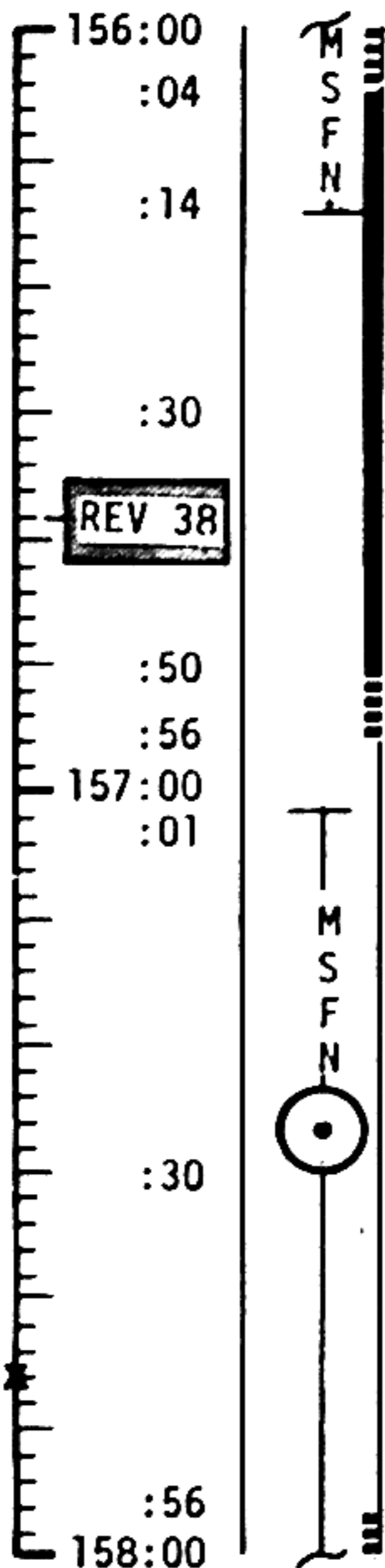
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 154:00 - 156:00 | 6/36-37 | 3-132 |

MCC-H

2222 CST

# FLIGHT PLAN

NOTES



REST PERIOD  
(7.5 HOURS)

REST  
ATT

DUMP DSE

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

HGA P-22 Y239

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

0022 CST

# FLIGHT PLAN

## NOTES

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

T  
M  
S  
F  
N  
I

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

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN  
OPTION 1 PREFERRED

P30 - EXTERNAL zV

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

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

### POSTSLEEP CHECKLIST

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

MAP UPDATE REV 39

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

TEI 41 ASSUMES  
PLANE CHANGE 2

### CSM CONSUMABLES UPDATE

GET: \_\_\_\_\_ : \_\_\_\_\_  
RCS TOTAL \_\_\_\_\_ %  
QUAD A \_\_\_\_\_ % B \_\_\_\_\_ %  
C \_\_\_\_\_ % D \_\_\_\_\_ %  
H<sub>2</sub> TOTAL \_\_\_\_\_ %  
O<sub>2</sub> TOTAL \_\_\_\_\_ %

### P52 (PLANE CHANGE ORIENT)

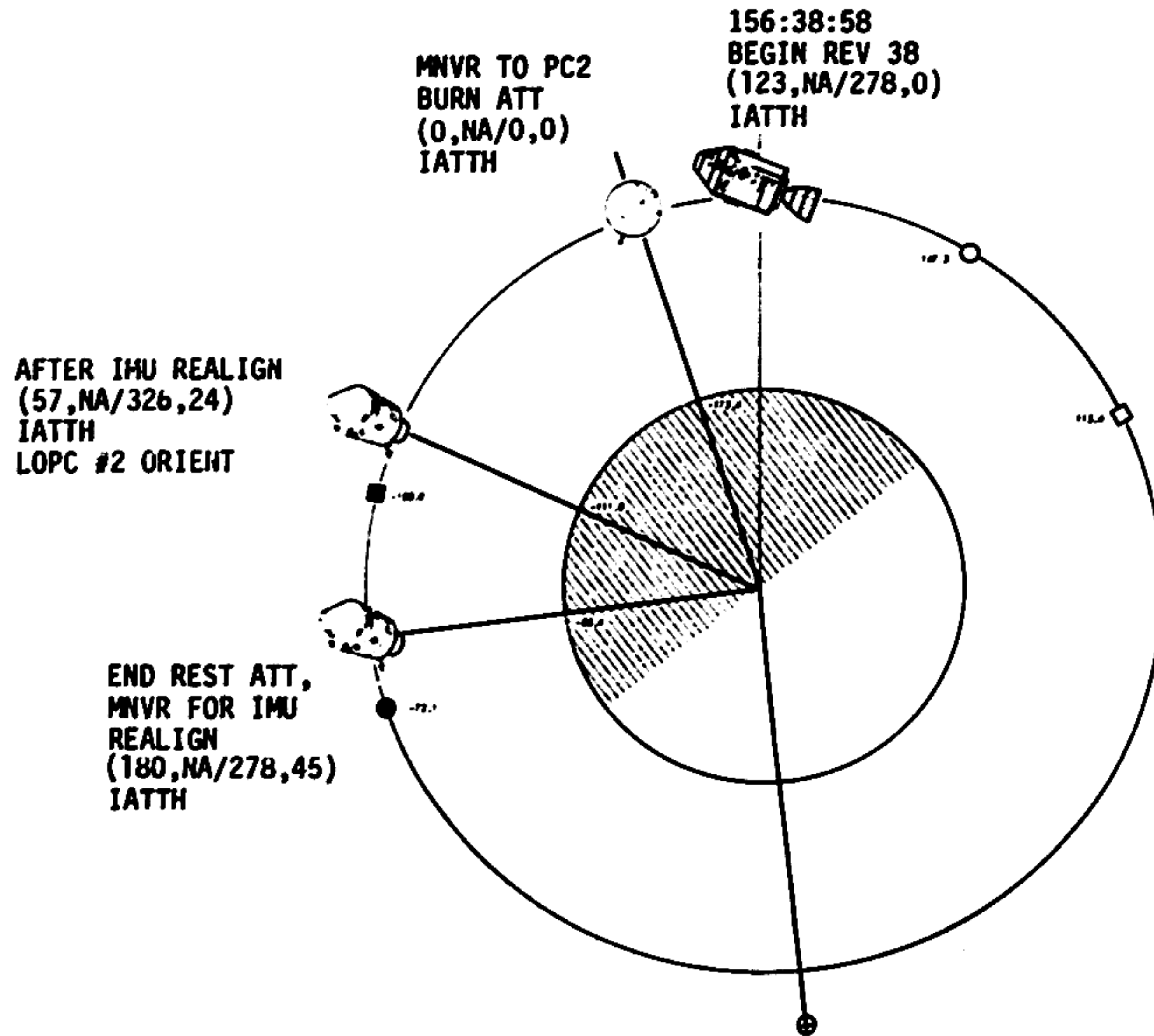
N71: \_\_\_\_\_  
N05: \_\_\_\_\_  
N93: \_\_\_\_\_  
X \_\_\_\_\_  
Y \_\_\_\_\_  
Z \_\_\_\_\_  
GET \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

### CREW STATUS REPORT

|       | CDR   | CMP   | LMP   |
|-------|-------|-------|-------|
| SLEEP | _____ | _____ | _____ |
| PRD   | _____ | _____ | _____ |

REV 39

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



**LEGEND:**

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

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HIGH RESOLUTION PHOTOGRAPHY  
REV 39

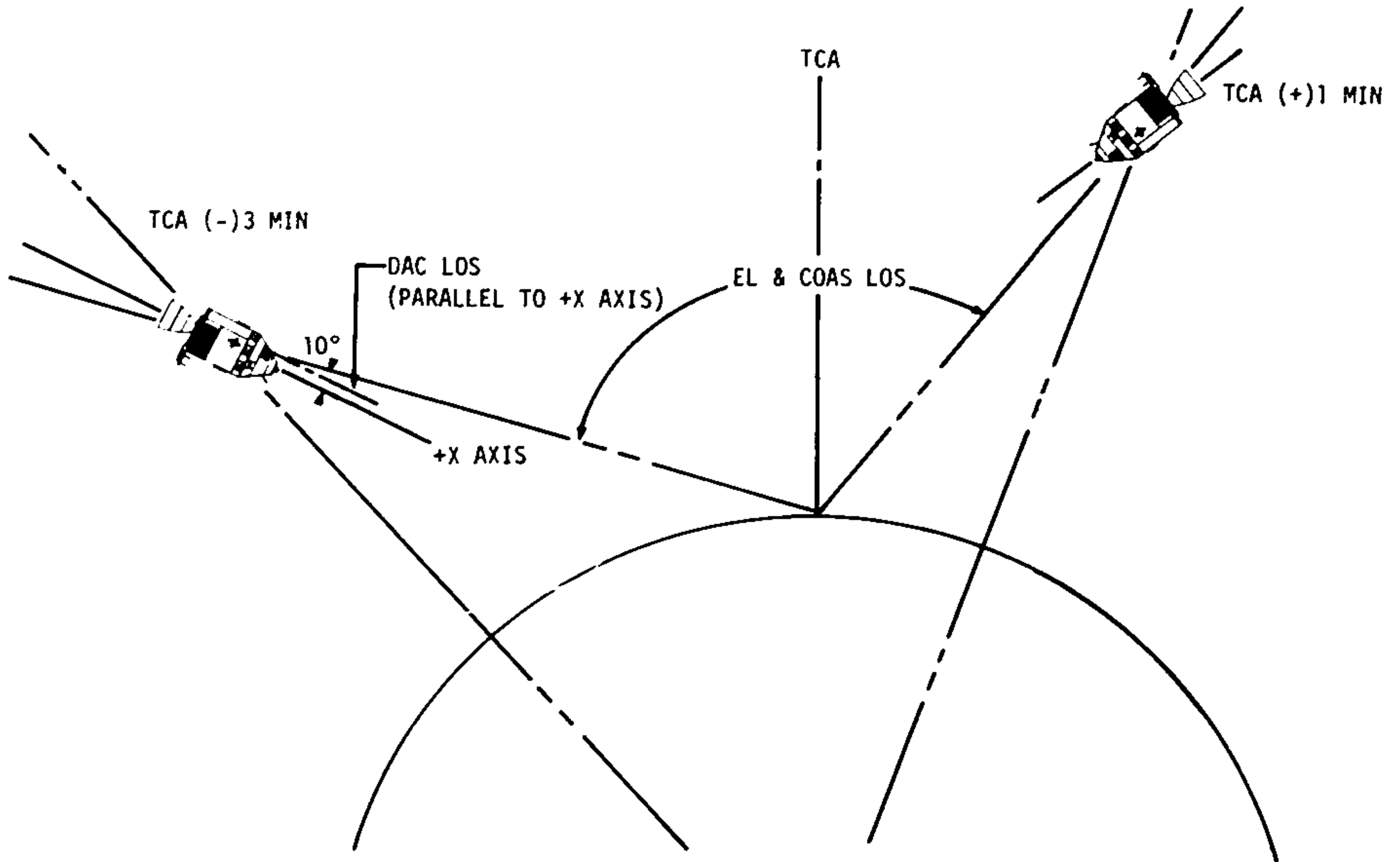


FIGURE 3-4  
3-135



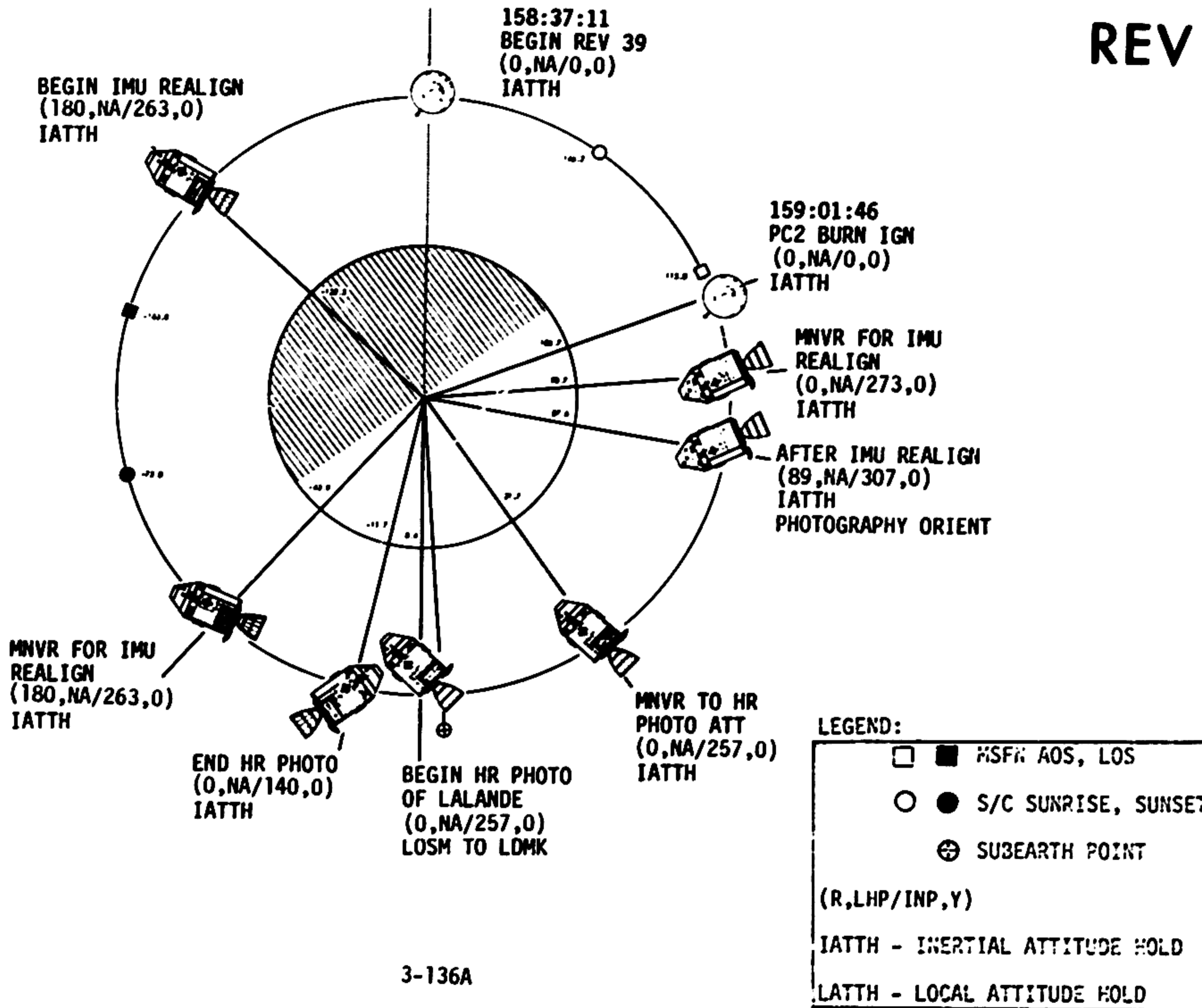
# FLIGHT PLAN

CSM PLANE CHANGE #2  
BURN TABLE

| P OR Y<br>RATES     | ATT<br>DEVIATION | SHUTDOWN<br>TIME | RESIDUALS |
|---------------------|------------------|------------------|-----------|
| 10°/SEC<br>TAKEOVER | +10°<br>TAKEOVER | BT + 1 SEC       | NO TRIM   |

TABLE 3-10  
3-136

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3-136A

REVISION B

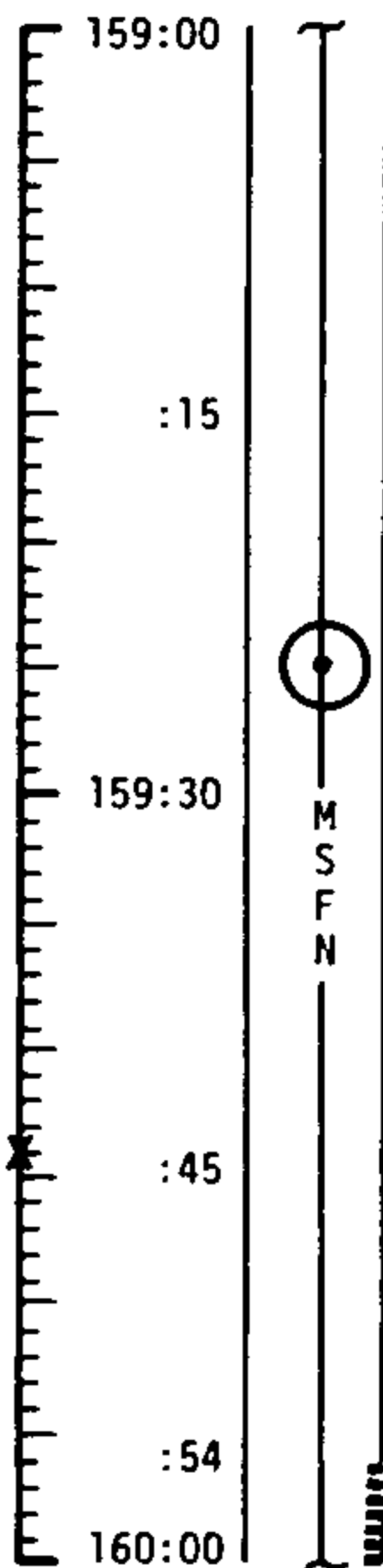
MCC-N

0122 CST

# FLIGHT PLAN

## NOTES

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



### CSM PLANE CHANGE #2

TIG: 159:01:46.0  
 BT : 18.0 SEC  
 $\Delta V_R$ : 360.0 FPS  
 ULLAGE: 4 JET 11 SEC  
 ORBIT: 58.6 X 56.5 NM

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

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

BURN STATUS REPORT  
 REPORT GYRO TORQUING ANGLES (P52 @158:15)  
 V66 TRANSFER CSM TO LM SLOT  
 SET COAS FOR (+) 10 DEG LOS  
 LiOH CANISTER CHANGE NO 12  
 14 INTO B, STOW 12 IN A3  
 START EAT PERIOD

MNVR TO ATT FOR LALANDE PHOTOGRAPHY  
 BY 159:26 (FOR T1) R 0 OMNI D  
 P 257  
 Y 0

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

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

HI RESOLUTION PHOTO  
 LALANDE  
 T1 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 T2 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_

| BURN STATUS REPORT       |                          |                          |   |                |
|--------------------------|--------------------------|--------------------------|---|----------------|
| X                        | X                        | <input type="checkbox"/> | • | $\Delta$ TIG   |
| X                        | X                        | <input type="checkbox"/> | • | BT             |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | $V_{gx}$       |
| TRIM                     |                          |                          |   |                |
| X                        | X                        | X                        |   | R              |
| X                        | X                        | X                        |   | P              |
| X                        | X                        | X                        |   | Y              |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | $V_{gx}$       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | $V_{gy}$       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | $V_{gz}$       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • | $\Delta V_c^*$ |
| X                        | X                        | X                        |   | FUEL*          |
| X                        | X                        | X                        |   | OX*            |
| X                        | X                        | X                        |   | UNBAL          |

\*ITEMS TO BE REPORTED TO MSFN

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

STEREO STRIP PHOTOGRAPHY  
REV 40

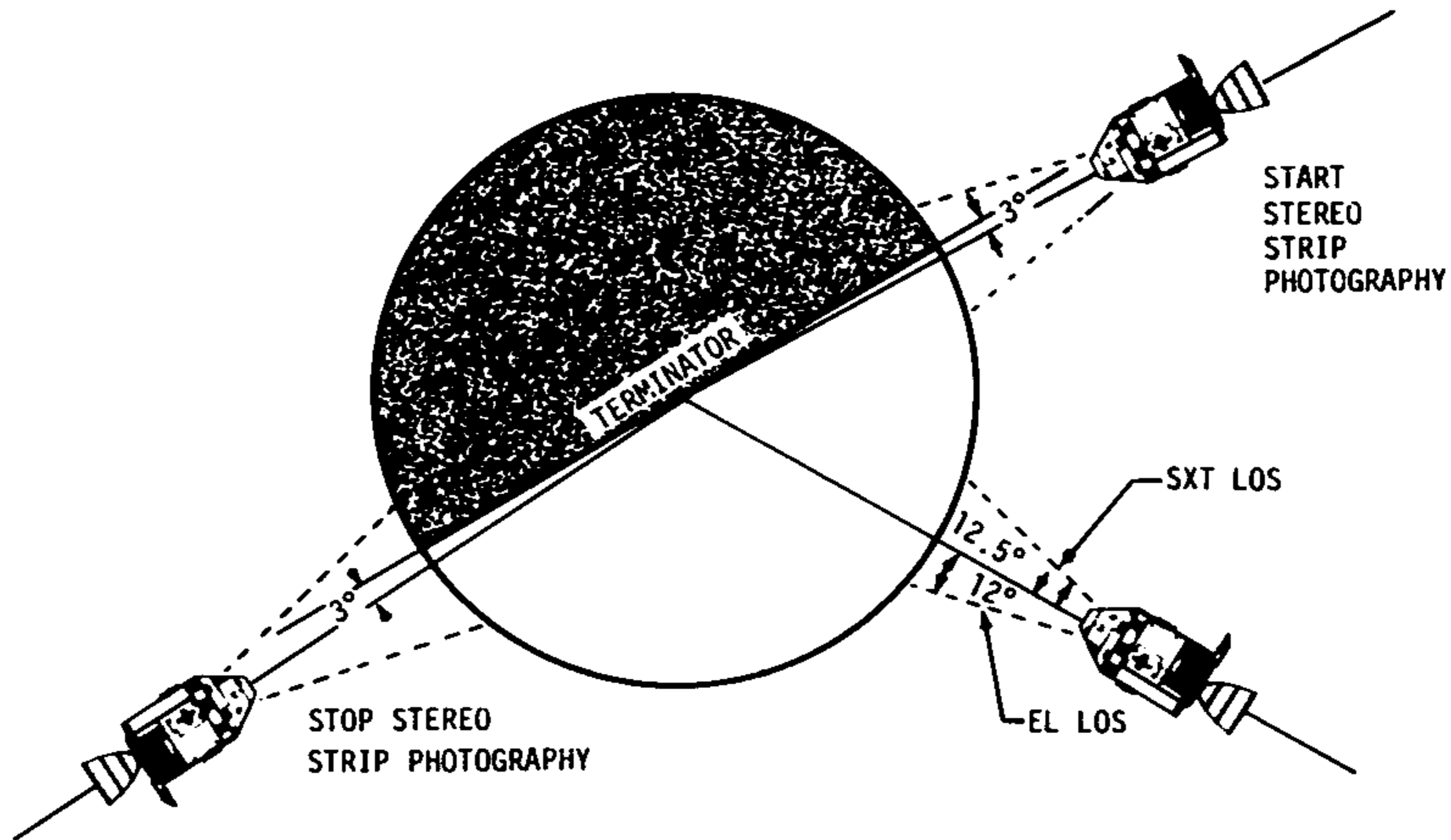


FIGURE 3-5  
3-138

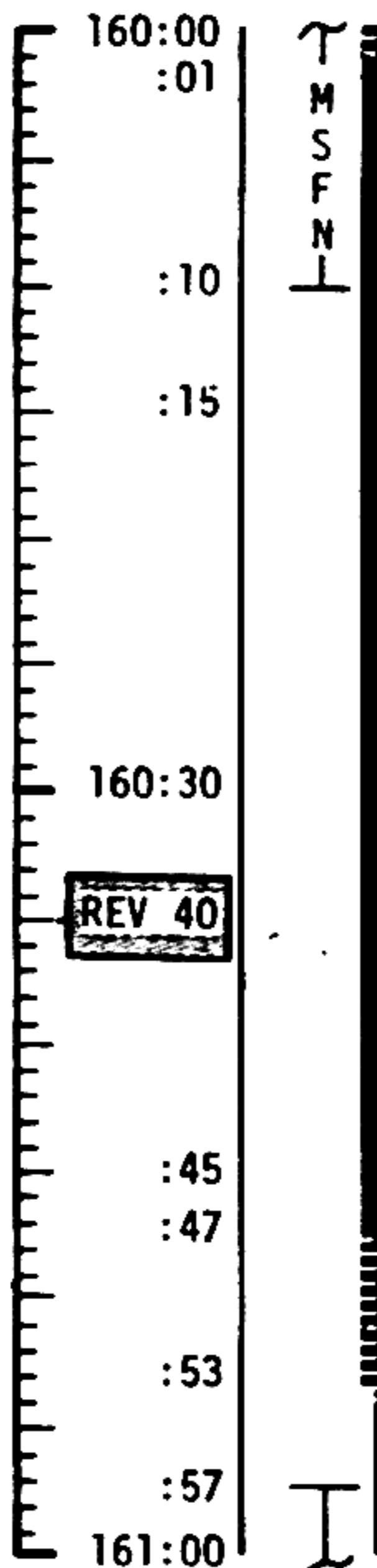
MCC-H

0222 CST

# FLIGHT PLAN

NOTES

UPDATE TO CSM  
STEREO PHOTO TIME  
MAP UPDATE REV 40



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

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

P52 IMU REALIGN  
OPTION 3 REFSMMAT

GDC ALIGN TO IMU

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

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

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

| STEREO PHOTO |                       |
|--------------|-----------------------|
| T1           | _____ : _____ : _____ |
| T2           | _____ : _____ : _____ |

| MAP UPDATE REV <u>40</u> |                         |
|--------------------------|-------------------------|
| LOS                      | : _____ : _____ : _____ |
| 180°                     | : _____ : _____ : _____ |
| AOS                      | : _____ : _____ : _____ |

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

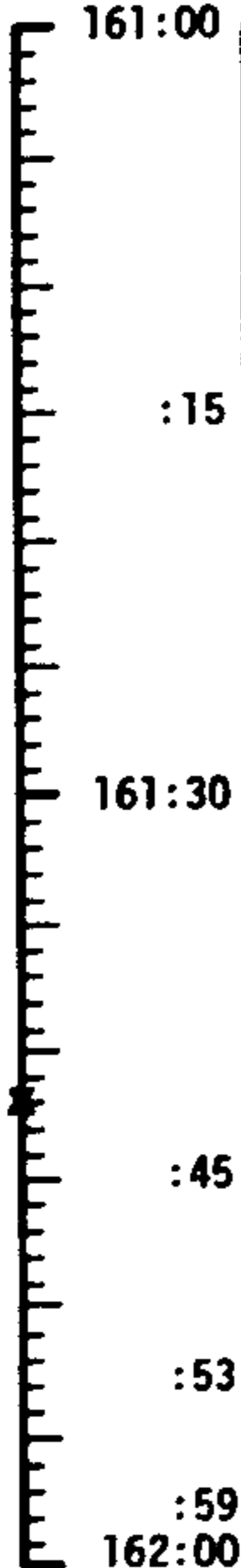
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 160:00 - 161:00 | 7/39-40 | 3-139 |

MCC-N

0322 CST

# FLIGHT PLAN

NOTES



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

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

STEREO STRIP  
PHOTOGRAPHY

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

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

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

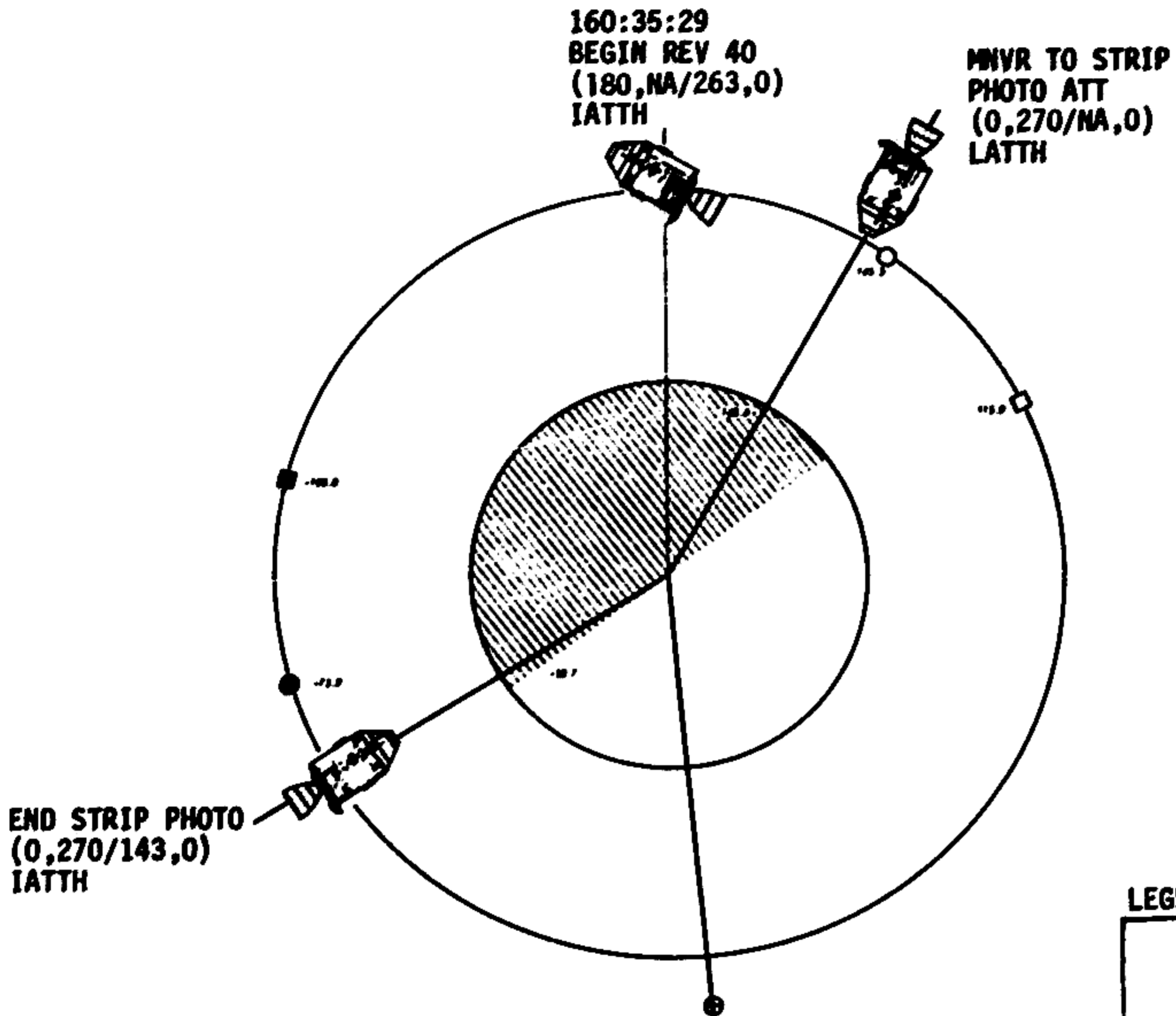
|                |               |
|----------------|---------------|
| MAP UPDATE REV | <u>41</u>     |
| LOS            | : ___:___:___ |
| 180°           | : ___:___:___ |
| AOS            | : ___:___:___ |

UPDATE TO CSM  
MAP UPDATE REV41  
TEI 43 PAD

DUMP DSE

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

# REV 40



160:35:29  
BEGIN REV 40  
(180,NA/263,0)  
IATTH

MNR TO STRIP  
PHOTO ATT  
(0,270/NA,0)  
LATTH

END STRIP PHOTO  
(0,270/143,0)  
IATTH

### LEGEND:

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

3-140A

REVISION B



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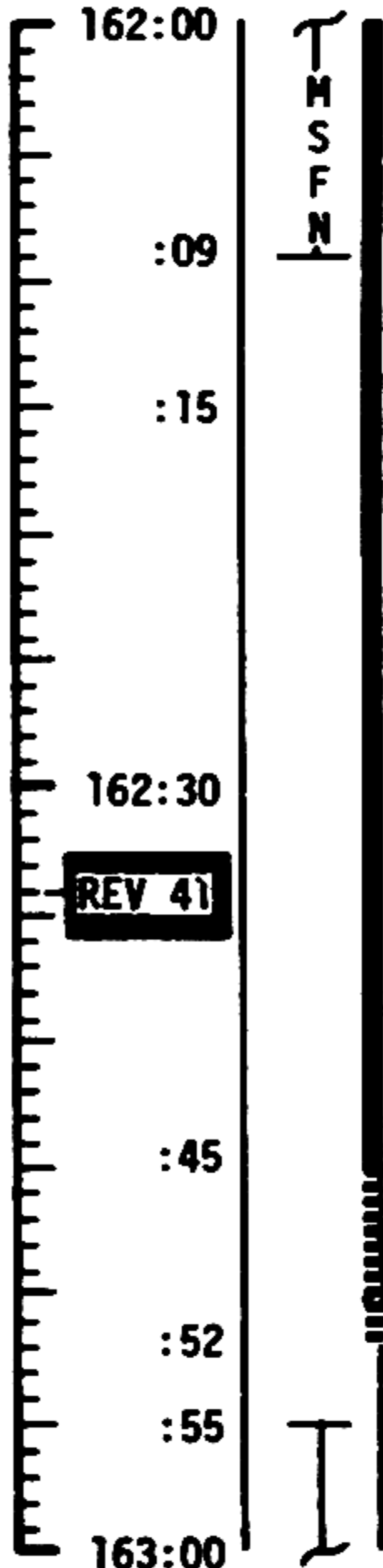
MCC-N

0422 CST

# FLIGHT PLAN

NOTES

UPDATE TO CSM  
TIME - HIGH  
RESOLUTION PHOTOS



REPORT GYRO TORQUING ANGLES

VERIFY DSE MOTION AT LOS

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

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

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

REACQUIRE MSFN  
HGA P -64, Y 173

HI RESOLUTION PHOTO  
DESCARTES

T1 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
T2 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_

HI RESOLUTION PHOTO  
FRA MAURO

T1 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
T2 \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
R \_\_\_\_\_, P \_\_\_\_\_, Y \_\_\_\_\_

T1 IS 3 MINUTES  
BEFORE TCA

T2 IS 1 MINUTE  
AFTER TCA

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

HIGH RESOLUTION PHOTOGRAPHY  
REV 41

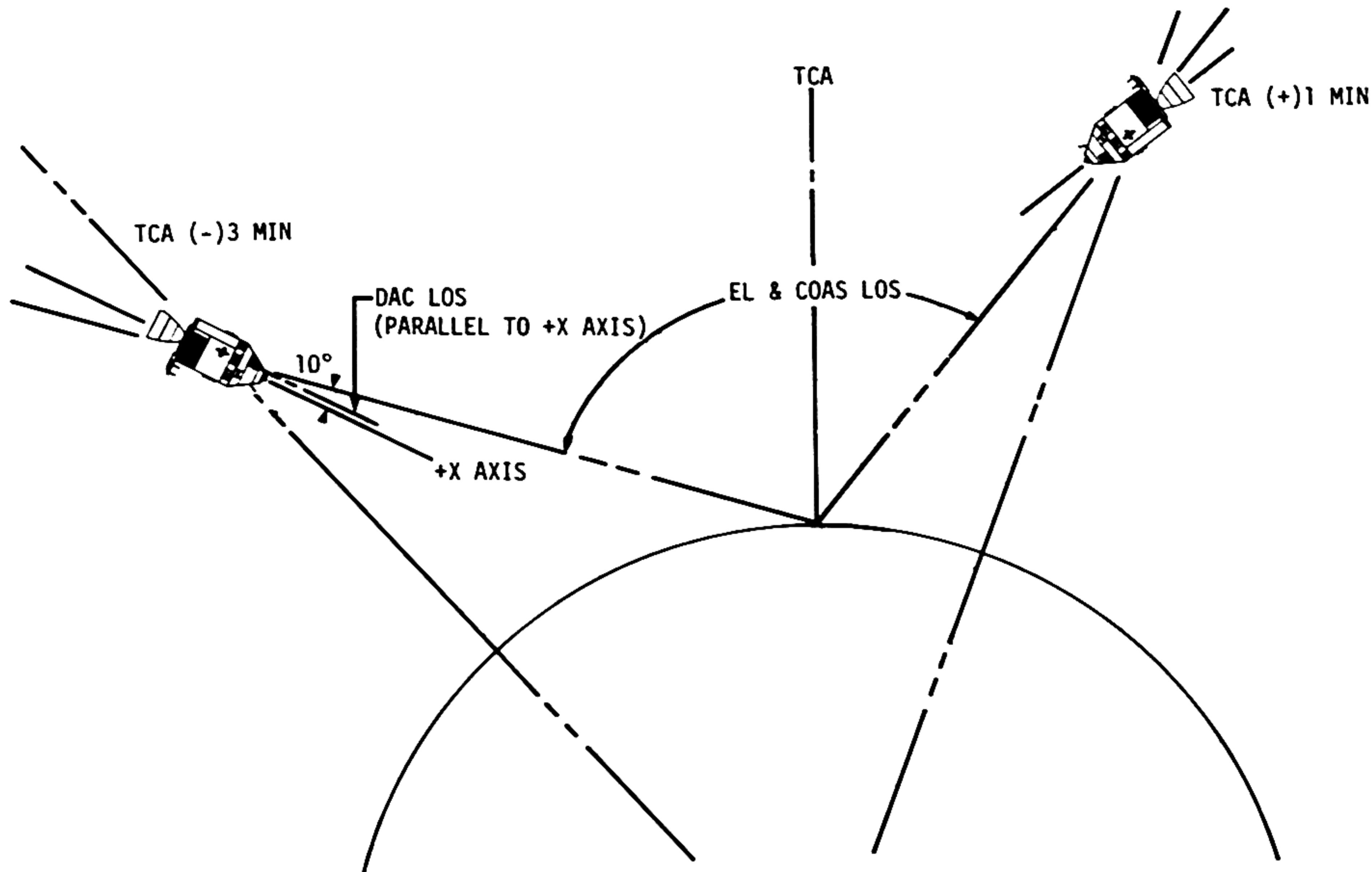
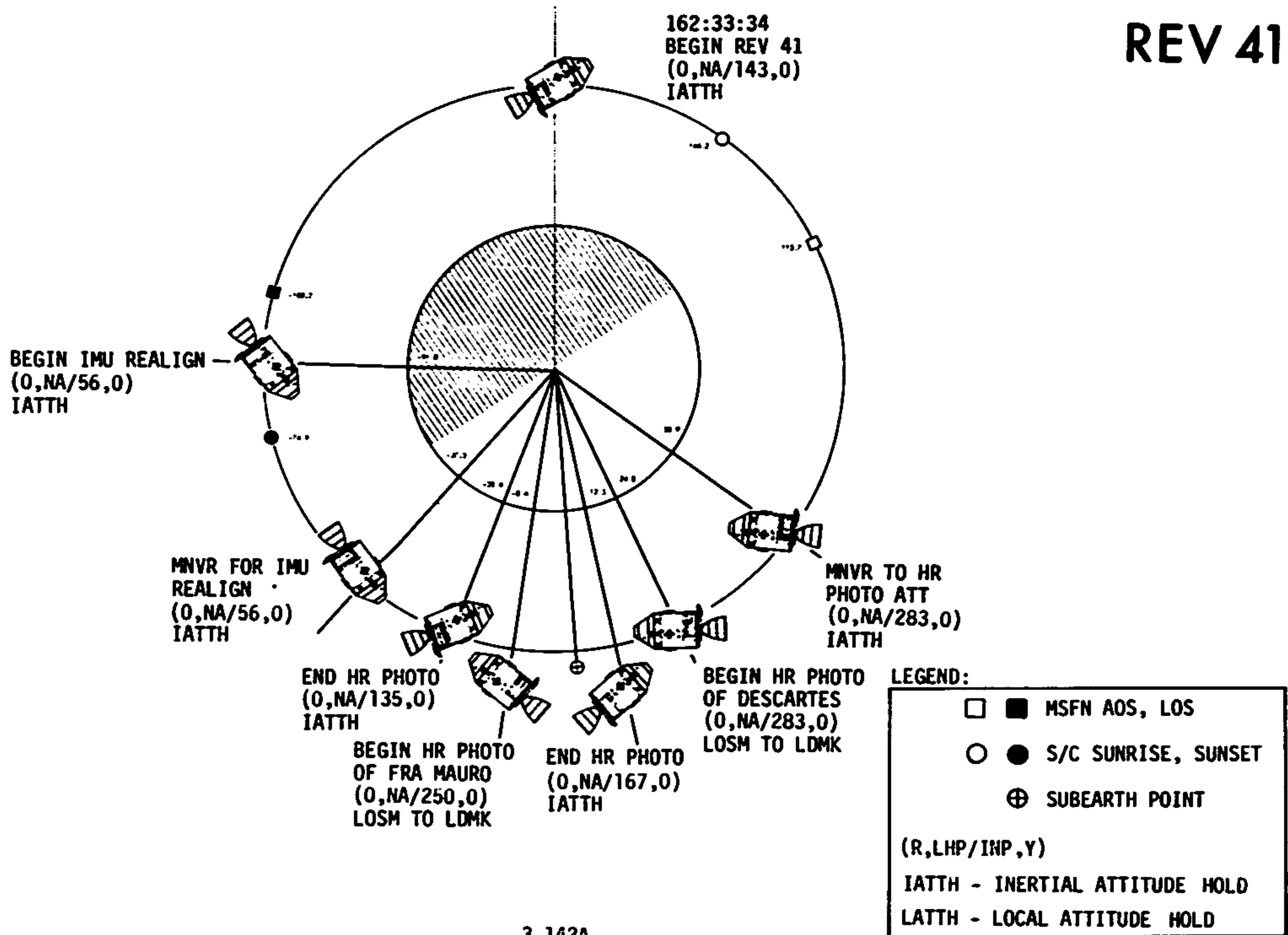


