



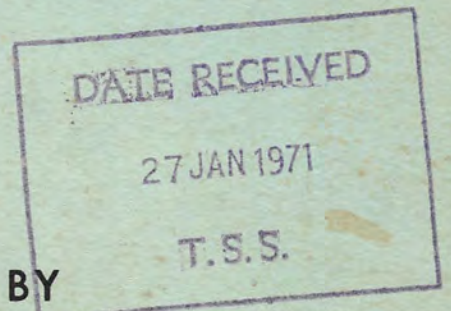
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 14 (JAN 31, 1971)

AS-509/CSM-110/LM-8

FINAL

FLIGHT PLAN



PREPARED BY
APOLLO FLIGHT PLANNING SECTION

FLIGHT PLANNING BRANCH

FLIGHT CREW SUPPORT DIVISION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CHANGED
JANUARY 18, 1971



This final version of **the Apollo 14 Flight Plan** is number two of a set sent to Honeysuckle Creek Tracking Station, Canberra, Australia, for support of the mission.

It is dated January 18 1971 and was received at the station on January 27, four days before launch.

Honeysuckle Creek was one of NASA's three prime 26 metre dish tracking sites (the others being Goldstone, California and Madrid, Spain).

This copy was preserved by Honeysuckle Creek's Hamish Lindsay, who was responsible for the station's Technical Support Section. It was presented to Colin Mackellar by Hamish in July 2004.

The Flight Plan was scanned, and this PDF file assembled, by Colin Mackellar for **www.honeysucklecreek.net**, February 2021, the 50th anniversary of Apollo 14.

For authenticity, the pages have been assembled without rotation of those pages where text and charts are sideways (they can be easily rotated in a PDF viewer). Pages 1-27, and 6-1 and 6-2 are foldout charts. Blank pages have also been retained.

www.honeysucklecreek.net



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 14 (JAN 31, 1971)

AS-509/CSM-110/LM-8

FINAL

FLIGHT PLAN

DATE RECEIVED
27 JAN 1971
T. E. S. [unclear]

RECEIVED AT
27 JAN 1971
HONEYSUCKLE CREEK

PREPARED BY

APOLLO FLIGHT PLANNING SECTION
FLIGHT PLANNING BRANCH
FLIGHT CREW SUPPORT DIVISION



MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CHANGED ✓

JANUARY 11, 1971

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

APOLLO 14 (JAN 31, 1971)

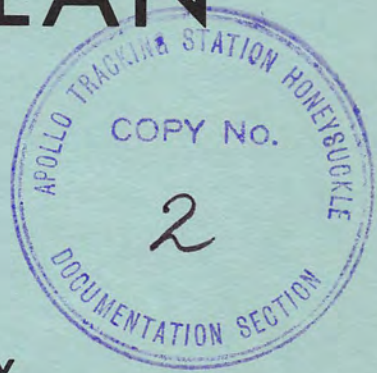
AS-509/CSM-110/LM-8

FINAL

(JANUARY 31, 1971)

FLIGHT PLAN

DATE RECEIVED
22 DEC 1970
T. S. S.



PREPARED BY

APOLLO FLIGHT PLANNING SECTION

FLIGHT PLANNING BRANCH

FLIGHT CREW SUPPORT DIVISION



MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DECEMBER 2, 1970

SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

APOLLO 14
(January 31, 1971)
FLIGHT PLAN

January 18, 1971

PREPARED BY:

C. L. Stough

C. L. STOUGH
BOOK MANAGER

APPROVED BY:

J. W. O'Neill

J. W. O'NEILL, CHIEF
FLIGHT PLANNING BRANCH
FLIGHT CREW SUPPORT DIVISION

It is requested that any organization having comments, questions, or suggestions concerning this document contact C. L. Stough, Flight Planning Branch, CF62, Building 4, room 231, telephone 483-4271.

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes should be submitted to the Apollo Flight Data File Manager T. W. Holloway, CF62, Building 4, room 230, telephone 483-4271.

Distribution of this document is controlled by W. J. North, Chief, Flight Crew Support Division.



APOLLO 14
(January 31, 1971)
FLIGHT PLAN

January 11, 1971

PREPARED BY:

C. L. Stough

C. L. STOUGH
BOOK MANAGER

APPROVED BY:

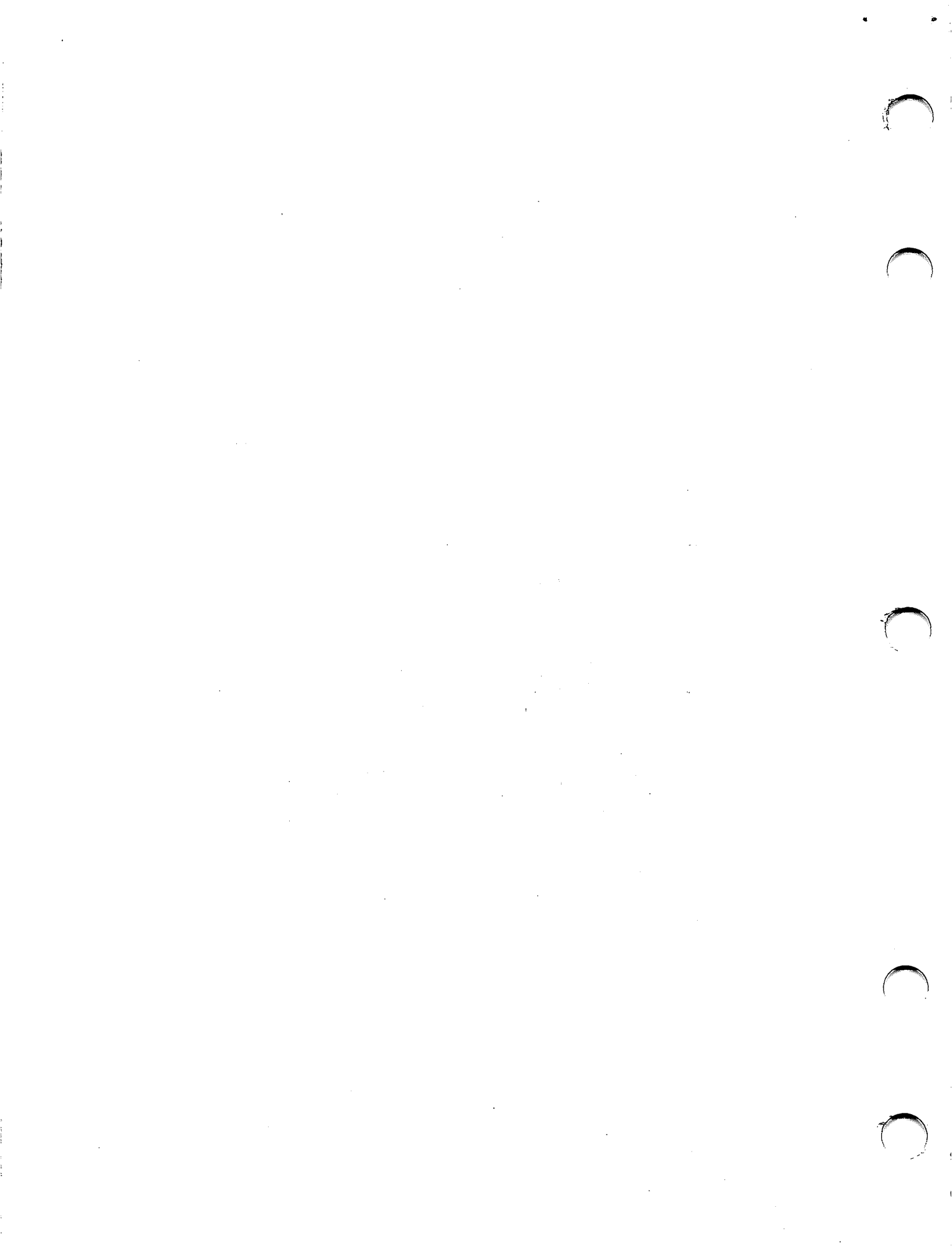
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APOLLO 14
(JANUARY 31, 1971)

FLIGHT PLAN

FINAL

DECEMBER 2, 1970

SUBMITTED BY:

C. L. Stough

C. L. STOUGH
BOOK MANAGER

APPROVED BY:

J. W. O'Neill

J. W. O'NEILL, CHIEF
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W. J. North 11/24/70

WARREN J. NORTH, CHIEF
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CONCURRENCE:

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APOLLO SPACECRAFT PROGRAM OFFICE

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SYGURD A. SJOBERG
DIRECTOR OF FLIGHT OPERATIONS

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ACKNOWLEDGMENTS

Acknowledgment is made to Messrs. R. Rogers, Richard Shinkle, Wood Calvert, John Owen, Joe Shacter, Don Hutson, Thomas Johnson, Leon Vick, Bob Jefferies, Elvin Pippert, Spencer Gardner, Brian Hurlbut, Marion Griffin, Gerald Shinkle, George Laski, and Richard Meckley for their technical support in the preparation of the Apollo 14 Flight Plan.

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 14 (Mission H-3)" published November 24, 1970.

The CSM and LM attitude information was taken from the document, "Operational Lunar Orbit Attitude Sequence for Apollo 14, (Mission H-3)" to be published by December 22, 1970.

Consumable analysis data were prepared by the Consumables Analysis Section of the Mission Planning and Analysis Division.



APOLLO 14
(JANUARY 31, 1971)

FLIGHT PLAN

DECEMBER 23, 1970

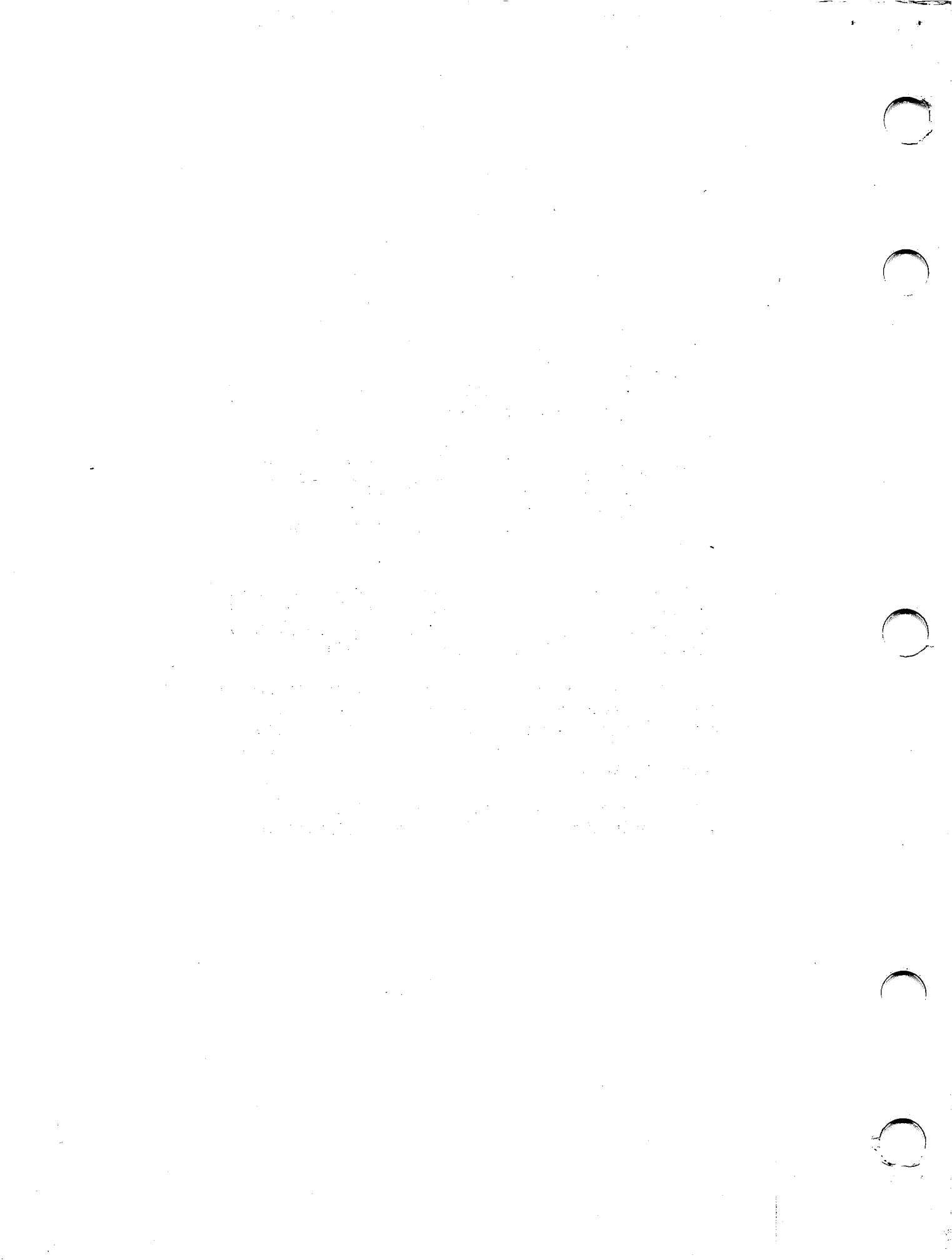
PREPARED BY: C. L. Stough
C. L. STOUGH
BOOK MANAGER

APPROVED BY: J. W. O'Neill
FOR J. W. O'NEILL, CHIEF
FLIGHT PLANNING BRANCH
FLIGHT CREW SUPPORT DIVISION

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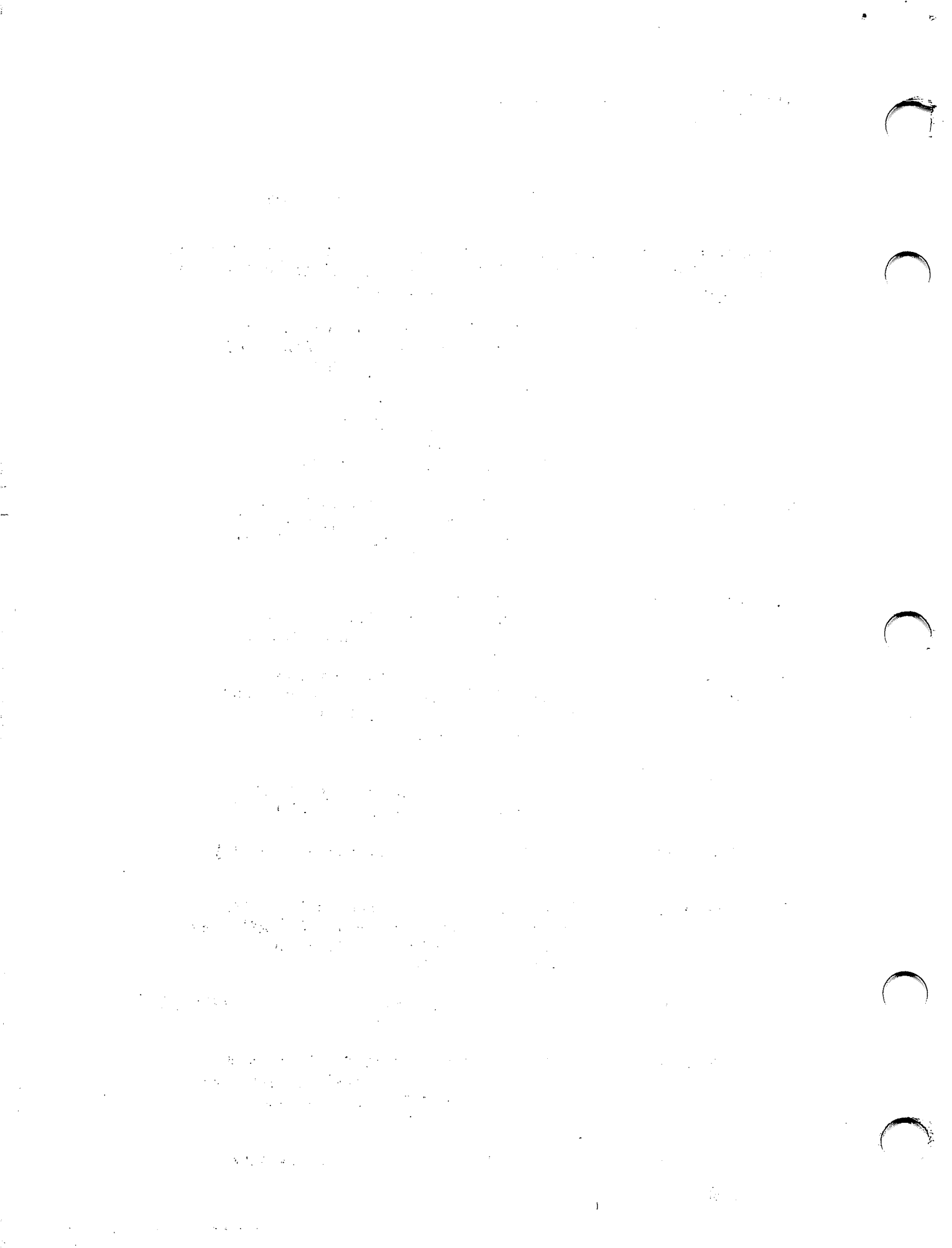


Flight Plan (January 31, 1971 Launch)
Pen & Ink 1/18/71

Flight Data File Pen and Ink Changes

The enclosed pen and ink changes are included with change C to the Apollo 14 Flight Plan dated 1/18/71. The list of effective pages for change C reflect these pen and ink changes.

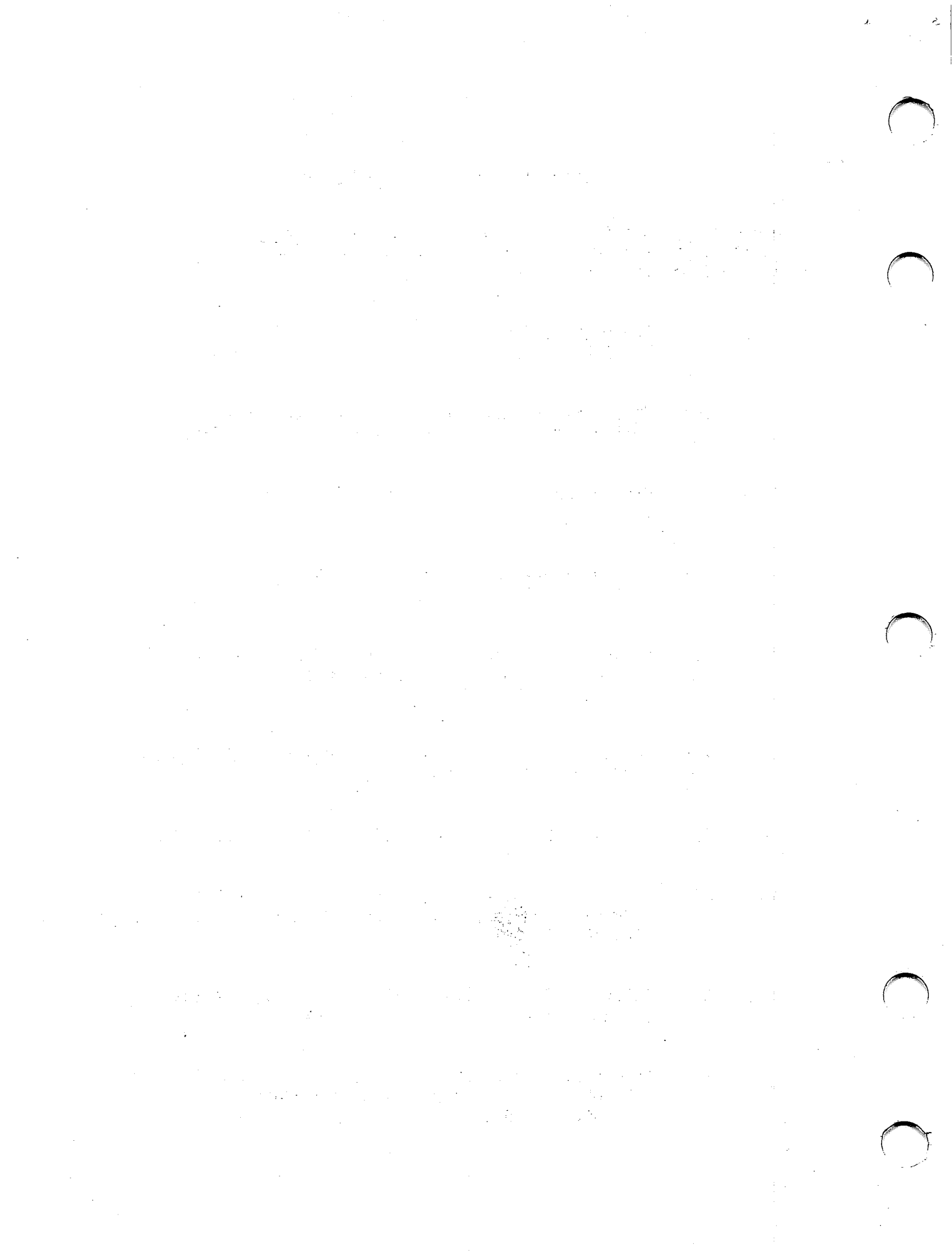
1. Page 3-142: At bottom of page change edition from "Final (Jan)" to "Change C (Jan)" and Date from "December 2, 1970" to "January 18, 1971." ✓
2. Page 3-142: At 116:50 change "(000,114,045) HGA P -84, Y 356" to "(184,202,045) HGA P 3, Y 229" ✓
3. Page 3-196: At bottom of page change edition from "Change A (Jan)" to "Change C (Jan)" and date from "December 23, 1970" to "January 18, 1971" ✓
4. Page 3-196: At 139:55 change "CM/EL/250/CEX (f11,1/250,∞)(31FR)" to "CM/EL/250/CEX (f8,1/250,∞)(31FR)" ✓
5. Page 3-198: At bottom of page change edition from "Final (Jan)" to "Change C (Jan)" and date from "December 2, 1970" to "January 18, 1971" ✓
6. Page 3-198: At 140:06 change "Photo TGT 7, North (f11,1/250,∞)" to "Photo TGT 7, North (f8,1/250,∞)" ✓
7. Page 1-16: Delete TV show on Thursday 4, February 7:23 pm CST. ✓
8. Page 3-96: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE C (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 18, 1971" ✓
9. Page 3-96: At 100:58, delete TV callout "CM5/TV-AVG (f22) TV (GDS) 101:00 - 101:14" ✓
10. Page 3-98: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE C (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 18, 1971" ✓
11. Page 3-98: From 101:00 to 101:14 delete TV show ✓



FLIGHT DATA FILE PEN AND INK CHANGES

The enclosed pen and ink changes are included with change B to the Apollo 14 Flight Plan dated 1/11/71. The list of effective pages for change B reflect these pen and ink changes.

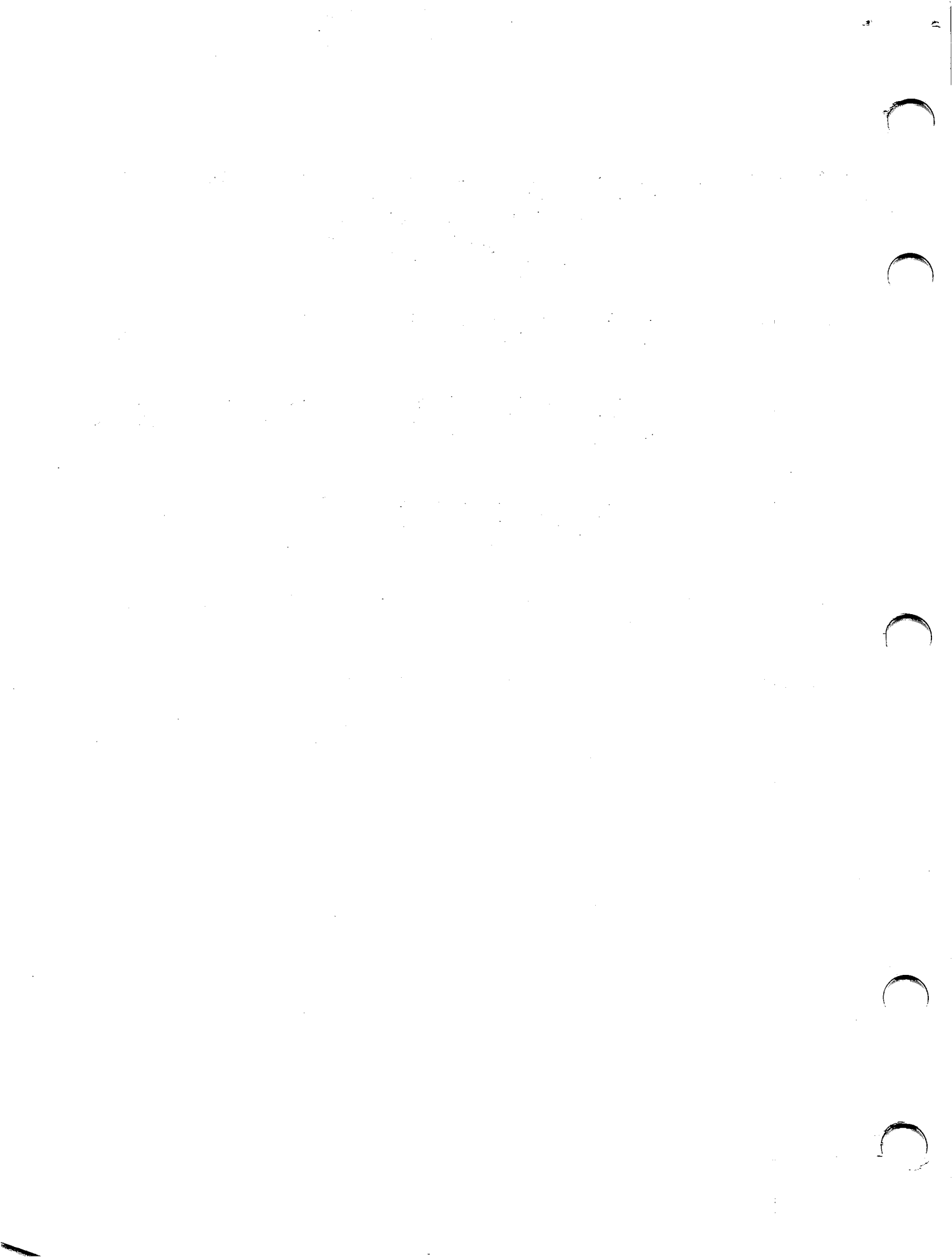
1. Page 1-16: Under CST and GET for Friday 5, FEB. Change "8:20 AM" to 8:06 AM" and "113:40" to "113:43". ✓
2. Page 1-16: Under CST and GET for Saturday 6, FEB. Change "3:59AM" to "3:56 AM" and "133:31" to "133:33". ✓
3. Page 3-78: Change CSM IMU roll angle for LOI +2 hr DPS abort from "301" to "121". ✓
4. Page 3-78: Change LM FDAI angles for LOI +2 hr DPS abort from "10,81,1" to "170,261,359". ✓
5. Page 3-79: At bottom of page change edition from "FINAL (JAN)" to "CHANGE B (JAN)" and Date from "DECEMBER 2, 1970" to "JANUARY 11, 1971". ✓
6. Page 3-79: In the Notes column under S-IVB LUNAR IMPACT change "LONG 33.250" to "LONG -33.250". ✓ *add Milton*
7. Page 3-82: Change "AOS to LOS = 874 SEC" to "AOS TO LOS = 450 SEC". ✓
8. Page 3-86: At bottom of page change edition from "FINAL (JAN)" to "CHANGE B (JAN)" and Date from "DECEMBER 2, 1970" to "JANUARY 11, 1971". ✓
9. Page 3-86: Delete "V48 (21111)(X1111)" and "(21111)" at the bottom of the page. ✓
10. Page 3-87: At bottom of page change edition from "FINAL (JAN)" to "CHANGE B (JAN)" and Date from "DECEMBER 2, 1970" to "JANUARY 11, 1971". ✓



11. Page 3-87: Change DAP LOAD STATUS at top of time column from "21111" to "21101".
Delete "V48 (21101)(X1111)" and "(21101)" at bottom of page. (X1111)
12. Page 3-106: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 11, 1971".
13. Page 3-106: Under CSM LOW ALTITUDE LANDMARK TRACKING PROFILE change "AOS TO LOS = 72 SEC" to "AOS TO LOS = 52 SEC".
14. Page 3-128: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 11, 1971".
15. Page 3-128: At 111:58 add "TERMINATE WASTE WATER DUMP".
16. Page 3-136: At bottom of page change edition from "FINAL (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 2, 1970" to "JANUARY 11, 1971".
17. Page 3-136: At 114:32 in the time column change "(10101)" to "(11101)"
(X1111) to (X1111)
18. Page 3-148: At bottom of page Change edition from "CHANGE A (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 11, 1971".
19. Page 3-148: At 118:24 change "CM4/DC/80/VHBW-BRKT-IVL (f2.8/1/60,∞) (51 FR)" to "CM4/DC/80/VHBW-BRKT,IVL, PCM CABLE (f2.8,1/60,∞) (51 FR)".
20. Page 3-214: At bottom of page change edition from "FINAL (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 2, 1970" to "JANUARY 11, 1971".



21. Page 3-214: At 144:16, delete the following: "REMOVE DECONTAMINATION BAGS (A8) UNSTOW AND ASSEMBLE:
VACUUM CLEANER, PWR CABLE,
HOSE, AND BAG (SIDE A12, SIDE A8)
CONNECT PWR CABLE (PNL 201)". ✓
22. Page 3-216: At 144:32, change "DECONTAMINATION BAGS (A8, U1)" to "DECONTAMINATION BAGS". ✓
23. Page 3-216: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 11, 1971". ✓
24. Page 3-225: At bottom of page change edition from "CHANGE A (JAN)" to "CHANGE B (JAN)" and date from "DECEMBER 23, 1970" to "JANUARY 11, 1971". ✓
25. Page 3-225: In the LM LUNAR IMPACT BOX change "LONG 1929°W" to "LONG 19.27°W". ✓
26. Page 3-225: In Notes column change "LAT 3.32°S" to "LAT 3.04°S" and "LONG 23.38°W" to "LONG 24.64°W". ✓



FLIGHT PLAN
(January 31, 1971 Launch)

LIST OF EFFECTIVE PAGES

FINAL DATE 12/2/70
CHANGE DATE 12/23/70
CHANGE DATE 1/11/71
CHANGE DATE 1/18/71

change implemented 27/1/71 LH.

* INDICATES CURRENT CHANGE

PAGE NUMBER	CHANGE DATE
✓*i thru iia	1/18/71
iii thru vi	12/23/70
vii thru xx	FINAL
✓1-1 thru 1-15	FINAL
*1-16	1/18/71
1-17 thru 1-27	FINAL
2-1 thru 2-5	FINAL
3-1 thru 3-8	FINAL
3-9 thru 3-14	12/23/70
3-15 thru 3-31	FINAL
3-32	12/23/70
3-33 thru 3-36	FINAL
3-37	12/23/70
3-38 thru 3-49	FINAL
3-50	12/23/70
3-51	FINAL
3-52	12/23/70
3-53 thru 3-76	FINAL
3-77	12/23/70
3-78 and 3-79	1/11/71
3-80 thru 3-81	FINAL
3-82	1/11/71
✓3-83 thru 3-85	FINAL
*3-86	1/18/71
3-87	1/11/71
✓3-88 thru 3-95	FINAL
*3-96	1/18/71
3-97	FINAL
✓*3-98	1/18/71

LIST OF EFFECTIVE PAGES (CONT)

3-99 thru 3-103	FINAL
3-104	12/23/70
3-105	FINAL
3-106	1/11/71
3-107 thru 3-109	FINAL
3-110	12/23/70
3-111 thru 3-116	FINAL
3-117	12/23/70
3-118	FINAL
3-119	12/23/70
3-120	FINAL
3-121 thru 3-123	12/23/70
3-124	FINAL
3-125	12/23/70
3-126 and 3-127	FINAL
3-128	1/11/71
3-129 thru 3-131	FINAL
3-132	12/23/70
3-133 and 3-134	FINAL
3-135	12/23/70
3-136	1/11/71
3-137 and 3-138	FINAL
3-139	12/23/70
3-140 and 3-141	FINAL
✓ *3-142	1/18/71
3-143 thru 145	FINAL
3-146	12/23/70
3-147	FINAL
3-148	1/11/71
3-149	FINAL
3-150	12/23/70
3-151	FINAL
3-152	12/23/70
3-153	FINAL
3-154	12/23/70
3-155 thru 3-173	FINAL
3-174	12/23/70
3-175	FINAL
3-176	12/23/70
3-177 thru 3-179	FINAL
3-180	12/23/70
✓ 3-181 thru 3-195	FINAL
*3-196	1/18/71
✓ 3-197	FINAL
*3-198	1/18/71
3-199 thru 3-203	FINAL

LIST OF EFFECTIVE PAGES (CONT)

3-204	1/11/71
3-205	FINAL
3-206	12/23/70
3-207	FINAL
3-208	12/23/70
3-209 and 3-210	FINAL
3-211	12/23/70
3-212 and 3-213	FINAL
3-214	1/11/71
3-215	FINAL
3-216	1/11/71
3-217	12/23/70
3-218	1/11/71
3-219	FINAL
3-220 thru 3-225	12/23/70
3-226	FINAL
3-227 thru 3-232	12/23/70
3-233 thru 3-239	FINAL
3-240	12/23/70
✓ 3-241 thru 3-243	FINAL
✓ *3-244 and 3-245	1/18/71
✓ 3-246 and 3-247	FINAL
✓ *3-248	1/18/71
3-249 thru 3-260	FINAL
3-261	12/23/70
3-262 thru 3-268	FINAL
3-269 and 3-270	12/23/70
3-271	FINAL
3-272	12/23/70
3-273 thru 3-280	FINAL
3-281 and 3-282	12/23/70
3-283 thru 3-288	FINAL
4-1 thru 4-4	1/11/71
✓ 4-5 thru 4-13	12/23/70
*4-14	1/18/71
✓ 4-15	12/23/70
*4-16	1/18/71
4-17 thru 4-32	12/23/70
5-1 thru 5-18	FINAL
6-1 and 6-2	FINAL



FLIGHT PLAN
(January 31, 1971 Launch)

LIST OF EFFECTIVE PAGES

FINAL DATE 12/2/70
CHANGE DATE 12/23/70 ✓
CHANGE DATE 1/11/71 ✓

*change implemented
27/1/71
RA.*

* INDICATES CURRENT CHANGE

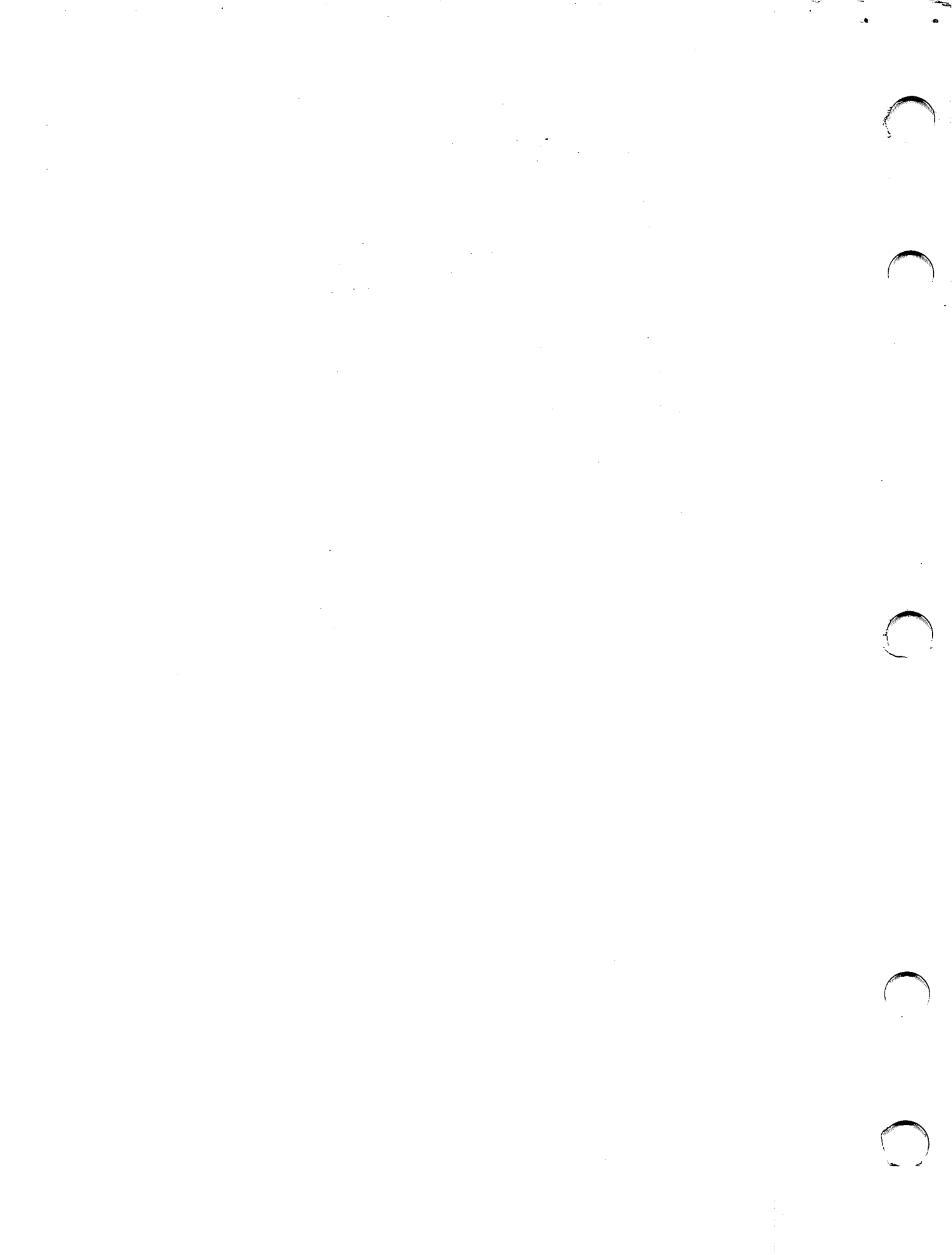
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*i thru iia	1/11/71
iii thru vi	12/23/70
vii thru xx	FINAL
1-1 thru 1-15	FINAL
✓ *1-16	1/11/71
1-17 thru 1-27	FINAL
2-1 thru 2-5	FINAL
3-1 thru 3-8	FINAL
3-9 thru 3-14	12/23/70
3-15 thru 3-31	FINAL
3-32	12/23/70
3-33 thru 3-36	FINAL
3-37	12/23/70
3-38 thru 3-49	FINAL
3-50	12/23/70
3-51	FINAL
3-52	12/23/70
3-53 thru 3-76	FINAL
3-77	12/23/70
✓ *3-78 and 3-79	1/11/71
✓ 3-80 thru 3-81	FINAL
✓ *3-82	1/11/71
✓ 3-83 thru 3-85	FINAL
✓ *3-86 and 3-87	1/11/71
3-88 thru 3-95	FINAL
3-96	12/23/70
3-97	FINAL
3-98	12/23/70

LIST OF EFFECTIVE PAGES (CONT)

3-99 thru 3-103	FINAL
3-104	12/23/70
✓ 3-105	FINAL
*3-106	1/11/71
3-107 thru 3-109	FINAL
3-110	12/23/70
3-111 thru 3-116	FINAL
3-117	12/23/70
3-118	FINAL
3-119	12/23/70
3-120	FINAL
3-121 thru 3-123	12/23/70
3-124	FINAL
3-125	12/23/70
✓ 3-126 thru 3-127	FINAL
*3-128	1/11/71
3-129 thru 3-131	FINAL
3-132	12/23/70
3-133 and 3-134	FINAL
3-135	12/23/70
✓ *3-136	1/11/71
3-137 thru 3-138	FINAL
3-139	12/23/70
3-140 thru 3-145	FINAL
3-146	12/23/70
3-147	FINAL
✓ *3-148	1/11/71
3-149	FINAL
3-150	12/23/70
3-151	FINAL
3-152	12/23/70
3-153	FINAL
3-154	12/23/70
3-155 thru 3-173	FINAL
3-174	12/23/70
3-175	FINAL
3-176	12/23/70
3-177 thru 3-179	FINAL
3-180	12/23/70
3-181 thru 3-195	FINAL
3-196	12/23/70
✓ 3-197 thru 3-203	FINAL
*3-204	1/11/71
3-205	FINAL
3-206	12/23/70
3-207	FINAL
3-208	12/23/70
3-209 thru 3-210	FINAL
3-211	12/23/70
3-212 and 3-213	FINAL

LIST OF EFFECTIVE PAGES (CONT)

✓*3-214	1/11/71
3-215	FINAL
✓*3-216	1/11/71
✓3-217	12/23/70
✓*3-218	1/11/71
3-219	FINAL
3-220 thru 3-225	12/23/70
3-226	FINAL
3-227 thru 3-232	12/23/70
3-233 thru 3-239	FINAL
3-240	12/23/70
3-241 thru 3-260	FINAL
3-261	12/23/70
3-262 thru 3-268	FINAL
3-269 and 3-270	12/23/70
3-271	FINAL
3-272	12/23/70
3-273 thru 3-280	FINAL
3-281 and 3-282	12/23/70
✓3-283 thru 3-288	FINAL
✓*4-1 thru 4-4	1/11/71
4-5 thru 4-32	12/23/70
5-1 thru 5-18	FINAL
6-1 and 6-2	FINAL



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ABBREVIATIONS

ABB	abbreviation or abbreviated
AC	alternating current
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
ALSD	Apollo lunar surface drill
ALSEP	Apollo lunar surface experiment package
ALT	altitude
AM	amplitude modulation
AMP or amp	amperes
AMPL	amplifier
ANG	Antigua
ANT	antenna
AOH	Apollo Operations Handbook
AOL	Atlantic Ocean line
AOS	acquisition of signal or acquisition of site
AOT	alignment optical telescope
APS	ascent propulsion subsystem
ARIA	Apollo range instrumentation aircraft
ARS	atmosphere revitalization system
ASC	ascent
A/T	alignment technique
ATT	attitude
AUX	auxiliary
AZ	azimuth
BAT	battery
BEF	blunt end forward
BD	band
BDA	Bermuda
BIOMED	bio-medical data
BP	barber pole
BRKT	bracket
BSLSS	buddy secondary life support system
BT	burn time
BU	backup
BW	black and white (Film 3400)
BWD	backward
BW1	black and white (Film 3401)

ABBREVIATIONS (CONT)

CAP COM	capsule communicator
CALIB	calibration
CAM	camera
CB	circuit breaker
CCGE	cold cathode gage experiment
CCIG	cold cathode ion gage
CCW	counter clockwise
CDH	constant delta altitude
CDR	Commander
CDU	coupling data unit
CEX	color external (S0358)
CIN	color internal (S0168)
CIRC	circulation
CK	check
CKT	circuit
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 or contingency
CP	control point
CPLLE	charged particle lunar environment experiment
CRO	Carnarvon, Australia
CRYO	cryogenic
CS	contingency sample
CSC	close-up stereo camera
CSI	coelliptic sequence initiation
CSM	command and service modules
CST	central standard time
C/S	central station
C&WS	caution and warning system
CW	clockwise
CWEA	caution and warning electronics assembly
CYI	Grand Canary Island
DAC	data acquisition camera
DAP	digital auto pilot
DB	deadband
DC	direct current or data camera (70mm)

ABBREVIATIONS (CONT)

DCA	digital command assembly
DEDA	data entry and display assembly
DEG	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
DRT	dome removal tool
DS	documented sample
DSE	data storage equipment(CSM)
DSEA	data storage equipment assembly (LM)
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
EKG	electrocardiogram
EL	electric Hasselblad camera
ELEV	elevation
EMER	emergency
EMS	entry monitor system
EMU	extravehicular mobility unit
ENG	engine
ENH	earth near horizon
ENT	entry
E.O.	earth orbit
EOM	end of mission
EPO	earth parking orbit
EPHEM	Ephemeris
EPS	electrical power subsystem
EQUIP	equipment
ERECT	erectable
EST	eastern standard time
ETB	equipment transfer bag
EVA	extravehicular activity

ABBREVIATIONS (CONT)

EVAP	evaporator
EVCS	extravehicular communications system
EVT	extravehicular transfer
EXT	external
f	f-stop
FAM	familiarize or familiarization
FC	fuel cell
FCS	fecal containment system
FDAI	flight director attitude indicator
FLT	flight
FM	frequency modulated
FOV	field of view
FPS	feet per second
fps	frames per second
FR	frame(s)
FT or ft	feet
FTO	flight test objective
FTP	full throttle position
FTT	fuel transfer tool
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
GETIL	ground elapsed time of landing for TIG time of abort burn
GLY	glycol
GMT	Greenwich mean time
G&N	guidance and navigation
GNCS	guidance, navigation and control system (CSM)
GWM	Guam
GYM	Guaymas, Mexico
H ₂	hydrogen
HA	apogee altitude
HAW	Hawaii
HBR	high bit rate (TLM)
HD	highly desirable
HFE	heat flow experiment
HGA	high-gain antenna
HI	high (switch position)

ABBREVIATIONS (CONT)

HOR	horizon
H2O	water
HP	perigee altitude
HR	hour(s)
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	interval
IP	initial point
ISA	interim stowage assembly
IU	instrumentation unit
IVC	intervehicular communications
IVL	intervalometer
IVT	intravehicular transfer
i_R	inclination of the ascending return
JETT	jettison
KM	kilometer
kwh	kilowatt hour
LA	launch azimuth
LAT	latitude
LBR	low bit rate (TLM)
LB or lb	pound(s)
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
LEVA	lunar extravehicular visor assembly
LFH	lunar far horizon
LGC	LM guidance computer
LH	left-hand
L/H	local horizontal

ABBREVIATIONS (CONT)

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
LPD	landing point designator
LPO	lunar parking orbit
LPM	lunar portable magnetometer
LR	landing radar
LRRR or LR ³	laser ranging retro-reflector
L/S	landing site or lunar surface
LSM	lunar surface magnetometer
LT	light
LTC	lunar topographic camera
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
MBW	medium black and white film
MCC	midcourse correction
MCC-H	Mission Control Center - Houston
MDC	main display console
MEAS	measurement
MESA	modular experiment stowage assembly
MET	mission event timer
MGA	middle gimbal angle
M/I	minimum impulse
MIN	minimum or minutes(s)
MIR	mirror
MLA	Merrit Island, Florida, launch area
mm or MM	millimeter

ABBREVIATIONS (CONT)

MNA or MNB	main electrical bus A or B
MNVR	maneuver
MON	monitor
MPL	mid-Pacific line
MPS	main propulsion system
M/R	mixture ratio (fuel to oxidizer)
MSFN	Manned Space Flight Network
MTVC	manual thrust vector control
N_2	nitrogen
NAV	navigation
NM	nautical miles
NO.	number
NOM	nominal
NXX	Noun XX
O_2	oxygen
OBS	observation
O/F	oxidizer to fuel ratio
OGA	outer gimbal angle
OID	octal identifier
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	Pericynthion
PGA	pressure garment assembly
PGNCS	primary guidance, navigation and control system (LM)
PGNS	primary guidance navigation system (LM)
PHOTO	photograph
PIPA	pulse integrating pendulous accelerometer
PKG	package
PLSS	portable life support system
PM	phase modulated
POL	polarity or polarizing

ABBREVIATIONS (CONT)

PRE	Pretoria, South Africa
PREF	preferred
PREP	preparation
PRESS	pressure
PRIM	primary
PROP	proportional
PRN	pseudo random noise
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 gaging system
PWR	power
PXX	Program XX
PYRO	pyrotechnic
QTY	quantity
QUAD	quadrant
R	roll or range
R&B	red and blue
RAD	radiator, radial, or radiation
RCDR	recorder
RCS	reaction control system
RCU	remote control unit
RCV	receiver
REACQ	reacquire
REFSMAT	reference stable member matrix
REG	regulator
REQD	required
REV	revolution
RH	right-hand
RHC	rotational hand controller
RING	ringsite
RLS	radius of landing site
RNDZ	rendezvous
RNG	range or ranging
RR	rendezvous radar
RSI	roll stability indicator
RSLV	resolver
RT	realtime
RTC	realtime command
RTG	radioisotope thermoelectric generator
RXX	Routine XX

ABBREVIATIONS (CONT)

SA	shaft angle
SC	spacecraft
SCE	signal conditioning equipment
SCS	stabilization control system
SCT	scanning telescope
SE	southeast or subearth
SEC	secondary
SECO	S-IVB engine cutoff
SECS	sequential events control system
SEF	sharp end forward
SEL	select
SEP	separate
SEQ	sequence
SHUT	shutter speed, TOPO camera
SIDE	suprathermal ion detector experiment
SII	Saturn II (second stage)
S-IVB	Saturn IVB(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 or subsolar
STBY	standby
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 or talkback
TCA	time of closest approach
TD	touchdown
T&D	transposition and docking
TD&E	transposition docking and LM ejection
TDS	thermal degradation sample
TEC	transearth coast
TECH	technique

ABBREVIATIONS (CONT)

TEI	transearth injection
TEMP	temperature
TERM	terminate
TEX	Corpus Christi, Texas
TGT	target
THC	translation hand controller
TIG	time of ignition
TLC	translunar coast
TLI	translunar injection
TLM or TM	telemetry
TPF	terminal phase final
TPI	terminal phase initiation
TPM	terminal phase midcourse
T/R	transmitter/receiver
TRANS	translation
TRK	track or tracking
TRUN	trunnion
TV	television
TVC	thrust vector control
TWR	tower
UCTA	urine collection transfer assembly
UHT	universal hand tool
ULC	utility light clamp
ULL	ullage
UMB	umbilical
UNBAL	unbalance (meter)
UNDK	undock
US	United States
V	velocity
VG _{IMU}	velocity to be gained as related to IMU orientation
VGX	velocity to be gained (X-body axis)
VGY	velocity to be gained (Y-body axis)
VGZ	velocity to be gained (Z-body axis)
VR	resultant velocity
VX	velocity along the X-axis
VY	velocity along the Y-axis
VZ	velocity along the Z-axis
VAN	USNS vanguard
VHBW	very high speed black and white film
VHF	very high frequency
VLV	valve
VOX	voice keying
VXX	Verb XX

ABBREVIATIONS (CONT)

WRT	with respect to
X	time of closest approach (symbol)
XDOT	rate of change along the X-axis
XFER	transfer
XMIT	transmit or transmitter
XPNDER	transponder
Y	yaw
YDOT	rate of change along the Y-axis
ZDOT	rate of change along the Z-axis
ZPN	impedance pneumogram
ΔA_z	azimuth change (difference)
ΔH	altitude change (difference)
ΔP	pressure change (difference)
ΔR	position change (difference)
ΔV	velocity change (difference)
ΔVC	velocity change at engine cutoff
ΔVT	velocity change loaded pre-burn
#	frame number(s) (for camera data)
ϕ	latitude
λ	longitude

PHOTOGRAPHIC NOMENCLATURE

AAA/BBB/CCC/DDD - EEE, EEE, (fGG, HHH, III) JJ fps or (JJ FR) (KK% MAG).

AAA - Location from which photography is to be accomplished

BBB - Camera

CCC - Lens (film type on LTC camera only)

DDD - Film Type (direction of flight of CM, i.e., SEF, BEF, for LTC camera only)

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

fGG - Lens Aperture Setting

HHH - Shutter Speed

III - Focus Distance in Feet

JJ - Number of frames for DC, LTC, EL or

JJ - Frame Rate for the DAC only

KK - Magazine percent for the DAC only

CODE EXAMPLE:

1. CM4/DAC/18/CEX-BRKT, SPOT (fGG,1/250,∞) 12 fps (50% MAG)

Meaning: Photos are taken from CM right hand rendezvous window using the DAC with 18mm lens and S0368 film. The camera will be bracket mounted with the following camera settings: f-stop from spotmeter reading, shutter speed 1/250 of a second, focus at infinity, 12 frames per second, and 50% of MAG to be used.

2. CM4/EL/80/BW-BRKT, IVL (f6.5,1/125,∞) (10 FR)

Meaning: Photos are taken from CM right hand rendezvous window using the Electric Hasselblad camera with the 80mm lens and black & white film (3400). The camera will be bracket mounted with the following settings f-stop (aperture) f6.5, shutter speed 1/125, and focus at infinity. The operation of the shutter will be controlled by the intervalometer. Ten frames have been allotted for this sequence.

PHOTOGRAPHIC NOMENCLATURE (CONT)

3. CM3/LTC/BW/SEF - SHUT-1/100, RNG - 74.2, INT 66.0) (164 FR)

Meaning: Photos are taken from the hatch window of the CM with the Lunar Topographic camera, with black and white film. The SC is oriented such that the sharp end (+X axis) is forward (in the direction of flight) and the camera is mounted with the "arrow" pointing in the direction of flight. The controls are set for a shutter speed of 1/100 of a second, the range to the calculated counter setting of 74.2 and the interval of 66.0 frames per minute. One hundred and sixty four (164) frames have been allotted for this photographic sequence.

CAMERA LOCATIONSCOMMAND MODULE

CM-1	LH Side Window
CM-2	LH Rendezvous Window
CM-3	Hatch Window
CM-4	RH Rendezvous Window
CM-5	RH Side Window

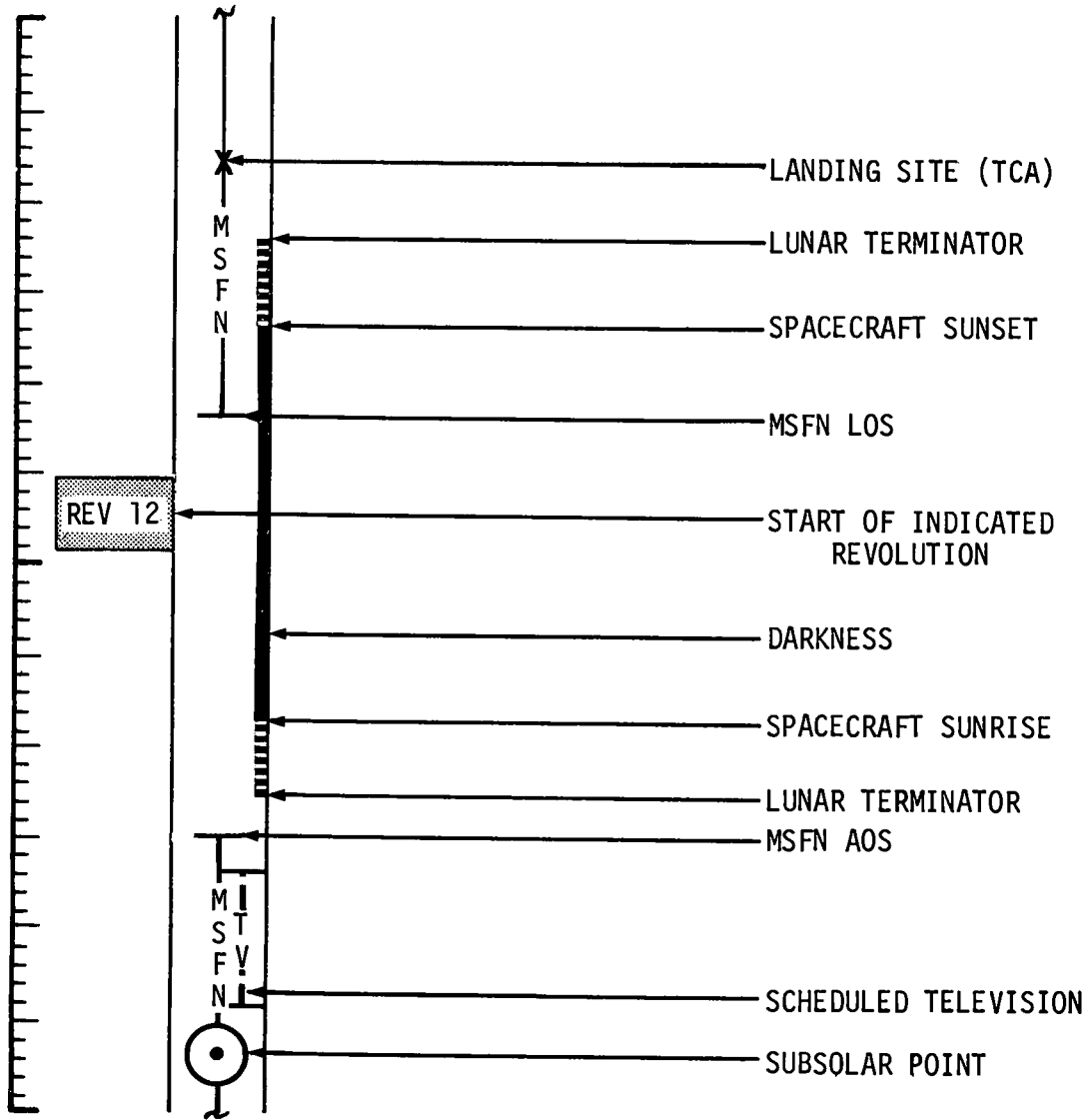
LUNAR MODULE

LM-1	LH Window
LM-2	Docking Window
LM-3	RH Window

CAMERA MOUNTSCSM

CM4 - Electric Hasselblad (EL) +X axis +12°
 CM4 - Electric Hasselblad reseau (DC) +X axis +12°
 CM4 - Electric Hasselblad (EL) with 500mm lens only +X axis +10°
 CM2 or 4 - Data Acquisition Camera with right angle mirror (DAC) +X axis
 SXT - Data Acquisition Camera with SXT Adapter - same as SXT shaft & trunnion
 CM3 - Lunar Topographic Camera - (perpendicular to hatch window) +X axis +57°
 CM3 - Electric Hasselblad (EL) +X axis +57°
 CM3 - Electric Hasselblad (DC) +X axis +57°

SYMBOL NOMENCLATURE



SECTION I - FLIGHT PLAN NOTES



FLIGHT PLAN NOTES

I. Crew

A. Crew designations are as follows:

<u>Designation</u>	<u>Prime</u>	<u>Backup</u>
Commander (CDR)	Shepard	Cernan
Command Module Pilot (CMP)	Roosa	Evans
Lunar Module Pilot (LMP)	Mitchell	Engle

B. 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

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

ACTIVITY	PRESSURIZED HARD SUIT	SUITED (SOFT SUIT)	PARTIAL SUIT WITHOUT HELMET & GLOVES	SHIRT SLEEVES
LAUNCH		ALL		
EARTH ORBIT THRU S-IVB EVASIVE MNVR			ALL	
TLC & TEC				ALL
LM ACTIVATION			ALL	
UNDOCKING THRU CIRC		CDR & LMP	CMP	
CIRC TO TD		CDR & LMP		CMP
LUNAR STAY EXCEPT EVA	VARIES ACCORDING TO CHECKLIST FOR CDR & LMP			CMP
SURFACE EVA	CDR & LMP			CMP
LIFT-OFF THRU DOCKING		CDR & LMP	CMP	
LM JETTISON THRU TEI				ALL
ENTRY				ALL

- D. Crew status reports will be voiced to MCC-H before and after crew sleep periods. After waking, the crew will report sleep obtained during the last 24 hours and personal dosimeter readings. Before going to sleep, the crew will report medication used and any other pertinent information on activities performed. Before ascent prep, the LM crew will report personal dosimeter readings and medication used.
- E. Negative reporting will be used in reporting completion of each checklist.
- F. All onboard gauge readings will be read directly from the gauges with no calibration bias applied.

II. CSM Systems

A. Communications

- 1. The preferred S-Band communication modes are:
 - (a) Uplink Mode 6 (Voice, PRN, and Udata)
 - (b) Downlink Mode 2 (Voice, PRN, TLM-HBR)
- 2. OMNI B and VHF LEFT will be selected for lift-off. OMNI D will be selected by the crew during boost. OMNI D will probably be the best antenna for earth orbit.
- 3. VHF Duplex B will be used for launch, and Simplex A will be used for earth-orbit operations.
- 4. During TLC and TEC, OMNI antennas will normally be used. The CSM X-axis will be pitched up 90° (north) for TLC and pitched down 90° (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.
- 5. MSFN relay will be used for LM/CSM communication during descent and ascent frontside passes. Communications during lunar stay periods will be through MCC-H.
- 6. Table 1-1 is a summary of the MSFN coverage available for the CSM.
- 7. Table 1-2 contains a summary of the scheduled CSM TV transmissions.

8. 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.

B. DSE

1. 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.
2. 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.
3. CSM HBR DATA for stereo and LTC photographic strips are required for a minimum of 5 minutes at the beginning and at the end of the strip. If HGA coverage is not available, these data will be recorded on the DSE.
4. During the 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.
5. CSM LBR data will be recorded during all P24 landmark tracking.
6. CSM HBR will be recorded during all CSM engine burns.
7. LM LBR data will be recorded during LOS periods before PDI.
8. All entry data will be recorded in HBR during the blackout.
9. All HGA activations will be recorded on DSE.

C. Electrical Power

1. The CSM will normally remain powered up throughout the mission.
2. Table 1-3 lists the fuel cell purges and waste water dumps.
3. Based on cryo purity and performance, the time between fuel cell O₂ purges will be increased to coincide with water dump times. The O₂ purge at 6 hours will allow a judgement to be made on the defined purge schedule.

4. The cryogenic heaters will be managed such that the planned usage is obtained out of each O_2 tank. The H_2 heaters will be in AUTO during the mission. The H_2 fans will be operated manually for one minute before and after each sleep cycle, prior to SPS or S-IVB thrusting and pre-CSM/LM ejection.
5. Table 1-9 contains the battery charge schedule.

D. ECS and Water Management

1. Potable water will be chlorinated once a day after the eat period prior to each sleep period.
2. Waste water dump and fuel cell purge criteria:
 - (a) Waste water dumps and fuel cell purges will be scheduled as follows:
 - (1) Once during each 24 hours, if possible, following the initial dump and purge
 - (2) H_2 fuel cell purges will be scheduled at every other O_2 fuel cell purge after the first O_2 fuel cell purge
 - (b) The most opportune time to perform waste water dumps and fuel cell purges are as follows:
 - (1) Immediately after the sextant star check in maneuver preparation or cislunar navigation
 - (2) Behind the moon, with completion of dump or purge before AOS
 - (c) If possible, dumps and purges will not be scheduled during the following periods:
 - (1) Ten hours before MCC-2 or a TLC P23
 - (2) Eight hours before MCC-5 or a TEC P23
 - (3) MSFN tracking periods during two lunar orbits before TEI

(d) Dumps and purges will not be scheduled during the following MSFN tracking periods:

(1) Ten hours before MCC-4 until after LOI

(2) Four hours before DOI until six hours after PDI

(3) Six hours before ascent from the lunar surface until after LM jettison

(4) Ten hours before MCC-7 until entry

(e) All waste water dumps will be manual.

3. Only one CO₂ absorber filter (LiOH canister) is changed at a time. Table 1-4 lists the LiOH canister change schedule. There are 20 filters on board, with 18 stowed at launch.
4. At lift-off, the cabin will contain 60% O₂ and 40% N₂. 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. CSM O₂ will be used to pressurize the LM after transposition and docking; and repressurizing the LM before TLC LM entry, LOI and LM activation.

E. Guidance and Navigation

1. REFSMMAT Definitions

- (a) The "Launch Pad" REFSMMAT will be used for launch, TLI, and TD&E. This REFSMMAT places the IMU X-axis along the launch azimuth at the pad and the Z-axis along the negative radius vector. The FDAI, at launch, will display roll 162° (launch azimuth +90°), pitch 90°, and yaw 0°.
- (b) The "PTC" REFSMMAT will be used for all midcourse maneuvers (except MCC-7) and for other operations during TLC

and TEC. This REFSMMAT places the X-axis in the ecliptic plane and perpendicular to the earth-moon line projection in the ecliptic plane at the average time of transearth injection for the monthly launch window and azimuth range. The Z-axis is then perpendicular to the ecliptic and directed south. At the beginning of the PTC Mode, during TLC, the spacecraft will maneuver to an FDAI display of pitch 90° . During TEC, the pitch attitude will be 270° .

- (c) The "Landing Site" REFSMMAT will be used for LOI, DOI, PDI, landing, and CSM lunar orbit activities up to the first plane change. This REFSMMAT places the CSM IMU X-axis along the positive lunar radius vector at the landing site at the predicted landing time and places the Z-axis in the direction of flight parallel to the CSM orbital plane. At nominal touchdown, the LM FDAI will display roll 0° , pitch 0° , and yaw 0° .
- (d) A "Preferred" REFSMMAT will be used by the CSM for all lunar-orbit plane changes, and TEI. The CSM IMU X-axis will normally be aligned with the spacecraft X-body axis at the vehicle attitude for ignition with the thrust directed through the center of gravity. In the case of large plane change maneuvers, the IMU X-axis may be aligned 45° from the spacecraft body axis at ignition attitude. The Z-axis will be in the plane formed by the X-axis and the position vector and directed up away from the moon for plane changes. At burn ignition, the FDAI will display roll 0° (180° for TEI), pitch 0° , and yaw 0° .
- (e) The "Lift-Off" REFSMMAT will be used for all lunar activities after plane change 1, through rendezvous, and LM jettison. This REFSMMAT places the CSM IMU X-axis along the positive lunar radius vector at the landing site at predicted lift-off time, with the Z-axis parallel to the CSM orbital plane. At nominal lift-off time, the LM FDAI will display roll 0° , pitch 0° , and yaw 0° with slight differences reflecting actual touchdown yaw and slope tilt angles.
- (f) The "Entry" REFSMMAT aligns the IMU X-axis in the local horizontal plane in the direction of flight at entry interface. The entry REFSMMAT is used for MCC-7 and all

remaining activities. The Z-axis is down along the negative radius at entry interface. At entry interface, with wings level, local horizontal, heat shield forward, lift up, heads down, the FDAI will display roll 0° , pitch 180° , and yaw 0° .

2. The CSM external lighting will be operated during the rendezvous from lift-off to docking. The running lights only will be on from CSM/LM separation to PDI.
3. The time tags on maneuvers in Section 3 indicate the completion time of the maneuvers unless otherwise stated. All maneuver angles are the angles read on the FDAI after the maneuver has been completed.
4. CSM/LM and CSM attitude maneuvers will normally be at the rate of $0.2^\circ/\text{sec}$ ($0.5^\circ/\text{sec}$ after rendezvous and docking) unless other rates are required.
5. Undocking will be done radially, CSM below, 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. The separation maneuver will then be performed immediately.
6. LM jettison will be done radially, CSM below, with jettison providing approximately 0.4 foot per second thrust radial. The separation burn will be performed five minutes after jettison, providing one foot per second thrust retrograde.

F. Propulsion Systems

1. In order to conserve SM RCS, the SPS engine will be used to "back-up" all LM rendezvous burns. The SPS gimbal motors will not be turned on during the normal maneuver preparation.
2. 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. The first engine ignition will be started on bank A.
3. Table 1-5 lists the CSM propulsion burns.

III. LM Systems

A. Communications

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

B. ECS

1. The LM will contain ambient air at lift-off. During launch the pressure will bleed to zero psia. CSM O₂ 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. After the first LM egress, the LM will be isolated and allowed to leak down. For the entry into the LM before undocking, the CSM O₂ will be used to pressurize the LM. This procedure insures a higher percentage of oxygen in the LM at the first EVA.
2. LM O₂ will be used to pressurize the LM three times; after EVA-1 and EVA-2, and after equipment jettison.

C. Guidance Systems

1. The LGC and CMC will use the same landing site and lift-off REFSMMATS.
2. The AGS will be placed in standby after the "GO" is given for lunar stay.
3. The RR will be powered down after TD plus 2 hours until lift-off preparation.
4. The IMU will be powered down and the LGC placed in standby approximately 3 hours and 25 minutes after TD until after the eat period following sleep on the lunar surface.

5. To prevent overheating of the antenna, the rendezvous radar will be pointed away from the sun and will be turned off when no functional use is required.

D. Propulsion Systems

1. The APS/RCS interconnect will be used during the lunar lift-off and ascent only.
2. Table 1-6 lists the LM propulsion burns.

IV. Procedures

- A. CSM - Crew procedures called out in the flight plan may be found in the following documents:

1. Apollo Operations Handbook - CSM 110 (AOH), Volume 2
2. Crew Checklists
3. CSM Rendezvous Procedures
4. Photographic and TV Procedures
5. Lunar Landmark Tracking Attitude Studies
6. Lunar Orbit Attitude Sequence for Mission H-3

- B. LM - Crew procedures called out in the flight plan may be found in the following documents:

1. Apollo Operations Handbook LM-8, Volume 2
2. Crew Checklists
3. LM Rendezvous Procedures
4. LM Descent/Ascent Procedures
5. Photographic and TV Procedures
6. Orbital EVA Procedures
7. Lunar Surface Procedures

V. Medical Data During Sleep Periods

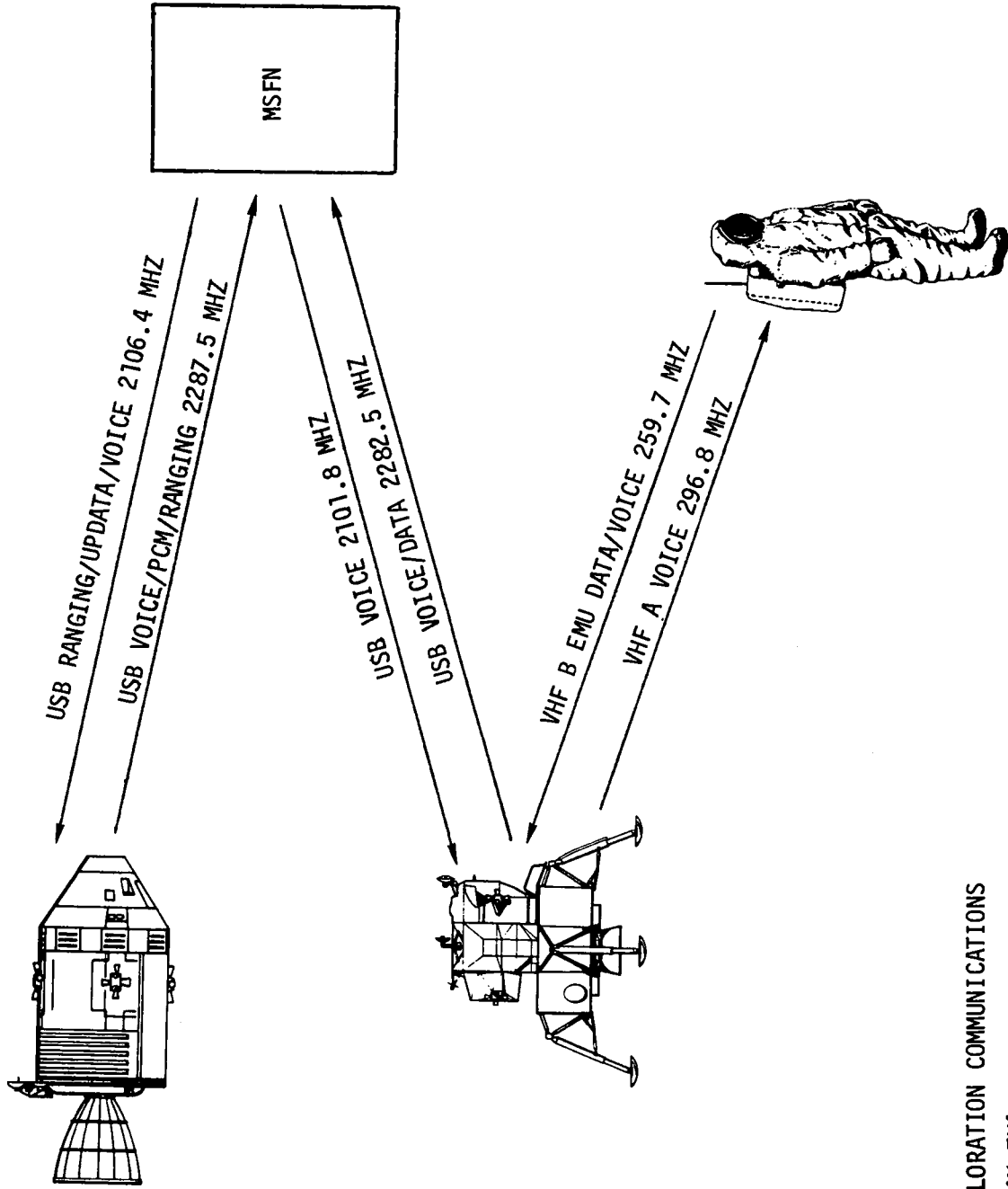
- A. During translunar and transearth coast phases, and in lunar orbit when all three crewmembers are in the CSM, an EKG and ZPN will be transmitted continuously from at least one crewman.
- B. During lunar orbit, when the CMP is the sole occupant of the CSM, the CMP's EKG and ZPN will be transmitted to MCC-H.
- C. While on the lunar surface, an EKG will be transmitted continuously from at least one crewman.

VI. Synchronization of Ground Elapsed Time (GET)

The realtime GET will be synchronized with the flight plan GET if the difference is more than +1 minute. The time changes will occur approximately 30 hours before the second lunar orbit, and prior to LOS on the tenth orbit. The time changes will be based on the expected difference between realtime and flight plan GET's at the start of lunar orbit revs 2 and 20. The synchronization is performed by a V70 uplink from the ground followed by the crew synchronizing the mission time to the CMC clock.

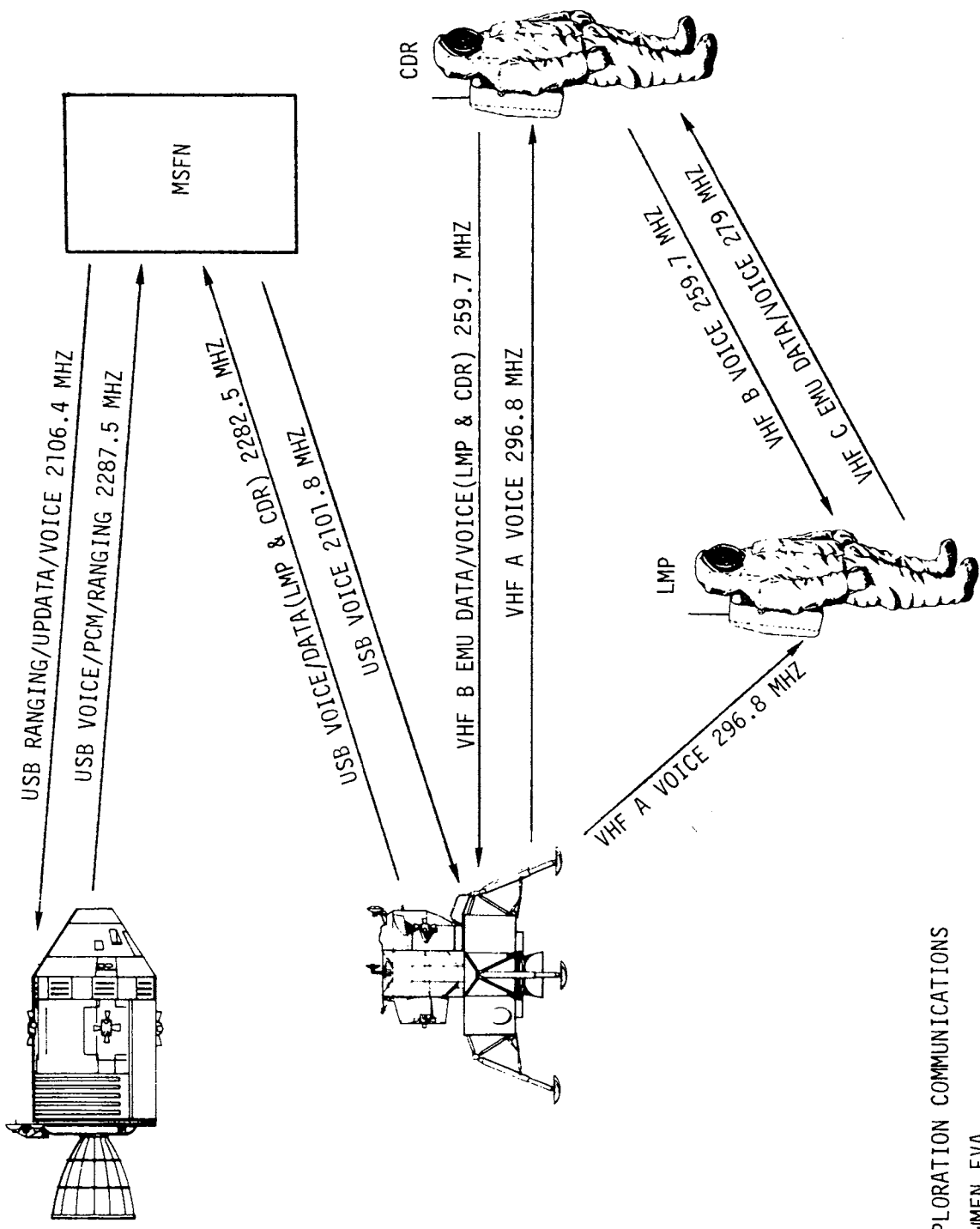
VII. Miscellaneous

- A. Table 1-7 contains a summary of the expected block data update times.
- B. Table 1-10 is the Landmark Tracking Table.
- C. Table 1-11 is a schedule of the P23 cislunar navigation sightings.
- D. Table 1-12 is the Mission Activity Summary.



LUNAR EXPLORATION COMMUNICATIONS
 ONE CREWMAN EVA
 PRIMARY MODE

Figure 1-1



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

Figure 1-2

TABLE 1-1
 SC Coverage By MSFN Stations Using 85FT/210FT Dish/Antenna

	GOLDSTONE (GDS)		PARKS		HONEYSUCKLE (HSK)		MADRID (MAD)	
	AOS	LOS	AOS	LOS	AOS	LOS	AOS	LOS
EARTH ORBIT	1:29	1:34			1:00	1:06		
	2:50	13:11			2:36	2:37		
TRANS- LUNAR COAST					7:47	16:18		
	22:49	30:36					14:38	30:36
	30:36	37:55			32:27	41:11	30:36	30:37
	47:16	62:05			56:34	65:29	39:20	54:50
	71:28	82:25			80:32	82:24	63:36	78:52
	149:25	160:25					149:26	153:13
TRANS- EARTH COAST	170:00	184:25			154:54	164:00	162:08	177:09
					178:56	188:17		
							186:31	201:08
	194:30	208:29			203:12	214:07		
			206:22	210:32				
					216:01	216:27	212:56	215:12

TABLE 1-1 (CONTINUED)
 SC Coverage By MSFN Stations Using 85FT/210FT Dish/Antenna

REV	GET AT END OF REV	GOLDSTONE (GDS)		PARKS AUSTRALIA		HONEYSUCKLE (HSK)		MADRID (MAD)	
		AOS	LOS	AOS	LOS	AOS	LOS	AOS	LOS
1	84:45	82:57	84:22			82:57	84:21		
2	86:53	85:05	86:11			85:05	86:30		
3	88:47					87:15	88:20	87:49	88:20
4	90:41					89:09	89:45	89:09	90:14
5	92:34							91:03	92:08
6	94:28							92:56	94:02
7	96:22	95:54	95:55					94:50	95:55
8	98:16	96:44	97:49					96:44	97:49
9	100:09	98:38	99:43					98:38	99:43
10	102:03	100:31	101:36					100:32	101:37
11	103:57	102:26	103:30					102:26	103:31
12	105:51	104:19	105:24						
13	107:49	106:12	107:24			106:12	107:23		
14	109:47	108:11	109:22			108:10	109:22		
15	111:46	110:09	111:42			110:09	111:21		
16	113:44					112:07	113:19	112:39	113:18
17	115:42					114:05	114:37	114:05	115:17
18	117:41							116:04	117:15
19	119:39							118:02	119:14
20	121:38	120:48	121:12					120:00	121:12

TABLE 1-1 (CONTINUED)
 SC Coverage By MSFN Stations Using 85FT/210FT Dish/Antenna

REV	GET AT END OF REV	GOLDSTONE (GDS)		PARKS AUSTRALIA		HONEYSUCKLE (HSK)		MADRID (MAD)	
		AOS	LOS	AOS	LOS	AOS	LOS	AOS	LOS
21	123:36	121:58	123:10					121:59	123:11
22	125:34	123:57	125:09					123:57	125:09
23	127:32	125:55	127:07					125:56	127:07
24	129:31	127:54	129:06					127:54	128:37
25	131:29	129:52	131:04			130:20	131:04		
26	133:27	131:51	133:03			131:50	133:02		
27	135:26	133:49	135:01			133:49	135:01		
28	137:24	135:47	136:03			135:47	136:59		
29	139:22					137:46	138:57	137:46	138:57
30	141:21							139:44	140:56
31	143:19							141:42	142:54
32	145:17							143:41	144:52
33	147:16	145:45	146:51					145:39	146:51
34	149:14	147:37	148:48					147:37	148:49

TABLE 1-2
 APOLLO 14 TV SCHEDULE

DAY	DATE	CST	GET, HR:MIN	DURATION, HR:MIN	ACTIVITY SUBJECT	VEHICLE	STATION
SUNDAY	31 JAN	5:28 PM	03:05	00:25	TRANSPOSITION & DOCKING	CSM	GDS
WEDNESDAY	3 FEB	4:08 AM	61:45	00:45	INTERIOR & IVT TO LM	CSM	GDS/HSK
THURSDAY	4 FEB	7:23 PM	101:00	00:14	FRA MAURO LANDING SITE	CSM	GDS
FRIDAY	5 FEB	8:06 AM 8:06 AM	113:43	04:00	LUNAR SURFACE EVA-1	LM	HSK/MAD
SATURDAY	6 FEB	3:56 AM 3:56 AM	133:33	07:43	LUNAR SURFACE EVA-2	LM	HSK/GDS/MAD
SATURDAY	6 FEB	2:14 PM	143:51	00:06	RENDEZVOUS	CSM	MAD
SATURDAY	6 FEB	2:29 PM	144:06	00:04	DOCKING	CSM	MAD
SUNDAY	7 FEB	6:53 PM	172:30	00:30	INFLIGHT DEMONSTRATIONS	CSM	GDS

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11/17/71

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11/17/71

TABLE 1-3

FUEL CELL PURGE AND WATER DUMP SCHEDULE

<u>GET,</u> <u>HR:MIN</u>	<u>O₂ FUEL CELL PURGE</u> <u>AND WATER DUMP</u>		<u>H₂ FUEL CELL PURGE</u>		<u>REMARKS</u>
	<u>NUMBER</u>	<u>ΔTIME,</u> <u>HR:MIN</u>	<u>NUMBER</u>	<u>ΔTIME,</u> <u>HR:MIN</u>	
05:55	1	05:55			IF NO MCC-1
11:30	1	11:30			IF MCC-1 PERFORMED
30:15	2	24:20/18:45	1	30:15	MCC-2
60:20	3	30:05			MCC-3
84:50	4	24:30	2	54:35	LOI+2HR
111:40	5	26:50			LOS MIDPOINT
139:20	6	27:40	3	54:30	
166:00	7	26:40			MCC-5
193:10	8	27:10		53:50	IF NO MCC-6
194:10	8	28:10	4	54:50	IF MCC-6 PERFORMED
216:12		23:02/22:02			CM/SM SEPARATION

TABLE 1-4
LiOH CANISTER CHANGE SCHEDULE

CHANGE NO.	APPROXIMATE GET, HR:MIN	APPROXIMATE ΔT , HR	INSTALL		REMOVE & STOW	
			CANISTER	POSITION	CANISTER NO.	STOWAGE LOCATION
1	12:00		3	A	1	B5
2	26:10	14	4	B	2	B5
3	38:00	12	5	A	3	B5
4	51:10	13	6	B	4	B5
5	64:12	13	7	A	5	B6
6	76:10	12	8	B	6	B6
7	90:15	14	9	A	7	B6
8	103:38	13	10	B	8	B6
9	119:30	16	11	A	9	A3
10	147:05	27	12	B	10	A3
11	162:10	15	13	A	11	A3
12	174:00	12	14	B	12	A3
13	187:00	13	15	A	13	A4
14	199:00	12	16	B	14	A4
15	210:00	11	17	A	15	A4

TABLE 1-5
CSM BURN SCHEDULE

BURN MNVR	GETI BURN TIME	ΔVT , FPS	ULLAGE ΔV , FPS	REFSMMAT	RESULTANT HA & HP	REMARKS
TLI	02:30:38 5 MIN 55.6 SEC	10353.1		PAD		S-IVB BURN
CSM/LM EJECTION	03:56 3.0 SEC	0.4	-----	PAD	-----	RCS BURN
MCC-1	11:36:33	-----	-----	PTC	-----	NOM ZERO
MCC-2	30:36:07 11.08 SEC	73.40	NOT REQ'D	PTC	-----	SPS BURN
MCC-3	60:38:14	-----	-----	PTC	-----	NOM ZERO
MCC-4	77:36:14	-----	-----	PTC	-----	NOM ZERO
LOI	82:38:14 6 MIN:06.6 SEC	2986.0	NOT REQ'D	LDG SITE	HA 170.00 HP 57.14	SPS BURN
DOI	86:56:57 21.38 SEC	206.6	4 JET 14.0 SEC	LDG SITE	HA 58.44 HP 9.77	SPS BURN
BAILOUT BURN	87:27:31 10.17 SEC	100.0	4 JET 14.0 SEC	LDG SITE		SPS BURN
UNDOCK & SEP	104:27:31 3.07 SEC	1.00	-----	LDG SITE	HA 59.48 HP 8.23	RCS BURN
CIRC BURN	105:46:48 3.79 SEC	72.46	4 JET 11.0 SEC	LDG SITE	HA 63.51 HP 56.04	SPS BURN
PC-1	118:09:40 18.4 SEC	360.70	4 JET 11.0 SEC	PLANE CHANGE	HA 61.71 HP 57.41	SPS BURN
CSM SEP BURN	146:28:31	1.00		LIFT-OFF	HA 58.26 HP 60.24	3 AXIS RCS BURN
TEI	149:14:50 2 MIN 27.4 SEC	3449.55	4 JET 12 SEC	TEI	-----	SPS BURN
MCC-5	166:14:50	-----	-----	PTC	-----	NOM ZERO
MCC-6	194:26:59	-----	-----	PTC	-----	NOM ZERO
MCC-7	213:26:59	-----	-----	ENTRY	-----	-----

NOTES: 1. HA & HP ARE HEIGHTS ABOVE LANDING SITE RADIUS (937.73488 NM).
2. BURN TIME DOES NOT INCLUDE ULLAGE OR TAILOFF BT.

TABLE 1-6
LM BURN SCHEDULE

BURN MNVR	GETI BURN TIME	Δ VT, FPS	ULLAGE Δ V, FPS	REFSMAT	RESULTANT HA & HP	REMARKS
PDI	108:42:01 11 MIN 31.5 SEC	6637.7	2 JET 7.5 SEC	LDG SITE	-----	DPS BURN
ASCENT	142:24:29 7 MIN 10.7 SEC	6053.4	NONE	LIFT-OFF	HA 50.96 HP 9.14	APS BURN
TPI	143:09:40 4.0 SEC	92.2	2 JET 13 SEC	LIFT-OFF	HA 61.0 HP 44.6	APS BURN
LM DEORBIT	147:52:58.9 1 MIN 17 SEC	183.7		LIFT-OFF	N/A	RCS BURN

NOTES: 1. HA & HP ARE HEIGHTS ABOVE LANDING SITE RADIUS (937.73488 NM).
2. BURN TIME DOES NOT INCLUDE ULLAGE OR TAILOFF BT.

TABLE 1-7

FINAL APOLLO 14 RETURN TO EARTH
BLOCK DATA SCHEDULE

BLOCK DATA	PASSED DATA, GET, HR:MIN	GETI, HR:MIN	ΔV , FPS	GETIL, HR:MIN	i_R , DEG	PAD TYPE
TLI + 90 MIN	1:40	4:00	7488	12:12	32.8°D	COMPLETE P30
L/O + 8 HR	1:40	8:00	3209	46:29	32.8°A	P37
L/O + 15 HR	6:00	15:00	5557	45:56	32.8°A	P37
L/O + 25 HR	14:00	25:00	4873	70:03	33.0 A	P37
L/O + 35 HR	14:00	35:00	7376	69:28	33.3 A	P37
L/O + 45 HR	14:00	45:00	5630	93:49	34.1 A	P37
L/O + 60 HR	14:00	60:00	5166	117:53	36.9 A	P37
LOI-5 FLYBY	35:00	77:38	403	165:57	40.0 D	COMPLETE P30(DOCKED)
PC + 2	76:00	84:36	1519	141:42	30.1 D	ABB P30 (DOCKED)
TEI 4	79:30	91:15	3955	141:47	40° A	ABB P30
TEI 5	85:05	92:30	3220	166:14	40° A	ABB P30
TEI 12	89:20	105:54	3630	166:24	40° A	ABB P30
TEI 19	100:45	119:38	3326	191:13	40° A	ABB P30
TEI 34 (PRELIM)	115:00	149:15	3451	216:40	40° A	COMPLETE P30
TEI 34 (NOM)	147:40	149:15	3451	216:40	40° A	COMPLETE P30
TEI 35	147:40	151:14	3523	216:16	40° A	ABB P30

NOTES:

1. The TLI + 90 minute abort is to the AOL. All other block data maneuvers are to the MPL line [Nominal TEI (REV 34) is to EOM ϕ, λ].
2. Lift-off + 15 hours abort assumes no MCC-1.
3. Lift-off + 35 hours abort assumes MCC-2.
4. Update flyby early if pericyynthion is not clear of moon.
5. Pericyynthion + 2 hours fast return to MPL assumes MCC-4.
6. TEI 4 assumes LOI and no DOI.
7. TEI 5 assumes DOI.
8. TEI 12 assumes no circularization maneuver.
9. TEI 19 assumes circularization and no plane change maneuvers.
10. TEI 34 (PRELIM) assumes the plane change maneuver.
11. All TEI's are $i_R = 40^\circ$ ascending returns.

TABLE 1-8

APOLLO 14/LM - 8 DSEA SCHEDULE

ACTIVITY	GET, HR:MIN	MODE	RECORD TIME X DUTY CYCLE (%) = TAPE TIME USED, HR:MIN	TOTAL TAPE TIME USED* HR:MIN
UNDOCK PREP TO POST-UNDOCKING	104:26 104:35	ICS/PTT	00:09 x 100% = 00:09	00:09
PDI PREP TO POST-TD (PDI+20)	108:20 109:02	VOX	00:42 x 63% = 00:27	00:36
EVA-1 PLSS COMM TO POST-EVA-1	112:50 117:55	VOX	5:05 x 63% = 3:12	03:48
EVA-2 PLSS COMM TO POST-EVA-2	133:35 138:40	VOX	5:05 x 63% = 3:12	07:00
LIFT-OFF (-16) TO LIFT-OFF (-) 2	142:08 142:22	ICS/PTT	00:14 x 100% = 00:14	07:14
LIFT-OFF (-) 2 TO INSERTION	142:22 142:34	VOX	00:12 x 63% = 00:08	07:22
INSERTION TO POST-DOCKING	142:34 144:15	ICS/PTT	1:41 x 100% = 1:41	09:03

*REMAINING TAPE WILL BE REQUIRED IF EVA'S ARE EXTENDED

TABLE 1-9
BATTERY CHARGE SCHEDULE

GET, HR:MIN	BATTERY
04:25	B
26:15	A
32:20	A
53:00	B
106:15	B
112:30	A
132:20	B
136:15	A
166:18	B
186:25	A

TABLE 1-10
 LANDMARK AND LANDING SITE DATA

<u>SITE</u>	<u>REV</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>*ALTITUDE (NM)</u>
MÖSTING A	2	3.250°S	5.283°W	000.00
H-3	3	3.691°S	7.542°W	000.00
14-1	12, 13, 15	4.046°S	15.600°W	-000.44
14-2		3.610°S	15.317°W	-000.15
14-3		3.919°S	15.139°W	-000.38
14-4		3.470°S	14.890°W	-000.87
RP3	15	3.533°S	131.700°E	000.00
RP5	15	10.567°S	99.400°E	000.00
DAGUERRE 66	15	11.717°S	33.200°E	000.00
LDG SITE	17	3.672°S	17.463°W	-000.76
RP2	18	0.283°S	141.250°E	000.00
12-1	18	5.736°S	112.309°E	000.00
DOLLOND E	18	10.433°S	15.733°E	000.00
FM1	18	3.246°S	17.317°W	000.00
RP4	29	5.850°S	120.250°E	000.00
ANSGARIUS N	29	11.633°S	81.067°E	000.00
DE2	29	9.250°S	19.592°E	000.00
ENKE E	29	0.283°N	40.300°W	000.00

*Difference between landmark radius vector and 938,4935 NM (mean lunar radius)

TABLE 1-11

P23 CISLUNAR NAVIGATION

<u>GET</u>	<u>STAR/HORIZON</u>	<u>COMMON NAME</u>
9:30	72/EFH 236/ENH 53/EFH 202/ENH	GACRUX DELTA OPHIUCHI GAMMA CENTAURI ZETA OPHIUCHI
28:30	202/ENH 165/EFH 33/ENH 172/EFH	ZETA OPHIUCHI ETA CENTAURI ANTARES BETA LIBRAE
164:00	40/ENH 212/EFH 33/EFH 35/EFH* 211/EFH* 214/ENH*	ALTAIR DELTA SAGITTARII ANTARES RASALHAGUE BETA OPHIUCHI ZETA SAGITTARII
166:45 (TEI+17.5)	16/MFH 50/MFH 22/MNH	PROCYON POLLUX REGULUS
167:15 (TEI+18)	40/ENH 212/EFH 33/EFH	ALTAIR DELTA SAGITTARII ANTARES
173:00 (TEI+24)	40/ENH 212/EFH 33/EFH 35/EFH* 211/EFH* 42/ENH*	ALTAIR DELTA SAGITTARII ANTARES RASALHAGUE BETA OPHIUCHI PEACOCK
188:27 (EI-28)	37/EFH 33/EFH 120/ENH 40/ENH* 35/EFH* 211/EFH*	NUNKI ANTARES AL NA'IR ALTAIR RASALHAGUE BETA OPHIUCHI

*Constraint Stars

TABLE 1-11

P23 CISLUNAR NAVIGATION (CONT)

<u>GET</u>	<u>STAR/HORIZON</u>	<u>COMMON NAME</u>
192:27 (EI-24)	37/EFH 33/EFH 120/ENH	NUNKI ANTARES AL NA'IR
196:27 (EI-20)	37/EFH 33/EFH 120/ENH 40/ENH* 211/EFH* 214/EFH*	NUNKI ANTARES AL NA'IR ALTAIR BETA OPHIUCHI ZETA SAGITTARII
208:27 (EI-8)	44/ENH 212/EFH 213/EFH 45/ENH	ENIF DELTA SAGITTARII LAMBDA SAGITTARII FOMALHAUT
211:27 (EI-5)	22/MFH 64/MNH 23/MFH 151/MFH 16/MNH	REGULUS ALHENA DENEbola GAMMA-PRIME LEONIS PROCYON
213:57 (EI-2.5)	22/MFH 23/MFH 16/MNH	REGULUS DENEbola PROCYON

*Constraint Stars

TABLE 1-12
MISSION ACTIVITY SUMMARY
APOLLO 14

MISSION ACTIVITY SUMMARY		31 JAN SUN		1 FEB MON		2 FEB TUES		3 FEB WED		4 FEB THURS		5 FEB FRI		6 FEB SAT		7 FEB SUN		8 FEB MON		9 FEB TUES																																													
DAY/DATE	C.S.T.	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM	6 AM	NOON	6 PM																																										
ACTIVITY DAY	LAUNCH DAY		1	2		3		4		5		6		7		8		9		10																																													
EAT PERIODS	[EAT PERIODS]																																																																
REST PERIODS	[REST PERIODS]																																																																
LUNAR REVOLUTION NO.	[LUNAR REVOLUTION NO.]																																																																
G.E.T.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
LM MANEUVER DATA	[LM MANEUVER DATA]																																																																
LM	[LM ACTIVITY]																																																																
CMS	[CMS ACTIVITY]																																																																
CMS MANEUVER DATA	[CMS MANEUVER DATA]																																																																
G.E.T.	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
LUNAR REVOLUTION NO.	[LUNAR REVOLUTION NO.]																																																																
LIGN CANISTER CHANGE	[LIGN CANISTER CHANGE]																																																																

*MAY NOT BE REQUIRED

SECTION 2 - MISSION OBJECTIVES



SECTION 2
MISSION OBJECTIVES

This section contains an activity summary, reflecting the objectives for Apollo 14 as described in "Mission Requirements H-3 Type Mission." Table 2-1 provides a functional breakdown of the objectives and indicates the page(s) in the timeline where the activity occurs. The alphanumeric listing presented in Table 2-1 is not intended to represent a priority or a sequential listing.

Details of the implemented test requirements are adequately covered in the Mission Requirements Document, the Lunar Surface Procedures Plan, and the Photographic and TV and Procedures Document.