FIGURE 3-4  
3-142

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3-142A

REVISION B

MCC-H

0522 CST

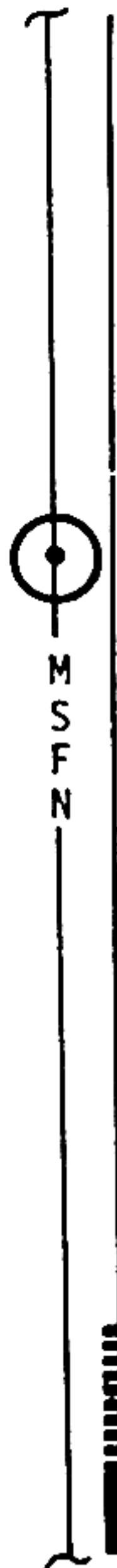
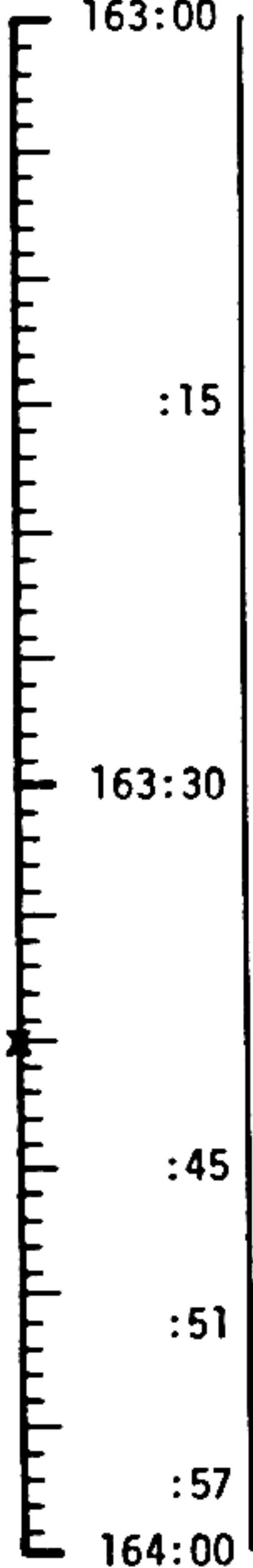
# FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM  
MAP UPDATE REV 42

~~PCM-LBR~~



MNVR-TO ATT FOR DESCARTES PHOTOGRAPHY BY 163:16

OMNI D      R 0  
                                  P 283  
                                  Y 0

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

R 0, P 250, Y 0      OMNI D

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

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

R 0  
 P 56  
 Y 0

UPDATE TO CSM  
LDMK TRACK PAD

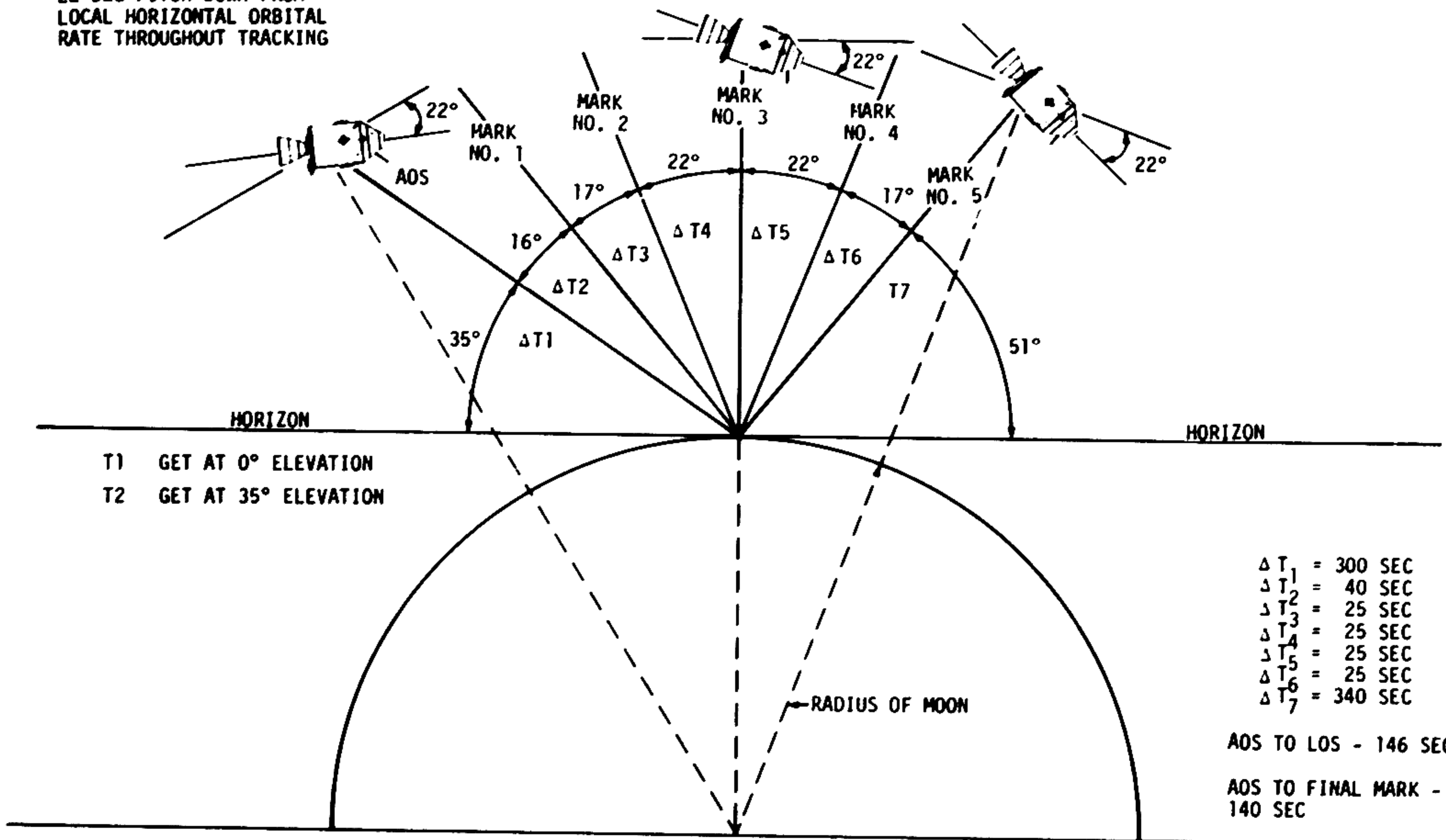
UPLINK TO CSM  
CSM STATE VECTOR  
& V66

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

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

# CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM  
LOCAL HORIZONTAL ORBITAL  
RATE THROUGHOUT TRACKING



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

|                  |   |         |
|------------------|---|---------|
| Δ T <sub>1</sub> | = | 300 SEC |
| Δ T <sub>2</sub> | = | 40 SEC  |
| Δ T <sub>3</sub> | = | 25 SEC  |
| Δ T <sub>4</sub> | = | 25 SEC  |
| Δ T <sub>5</sub> | = | 25 SEC  |
| Δ T <sub>6</sub> | = | 25 SEC  |
| Δ T <sub>7</sub> | = | 340 SEC |

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON  
FIGURE 3-3  
3-144

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ CP-1  
 T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °  
 N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_  
 CP \_\_\_\_\_ N89

LAT -5.667° \_\_\_\_\_  
 LONG/2 +56.000° \_\_\_\_\_  
 ALT +0.00 NM \_\_\_\_\_

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ CP-2  
 T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °  
 N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_  
 CP \_\_\_\_\_ N89

LAT -10.250° \_\_\_\_\_  
 LONG/2 +28.091° \_\_\_\_\_  
 ALT -0.81NM \_\_\_\_\_

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ DE-1  
 T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °  
 N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_  
 CP \_\_\_\_\_ N89

LAT -8.883° \_\_\_\_\_  
 LONG/2 +7.775° \_\_\_\_\_  
 ALT -1.70NM \_\_\_\_\_

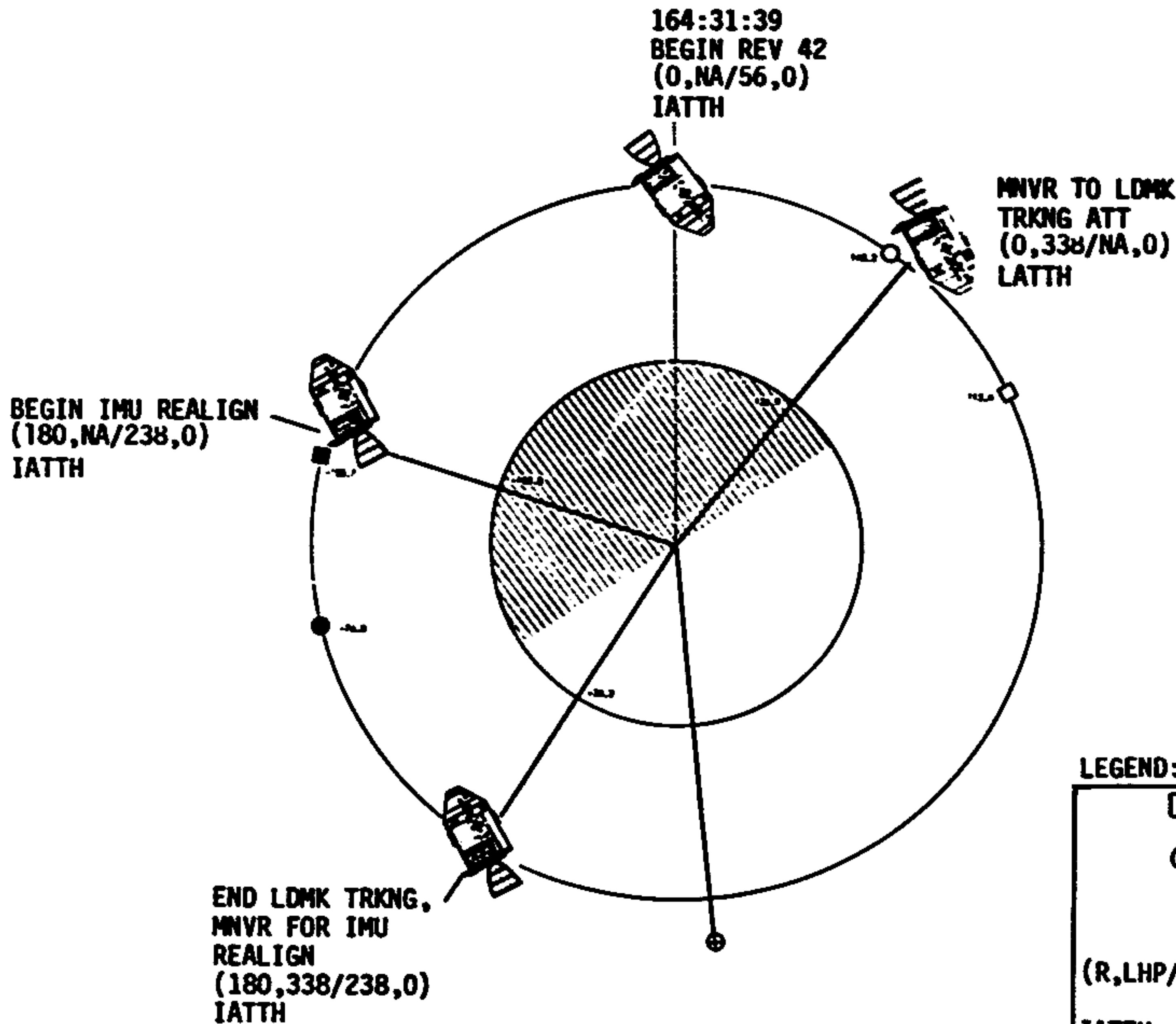
P22 ~~MAN~~ <sup>AUTO</sup> ACQ P dn 22° R0° Y0° ( $\frac{1}{60}$ )

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ FM-1  
 T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_  
 R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °  
 N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_  
 CP \_\_\_\_\_ N89

LAT -3.228° \_\_\_\_\_  
 LONG/2 -8.665° \_\_\_\_\_  
 ALT -1.56NM \_\_\_\_\_

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

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**LEGEND:**

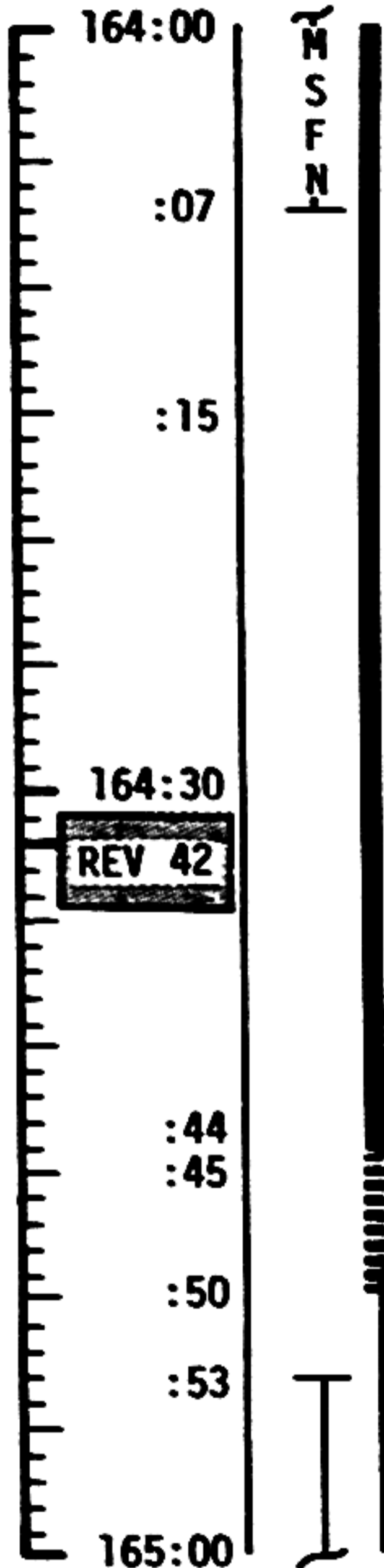
|                                |   |                     |
|--------------------------------|---|---------------------|
| □                              | ■ | MSFN AOS, LOS       |
| ○                              | ● | S/C SUNRISE, SUNSET |
| ⊕                              |   | SUBEARTH POINT   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

MCC-N

0622 CST

# FLIGHT PLAN

NOTES



P52 IMU REALIGN  
OPTION 3 REFSMMAT

VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU  
O2 FUEL CELL PURGE

WASTE WATER DUMP

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

P52 (PHOTOGRAPHY ORIENT)

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

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

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

X \_\_\_\_\_

Y \_\_\_\_\_

Z \_\_\_\_\_

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

SELECT OMNI D

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

R 0  
P 338/NA  
Y 0

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

START DAC @ T2 (-) 1 MIN

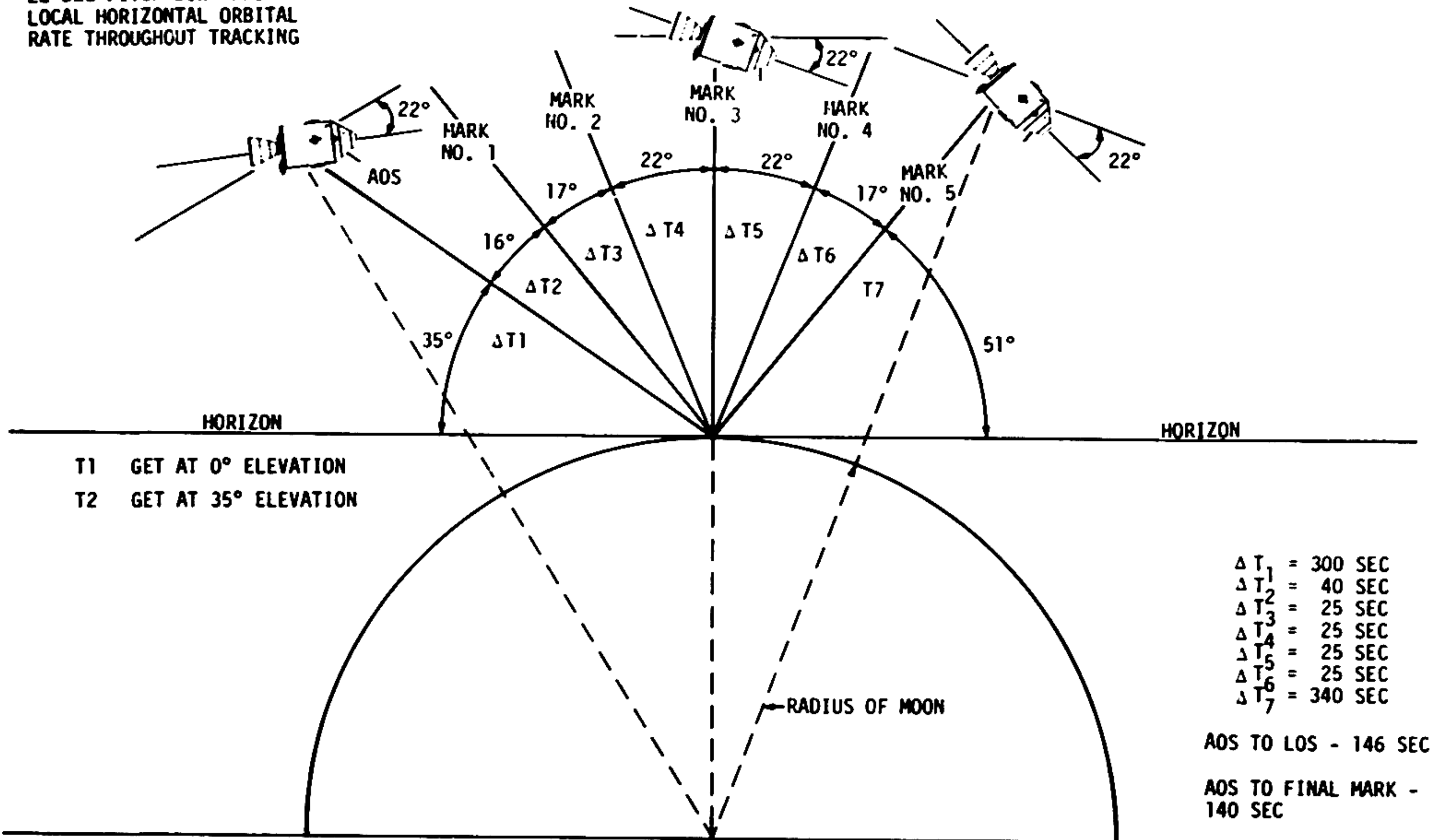
LDMK IS AT ~14.5°  
SUN ANGLE  
STOP DAC AFTER MARK 5

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



# CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING



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

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

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °

N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_

CP \_\_\_\_\_ N89

LAT -5.667° \_\_\_\_\_

LONG/2 +56.000° \_\_\_\_\_

ALT +0.00 NM \_\_\_\_\_

**CP-1**

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °

N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_

CP \_\_\_\_\_ N89

LAT -10.250° \_\_\_\_\_

LONG/2 +28.091° \_\_\_\_\_

ALT -0.81NM \_\_\_\_\_

**CP-2**

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °

N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_

CP \_\_\_\_\_ N89

LAT -8.883° \_\_\_\_\_

LONG/2 +7.775° \_\_\_\_\_

ALT -1.70NM \_\_\_\_\_

**DE-1**

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

T<sub>1</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

T<sub>2</sub> \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

R \_\_\_\_\_ °P \_\_\_\_\_ °Y \_\_\_\_\_ °

N or S NM \_\_\_\_\_ SA \_\_\_\_\_ TA \_\_\_\_\_

CP \_\_\_\_\_ N89

LAT -3.228° \_\_\_\_\_

LONG/2 -8.665° \_\_\_\_\_

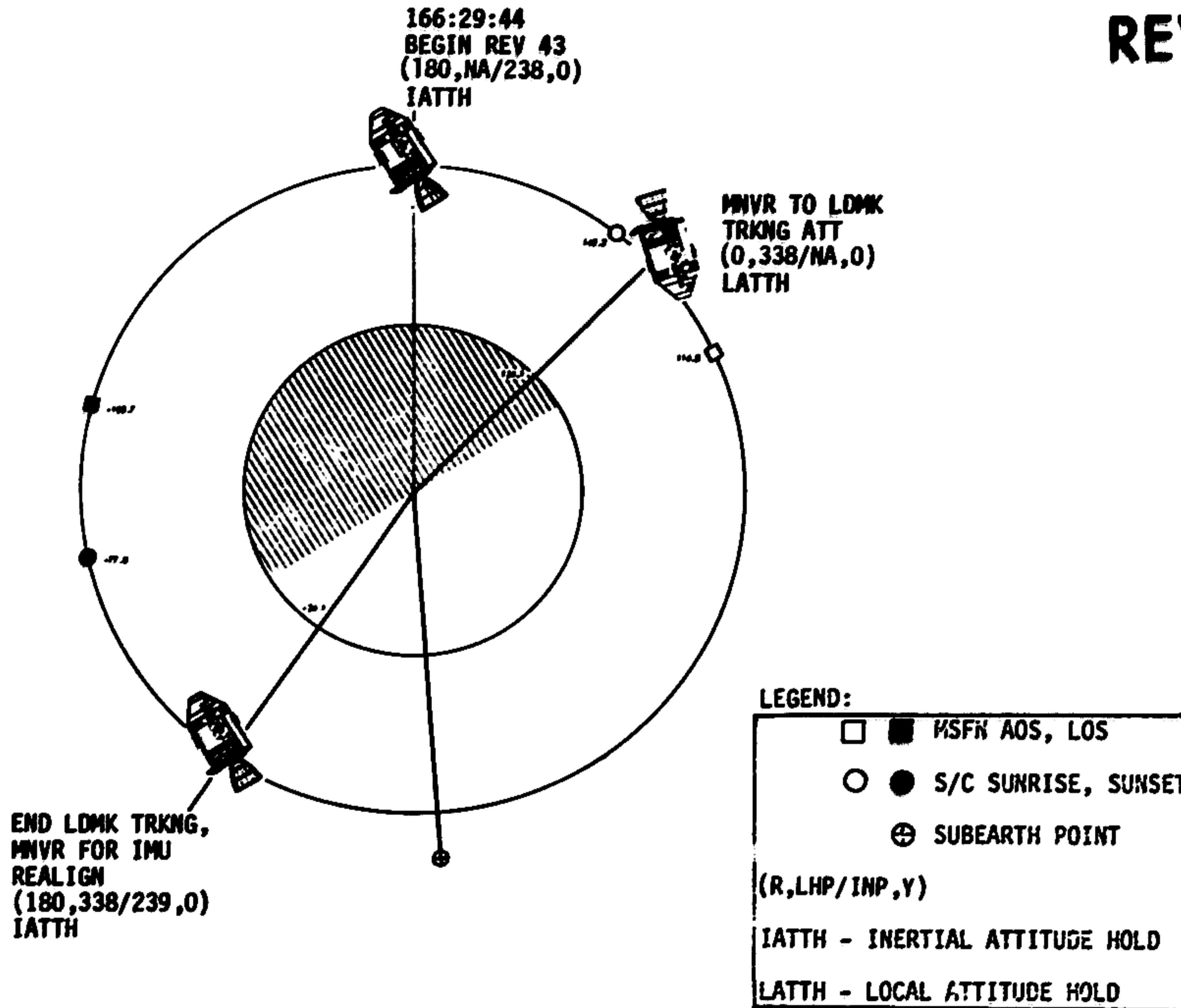
ALT -1.56NM \_\_\_\_\_

**FM-1**

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

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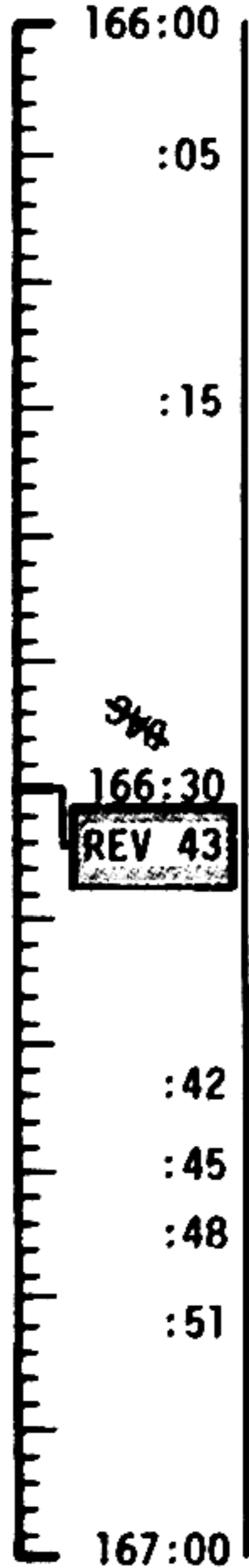
MCC-N

0822 CST

# FLIGHT PLAN

NOTES

UPLINK CSM  
STATE VECTOR  
& V66



VERIFY DSE MOTION AT LOS

P52 IMU REALIGN  
OPTION 3 REFSMMAT

GDC ALIGN TO IMU

EAT PERIOD

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

SELECT OMNI D

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

R 0  
P 338/NA  
Y 0

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

START DAC @ T2 (-) 1 MIN

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

P52 (LDG SITE ORIENT)

N171: \_\_\_\_\_  
 N05: \_\_\_\_\_  
 N93: \_\_\_\_\_  
 X \_\_\_\_\_  
 Y \_\_\_\_\_  
 Z \_\_\_\_\_  
 GET \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_

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

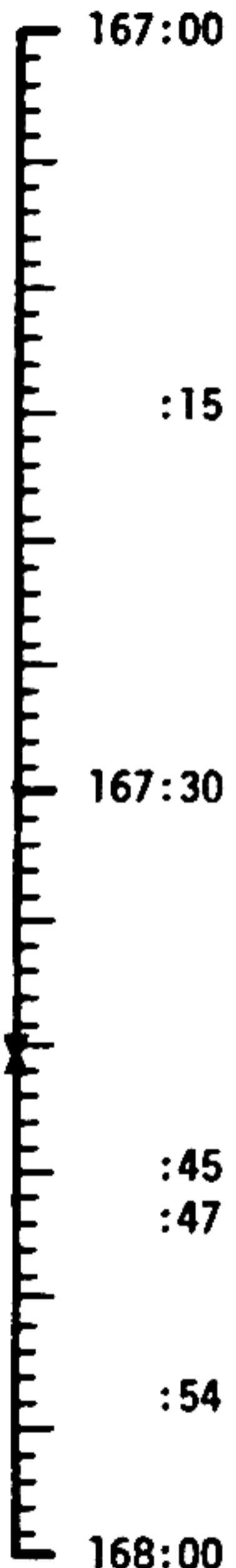
MCC-N

0922 CST

# FLIGHT PLAN

## NOTES

UPDATE TO CSM  
MAP UPDATE REV 44



REPORT GYRO TORQUING ANGLES

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

START DAC @ T2(-)1 MIN

CP 2 LDMK IS  
AT ~67° SUN ANGLE

STOP DAC AFTER MARK 5

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

START DAC @ T2(-)1 MIN

DESCARTES LDMK  
AT ~72.5 SUN ANGLE

STOP DAC AFTER MARK 5

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

START DAC @ T2(-)1 MIN

FR. MAURO LDMK  
AT ~40.5 SUN ANGLE

STOP DAC AFTER MARK 5

STOP PITCH AND MNVR TO ACQUIRE MSFN BY 167:40

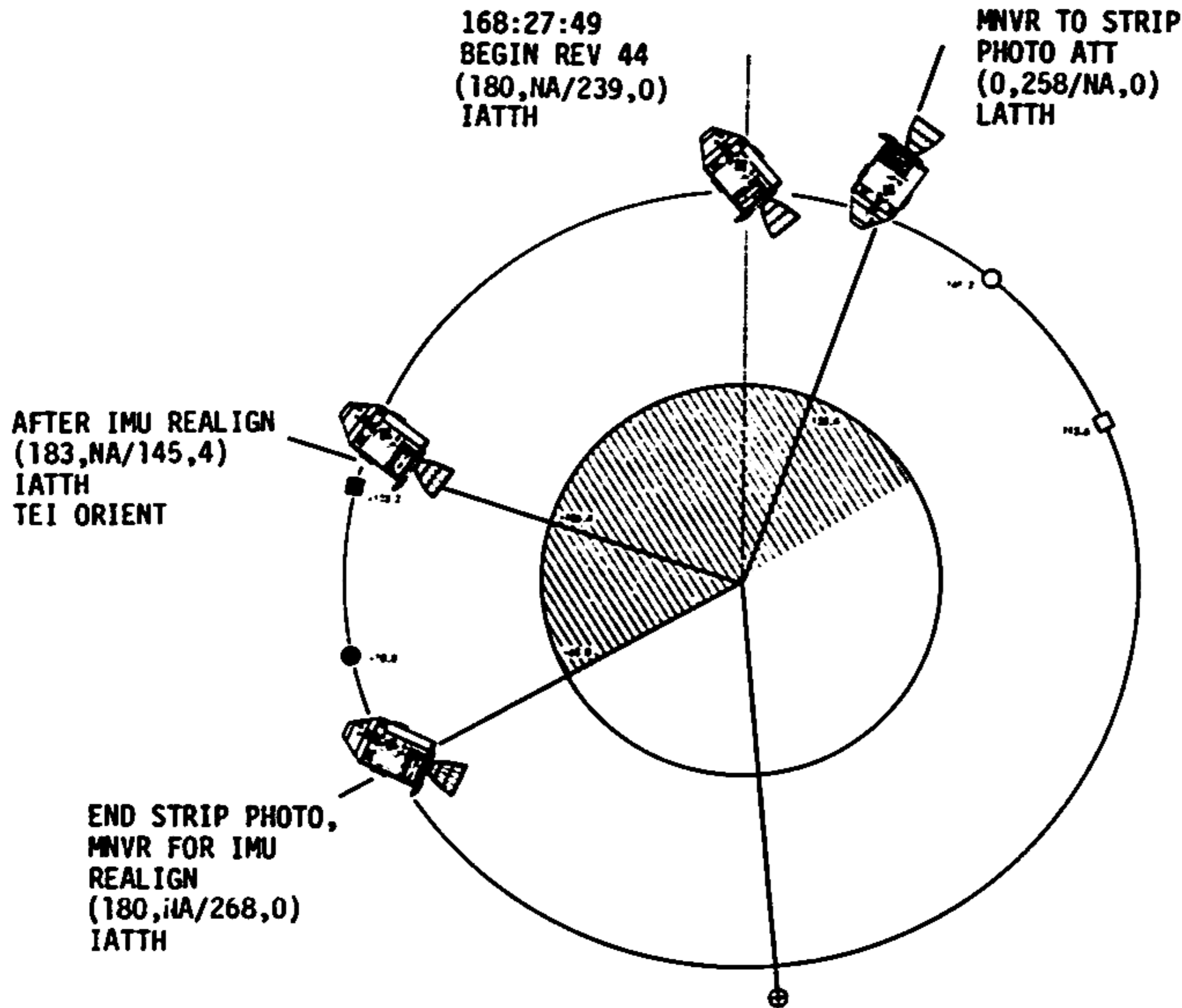
|   |            |      |            |
|---|------------|------|------------|
| R | <u>180</u> | HGA: |            |
| P | <u>239</u> | P    | <u>-29</u> |
| Y | <u>0</u>   | Y    | <u>184</u> |

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

DUMP DSE

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

REV 44



LEGEND:

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

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

3-151A

REVISION B

STEREO STRIP PHOTOGRAPHY  
REV 44

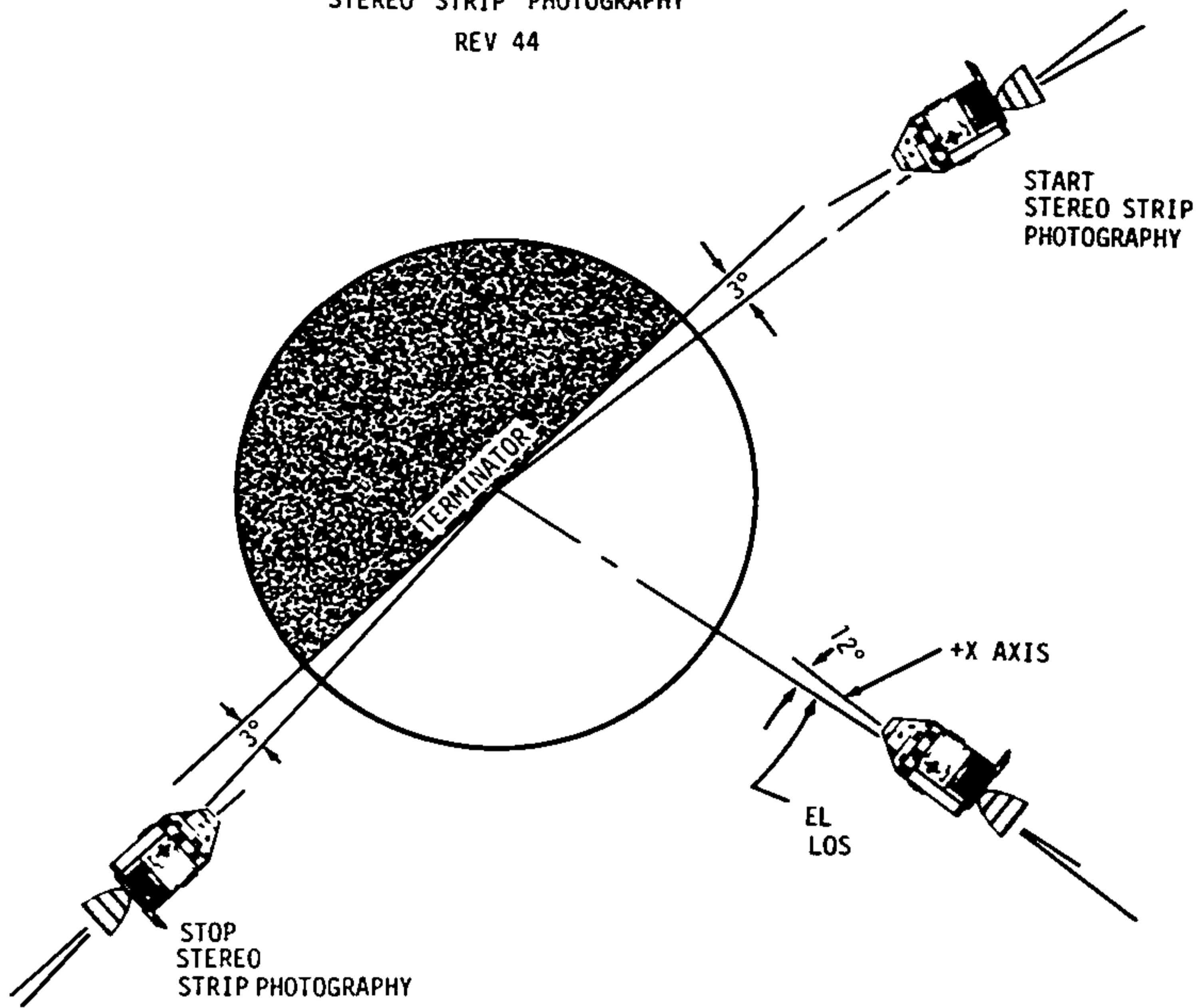


FIGURE 3-5  
3-152

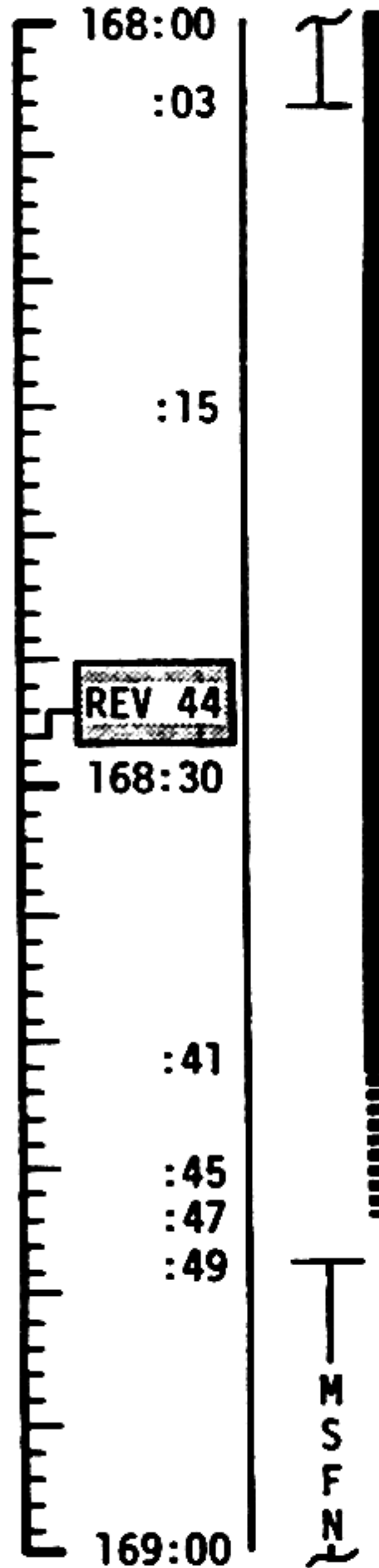
MCC-N

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

1022 CST

# FLIGHT PLAN

NOTES



VERIFY DSE MOTION AT LOS

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

MNVR TO PHOTOGRAPHIC ATTITUDE BY 168:36

R 0  
P 258/NA  
Y 0

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

SELECT OMNI D

VO6N65 AT GROUND TERMINATOR  
BEGIN PHOTOGRAPHY AT GROUND TERMINATOR (+) 1 MIN T1

RECORD START TIME \_\_\_\_\_:\_\_\_\_\_:\_\_\_\_\_ GET

|                  |     |
|------------------|-----|
| STEREO PHOTO     |     |
| T1: _____:_____: | GET |
| T2: _____:_____: | GET |