TABLE 2-1
MISSION OBJECTIVE SUMMARY
REFERENCE

NUMBER	OBJECTIVE	ACTIVITY	PAGE NUMBER
4.1	Photographs of Candidate Exploration Sites		
4.1.1	Obtain photographs of a selected lunar site from low altitude	LUNAR ORBIT	3-89
4.1.2	Obtain stereoscopic photographs and landmark tracking of selected lunar sites	LUNAR ORBIT	3-176-178/190-194
4.1.3	Obtain high-resolution photographs of selected lunar sites	LUNAR ORBIT	3-180-186
4.2	Modular Equipment Transporter Evaluation		
4.2.1	Demonstrate that an astronaut can unload and deploy the MET from a landed LM	EVA-1	3-133
4.2.2	Obtain data on the dynamic interaction between the MET and the lunar surface	EVA-2	3-183
4.3	Selenodetic Reference Point Update		
4.3.1	Obtain lunar landmark tracking data to permit an update of the selenodetic coordinates of selected lunar reference points.	LUNAR ORBIT LUNAR ORBIT	3-83/120-124 3-138-142 3-190-194
4.4	Transearth Lunar Photography		
4.4.1	Obtain lunar photographs after TEI to permit extension of selenodetic control and mapping	TEC	3-227/231/232
4.5	EMU Water Consumption Measurement		
4.5.1	Obtain data for improving confidence in present method of computing water remaining during EVA	LUNAR SURFACE	3-153
4.6	CSM Oxygen FLOW RATE		
4.6.1	Obtain data on a single O2 tank under a maximum flow rate conditions when the quantity is between 60% and 40%	TEC	3-244-248
4.6.2	Obtain data on a single O2 tank under nominal flow rate conditions when the quantity is between 20% and 5%	TEC	3-248-288
4.7	Visibility at High Sun Angles		
4.7.1	Obtain crew comments and photographs while viewing pre selected target areas under specified sun elevation and line-of-sight elevation angles	LUNAR ORBIT	3-128-130 3-196-198

TABLE 2-1
MISSION OBJECTIVE SUMMARY
REFERENCE (CONT)

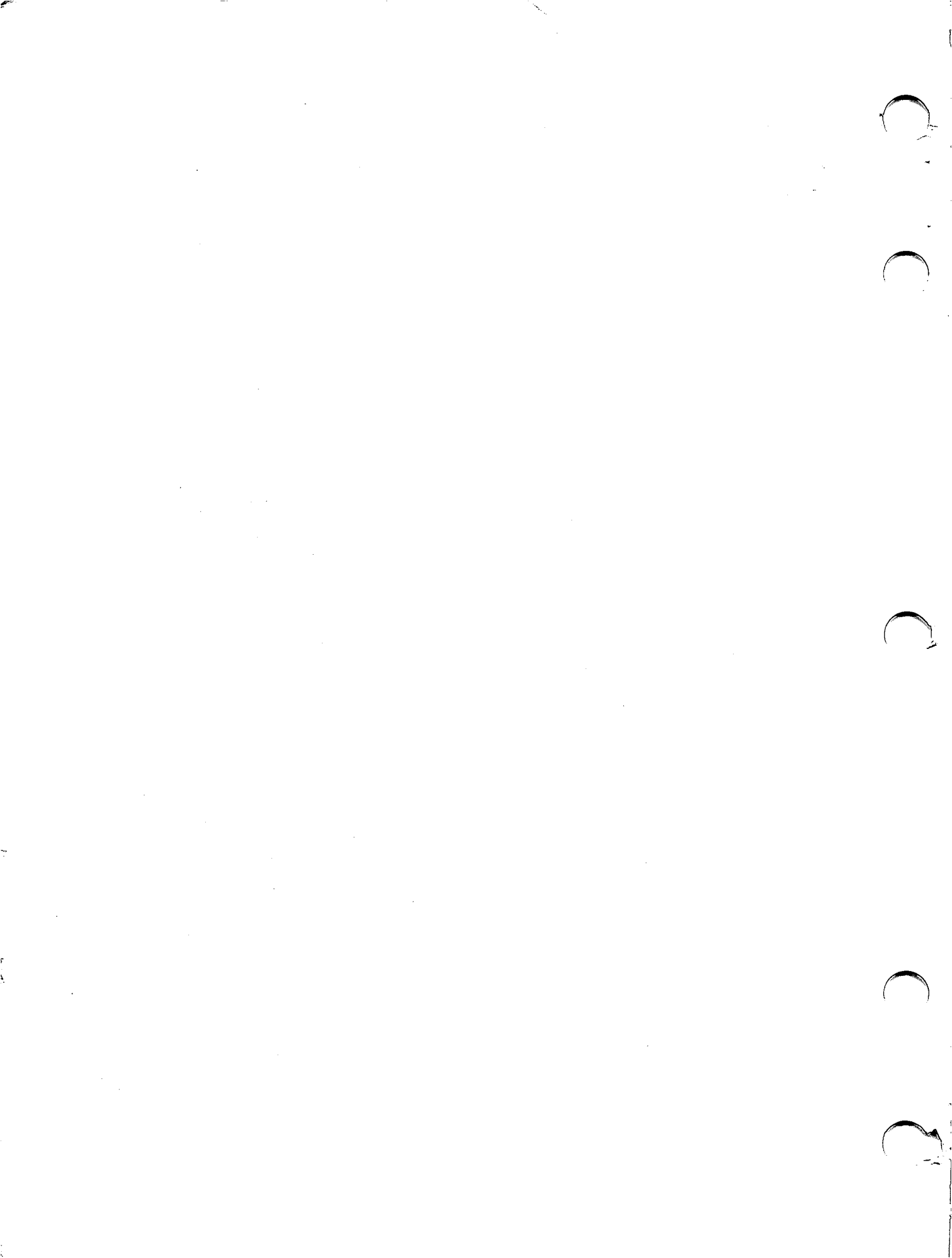
NUMBER	OBJECTIVE	ACTIVITY	PAGE NUMBER
4.8	Thermal Coating Degradation		
4.8.1	Obtain data on the optical properties of twelve thermal control coatings after being covered with lunar dust	EVA-2	3-183/184
4.8.2	Obtain data on the optical properties of twelve thermal control coatings after the lunar dust has been removed by brushing	EVA-2	3-183/184
4.9	EVA Communication System Performance		
4.9.1	Determine the effects upon communication of obstructing lunar surface features between EVC-1 and the LM	EVA-2	3-187
4.10	CSM Orbital Science Photography		
4.10.1	Obtain photographs of lunar surface areas of prime scientific interest, using the Lunar Topographic Camera	LUNAR ORBIT	3-89/118 3-180-182 3-186 3-225
4.10.2	Obtain photographs of lunar surface areas of prime scientific interest, using the Hasselblad camera with the 250mm lens.	LUNAR ORBIT	3-174/178
4.10.3	Obtain the photographs of specific segments of the lunar surface in earthshine and in low level light near the terminator, using the 16mm sequence camera with the 18mm lens and either type of Hasselblad camera with an 80mm lens	LUNAR ORBIT	3-184-186/198 3-150-152
4.11	Dim Light Photography		
4.11.1	Obtain photographs of diffuse galactic light of four celestial subjects	LUNAR ORBIT	3-144/178/180
4.11.2	Obtain photographs of zodiacal light as the CSM approaches sunrise	LUNAR ORBIT	3-132
4.11.3	Obtain photographs of the Lunar libration region, L4	LUNAR ORBIT	3-180
4.11.4	Obtain photographs through the CSM sextant of the earth's darkside	TLC/TEC	3-33/271
4.11.5	Obtain earth limb photographs during solar eclipse by the earth; and obtain comet photography, if appropriated trajectory and celestial conditions exist	TEST CONDITIONS DO NOT EXIST	
5.1	Contingency Sample Collection		
5.1.1	Provide a contingency sample for postflight scientific investigation	EVA-1	3-135

TABLE 2-1
MISSION OBJECTIVE SUMMARY
REFERENCE (CONT)

NUMBER	OBJECTIVE	ACTIVITY	PAGE NUMBER
5.2	Selected Sample Collection		
5.2.1	Collect rock samples and fine-grained fragmental material	EVA-2	3-189
5.2.2	Collect one large rock	EVA-2	3-189
5.5	Apollo Lunar Surface Experiments Package		
5.5.1	Deploy the passive seismic experiment (S-031)	EVA-1	3-141
5.5.2	Deploy the active seismic experiment (S-033)	EVA-1	3-141
5.5.3	Deploy the suprathermal ion detector experiment (S-036) and the cold cathode ion gauge experiment (S-058)	EVA-1	3-141
5.5.4	Deploy the charged particle lunar environment experiment (S-038)	EVA-1	3-141
5.5.5	Deploy the lunar dust detector experiment (M-515)	EVA-1	3-139
5.6	Lunar Geology Investigation		
5.6.1	Examine, describe, photograph, and collect lunar geologic samples for return to earth	EVA-1 & 2	3-145/185/187
5.6.2	Examine, describe, and photograph field relationships (such as shape, size, range, patterns of alignment or distribution) of all accessible types of lunar topographic features	EVA-2	3-185/187/189
5.6.3	Collect special soil samples (i.e., core tube samples, a 4-kilogram sample and trench samples) from the lunar surface and subsurface	EVA-1	3-143
5.6.4	Collect large equidimensional rock samples from the lunar surface	EVA-1	3-142-145
5.6.5	Collect special container soil samples (i.e., lunar environment soil sample and exhaust-contaminated sample) from the lunar surface and subsurface	EVA-2	3-189/191
5.7	Laser Ranging Retro-Reflector		
5.7.1	Deploy the laser ranging retro-reflector (LR3) experiment (S-078)	EVA-1	3-141
5.8	Solar Wind Composition		
5.8.1	Conduct the solar wind composition experiment (S-080)	EVA-1 & 2	3-135/193

TABLE 2-1
MISSION OBJECTIVE SUMMARY
REFERENCE (CONT)

NUMBER	OBJECTIVE	ACTIVITY	PAGE NUMBER
5.9	CSM/LM S-Band Transponder Experiment		
5.9.1	Obtain S-Band Doppler tracking measurements of the docked CSM/LM and the undocked CSM during non powered flight while in lunar orbit	PASSIVE	
5.9.2	Obtain S-Band Doppler tracking measurements of the LM during non-powered portions of the lunar descent	PASSIVE	
5.9.3	Obtain S-Band Doppler tracking measurements of the LM ascent stage during non powered portions of the descent for lunar impact	PASSIVE	
5.10	Down-Link Bi-static Radar Observations of the Moon		
5.10.1	Obtain data on the spectral properties of S-band bistatic radar echoes from the lunar crust	CSM SOLO	3-174-176
5.10.2	Obtain data to allow a determination of the Brewster angle of the lunar crust in the S-band	CSM SOLO	3-174-176
5.10.3	Obtain data on the spectral properties of VHF bi-static radar echoes from the lunar crust	CSM SOLO	3-152-176
5.10.4	Obtain data to allow a determination of the Brewster angle of the lunar crust in the VHF band	CSM SOLO	3-152-176
5.11	Portable Magnetometer		
5.11.1	Obtain data on the local magnetic field by use of a portable magnetometer	EVA-2	3-183/185/189
5.12	Soil Mechanics		
5.12.1	Obtain data on the lunar surface and subsurface characteristics relative to the origin and nature of the lunar soil, to construction of a shelter and to mobility of a roving vehicle	EVA-2	3-189
5.12.2	Obtain data on lunar soil mechanical behavior	EVA-2	3-189
5.12.3	Obtain a representative sample of fine-grained fragmental material	EVA-1	3-143
5.13	Gegenschein from Lunar Orbit		
5.13.1	Obtain data on the spatial distribution of the Gegenschein and Moulton point	CSM SOLO	3-126-128
S-176	Apollo Window Meteoroid Experiment	PASSIVE	
T-029	Pilot Describing Function	PASSIVE	



SECTION 3 - DETAILED TIMELINE

C

C

C

C

C

MCC-H

FLIGHT PLAN

1423 CST

CSM LAUNCH CHECKLIST

LIFT-OFF JANUARY 31, 1971

NOTES

L/O CREW POSITIONS
 LEFT COUCH - CDR
 CENTER COUCH - CMP
 RIGHT COUCH - LMP
 AT SECO+20 SEC, S-IVB
 MNVRS TO LH AND
 INITIATES ORB RATE
 (HEADS DOWN)

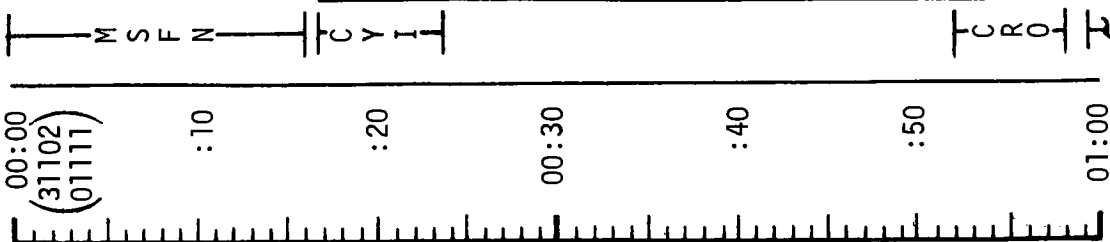
THE DAP LOAD WILL
 BE SHOWN WHEN
 APPLICABLE IN THE
 TIME COLUMN OR
 AS A NOTE TO
 INDICATE STATUS

SECO
 INSERTION AND SYSTEMS CHECKS PAGE L 2-11

UPDATE TO CSM
 Z TORQUING ANGLE

P52 IMU REALIGN
N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____

P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (LAUNCH ORIENT)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	00:00 - 01:00	1/E.0.	3-1

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

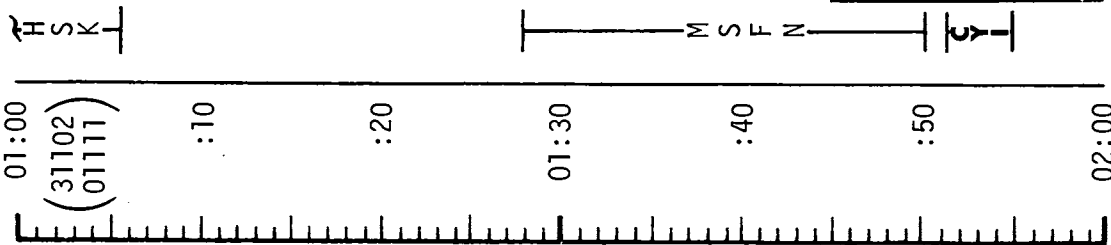
DUMP DSE

FLIGHT PLAN

NOTES

1523 CST

MCC-H



REPORT: GYRO TORQUING ANGLES

SCS ATT REF COMPARISON CHECK PAGE L 2-17
 EXTEND DOCKING PROBE PAGE L 2-18

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

TLI PREPARATION PAGE L 2-23

PYRO ARM

AS A GENERAL RULE, EXCEPT DURING TEC, UNDOCKED PERIODS AND WHILE THE LM IS ON THE LUNAR SURFACE, MCC-H WILL 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 14	FINAL (JAN)	DECEMBER 2, 1970	01:00 - 02:00	1/E.O.	3-2

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA—MSC

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FLIGHT PLAN

TLI
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TERMINATE	+45° TERMINATE	$V_i = \text{PAD VALUE} + 2 \text{ SEC}$	NO TRIM

TABLE 3-1
3-4

1623 CST

FLIGHT PLAN

NOTES



GO/NO-GO FOR TLI

DUMP DSE

GO/NO-GO FOR T&D

NOMINAL TLI CHECKLIST PAGE L 2-24
TB6 02:21:00.1

GO/NO-GO FOR TLI
P47 THRUST MONITOR

TLI

P00 CMC IDLING
 V66 SET CSM S.V. INTO LM S.V.
 TLI BURN STATUS REPORT
 CDR - TRANS TO CENTER COUCH, CMP - LEFT COUCH
 LMP - RIGHT COUCH
 WASTE STOWAGE VENT - CLOSED
 NORMAL SC/BOOSTER SEPARATIONS PAGE L 3-1
 DIRECT O₂ VLV - OPEN, UNTIL CABIN IS 5.7 PSI, THEN CLOSE
 V48 (11103)(01111)

S-IVB MNVRS TO SEP ATT 02:51:34
(000,158,319) OMNI_C

GO/NO-GO FOR TRANSPORTATION AND DOCKING

CSM SEPARATION PREPARATION PAGE L 3-1

TIG: 02:30:38
 BT: 5 MIN 55.6 SEC
 ΔVT: 10 353.1 FPS

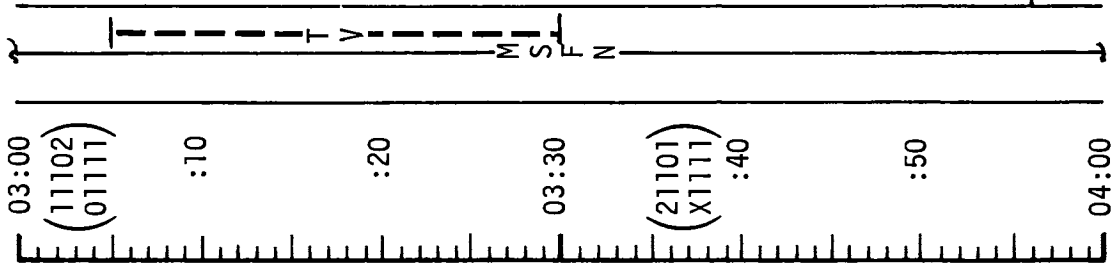
AT SECO: S-IVB INERTIAL
 AT SECO+2 MIN 31 SEC:
 S-IVB TO LOCAL
 HORIZONTAL, ORB RATE,
 HEADS DOWN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	02:00 - 03:00	1/TLC	3-5

FLIGHT PLAN

MCC-H

1723 CST



CSM/S-IVB SEP 03:01
 CSM MNVR TO DOCK ATT (301,338,041)(03:05)
 V48 (11102)(01111) HGA P -3, Y 299
 TV (GDS) 03:05 TO 03:30 CM4/TV - PEAK, BRKT (f22)
 VISUALLY INSPECT AND PHOTOGRAPH S-IVB AND LM
 DOCK 03:11

CSM/LM PRESSURE EQUALIZATION PAGE L 3-5
 TUNNEL HATCH REMOVAL PAGE L 3-5
 DOCKING LATCH VERIFICATION PAGE L 3-6
 LM UMBILICAL CONNECTIONS PAGE L 3-6
 HATCH INSTALLATION PAGE L 3-6
 PRE LM SEP & EJECTION PAGE L 3-7

S-IVB NON-PROPULSIVE VENT START (03:36:33.7)
 V48 (21101) (X1111)
 GO/NO-GO PYRO ARM (CUE MSFN)
 LOGIC ON
 PYRO ARM
 P47 THRUST MONITOR

S-IVB NON-PROPULSIVE VENT COMPLETE (03:51:33.7)
 PHOTOGRAPH LM EJECTION

CSM/LM EJECTION
 P00, V66 SET CSM S.V. INTO LM S.V.
 REPORT: GOOD EJECTION

T&D MNVR
 +X FOR 3 SEC ($\Delta V \approx 0.5$ FPS),
 AFTER 15 SEC PITCH UP AT
 0.5°/SEC. V49 AUTO MNVR
 TO DOCKING ATT. NULL
 TRANSLATION AND RATES,
 +X FOR 4 SEC ($\Delta V \approx 0.7$ FPS)

DURING TLC, HGA IS
 REQUIRED ONLY FOR
 TD&E, TV TRANSMISSION,
 AND MCC'S. THE
 ANTENNA WILL BE
 STOWED AT OTHER TIMES.
 DURING PTC
 MCC-H WILL COMMAND
 OMNI SELECTION.

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

TLI CUTOFF +
 1 HR 20 MIN

SPRING ACTUATOR
 $\Delta V \approx 0.8$ FPS. 5 SEC
 AFTER EJECTION THERE
 IS A 4 JET RCS -X
 TRANSLATION FOR 3 SEC
 ($\Delta V \approx 0.4$ FPS). TOTAL
 $\Delta V \approx 1.2$ FPS.

TIG: 03:56
 BT: 3 SEC
 ΔVT : 0.4 FPS
 ULLAGE: NONE
 ORBIT: N/A

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	03:00 - 04:00	1/TLC	3-6

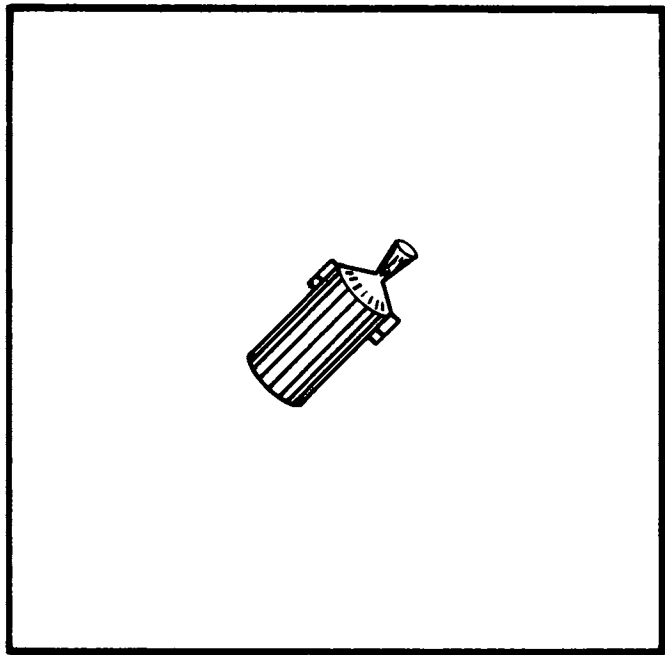
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FLIGHT PLANNING BRANCH

NASA - MSC

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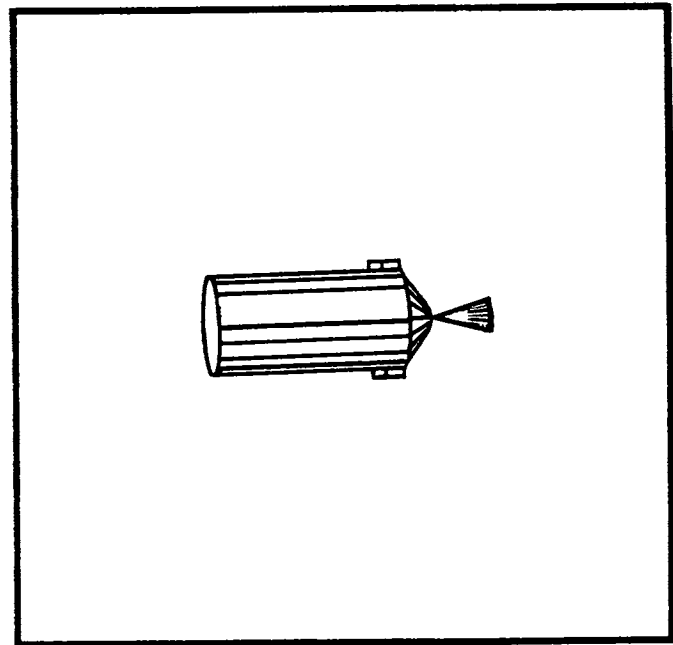
FOV 1°



GET 04:40

S-IVB LOX DUMP INITIATION
CSM/S-IVB RANGE 12 023 FT

FOV 5°



GET 04:19

S-IVB APS EVASIVE INITIATION
CSM/S-IVB RANGE 1583 FT

MCC-H

1823 CST

FLIGHT PLAN

NOTES

V49 MNVR TO VIEW S-IVB IN HATCH WINDOW BY 04:09
 (090,340,356) OMNI D
 REPORT: GO FOR S-IVB YAW MNVR
 VISUALLY INSPECT S-IVB/IU THERMAL SHROUD, TAKE PHOTOS IF
 DAMAGE IS EVIDENT

THE MNVR TO ACQUIRE
 THE S-IVB WILL BE
 PERFORMED AT 0.2°/
 SEC AND WILL BE INI-
 TIATED AFTER GOOD
 EJECTION IS VERIFIED

S-IVB YAW MNVR 04:09 (GROUND COMMAND)

GO FOR S-IVB YAW MNVR
 INDICATES THAT THE
 S-IVB IS IN THE CREW
 FIELD OF VIEW AND
 ADEQUATE SPACECRAFT
 SEPARATION HAS BEEN
 ACHIEVED.
 THE S-IVB YAW MNVR
 WILL BE PERFORMED
 NOMINALLY AT LM
 EJECTION +13 MIN

GO/NO-GO FOR S-IVB
 EVASIVE BURN

REPORT: GO FOR S-IVB EVASIVE BURN

DUMP DSE

S-IVB APS EVASIVE BURN 04:19 (GROUND COMMAND)

CHARGE BATTERY B

S-IVB MNVRS TO PROPELLANT DUMP ATT (04:29)
 REPORT: LM/CM ΔP

S-IVB CONTINUOUS H₂ VENT-ON (04:36)

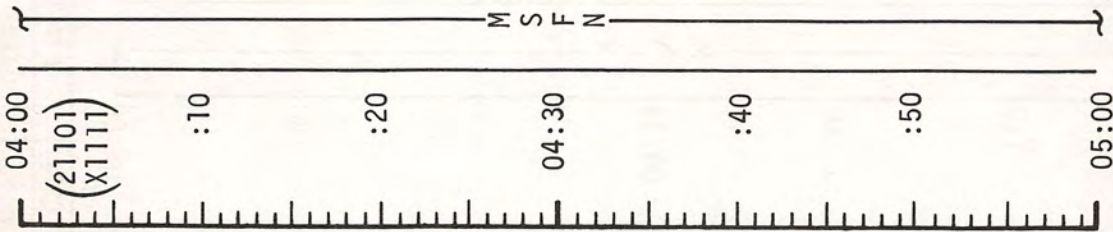
V49 MNVR TO P52 ATTITUDE (05:20)
 (230,300,356) HGA P 31, Y 310
 S-IVB LOX DUMP (04:40)

EVASIVE BURN ΔV
 ≈9.4 FPS

LOX DUMP ΔV ≈ 28 FPS

DOFF PGA'S

TRANSFER ITEMS OUT OF PGA POCKETS
 ZIP SUIT AND INSTALL ELECTRICAL
 COVER PRIOR TO STOWING (PGA BAG)
 STOW COMM CARRIERS & UCTA (PGA BAG)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	04:00 - 05:00	1/TLC	3-9

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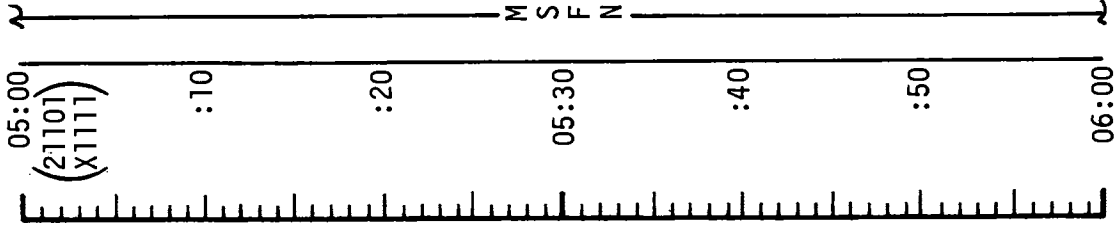
FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-H

1923 CST



PREPARE FOR LAUNCH VEHICLE
SYSTEMS PERFORMANCE DEBRIEFING
AT 27 HOURS. SEE QUESTIONS ON
PAGE 3-28

ATT DEADBAND - MIN
RATE - LOW
BMAG (3) - ATT 1/RATE 2
SC CONT - SCS

UPLINK TO CSM
DESIRED ORIENTATION
(PTC)

ZERO TRUNNION BIAS

STARS _____,
SA _____,
TA _____,

P52 IMU REALIGN
OPTION 3 REFSMMAT
(LAUNCH ORIENT)

REPORT: GYRO TORQUING ANGLES

P52 IMU REALIGN
OPTION 1 PREFERRED
(PTC ORIENT)

SC CONT - CMC
BMAG (3) - RATE 2
SECURE HGA, HGA TRACK - MAN HGA P -52, Y 270
O₂ FUEL CELL PURGE } IF NO MCC-1
WASTE WATER DUMP
VHF A SIMPLEX - OFF
VERIFY WASTE STORAGE VENT VALVE - VENT

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

NOTES

SC INTERIOR PHOTOG-
RAPHY AT CREW OPTION
CM/DAC/10/CIN- SPOT
(T2.8,1/60,3) 6 fps
(87% MAG)
(MAG (H) _____, FR # _____

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

P37 PAD ASSUMES
NO MCC-1

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	05:00 - 06:00	1/TLC	3-10

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

MCC-H

FLIGHT PLAN

2023 CST

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

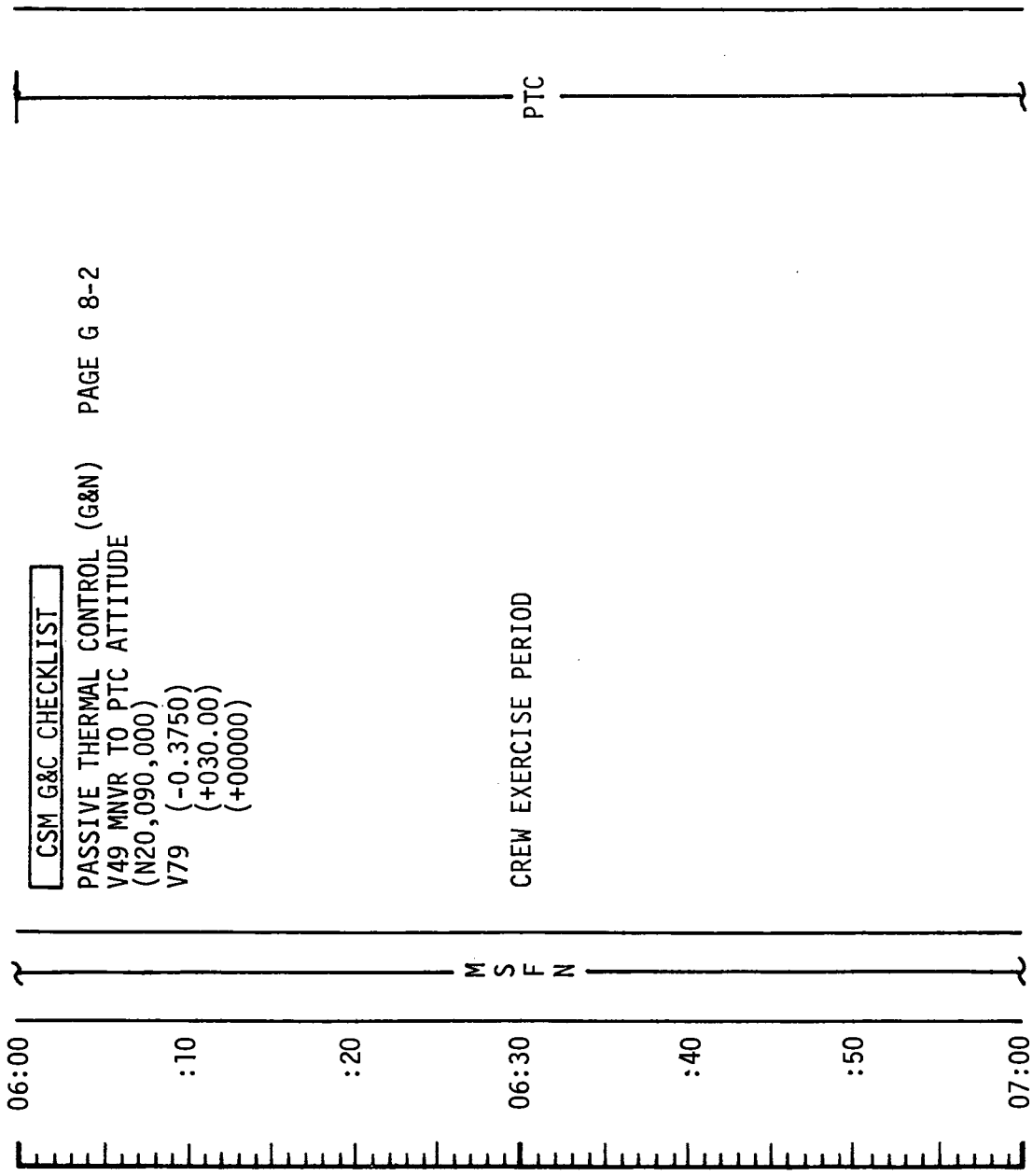
CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N) PAGE G 8-2
V49 MNVR TO PTC ATTITUDE

(N20,090,000)
V79 (-0.3750)
(+030.00)
(+00000)

NOTES

S-IVB APS MCC-1
GET ≈ 06:30
ΔV ≈ 30 FPS
DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	06:00 - 07:00	1/TLC	3-11

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

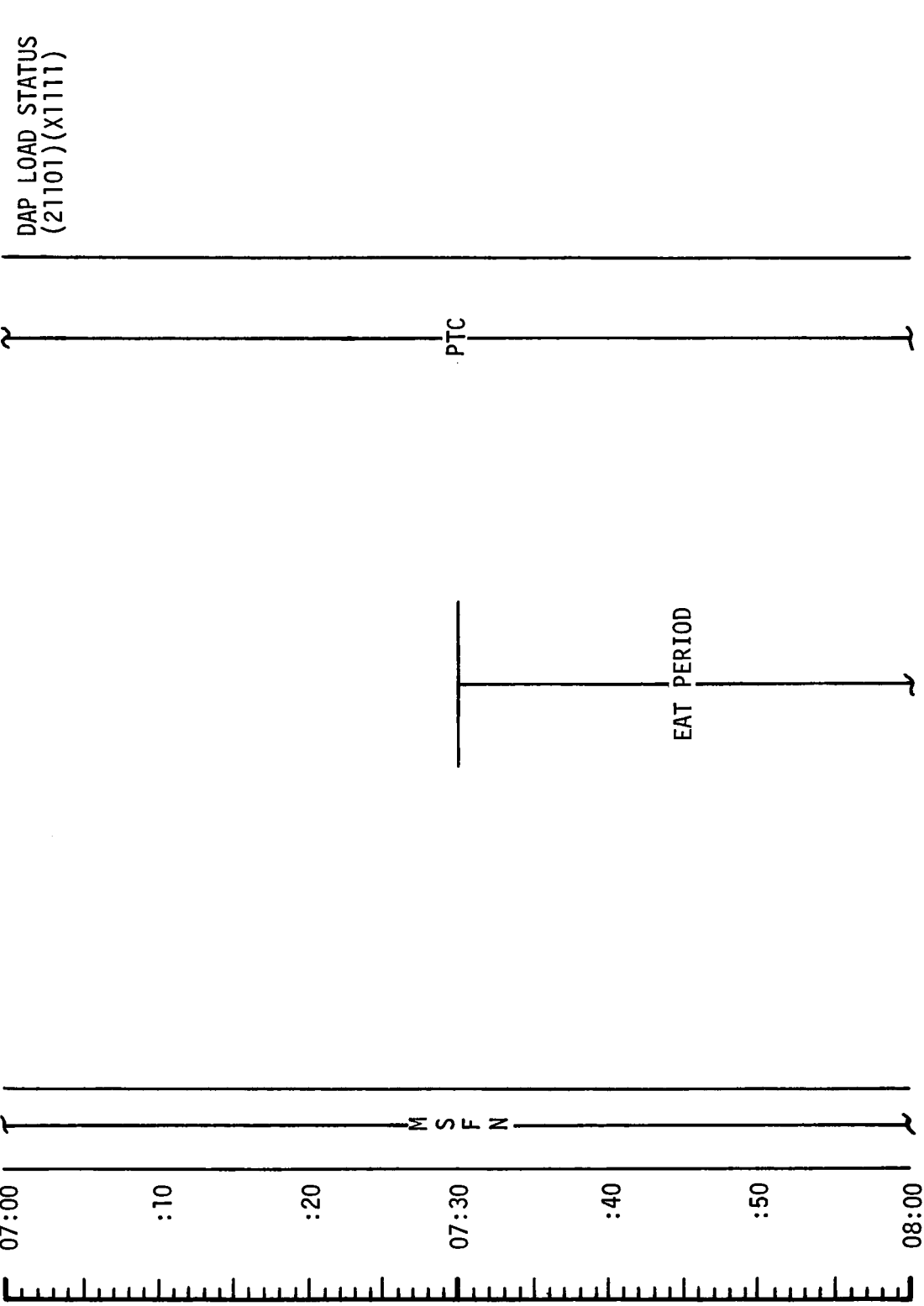
NASA — MSC

FLIGHT PLAN

MCC-H

2123 CST

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	07:00 - 08:00	1/TLC	3-12

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

2223 CST

FLIGHT PLAN

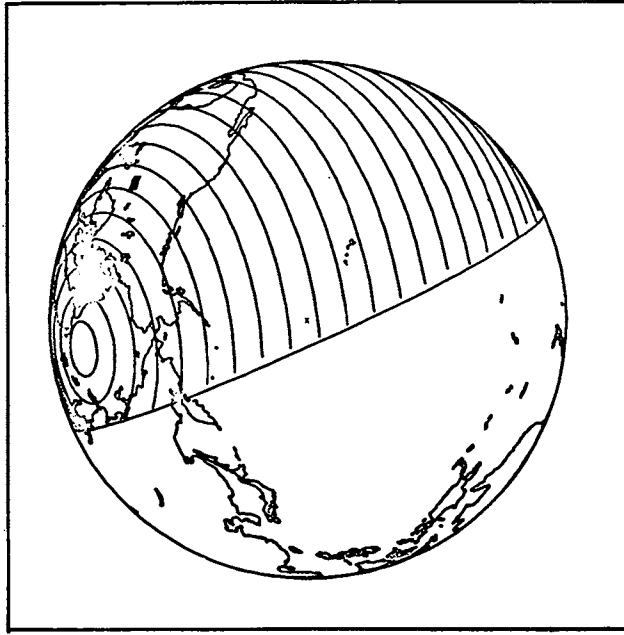
NOTES

DAP LOAD STATUS
(21101)(X1111)

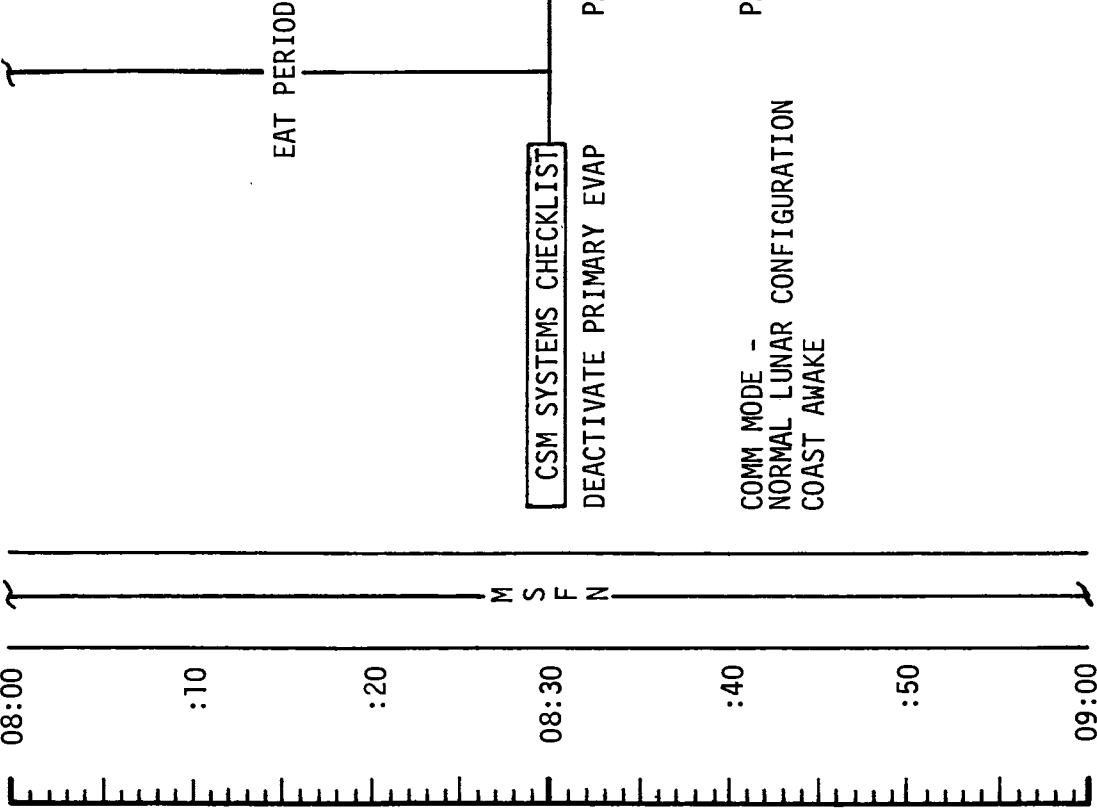
PTC

F.O.V. 10°

GET: 9:00



S-IVB MCC-2 GET \approx 09:30
 ΔV IS NOMINALLY ZERO
 EARTH DISTANCE
 \approx 44 241 NM



PAGE S 1-13

PAGE S 1-24

CSM SYSTEMS CHECKLIST

DEACTIVATE PRIMARY EVAP

COMM MODE -
NORMAL LUNAR CONFIGURATION
COAST AWAKE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	08:00 - 09:00	1/TLC	3-13

MSC Form 28 (May 69)

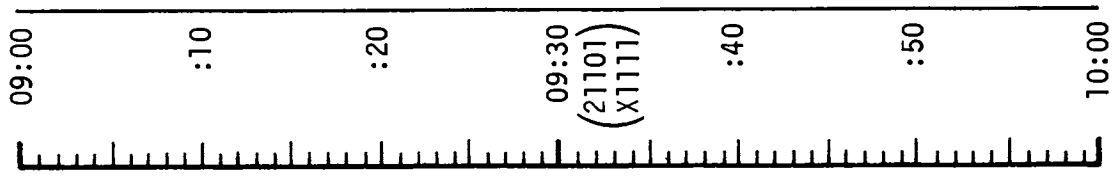
FLIGHT PLANNING BRANCH

NASA - MSC

FLIGHT PLAN

2323 CST

MCC-H



P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

CSM G&C CHECKLIST

ΔV TEST & NULL BIAS CHECK PAGE G 2-5
REPORT: BIAS

EXIT G&N PTC PAGE G 8-3
V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(153,224,328)
OMNI A

P23 CISLUNAR NAVIGATION
OPTICS CALIBRATION STAR N70 (00034)
P00
V49 MNVR TO SIGHTING ATTITUDE
(173,275,310) OMNI B
V67 (+80000) (+00070) (+00003)

P23 CISLUNAR NAVIGATION
5 MARKS ON EACH STAR, UPDATE STATE VECTOR
1. N70 (00000) (00000) (00120)
N88 (-54083) (-07011) (-83821)

DAP LOAD STATUS
(21101)(X1111)

P52	IMU REALIGN
N71:	_____
N05:	_____
N93:	_____
X	_____
Y	_____
Z	_____
GET	_____

PTC

LOAD W MATRIX

72 GACRUX
(EFH)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	09:00 - 10:00	1/TLC	3-14

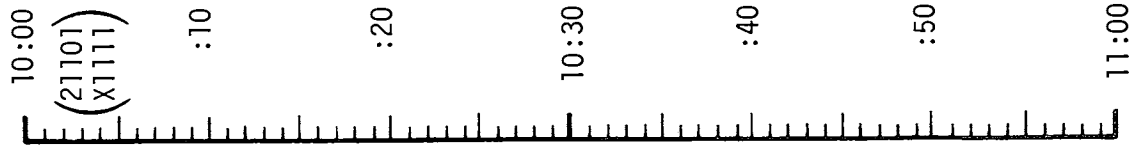
MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

MCC-H

FLIGHT PLAN

0023 CST



- 2. N70 (00000)(00000)(00110)
N88 (-44989)(-89085)(-06316)
- 3. N70 (00000)(00000)(00120)
N88 (-64872)(-11412)(-75242)
- 4. N70 (00000)(00000)(00110)
N88 (-35412)(-91724)(-18240)

UPDATE TO CSM
 MCC-1 MNVR PAD
 CSM S.V.
 UPLINK TO CSM
 CSM S.V. & V66
 MCC-1 TGT LOAD

P00
 V49 MNVR TO OPTICS CALIBRATION ATTITUDE
 (153,224,328) OMNI A
 P23 CISELUNAR NAVIGATION
 OPTICS CALIBRATION STAR N70 (00034)

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N) PAGE G 8-2

V49 MNVR TO PTC ATTITUDE
 (N20,090,000)
 V79 (-0.3750)
 (+030.00)
 (+00000)

PTC

NOTES

- 236 DELTA
OPHIUCHI (ENH)
- 53 GAMMA
CENTAURI (EFH)
- 202 ZETA
OPHIUCHI (ENH)

DAP LOAD STATUS
 (21101)(X1111)
 START PTC IF
 MCC-1 NOT REQUIRED

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	10:00 - 11:00	1/TLC	3-15

FLIGHT PLAN

MCC-1
BURN TABLE

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

TABLE 3-2
3-16

FLIGHT PLAN

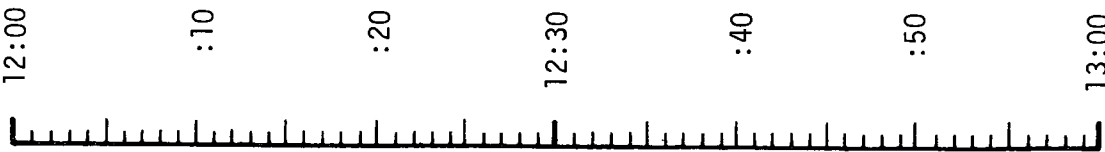
0223 CST

MCC-H

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N) PAGE G 8-2
V49 MNVR TO PTC ATTITUDE
(N20,090,000)
V79 (-0.3750)
(+030.00)
(+000000)



M S F N

PTC

NOTES

DAP LOAD STATUS
(21101)(X11111)

START PTC IF
MCC-1 WAS
PERFORMED

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	12:00 - 13:00	1/TLC	3-18

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

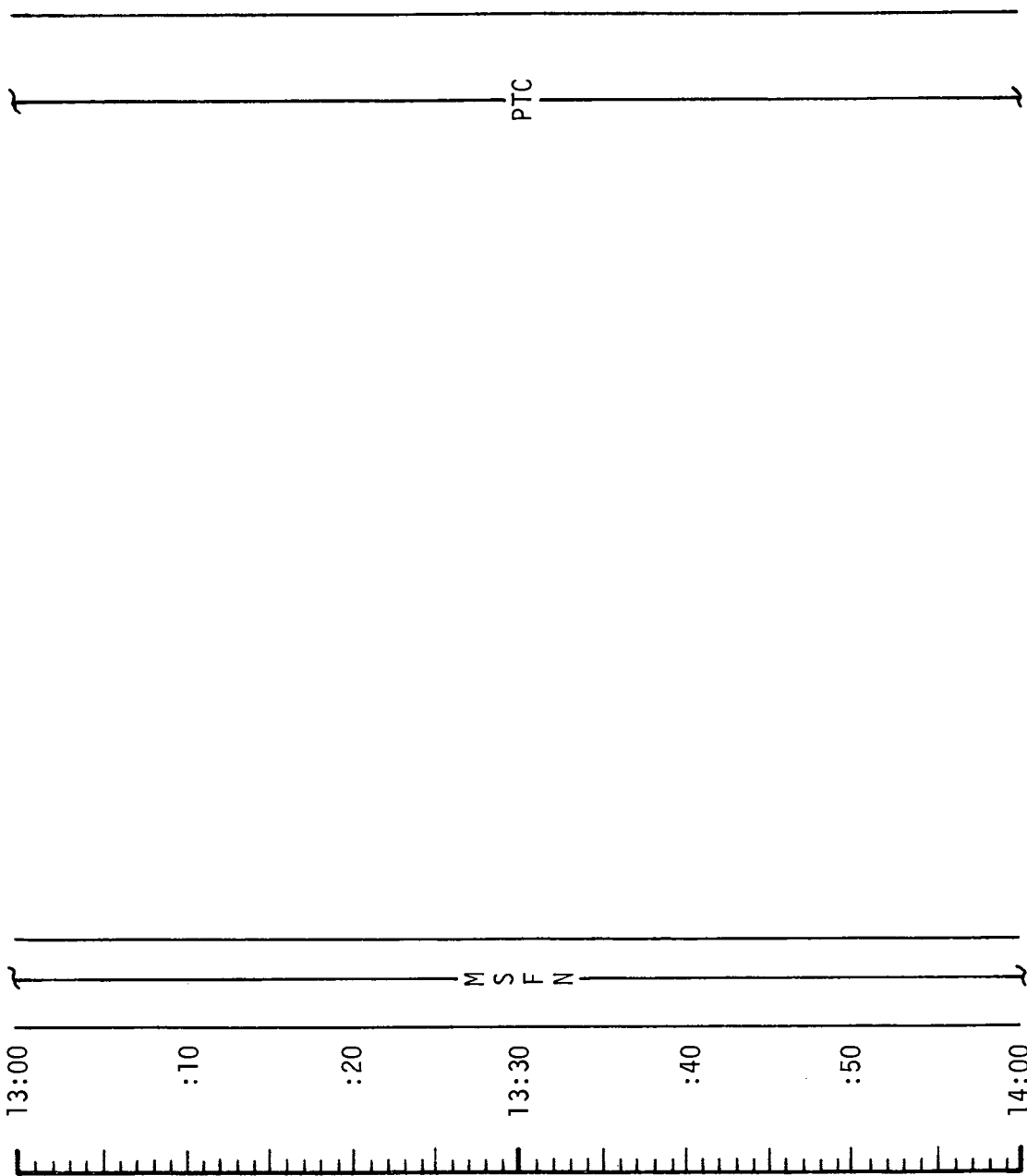
FLIGHT PLAN

0323 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X1111)



UPDATE TO CSM
P37 PADS (LAUNCH
+ 25, 35, 45 & 60)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	13:00 - 14:00	1/TLC	3-19

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

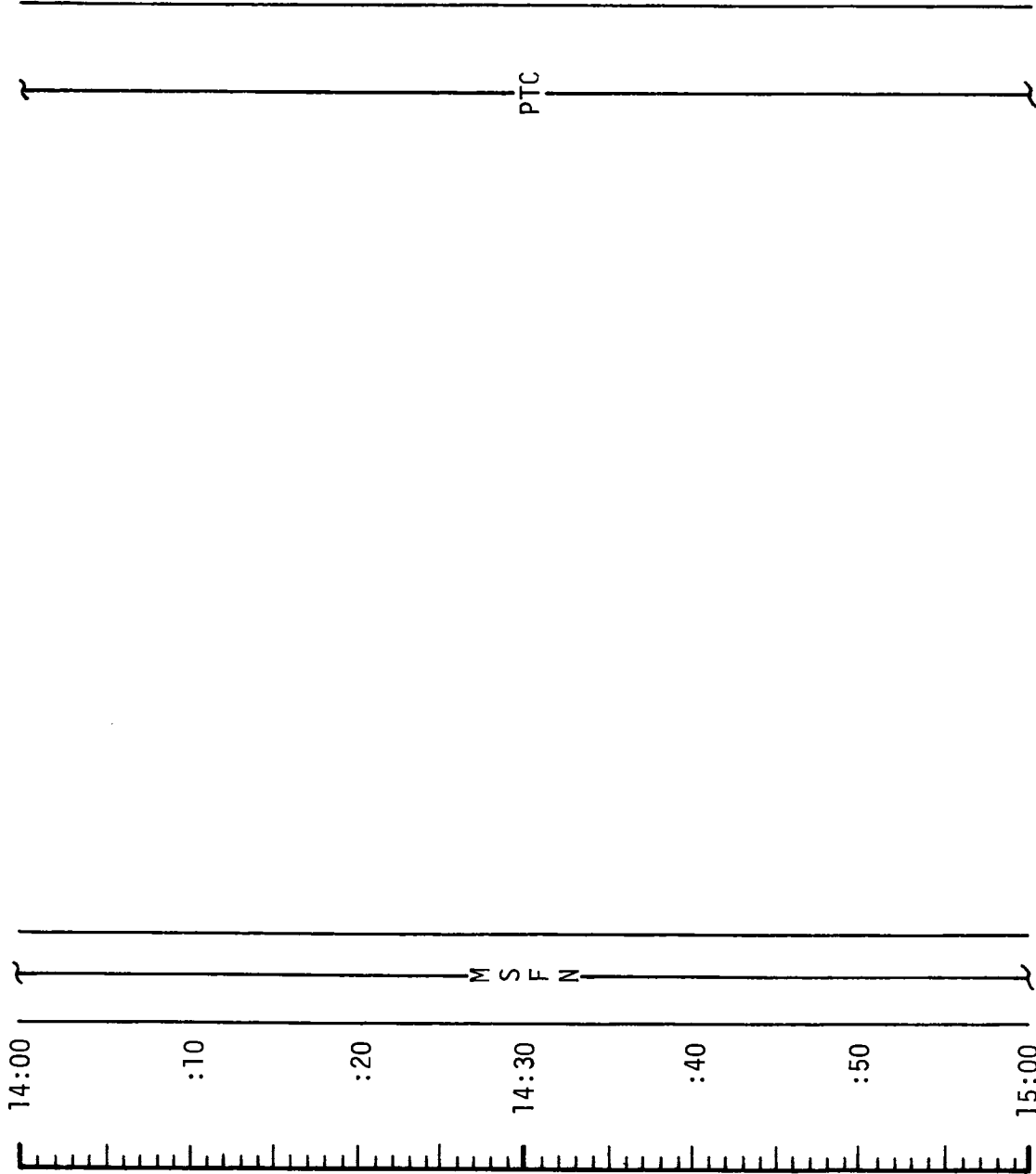
FLIGHT PLAN

0423 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	14:00 - 15:00	1/TLC	3-20

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-H 0523 CST



NOTES
DAP LOAD STATUS
(21101)(X1111)

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

EARTH DISTANCE
≈ 73 991 NM

PAGE S 1-26

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	15:00 - 16:00	1/TLC	3-21

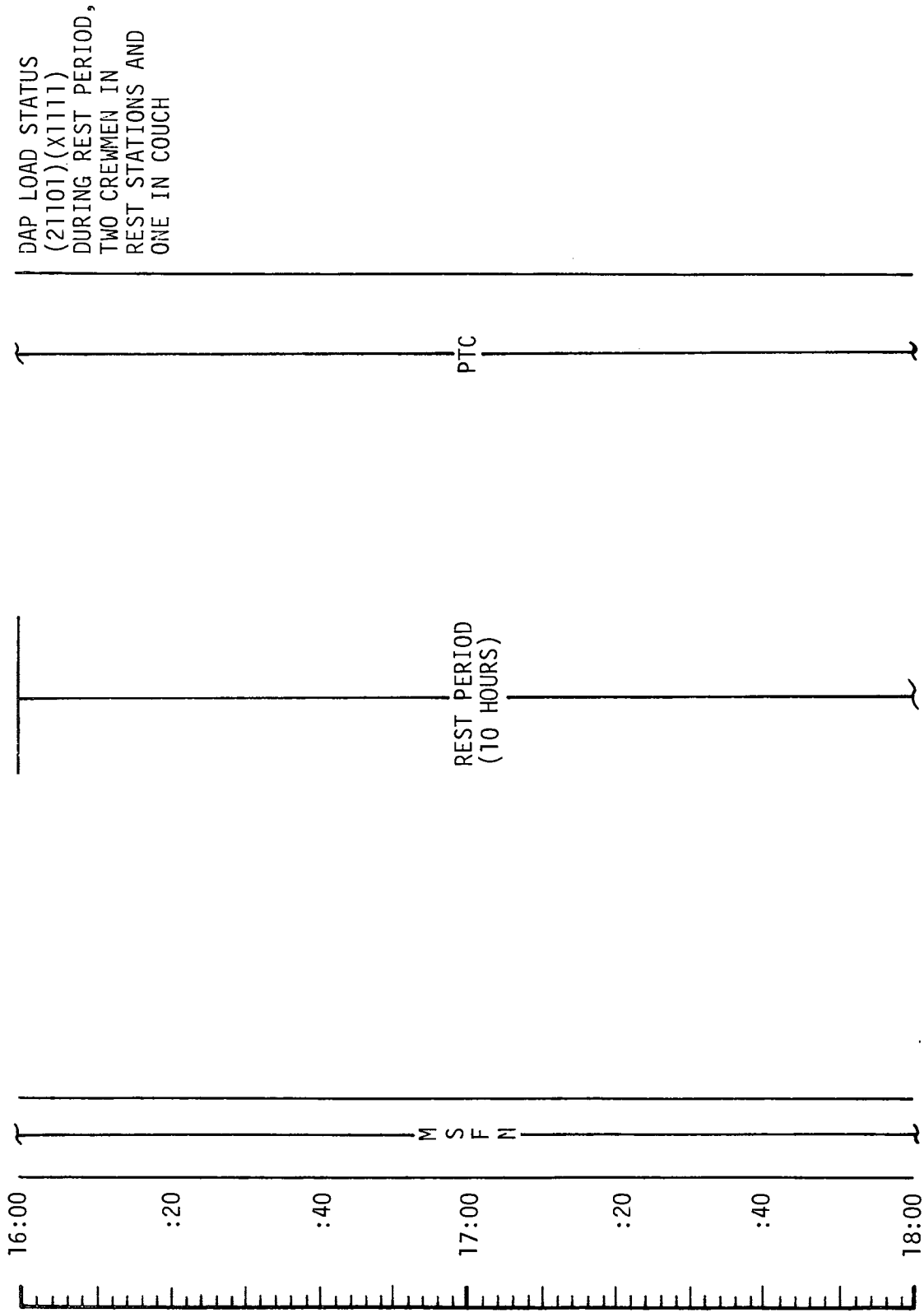
MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

0623 CST



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	16:00 - 18:00	1/TLC	3-22

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

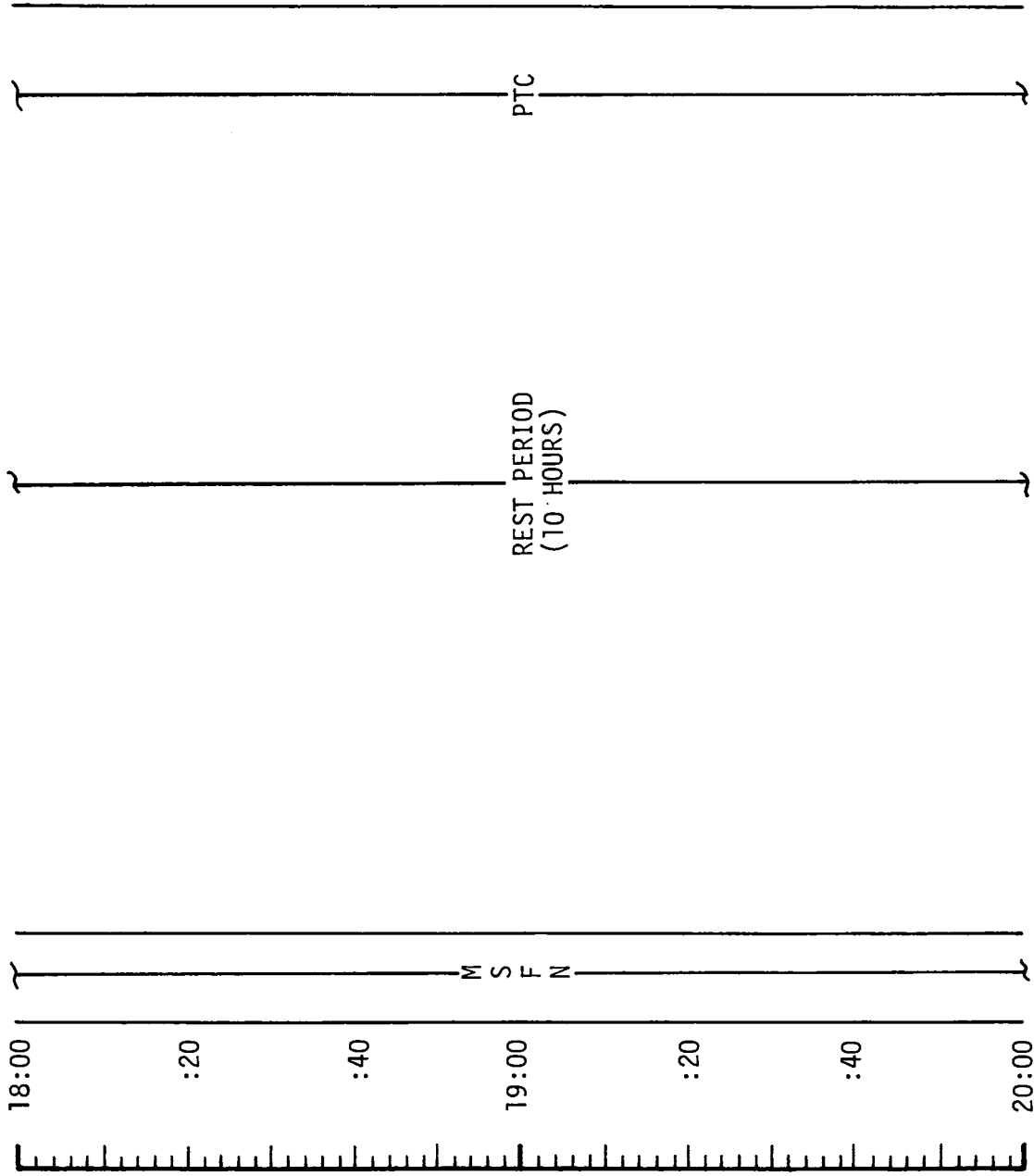
MCC-H

0823 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	18:00 - 20:00	1/TLC	3-23

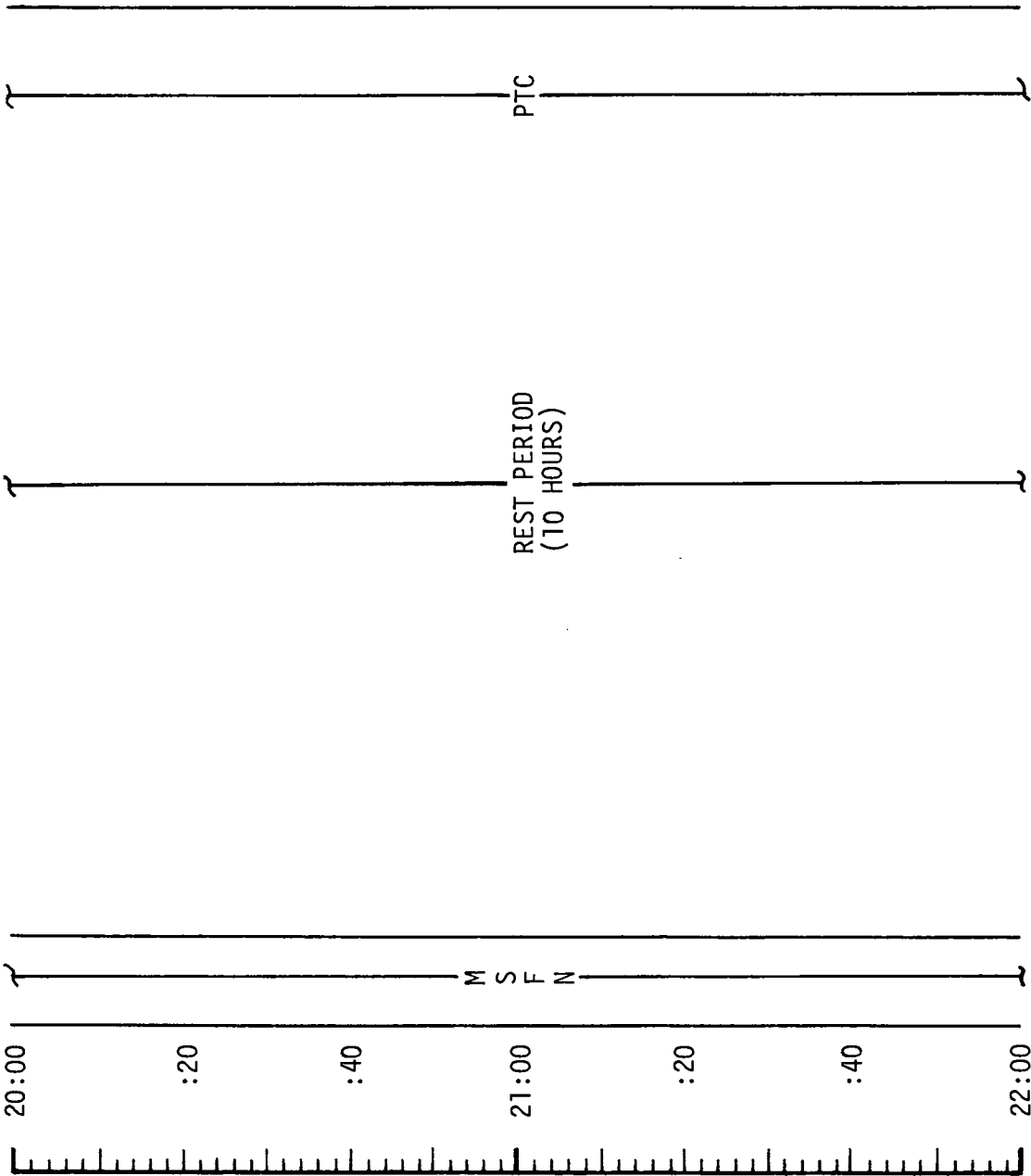
FLIGHT PLAN

1023 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X11111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	20:00 - 22:00	1/TLC	3-24

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

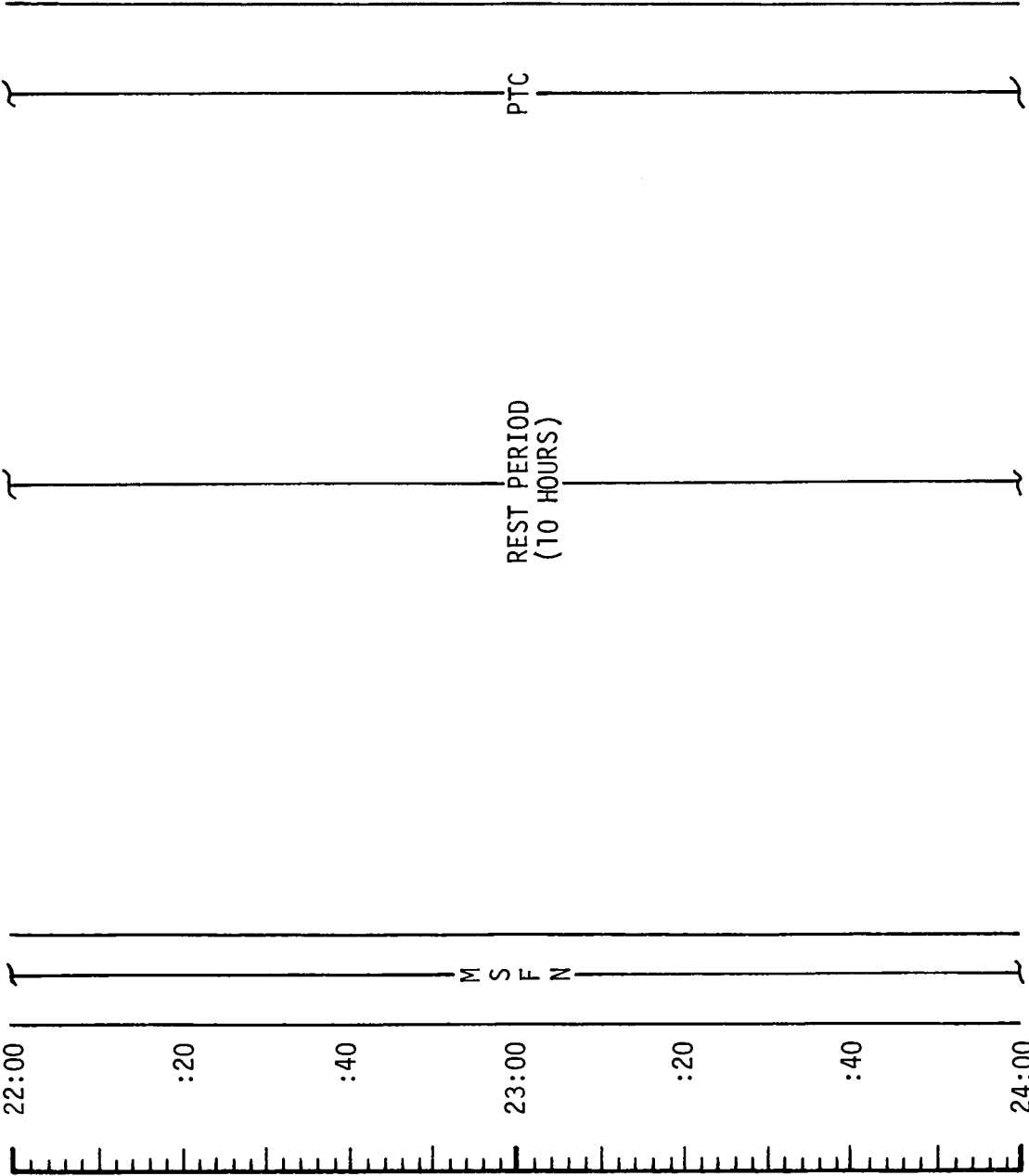
FLIGHT PLAN

MCC-H

1223 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	22:00 - 24:00	1/TLC	3-25

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

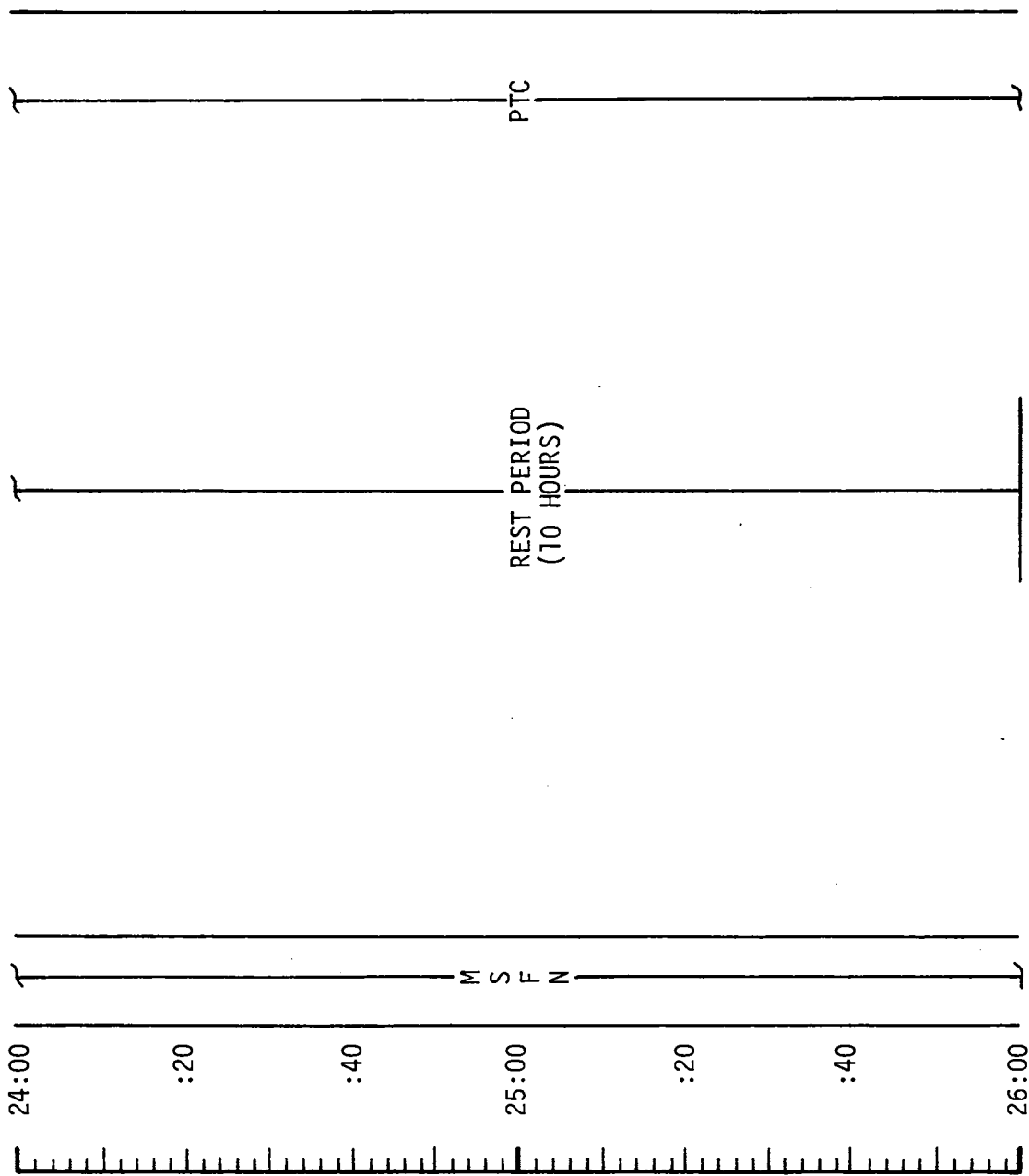
FLIGHT PLAN

MCC-H

1423 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	24:00 - 26:00	1/TLC	3-26

NASA — MSC

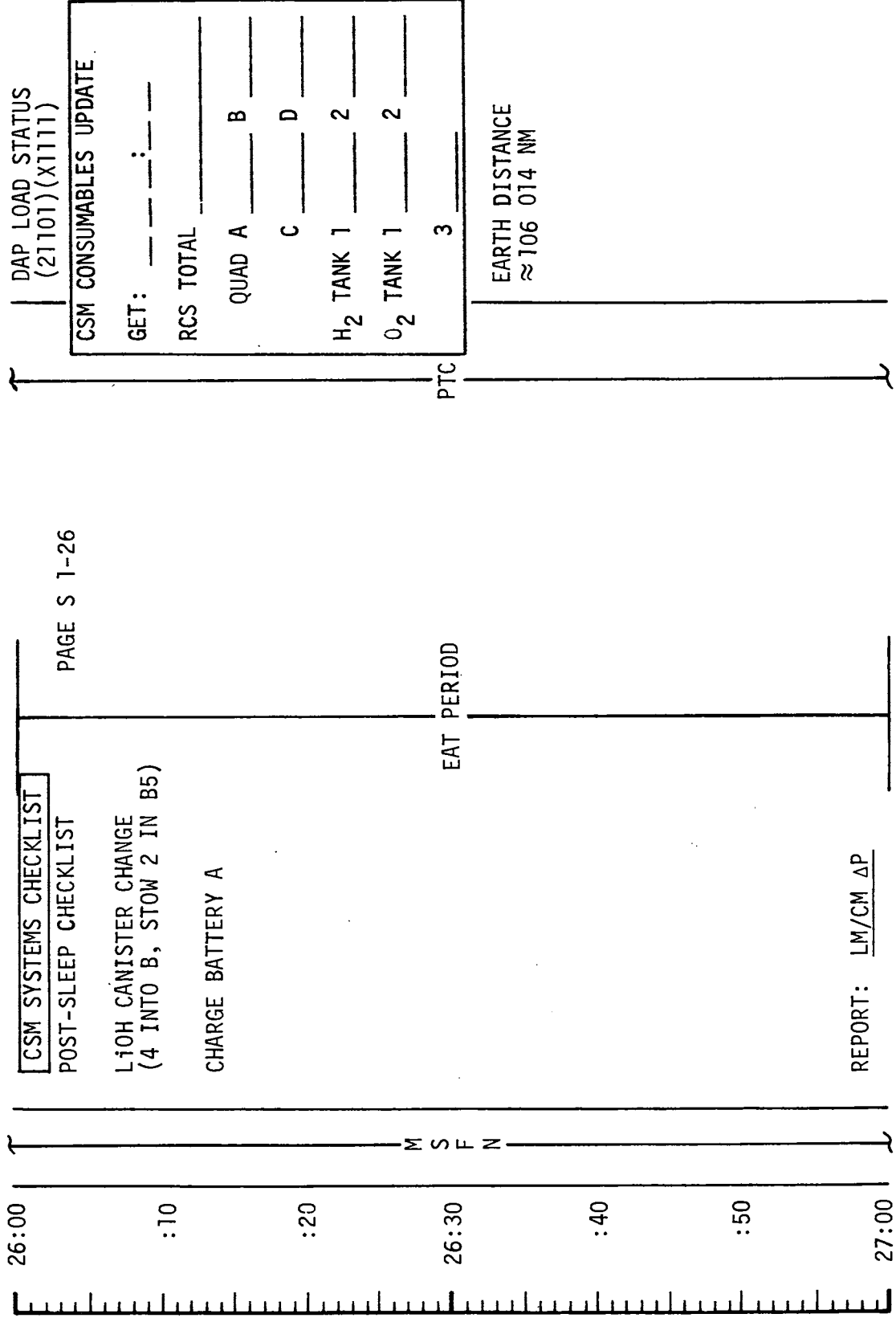
FLIGHT PLANNING BRANCH

MSC Form 28 (May 69)

FLIGHT PLAN

MCC-H

1623 CST



UPDATE TO CSM
 CONSUMABLES
 FLIGHT PLAN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	26:00 - 27:00	2/TLC	3-27

FLIGHT PLAN

1723 CST

MCC-H

LAUNCH VEHICLE
DEBRIEFING



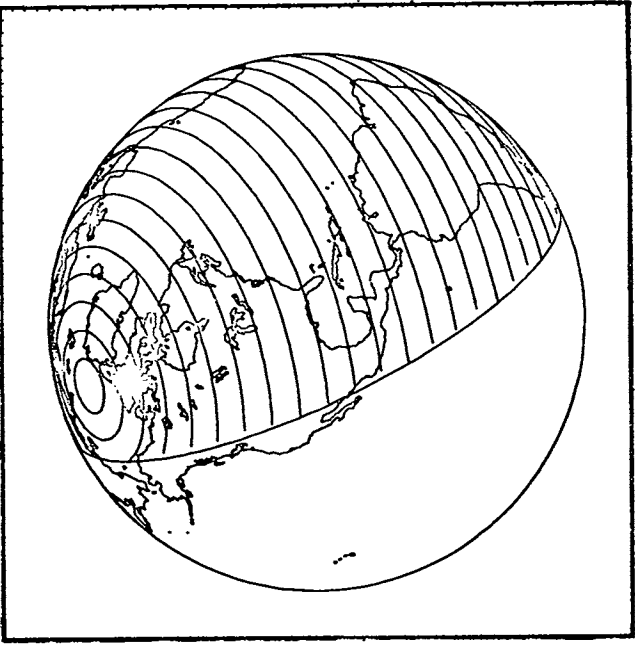
LAUNCH VEHICLE SYSTEMS
PERFORMANCE DEBRIEFING

28:00

1. WERE THERE ANY SIGNIFICANT CHANGES IN NOISE LEVEL BETWEEN STAGES OF POWERED FLIGHT?
2. WERE THERE ANY SIGNIFICANT CHANGES IN NOISE/ VIBRATION LEVEL DURING A SINGLE STAGE OF POWERED FLIGHT?
3. WERE THERE ANY UNEXPECTED ACCELERATION TRANS- IENTS EXPERIENCED AT INITIATION OF IGN, SII SECO, MAX Q OR M/R SHIFT FOR BOTH SII AND S-IVB?
4. AFTER SC SEPARATION, DESCRIBE THE CONDITIONS OF THE IU THERMAL SHROUD. WAS THERE ANY LOOSENESS?
5. HOW WAS GROUND/SC COMM AT IGNITION/ LIFT-OFF TIME REGION RELATIVE TO VIBRATION AND ACOUSTIC ENVIRONMENTS? DESCRIBE ANY VISIBLE VENTING OR SUSPECTED LEAK AFTER SEPARATION. WHEN, AND AT WHAT DISTANCE, WAS THE S-IVB SEEN FOR THE LAST TIME? ARE THERE ANY COMMENTS RELATIVE TO S-IVB/IU TLI GUIDANCE CUTOFF CONDITIONS (PREDICTED VS ACTUAL SC DISPLAY)?
9. WHAT DID THE ORDEAL BALL LOOK LIKE DURING TLI?

F.O.V. 4°

GET: 28:30



PTC

NOTES

DAP LOAD STATUS
(21101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	27:00 - 28:00	2/TLC	3-28

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

FLIGHT PLAN

1823 CST

28:00

:10

:20

(21101
X1111)

28:30

:40

:50

29:00

CSM G&C CHECKLIST

ΔV TEST & NULL BIAS CHECK
REPORT: BIAS

PAGE G 2-5

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

EXIT G&N PTC

PAGE G 8-3

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(151,227,333)
OMNI A

P23 ~~CISLUNAR NAVIGATION~~
OPTICS CALIBRATION STAR N70 (00034)
P00

V49 MNVR TO SIGHTING ATTITUDE
(155,265,310) OMNI B
V67 (+45000) (+00006) (+00003)

P23 CISLUNAR NAVIGATION
5 MARKS ON EACH STAR, UPDATE STATE VECTOR
1. N70 (00000)(00000)(00110)
N88 (-35412)(-91724)(-18240)

2. N70 (00000)(00000)(00120)
N88 (-58200)(-46152)(-66954)

NOTES

DAP LOAD STATUS
(21101)(X1111)

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

EARTH DISTANCE
≈ 114 188 NM

LOAD W MATRIX

202 ZETA
OPHIUCHI (ENH)

165 ETA
CENTAURI (EFH)

29-10 PTC

Cancel

M S F N

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	28:00 - 29:00	2/TLC	3-29

MCC-H

FLIGHT PLAN

NOTES

1923 CST



(21101)
(X1111)

3. N70 (00033)(00000)(00110)

:10

4. N70 (00000)(00000)(00120)
N88 (-64929)(-74326)(-16121)

P00

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(151,227,333)
P23 CISELUNAR NAVIGATION
OPTICS CALIBRATION STAR N70 (00034)
ACQUIRE MSFN HGA P -64 Y 102

29:30

M S F N

:40

H₂ PURGE LINE HEATERS - ON

:50

P30 EXTERNAL ΔV
V49 MNVR TO PAD BURN ATTITUDE
(208,347,316)

30:00

33 ANTARES
(ENH)

172 BETA
LIBRAE (EFH)

IF HGA LOCK
IS LOST ACQUIRE
MANUALLY WITH
HGA P -2 Y 356

UPLINK TO CSM
CSM S.V. & V66
MCC-2 TGT LOAD

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

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	29:00 - 30:00	2/TLC	3-30

MSC Form 29 (May 68)

FLIGHT PLANNING BRANCH

NASA - MSC

FLIGHT PLAN

MCC-2 BURN CHART

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

EARTH DARKSIDE DIM LIGHT PHOTOGRAPHY

CONFIGURE CAMERA
CM/DAC/SXT/VHBW, (EXP 1/500) 24 fps (2.5% MAG)
MAG (J) _____ MAG % _____

UTILITY POWER - ON

V49 MNVR TO EARTH DARKSIDE PHOTO ATTITUDE (30:55)
(156,269,310) OMNI B
SECURE HGA, HGA TRACK-MAN, HGA P -52, Y 270

DAMP VEHICLE RATES PER PTC PROCEDURE STEP 5
AFTER 20 MIN DISABLE ALL JETS
P22 ORBIT NAVIGATION (NO MARKS)

LDMK: LAT +15.000 SA +314.00
LONG/2 - 42.500 TA + 04.000
ALT +000.00

VERIFY THRU SXT THAT OPTICS BORESIGHTED ON EARTH DARKSIDE
MOUNT DAC ON SXT, DAC-ON AT 24 fps FOR 2 SEC
CHANGE DAC TO TIME & 1/60

1 FRAME, EXP TIME 60 SEC
1 FRAME, EXP TIME 20 SEC
1 FRAME, EXP TIME 5 SEC

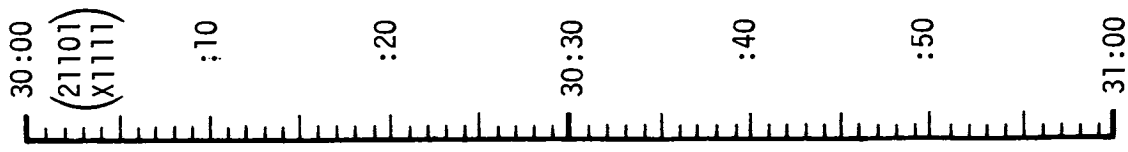
CHANGE DAC TO 24 fps & 1/500; DAC ON AT 24 fps FOR 2 SEC
CYCLE CMC MODE - FREE AUTO
ENABLE JETS
RECORD MAG % _____ DAC
REMOVE AND STOW DAC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	30:50 - 31:30	2/TLC	3-32

FLIGHT PLAN

MCC-H

2023 CST



SXT STAR CHECK
 P40 SPS THRUSTING
 H₂ & O₂ FUEL CELL PURGE
 WASTE WATER DUMP
 H₂ PURGE LINE HEATERS - OFF

TIG: 30:36:07
 BT: 11.08 SEC
 ΔVT: 73.40 FPS
 ULLAGE: NONE
 ORBIT: N/A

MCC-2
 V66 SET CSM S.V. INTO LM S.V.
 BURN STATUS REPORT

EARTH DARKSIDE
 DIM LIGHT PHOTOGRAPHY

NOTES

BURN STATUS REPORT		TRIM		ΔTIG	BT	V gx
X	X			•	•	•
X	X			•	•	•
X	X	X	X			
X	X	X	X			
X	X	X	X			
X	X	X	X			
X	X	X	X			
X	X	X	X			

*ITEMS TO BE REPORTED TO MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	30:00 - 31:00	2/TLC	3-33

TLI CUTOFF +28 HR

MCC-H

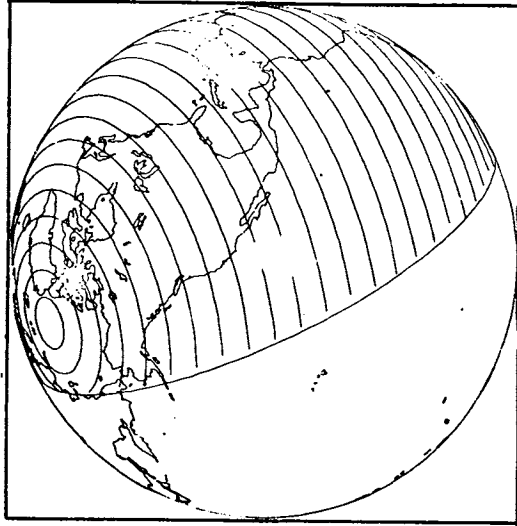
2123 CST

FLIGHT PLAN

NOTES

GET: 31:00

F.O.V. 4°



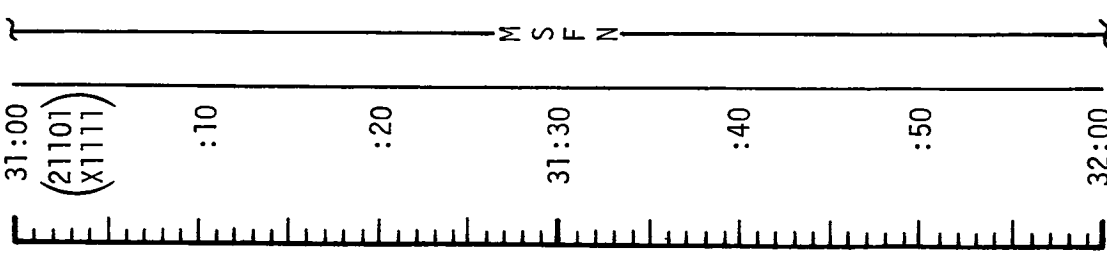
EARTH DARKSIDE
DIM LIGHT PHOTOGRAPHY

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N) PAGE G 8-2
 V49 MNVR TO PTC ATTITUDE
 (N20,090,000)
 V79
 (-0.3750)
 (+030.00)
 (+00000)

DAP LOAD STATUS
 (21101)(X1111)

PTC



UPDATE TO CSM
 QUADS TO ENABLE
 FOR PTC SPINUP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	31:00 - 32:00	2/TLC	3-34

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

2223 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)

VENT BATTERIES UNTIL SYSTEM TEST METER 4A=0
CREW EXERCISE PERIOD

CHARGE BATTERY A

PTC

M S F N



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1976	32:00 - 33:00	2/TLC	3-35

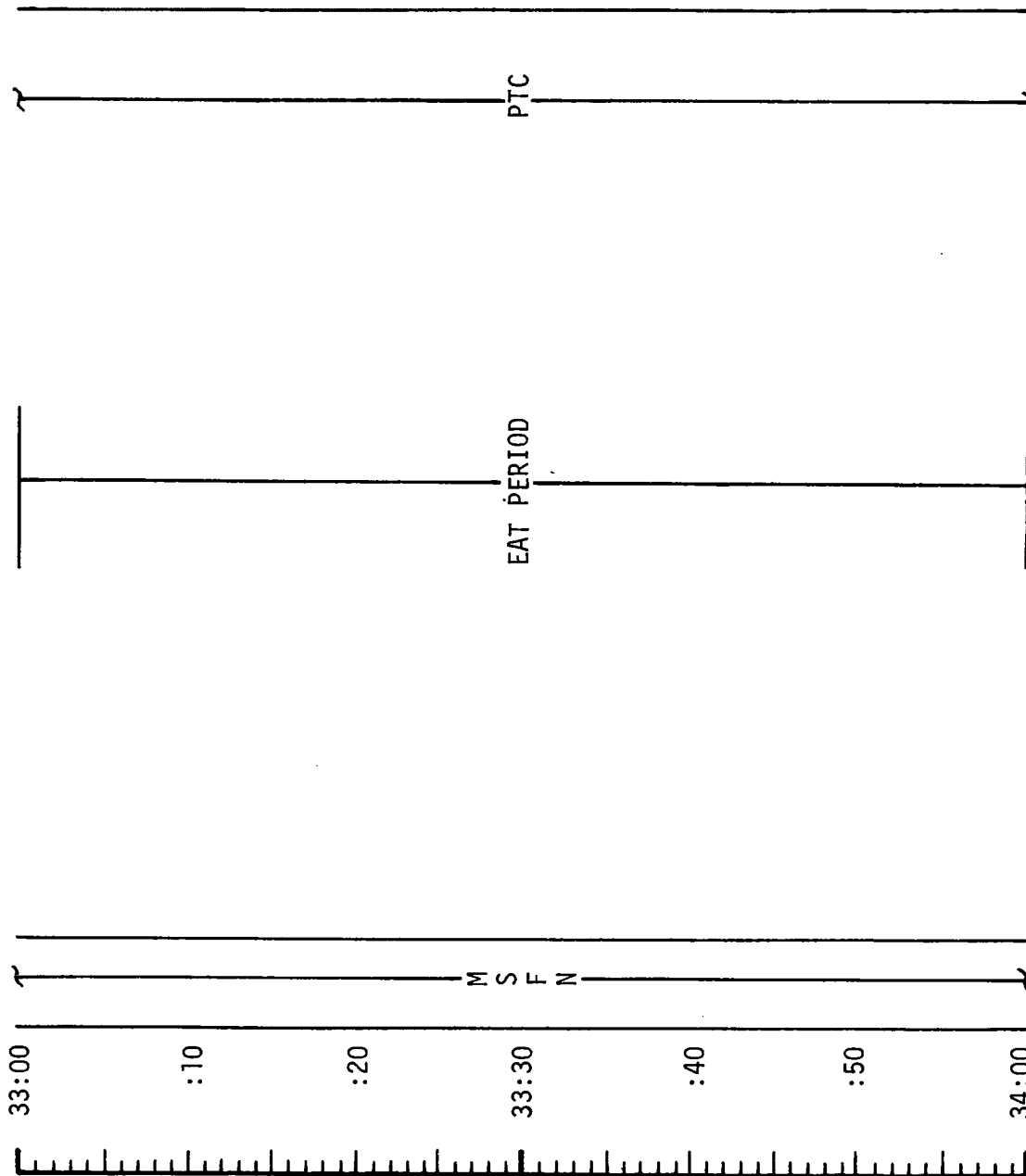
FLIGHT PLAN

2323 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	33:00 - 34:00	2/TLC	3-36

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-H

0023 CST

NOTES

LTC CHECKOUT
UNSTOW LTC

CM3/LTC/MBW/BEF - (SHUT 1/100, RNG 10.0, INT 8) (12 FR)
MAG (V) _____, FR # _____
LTC INSTALLATION (DECAL)
RECORD LTC CLOCK TIME
RECORD TIME : : & DAY _____ (LTC CLOCK)

AT GET : :
LTC CHECKOUT (DECAL) _____
LTC FILM MAGAZINE CHANGE (DECAL)
ADVANCE 4 FRAMES, RECORD FR # _____
PUT MAG (W) ON LTC
RESET FRAME COUNTER
LTC REMOVAL (DECAL) & STOW



UPDATE TO CSM
LOI MINUS 5 HR
FLYBY

LOI MINUS 5 HR
FLYBY IS A
CIRCUMLUNAR
TRAJECTORY TO THE
PRIME MPL AND WITH
A PERICYNTHION
BETWEEN 60 AND
1500 NM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	34:00 - 35:00	2/TLC	3-37

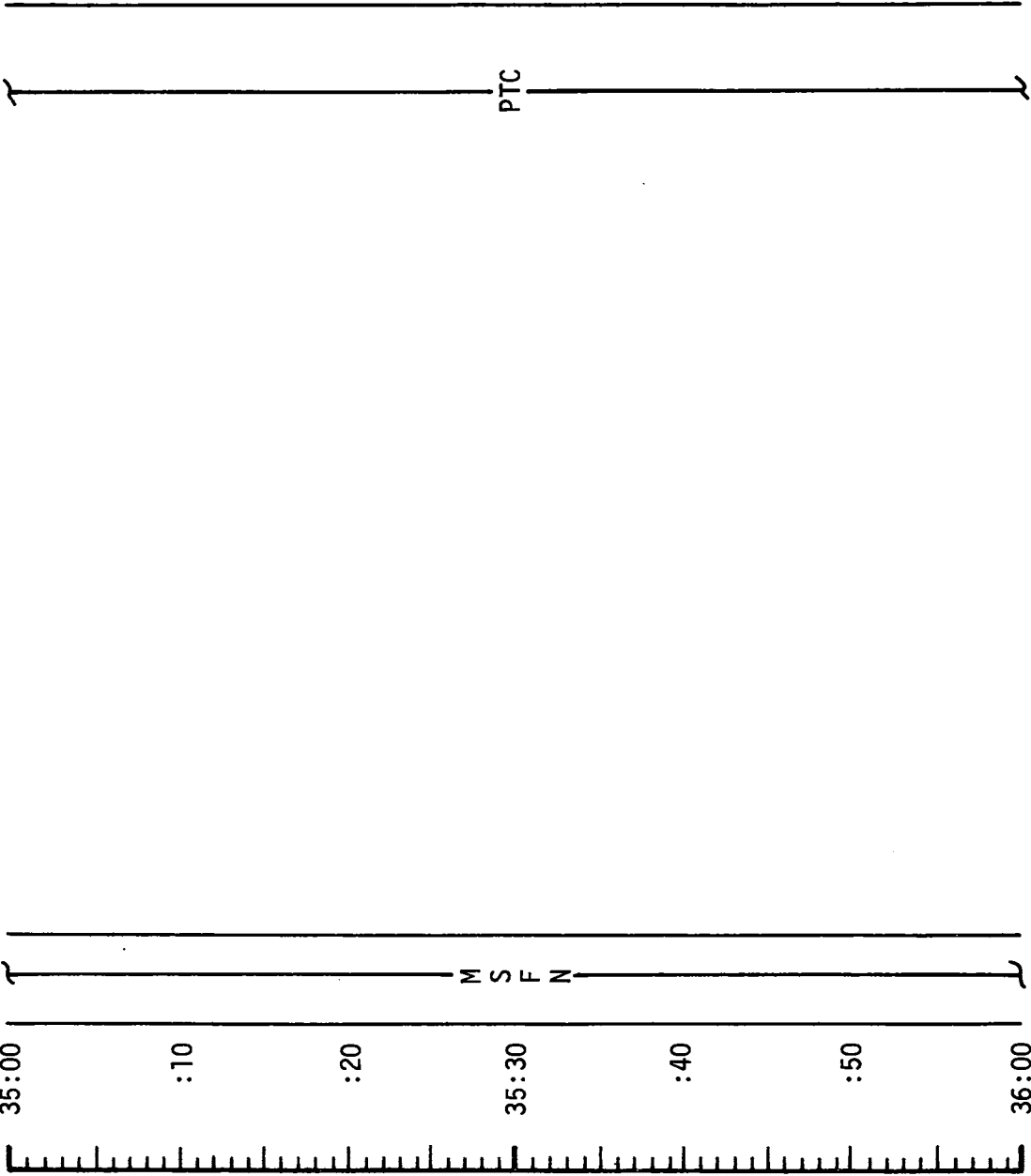
FLIGHT PLAN

MCC-H

0123 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	35:00 - 36:00	2/TLC	3-38