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

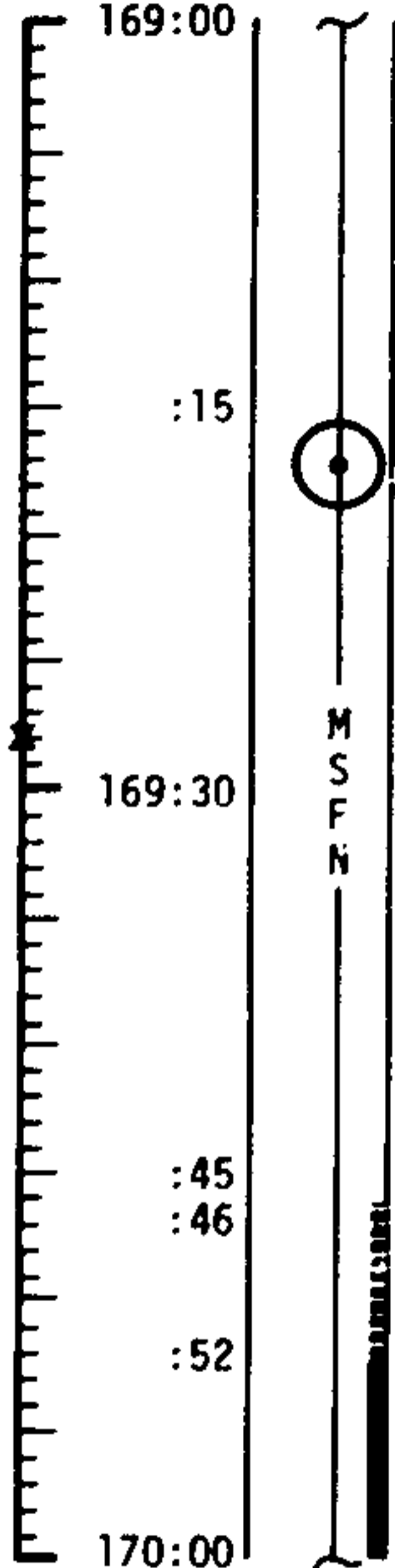
MCC-H

1122 CST

# FLIGHT PLAN

NOTES

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



STEREO STRIP  
PHOTOGRAPHY

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

RECORD STOP TIME \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ GET

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

DUMP DSE

UPLINK TO ~~CSM~~  
TEI DESIRED  
ORIENT

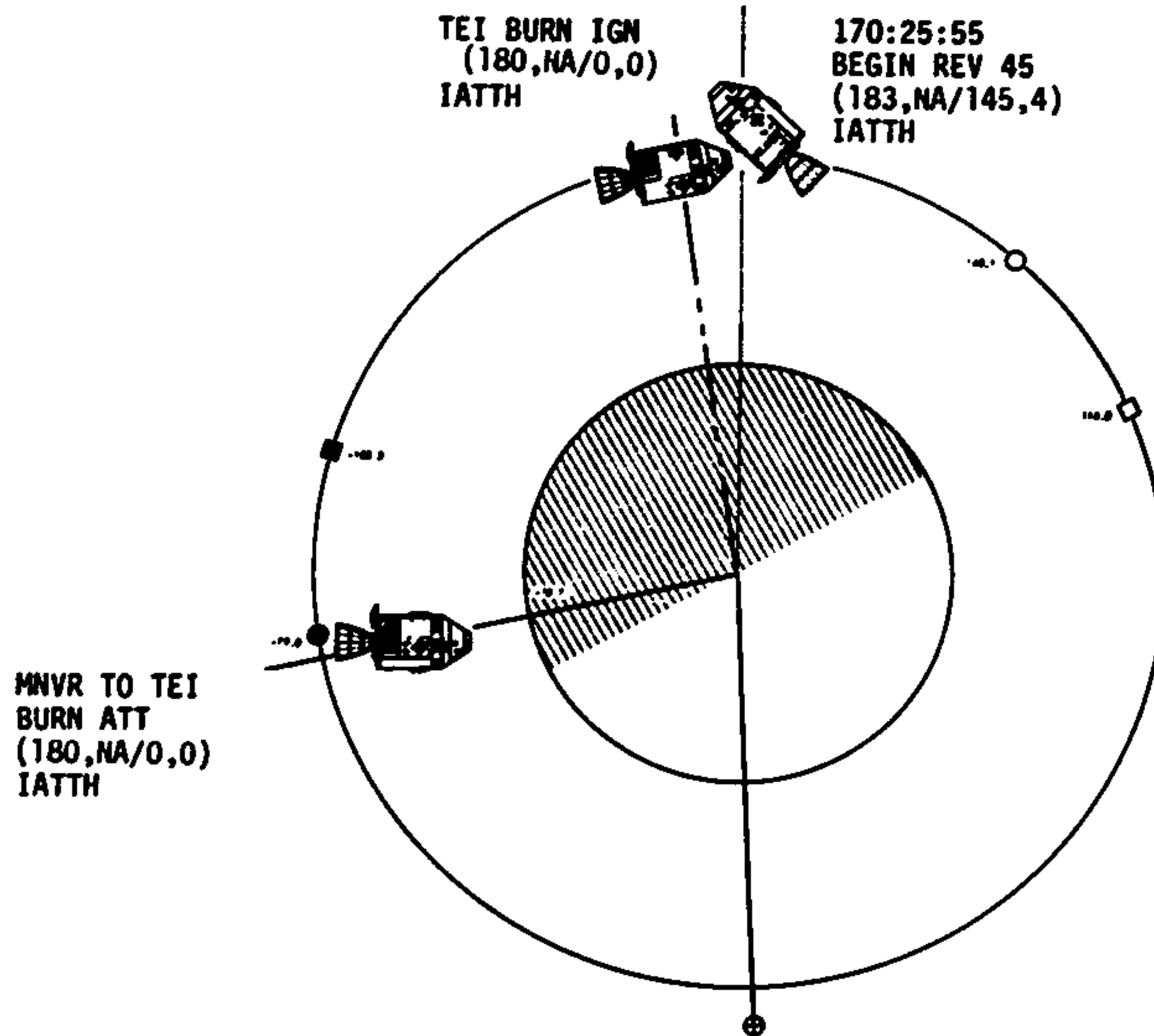
|                          |   |                       |
|--------------------------|---|-----------------------|
| MAP UPDATE REV <u>45</u> |   |                       |
| LOS                      | : | _____ : _____ : _____ |
| 180°                     | : | _____ : _____ : _____ |
| AOS          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

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

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# REV 45



### LEGEND:

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

3-154A

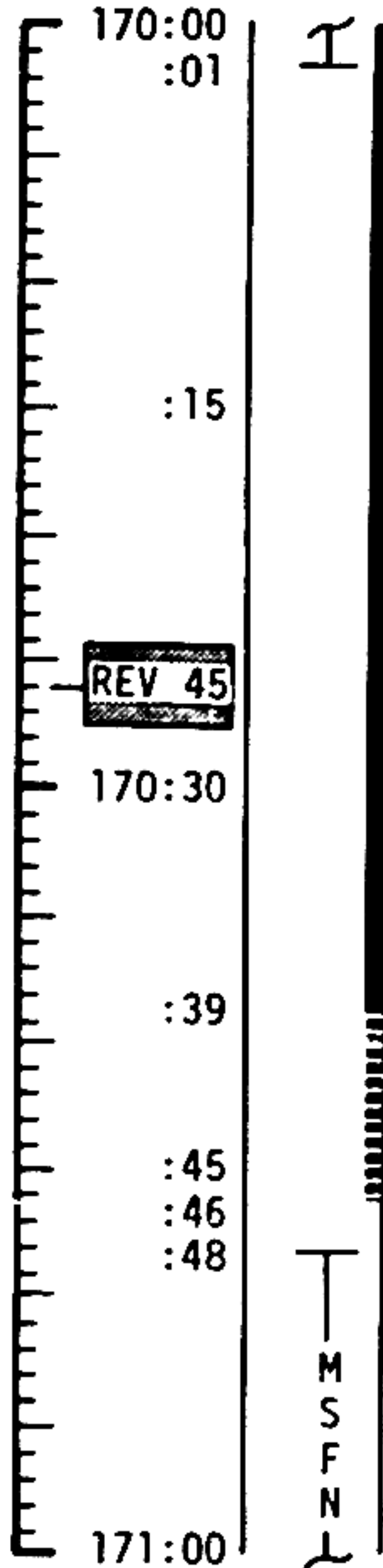
REVISION B

MCC-H

1222 CST

# FLIGHT PLAN

## NOTES



I

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN  
OPTION 1 PREFERRED

GDC ALIGN TO IMU

REV 45

170:30

:39

:45

:46

:48

171:00

M  
S  
F  
N  
L

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

|                  |                     |
|------------------|---------------------|
| P52 (TEI ORIENT) |                     |
| N71:             | __ __, __ __        |
| N05:             | __ __, __ __        |
| N93:             |                     |
| X                | __ __. __ __        |
| Y                | __ __. __ __        |
| Z                | __ __. __ __        |
| GET              | __ __: __ __: __ __ |

DUMP DSE

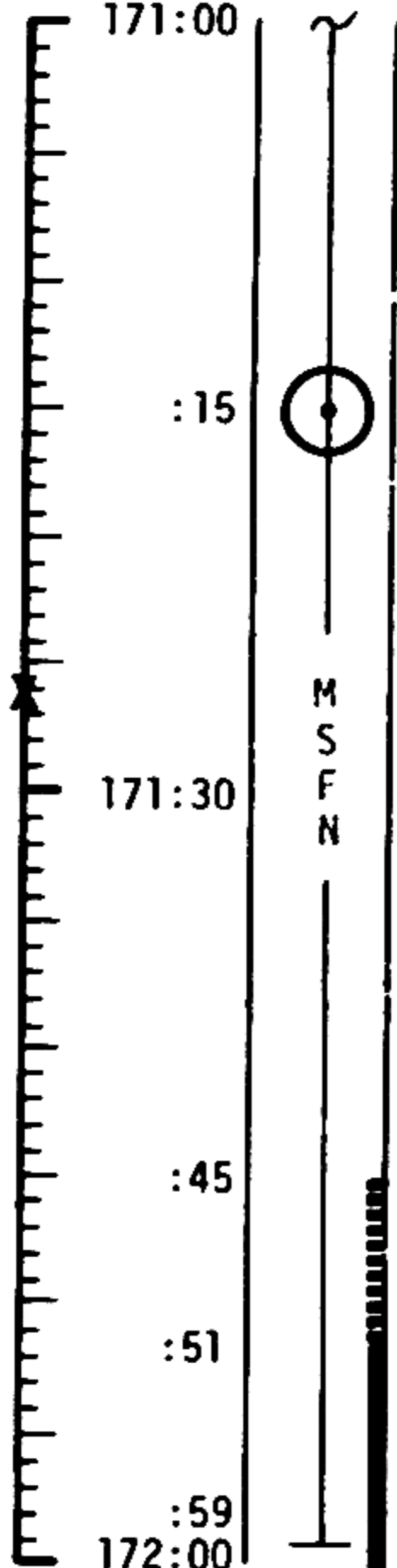
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 170:00 - 171:00 | 7/44-45 | 3-155 |

MCC-H

1322 CST

# FLIGHT PLAN

NOTES



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

UPLINK TO CSM  
 STATE VECTOR & V66  
 TEI 45 TARGET LOAD

M  
S  
F  
N

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

P30-EXTERNAL ΔV

V49-MNVR TO BURN ATT BY 171:51

R 180  
 P 0  
 Y 0

OMNI C

SXT STAR CHECK

P40-SPS THRUST  
 VERIFY DSE MOTION AT LOS

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

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

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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# FLIGHT PLAN

## TEI BURN TABLE

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

TABLE 3-11  
3-157

REVISION B

MCC-H

1422 CST

# FLIGHT PLAN

NOTES

172:00

:03

:15

172:30

:34

173:00

GDC ALIGN TO IMU

**TEI**

V66 TRANSFER CSM SV TO LM SLOT

|                |                |
|----------------|----------------|
| TIG:           | 172:21:14.7    |
| BT:            | 02:08.9 SEC    |
| $\Delta V_R$ : | 3035.9 FPS     |
| ULLAGE:        | 4 JETS, 12 SEC |

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

|   |            |              |
|---|------------|--------------|
| R | <u>187</u> | HGA          |
| P | <u>200</u> | P <u>-71</u> |
| P | <u>4</u>   | Y <u>TT</u>  |

UPLINK TO CSM  
DESIRED ORIENT  
(PTC)

M  
S  
F  
N

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

$\Delta$ TIG \*\*  
 BT \*\*  
 $V_{gx}$   
 R  
 P  
 Y  
 $V_{gx}$  \*\*\*  
 $V_{gy}$  \*\*\*  
 $V_{gz}$  \*\*\*  
 $\Delta V_c$  \*  
 FUEL \*  
 OX \*  
 UNBAL

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

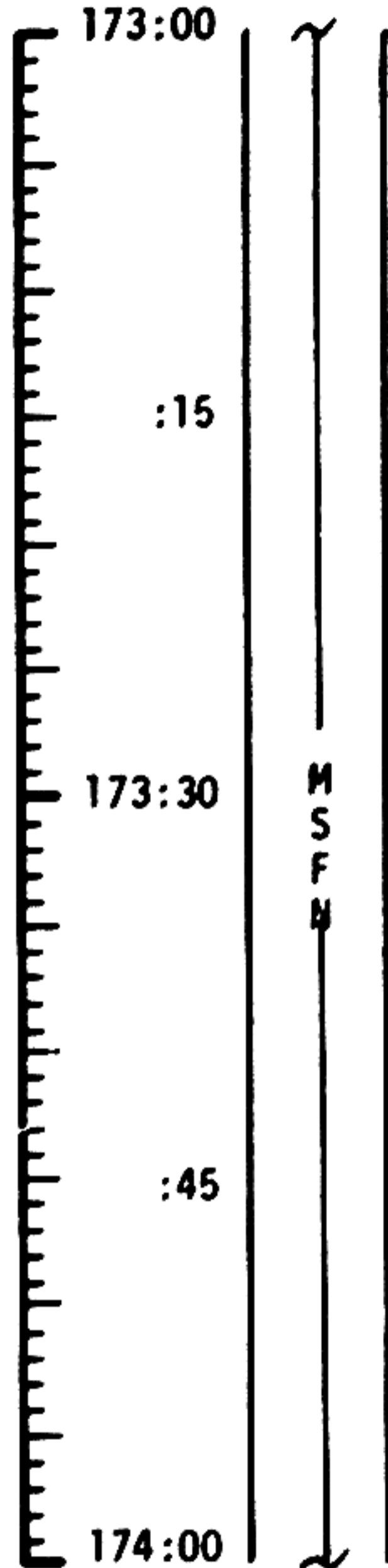
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV  | PAGE  |
|-----------|----------------|------------------|-----------------|----------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 172:00 - 173:00 | 7/45-TEC | 3-158 |

MCC-M

1522 CST

# FLIGHT PLAN

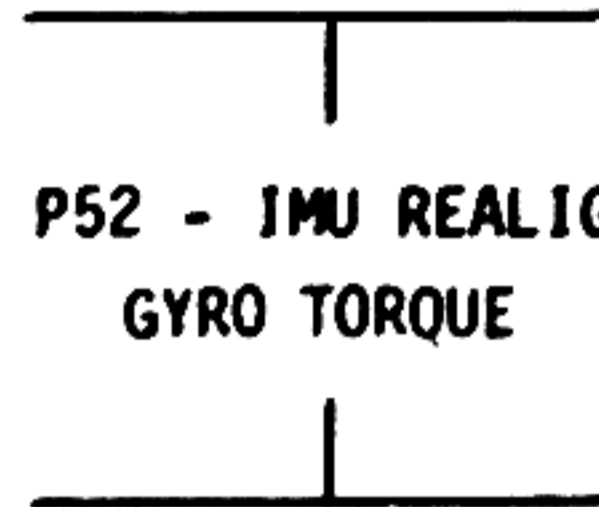
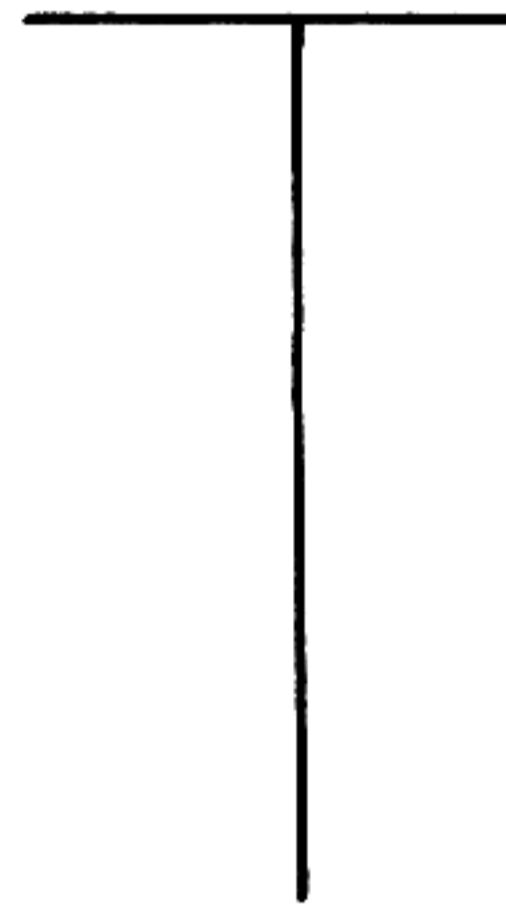
NOTES



WIPE EXCESSIVE MOISTURE FROM  
TUNNEL HATCH AREA  
CONTAMINATION CONTROL

DUMP DSE

:15



P52 - IMU REALIGN  
GYRO TORQUE

REPORT GYRO TORQUING ANGLES

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

173:30

M  
S  
F  
M

MNVR TO PTC ATTITUDE  
START PTC

P270  
Y 0

EAT PERIOD

:45

PTC  
P 270 Y 0

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

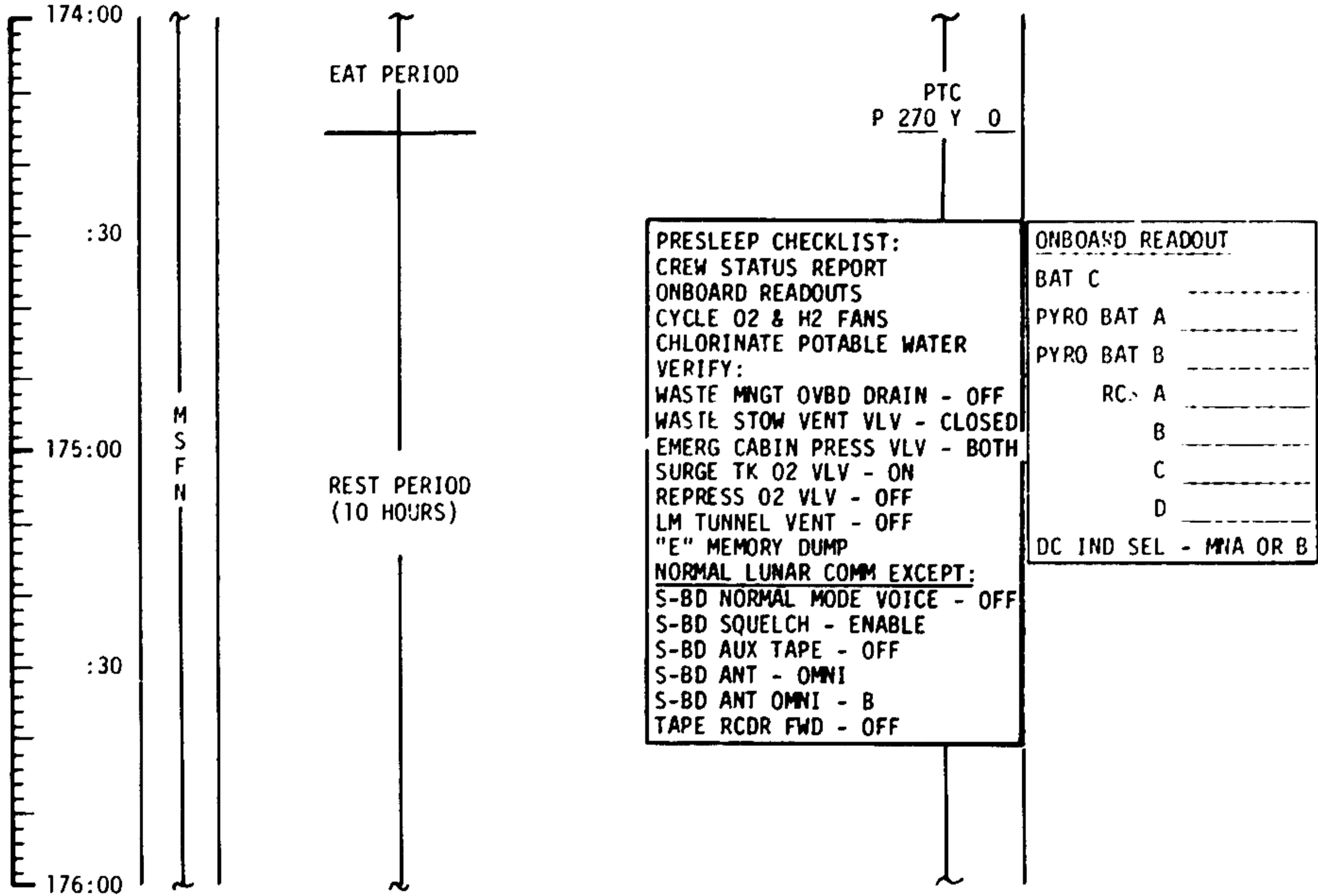
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 173:00 - 174:00 | 7/TEC   | 3-159 |

MCC-H

1622 CST

# FLIGHT PLAN

NOTES



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

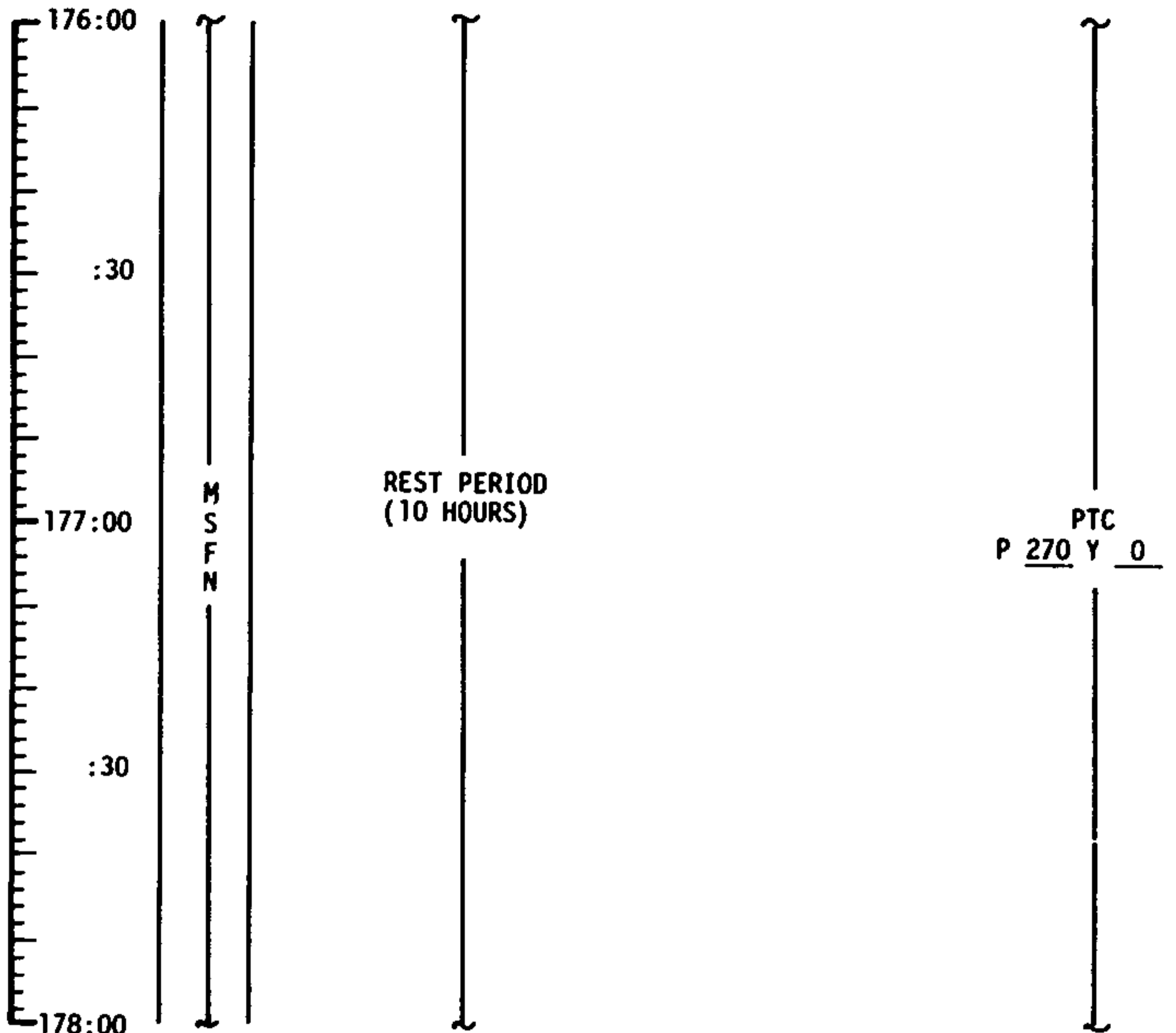


MCC-M

1822 CST

# FLIGHT PLAN

NOTES



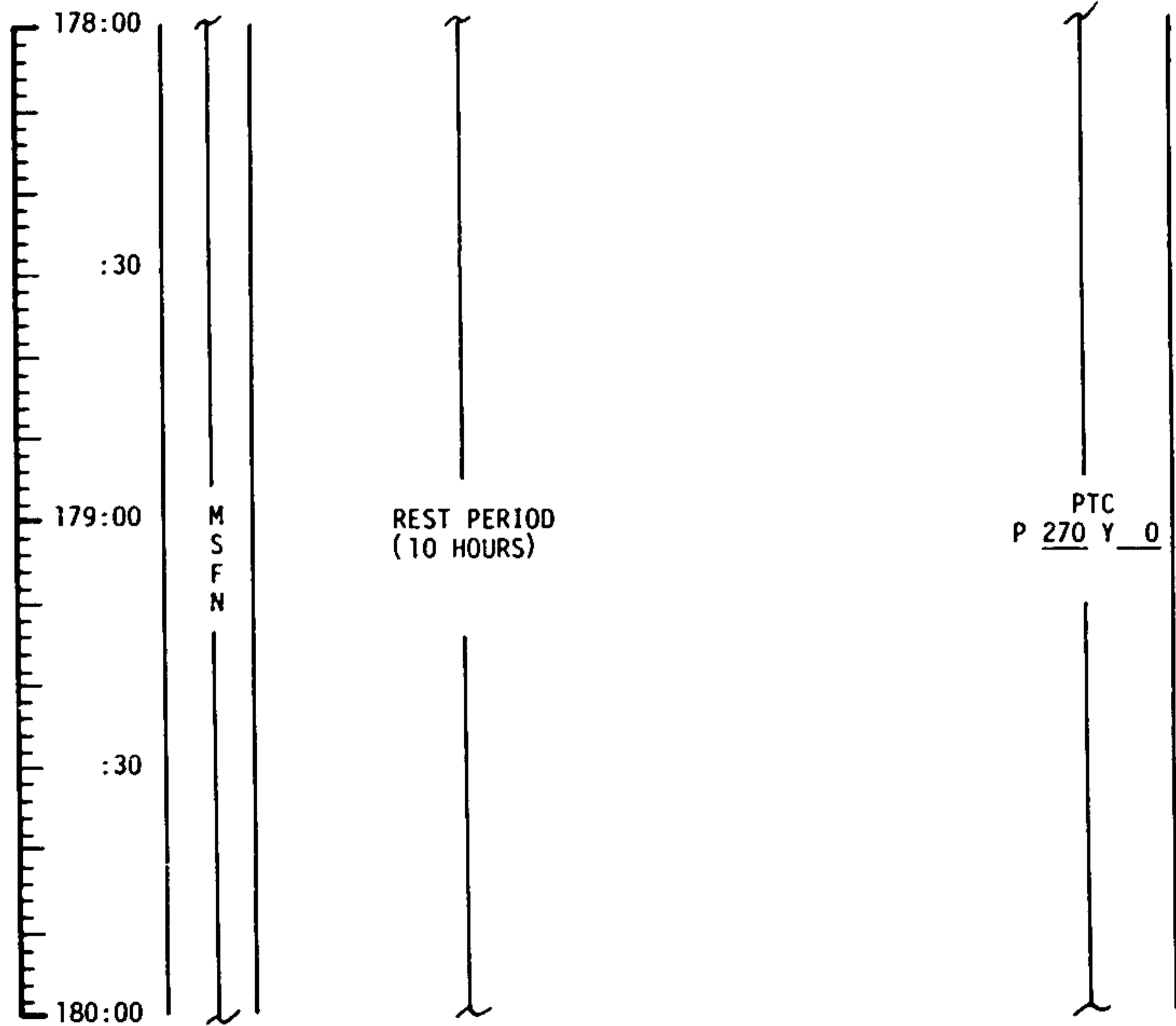
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 176:00 - 178:00 | 7/TEC   | 3-161 |

MCC-H

2022 CST

# FLIGHT PLAN

NOTES



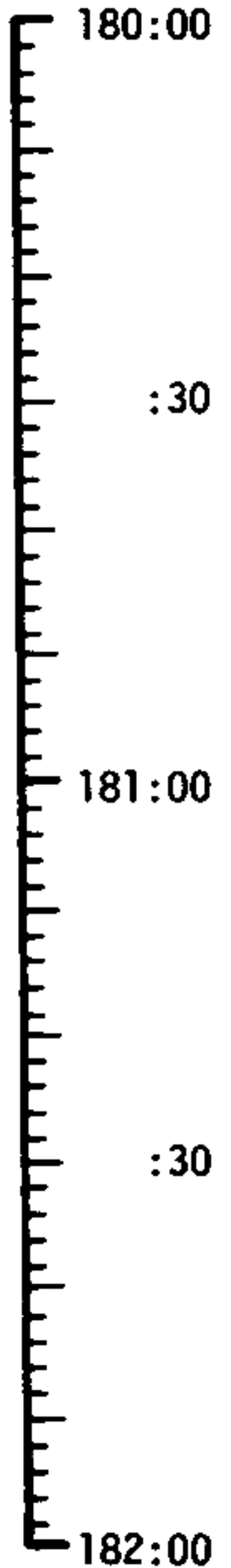
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 178:00 - 180:00 | 7/TEC   | 3-162 |

MCC-H

2222 CST

# FLIGHT PLAN

NOTES



M  
S  
F  
N

REST PERIOD  
(10 HOURS)

PTC  
P 270, Y 0

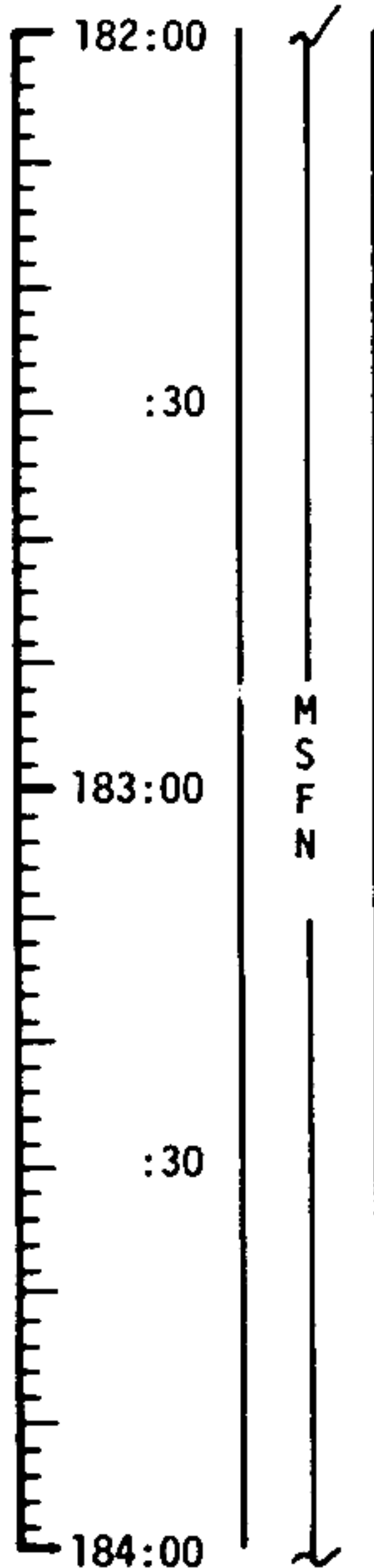
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 180:00 - 182:00 | 7/TEC   | 3-163 |

MCC-H

0022 CST

# FLIGHT PLAN

NOTES



REST PERIOD  
(10 HOURS)

PTC  
P 270, Y 0

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

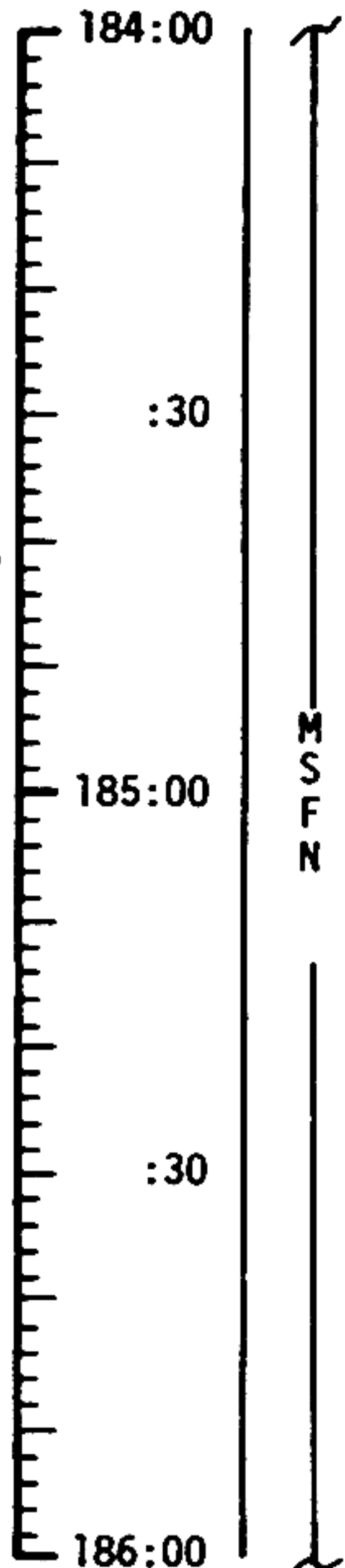
MCC-H

0222 CST

# FLIGHT PLAN

## NOTES

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



M  
S  
F  
N

EAT PERIOD

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

WIPE EXCESSIVE MOISTURE FROM  
TUNNEL HATCH AREA

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

**CONTINUE PTC IF MCC-5 IS NOT PERFORMED**

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

PTC  
270, Y 0

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

| CSM CONSUMABLES UPDATE |         |   |           |
|------------------------|---------|---|-----------|
| GET:                   | _____   | : | _____     |
| RCS TOTAL              | _____   | % |           |
| QUAD A                 | _____   | % | B _____ % |
|                        | C _____ | % | D _____ % |
| H <sub>2</sub> TOTAL   | _____   | % |           |
| O <sub>2</sub> TOTAL   | _____   | % |           |

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

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

Flight Med. not like this

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# FLIGHT PLAN

## MCC-5 BURN TABLE

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

TABLE 3-12  
3-106

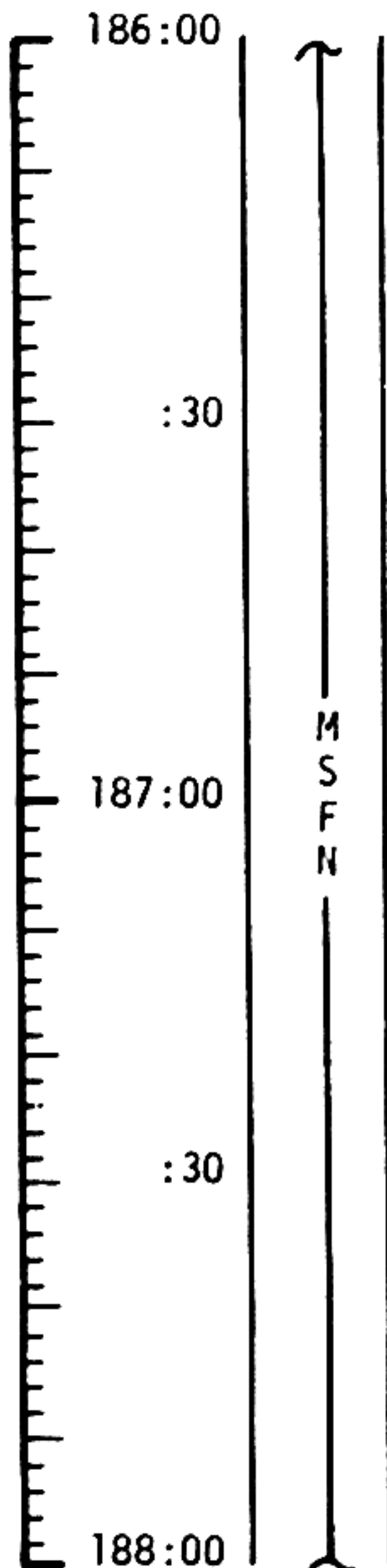
MCC-H

0422 CST

# FLIGHT PLAN

NOTES

BATTERY CHARGE, BATTERY B



H<sub>2</sub> PURGE LINE HTRS - ON  
 P30 - EXTERNAL ΔV  
 V49 - MNVR TO BURN ATT  
 SXT STAR CHECK  
 H2 & O2 FUEL CELL PURGE  
 WASTE WATER DUMP  
 P40/41 - SPS/RCS THRUST  
 GDC ALIGN TO IMU

**MCC-5**

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

TIG: 187:21:14.7  
 ΔV: NOMINALLY ZERO

| BURN STATUS REPORT       |   |                          |   |                   |
|--------------------------|---|--------------------------|---|-------------------|
| X                        | X | <input type="checkbox"/> | • | ΔTIG              |
| X                        | X |                          | • | BT                |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| TRIM                     |   |                          |   |                   |
| X                        | X | X                        |   | R                 |
| X                        | X | X                        |   | F                 |
| X                        | X | X                        |   | Y                 |
| <input type="checkbox"/> |   |                          | • | V <sub>gx</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gy</sub>   |
| <input type="checkbox"/> |   |                          | • | V <sub>gz</sub>   |
| <input type="checkbox"/> |   |                          | • | ΔV <sub>c</sub> * |
| X                        | X | X                        |   | FUEL *            |
| X                        | X | X                        |   | OX *              |
| X                        | X | X                        |   | UNBAL             |