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

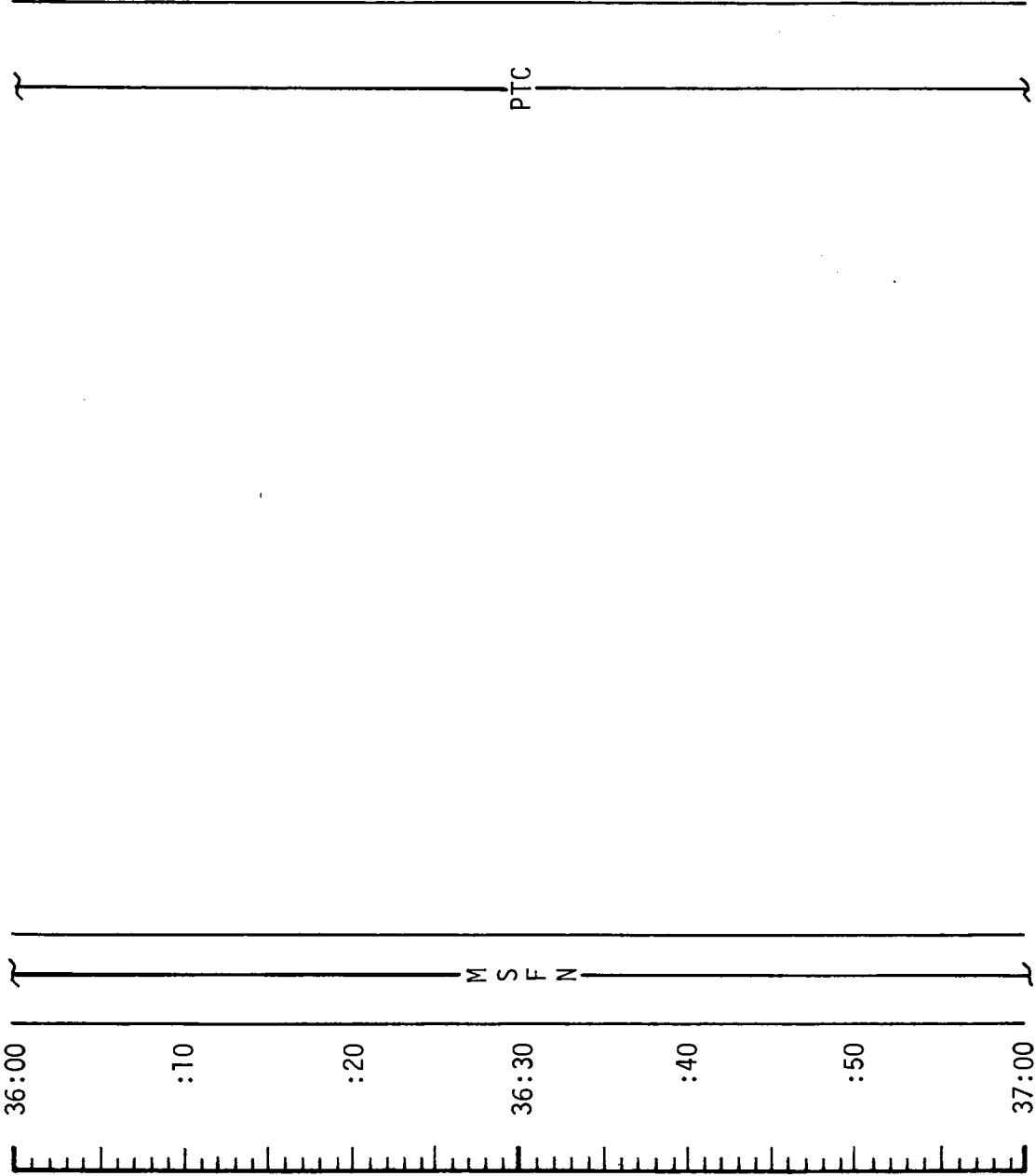
FLIGHT PLAN

0223 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X1111)

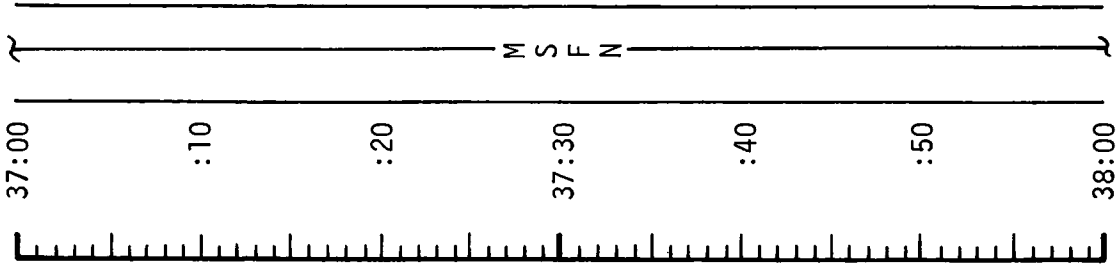


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	36:00 - 37:00	2/TLC	3-39

FLIGHT PLAN

0323 CST

MCC-H



NOTES

DAP LOAD STATUS
(21101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	37:00 - 38:00	2/TLC	3-40

MSC Form 29 (May 69)

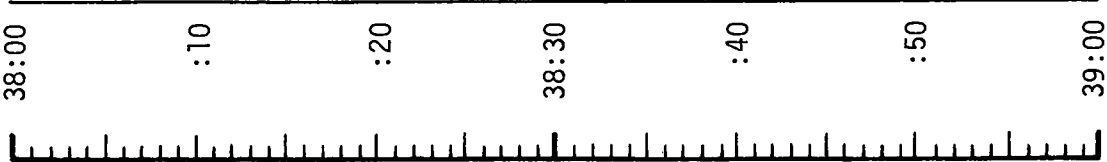
FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-H

0423 CST



L10H CANISTER CHANGE
(5 INTO A, STOW 3 IN B5)

M S F N

PTC

NOTES

DAP LOAD STATUS
(21101)(X1111)

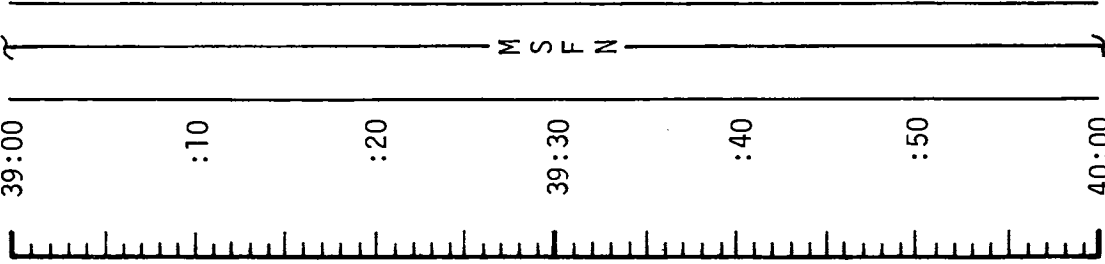
REPORT: LM/CM ΔP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	38:00 - 39:00	2/TLC	3-41

MCC-H

FLIGHT PLAN

0523 CST



NOTES

DAP LOAD STATUS
(21101)(X1111)

P52 IMU REALIGN	
N71:	_____
N05:	_____
N93:	_____
X	_____
Y	_____
Z	_____
GET	_____

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	39:00 - 40:00	2/TLC	3-42

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

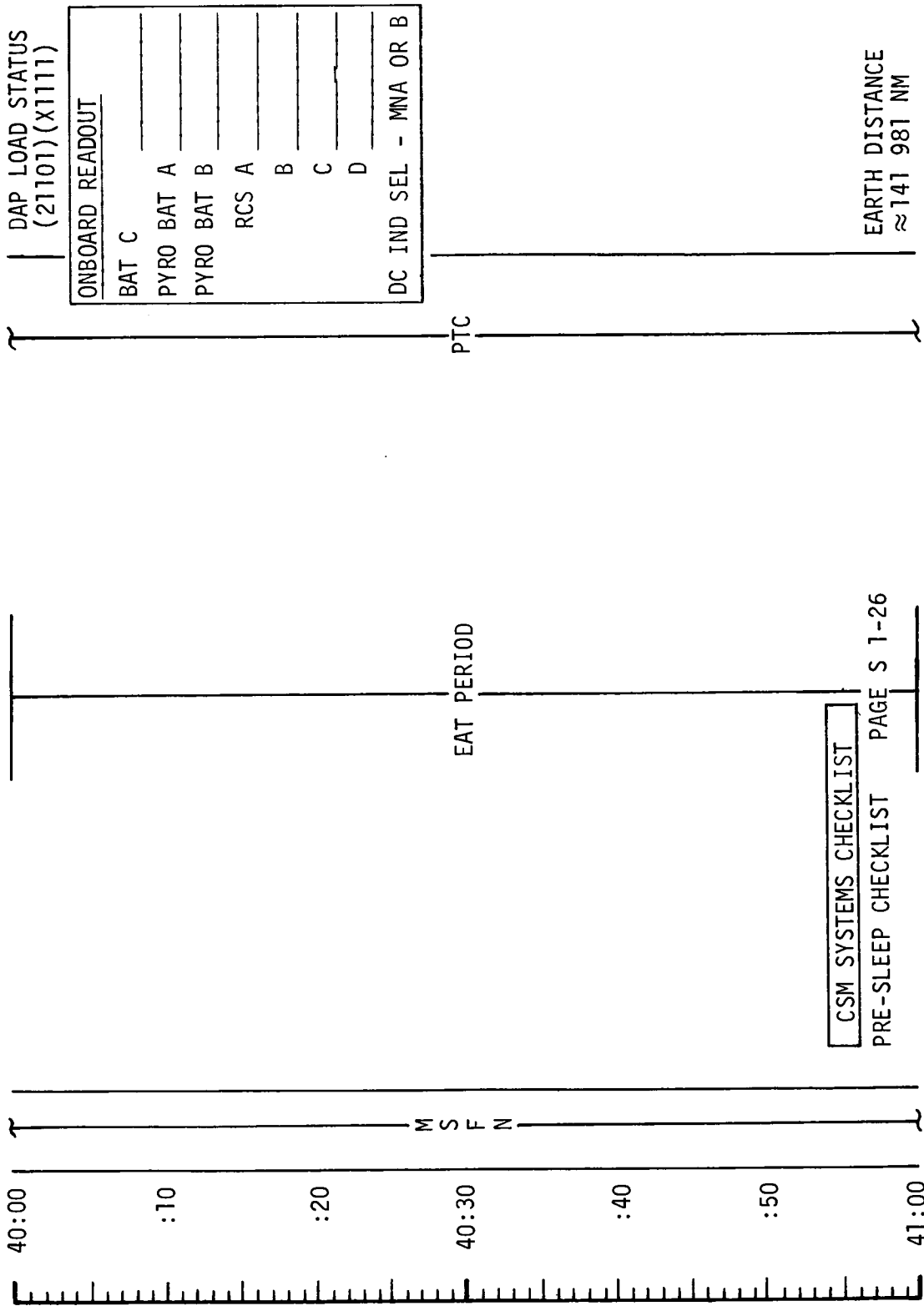
NASA — MSC

MCC-H

0623 CST

FLIGHT PLAN

NOTES



DAP LOAD STATUS
(21101)(X1111)

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

EARTH DISTANCE
≈ 141 981 NM

CSM SYSTEMS CHECKLIST
PRE-SLEEP CHECKLIST PAGE S 1-26

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	40:00 - 41:00	2/TLC	3-43

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

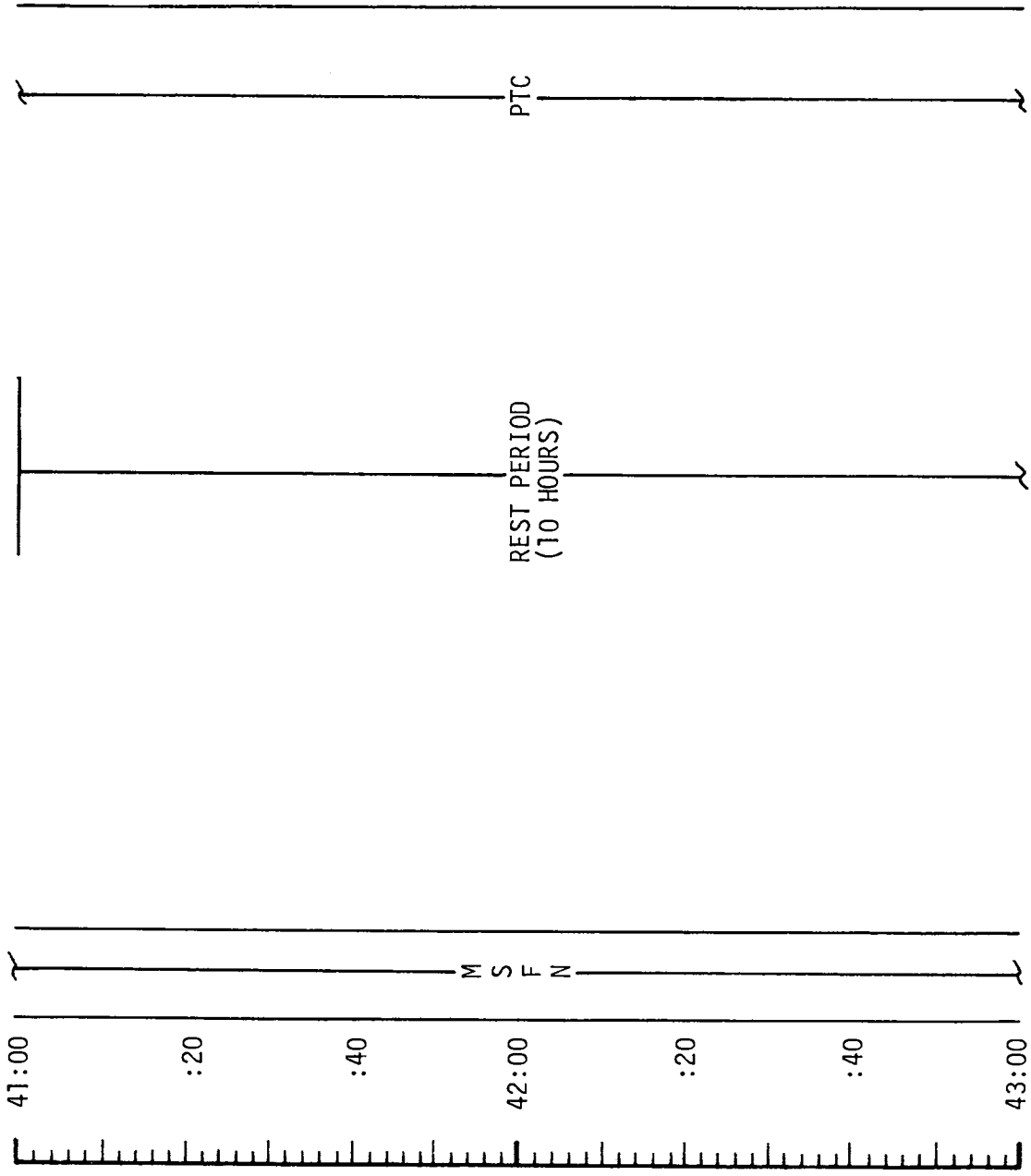
MCC-H

0723 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)
DURING REST PERIOD,
TWO CREWMEN IN
REST STATIONS AND
ONE IN COUCH



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	41:00 - 43:00	2/TLC	3-44

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

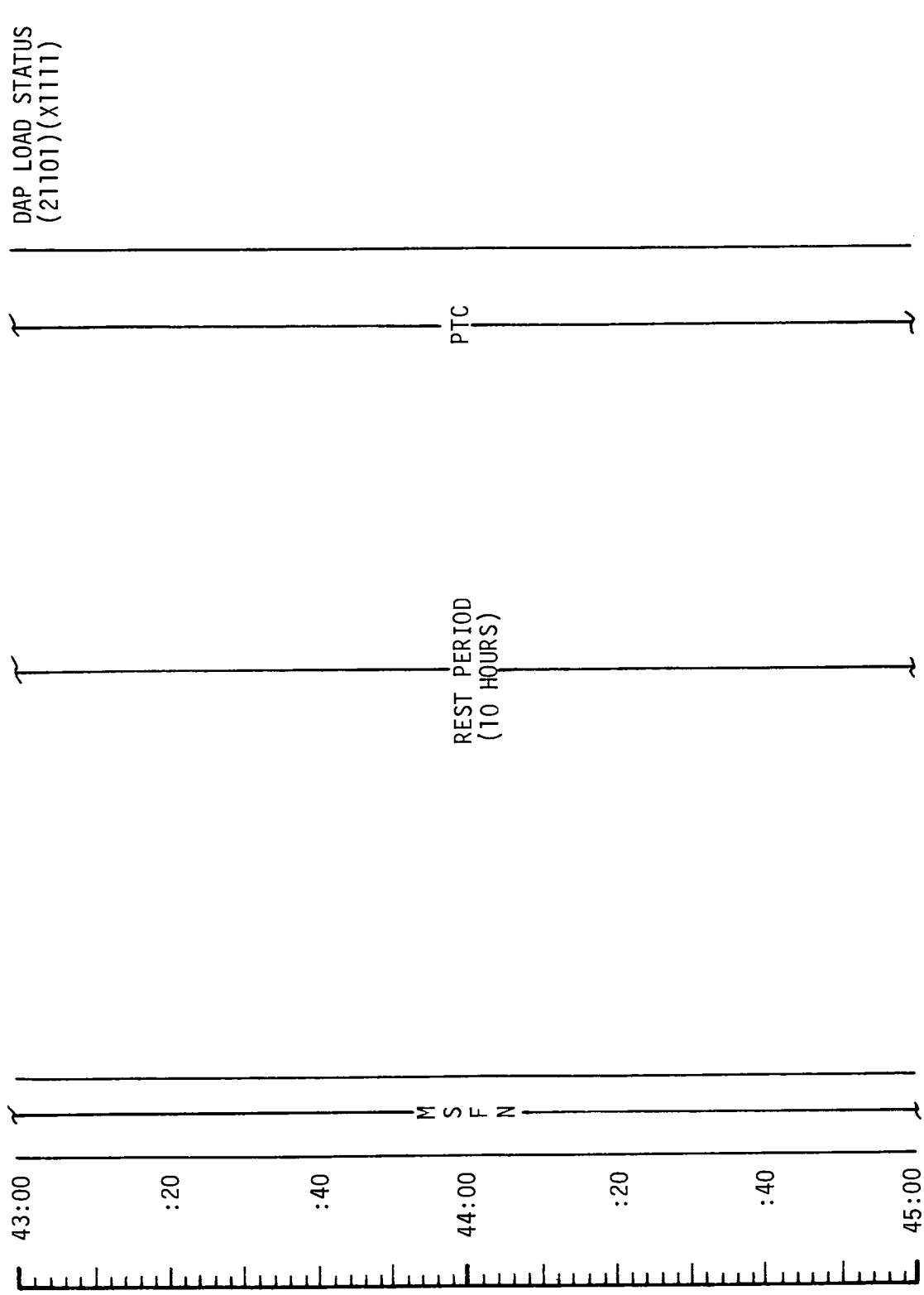
NASA — MSC

FLIGHT PLAN

MCC-H

0923 CST

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	43:00 - 45:00	2/TLC	3-45

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

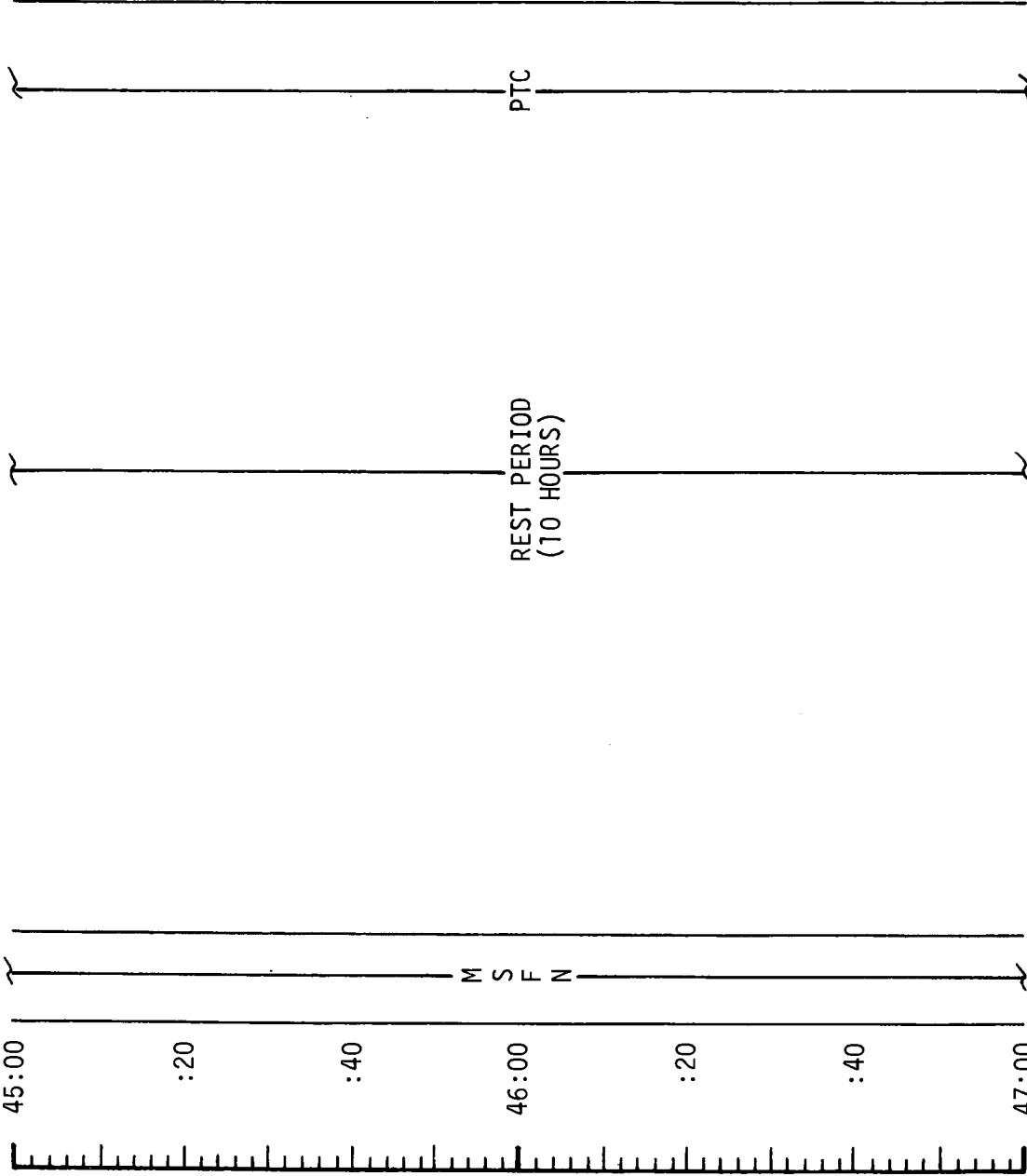
MCC-H

1123 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	45:00 - 47:00	2/TLC	3-46

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

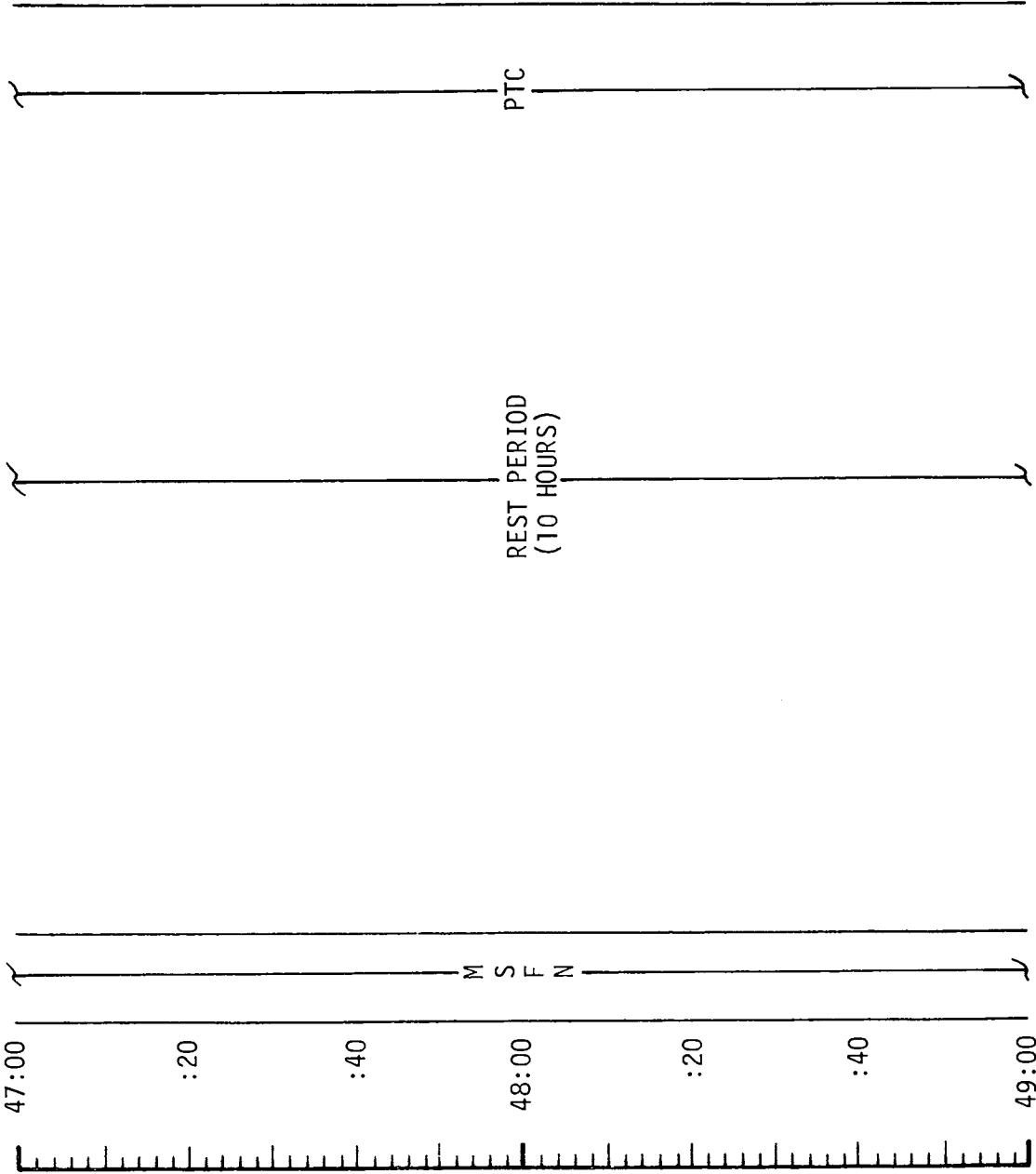
FLIGHT PLAN

1323 CST

MCC-H

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	47:00 - 49:00	2/TLC	3-47

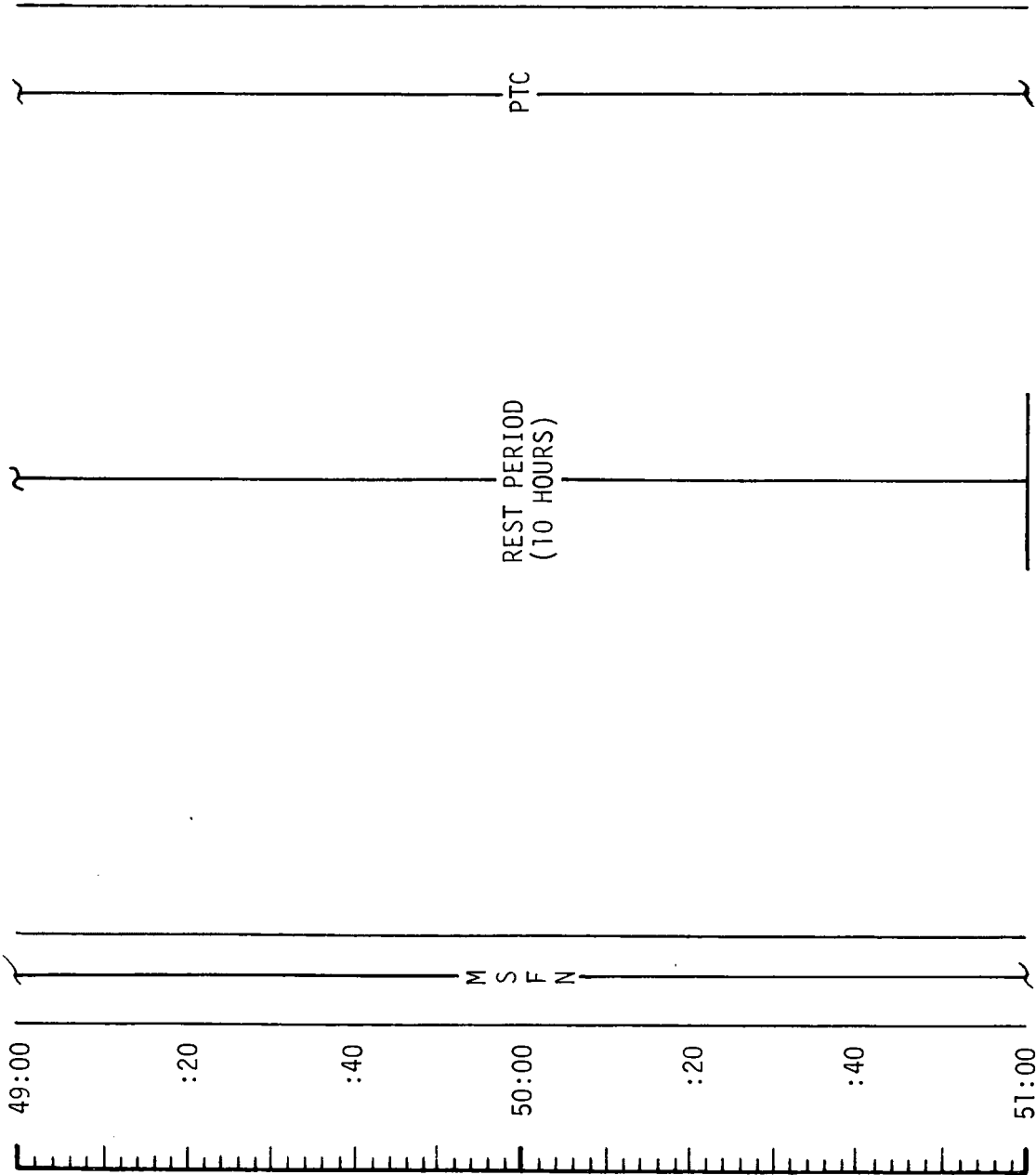
FLIGHT PLAN

MCC-H

1523 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	49:00 - 51:00	2/TLC	3-48

MSC Form 29 (May 69)

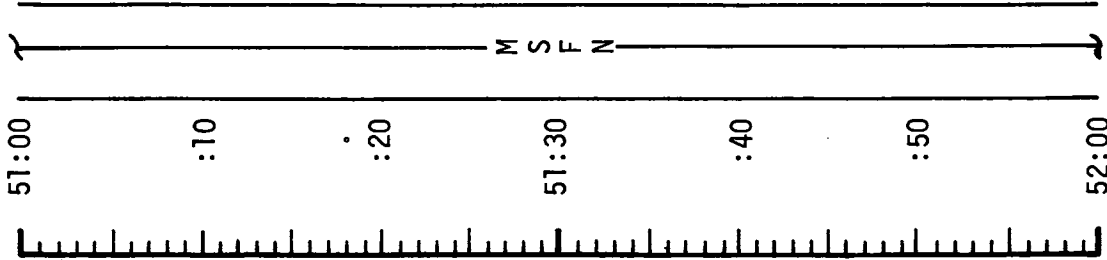
FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

FLIGHT PLAN

1723 CST



CSM SYSTEMS CHECKLIST
 POST-SLEEP CHECKLIST

PAGE S 1-26

LiOH CANISTER CHANGE
 (6 INTO B, STOW 4 IN B5)

REPORT: LM/CM ΔP

EAT PERIOD

NOTES

DAP LOAD STATUS
 (21101)(XT111)

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

PTC

EARTH DISTANCE
 ≈ 160 954 NM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	51:00 - 52:00	3/TLC	3-49

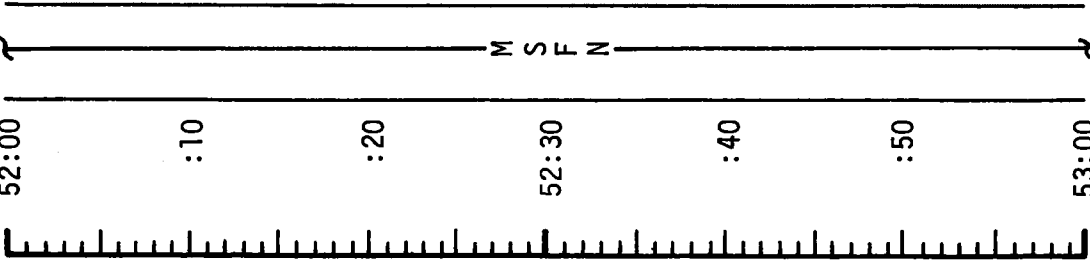
MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

NASA — MSC

UPDATE TO CSM
 CONSUMABLES
 FLIGHT PLAN

FLIGHT PLAN



S-170 BISTATIC RADAR FREQUENCY CHECK

VHF AM B - DUPLEX

VHF RANGING - ON

VHF ANT - LEFT (VERIFY)

NOTE: MSFN WILL TURN OFF

S-BAND UPLINK FOR

APPROXIMATELY 5 MIN

WHILE S-BAND DOWNLINK

FREQUENCY IS MEASURED

ON GROUND CUE:

VHF AM B - OFF

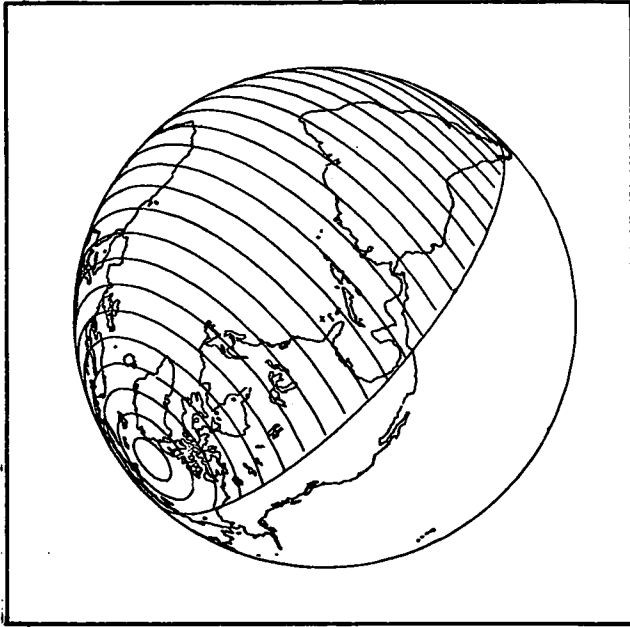
VHF RANGING - OFF

NOTES

DAP LOAD STATUS
(21101)(X1111)

GET: 52:00

F.O.V. 3°



PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	52:00 - 53:00	3/TLC	3-50

MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

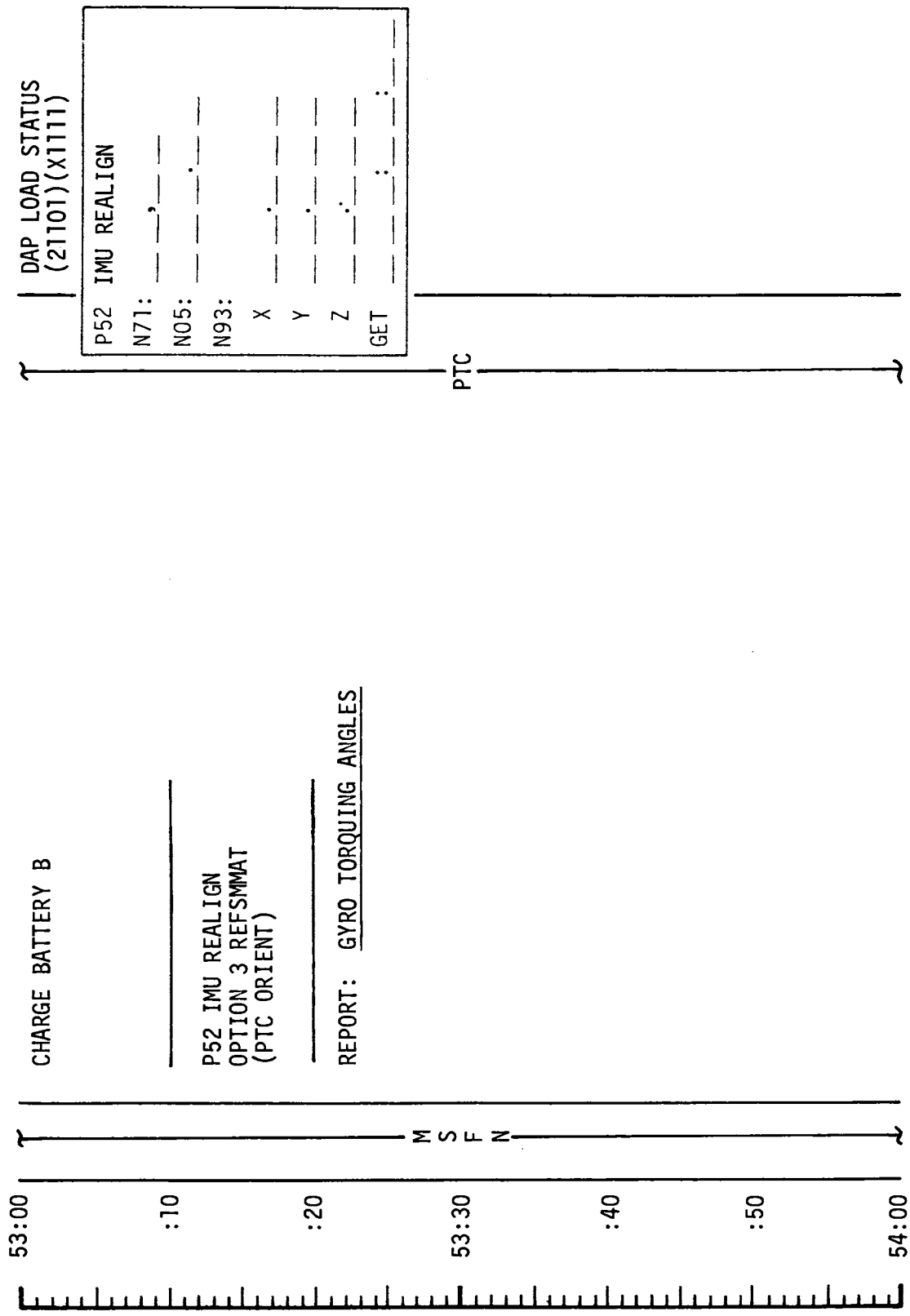
NASA - MSC

MCC-H

FLIGHT PLAN

1923 CST

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	53:00 - 54:00	3/TLC	3-51

MSC Form 28 (MAY 69)

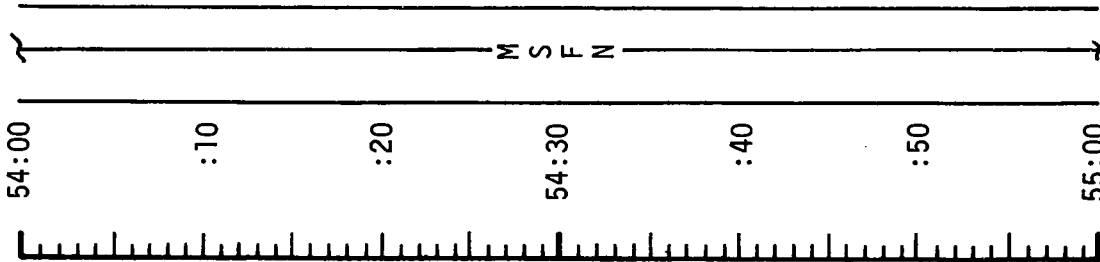
FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-H

2023 CST



UPLINK TO CSM
LIFT-OFF TIME
 (IF REQ'D)
 UPDATE TO CSM
T EPHM
 (IF REQ'D)
 P37 (L/O +60 TIG)
 (IF REQ'D)
 LOI-5 FLYBY TIG
 (IF REQ'D)

SYNCHRONIZE MISSION TIMER TO CMC (IF REQUIRED)
 V05N01E, 1706 E

PTC

NOTES
 DAP LOAD STATUS
 (21101)(X1111)

<u>T EPHM UPDATE</u>	
<u>OID</u>	<u>LOAD B</u>
03	---
04	---
05	---

LIFT-OFF TIME WILL
 BE UPDATED IF THE
 TIME PROPAGATED
 AHEAD TO START OF
 REV 2 DIFFERS FROM
 84:45:12 BY MORE
 THAN 1 MIN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	54:00 - 55:00	3/TLC	3-52

MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

NASA — MSC

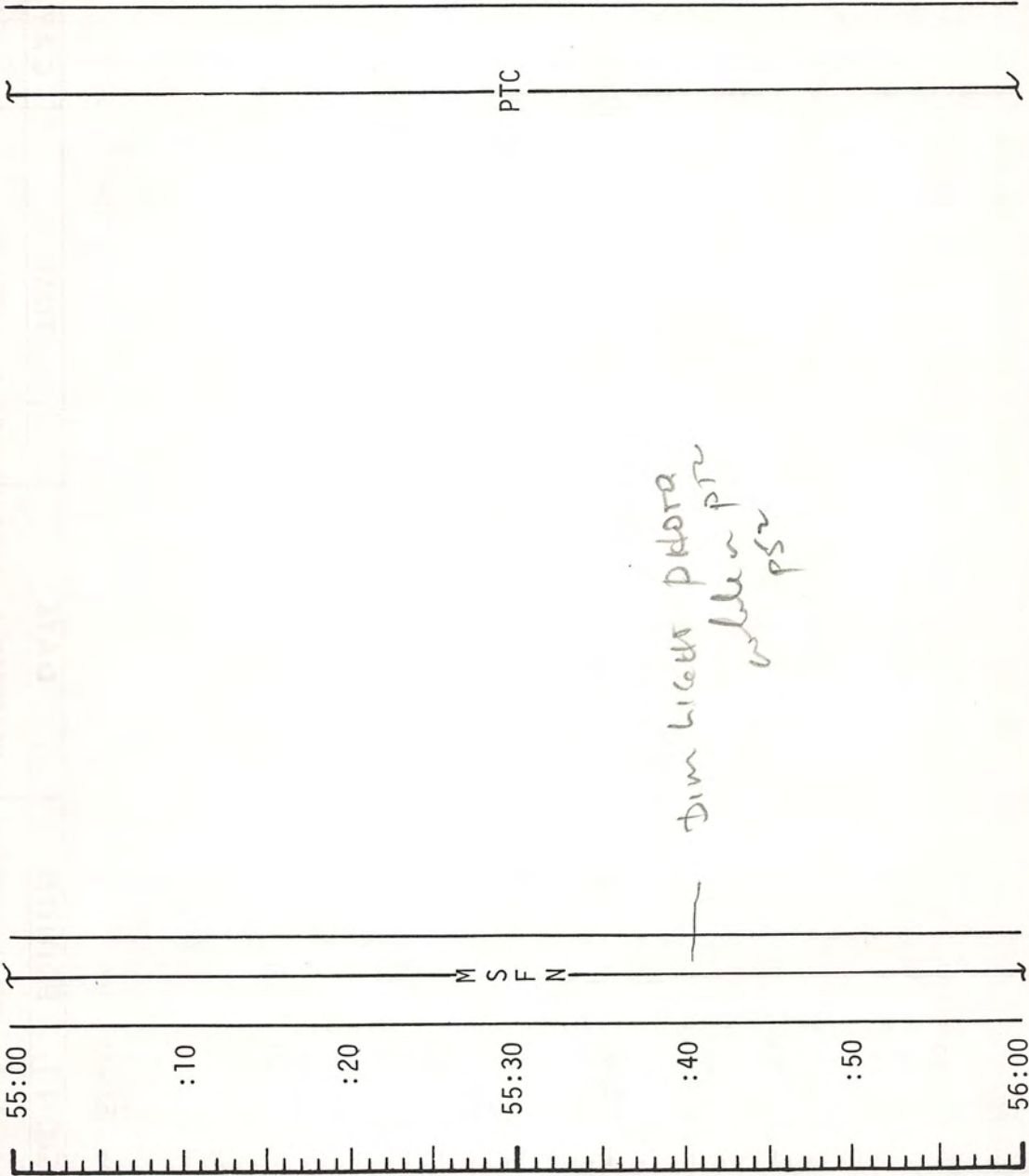
FLIGHT PLAN

MCC-H

2123 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	55:00 - 56:00	3/TLC	3-53

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

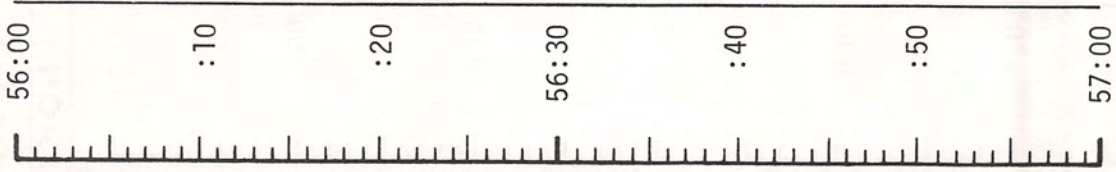
NASA — MSC

FLIGHT PLAN

2223 CST

MCC-H

1423



M S F N

PTC

NOTES
DAP LOAD STATUS
(21101)(X1111)

1523

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	56:00 - 57:00	3/TLC	3-54

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

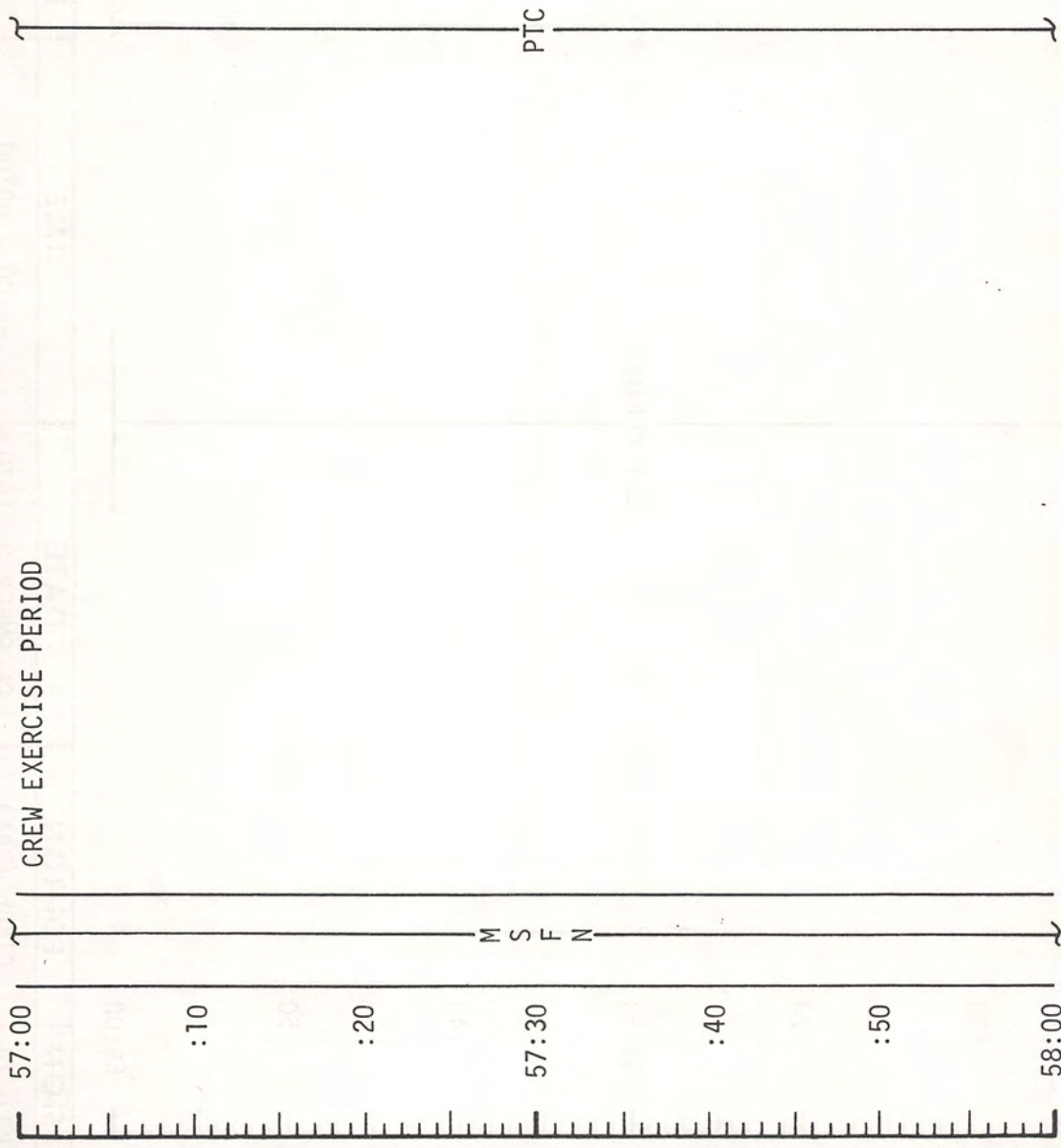
MCC-H

2323 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)

CREW EXERCISE PERIOD



1523

1623

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	57:00 - 58:00	3/TLC	3-55

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

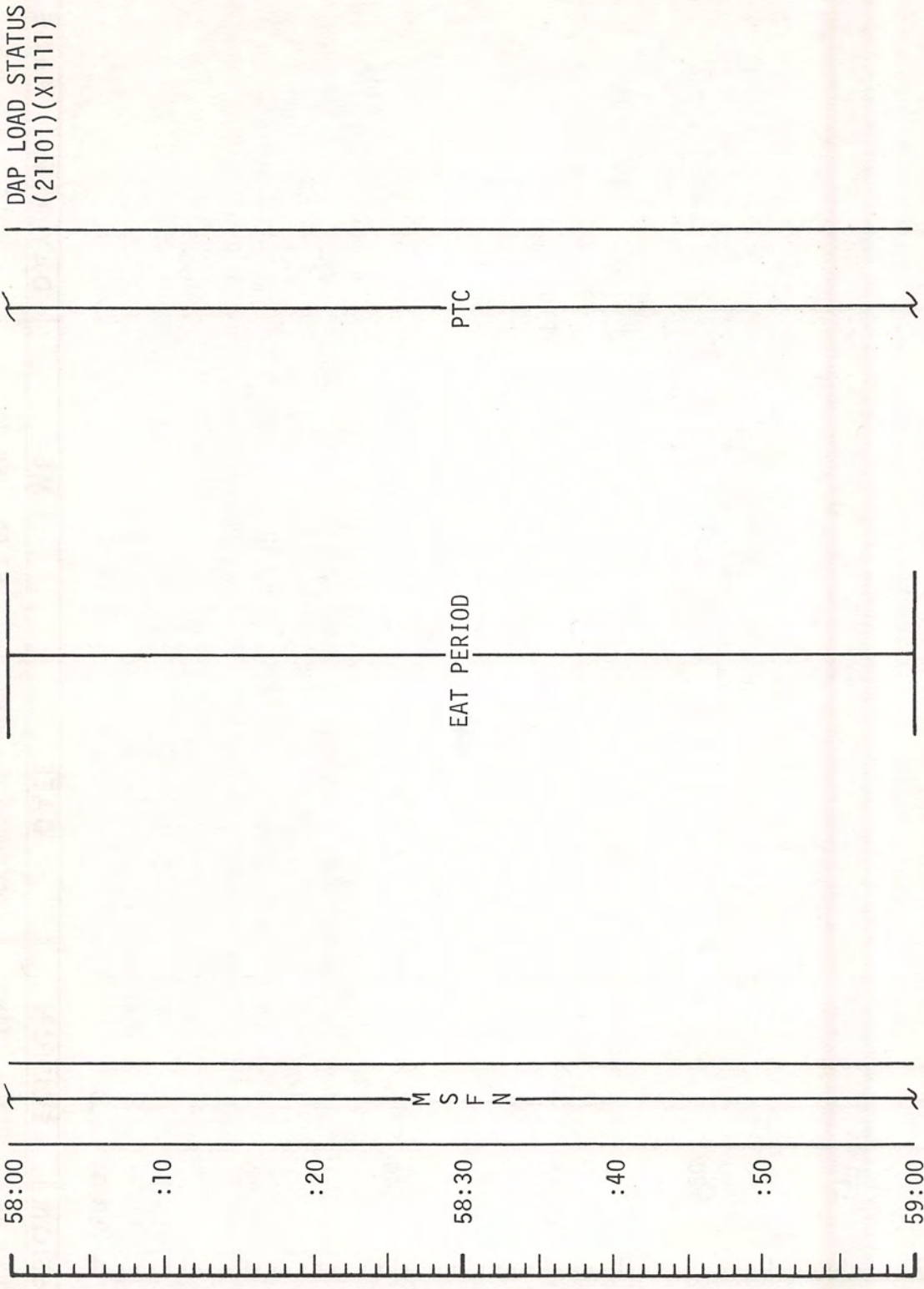
FLIGHT PLAN

0023 CST

MCC-H

1623

1723



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	58:00 - 59:00	3/TLC	3-56

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

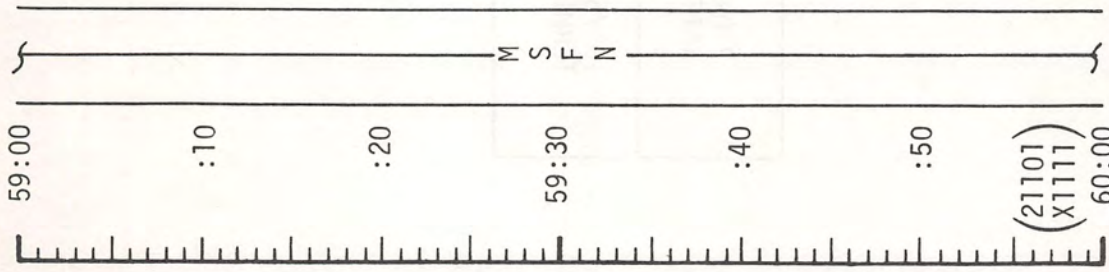
NASA — MSC

FLIGHT PLAN

MCC-H

1723

0123 CST



CSM G&C CHECKLIST

ΔV TEST & NULL BIAS CHECK
REPORT: BIAS

PAGE G 2-5

DAP LOAD STATUS
(21101)(X1111)

NOTES

P52 IMU REALIGN
N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____

IF LM/CM ΔP < 2.7 PSID - VENT
UNTIL ΔP > 2.7

O₂ HEATERS 1&2 (2) - AUTO
O₂ HEATERS 3 (1) - OFF

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES
EXIT G&N PTC IF MCC-3
IS REQUIRED

PAGE G 8-3

PTC

UPLINK TO CSM
CSM S.V. & V66
MCC-3 TGT LOAD

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

1823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	59:00 - 60:00	3/TLC	3-57

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

MCC-3
BURN CHART

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

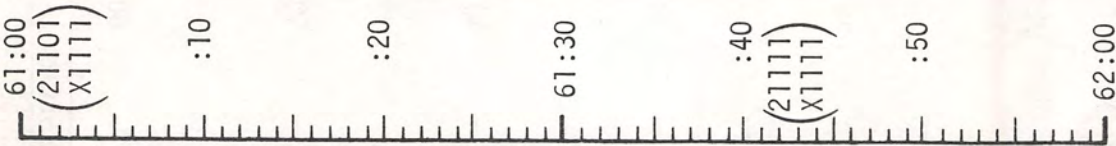
TABLE 3-4
3-58

MCC-H

UPLINK TO CSM
ΔH (IF REQUIRED)

1923

0323 CST



M S F N

T T V

FLIGHT PLAN

CSM SYSTEMS CHECKLIST

IVT TO LM (CHECK OUT, TLC)

PRESSURIZE CSM TO 5.7 PSIA

PAGE S 2-1

TV (HSK) 61:45 to 62:30
CM/TV - AVG (f5.6)

PRESSURIZE LM
EXIT G&N PTC

V48 (21111)(X1111)

V49 MNVR TO TV ATTITUDE (61:45)
(282,090,000)

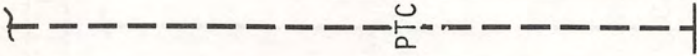
ACQ MSFN HGA P 34, Y 263

PREPARE FOR LM INGRESS
REMOVE TUNNEL HATCH AND STOW
REMOVE PROBE & DROGUE AND STOW

PAGE G 8-3

NOTES

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



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	61:00 - 62:00	3/TLC	3-60

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

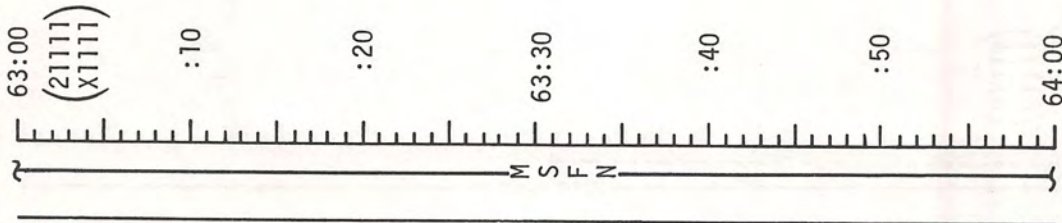
2023

FLIGHT PLAN

CSM

CMP

0523 CST



CSM POWER TO LM-OFF
(AT LMP REQUEST)

VHF SIMPLEX VOICE
CHECK WITH LM

CSM POWER TO LM - ON
(AT LMP REQUEST)

LM

CDR

HOUSEKEEPING

COMM ACTIVATION

OPS CHECKOUT

COMM DEACTIVATION

LMP

HOUSEKEEPING

COMM ACTIVATION

S-BAND/VHF SIMPLEX
VOICE TEST

OPS CHECKOUT

COMM DEACTIVATION

MCC-H

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	63:00 - 64:00	3/TLC	3-62

MSC Form 1674 (OT) (June 69)

FLIGHT PLANNING BRANCH

MCC-H

2223

FLIGHT PLAN

NOTES

0623 CST



LMP & CDR IVT TO CSM & CLOSE LM HATCH
 INSTALL PROBE, DROGUE AND CM HATCH

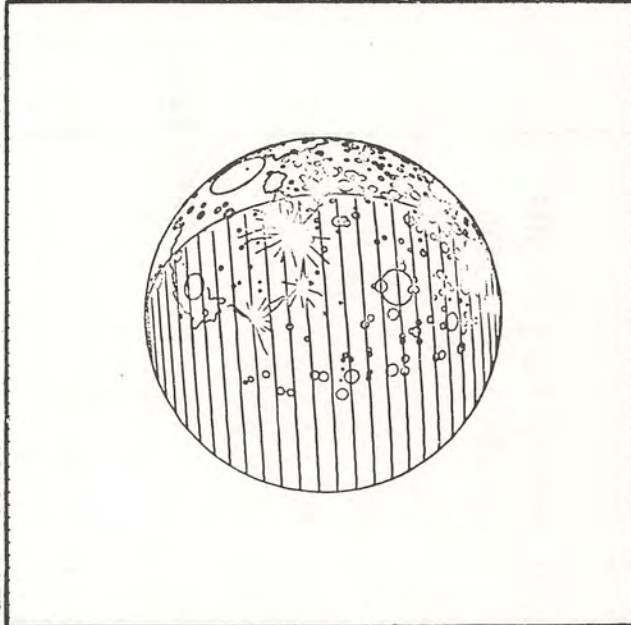
LM TUNNEL VENT VALVE - LM/CM ΔP
 CYCLE CMC MODE - FREE/AUTO
 V48 (21101)(X1111)
 L10H CANISTER CHANGE
 (7 INTO A, STOW 5 IN B6)

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N)
 (N20,090,000)
 V79 (-0.3750)(+030.00)(+000000)

GET: 65:00

F.O.V. 3°



GET: 65:00

F.O.V. 5°



DAP LOAD STATUS
 (21101)(X1111)

PAGE G 8-2

PTC

UPDATE TO CSM
 QUADS TO ENABLE
 FOR PTC SPINUP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	64:00 - 65:00	3/TLC	3-63

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA --- MSC

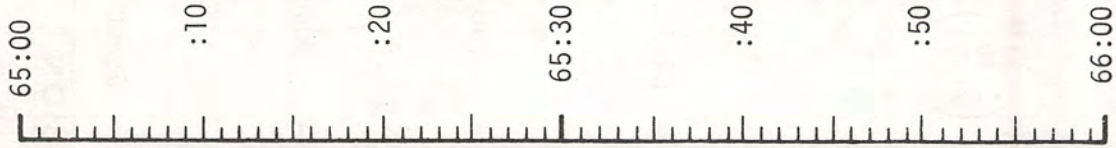
2323

MCC-H

2323

FLIGHT PLAN

0723 CST



0₂ HEATERS 1&2 (2) - OFF
 0₂ HEATERS 3 (1) - AUTO

M S F N

EAT PERIOD

PTC

CSM SYSTEMS CHECKLIST
 PRE-SLEEP CHECKLIST

PAGE S 1-26

NOTES

DAP LOAD STATUS (21101)(X1111)

ONBOARD READOUT

BAT C

PYRO BAT A

PYRO BAT B

RCS A

B

C

D

DC IND SEL - MNA OR B

EARTH DISTANCE
≈ 184 307 NM

MISSION	EDITION	DATE	TIME	DAY / REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	65:00 - 66:00	3/TLC	3-64

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

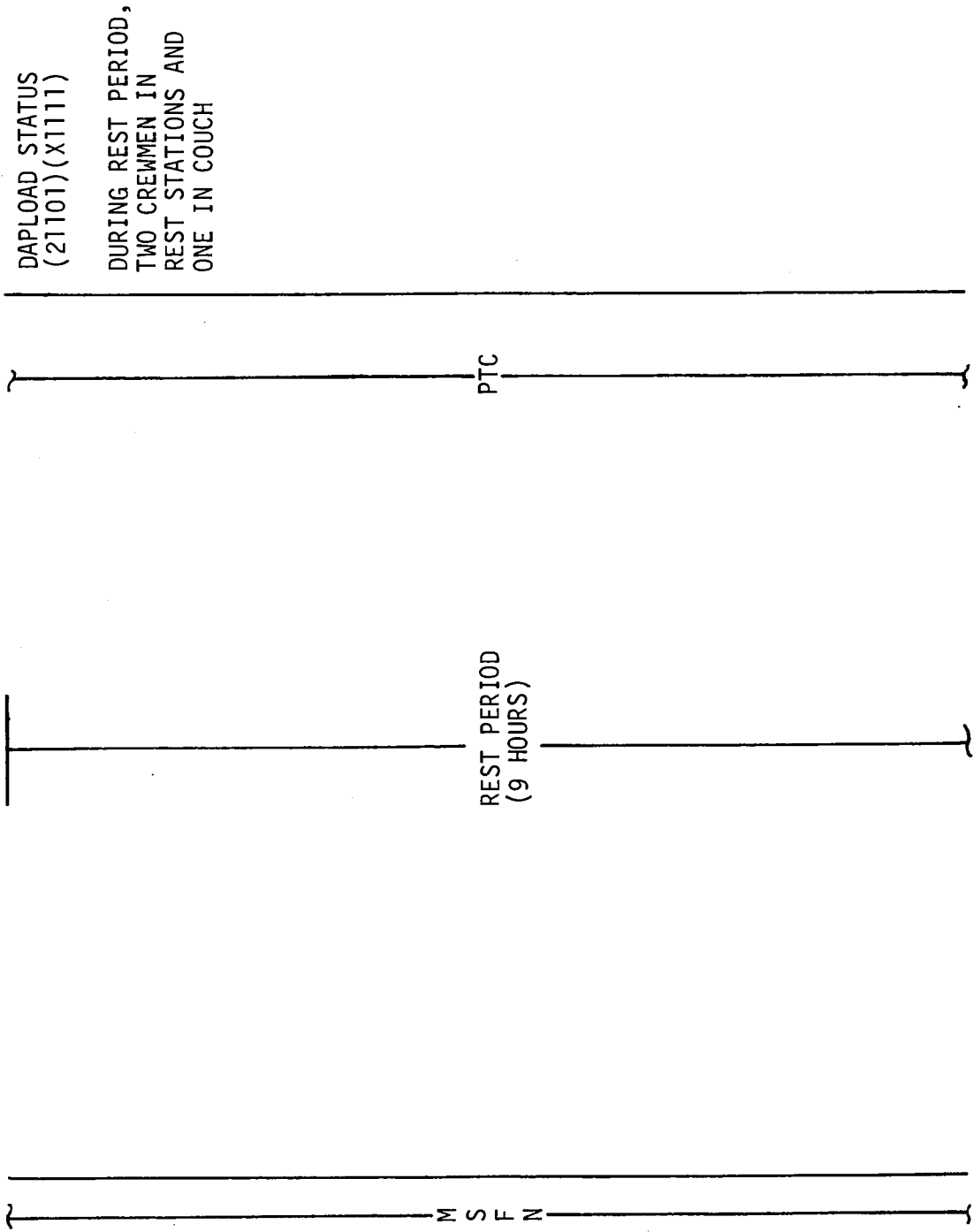
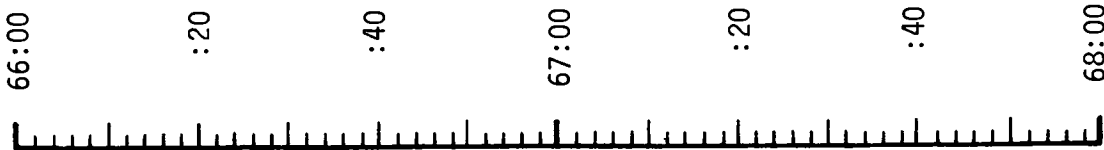
UPDATE TO CSM
 CSM S.V. (67:00)

0023

FLIGHT PLAN

0823 CST

MCC-H



NOTES

DAPLOAD STATUS
(21101)(X1111)

DURING REST PERIOD,
TWO CREWMEN IN
REST STATIONS AND
ONE IN COUCH

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	66:00 - 68:00	3/TLC	3-65

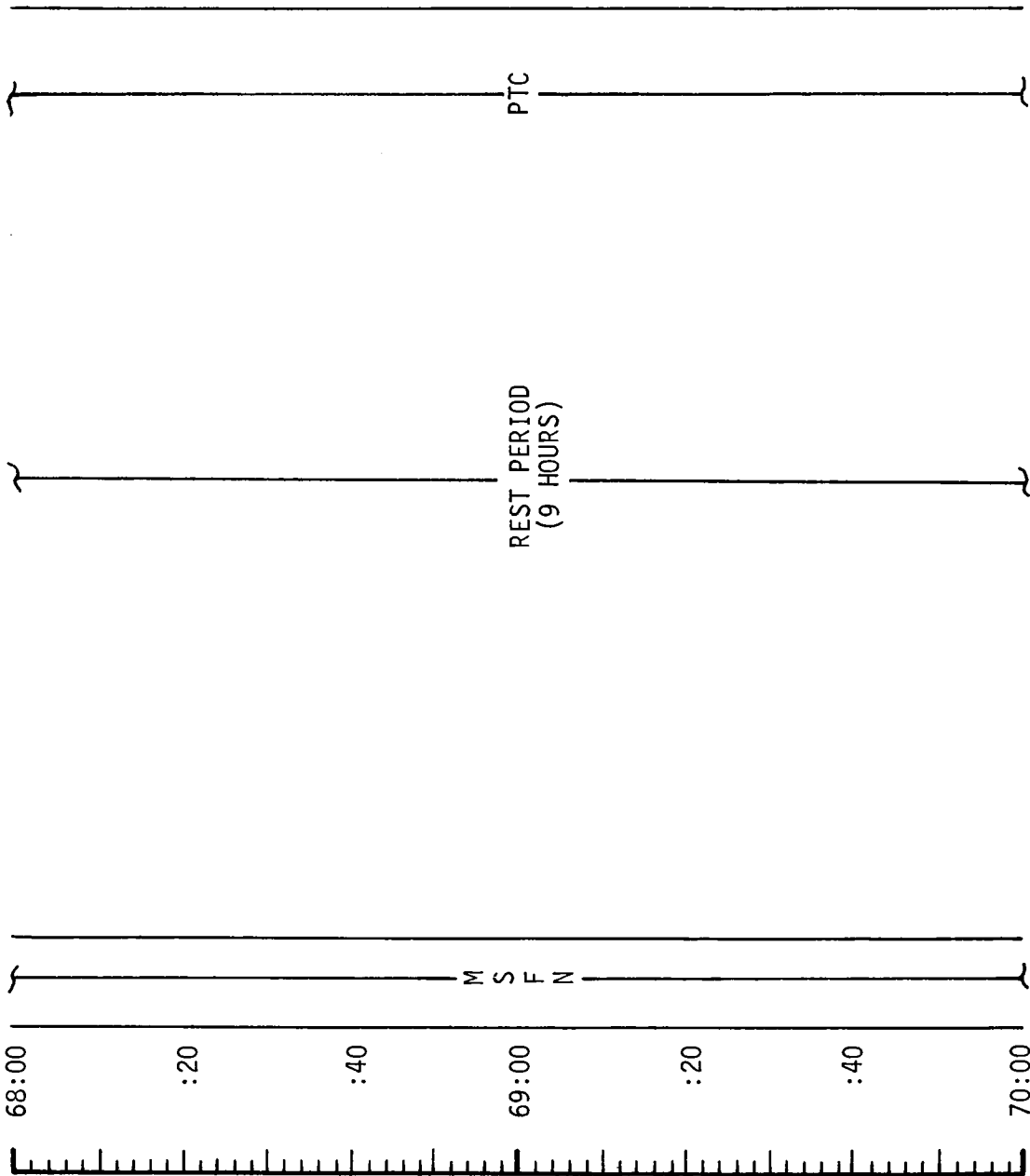
MCC-H

1023 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	68:00 - 70:00	3/TLC	3-66

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

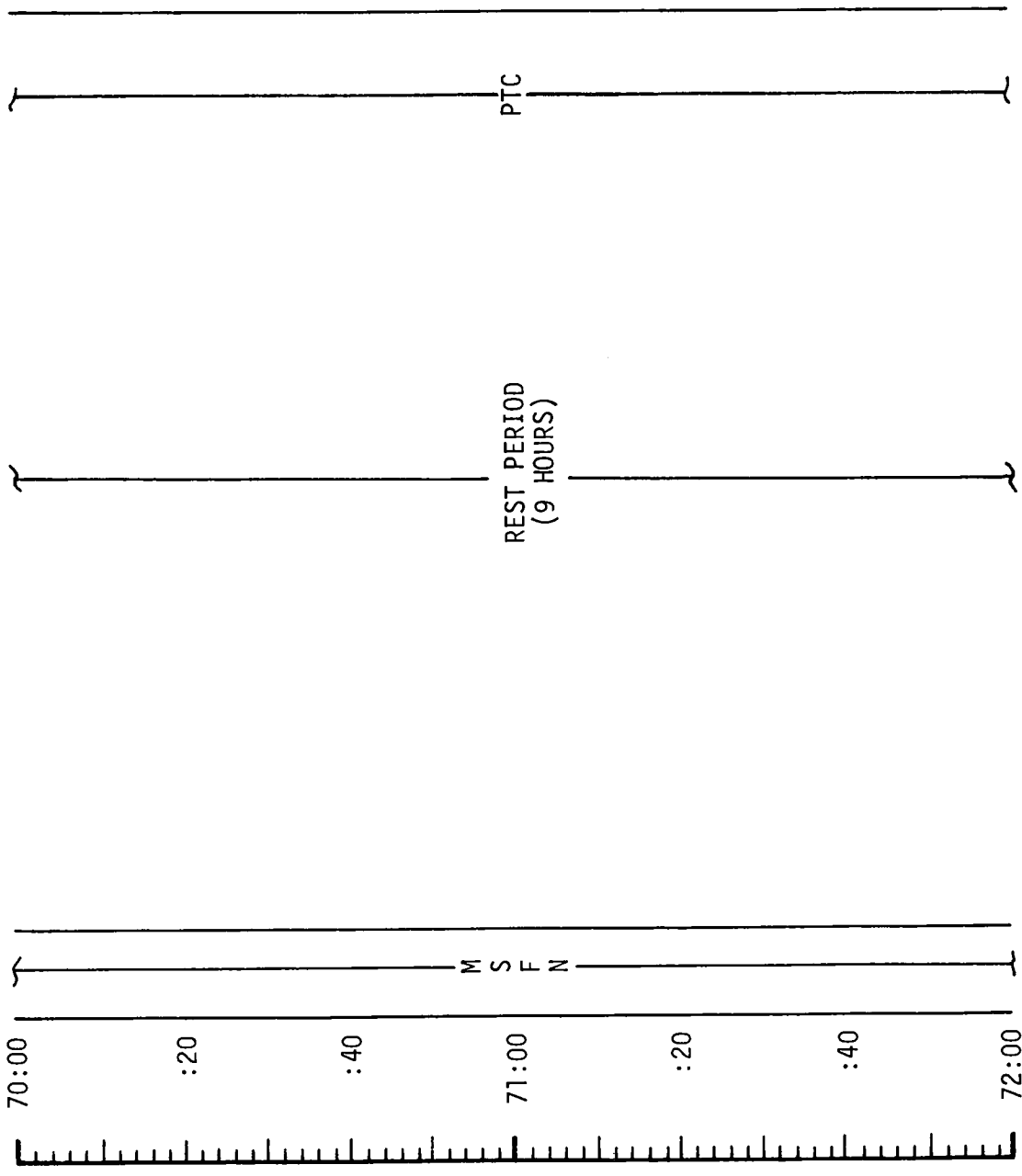
MCG-H

1223 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	70:00 - 72:00	3/TLC	3-67

MSC Form 29 (May 69)

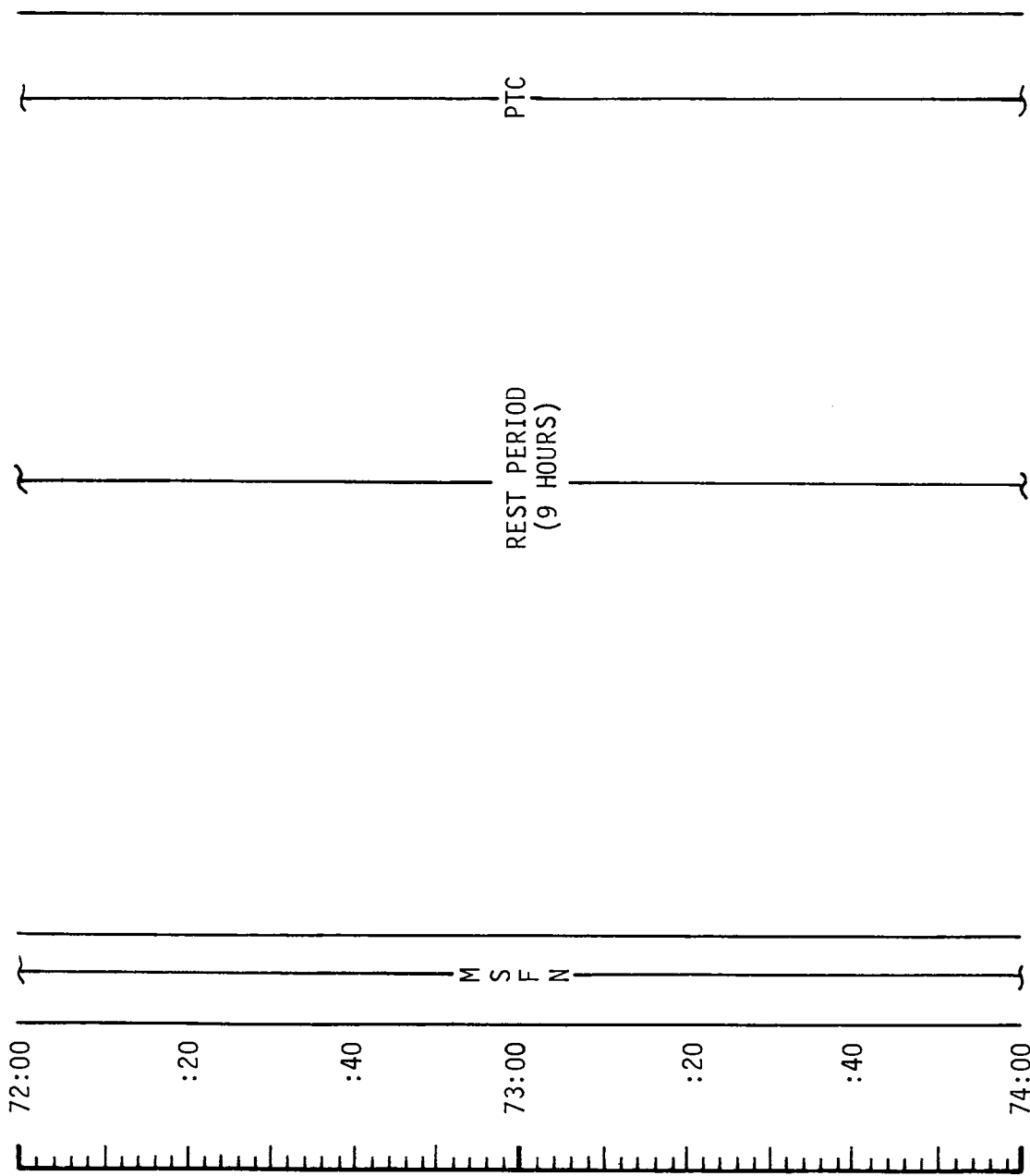
FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(21101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	72:00 - 74:00	3/TLC	3-68

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

1623 CST

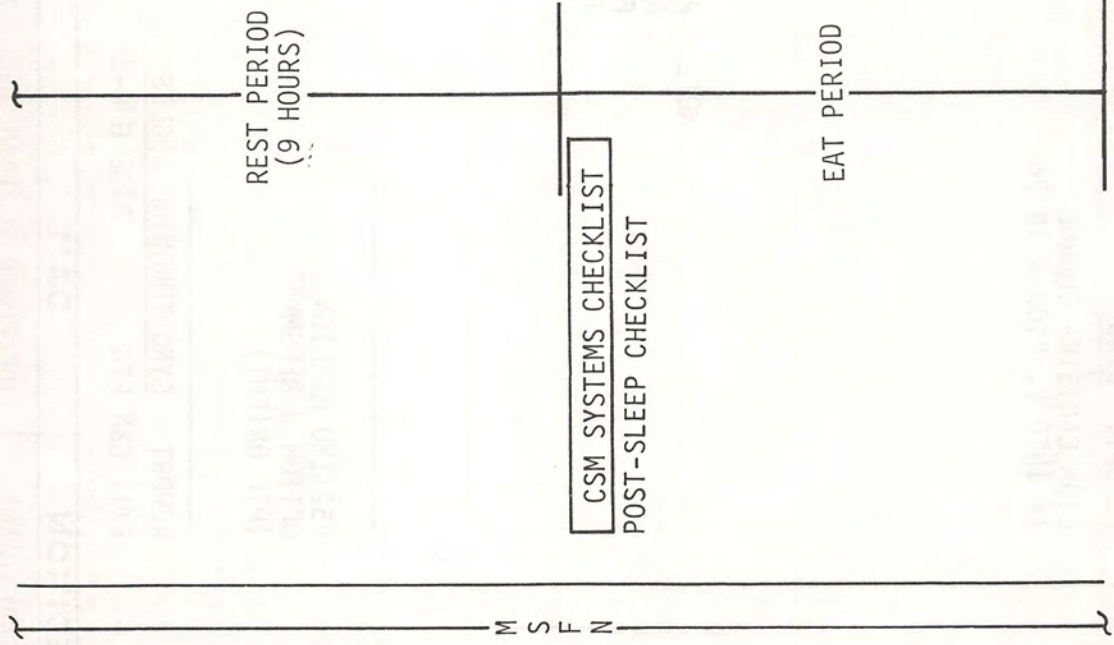
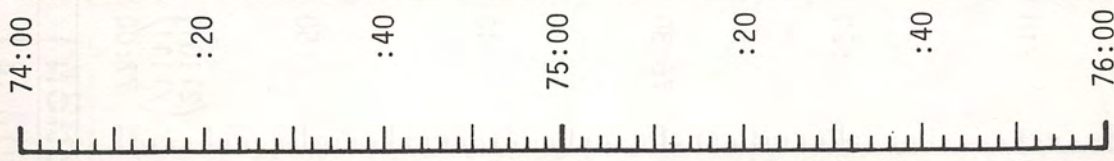
MCC-H

0823

1153

0923

1023



MISSION	EDITION	DATE	TIME	DAY / REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	74:00 - 76:00	3-4/TLC	3-69

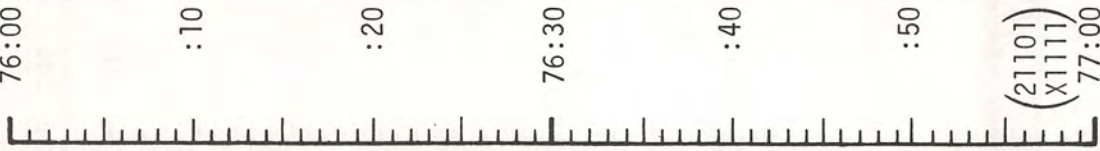
MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

FLIGHT PLAN

1823 CST



CSM G&C CHECKLIST

ΔV TEST & NULL BIAS CHECK
REPORT: BIAS

LiOH CANISTER CHANGE
(8 INTO B, STOW 6 IN B6)

PAGE G 2-5

NOTES

DAP LOAD STATUS
(21101)(X1111)

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

NOTE: PERICYNTHION +2 HR
ABORT PAD TARGETED PTC
FOR A FAST RETURN
TO MPL.

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES
EXIT G&N PTC PAGE G 8-3

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	76:00 - 77:00	4/TLC	3-70

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H
1023

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

UPLINK TO CSM
CSM S.V. & V66
MCC-4 TGT LOAD

1123

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FLIGHT PLAN

MCC-4
BURN CHART

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

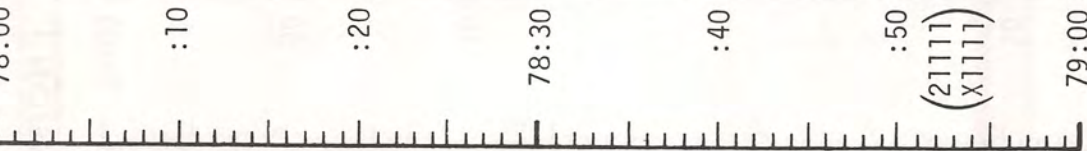
TABLE 3-5
3-72

MCC-H

1223

2023 CST

FLIGHT PLAN



UPDATE TO CSM
(IF NO MCC-4)
FLIGHT PLAN
CONSUMABLES (76:10)
PERICYNTHION +2 HR
ABORT PAD

CSM SYSTEMS CHECKLIST

PRE-LOI SECONDARY GLYCOL LOOP CHECK

REPORT: LM/CM ΔP

PAGE S 1-15

VERIFY LM/CM ΔP <2.4 PSID
IF LM/CM ΔP >2.4 PSID
PRESSURIZE CSM TO 5.7 PSIA

EXIT G&N PTC
V48 (21111)(X1111)

PAGE G 8-3

V49 MNVR TO MOON VIEW ATTITUDE (79:10)
(352,110,311) (HATCH WINDOW)
HGA P -30, Y 293

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	78:00 - 79:00	4/TLC	3-74

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

NOTES

DAP LOAD STATUS
(21101)(X1111)

IF NO MCC-4, CREW
WILL BE AWAKENED
AT 78:00. CREW
WILL ACCOMPLISH
THE FOLLOWING:
EAT PERIOD (75:00)
POST-SLEEP C/L (75:05)
CANISTER CHANGE (76:10)
AND PROCEED WITH
ACTIVITIES AT 78:00

EARTH DISTANCE
≈ 200 444 NM

1323

MCG-H

1323

2123 CST

FLIGHT PLAN

NOTES

79:00
(21111)
(X1111)

:10

:20

79:30

:40

:50

80:00

M S F N

UPLINK TO CSM
CSM S.V. & V66
(PRELIMINARY)
LOI TGT LOAD
(PRELIMINARY)
DESIRED ORIENTATION
(LDG SITE)

UPDATE TO CSM
LOI MNVR PAD
(PRELIMINARY)
TEI 4 PAD

CSM SYSTEMS CHECKLIST

CSM/LM PRESSURE EQUALIZATION (DECAL) PAGE S 2-3

CHECK MISSION TIMER AGAINST CMC CLOCK

ATT DEADBAND - MIN
RATE - LOW
BMAG (3) - ATT 1/RATE 2
SC CONT - SCS

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)
STARS _____,
SA _____,
TA _____,

REPORT: GYRO TORQUING ANGLES

P52 IMU REALIGN
OPTION 1 PREFERRED
(LDG SITE ORIENT)

SC CONT - CMC
BMAG (3) - RATE 2

TEI 4 PAD
ASSUMES NO DOI

P52	IMU REALIGN
N71:	_____
N05:	_____
N93:	_____
X	_____
Y	_____
Z	_____
GET	_____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	79:00 - 80:00	4/TLC	3-75

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

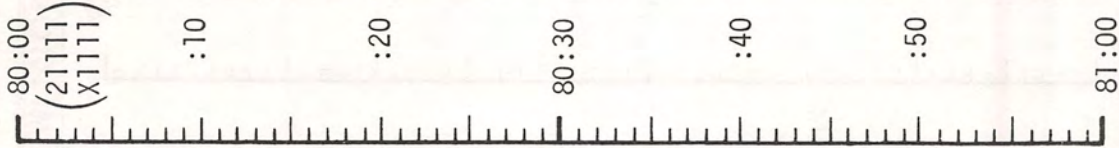
1423

MCC-H

1423

FLIGHT PLAN

2223 CST



CSM G&C CHECKLIST

Δ V TEST & NULL BIAS CHECK
REPORT: BIAS

PAGE G 2-5

NOTES

LUNAR PHOTOGRAPHY
AT CREW OPTION

CM /EL/80 OR 250/BW
(f5.6,250, ∞)(10 FR)
MAG (P) __, FR # __

CM /EL/80 OR 250/CEX
(f5.6,250, ∞)(10 FR)
MAG (L) __, FR # __

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	80:00 - 81:00	4/TLC	3-76

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

1523

1523
MCC-H

UPDATE TO CSM
LOI MNVR PAD
MAP UPDATE REV 1

UPLINK TO CSM
CSM S.V. & V66
LOI TGT LOAD

FLIGHT PLAN

2323 CST



MAP UPDATE REV	1
LOS:	---
180°:	---
AOS WITH LOI:	---
AOS WITHOUT LOI:	---

NOTES

CSM SYSTEMS CHECKLIST

- C&W SYSTEM OPERATIONAL CHECK PAGE S 1-17
- CM RCS MONITORING CHECK PAGE S 1-1
- SM RCS MONITORING CHECK PAGE S 1-1
- SPS MONITORING CHECK PAGE S 1-1
- ECS MONITORING CHECK PAGE S 1-5
- OXIDIZER FLOW VALVE INCR - INCR (VERIFY)
- O₂ HEATERS 1&2 (2) - AUTO
- O₂ HEATERS 3 (1) - OFF
- CYCLE CMC MODE - FREE/AUTO
- V48 (21101) (X1111)
- P30 EXTERNAL ΔV
- V49 MNVR TO PAD BURN ATTITUDE (82:00) (355,261,327)
- ACQ MSFN OMNI C

THE PU VALVE SHOULD BE USED TO MAINTAIN THE INDICATED UNBALANCE TO WITHIN ±50 LBS OF THE STABILIZED READING (TIG +25 SEC) UNTIL CROSSOVER. AFTER CROSSOVER THE VALVE SHOULD BE USED TO CONTROL THE UNBALANCE WITHIN THE GREEN BAND (0 ± 100 LBS). DURING NORMAL ENGINE OPERATION THE PU VALVE DECREASE POSITION SHOULD NOT BE USED.

THE APPROXIMATE TIME OF CROSSOVER IS 04:06 TO 04:10 INTO THE LOI BURN.

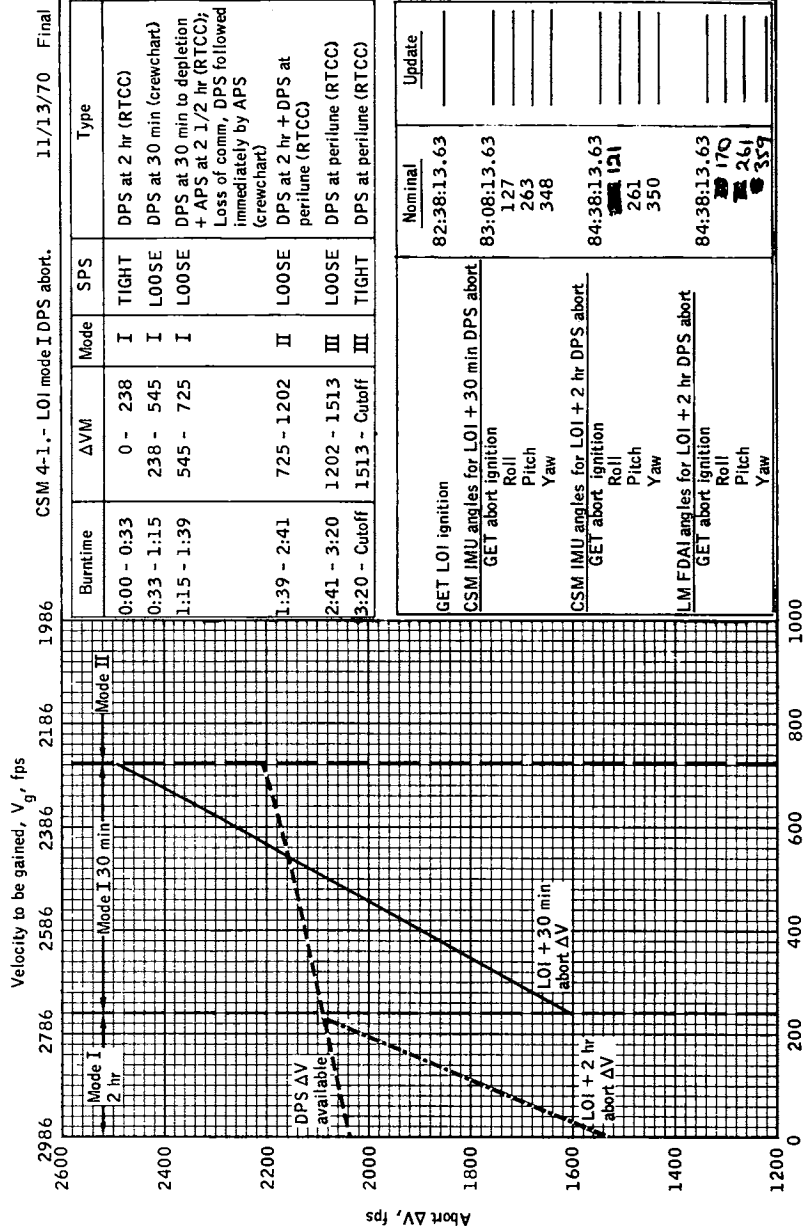
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	81:00 - 82:00	4/TLC	3-77

1623

FLIGHT PLAN

TABLE 3-6
LOI
BURN TABLE AND ABORT CHART

P OR Y RATES	ATT DEVIATION	SHUT DOWN TIME	RESIDUALS
10°/SEC COMPLETE	±10° COMPLETE	BT + 10 SEC	DO NOT TRIM



Burntime	ΔV_M	Mode	SPS	Type
0:00 - 0:33	0 - 238	I	TIGHT	DPS at 2 hr (RTCC)
0:33 - 1:15	238 - 545	I	LOOSE	DPS at 30 min (crewchart)
1:15 - 1:39	545 - 725	I	LOOSE	DPS at 30 min to depletion + APS at 2 1/2 hr (RTCC); Loss of comm, DPS followed immediately by APS (crewchart)
1:39 - 2:41	725 - 1202	II	LOOSE	DPS at 2 hr + DPS at perilune (RTCC)
2:41 - 3:20	1202 - 1513	III	LOOSE	DPS at perilune (RTCC)
3:20 - Cutoff	1513 - Cutoff	III	TIGHT	DPS at perilune (RTCC)

GET LOI ignition	Nominal	Update
CSM IMU angles for LOI + 30 min DPS abort	82:38:13.63	
GET abort ignition	83:08:13.63	
Roll	127	
Pitch	263	
Yaw	348	
CSM IMU angles for LOI + 2 hr DPS abort	84:38:13.63	
GET abort ignition	84:11:13.63	
Roll	261	
Pitch	350	
Yaw	350	
LM FDAI angles for LOI + 2 hr DPS abort	84:38:13.63	
GET abort ignition	84:11:13.63	
Roll	170	
Pitch	261	
Yaw	359	

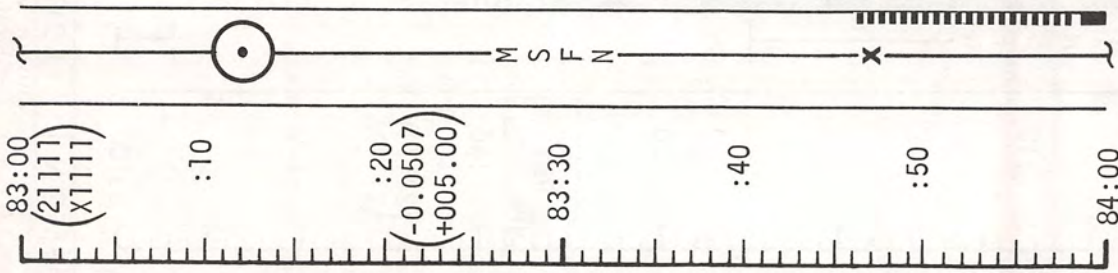
1 change 8 11/17/71

1 change 8 11/17/71

MCC-H

1723

0123 CST



FLIGHT PLAN

ESTABLISH ORB RATE TO OBSERVE LUNAR SURFACE
 V79 (-0.0507)
 (+005.00)
 (+000001)

PRO TO START PITCH RATE (000,215/176,000)

EAT PERIOD

NOTES

LINE UNDER PITCH ATTITUDE INDICATES AN ORDEAL (LOCAL HORIZONTAL) ANGLE.