\* ITEMS TO BE REPORTED TO MSFN

PTC  
 P 270, Y 0

(TEI + 15 HRS)

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

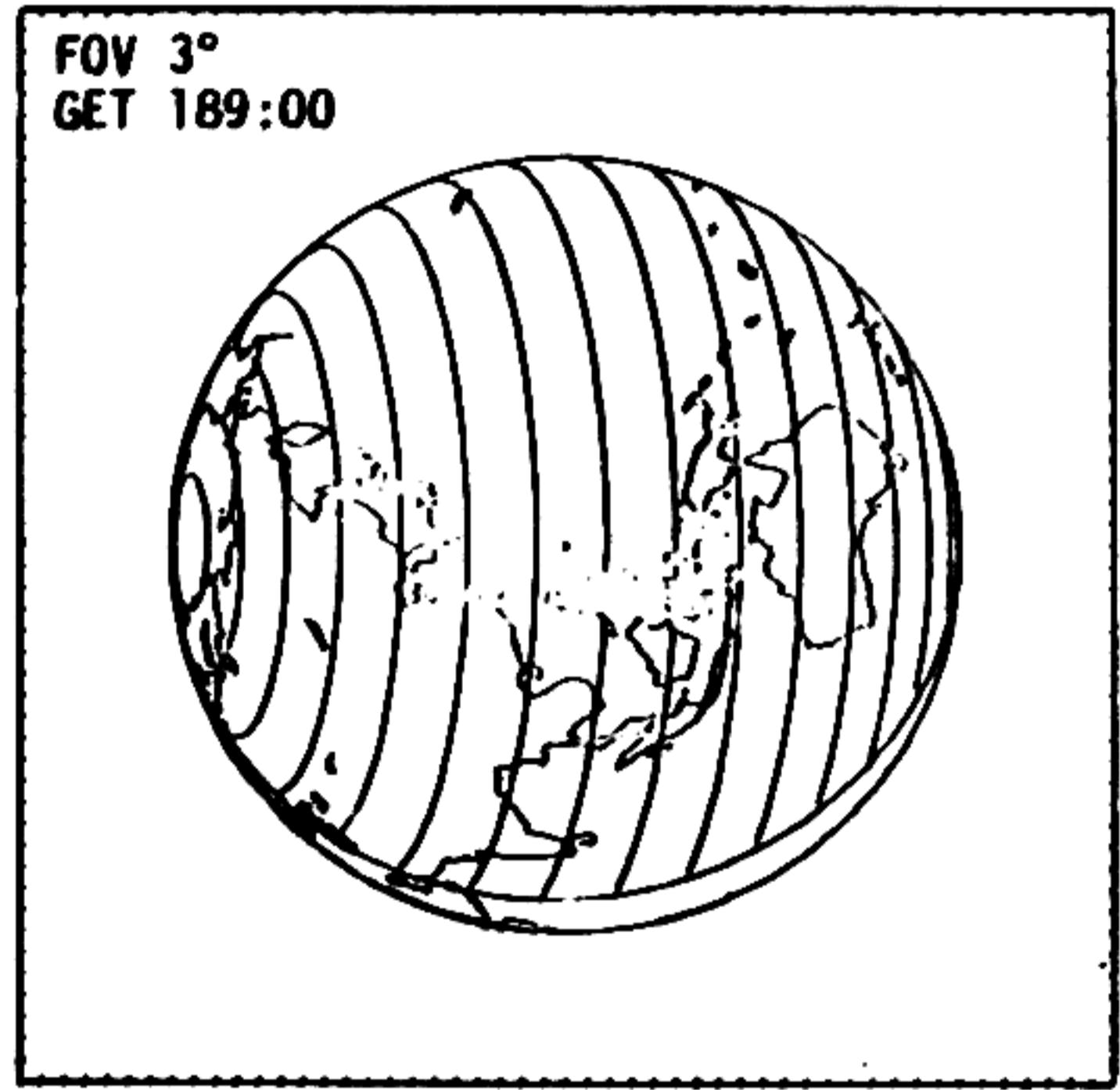
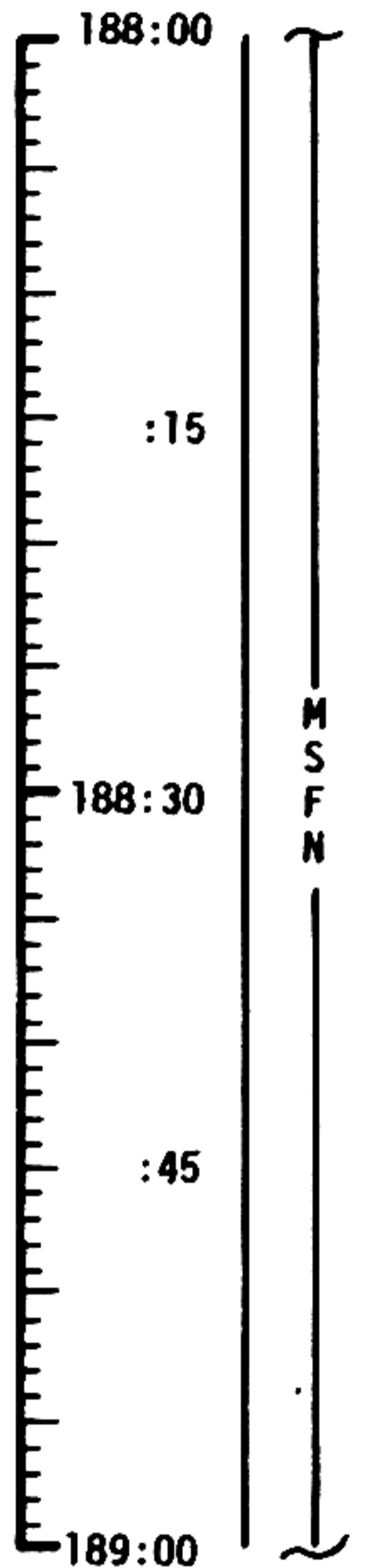


MCC-N

0622 CST

# FLIGHT PLAN

NOTES



PTC  
P 270, Y 0

STOP PTC AT ROLL 235°

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

MCC-N

0722 CST

# FLIGHT PLAN

NOTES

189:00

:15

189:30

:45

190:00

M  
S  
F  
N

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

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

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

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

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

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

3 MARKS ON EACH STAR

INCORPORATE P23  
MARK DATA AND  
UPDATE ONBOARD  
STATE VECTOR

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

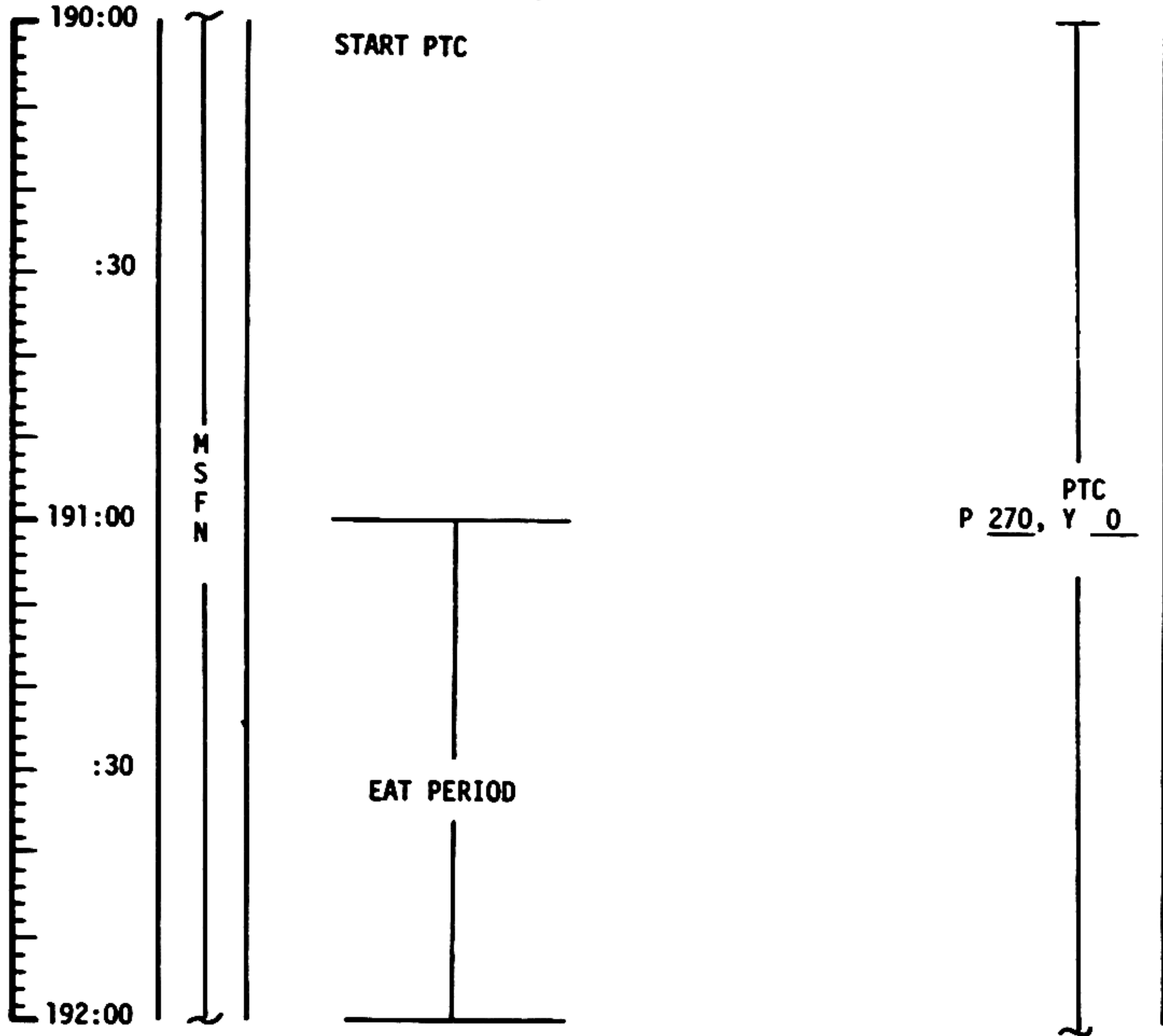
MCC-N

0822 CST

# FLIGHT PLAN

NOTES

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

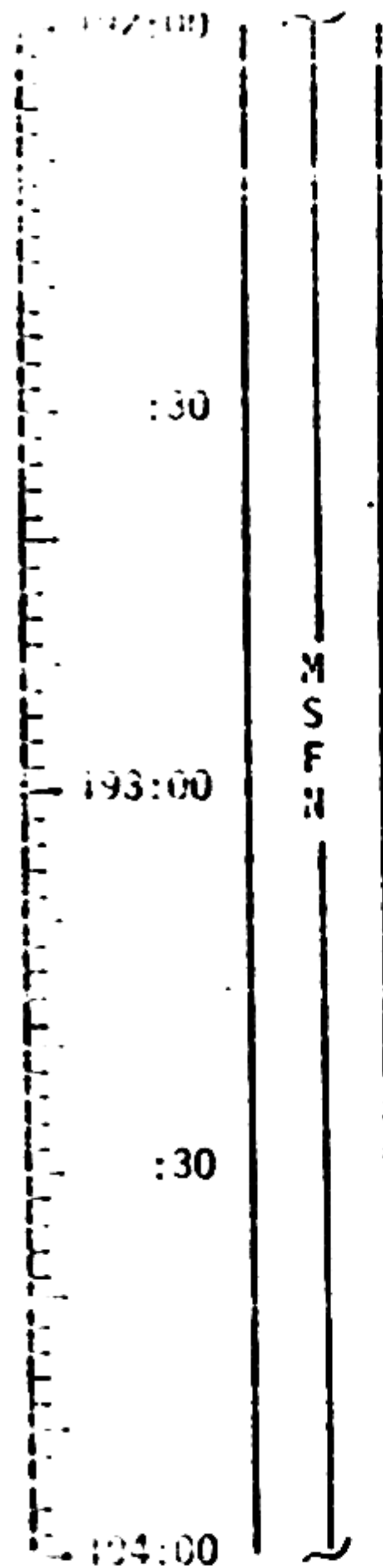


| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 190:00 - 192:00 | 8/TEC   | 3-170 |

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

# FLIGHT PLAN



PTC  
P 270, 1 0

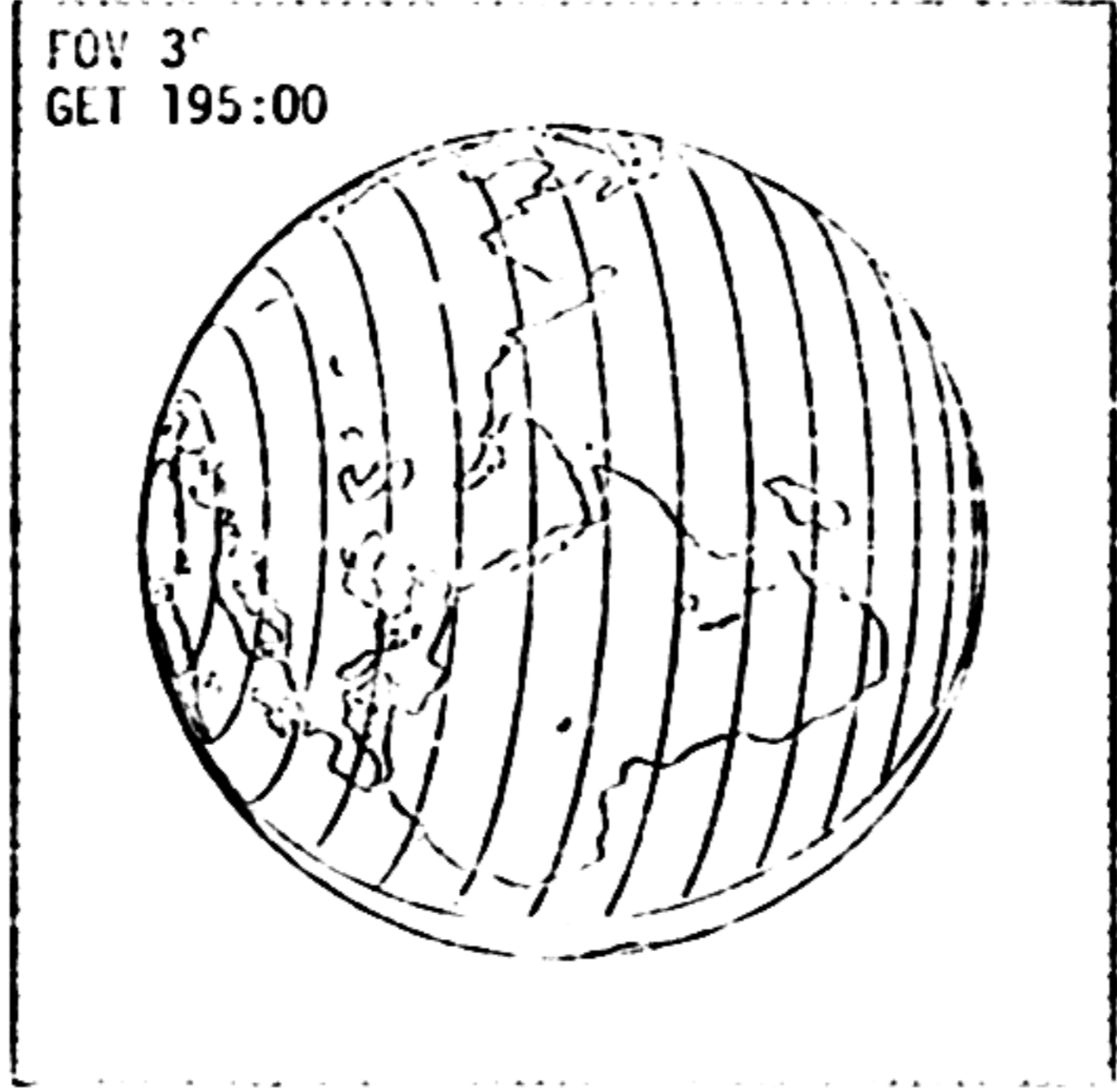
BATTERY CHARGE, BATTERY A

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

# FLIGHT PLAN

191:00  
:15  
194:30  
:45  
197:00

M  
S  
T  
R



PTC  
P 270, Y 0

STG 100 TO PPL 200

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

12-22-51 (100)

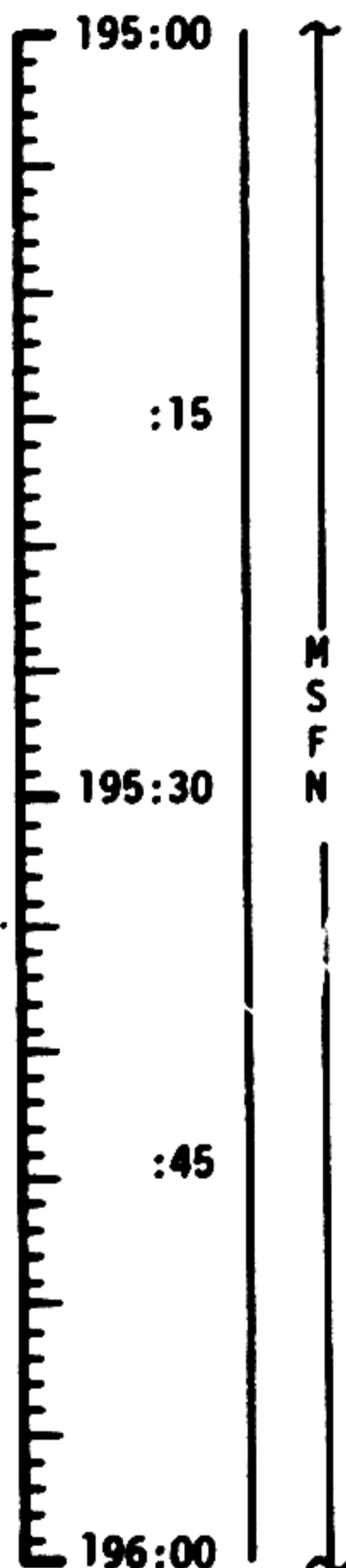
FLIGHT PLANNING DIVISION

MCC-M

1322 CST

# FLIGHT PLAN

NOTES



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

R 235  
 P 272  
 Y 0

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

R 90  
 P 329  
 Y 332

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

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

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

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

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

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

3 MARKS ON EACH STAR

INCORPORATE P23  
MARK DATA AND  
UPDATE ONBAORD  
STATE VECTOR

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

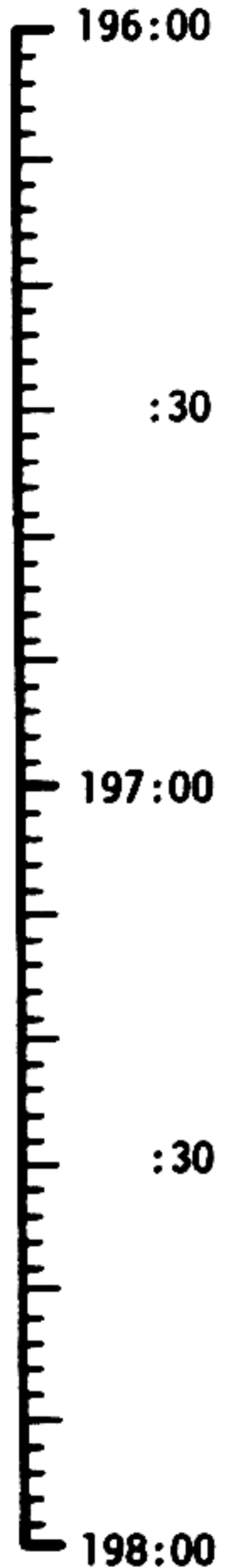
MCC-H

1422 CST

# FLIGHT PLAN

NOTES

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



M  
S  
F  
N

START PTC

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

PTC  
P 270, Y 0

EAT PERIOD

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

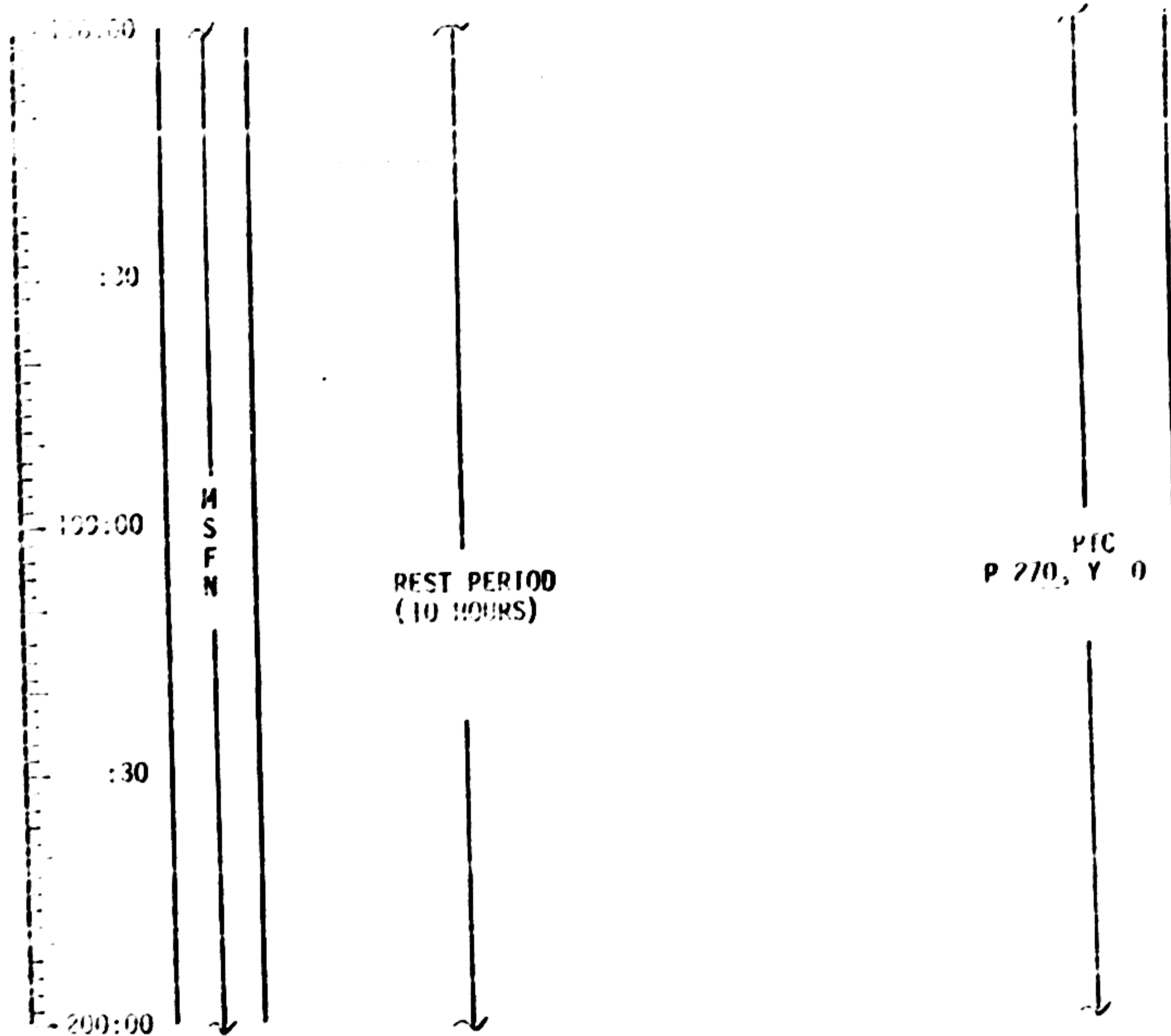
| ONBOARD READOUT       |       |
|-----------------------|-------|
| BAT C                 | _____ |
| PYRO BAT A            | _____ |
| PYRO BAT B            | _____ |
| RCS A                 | _____ |
| B                     | _____ |
| C                     | _____ |
| D                     | _____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

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

1822 CST

# FLIGHT PLAN

NOTES



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



MCC-11

1627 CST

# FLIGHT PLAN

NOTES

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

M  
S  
F  
H

REST PERIOD  
(10 HOURS)

PIC  
P 270, Y 0

| MISSION | EDITION       | DATE             | TIME            | DAY/REV | PAGE |
|---------|---------------|------------------|-----------------|---------|------|
| MCC-11  | 1627 (NOV 14) | OCTOBER 15, 1969 | 200:00 - 202:00 | 8/TEC   | 3/1  |

1627 (NOV 14)

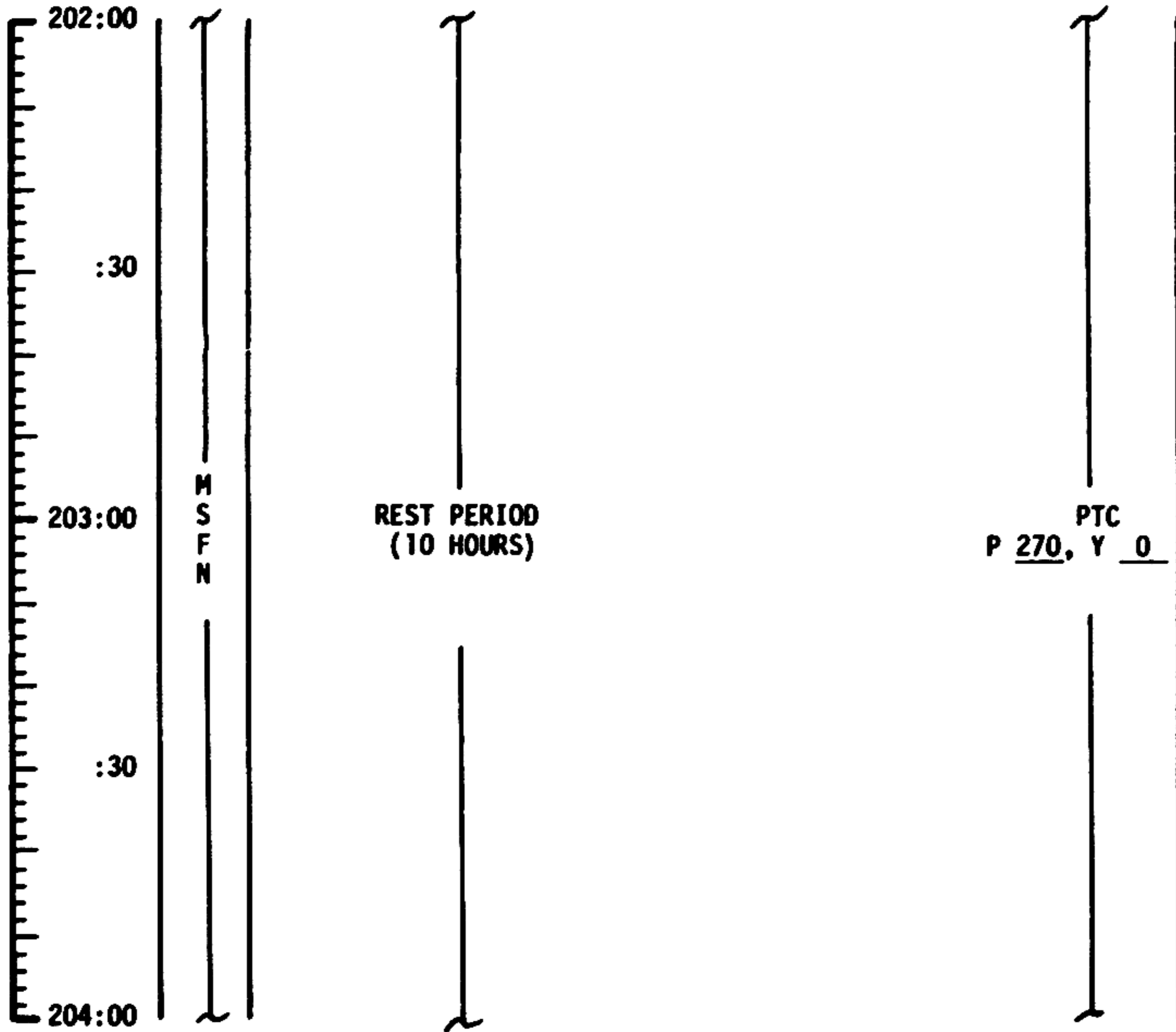
FLIGHT PLANNING BRANCH

MCC-N

2022 CST

# FLIGHT PLAN

NOTES



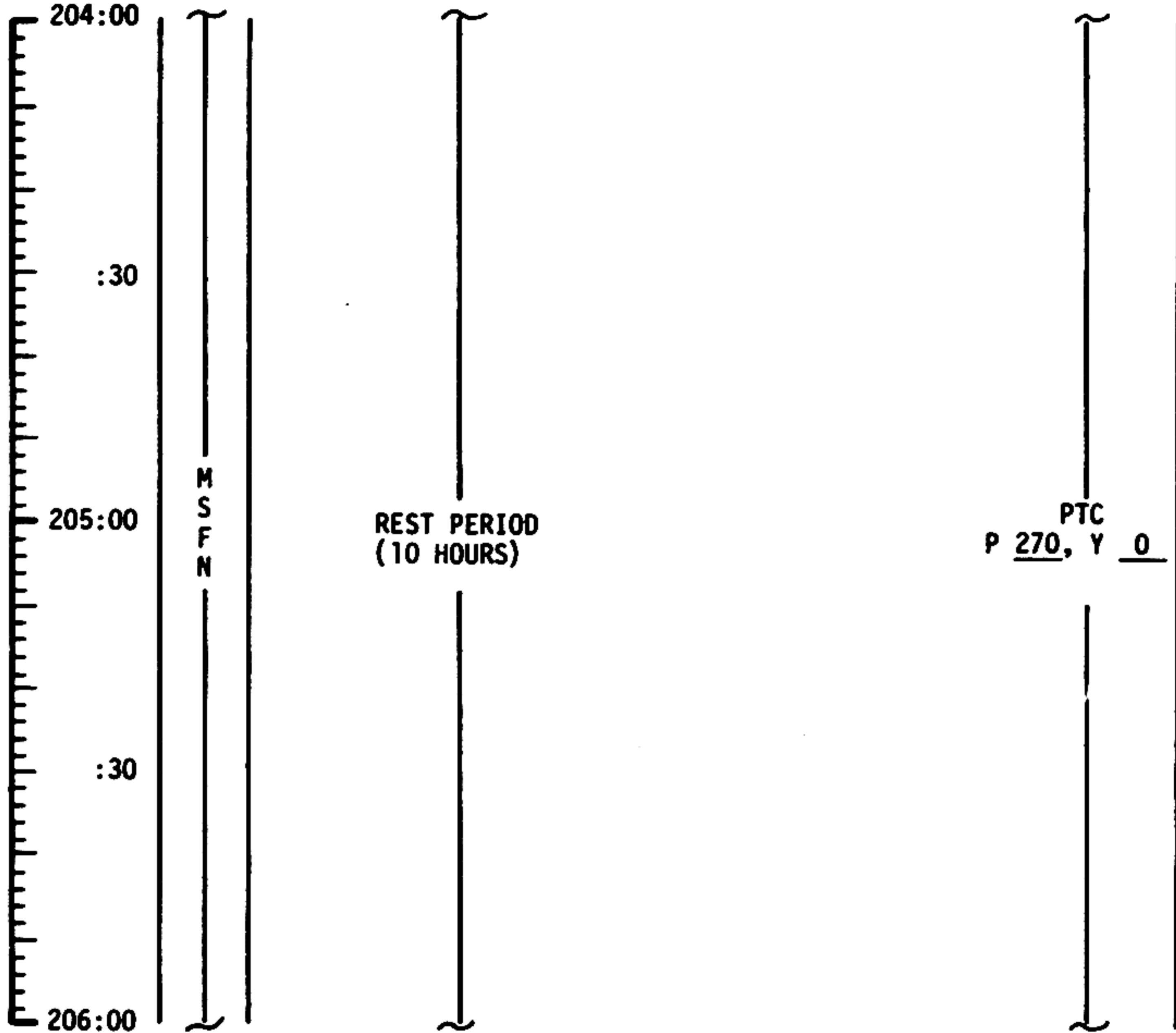
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 202:00 - 204:00 | 8/TEC   | 3-177 |

MCC-N

2222 CST

# FLIGHT PLAN

NOTES



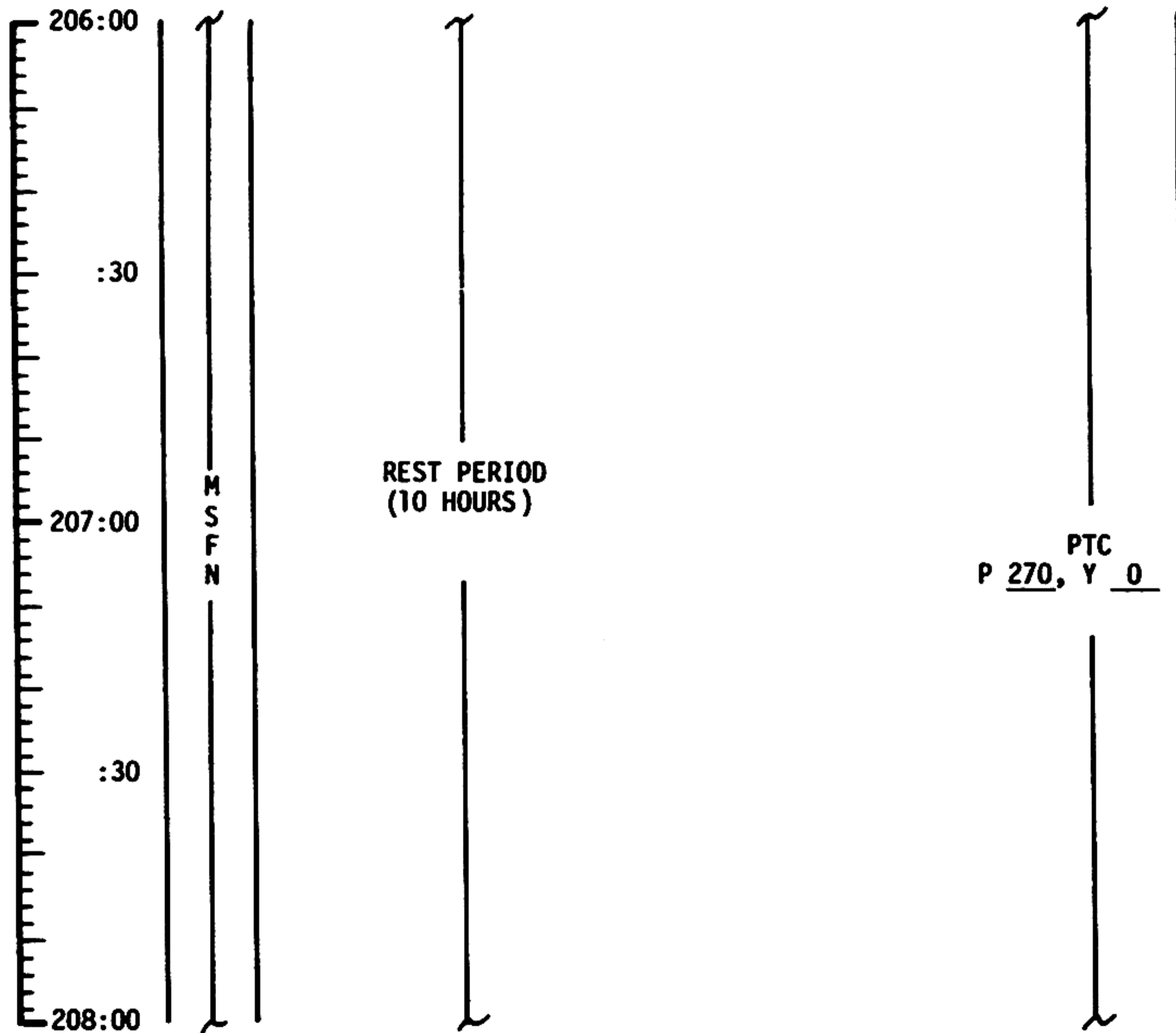
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 204:00 - 206:00 | 8/TEC   | 3-178 |

MCC-N

0022 CST

# FLIGHT PLAN

NOTES



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

MCC-N

0222 CST

# FLIGHT PLAN

NOTES

UPDATE TO CSM  
CONSUMABLES  
FLIGHT PLAN

UPLINK TO CSM  
STATE VECTOR & V66

208:00

:30

209:00

:30

210:00

M  
S  
F  
N

O<sub>2</sub> FUEL CELL PURGE  
WASTE WATER DUMP  
LiOH CANISTER CHANGE NO 16  
(18 INTO B, STOW 16 IN A4)

EAT PERIOD

EMS ENTRY CHECK

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

PTC  
P 270, Y 0

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

| CSM CONSUMABLES UPDATE |         |   |           |
|------------------------|---------|---|-----------|
| GET:                   | _____   | : | _____     |
| RCS TOTAL              | _____   | % |           |
| QUAD A                 | _____   | % | B _____ % |
|                        | C _____ | % | D _____ % |
| H <sub>2</sub> TOTAL   | _____   | % |           |
| O <sub>2</sub> TOTAL   | _____   | % |           |

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

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

**G.E.T.**

**REMARKS**

**FLIGHT PLAN**

**DATE 10/5/69**

**LIGHT FLASH  
& RADIO LOG**

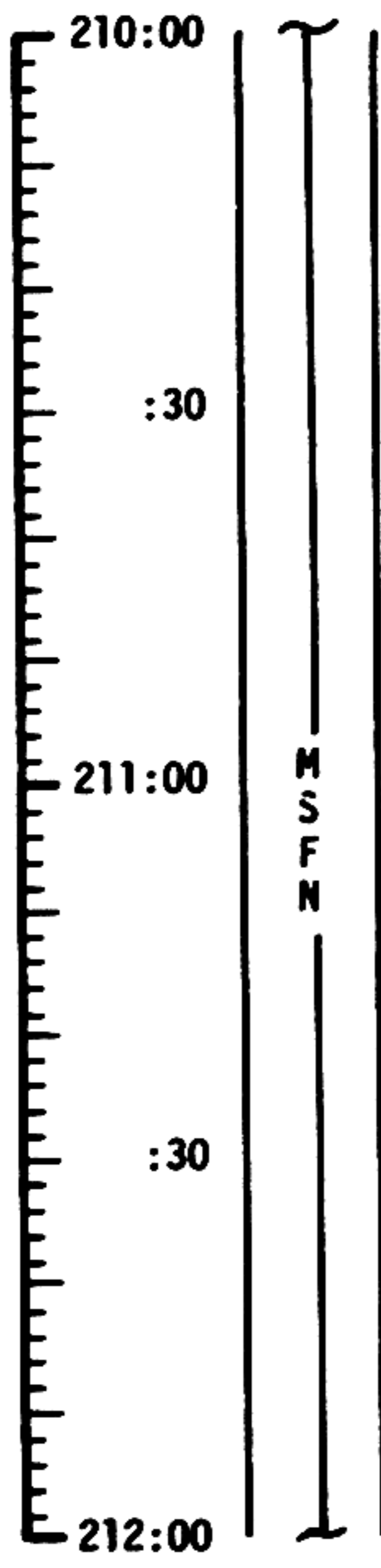


MCC-N

0422 CST

# FLIGHT PLAN

## NOTES



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

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

PTC  
 P 270, Y 0

M  
S  
F  
N

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

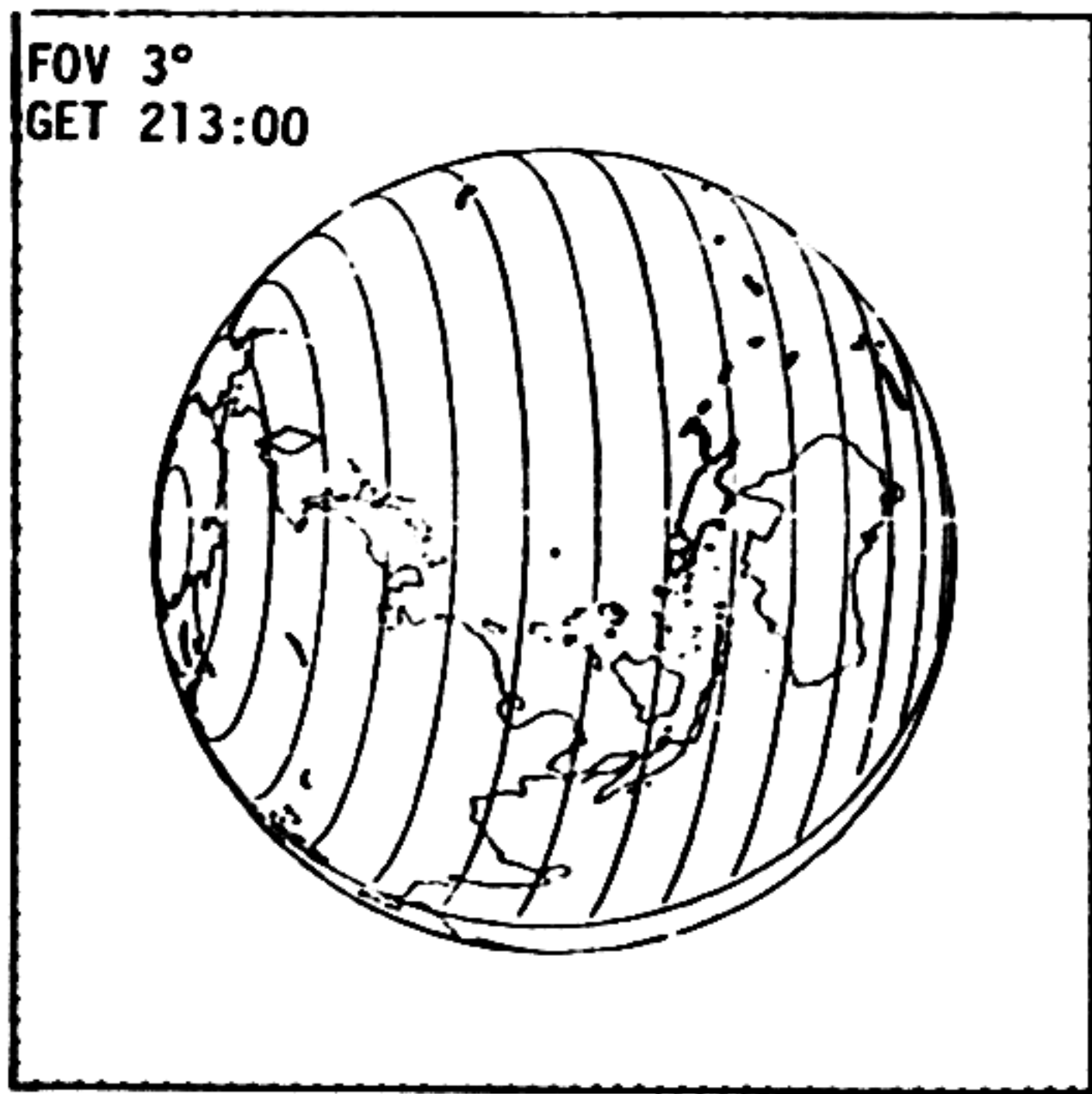
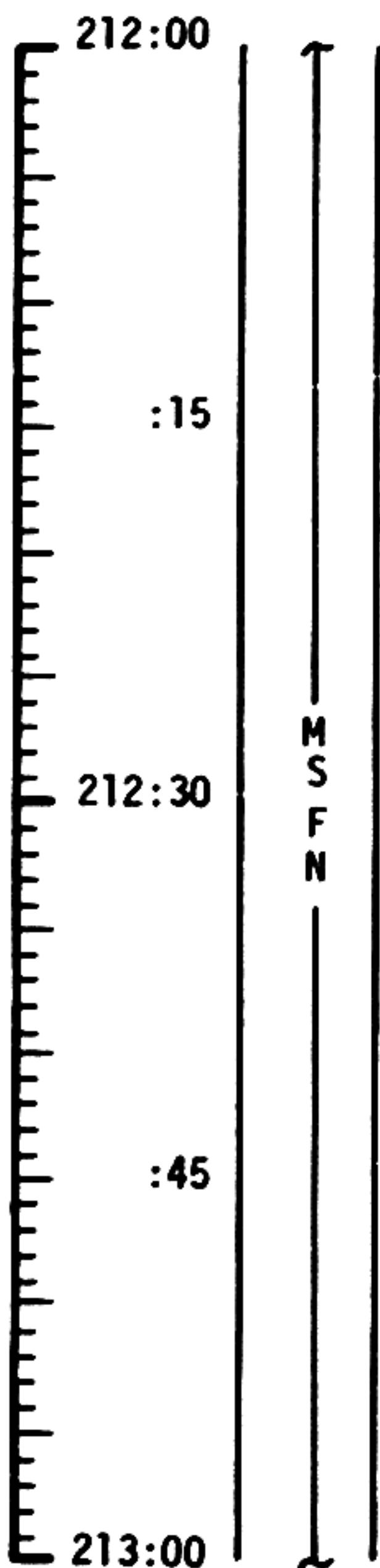


MCC-H

0622 CST

# FLIGHT PLAN

NOTES



PTC  
P 270, Y 0

STOP PTC AT ROLL 235°

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

MCC-H

0722

# FLIGHT PLAN

NOTES

213:00

:15

213:30

:45

214:00

M  
S  
F  
N

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

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

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

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

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

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

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

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

3 MARKS ON EACH STAR

INCORPORATE P23  
MARK DATA AND  
UPDATE ONBOARD  
STATE VECTOR

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

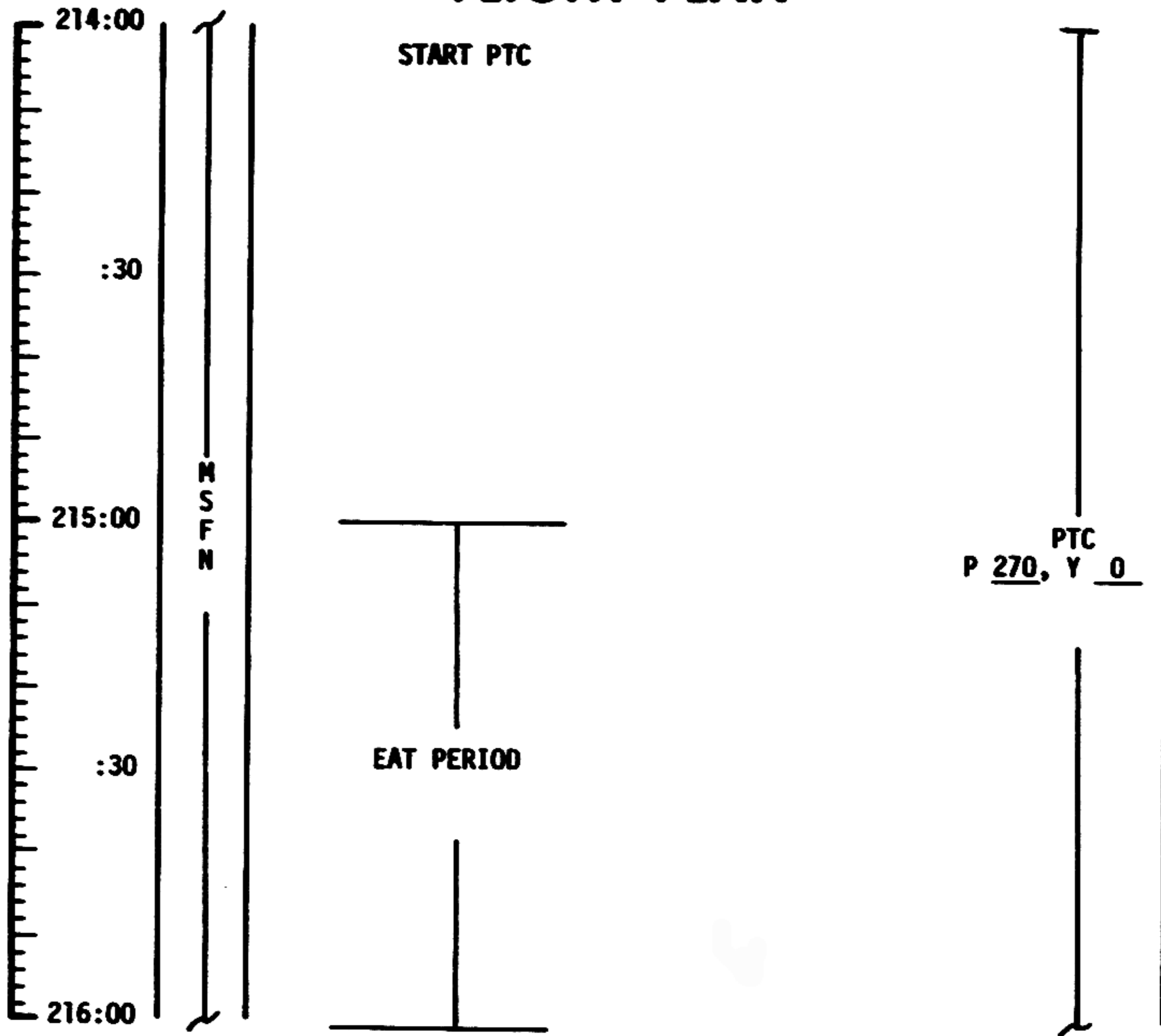
MCC-11

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

0822 CST

# FLIGHT PLAN

NOTES



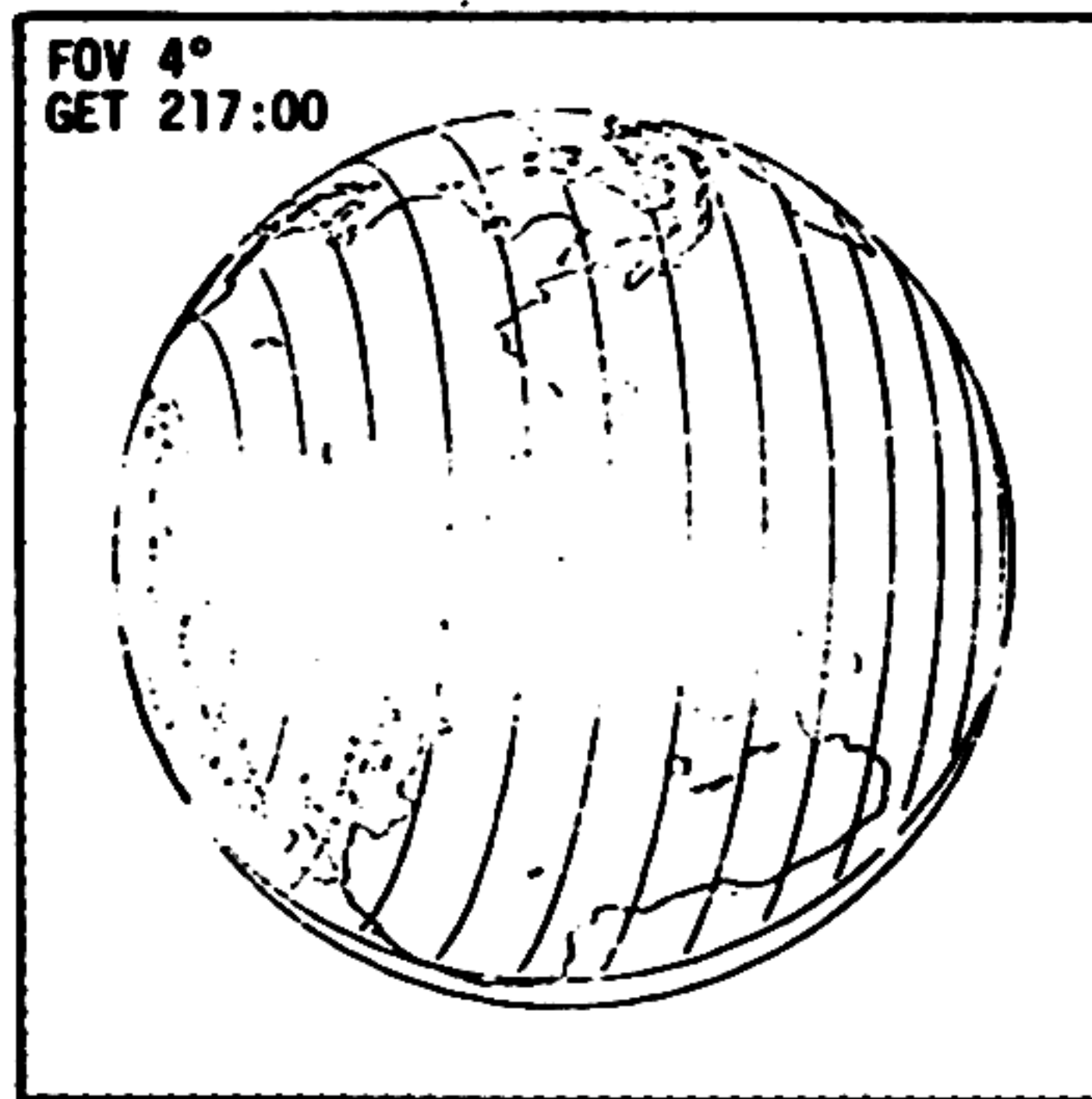
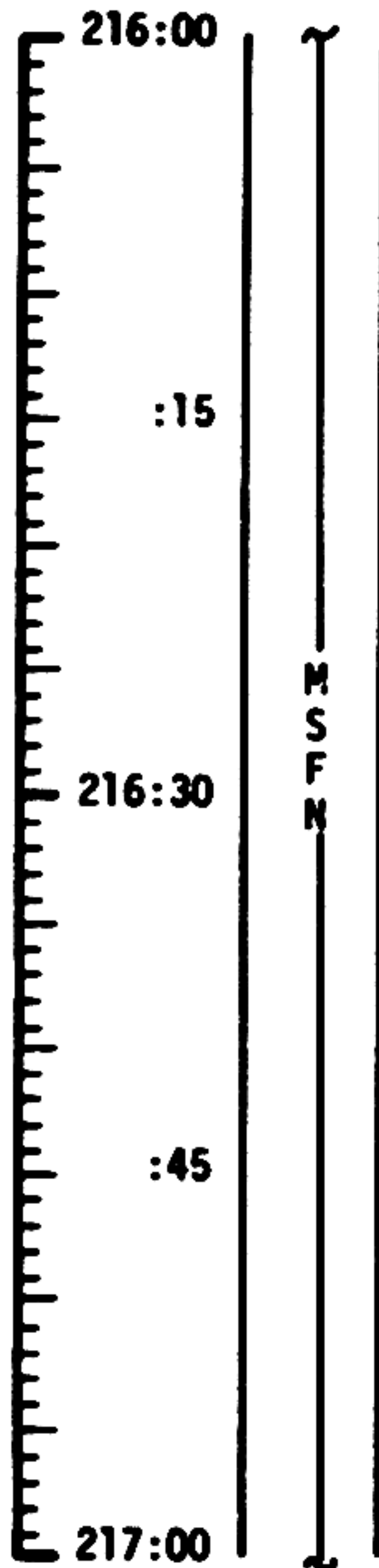
| MISSION   | EDITION         | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|-----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (MOV. 14) | OCTOBER 15, 1969 | 214:00 - 216:00 | 9/TEC   | 3-184 |

MCC-11

1022 CST

# FLIGHT PLAN

NOTES



P 270, Y 0 PTC

STOP PTC AT ROLL 235°

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

MCC-H

1122 CST

# FLIGHT PLAN

NOTES

217:00

:15

217:30

:45

218:00

M  
S  
F  
N

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

R 235  
 P 272  
 Y 0

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

R 90  
 P ~~135~~ 180  
 Y ~~329~~ 328

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

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

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

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

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

DO NOT PROCEED ON F 06 49

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

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

3 MARKS ON EACH STAR

INCORPORATE P23  
MARK DATA AND  
UPDATE ONBOARD  
STATE VECTOR

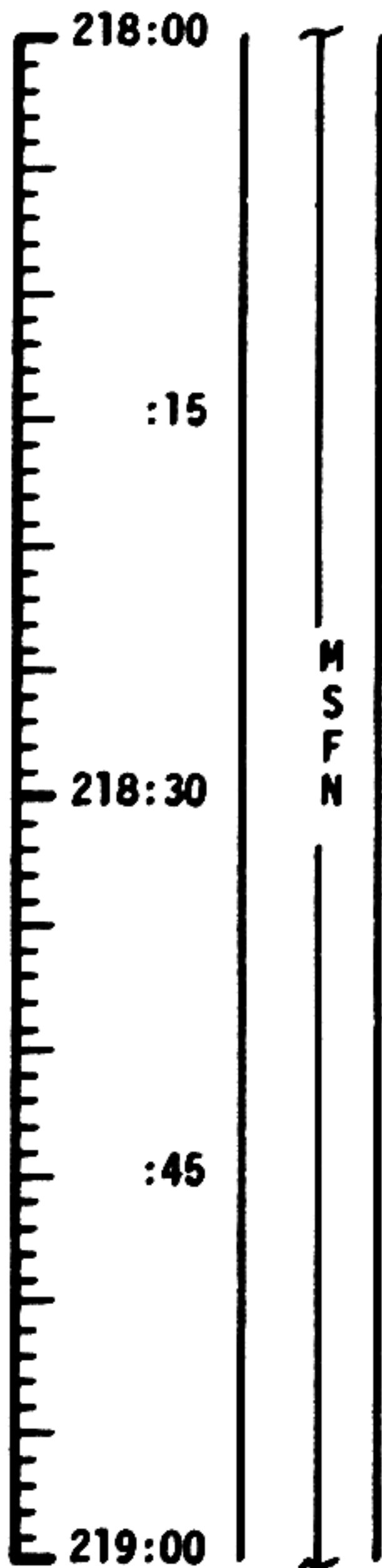
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 217:00 - 218:00 | 9/TEC   | 3-186 |

MCC-N

1222 CST

# FLIGHT PLAN

NOTES



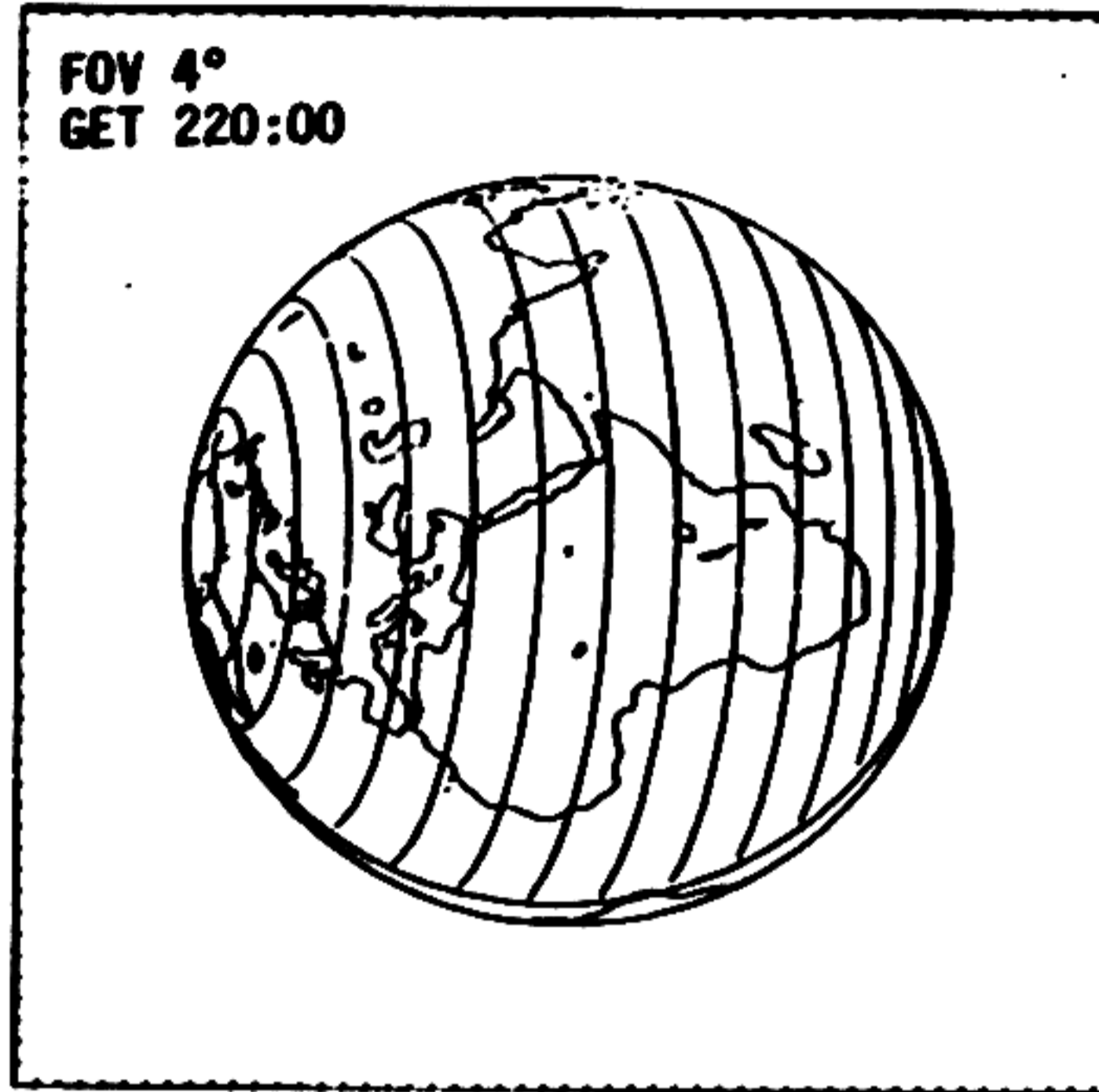
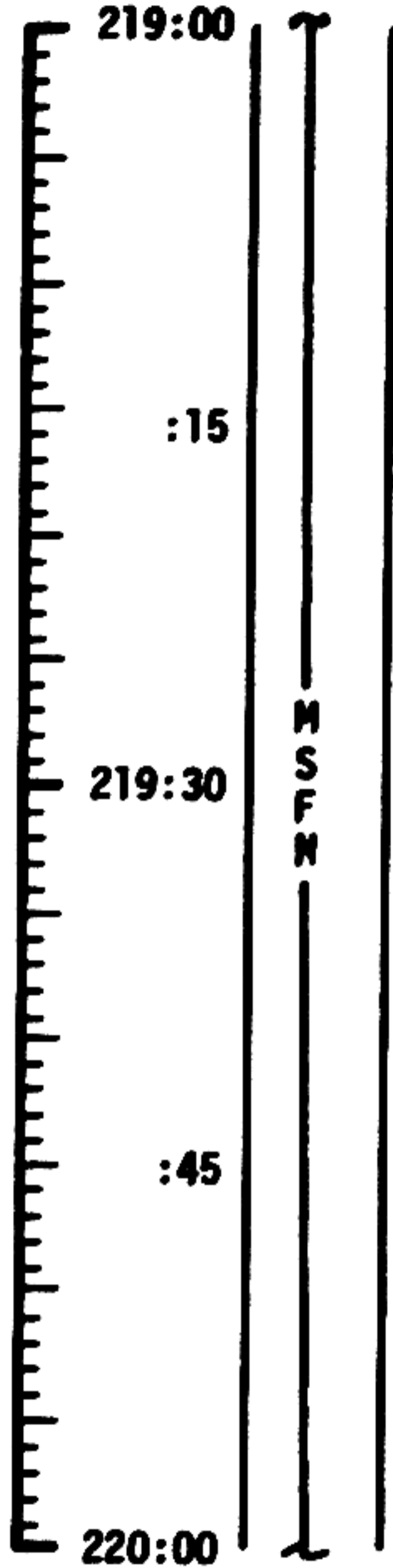
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE   |
|-----------|----------------|------------------|-----------------|---------|--------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 218:00 - 219:00 | 9/TEC   | 3-186A |

MCC-N

1322 CST

# FLIGHT PLAN

NOTES



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

NSC Form 28 (May 68)

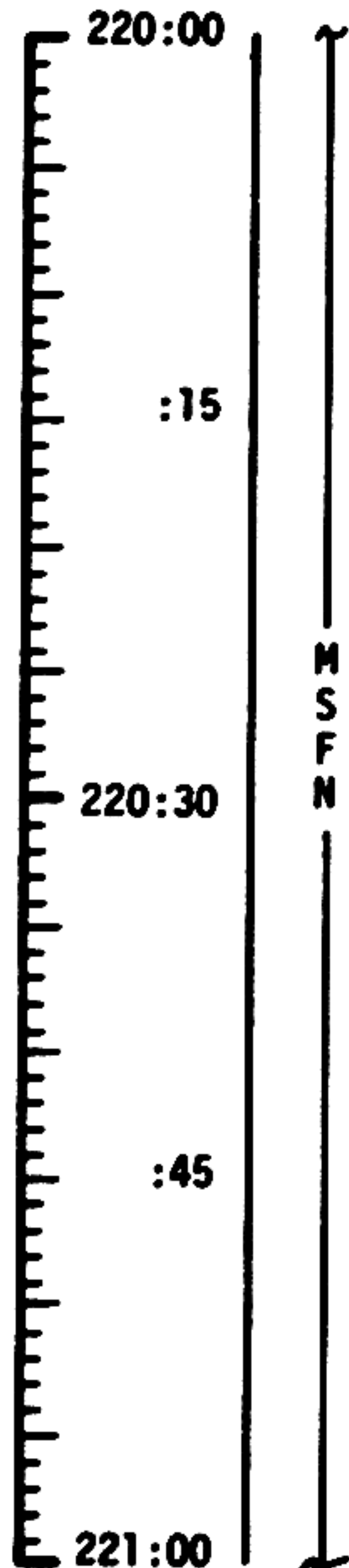
FLIGHT PLANNING BRANCH

MCC-N

1422 CST

# FLIGHT PLAN

NOTES



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

R 235  
 P 272  
 Y 0

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

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

3 MARKS ON EACH STAR

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

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

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

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

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

DO NOT PROCEED ON F 06 49

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

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

INCORPORATE P23  
 MARK DATA AND  
 UPDATE ONBOARD  
 STATE VECTOR

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



MCC-N

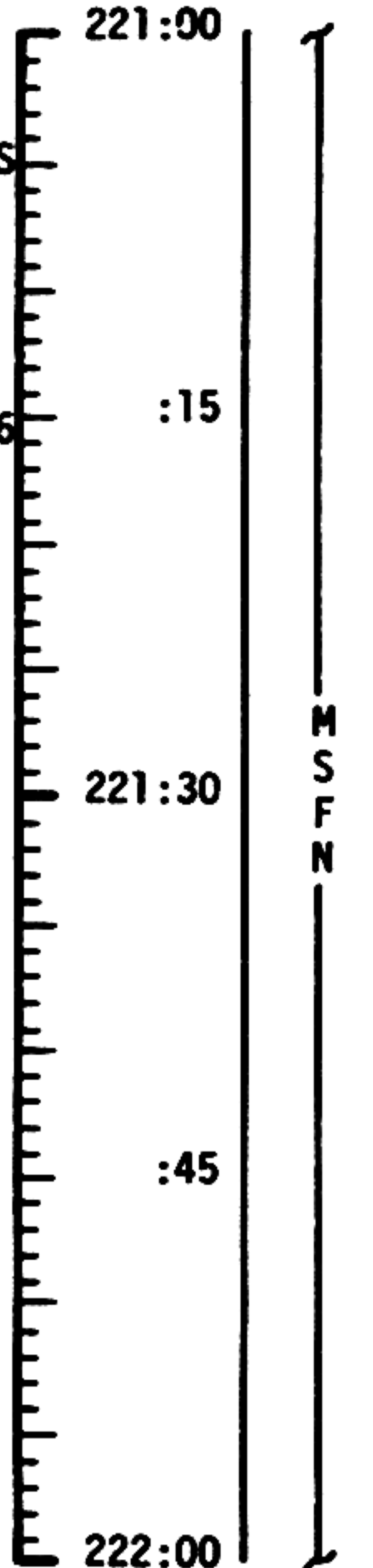
1522 CST

# FLIGHT PLAN

NOTES

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

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



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

WIPE EXCESSIVE MOISTURE FROM  
TUNNEL HATCH AREA  
CONTAMINATION CONTROL

\_\_\_\_\_

P52 - IMU REALIGN  
OPTION 3 - REFSMMAT

\_\_\_\_\_

REPORT GYRO TORQUING ANGLES

P30 EXTERNAL  $\Delta V$   
H<sub>2</sub> PURGE LINE HTRS - ON

P52 (PTC ORIENT)

N71: \_\_\_\_° \_\_\_\_

N05: \_\_\_\_° \_\_\_\_

N93:

X \_\_\_\_° \_\_\_\_

Y \_\_\_\_° \_\_\_\_

Z \_\_\_\_° \_\_\_\_

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

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

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# FLIGHT PLAN

## MCC-6 BURN TABLE

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

TABLE 3-13  
3-190

MCC-N

1622 CST

# FLIGHT PLAN

NOTES

(EI-22 HRS)

222:00

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

:30

223:00

M  
S  
F  
N

:30

224:00

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

MCC-6

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

R \_\_\_\_\_ HGA  
P \_\_\_\_\_ P \_\_\_\_\_  
Y \_\_\_\_\_ Y \_\_\_\_\_

TIG: 222:21:47.5  
ΔV: NOMINALLY ZERO

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

EAT PERIOD

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

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

ΔTIG

BT

V<sub>gx</sub>

R

P

Y

V<sub>gx</sub>

V<sub>gy</sub>

V<sub>gz</sub>

ΔV<sub>c</sub>

FUEL \*

OX \*

UNBAL

\*ITEMS TO BE  
REPORTED TO MSFN

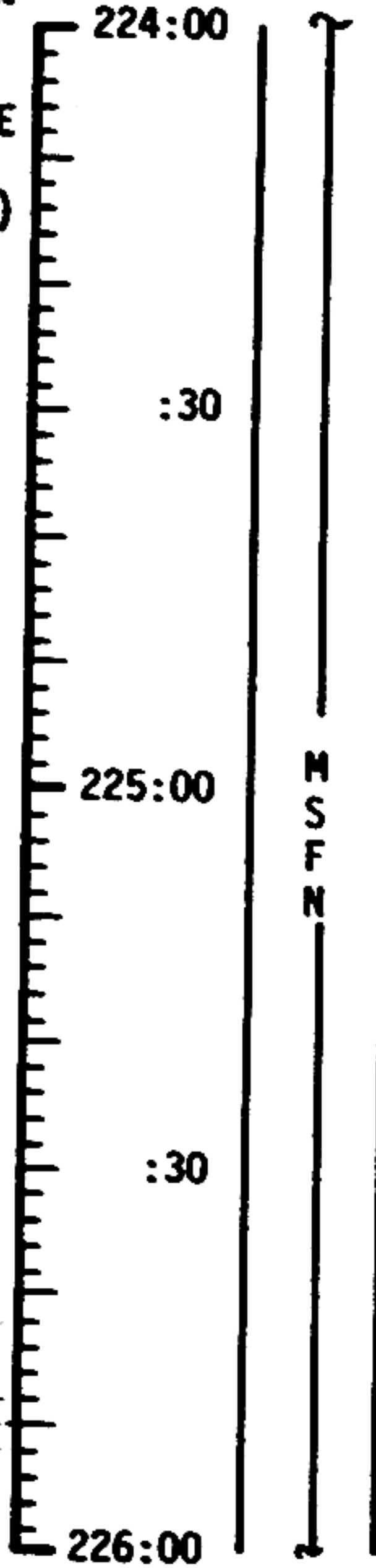
| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 222:00 - 224:00 | 9/TEC   | 3-191 |

1822 CST

# FLIGHT PLAN

MCC-N

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



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

PTC  
P 270 Y 0

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

REST PERIOD  
(10 HOURS)

## NOTES

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

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

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

MSC Form 29 (May 69)

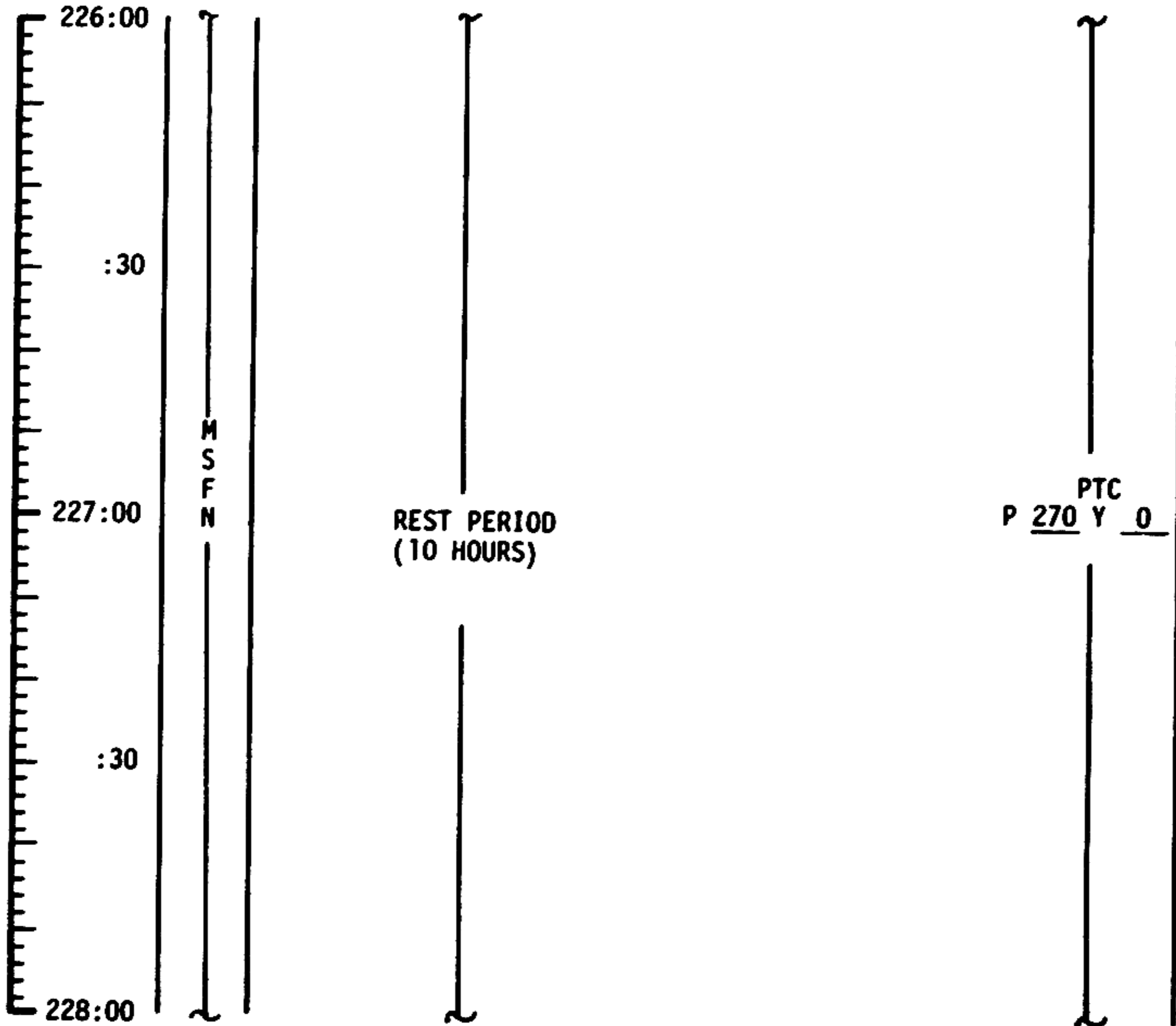
FLIGHT PLANNING BRANCH

MCC-H

2022 CST

# FLIGHT PLAN

NOTES



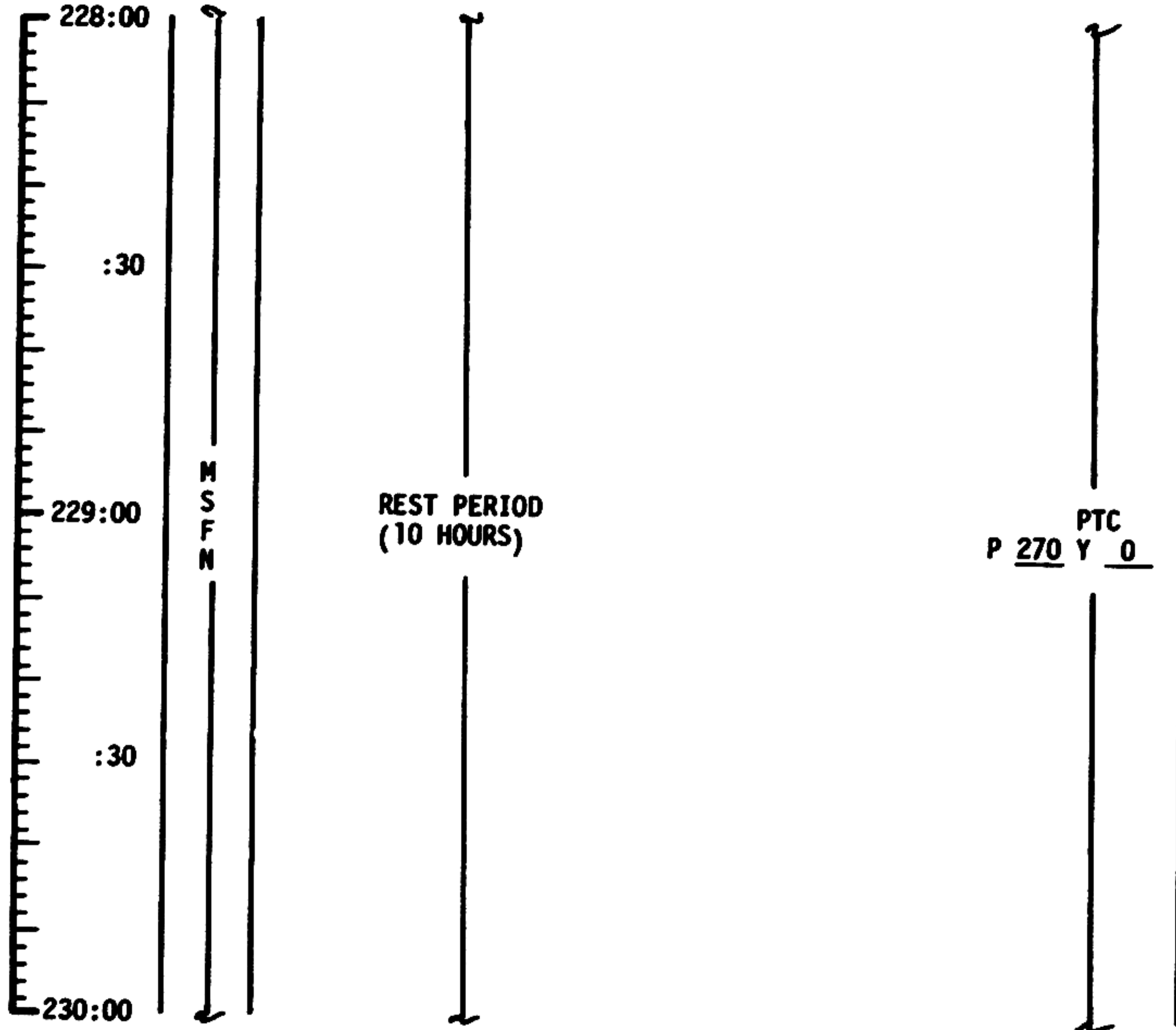
| MISSION   | EDITION         | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|-----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | -FINAL (NOV 14) | OCTOBER 15, 1969 | 226:00 - 228:00 | 9/TEC   | 3-193 |