THE SC CONTROLLING RATE AND DEADBAND WILL BE SHOWN IN THE TIME COLUMN IF OTHER THAN THE DAP LOAD

MAP UPDATE REV	2			
LOS	:	:	:	:
180°	:	:	:	:
AOS	:	:	:	:

DURING LUNAR ORBIT, URINE DUMPS SHOULD BE PERFORMED, WHEN REQUIRED, WHILE THE SC IS ON THE BACK SIDE OF THE MOON

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	83:00 - 84:00	4/1	3-80

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

1823

MCC-H

1823

1973

FLIGHT PLAN

0223 CST

84:00

(21111
X1111)

:10

:20

84:30

(21101
X1111)
:40

REV 2

:50

85:00

STOP ORB RATE AT P52 ATTITUDE (84:05)
(000,065,000) HGA P -54, Y 0

P52 IMU REALIGN
OPTION 3 REFSMMAT
(LDG SITE ORIENT)

REPORT: GYRO TORQUING ANGLES

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

CSM SYSTEMS CHECKLIST

COMM MODE - NORMAL LUNAR CONFIGURATION

H₂ PURGE LINE HEATERS ON

CYCLE CMC MODE - FREE/AUTO

V48 (21101)(X1111)

V49 MNVR TO LDMK TRACK ATTITUDE (85:00)
(000,262,000)

H₂ & O₂ FUEL CELL PURGE

WASTE WATER DUMP

H₂ PURGE LINE HEATERS - OFF

PAGE S 1-23

PERICYNTHION +2 HR

NOTES

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

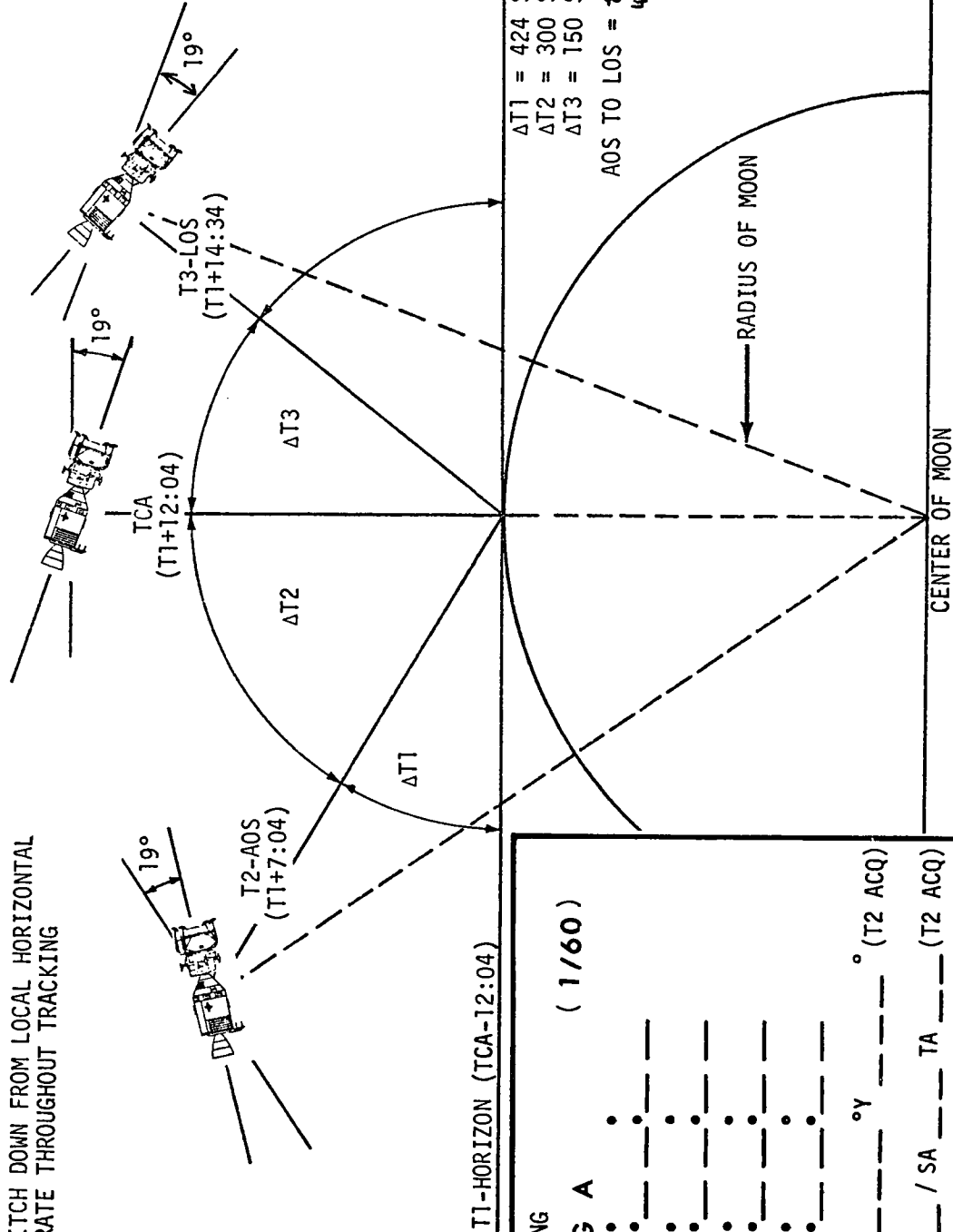
Z _____

GET _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	84:00 - 85:00	4/1-2	3-81

CSM LANDMARK TRACKING PROFILE
(60 x 170 NM ORBIT)

19 DEG PITCH DOWN FROM LOCAL HORIZONTAL
ORBITAL RATE THROUGHOUT TRACKING



ΔT1 = 424 SEC
ΔT2 = 300 SEC
ΔT3 = 150 SEC
AOS TO LOS = ~~300~~ 450 SEC

P24 LDMK TRACKING	(1/60)	
TGT: MÖSTING A		
T ₁	·	·
T ₂	·	·
TCA	·	·
T ₃	·	·
R	°P	°Y (T2 ACQ)
N or S NM	/ SA	TA (T2 ACQ)
N89		
LAT	-03.250	
LONG/2	-02.642	
ALT	+000.00	

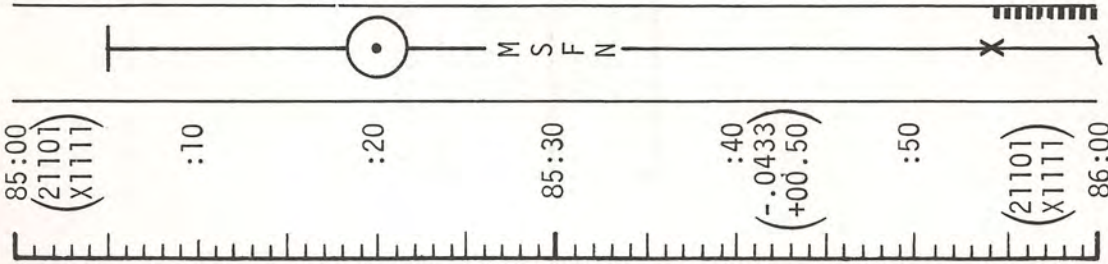
FLIGHT PLAN

MCC-H

1923

UPDATE TO CSM
 LDMK TRK PAD REV 2
 TEI 5 PAD
 LDMK H-3 PAD REV 3
 MAP UPDATE REV 3
 UPLINK TO CSM
 CSM S.V. & V66

0323 CST



ACQ MSFN OMNI C

CSM G&C CHECKLIST

ΔV TEST & NULL BIAS CHECK PAGE G 2-5
 REPORT: BIAS

CONFIGURE CAMERA: (LDMK TRACK)
 CM/DAC/SXT/CEX (EXP PAD) 1 fps (9% MAG)
 MAG (B) MAG %
 UTILITY POWER-ON
 P24 (MÖSTING A)
 OPT ZERO-OFF
 OPT MODE-CMC
 SC CONTROL-CMC/AUTO (VERIFY)
 V79 (N16 LOAD T2 TIME)
 (-0.0433)
 (+000.50)
 (+000001)
 PRO (AUTO PITCH RATE AT T2 TIME)

TRACK LDMK MÖSTING A
 30 SEC BETWEEN MARKS

START DAC AT T2 -1 MIN
 STOP DAC AT T3

RECORD MAG %
 V49 MNVR TO BURN PAD ATTITUDE EXCEPT IN ROLL (86:10)
 (060,269,000) HGA P 29, Y 255

NOTES

TEI 5 PAD ASSUMES
 NOMINAL DOI
 ACCOMPLISHED

MAP UPDATE REV 3

LOS : : :
 180° : : :
 AOS : : :

LDMK IS AT 10.6°
 SUN ANGLE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	85:00 - 86:00	4/2	3-83

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

2023

FLIGHT PLAN

DOI
BURN TABLE

P OR Y RATES	ATT DEVIATIONS	SHUTDOWN TIME	RESIDUALS
10°/SEC TERMINATE	+10° TERMINATE	BT	*TRIM OVERBURNS IN X TO WITHIN 1 FPS, DO NOT TRIM Y & Z

*IF OVERBURN IS >2.2 FPS PITCH 180 AND TRIM

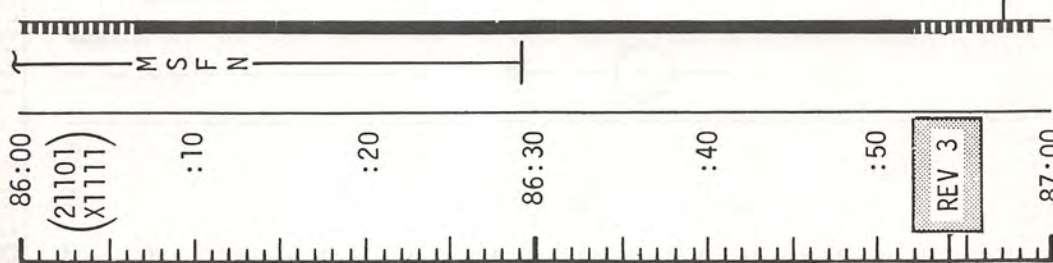
TABLE 3-7
3-84

MCC-H

2023

FLIGHT PLAN

0423 CST



CSM SYSTEMS CHECKLIST

- C&W SYSTEM OPERATIONAL CHECKLIST
- CM RCS MONITORING CHECK
- SPS MONITORING CHECK
- ECS MONITORING CHECK

- PAGE S 1-17
- PAGE S 1-1
- PAGE S 1-1
- PAGE S 1-5

- DUMP DSE
- UPLINK TO CSM
- DOI TARGET LOAD
- CSM S.V. & V66 (IF REQ'D)
- PIPA BIAS CHECK
- GO/NO-GO FOR DOI

- P52 IMU REALIGN
- OPTION 3 REFSMMAT
- LDG SITE ORIENT

REPORT: GYRO TORQUING ANGLES

- P30 EXTERNAL ΔV
- P40 SPS THRUSTING
- V49 MNVR TO PAD BURN ATTITUDE (86:40) (000,269,000)
- VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

- RECORD VG IMU DATA

- SXT STAR CHECK
- P40 SPS THRUSTING

DOI

V66 SET CSM S.V. INTO LM S.V.

P52	IMU REALIGN
N71:	---
N05:	---
N93:	---
X	---
Y	---
Z	---
GET	---

TIG:	86:56:57
BT:	21.38 SEC
ΔVT:	206.6 FPS
ULLAGE:	4 JET 14 SEC
ORBIT:	58.4x9.8 NM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	86:00 - 87:00	4/2-3	3-85

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

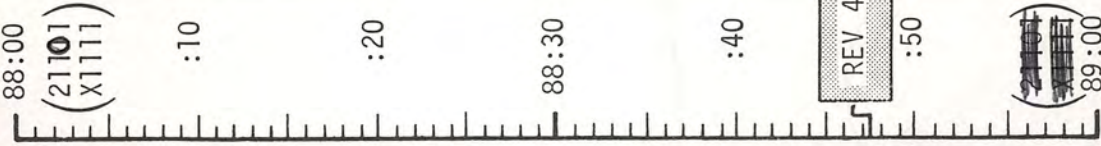
2123

NOTES

FLIGHT PLAN

NOTES

0623 CST



MAP UPDATE REV	4
LOS	:
180°	:
AOS	:

UPDATE TO CSM
MAP UPDATE REV 4

P52 IMU REALIGN
OPTION 3 REFSMMAT
(LDG SITE ORIENT)

REPORT: GYRO TORQUING ANGLES
VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

P52	IMU REALIGN
N71:	:
N05:	:
N93:	:
X	:
Y	:
Z	:
GET	:

V49 MNVR TO LTC ATTITUDE (89:05)
(181,257,359)

CONFIGURE CAMERA: TARGET 9 (DESCARTES)
CM3/LTC/BW/BEF - (SHUT 1/200, RNG PAD, INT 65.0) (402 FR)
MAG (W), FR #
LTC INSTALLATION (DECAL)
RECORD TIME: : : : : : , DAY : : : (LTC CLOCK)
AT GET: : : : : :
LTC CHECKOUT (DECAL)
CYCLE CMC MODE - FREE/AUTO
~~V49 MNVR TO LTC ATTITUDE (89:05)~~

change 6
11/17/71
2223

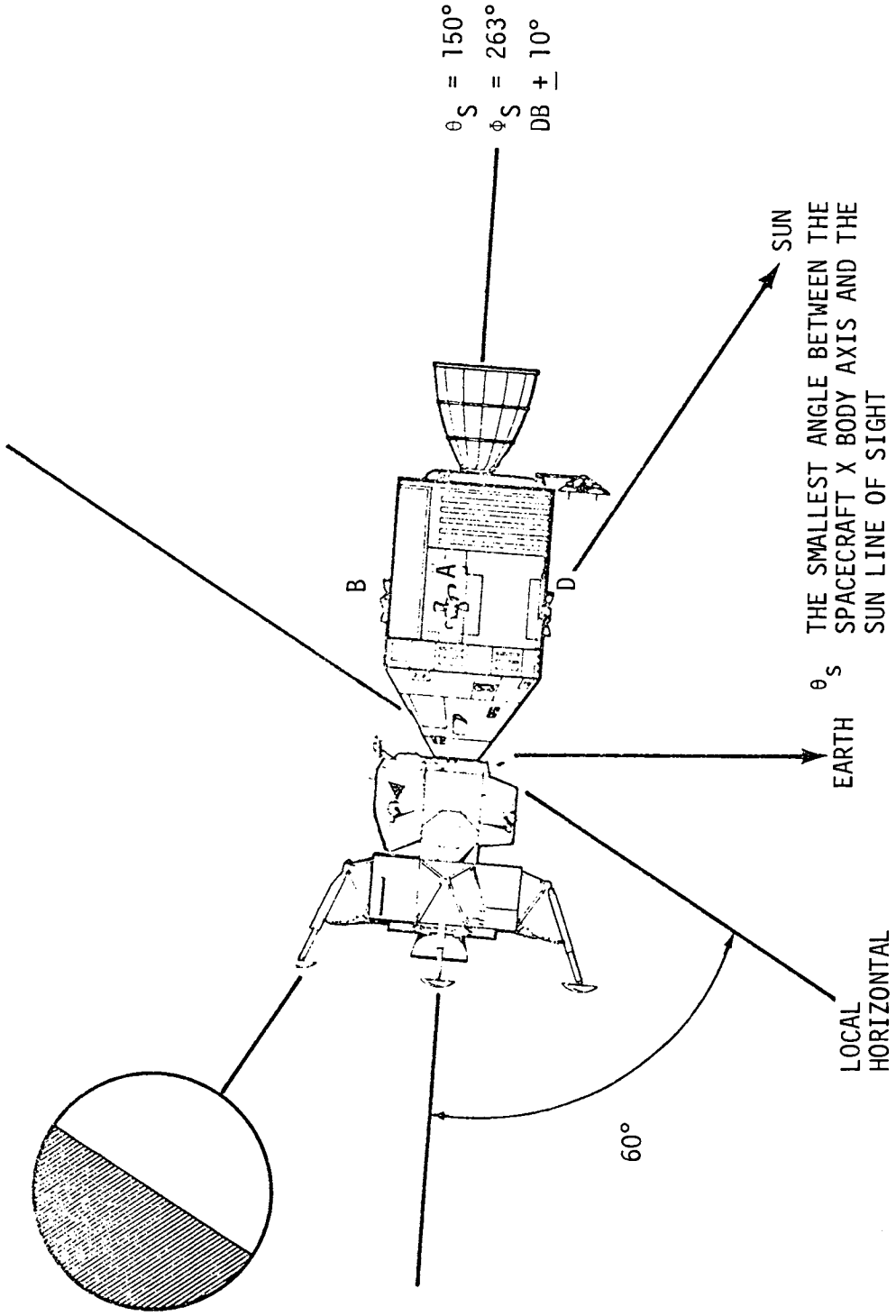
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE 6 1 (JAN)	JANUARY 11, 1971 DECEMBER 2, 1970	88:00 - 89:00	4/3-4	3-87

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

LUNAR ORBIT REST PERIOD ATTITUDE



θ_S THE SMALLEST ANGLE BETWEEN THE SPACECRAFT X BODY AXIS AND THE SUN LINE OF SIGHT

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

MCC-H

2323

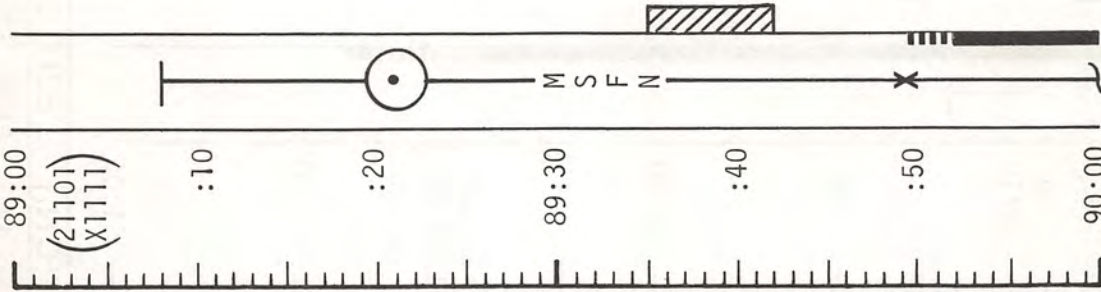
0723 CST

FLIGHT PLAN

NOTES

DUMP DSE

UPDATE TO CSM
LTC PHOTO PAD
TEI 12 PAD
MAP UPDATE REV 10
UPLINK TO CSM
CSM S.V. & V66



ACQ MSFN HGA P -64, Y 177

V49 TWEAK MNVR TO LTC PAD ATTITUDE

VERIFY LTC MODE - STANDBY/PWR - ON (T START - 1 MIN)
ZERO DET

LTC MODE - AUTO, DET - START/UP (T START)
PHOTO TGT 9 (DESCARTES)
(SEE PAD FOR RANGE CHANGES)
LTC MODE - STANDBY (T STOP)
LTC FILM MAG CHANGE (DECAL)
ADVANCE 4 FRAMES, RECORD FR # _____
PUT MAG (V) ON LTC
RESET FRAME COUNTER
LTC REMOVAL (DECAL) & STOW
V49 MNVR TO REST ATTITUDE (90:00)
(126,286,000) HGA P -35, Y 272
MAN ATT (3) - ACCEL CMD
SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0000) (+010.00) (+00001)
MAN ATT (3) - RATE CMD

LTC PHOTO PAD	TGT: 9(DESCARTES)
(181,257,359)	
R	P
T START:	Y
T STOP:	
RNG:	(51.7) (T START)
RNG:	(53.0) (T START + 00:54)
RNG:	(44.5) (T START + 01:23)
RNG:	(36.4) (T START + 02:21)
RNG:	(33.0) (T START + 04:41)
RNG:	(28.1) (T START + 05:18)

MAP UPDATE REV	10
LOS	:
180°	:
AOS	:

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	89:00 - 90:00	4/4	3-89

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

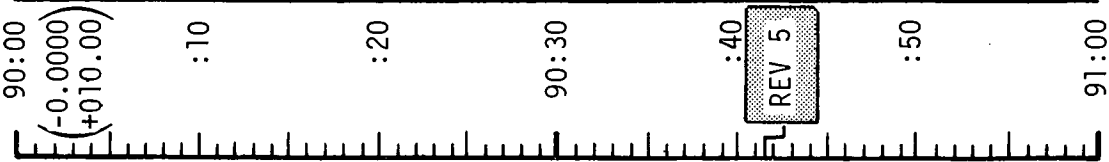
2073

FLIGHT PLAN

MCC-H

0823 CST

UPDATE TO CSM
TRAJECTORY STATUS



T M S F N

CSM SYSTEMS CHECKLIST

PRE-SLEEP CHECKLIST PAGE S - 126
(DO NOT CHLORINATE WATER UNTIL AFTER
EAT PERIOD)

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)
LiOH CANISTER CHANGE
(9 INTO A, STOW 7 IN B6)

EAT PERIOD

REST ATT

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

DAP LOAD STATUS
(21101) (X11111)

NOTES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	90:00 - 91:00	4/4-5	3-90

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

FLIGHT PLAN

MCC-H

0923 CST

NOTES

DUMP DSE

91:00
(-0.0000)
(+010.00)

:20

:40

92:00

:20

REV 6

:40

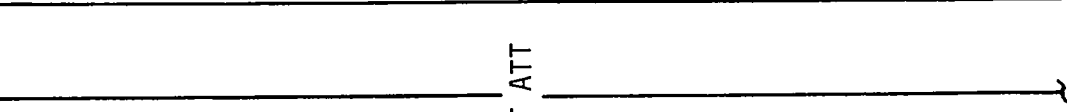
93:00



M S F N X

REST PERIOD
(8.5 HOURS)

REST ATT



DAP LOAD STATUS
(21101)(X1111)

DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	91:00 - 93:00	4/5-6	3-91

MSC Form 28 (May 68)

FLIGHT PLANNING BRANCH

NASA — MSC

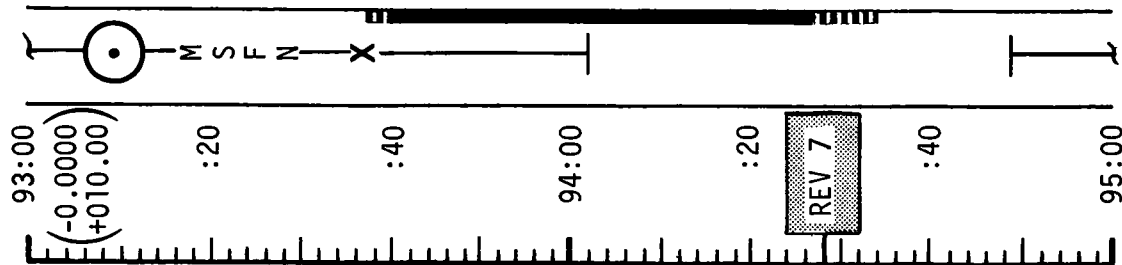
MCC-H

FLIGHT PLAN

1123 CST

NOTES

DAP LOAD STATUS
(21101)(X1111)



DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	93:00 - 95:00	4/6-7	3-92

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

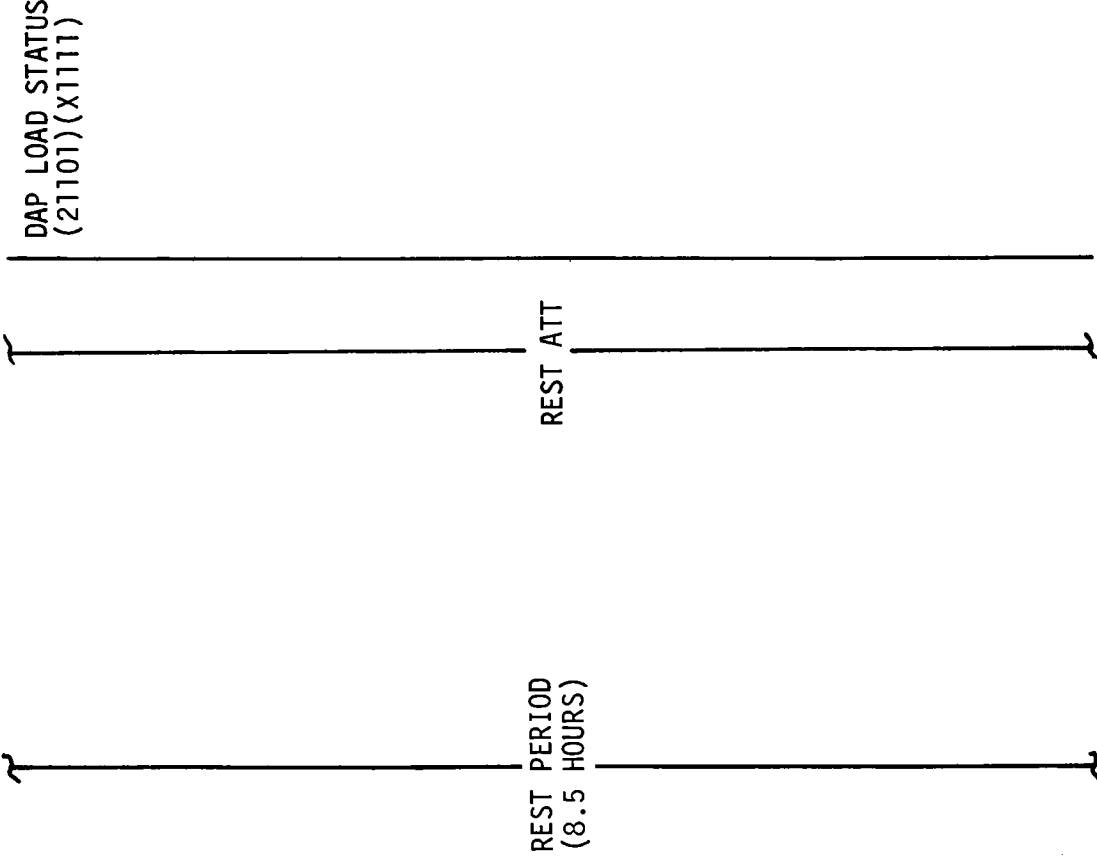
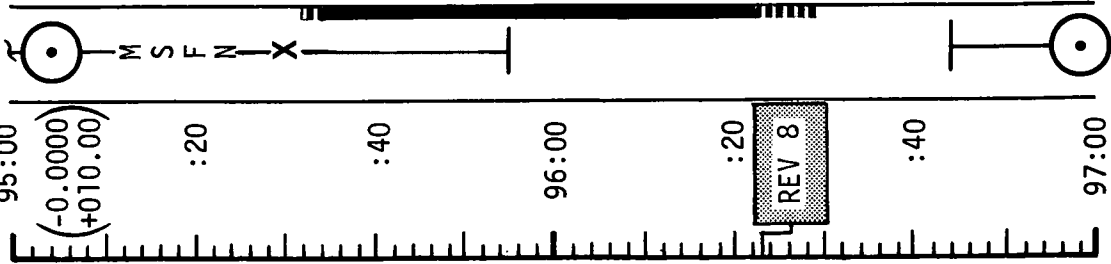
NASA — MSC

1323 CST

FLIGHT PLAN

MCC-H

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	95:00 - 97:00	4/7-8	3-93

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

DUMP DSE

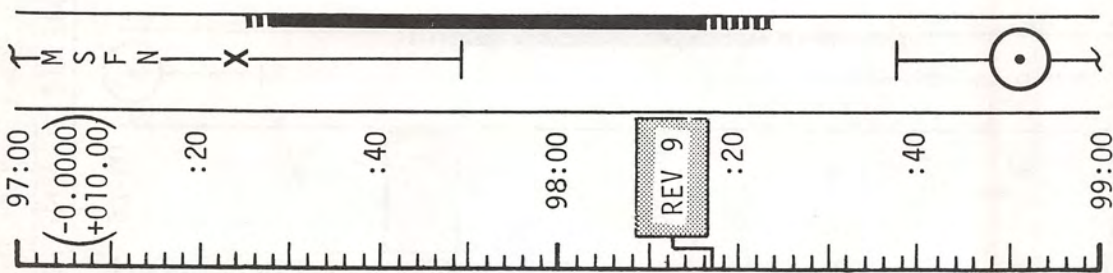
FLIGHT PLAN

MCC-H

1523 CST

NOTES

DAP LOAD STATUS
(21101)(X11111)



REST PERIOD
(8.5 HOURS)

REST ATT

DUMP DSE

0933,

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	97:00 - 99:00	4/8-9	3-94

NASA — MSC

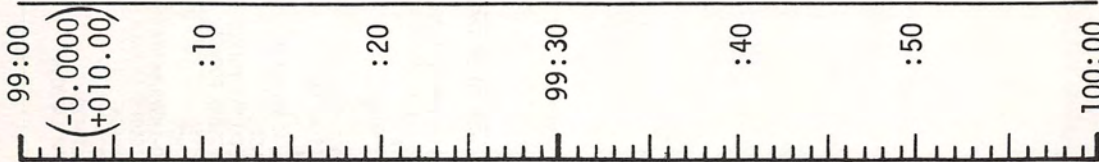
FLIGHT PLANNING BRANCH

MSC Form 29 (May 69)

09 MCF-H

FLIGHT PLAN

1723 CST



NOTES

DAP LOAD STATUS
(21101)(X1111)

WAKE CREW AT 99:00
IF TWEAK BURN IS
REQUIRED AT 99:46

REST PERIOD
(8.5 HOURS)

REST ATT

CSM SYSTEMS CHECKLIST

POST - SLEEP CHECKLIST PAGE S 1-26

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

EAT PERIOD

1013

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	99:00 - 100:00	5/9	3-95

CSM FLIGHT PLAN

100:00
(-0.0000)
(+10.00)

REV 10

100:10

100:20

100:30

SET UP TV (101:00)

DAP LOAD STATUS
(21101)
(X1111)

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

EAT PERIOD _____

REST ATTITUDE _____

CSM TO LM TRANSFER ITEMS:

SUIT WITH ACCESSORIES (EACH CREWMAN)

UCLA

FCS (UT)

LCG (UT)

SUNGLASSES WITH POUCH

WRISTWATCH

PEN

PEN - FELT TIP

PENCIL

CHECKLIST POCKET

SCISSORS POCKET

GLOVES

HELMET

BIO-INSTRUMENTATION EQUIPMENT

SCISSORS (1 ONLY)

PENLIGHT

EAR PLUGS

DOSIMETER

COMM EARMOLD

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

100:30
(-0.0000)
(+10.00)

100:40

100:50

101:00

ACQ MSFN HGA P -34, Y 266

MSFN:
DUMP DSE

LMP DON LCG & PGA WITHOUT HELMET AND GLOVES

MSFN UPLINK:
CSM S.V. AND V66
DESIRED ORIENT (LDG SITE)
LIFT-OFF TIME (IF REQ'D)

NOTE: LIFT-OFF TIME WILL BE
UPDATED IF THE TIME
OF REV 20 MERIDIAN
CROSSING DIFFERS MORE
THAN ± 1 MIN FROM
119:39:13

MSFN UPDATE:
TRAJECTORY STATUS
CONSUMABLES
FLIGHT PLAN
T EPHM (IF REQ'D)
REFSMAT 00 TIME COPY AT (101:22)
MAP UPDATE REV 11 (101:35)
TEI 12 TIG (IF REQ'D)
TEI 19 PAD

REST ATTITUDE

T EPHM UPDATE

LOAD B

OID _____

03 _____

04 _____

05 _____

MSFN UPDATE:
TRAJECTORY STATUS
CONSUMABLES
FLIGHT PLAN
T EPHM (IF REQ'D)
REFSMAT 00 TIME COPY AT (101:22)
MAP UPDATE REV 11 (101:35)
TEI 12 TIG (IF REQ'D)
TEI 19 PAD

SYNCHRONIZE MISSION TIMER TO CMC (IF REQ'D)
VOSNOTE, 1706 E

VERIFY LM/CM ΔP < 2.4
IF ΔP > 2.4 PRESSURIZE CSM TO 5.7
REPORT ΔP TO MSFN

CDR DON LCG & PGA WITHOUT HELMET AND GLOVES

~~GMS/TV - AVG (722)~~
~~TV (GDS) 101:00-101:14~~

1123

1 ch.c
1/18/71

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE 4 (JAN)	DECEMBER 20 1970	3-96

January 18, 1971

1023

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CSM FLIGHT PLAN

1123

200000
11/18/71

101:00
(-0000)
(+10.00)

TV deleted

REST ATTITUDE
16MM & 70MM CAMERA MAGAZINES USED FROM 100:00 TO 120:00

CAMERA	MAGAZINES	TYPE (DECAL-COLOR)	STOWAGE LOCATION
EL	L N	CEX (BLUE) CEX (BLUE)	B3 A13
DC	R S	MBW (SILVER) VHBW (SILVER/BLACK)	A10 A10
DAC	B, C J, K	CEX (BLUE) *VHBW (SILVER/BLACK)	B8 Cushion B2

*Should be left in B2 or kept out of direct sunlight.

REFSMAT 00 TIME			
	HRS	MIN	SEC
+	0	0	
+	0	0	0
+	0	0	

CYCLE CMC MODE-FREE/AUTO
P52 (OPTION 3)
(LDG SITE ORIENT)

REPORT: GYRO TORQUING ANGLES

P52 (OPTION 1)
(LDG SITE ORIENT)

CDR V49 MNVR TO AGS CALIB ATTITUDE (101:36)
(007.5, 112.5, 022.5) HGA P -80, Y 98

101:10
101:20
(2T101)
(X1111)

101:30
(21101)
(X1111)

MAP UPDATE REV 11

LOS : _____

180°: _____

AOS : _____

CMP DON PGA WITHOUT HELMET AND GLOVES

LMP VERIFY DSE TAPE MOTION (LBR/RCD/FMD/CMD RESET)
V48 (21111)
(X1111)

PREPARE COUCH FOR HATCH
REMOVE PROBE STRAPS (A1)

VERIFY LM/CM ΔP < 0.2
IF ΔP > 0.2 PERFORM CM/LM PRESSURE EQUALIZATION (DECAL)
TUNNEL HATCH REMOVAL (DECAL); STOW HATCH
PROBE REMOVAL (DECAL); STOW PROBE
DROGUE REMOVAL (DECAL); STOW DROGUE

RECORD DOCKING TUNNEL INDEX ANGLE _____

AT LMP REQUEST:
LM PWR - RESET/OFF
SYS TEST - 40
SYS TEST ind - 0 volts

101:40
101:50
102:00

1123

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE C (JAN)	DECEMBER 29 1970	3-98

January 18, 1971

LM FLIGHT PLAN

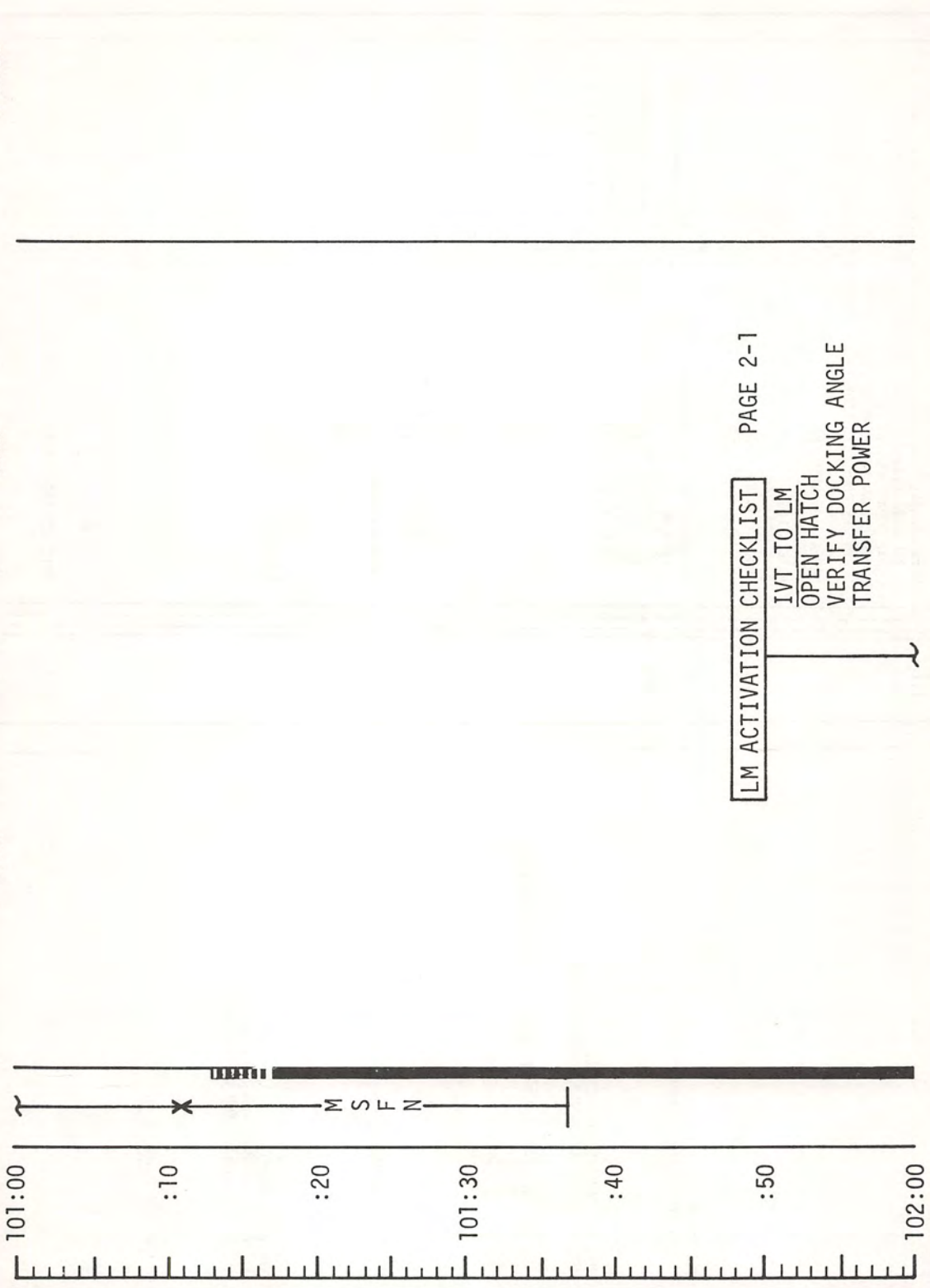
MCC-H

1923 CST

CDR

LMP

NOTES



1123

1223

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	101:00 - 102:00	5/10	3-99

CSM FLIGHT PLAN

<p>102:00 (21111) (X1111) REV 11</p> <p>MARK TO LM FOR LM MISSION TIMER SYNC AT CDR REQUEST</p> <p>CONFIGURE CAMERAS FOR UNDOCKING CM2/EL/80/CEX (f8, 1/250, FOCUS) (10 FR)</p> <p>MAG (N) _____, FR # _____ CM2/DAC/18/CEX-BRKT, MIR (T8, 1/250, 7) 12 fps (100% MAG)</p> <p>MAG (C) _____, MAG % _____ UTILITY PWR - ON</p> <p>SWITCH TO CDR COMM UMB</p> <p>VHF C/O AT LMP REQUEST VHF ANT - RIGHT VHF AM B - SIMPLEX FOR VHF B CHECK VHF AM A - SIMPLEX FOR VHF A CHECK</p> <p>ACQ MSFN HGA P -80, Y 98</p> <p style="text-align: right;">102:30</p>	<p>102:30 (21111) (X1111)</p> <p>REPORT DOCKING TUNNEL INDEX ANGLE TO MSFN MSFN UPLINK: CSM S.V. AND V66</p> <p>MSFN UPDATE: DAP DATA (103:20) MAP UPDATE REV 12 (103:30) UNDOCK/SEP PAD COPY AT (104:05) P24 TRK PAD: (L/S LDMK 14-X) (104:35)</p> <p>MAN ATT (3) RATE CMD ATT DB - MIN RATE - LOW SC CONT - SCS BMAG (3) - ATT 1/RATE 2</p> <p>LM DOCKED IMU COARSE ALIGN V06N20E VOICE ANGLES TO LM ON CDR MARK - ENTER RECORD GIMBAL ANGLES VOICE ANGLES TO LM</p> <p>SC CONT - CMC, ATT DB - MAX BMAG MODE (3) - RATE 2</p> <p>LM CLOCK SYNC: V16N65E ON CDR MARK - V06N65E</p> <p>LM T EPHM UPDATE: V05NOTE, 1706E DON HELMET AND GLOVES</p> <p>LM LANDING GEAR DEPLOY</p> <p>SUIT CKT INTEGRITY CHECK (DECAL)</p> <p style="text-align: right;">103:00</p>
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** N20: _____
** R _____
** P _____
** Y _____

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-100

LM FLIGHT PLAN

MCC-H

1223

2023 CST

CDR

LMP

NOTES

<p>102:00</p> <p style="border: 1px solid black; padding: 2px;">REV 11</p> <p>:10</p> <p>:20</p> <p>102:30</p> <p>:40</p> <p>:50 (32022)</p> <p>103:00</p>	<p>IVT TO LM TRANSFER HELMETS & GLOVES MISSION TIMER ACTIVATION</p> <hr/> <p>ECS ACTIVATION AND C/O</p> <hr/> <p>CONNECT TO LM ECS</p> <hr/> <p>PGNS TURN-ON & SELF-TEST</p> <hr/> <p>DOCKED IMU COARSE ALIGN REPORT: <u>GIMBAL ANGLES</u> & <u>GEI</u> LGC/CMC CLOCK SYNC T EPHEM UPDATE E-MEMORY DUMP V48 (32022) DEPLOY LANDING GEAR</p> <hr/> <p>RCS PRESSURIZATION REPORT: <u>He PRESSURE</u></p>	<p>LIGHTS ON DES O₂ AND H₂O - OPEN</p> <hr/> <p>EPS ACTIVATION CONNECT TO LM COMM CONFIGURE S-BAND</p> <hr/> <p>PRIMARY GLYCOL LOOP ACT</p> <hr/> <p>CAUTION/WARNING C/O</p> <hr/> <p>CONNECT TO LM ECS CB ACTIVATION</p> <hr/> <p>VHF CHECKOUT</p> <hr/> <p>REPORT: <u>LM POWER TRANSFER</u> <u>TIME</u></p> <p>SEC S-BAND VOICE CHECK, PRIM S-BAND CHECK, STEERABLE ANTENNA ACTIVATION P116, Y41</p> <hr/> <p>SUIT FAN/H₂O SEP CHECK</p> <p>GLYCOL PUMP CHECK BIOMED - RIGHT</p> <hr/> <p>ASCENT BATTERY ACTIVATION AND C/O</p> <p>REPORT: <u>ED BAT VOLTAGE</u></p>
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DUMP DSE
UPLINK TO CSM
CSM S.V. & V66
UPDATE TO CSM
DAP DATA
MAP UPDATE REV 12
UNDOCK & SEP PAD
P24 TRK PAD

1323

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	102:00 - 103:00	5/10-11	3-101

CSM FLIGHT PLAN

103:00
(21111)
(X1111)

AT CDR'S REQUEST DURING RCS CHECKOUT
CMC - FREE FOR RCS HOT FIRE

```

* * * * *
* PANEL 10
* MODE - VOX
* VOX SENS tw - 5
* S-BD - OFF
* INTERCOM - OFF
* VHF AM T/R - T/R (VERIFY)
* * * * *
    
```

103:10

AFTER LM RCS CHECKOUT
CMC - AUTO

ROLL (8) - OFF UNTIL LM/CM ΔP > 3.5 PSID
REMOVE AND STOW CSM/LM UMBILICAL IN F1 or F2
INSTALL DROGUE AND PROBE (DECAL)
PRE-LOAD PROBE (DECAL)
DOCKING LATCH RELEASE (DECAL)
HATCH INSTALLATION (DECAL)
HATCH INTEGRITY CHECK (DECAL)

103:20
(21101)
(X1111)

CYCLE CMC MODE - FREE/AUTO
ROLL (4) - ON
V48 (21101)
LOAD N47 & N48

+						WT	N47
	0	0				P TRIM	N48
	0	0				Y TRIM	

V49 TRIM TO AGS CALIB ATT
(007.5,112.5,022.5)

```

* * * * *
* CB RNDZ XPNDR FLT BUS - CLOSE (VERIFY)
* RNDZ XPNDR - HTR (VERIFY)
* VHF ANT - RIGHT (VERIFY)
* VHF RCV ONLY - B DATA
* VHF AM A - SIMPLEX
* VHF AM B - OFF
* * * * *
    
```

103:30
(21101)
(X1111)

VERIFY DSE TAPE MOTION (LBR/RCD/FUD/CMD RESET)
DOFF HELMNET AND GLOVES

MAP UPDATE REV 12

LOS : _____

180° : _____

AOS : _____

LiOH CANISTER CHANGE:
(10 INTO B, STOW 8 IN B6)

RR XPNDR ACTIVATION AND SELF-TEST (DECAL)

RNDZ XPNDR - HTR

SET DET COUNTING UP TO UNDOCK/SEP
UNDOCK CUE CARD

```

* * * * *
* LM DRIFT CHECK
* V06N20E
* ON CDR MARK - ENTER
* RECORD GIMBAL ANGLES
* VOICE ANGLES TO LM
* * * * *
    
```

104:00
REV 12

103:30
(21101)
(X1111)

LM RR SELF-TEST
RNDZ XPNDR - HTR (VERIFY)
AUTO RCS SEL B3 - OFF

104:00

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-102

LM FLIGHT PLAN

MCC-H

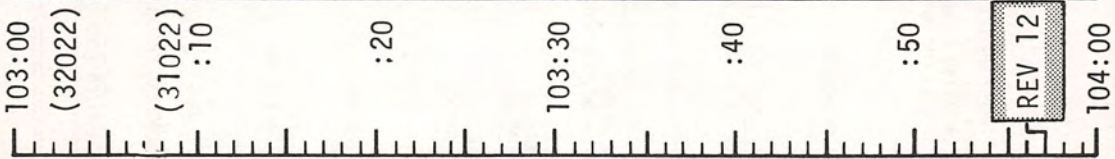
1323

2123 CST

CDR

LMP

NOTES



- UPLINK TO LM
- LS REFSMMAT
- LM S.V. & V66
- LGC/CMC CLOCK SYNC
- LGC ABORT CONSTANTS
- E-MEMORY
- PIPA BIAS (IF REQ'D)
- UPDATE TO LM
- GYRO TORQUING ANGLES
- AGS ABORT CONSTANTS
- DAP DATA
- UPDATE TO LM
- AGS K FACTOR

X	M S F N	
103:00 (32022)	RCS CHECKOUT	
(31022) :10	V48 (31022) DOCKED IMU FINE ALIGN	COPY UPDATES
:20	VERIFY DROGUE & PROBE INSTALLATION	AGS ACTIVATION & SELF-TEST
:30	CLOSE AND SECURE HATCH	AGS TIME INITIALIZATION LOAD AGS PAD COPY AGS K FACTOR V47 INITIALIZE AGS (K) CONFIGURE COMM FOR LOS STEERABLE ANT P132, Y48
103:30	DON HELMETS & GLOVES	
:40	ARS/PGA INTEGRITY CHECK	
:50	CABIN REGULATOR CHECK	
REV 12	DOFF HELMETS & GLOVES (CREW OPTION)	
104:00	DRIFT CHECK	RATE GYRO TEST

1423

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	103:00 - 104:00	5/11-12	3-103

CSM FLIGHT PLAN

104:00

(21101)
(X1111)

VERIFY:
CM2/EL/80/CEX (F8,1/250,FOCUS)
CM2/DAC/18/CEX-BRKT, MIR (T8,1/250,7) 12 fps
UTILITY PWR - ON

LM AGS CALIB
RATE < 0.075°/SEC
CMC MODE - FREE
AFTER COMPLETION OF AGS CALIB
(APPROX 6 MIN) CMC MODE - AUTO

P30; LOAD UNDOCK/SEP

WHEN LM RR SELF-TEST COMPLETE:
AUTO RCS SEL B3 - ON, RNDZ XPNDR - PWR

V49 MNRV TO UNDOCK PAD ATT (104:19)

LOAD ΔV IN EMS TO -100.0
CHECK NULL BTAS
VERIFY EMS -100.0/ΔV/STBY

GDC ALIGN
VERIFY ORDEAL
ALT SET = 40 NM

PERFORM UNDOCKING SWITCH
CONFIGURATION:

ACQ MSFN HGA P -80, Y 13

GO/NO-GO FOR UNDOCK/SEP
P41 (TRIM)

SC COUNT - SCS
BMAG (3) - ATT 1/RATE 2

V48 (11101)
(X1111)
RHC & THC - ARMED

PERFORM UNDOCKING CHECKLIST

UNDOCK/SEPARATION (000,090/102,000)

TIG: 104:27:31
BT: 3.07 SEC
ΔVT: 1 FPS
ULLAGE: N/A
ORBIT: 59.5 x 8.2

104:10

104:20

(11101)
(X1111)

104:30

P30 MANEUVER

SET STARS		C	S	M	S	E	P	PURPOSE
R	Y	R	C	S	G	&	N	PROP/GUID
ALIGN		+			N	/	A	WT N47
ALIGN		+	O	O	N	/	A	P TRIM N48
ALIGN		+	O	O	N	/	A	Y TRIM
ULLAGE		+	O	O	O			HRS GETI
		+	O	O	O			MIN N33
		+	O	O	O			SEC
		+	O	O	O	0	0	ΔV X N81
		+	O	O	O	0	0	ΔV Y
		-	O	O	O	1	0	ΔV Z
		X	X	X				R (000)
		X	X	X				P (102)
		X	X	X				Y (000)

UNDOCKING CHECKLIST

59:30 EMS MODE - NORM, DAC - ON
THC PWR - ON

00:00 PROBE EXT/REL - EXT/REL (MOM)
VERIFY PROBE EXTENDED, LM ATTACHED
ALLOW MOTION TO DAMP (5 SEC)
PROBE EXT/REL - EXT/REL (HOLD) (< 20 SEC)
AFTER 2 SEC XLATE (4 JET) AFT
FOR ~ 3 SEC (VGX to + 2.0)
AFTER PROBE/DROGUE DISENGAGED,
PROBE EXT/REL - OFF
THC & RHC - LOCKED, THC PWR - OFF
P00

SC COUNT - CMC, ATT DB - MAX
ΔV CG - CSM
BMAG (3) - RATE 2
RHC PWR DIR - OFF
ROLL (4) - OFF
EMS FUNC - ΔV SET/VHF RNG
EMS MODE - VHF RNG
VHF ANT - LEFT
VHF AM A - OFF
VHF AM B - DUPLEX
VHF RANGING - RANGING