MCC-N

2222 CST

# FLIGHT PLAN

NOTES



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

NSC Form 29 (May 68)

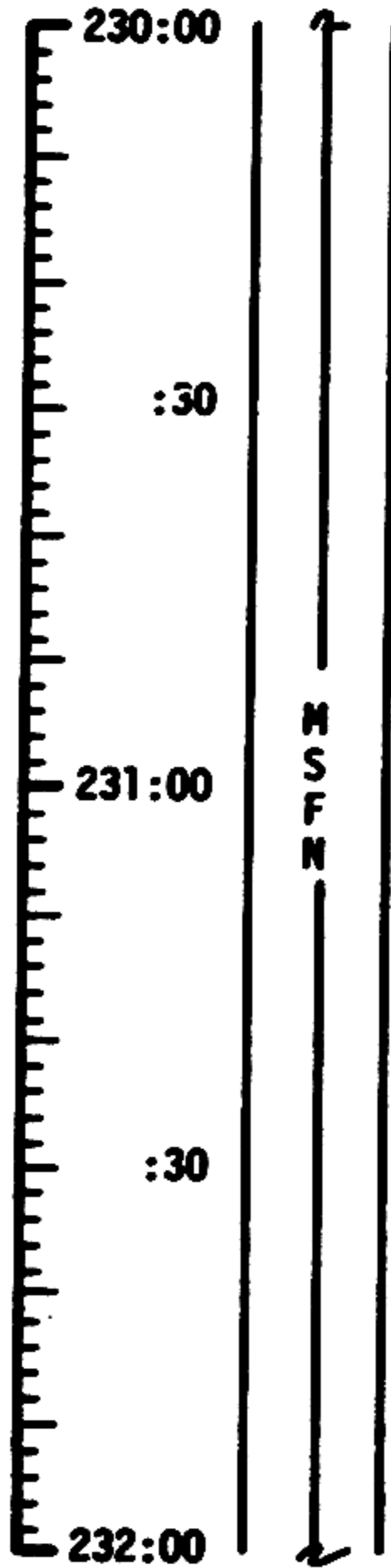
FLIGHT PLANNING BRANCH

MCC-N

0022 CST

# FLIGHT PLAN

NOTES



REST PERIOD  
(10 HOURS)

PTC  
P 270 Y 0

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

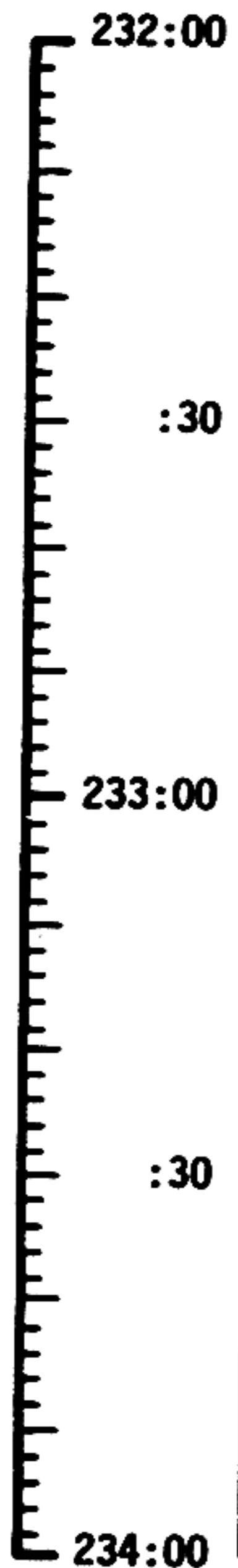


MCC-N

0222 CST

# FLIGHT PLAN

NOTES



M  
S  
F  
N

REST PERIOD  
(10 HOURS)

PTC  
P 270 Y 0

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

MSC Form 29 (May 69)

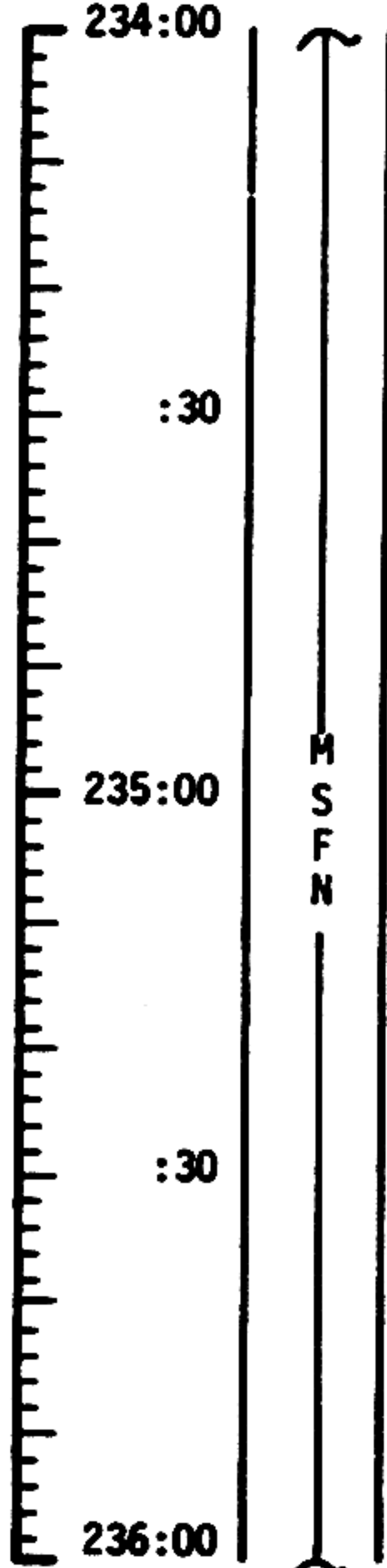
FLIGHT PLANNING BRANCH

MCC-N

U422 CST

# FLIGHT PLAN

## NOTES



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

| CSM CONSUMABLES UPDATE |               |
|------------------------|---------------|
| GET:                   | _____ : _____ |
| RCS TOTAL              | _____ %       |
| QUAD A                 | _____ %       |
| B                      | _____ %       |
| C                      | _____ %       |
| D                      | _____ %       |
| H <sub>2</sub> TOTAL   | _____ %       |
| O <sub>2</sub> TOTAL   | _____ %       |

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

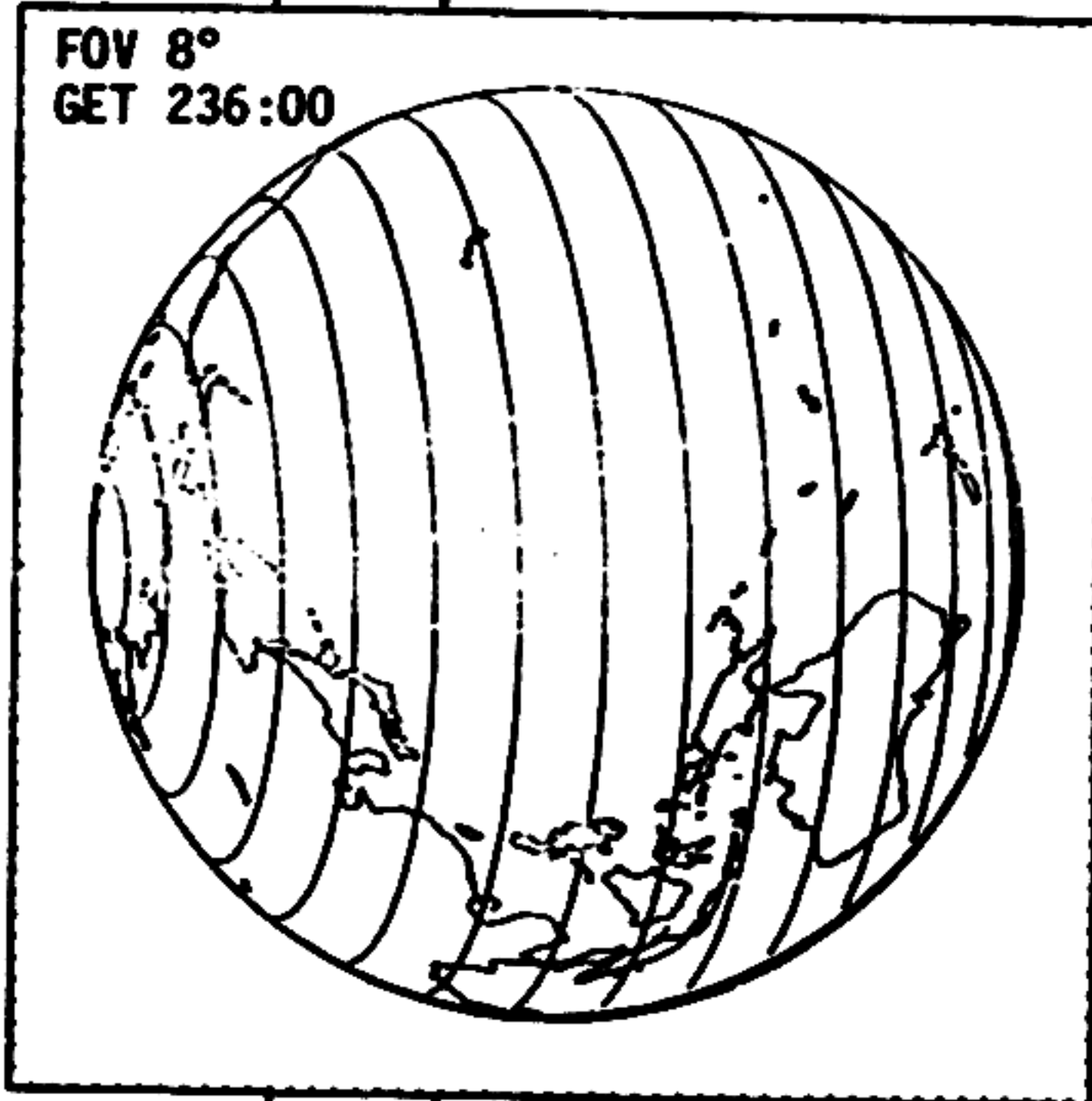
P 270 Y 0

PTC

EAT PERIOD

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

STOP PTC AT ROLL 235°

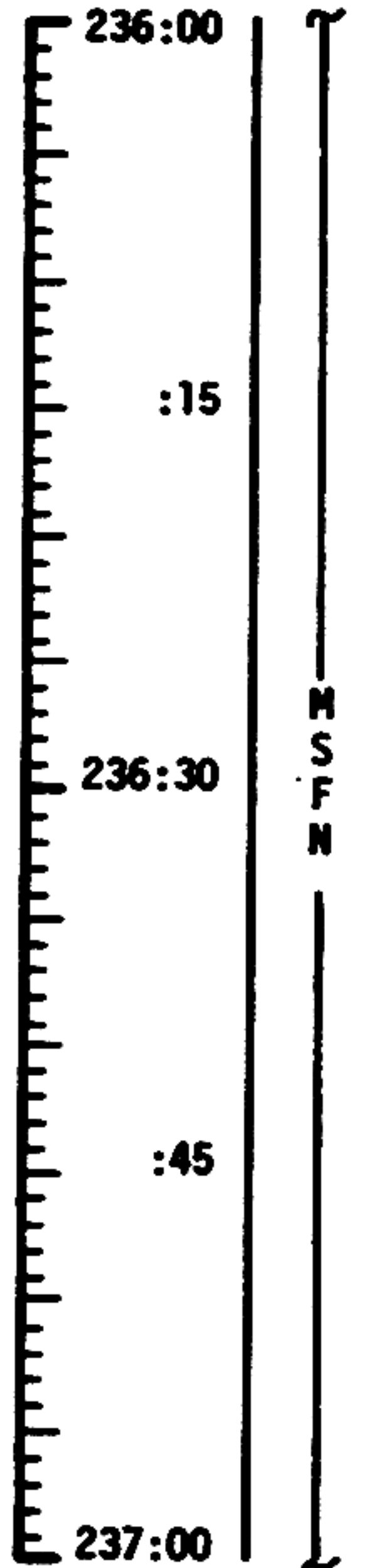


| MISSION   | EDITION        | DATE             | TIME            | DAY/REV | PAGE  |
|-----------|----------------|------------------|-----------------|---------|-------|
| APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 234:00 - 236:00 | 10/TEC  | 3-197 |

0622 CST

# FLIGHT PLAN

NOTES



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

P00  
 V49 - MNVR TO SIGHTING ATT R 90  
 STAR/EARTH HORIZON P ~~153~~ 168  
 P23 - CISLUNAR NAVIGATION Y 341  
 LOAD W MATRIX (R1 +4 5 0 0 0)(R2 +0 0 0 0 6)  
 1. STAR 2 6 EFH (R3 = 0 0 1 2 0)  
 2. JUPITER EFH (R3 = 0 0 1 2 0)  
 N88: (R1 = -8 9 8 5 4)(R2 = -4 1 0 1 4)(R3 = -1 5 6 3 6)  
 DO NOT PROCEED ON F 06 49  
 3. STAR 7 5 ENH (R3 = 0 0 1 1 0)  
 N88: (R1 = -0 9 8 7 1)(R2 = -7 9 1 6 3)(R3 = -6 0 2 9 8)  
 4. STAR 1 6 3 EFH (R3 = 0 0 1 2 0)  
 N88: (R1 = -8 3 4 6 4)(R2 = -4 4 9 6 6)(R3 = +3 1 8 0 9)  
 5. STAR 2 0 5 ENH (R3 = 0 0 1 1 0)  
 N88: (R1 = -0 9 1 5 3)(R2 = -5 5 8 9 1)(R3 = -8 2 4 1 6)  
 6. STAR 3 1 EFH (R3 = 0 0 1 2 0)

3 MARKS ON EACH STAR

INCORPORATE P23  
 MARK DATA AND  
 UPDATE ONBOARD  
 STATE VECTOR

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

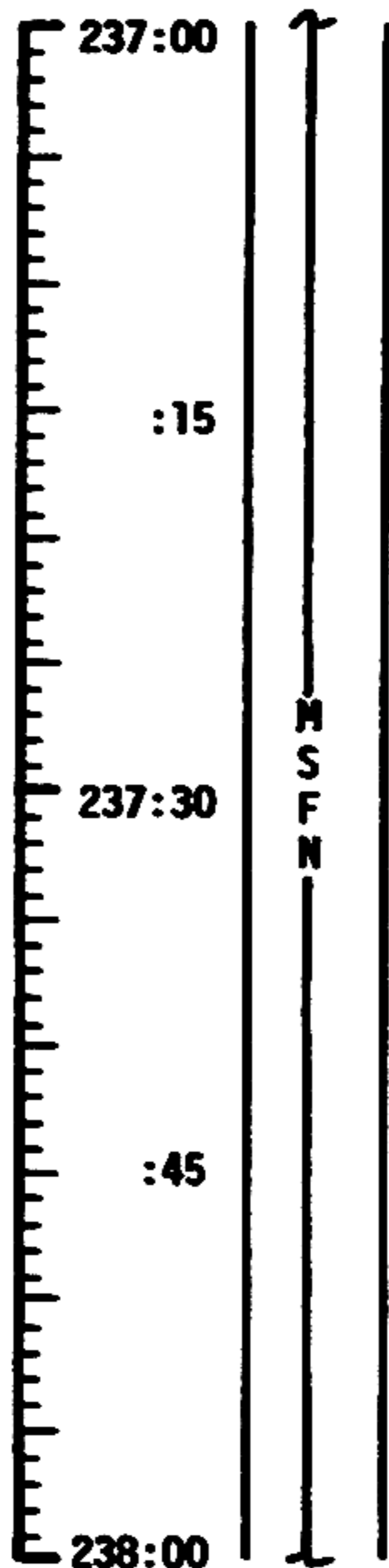
MCC-11

0722 CST

# FLIGHT PLAN

NOTES

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



START PTC

M  
S  
F  
N

PTC  
P 270, Y 0

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

MCC-7

0822 CST

# FLIGHT PLAN

NOTES

(EI-6 HRS)  
GO/NO-GO

238:00

:30

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

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

PTC  
P 270 Y 0

239:00

M  
S  
F  
N

VHF SIMPLEX A-ON  
(COMM CHECK)

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

DON MAE WEST & FOOT RESTRAINTS

:30

STOP PTC

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

240:00

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

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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# FLIGHT PLAN

## MCC-7 BURN TABLE

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

TABLE 3-14  
3-201

MCC-N

1022 CST

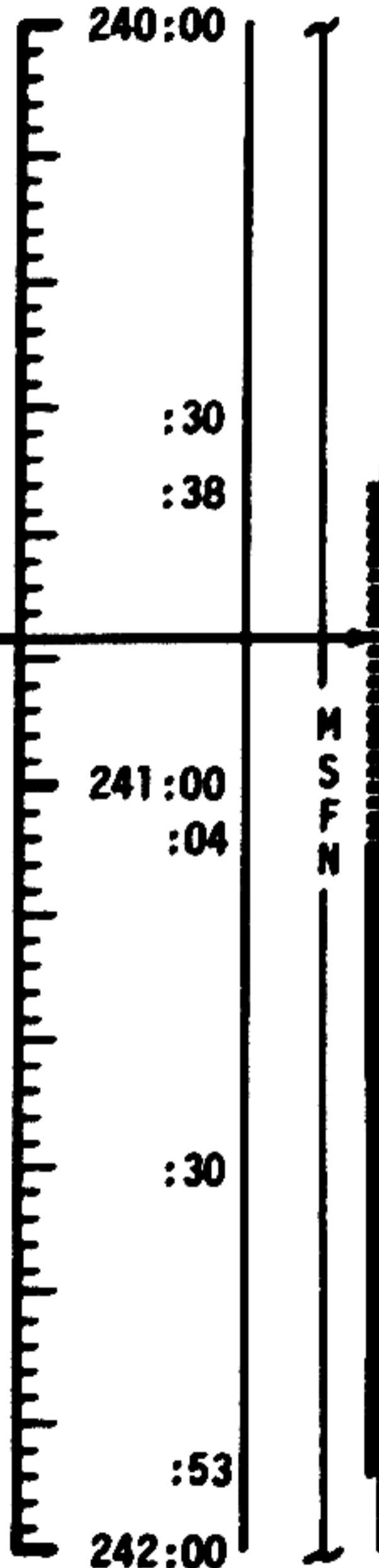
# FLIGHT PLAN

NOTES

(EL - 4 HRS)

EARTH PENUMBRA

(EI - 3 HRS)



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

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

SXT STAR CHECK  
 P40/P41-SPS/RCS THRUST

GDC ALIGN TO IMU

**MCC-7**

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

TIG: 241:21:48  
 ΔV: NOMINALLY ZERO

\*ITEMS TO BE REPORTED  
 to MSFN

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

| BURN STATUS REPORT       |                          |                          |                     |
|--------------------------|--------------------------|--------------------------|---------------------|
| X                        | X                        | <input type="checkbox"/> | • ΔTIG              |
| X                        | X                        | <input type="checkbox"/> | • BT                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • Vgx               |
| TRIM                     |                          |                          |                     |
| X                        | X                        | X                        | • R                 |
| X                        | X                        | X                        | • P                 |
| X                        | X                        | X                        | • Y                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • Vgy               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • Vgz               |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | • ΔV <sub>c</sub> * |
| X                        | X                        | X                        | • FUEL*             |
| X                        | X                        | X                        | • OX*               |
| X                        | X                        | X                        | • UNBAL             |

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



MCC-N

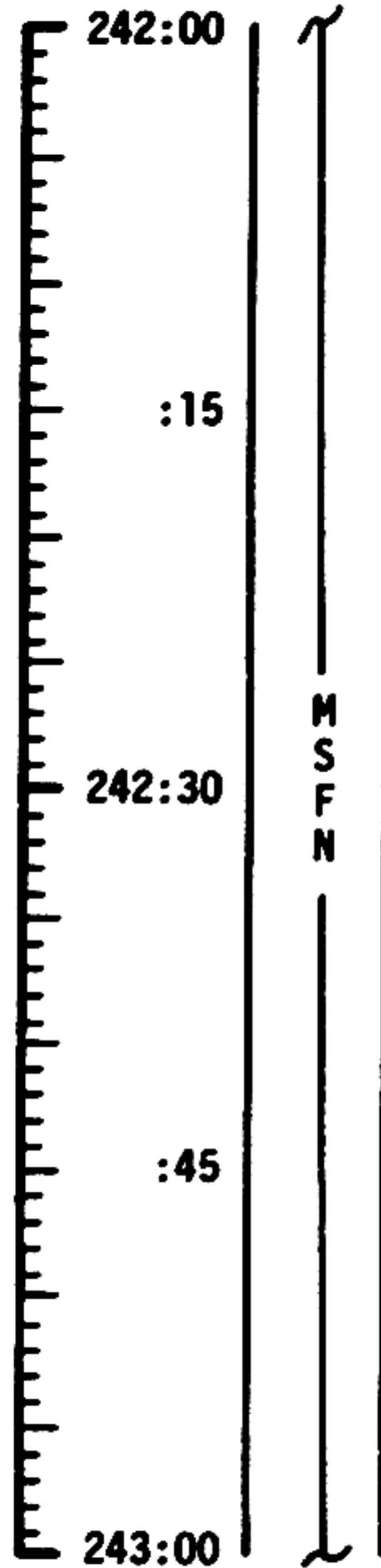
1222 CST

# FLIGHT PLAN

NOTES

(EI - 2 HRS)

GO/NO GO FOR PYRO  
ARM



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

MNVR TO ENTRY ATTITUDE    R \_\_\_  
   P \_\_\_  
   Y \_\_\_

SXT AND BORESIGHT STAR CHECK

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

MCC-N

1322 CST

# FLIGHT PLAN

## NOTES

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

P52 - IMU REALIGN  
 OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES  
 GDC ALIGN TO IMU  
 EMS ENTRY CHECK

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

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

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

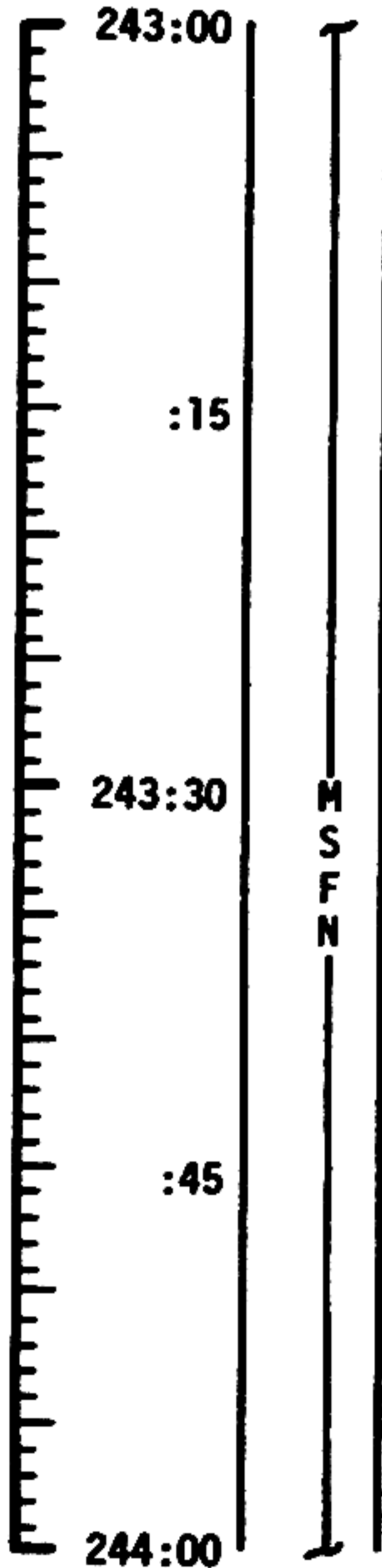
CM RCS CK

SEPARATION CHECKLIST

(EI - 1 HR)

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

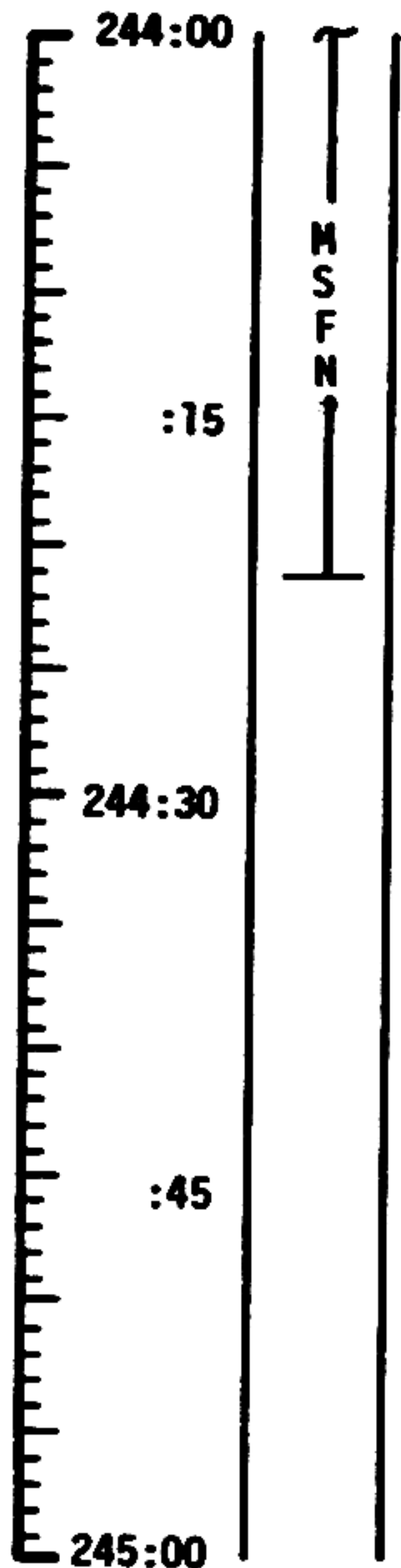
UPLINK TO CSM  
 STATE VECTOR & V66  
 (EI - 30 MIN)



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

# FLIGHT PLAN

## NOTES



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

**CM/SM SEP**  
 MNVR TO ENTRY ATT R  
 P63 - ENTRY INIT P  
 Y

**EI - GET = 244:21:48**  
 P64 - ENTRY POST 0.05G

| TRAJECTORY EVENTS            | TIME FROM EI<br>MIN : SEC |
|------------------------------|---------------------------|
| 400,000 FEET (GET 244:21:48) | 00 : 00                   |
| ENTER S BAND BLACKOUT        | 00 : 18                   |
| 0.05G                        | 00 : 30                   |
| KA - INITIATE CONSTANT DRAG  | 00 : 52                   |
| RDOT = -700 FPS              | 01 : 18                   |
| PEAK G                       | 01 : 22                   |
| SUBCIRCULAR VELOCITY         | 02 : 10                   |
| P64 TO P67                   | 02 : 12                   |
| EXIT S BAND BLACKOUT         | 03 : 23                   |
| GUIDANCE TERMINATION         | 07 : 06                   |
| DROGUE DEPLOYMENT            | 08 : 08                   |
| MAIN DEPLOYMENT              | 08 : 54                   |
| SPLASHDOWN                   | 13 : 35                   |

Y = -6.5° -  
 L/D = 0.309  
 V = 36116  
 R = 1250

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

**SECTION 5 - ABBREVIATED TIMELINE**

**ABBREVIATED  
TIMELINE**

# ABBREVIATED TIMELINE

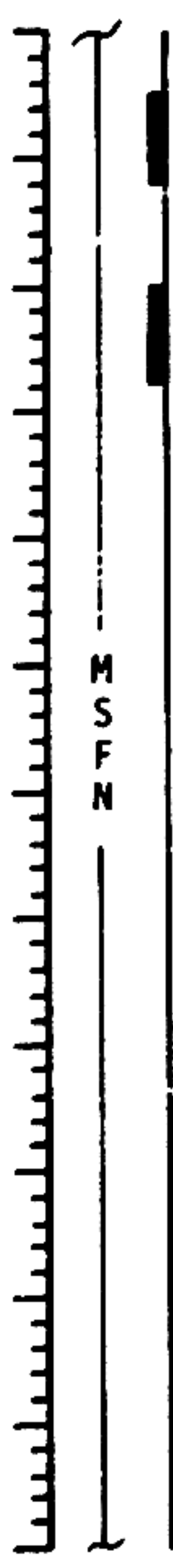
1022 CST

NOV 14

CSM

CSM

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



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

BEGIN TLI PREP

GO/NO-GO FOR TLI

**TLI** 02:47

**CSM/S-IVB SEP** 03:12 TV

**DOCK** 03:22

CONFIGURE FOR EJECTION

**CSM/LM EJECTION** 04:07

**S-IVB EVASIVE MANEUVER** 04:24

**S-IVB SLINGSHOT MANEUVER** 04:57

DOFF & STOW PGA'S

P52 - IMU REALIGN, OPT 1

P23 - CISELUNAR NAVIGATION  
(5 SETS)

EAT

P52 - IMU REALIGN, OPT 3  
 PTC (IF MCC-1 NOT PERFORMED)

**MCC-1** 11:47 (NOM ZERO)

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



PTC

P52 - IMU REALIGN, OPT 3

P23 - CISELUNAR NAVIGATION  
(5 SETS)

EAT

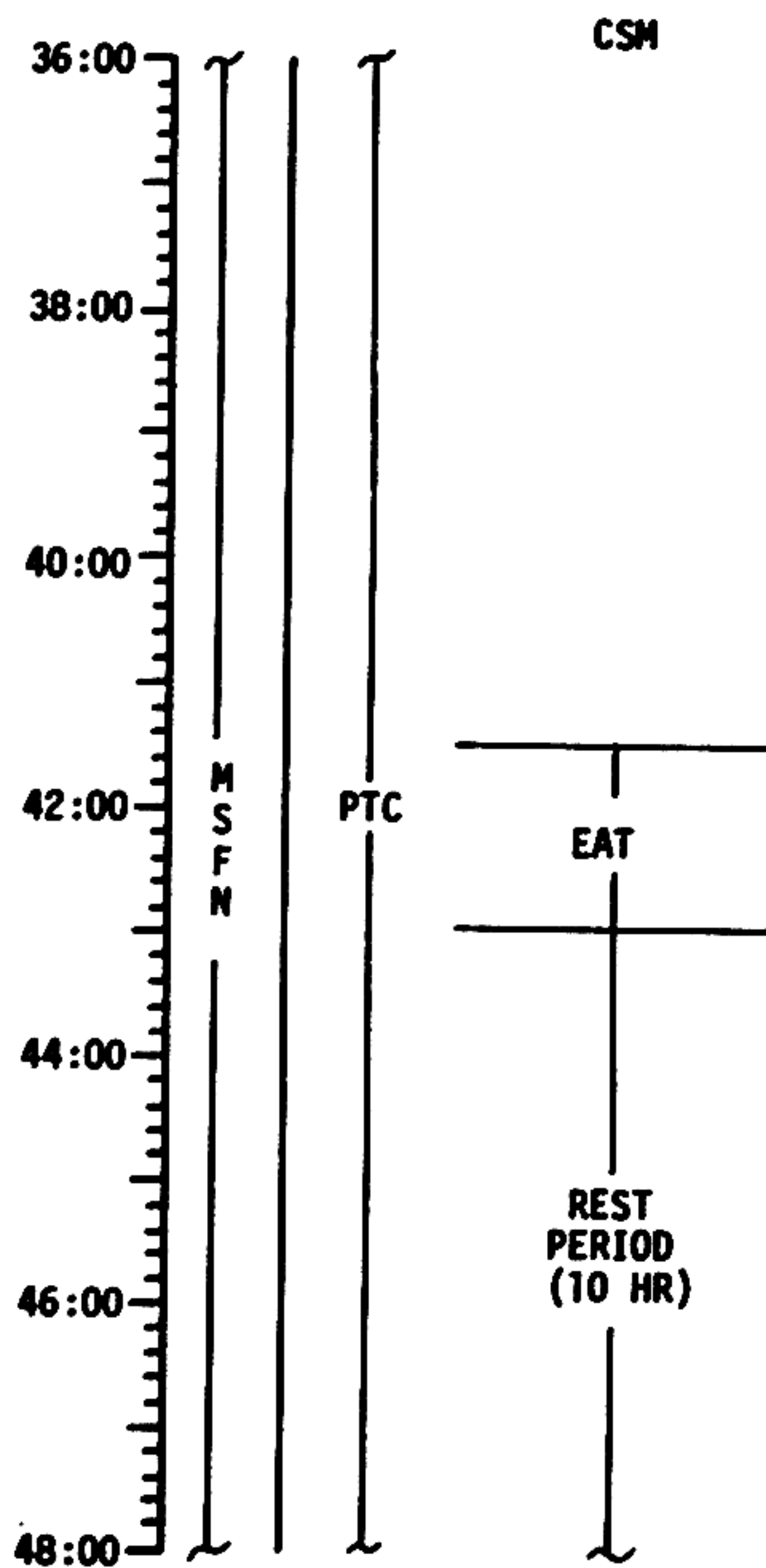
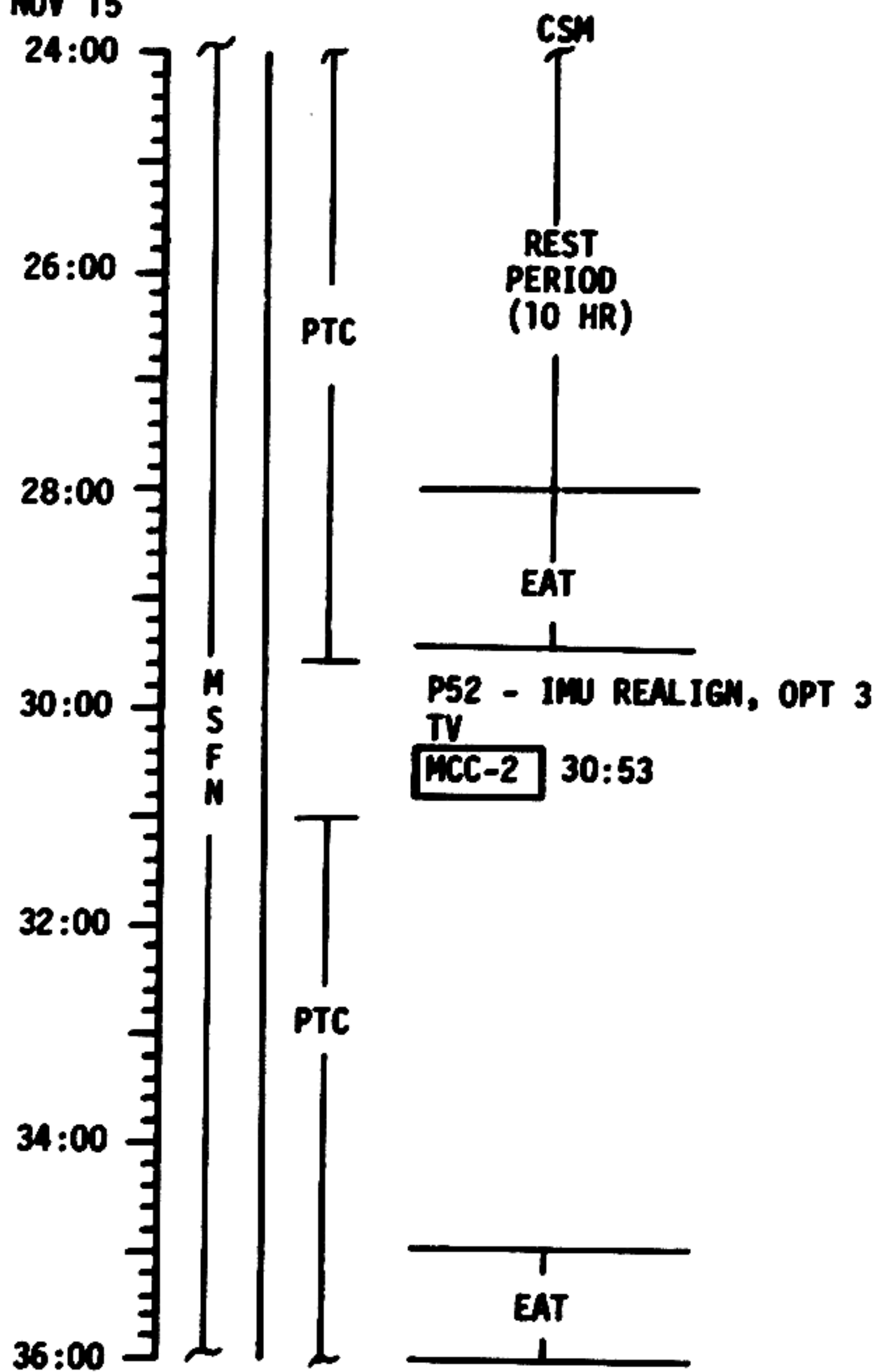
REST PERIOD  
(10 HR)

PTC

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

# ABBREVIATED TIMELINE

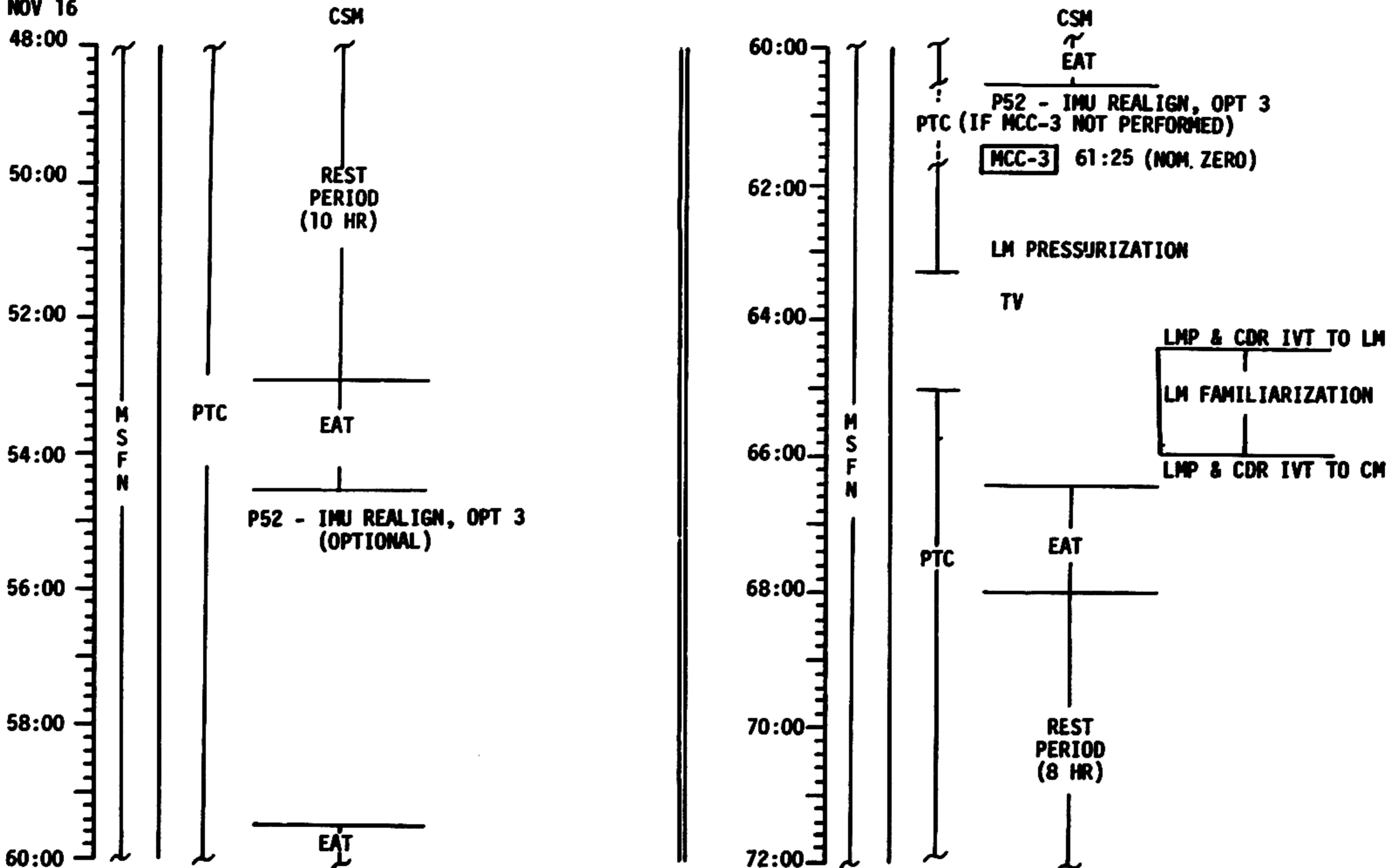
1022 CST  
NOV 15



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

# ABBREVIATED TIMELINE

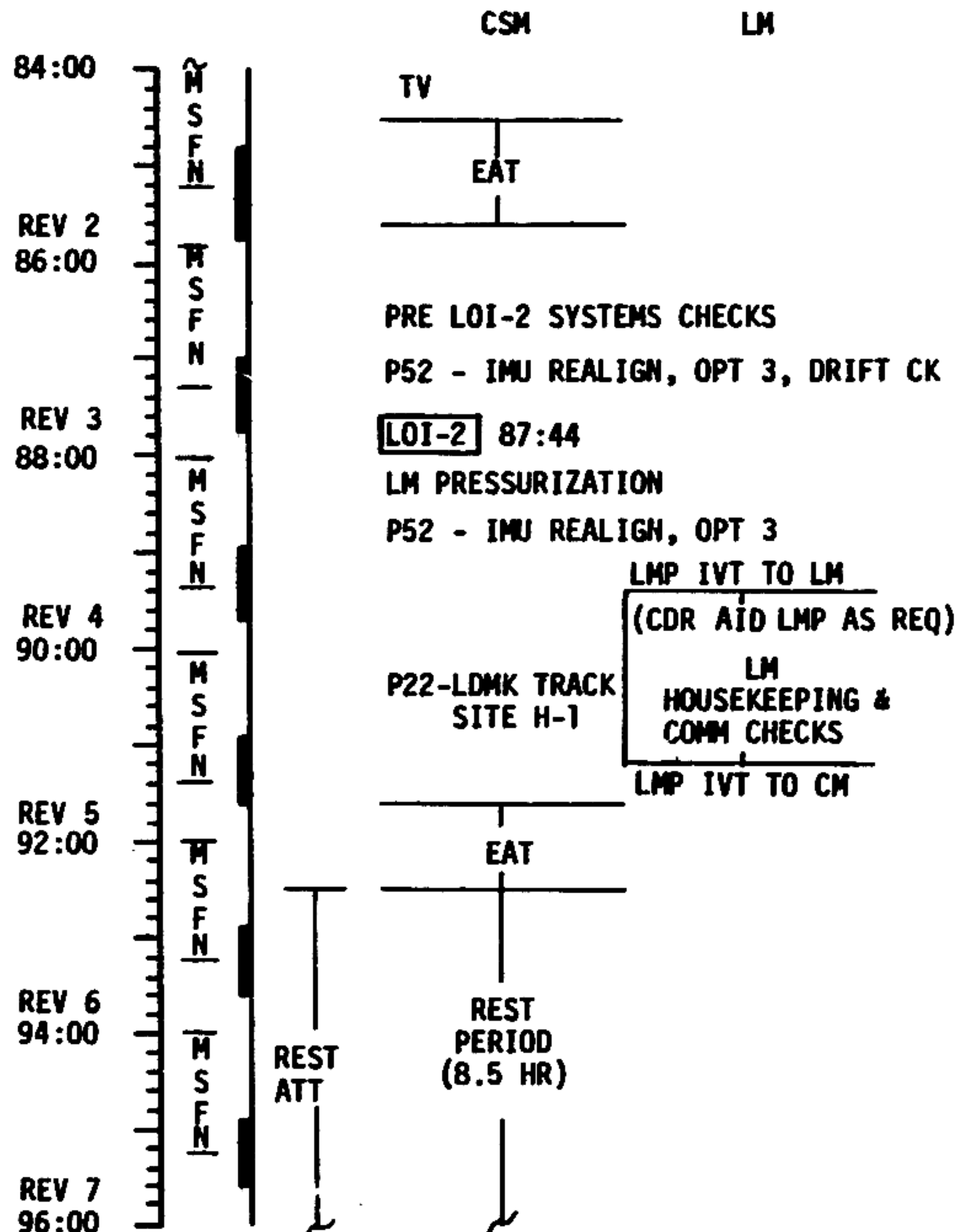
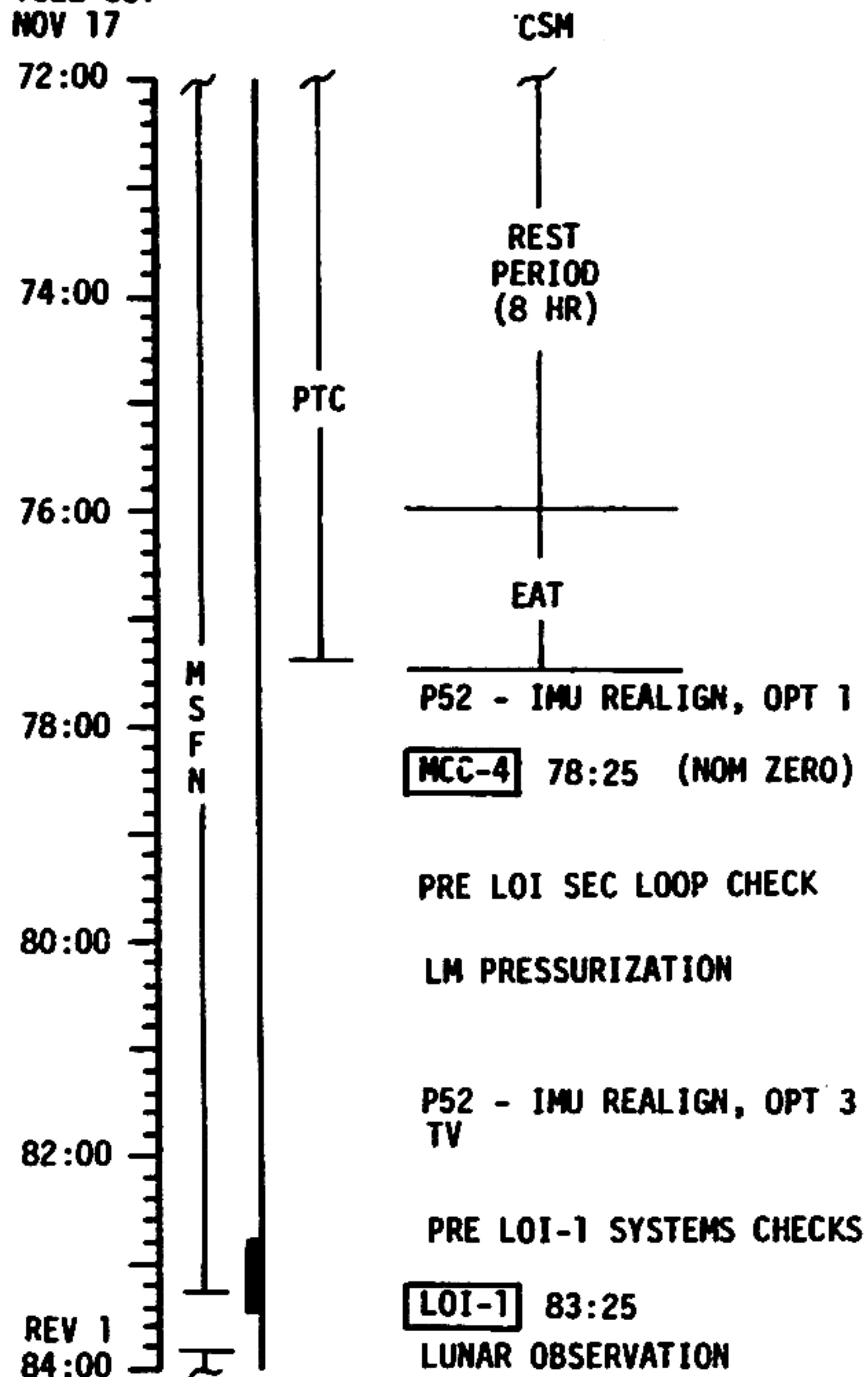
1022 CST  
NOV 16



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

# ABBREVIATED TIMELINE

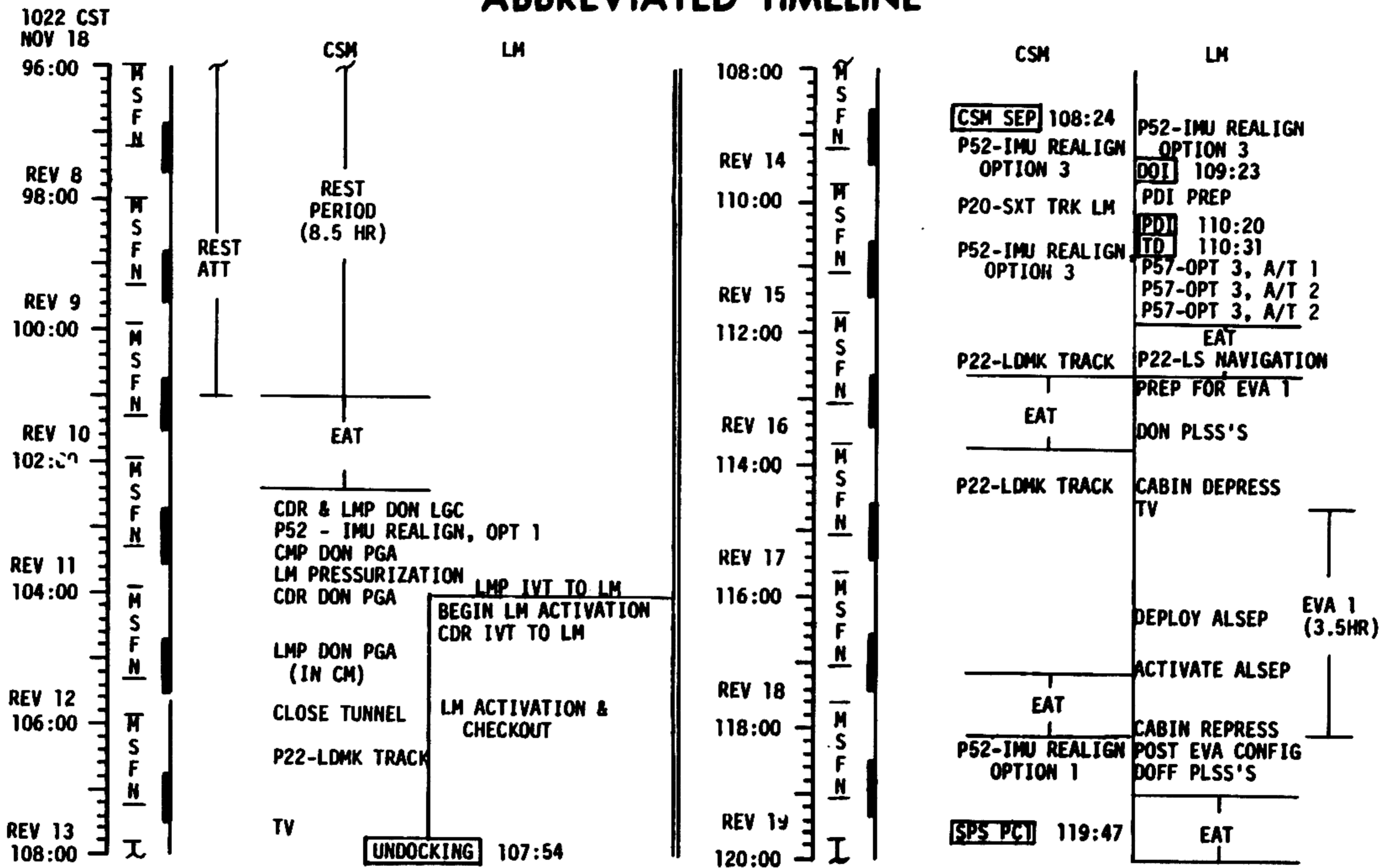
1022 CST  
NOV 17



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

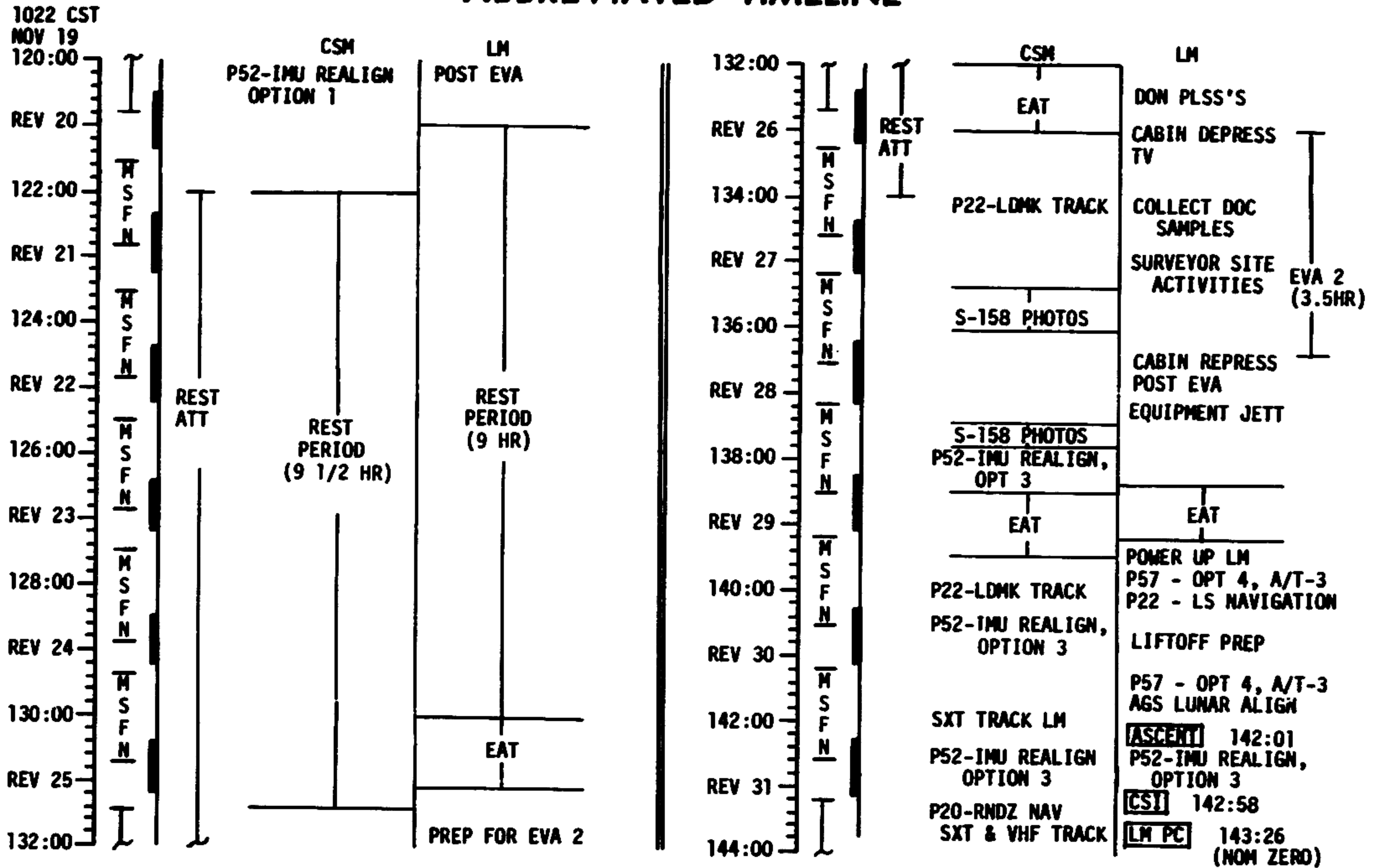


# ABBREVIATED TIMELINE



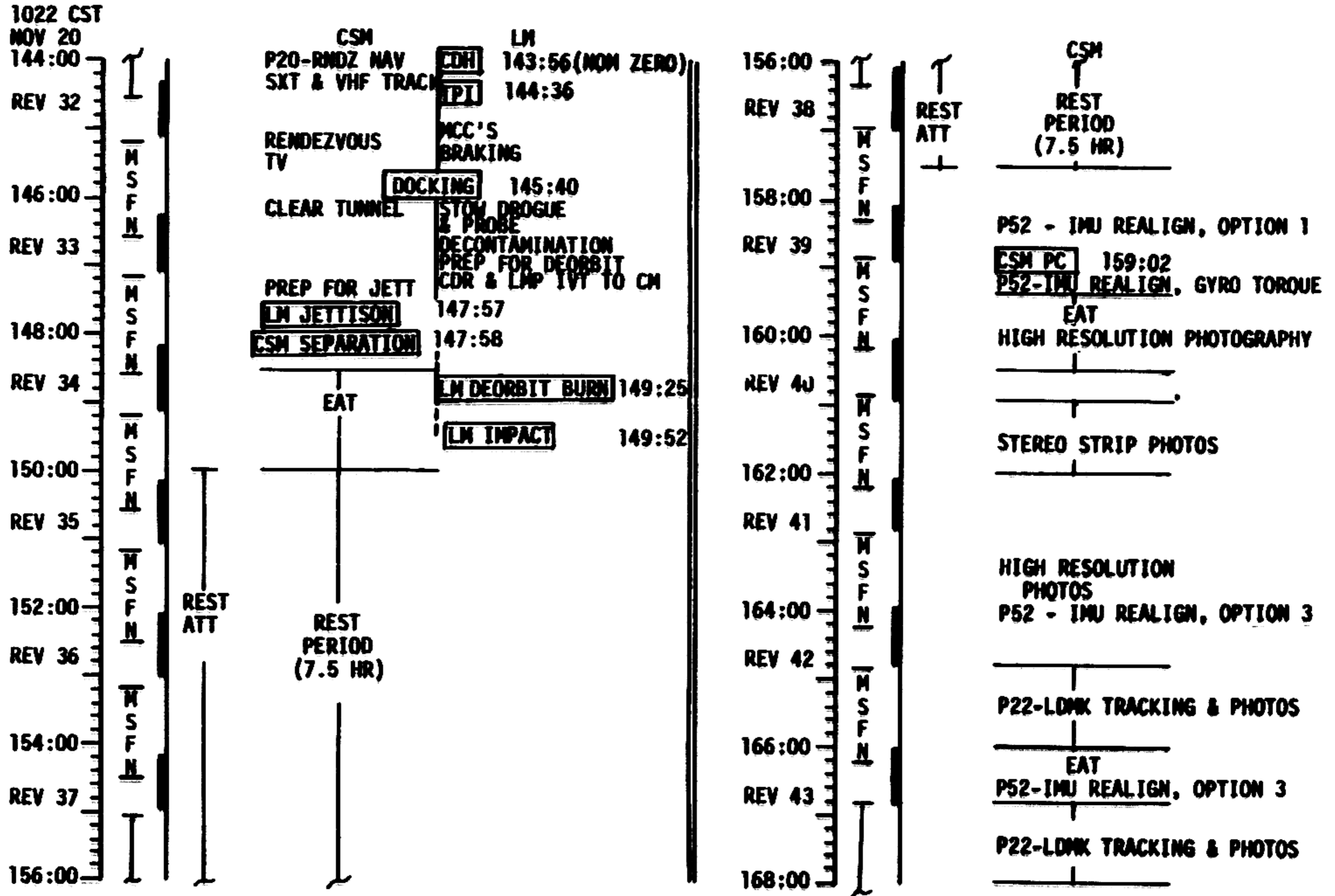
| MISSION   | EDITION                       | DATE             | TIME           | DAY/REV | PAGE |
|-----------|-------------------------------|------------------|----------------|---------|------|
| APOLLO 12 | ABBREVIATED TIMELINE (NOV 14) | OCTOBER 15, 1969 | 96:00 - 120:00 | 5/7-19  | 5-5  |

# ABBREVIATED TIMELINE



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

# ABBREVIATED TIMELINE



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

# ABBREVIATED TIMELINE

1022 CST

NOV 21

168:00

REV 44

170:00

REV 45

172:00

REV 46

174:00

176:00

178:00

180:00



CSM

STEREO STRIP PHOTOS  
P52-IMU REALIGN, OPTION 1

PREP FOR TEI  
**TEI** 172:21  
TV

P52-IMU REALIGN, GYRO TORQUE  
EAT

PTC

REST PERIOD (10 HR)

180:00

182:00

184:00

186:00

188:00

190:00

192:00



CSM

REST PERIOD (10 HR)

EAT

P52-IMU REALIGN, OPTION 3

PTC

PTC (IF MCC-5 NOT PERFORMED)

**MCC-5** 187:21 (NOM ZERO)

P23 - CISELUNAR NAVIGATION (5 SETS)

PTC

EAT

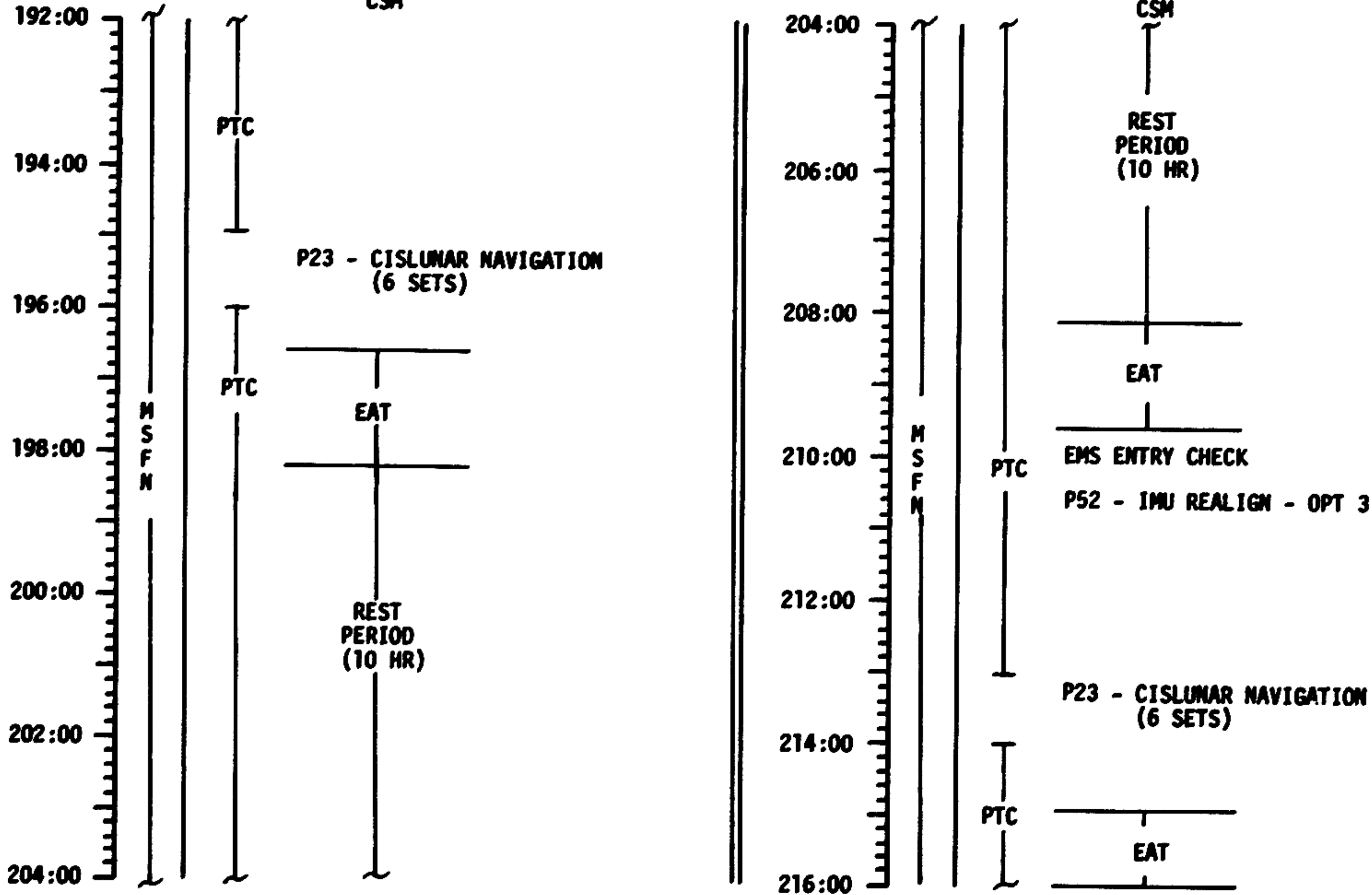
| MISSION   | EDITION                       | DATE             | TIME            | DAY/REV    | PAGE |
|-----------|-------------------------------|------------------|-----------------|------------|------|
| APOLLO 12 | ABBREVIATED TIMELINE (NOV 14) | OCTOBER 15, 1969 | 168:00 - 192:00 | 7-8/43-TEC |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

1022 CST (Nov 21)

FLIGHT PLANNING BRANCH

# ABBREVIATED TIMELINE

1022 CST  
NOV 22



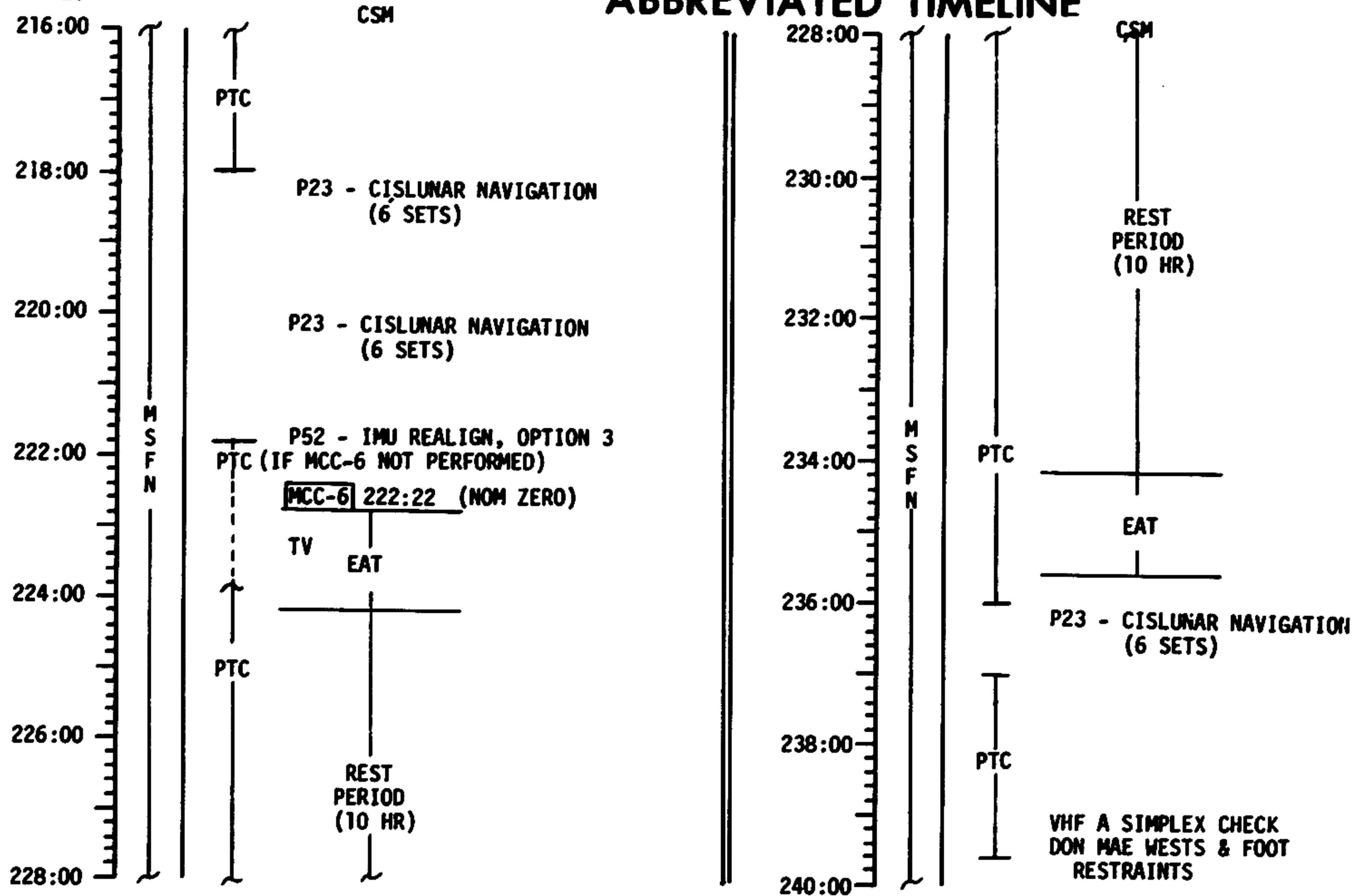
| MISSION   | EDITION                          | DATE             | TIME            | DAY/REV | PAGE |
|-----------|----------------------------------|------------------|-----------------|---------|------|
| APOLLO 12 | ABBREVIATED<br>TIMELINE (NOV 14) | OCTOBER 15, 1969 | 192:00 - 216:00 | 8-9/TEC |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

MSC Form 1057 OT (Mar 69)

FLIGHT PLANNING BRANCH

1022 CST  
NOV 23

# ABBREVIATED TIMELINE



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

# ABBREVIATED TIMELINE

1022 CST  
NOV 24

240:00

242:00

244:00

246:00

M  
S  
F  
N

CSM  
P52 - IMU REALIGN, OPTION 1

**MCC-7** 241:22 (NOM ZERO)

BEGIN ENTRY PREP

P52 - IMU REALIGN, OPTION 3

INITIALIZE EMS  
SEPARATION CHECKLIST

**CM/SM SEP**

**ENTRY INTERFACE** 244:22

**SPLASHDOWN** 244:35

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

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PHOTO PLAN

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

DATE NOVEMBER 3, 1969

PHOTO PLAN

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

DATE NOVEMBER 3, 1969







FILM MAGAZINE IDENTIFICATION AND STORAGE

MAGAZINES

STORAGE

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

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CEX            | X | X | X | X | X | X |   |   |   |   | X | X | X | X | X | X |
| CIN            |   |   |   |   |   |   | X | X |   |   |   |   |   |   |   |   |
| HCEX<br>BW 164 |   |   |   |   |   |   | X |   | X | X |   |   |   |   |   |   |
| TR             |   |   |   |   |   |   |   |   |   |   | X | X | X | X | X | X |

|   |               |
|---|---------------|
|    | CAMERA        |
|    | B8            |
|    | B2            |
|    | A8            |
|   | A10           |
|  | R13 (Mag bag) |

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

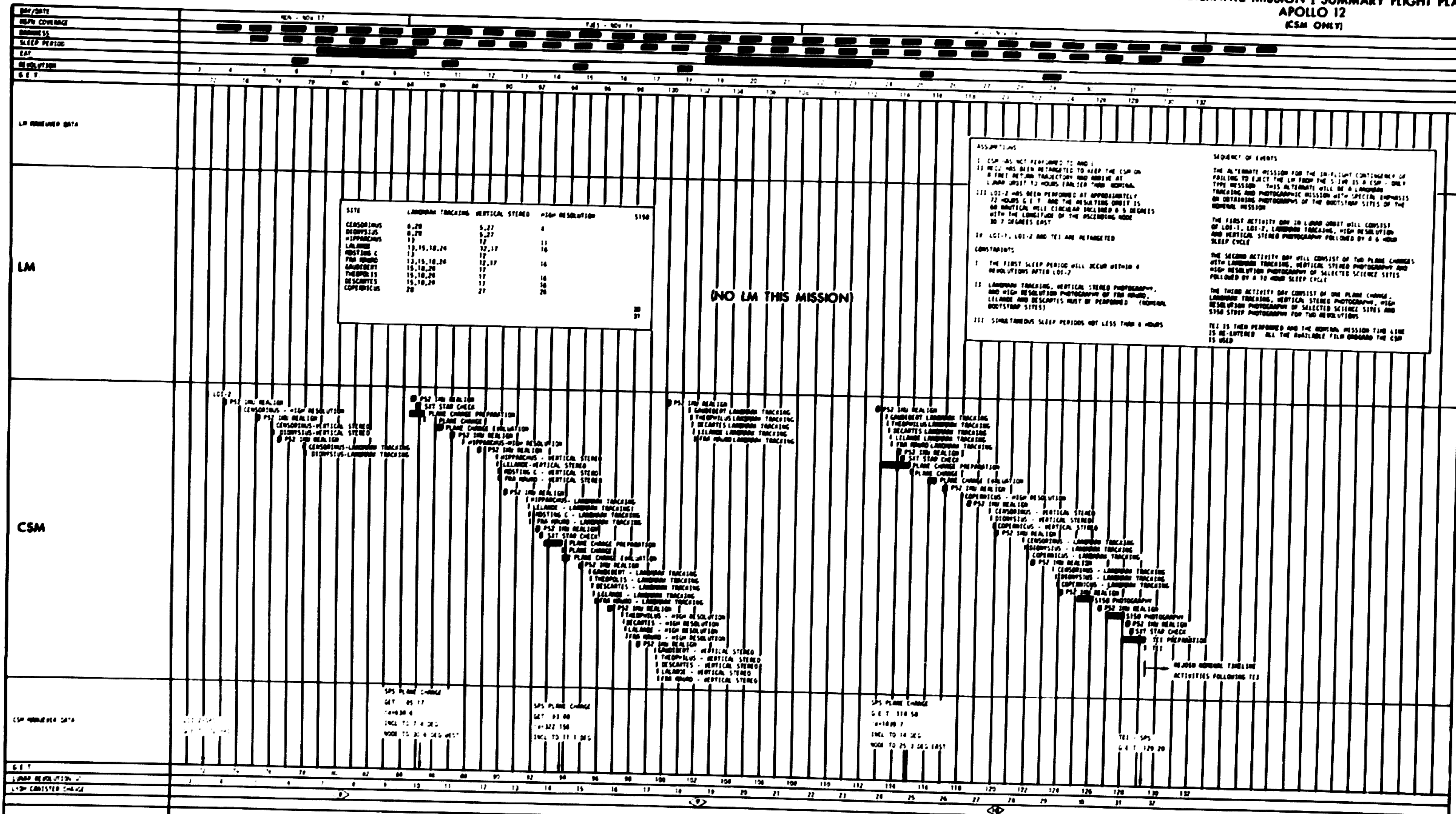
|      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| CEX  | X | X |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| HCEX |   |   |   |   |   |   |   |   |   | X | X | X |   |   |  |  |
| BW   |   |   |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

TR - Transfer and return

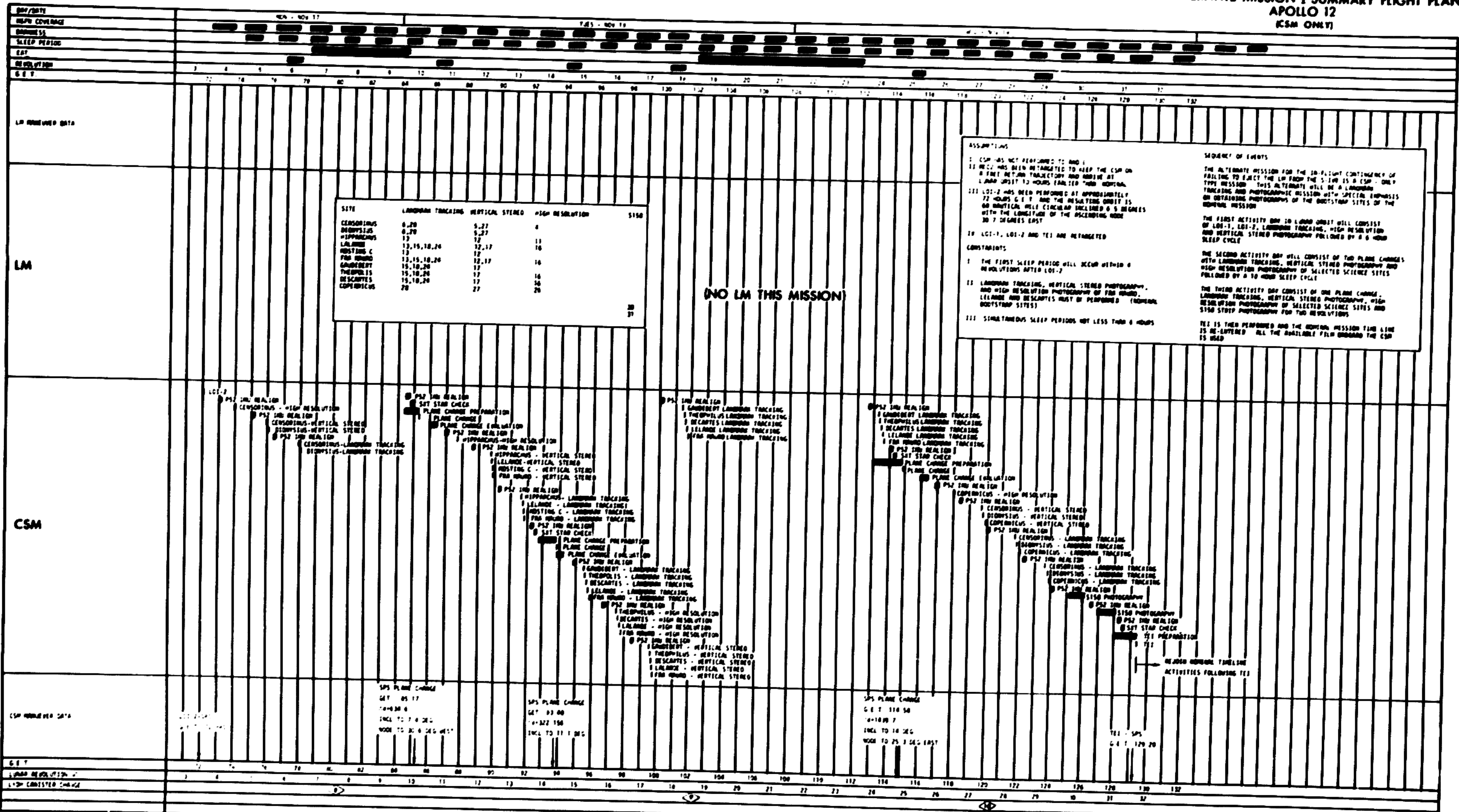
**SECTION 6 - ALTERNATE MISSIONS**

**ALTERNATE  
MISSIONS**

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



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



| SITE       | LANDMARK TRACKING | VERTICAL STEREO | HIGH RESOLUTION | 5150 |
|------------|-------------------|-----------------|-----------------|------|
| CECROPIUS  | 0,20              | 5,27            | 4               |      |
| DIOPHANTUS | 0,20              | 5,27            |                 |      |
| HIPPARCHUS | 13                | 12              | 11              |      |
| LALANDE    | 13,15,18,24       | 12,17           | 16              |      |
| ROSTING C  | 13                | 12              |                 |      |
| FOR HOUND  | 13,15,18,24       | 12,17           | 16              |      |
| GAUDREY    | 15,18,24          | 17              |                 |      |
| THEOPHILUS | 15,18,24          | 17              | 16              |      |
| DESCARTES  | 15,18,24          | 17              | 16              |      |
| COPERNICUS | 20                | 27              | 26              |      |

(NO LM THIS MISSION)

**ASSUMPTIONS**

- CSM HAS NOT PERFORMED TO AND 1
- RECI HAS BEEN INTENDED TO KEEP THE CSM ON A FREE RETURN TRAJECTORY AND ARRIVE AT LUNAR ORBIT 10 HOURS EARLIER THAN NORMAL
- LOI-2 HAS BEEN PERFORMED AT APPROXIMATELY 72 HOURS C E T AND THE RESULTING ORBIT IS AN ORBITAL WAVE CIRCULAR INCLINED 6.5 DEGREES WITH THE LONGITUDE OF THE ASCENDING NODE 30.7 DEGREES EAST

**SEQUENCE OF EVENTS**

THE ALTERNATE MISSION FOR THE IN-FLIGHT CONTINGENCY OF FAILING TO EJECT THE LM FROM THE S-100 IS A CSM-ONLY TYPE MISSION. THIS ALTERNATE WILL BE A LANDMARK TRACKING AND PHOTOGRAPHIC MISSION WITH SPECIAL EMPHASIS ON OBTAINING PHOTOGRAPHS OF THE BOOTSTAMP SITES OF THE GENERAL MISSION.

THE FIRST ACTIVITY DAY IN LUNAR ORBIT WILL CONSIST OF LOI-1, LOI-2, LANDMARK TRACKING, HIGH RESOLUTION AND VERTICAL STEREO PHOTOGRAPHY FOLLOWED BY A 6 HOUR SLEEP CYCLE.

THE SECOND ACTIVITY DAY WILL CONSIST OF TWO PLANE CHANGES WITH LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY AND HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES FOLLOWED BY A 6 HOUR SLEEP CYCLE.

THE THIRD ACTIVITY DAY CONSIST OF ONE PLANE CHANGE, LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY, HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES AND 5150 STAMP PHOTOGRAPHY FOR TWO REVOLUTIONS.

TEI IS THEN PERFORMED AND THE GENERAL MISSION TIME LINE IS RE-ENTERED. ALL THE AVAILABLE FILM ONBOARD THE CSM IS USED.

**CONSTRAINTS**

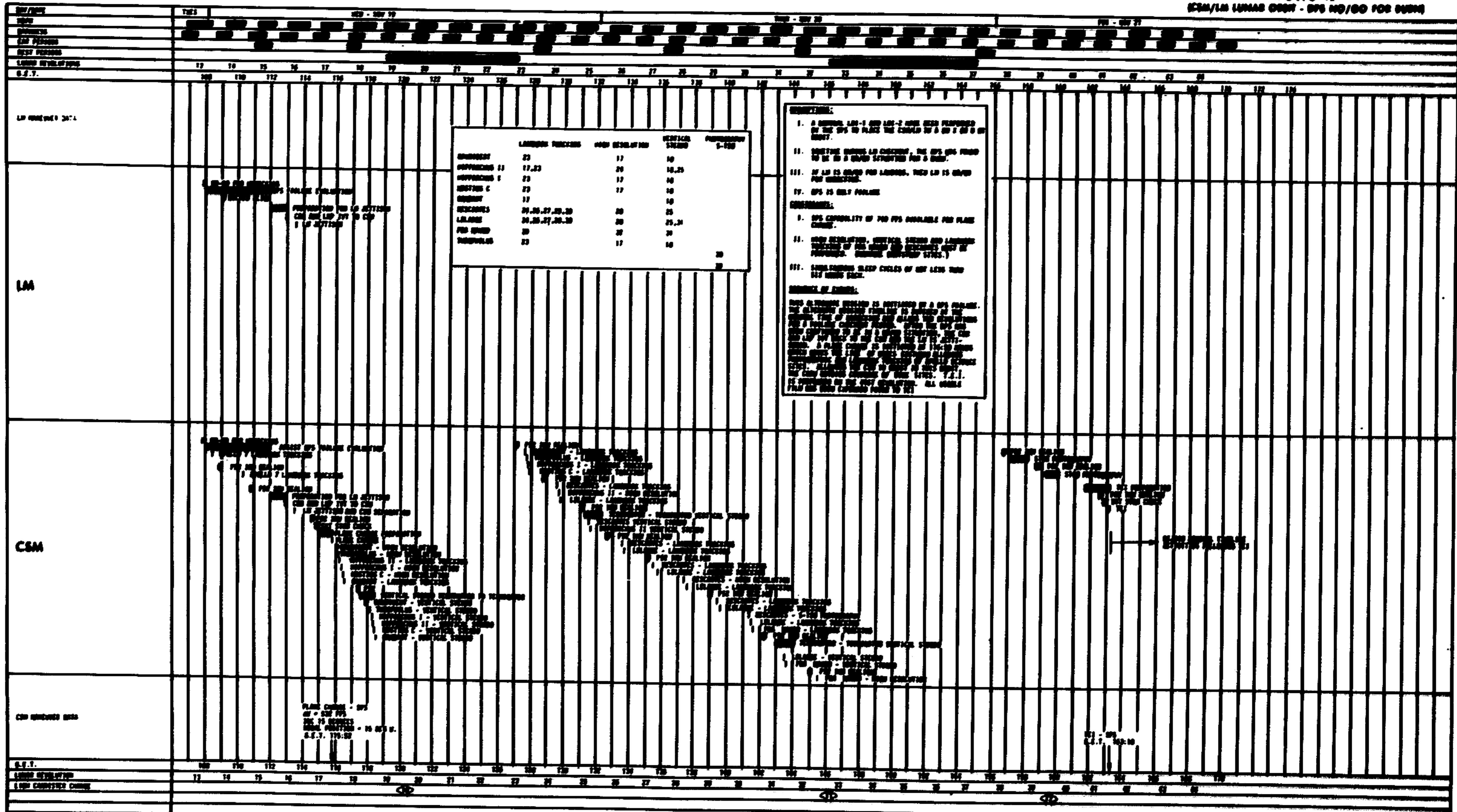
- THE FIRST SLEEP PERIOD WILL OCCUR WITHIN 6 REVOLUTIONS AFTER LOI-2
- LANDMARK TRACKING, VERTICAL STEREO PHOTOGRAPHY, AND HIGH RESOLUTION PHOTOGRAPHY OF FOR HOUND, LALANDE AND DESCARTES MUST BE PERFORMED (GENERAL BOOTSTAMP SITES)
- SIMULTANEOUS SLEEP PERIODS NOT LESS THAN 6 HOURS

SPS PLANE CHANGE  
 GET 05 17  
 TIME 06  
 INCL TO 7.4 DEG  
 NODE TO 26.6 DEG WEST

SPS PLANE CHANGE  
 GET 03 00  
 TIME 07  
 INCL TO 11.1 DEG

SPS PLANE CHANGE  
 GET 11 54  
 TIME 07  
 INCL TO 14 DEG  
 NODE TO 25.7 DEG EAST

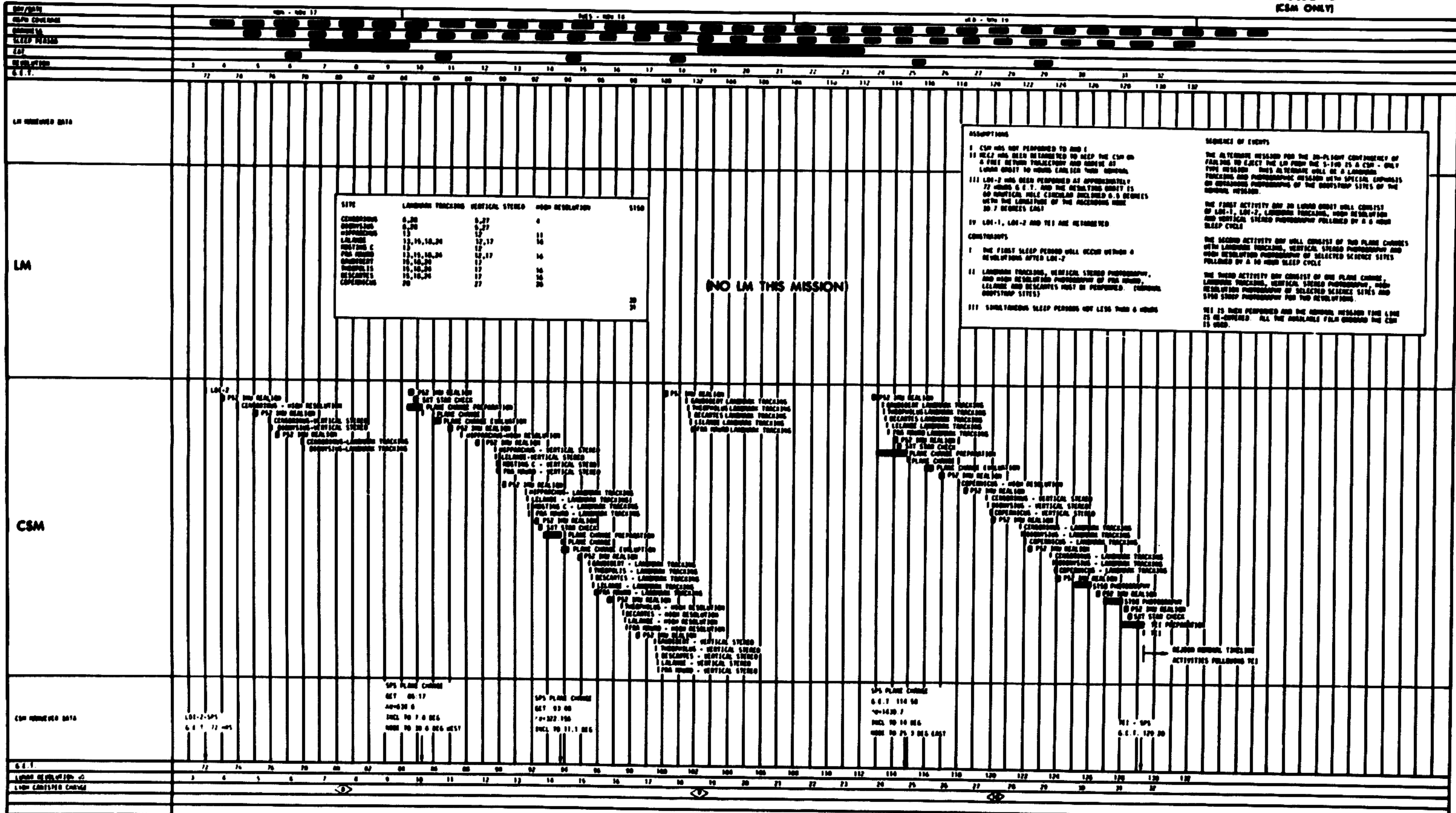
TEI - SPS  
 GET 120 20



**DISREGARD PREVIOUS  
2 IMAGES**



ALTERNATE MISSION 1 SUMMARY FLIGHT PLAN  
 APOLLO 12  
 CSM ONLY



| SITE      | LANDING TORCHING | VERTICAL STEREO | HIGH RESOLUTION | 5160 |
|-----------|------------------|-----------------|-----------------|------|
| CERBERUS  | 0,20             | 0,27            | 0               |      |
| GARDENIA  | 0,20             | 0,27            | 0               |      |
| HOPKINS   | 13               | 12              | 11              |      |
| LALAGE    | 13,16,18,24      | 12,17           | 16              |      |
| HOPKINS C | 13               | 12              | 11              |      |
| FOR HOUND | 13,16,18,24      | 12,17           | 16              |      |
| GARDENIA  | 13,16,24         | 12              | 11              |      |
| HOPKINS   | 13,16,24         | 12              | 16              |      |
| DECAPIES  | 13,16,24         | 12              | 16              |      |
| CERBERUS  | 20               | 27              | 26              |      |

NO LM THIS MISSION

**ASSUMPTIONS**

- CSM HAS NOT PERFORMED TO AND I
- RECEIVED DATA HAS BEEN DELAYED TO KEEP THE CSM ON A FREE RETURN TRAJECTORY AND ARRIVE AT LUNAR ORBIT TO HOUND LATER THAN NORMAL
- LM-2 HAS BEEN PERFORMED AT APPROXIMATELY 77 HOURS G.E.T. AND THE RESULTING ORBIT IS 60 HORIZONTAL MILE CIRCULAR INCLINED 6.6 DEGREES WITH THE LONGITUDE OF THE ASCENDING NODE 20.7 DEGREES EAST
- LM-1, LM-2 AND TEI ARE RETAINED

**SEQUENCE OF EVENTS**

THE ALTERNATE MISSION FOR THE 20-FLIGHT CONTINGENCY OF FAILING TO EJECT THE LM FROM THE S-100 IS A CSM - ONLY TYPE MISSION. THIS ALTERNATE WILL BE A LANDING TORCHING AND PHOTOGRAPHIC MISSION WITH SPECIAL EMPHASIS ON ADVANCED PHOTOGRAPHY OF THE GROUNDSTAMP SITES OF THE ORIGINAL MISSION.

THE FIRST ACTIVITY ON 20 LUNAR ORBIT WILL CONSIST OF LM-1, LM-2, LANDING TORCHING, HIGH RESOLUTION AND VERTICAL STEREO PHOTOGRAPHY FOLLOWED BY A 6 HOUR SLEEP CYCLE.

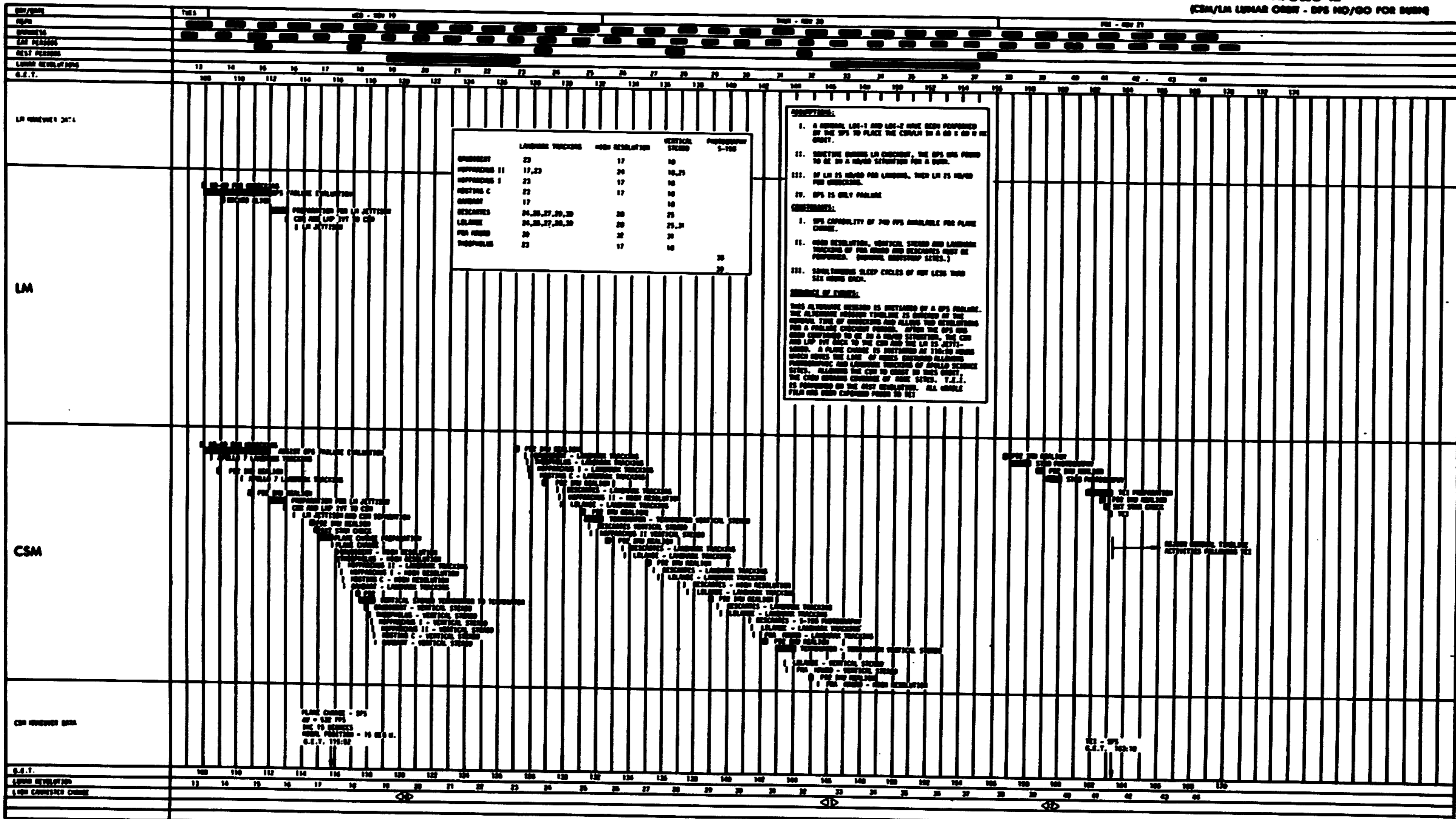
THE SECOND ACTIVITY ON 20 WILL CONSIST OF TWO PLANE CHANGES AT THE LANDING TORCHING, VERTICAL STEREO PHOTOGRAPHY AND HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES FOLLOWED BY A 60 HOUR SLEEP CYCLE.

THE THIRD ACTIVITY ON 20 WILL CONSIST OF ONE PLANE CHANGE, LANDING TORCHING, VERTICAL STEREO PHOTOGRAPHY, HIGH RESOLUTION PHOTOGRAPHY OF SELECTED SCIENCE SITES AND SPOD STAMP PHOTOGRAPHY FOR TWO REVOLUTIONS.

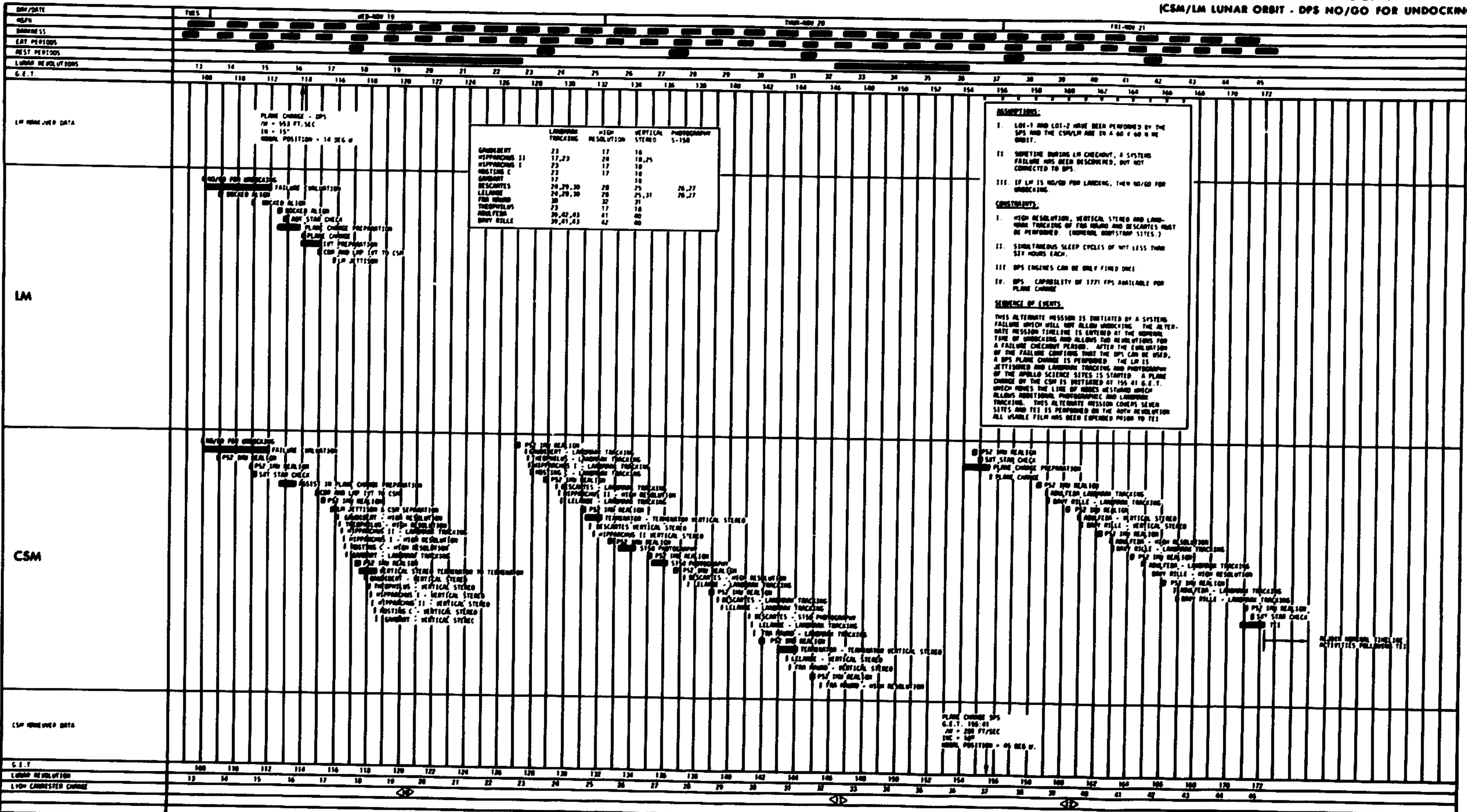
TEI IS THEN PERFORMED AND THE ORIGINAL MISSION TIME LINE IS RESUMED. ALL THE AVAILABLE FILM ONBOARD THE CSM IS USED.

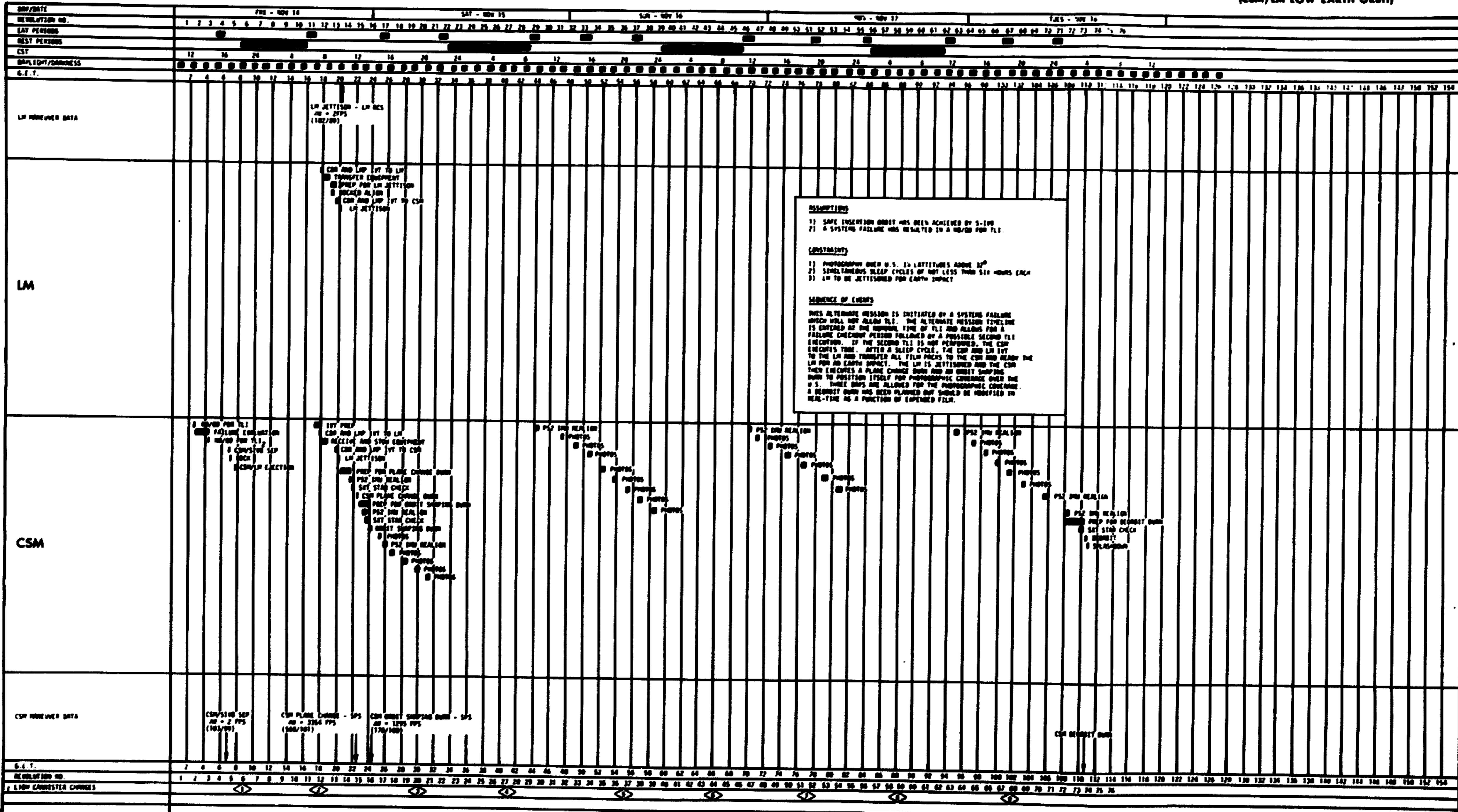
**CONSTRAINTS**

- THE FIRST SLEEP PERIOD WILL OCCUR WITHIN 4 REVOLUTIONS AFTER LM-2
- LANDING TORCHING, VERTICAL STEREO PHOTOGRAPHY, AND HIGH RESOLUTION PHOTOGRAPHY OF FOR HOUND, LALAGE AND DECAPIES MUST BE PERFORMED. (GROUNDSTAMP SITES)
- SOME TYPICAL SLEEP PERIODS NOT LESS THAN 6 HOURS



ALTERNATE MISSION 3 SUMMARY FLIGHT PLAN  
 APOLLO 12 REVISION A  
 (CSM/LM LUNAR ORBIT - DPS NO/GO FOR UNDOCKING)





**APOLLO XII (CONRAD - RED VELCRO)**

Check items eaten

| MEAL | Day 1*, 5**, 9  | Day 2, 6, 10  | Day 3, 7, 11   | Day 4, 8  |
|------|---|---|--|---|
| A    | 1 5 9<br>Peaches<br>Corn Flakes<br>Bacon Squares (8)<br>Orange Drink<br>Coffee w/Sugar                  | 2 6 10<br>Apricots<br>Sausage Patties<br>Scrambled Eggs<br>Grapefruit Drink<br>Coffee w/Sugar         | 3 7 11<br>Pears<br>Corn Flakes<br>Bacon Squares (8)<br>Grape Drink<br>Coffee w/Sugar | 4 8<br>Canadian Bacon & Applesauce<br>Scrambled Eggs<br>Cinnamon Bread (4)<br>Orange-G.F. Drink<br>Coffee w/Sugar |
| B    | Tuna Salad<br>Beef & Gravy WP<br>Jellied Candy<br>Grape Punch   | Turkey & Gravy WP<br>Cheese Crackers (4)<br>Chocolate Pudding<br>Orange-G.F. Drink                    | Frankfurters WP<br>Applesauce<br>Chocolate Bar<br>P.A.-G.F. Drink                    | Shrimp Cocktail<br>Ham & Potatoes WP<br>Apricots<br>Chocolate Pudding<br>Orange Drink                             |
| C    | Cream of Chicken Soup<br>Chicken & Rice<br>Sugar Cookies (4)<br>Butterscotch Pudding<br>P.A.-G.F. Drink | Pork & Scalloped Potatoes<br>Bread Slice Sandwich Spread WP<br>Jellied Candy<br>Cocoa<br>Orange Drink | Salmon Salad<br>Chicken Stew<br>Butterscotch Pudding<br>Peaches<br>Grapefruit Drink  | Spaghetti w/Meat<br>Beef Stew<br>Banana Pudding<br>Cocoa<br>Grape Drink   |

\* Day 1 consists of Meal B and C only

\*\*Day 5 consists of Meal A only

WP = Wet Pack

**APOLLO XII (GORDON - WHITE VELCRO)**

| MEAL  |  | Check items eaten   |   |  |
|---|--|---|---|--|
| Day 1*, 5, 9  | Day 2, 6, 10   | Day 3, 7, 11  | Day 4, 8  |  |
| 1 5 9   | 2 6 10   | 3 7 11  | 4 8   |  |
| <b>A</b> Peaches<br>Corn Flakes<br>Bacon Squares (8)<br>Orange Drink<br>Coffee (black)              | Apricots<br>Scrambled Eggs<br>Sausage Patties<br>Grapefruit Drink<br>Coffee (black)                              | Pears<br>Corn Flakes<br>Bacon Squares (8)<br>Grape Drink<br>Coffee (black)          | Canadian Bacon<br>& Applesauce<br>Strawberry Cubes (4)<br>Scrambled Eggs<br>Orange-G.F. Drink<br>Coffee (black) |  |
| <b>B</b> Tuna Salad<br>Beef & Gravy WP<br>Jellied Candy<br>Grape Punch                              | Turkey & Gravy WP<br>Cheese Crackers (4)<br>Chocolate Pudding<br>Orange-G.F. Drink                               | Frankfurters WP<br>Applesauce<br>Chocolate Bar<br>P.A.-G.F. Drink                   | Shrimp Cocktail<br>Ham & Potatoes<br>Apricots<br>Chocolate Pudding<br>Orange Drink                              |  |
| (Day 5)<br>Beef & Potatoes WP   |  |   |   |  |
| <b>C</b> Pea Soup<br>Chicken & Rice<br>Sugar Cookies (4)<br>Butterscotch Pudding<br>P.A.-G.F. Drink | Pork & Scalloped<br>Potatoes<br>Bread Slice<br>Sandwich Spread WP<br>Date Fruitcake (4)<br>Cocoa<br>Orange Drink | Salmon Salad<br>Beef & Gravy<br>Butterscotch Pudding<br>Peaches<br>Grapefruit Drink | Spaghetti w/Meat<br>Beef Stew<br>Banana Pudding<br>Cocoa<br>Grape Drink   |  |

\*Day 1 consists of Meal B and C only

WP = Wet Pack

**APOLLO XII (BEAN - BLUE VELCRO)**

Check items eaten

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

\* Day 1 consists of Meal B and C only

\*\*Day 5 consists of Meal A only

WP = Wet Pack

Front

Color \_\_\_\_\_

APOLLO XII/LM-6 MENU

CDR - Red Velcro  
Check Items Eaten  
Day 1 Meal C

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

Day 2 Meal A

Peaches  
Scrambled Eggs  
Bacon Squares (8)  
Cocoa  
Orange Drink

Day 2 Meal B

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

Day 2 Meal C

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

2 Spoons

WP = Wet Pack

LMP - Blue Velcro  
Day 1 Meal C

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

Day 2 Meal A

Peaches  
Corn Flakes  
Canadian Bacon &  
Applesauce  
Cocoa  
Orange Drink

Day 2 Meal B

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

Day 2 Meal C

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

FOOD LOG

FOOD LOG

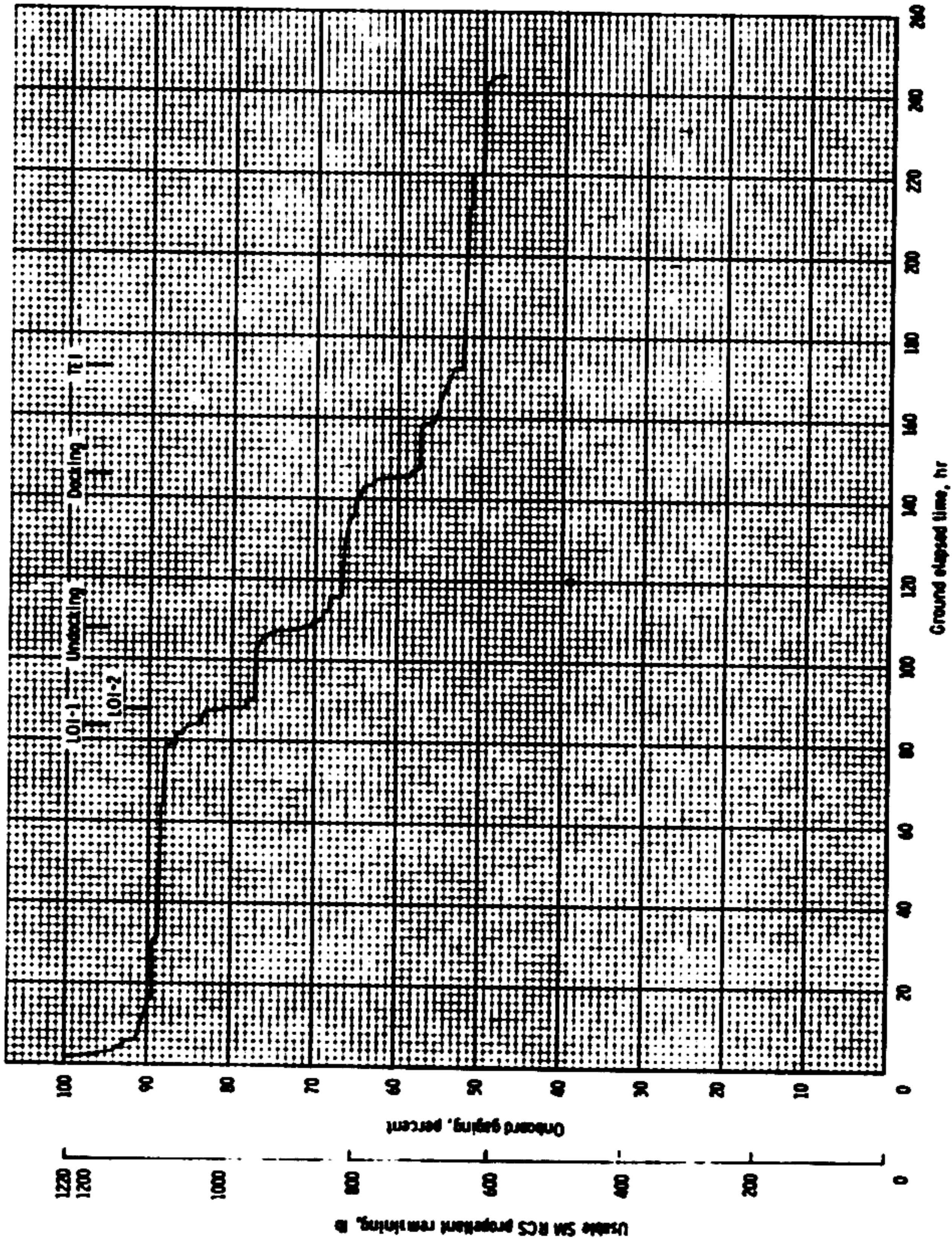
FOOD LOG

FOOD LOG

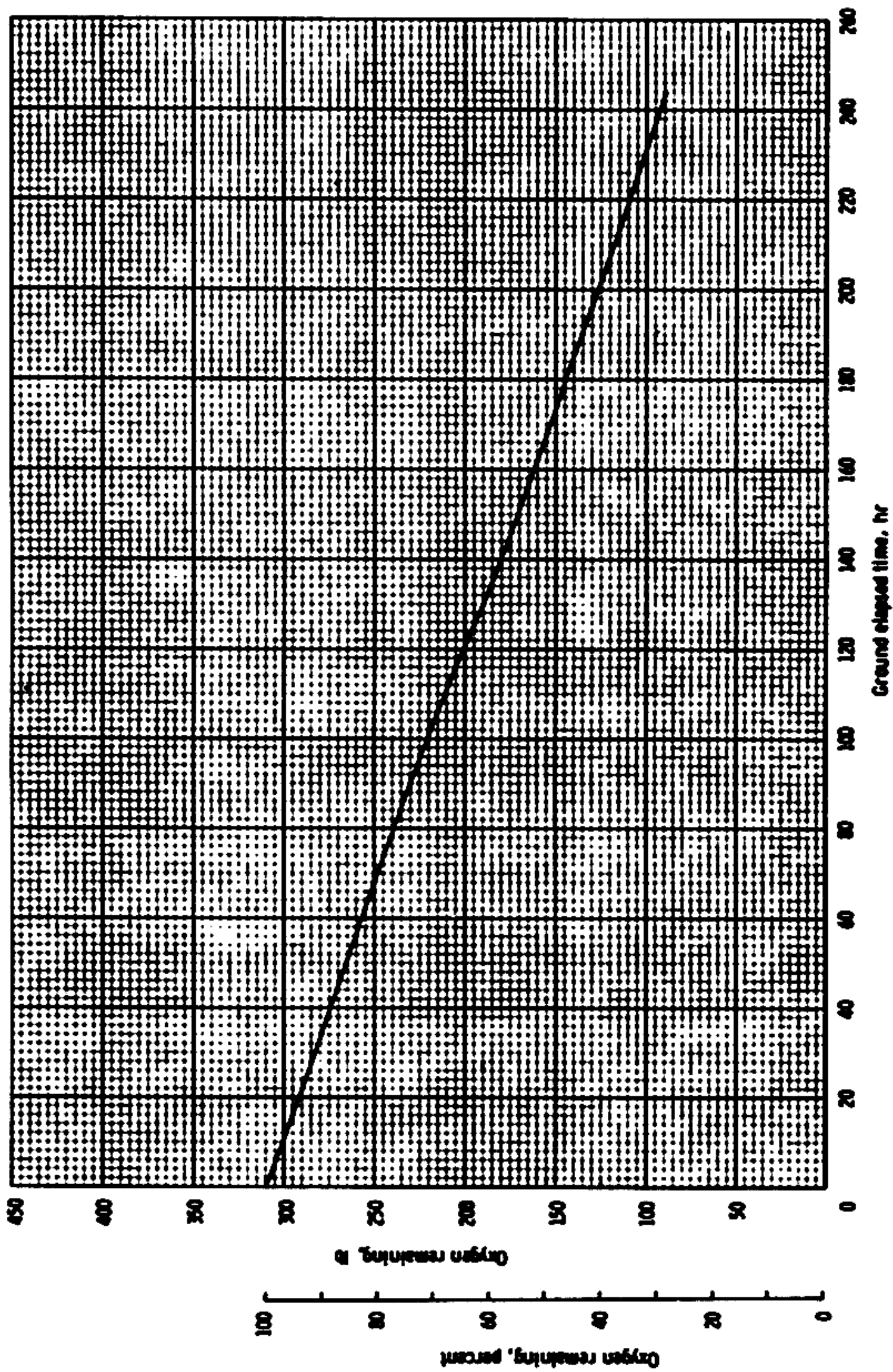
Basic Date  
Changed



DATE NOVEMBER 3, 1969



TOTAL SM RCS



DATE NOVEMBER 3, 1969

TANK

CSM H<sub>2</sub>  
1 TANK

DATE NOVEMBER 3, 1969