MISSION

EDITION

DATE

PAGE

APOLLO 14

CHANGE A (JAN)

DECEMBER 23, 1970

3-104

LM FLIGHT PLAN

MCC-H

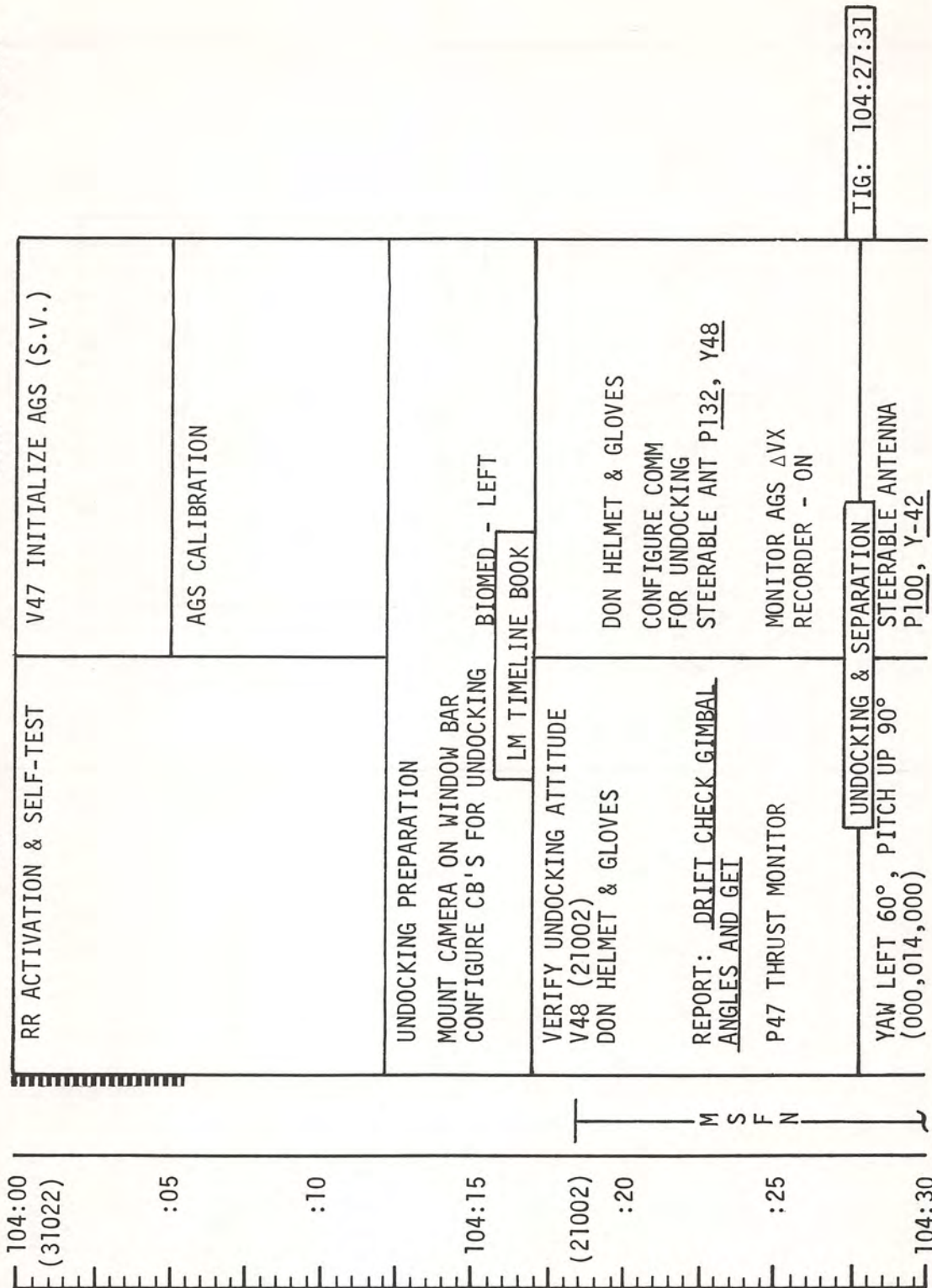
1423

2223 CST

CDR

LMP

NOTES



GO/NO-GO FOR UNDOCKING & SEPARATION

DUMP DSE 1453

TIG: 104:27:31

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	104:00 - 104:30	5/12	3-105

CSM FLIGHT PLAN

change 8
1/2/71

VERIFY LM TRACKER LT - ON
 DAC - OFF
 RECORD MAG % _____, FR # _____
 GDC ALIGN
 VERIFY ORDEAL
 ALT SET = 40 NM
 V49 MINVR TO LDMK TRK PAD ATT 104:48
 ONNI C _____

MONITOR S-BAND

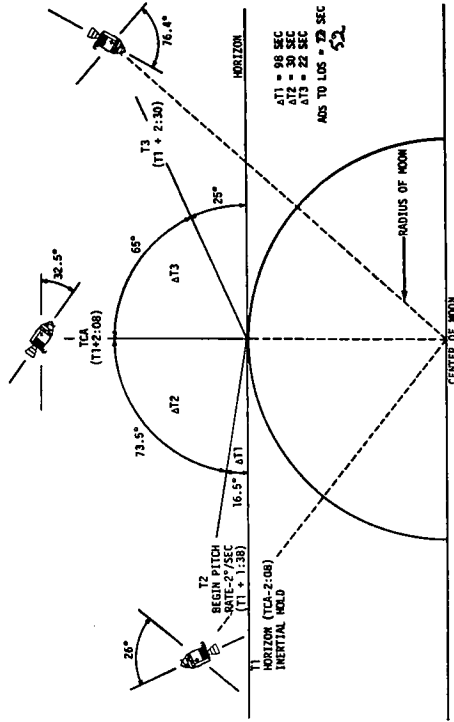
CONFIGURE CAMERA: (LDMK TRK)
 CM/DAC/SXT/CEX (EXP-PAD) 1 fps (2.7% MAG)

MAG (B) _____, MAG % _____
 UTILITY PWR - ON

P24 (L/S LDMK 14-X)
 OPT ZERO - OFF, OPT MODE - CMC
 OPT TEL TRUN - SLAVE TO SXT
 OPT COUPLING - RSLV, OPT SPEED - HI
 SC CONT - CMC/AUTO & MAN ATT (3) - RATE CMD (VERIFY)
 V79 (NT6 LOAD T2 TIME)
 (-2.0000)
 (+000.50)
 (+00001)
 PRO
 0:00 - T1 (HORIZON) DET - ZERO/UP/START, DAC - ON

1:38 - T2 (AUTO PITCH RATE BEGINS) OPT MODE - MAN, TAKE MARKS
 2:08 - TCA
 2:30 - T3 (LDMK LOSS) DAC - OFF

CSM LOW ALTITUDE LANDMARK TRACKING PROFILE



P24 LDMK TRACKING (1/50)

T ₁	_____	_____	_____	_____	_____	_____	_____	_____	_____
T ₂	_____	_____	_____	_____	_____	_____	_____	_____	_____
TCA	_____	_____	_____	_____	_____	_____	_____	_____	_____
T ₃	_____	_____	_____	_____	_____	_____	_____	_____	_____
R	(020)	(298)	(000)	(000)	(000)	(000)	(000)	(000)	(000)
N or S NM	14-1	14-2	14-3	14-4	14-4	14-4	14-4	14-4	14-4
TA	14-1	14-2	14-3	14-4	14-4	14-4	14-4	14-4	14-4
N89	-04.046	-03.610	-03.919	-03.470	-03.470	-03.470	-03.470	-03.470	-03.470
LAT	-07.800	-07.659	-07.570	-07.445	-07.445	-07.445	-07.445	-07.445	-07.445
LONG/2	-000.44	-000.15	-000.38	-000.87	-000.87	-000.87	-000.87	-000.87	-000.87
ALT									

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE 8 (JAN)	DECEMBER 23, 1966 JANUARY 11, 1971	3-106

104:30
 (11101)
 (X1111)
 104:40
 M
 S
 F
 N
 104:50
 (-2.000)
 (+00.50)
 105:00

LM FLIGHT PLAN

NOTES

LMP

CDR

2253 CST



UNDOCKING PHOTOGRAPHY
DAC - ON (1 MIN)
DC 10 FRAMES
RECORDER - OFF

DOFF HELMET & GLOVES

V47 INITIALIZE AGS (S.V.)

EXTERIOR LTG - TRACK-OFF

DOFF HELMET & GLOVES

V83 SET ORDEAL

DPS THROTTLE CHECK

PITCH TO OBSERVE LANDING SITE (104:55)
(000,325/337,000)

OBSERVE AND PHOTO LANDING SITE
DAC - ON (5 MIN)
DC 5 FRAMES

MCC-H

1453

UPDATE TO LM
REV 12 TCA (LS)

UPLINK TO LM
CSM S.V.
PIPA BIAS (IF REQ'D)
GYRO COMPENSATION
(IF REQ'D)

RECORD PCM LBR
ON DSE DURING P24

1523

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	104:30 - 105:00	5/12	3-107

CSM FLIGHT PLAN

105:00
(111101)
(X1111)

STOP PITCH RATE AT BURN ATT P 110
VHF RING - RESET, COMPARE RR AND THF RANGE
ACQ MSFN HGA P -6Z, Y 85

RECORD MAG %
REMOVE & STOW DAC

P52 (OPTION 3)
(LDG SITE ORIENT)

REPORT: GYRO TORQUING ANGLES

MSFN UPLINK:
CSM S.V.
CIRC TARGET LOAD

MSFN UPDATE:
CIRC PAD
MAP UPDATE REV 13
PADS A-D COPY AT (106:10)
P24 TRK PAD: (L/S LDMK 14-1) (106:35)

P30; VERIFY CIRC TIG AND ΔV'S

V49 TRIM TO CIRC BURN PAD ATT

SXT STAR CHECK

P40 (TRIM)

60/NO-60 FOR CIRC

(P40)
(0.5° DB)

105:20

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

MAP UPDATE REV 13

LOS: _____

180°: _____

AOS: _____

* VHF AM B - OFF *
* VHF AM A - SIMPLEX *
* VHF RCY ONLY - B DATA *

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

GDC ALIGN
VERIFY ORDEAL
ALT SET = 50 NM

105:30

MISSION	DATE	PAGE
APOLLO 14	DECEMBER 2, 1970	3-108
EDITION		
FINAL (JAN)		

CSM FLIGHT PLAN

SET DET COUNTING UP TO CIRC

105:30
(P40)
(0.5° DB)

105:40

106:00

CIRC BURN TABLE			
P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC	+10°	BT + 1 SEC	TRIM X TO < 1 FPS TRIM Y TO < 0.2 FPS DO NOT TRIM Z
TERMINATE	TERMINATE		

CSM CIRCULARIZATION(000,352/110,359) TIG: 105:46:48
 BT: 3.79 SEC
 ΔVT: 72.46 FPS
 ULLAGE: 4 JET, 11 SEC
 ORBIT: 63.5 x 56

P00; VOICE P76 BURN DATA TO LM
V82

V48 (11111)
(X1111)

DOFF PGA

ZIP SUIT & INSTALL ELECTRICAL COVER PRIOR TO STOWING (PGA BAG)
 STOW COMM CARRIERS & UCTA (PGA BAG)

P30 MANEUVER

PURPOSE PROP/GUID	C I R C			S P S G & N			WT	N47
	S	P	S	G	&	N		
P _r ALIGN								N48
P _y ALIGN								N48
Y ALIGN								GET1
								MIN N33
								SEC
ULLAGE								ΔV _x N81
								ΔV _y
								ΔV _z
								R (000)
								P (110)
								Y (359)
								H _A N44
								H _p
								ΔVT
								BT
								ΔVC
								SXTS
								SFT
								TRN
								BSS
								SPA
								SXP
								LAT N61
								LONG
								RTGO EMS
								V10
								GET 0.05G

SET STARS

P_r ALIGN

P_y ALIGN

Y ALIGN

ULLAGE

HORIZON/WINDOW

OTHER

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-110

LM FLIGHT PLAN

NOTES

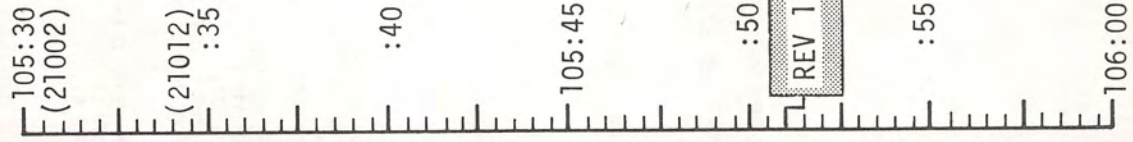
LMP

CDR

2353 CST

MCC-H

1553



UNDOCKED AGS CALIBRATION
V48 (21012)

SYSTEMS CHECKS

MNVR TO OBSERVE CSM CIRCULARIZATION BURN (105:45)
(000,236,000)

DAC-ON (5 MIN)
DC 2 FRAMES

P76 TARGET ΔV
(UPDATE CSM S.V.)

V83 SET ORDEAL
ESTABLISH ORBITAL RATE
(000,325/148,000)

V47 INITIALIZE AGS (S.V.)

CSM CIRCULARIZATION
105:46:48

1608

1623

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	105:30 - 106:00	5/12-13	3-111

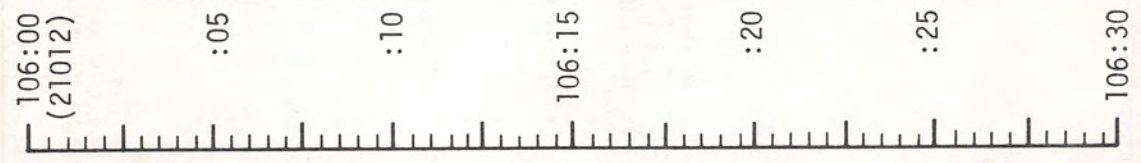
LM FLIGHT PLAN

NOTES

LMP

CDR

0023 CST



MCC-H

1623

*CSM Dump:
USE 2 DECOMS
Hi/Lo Br.
combination
3C Bio on Net 3*

DUMP DSE

RESET DET TO COUNT DOWN
TO PDI₀

VERIFY COMM AT AOS
STEERABLE ANTENNA
P 14, Y -10

BIOMED - RIGHT
REPORT: DELTA GYRO ANGLES,
GET, LPD BIAS

DPS PRESSURIZATION AND CHECKOUT

LANDING RADAR CHECKOUT

- UPLINK TO CSM
- CSM S.V. (PDI-10)
- LM S.V.
- PIPA BIAS
- UPDATE TO CSM
- PADS E-N
- UPDATE TO LM
- NO PDI + 12 PAD
- PDI PAD
- PDI ABORT EARLY
- PDI ABORT LATE
- T2 ABORT PAD
- AND T3 TIG

1653

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	106:00 - 106:30	5/13	3-113

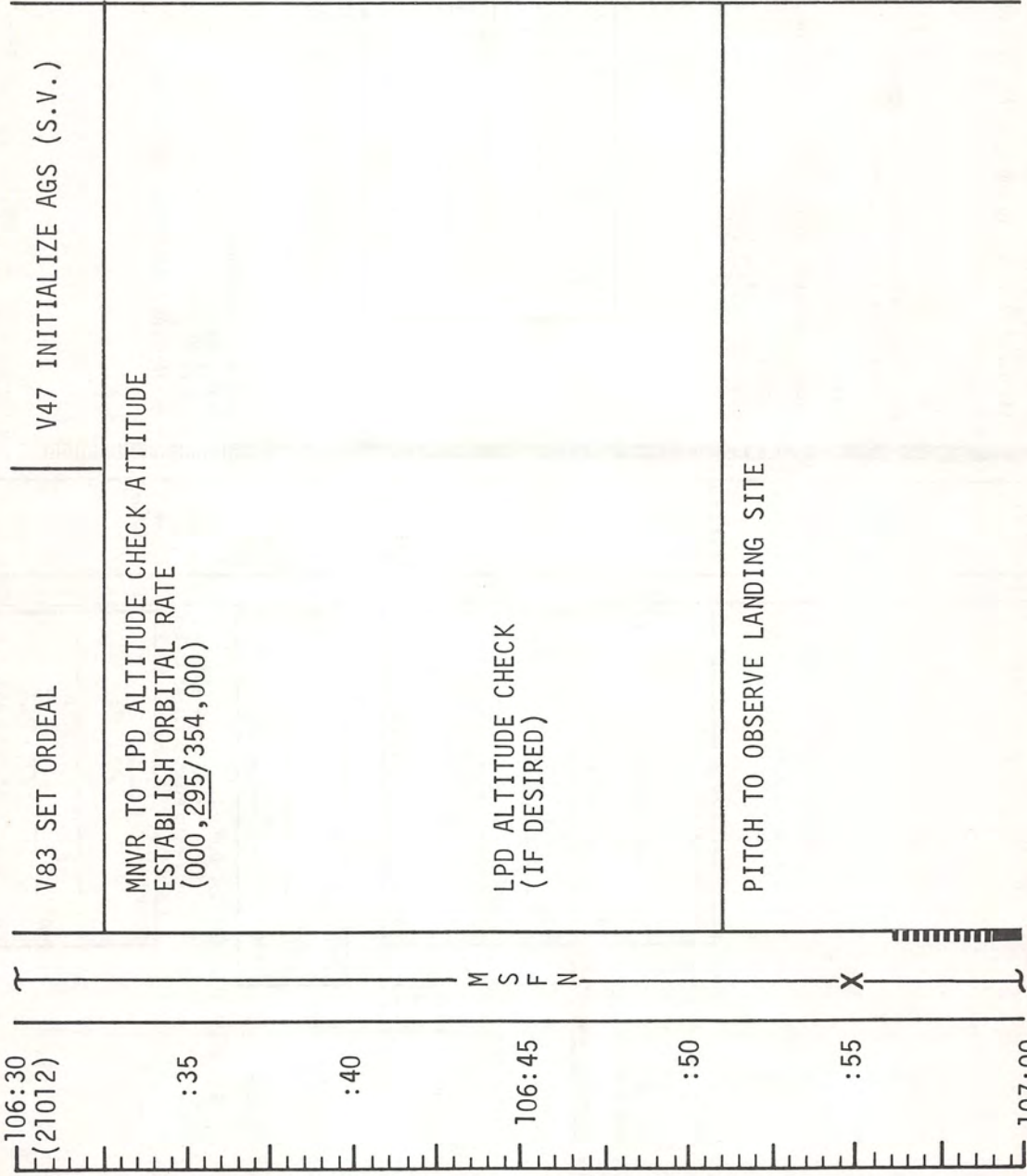
LM FLIGHT PLAN

NOTES

LMP

CDR

0053 CST



MCC-H

1653

UPLINK TO LM
 CSM S.V. (PDI-10)
 LM S.V.
 PIPA BIAS
 DESCENT TARGET
 LPD BIAS (IF REQ'D)

RECORD PCM LBR
 ON DSE DURING P24

1723

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	106:30 - 107:00	5/13	3-115

CSM FLIGHT PLAN

107:00
(11112)
(X1111)

MSFN UPDATE:
MAP UPDATE REV 14
LTC PADS (TGT 16, 12 (LDG LM) (108:15))

107:10

P52 (OPTION 3)
(LDG SITE ORIENT)

REPORT: GYRO TORQUING ANGLES

P52 (COAS CALIB)
USE POLLUX N88 (-.38513)
(+.79364)
(+.47097)

GDC ALIGN
VERIFY ORDEAL

VERIFY DSE TAPE MOTION (LBR/RCD/FMD/CMD RESET)

* MSFN ENABLES MSFN S-BAND RELAY *

MAP UPDATE REV 14

LOS : _____
180° : _____
AOS : _____

P52 IMU REALIGN

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

COAS CALIB - N92

SHAFT : _____
TRUN : _____

107:30
(11101)
(X1111)

CYCLE CMC MODE - FREE/AUTO
V48 (11101)
(X1111)
V49 MNVR TO LTC TGT: 16 PHOTO PAD ATT (107:52)

CONFIGURE CAMERAS: (LTC & EL ORB SCIENCE PHOTOS)
CM/EL/500/CEX (FB, 1/125, ∞) (133 FR)

MAG (L) _____, FR # _____

CM3/LTC/M8M/BEF (SHUT 1/100, RNG 1-PAD, INT 8.2) (127 FR)

MAG (V) _____, FR # _____
LTC INSTALLATION (DECAL)
LTC CHECKOUT (DECAL)

LTC PHOTO PAD TGT: 16 (000,302,000)

R _____ P _____ Y _____
T START: _____
T STOP : _____
RNG 1 _____ (91.1) T START
RNG 2 _____ (90.0) T START + 7:10

ORBITAL SCIENCE PHOTOGRAPHY

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507)
(+000.50)
(+000001)

PRO TO START PITCH RATE AT ORDEAL P 212

PHOTO TGT 14, SOUTH (FB, 1/125, ∞) 30 FR AT 4 SEC (500 MM)
(180° +0:10)

107:40
REV 14
107:50

(-.0507)
(+00.50)

108:00

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-116

LM FLIGHT PLAN

MCC-H

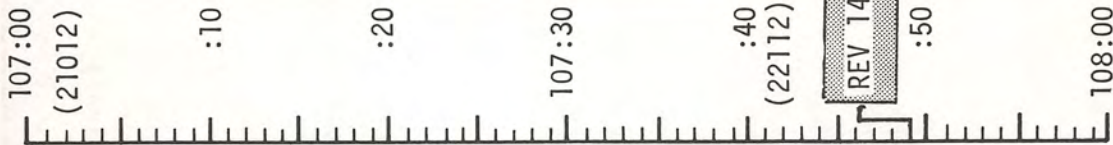
UPDATE TO CSM
 MAP UPDATE REV 14
 LTC PADS (TGT 16,
 12 (LDG LM))

1723

ENABLE MSFN
 S-BD RELAY

1823

0123 CST



CDR

P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (LDG SITE ORIENT)

REPORT: DELTA GYRO ANGLES, GET

COAS CALIBRATION

START MNVR TO PDI ATTITUDE
 P30 EXTERNAL ΔV
 (NO PDI + 12 ABORT)
 V48 (22112)
 P63 MNVR TO PDI ATT (107:45)
 (000,113,000)
 P00
 COAS TO OVERHEAD WINDOW
 DON HELMET & GLOVES

LMP

CONFIGURE COMM FOR LOS
 STEERABLE ANT P 2, Y 2
 BIOMED - OFF
 RELOCATE DAC ABOVE RH WINDOW

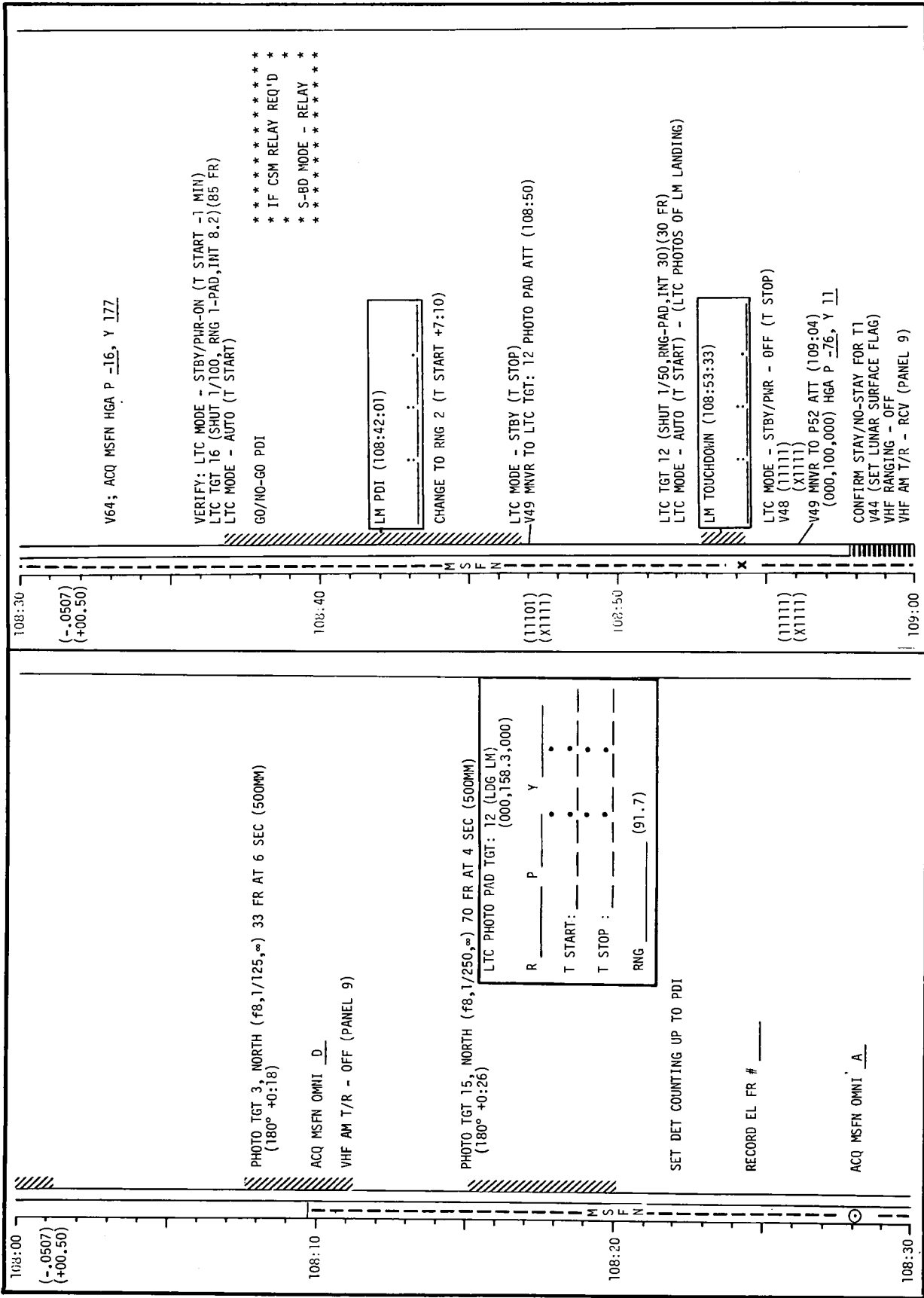
ALIGN AGS TO PGNS
 VERIFY LOOSE GEAR STOWED
 RESTRAINTS ATTACHED

DON HELMET & GLOVES
 CONFIGURE EGRESS MODE
 CHECK SYSTEMS CONFIGURATION

NOTES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	107:00 - 108:00	5/13-14	3-117

CSM FLIGHT PLAN



V64; ACQ MSFN HGA P -16, Y 177

VERIFY: LTC MODE - STBY/PWR-ON (T START -1 MIN)
LTC TGT 16 (SHUT 1/100, RNG 1-PAD, INT 8.2) (85 FR)
LTC MODE - AUTO (T START)

GO/NO-GO PDI

* IF CSM RELAY REQ'D *
* S-BD MODE - RELAY *

LM PDI (108:42:01)

CHANGE TO RING 2 (T START +7:10)

LTC MODE - STBY (T STOP)
V49 MNVR TO LTC TGT: 12 PHOTO PAD ATT (108:50)

LTC TGT 12 (SHUT 1/50, RNG-PAD, INT 30) (30 FR)
LTC MODE - AUTO (T START) - (LTC PHOTOS OF LM LANDING)

LM TOUCHDOWN (108:53:33)

LTC MODE - STBY/PWR - OFF (T STOP)
V48 (11111)
(X1111)
V49 MNVR TO P52 ATT (109:04)
(000,100,000) HGA P -76, Y 11

CONFIRM STAY/NO-STAY FOR T1
V44 (SET LUNAR SURFACE FLAG)
VHF RANGING - OFF
VHF AM T/R - RCV (PANEL 9)

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-118

LM FLIGHT PLAN

0223 CST

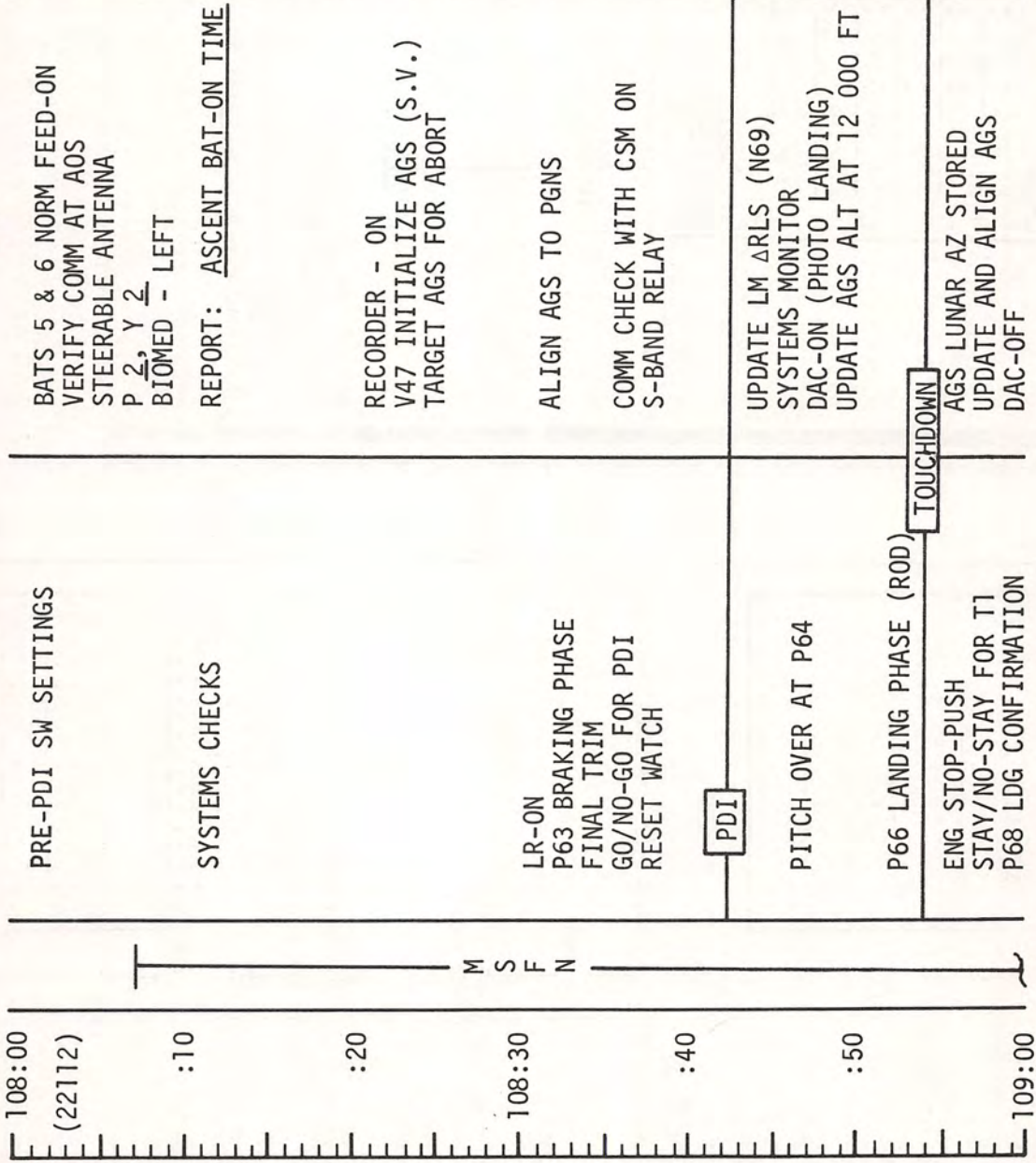
MCC-H

1823

CDR

LMP

NOTES



UPLINK TO LM
LM S.V.

RLS
GYRO COMPENSATION
UPDATE TO LM
AGS RLS (231)

GC/NO-GO FOR PDI

UPDATE
Δ RLS

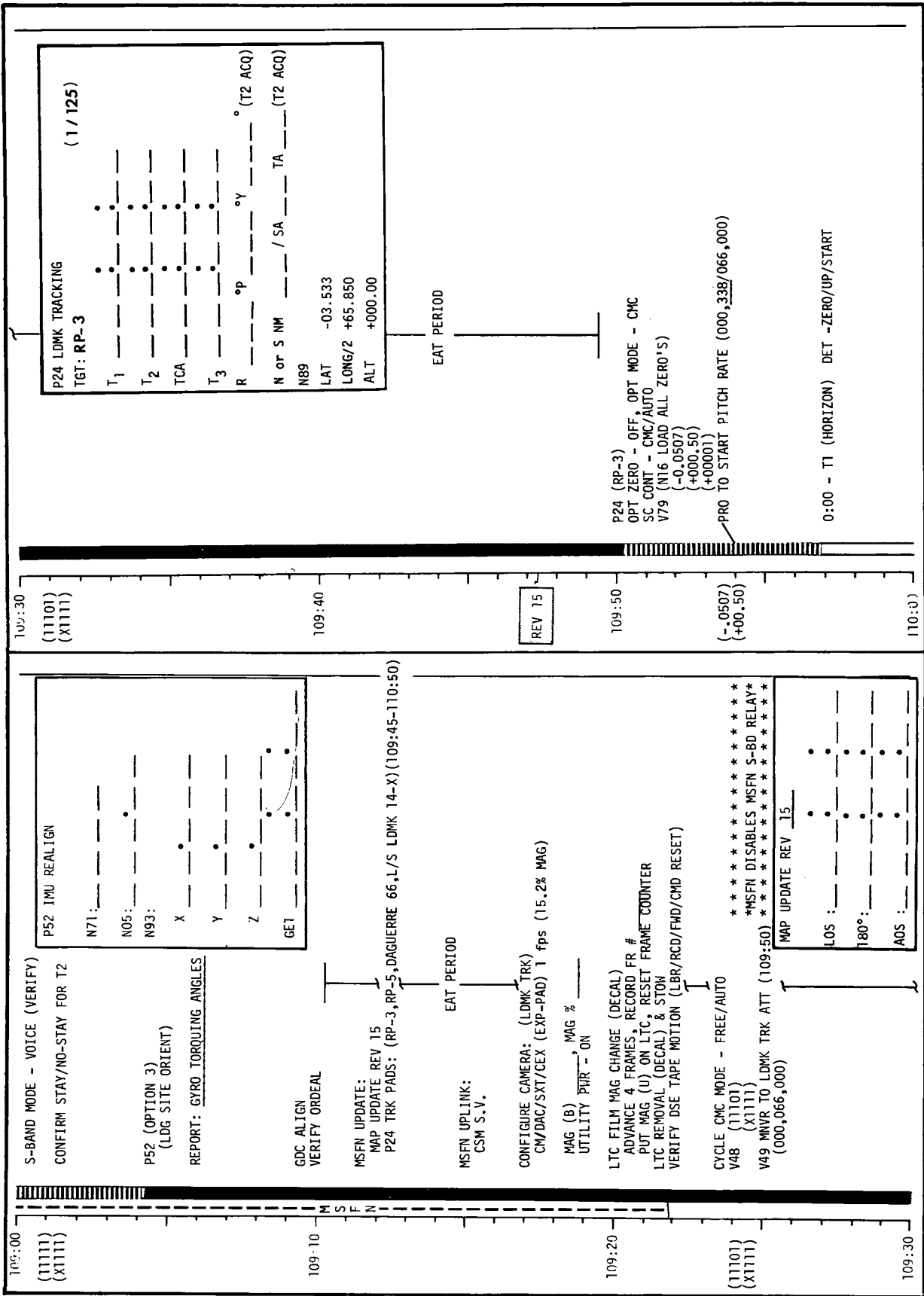
DUMP DSE

STAY/NO-STAY FOR T1

1923

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	108:00 - 109:00	5/14	3-119

CSM FLIGHT PLAN



LM FLIGHT PLAN

NOTES

0323 CST

CDR

LMP

109:00 (22112)	P12 POWERED ASCENT STAY/NO-STAY FOR T2 LR-OFF	RECORDER-OFF LUNAR SURFACE CHECKLIST	
:10	DOFF HELMET & GLOVES	BAT 5&6 - OFF DOFF HELMET & GLOVES REPORT DEDA 047,053	
:20	P57 IMU ALIGN OPTION 3 REFSMMAT A/T 1-GRAVITY & LM Z AXIS (LDG SITE ORIENTATION)	AGS LUNAR SURFACE GYRO CALIBRATION, BIOMED - RIGHT CONFIGURE COMM FOR LUNAR SURFACE STEERABLE ANT: P 119, Y-39	
109:30	INSTALL WINDOW SHADES	TERMINATE AGS GYRO CALIBRATION	
:40	P57 LUNAR SURFACE ALIGN OPTION 3 REFSMMAT A/T 2 - TWO CELESTIAL BODIES (LDG SITE ORIENTATION)		
:50	P57 LUNAR SURFACE ALIGN OPTION 3 REFSMMAT A/T 2 - TWO CELESTIAL BODIES (LDG SITE ORIENTATION)	ALIGN AGS TO PGNS STORE AZIMUTH	
110:00	STOW WINDOW SHADES	AGS TO STBY	

STAY/NO-STAY FOR T2

COPY AGS AZIMUTH
UPDATE TO CSM
MAP UPDATE REV 15
P24 TRACK PADS
UPLINK TO CSM
CSM S.V.

DISABLE MSFN
S-BD RELAY

STAY/NO-STAY FOR
POWER DOWN

UPLINK TO LM
RLS (IF REQ'D)
CSM S.V.

MCC-H
1923

2023

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	109:00 - 110:00	5/14-15	3-121

CSM FLIGHT PLAN



3:50 - DAC - ON
 4:50 - T2 (LDMK ACQ) OPT MODE - MAN, TAKE MARKS 10 SEC APART
 6:30 - TCA
 7:18 - T3 (LDMK LOSS) DAC - OFF
 P24 (RP-5)
 V79E, PRO, PRO
 OPT ZERO - OFF, OPT MODE - CMC
 0:00 - T1 (HORIZON) DET - ZERO/UP/START
 ACQ MSFN OMNI D

3:50 - DAC - ON
 4:50 - T2 (LDMK ACQ) OPT MODE - MAN, TAKE MARKS 10 SEC APART
 6:30 - TCA
 7:18 - T3 (LDMK LOSS) DAC - OFF

P24 (DAGUERRE 66)
 V79E, PRO, PRO
 OPT ZERO - OFF, OPT MODE - CMC

0:00 - T1 (HORIZON) DET -ZERO/UP/START

P24 LDMK TRACKING
 TGT: **RP-5** (1/250)

T1 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 T2 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 TCA _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 T3 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 R _____ °P _____ °Y _____ ° (T2 ACQ)

N of S NM _____ / SA _____ TA _____ (T2 ACQ)
 N89
 LAT -10.567
 LONG/2 +49.700
 ALT +000.00

P24 LDMK TRACKING
 TGT: **DAGUERRE 66** (1/250)

T1 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 T2 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 TCA _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 T3 _____ ° _____ ' _____ " _____ ° (T2 ACQ)
 R _____ °P _____ °Y _____ ° (T2 ACQ)

N of S NM _____ / SA _____ TA _____ (T2 ACQ)
 N89
 LAT -11.717
 LONG/2 +16.600
 ALT +000.00

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-122

LM FLIGHT PLAN

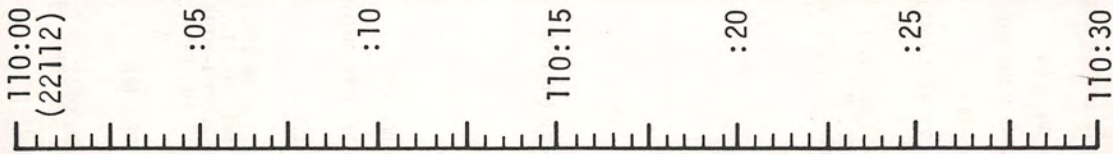
MCC-H

UPDATE TO LM
P22 ACQ TIME

2023

RECORD PCM LBR
ON DSE DURING P24

0423 CST



CDR

LMP

CONFIGURE FOR PARTIAL POWER DOWN (BIOMED - AS DESIRED)

DESCRIBE AND PHOTOGRAPH LUNAR SURFACE
REPORT FEATURES SEEN DURING DESCENT
DETERMINE LM LOCATION WITH MCC-H
REPORT ANGLE OF +Z WITH RESPECT TO WEST

EAT PERIOD

NOTES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	110:00 - 110:30	5/15	3-123

2053

CSM FLIGHT PLAN

110:30
 (-.0507)
 (+00.50)

M S F N

110:40

110:50

(11102)
 (X1111)

111:00

3:50 - DAC - ON

4:50 - T2 (LDMK ACQ) OPT MODE - MAN, TAKE MARKS 10 SEC APART

6:30 - TCA

7:18 - T3 (LDMK LOSS) DAC - OFF

P24 (L/S LDMK 14-X)
 W79E, PRO, PRO
 OPT ZERO - OFF, OPT MODE - CMC

0:00 - T1 (HORIZON) DET - ZERO/UP/START

3:50 - DAC - ON

4:50 - T2 (LDMK ACQ) OPT MODE - MAN, TAKE MARKS TO SEC APART

6:30 - TCA

7:18 - T3 (LDMK LOSS) DAC - OFF
 V48 (11102) (X1111)
 V49 MANVR TO ANTI-SOLAR PT ATT (111:05)
 (197,251,346) HGA P -41, Y 156

RNDZ XPDR - OFF

RECORD MAG %

P24 LDMK TRACKING
 TGT: L/S LDMK 14-X (1/60)

T ₁	---	---	---	---	---
T ₂	---	---	---	---	---
TCA	---	---	---	---	---
T ₃	---	---	---	---	---
R	ep	oy	°	(T2 ACQ)	

N or S		NM		/	SA	/	TA	TA	(T2 ACQ)
N89	14-1	14-2	14-3	14-4					
LAT	-04.046	-03.610	-03.919	-03.470					
LONG/2	-07.800	-07.659	-07.570	-07.445					
ALT	-000.44	-000.15	-000.38	-000.87					

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-124

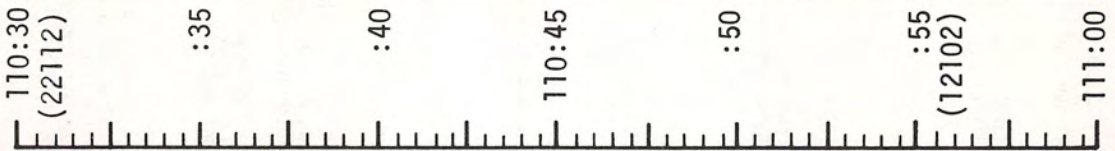
LM FLIGHT PLAN

MCC-H

UPDATE TO LM
LM CONSUMABLES

2053

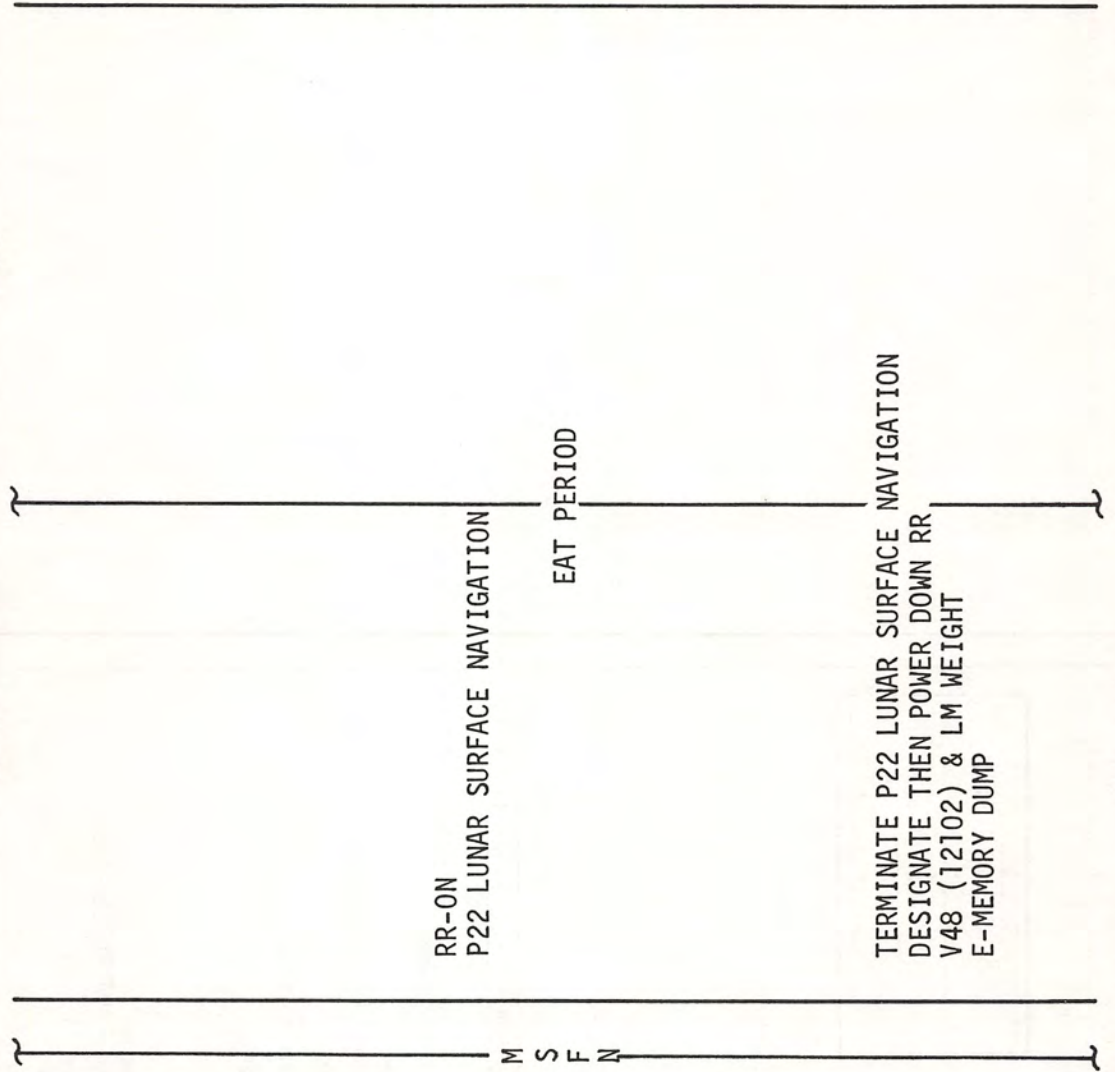
0453 CST



CDR

LMP

NOTES



UPDATE TO LM
DAP LOAD

2123

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	110:30 - 111:00	5/15	3-125

CSM FLIGHT PLAN

111:00
(11102)
(X1111)

CONFIGURE CAMERA: (GEGENSCHIEIN)
INSTALL CAMERA SHIELD
CH4/DAC/18/VHBM-BRKT, MIR, CONT (T1, 1/500, ∞) 24fps (7.4% MAG)

MAG (J) _____, MAG % _____
UTILITY PHR - ON

111:10
(11101)
(X1111)

V48 (11101)
(X1111)

MAP UPDATE REV 16

LOS : • • • • •

180°: • • • • •

AOS : • • • • •

MSFN UPDATE:
MAP UPDATE REV 16
ZERO PHASE PADS (111:45, 112:10)

GEGENSCHIEIN PHOTOGRAPHY

VERIFY DSE TAPE MOTION (LBR/RCD/FMD/CMD RESET)

INHIBIT - A3, C4, B3, D4 THRUSTERS
DAC - ON AT 24fps FOR 2 SEC, CHANGE TO TIME & 1/60
DIM INTERIOR LIGHTS
2 FRAMES, EXP TIME 20 SEC
1 FRAME, EXP TIME 5 SEC
CHANGE TO 24fps & 1/500, RUN OAC FOR 2 SEC, LIGHTS UP

ENABLE - A3, C4, B3, D4 THRUSTERS
V49 MNVR TO MIDWAY PT ATT (111:27)
(197,261,346)

INHIBIT - A3, C4, B3, D4 THRUSTERS
DAC - ON AT 24fps FOR 2 SEC, CHANGE TO TIME & 1/60
DIM INTERIOR LIGHTS
2 FRAMES, EXP TIME 20 SEC
1 FRAME, EXP TIME 5 SEC

111:20

111:30

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-126

LM FLIGHT PLAN

NOTES

CDR

LMP

0523 CST

MISSION

EDITION

DATE

TIME

DAY/REV

PAGE

APOLLO 14

FINAL (JAN)

DECEMBER 2, 1970

111:00 - 111:30

5/15

3-127

MCC-H

2123

UPLINK TO LM
INITIATE GRAVITY
MEASUREMENT TEST

DUMP DSE

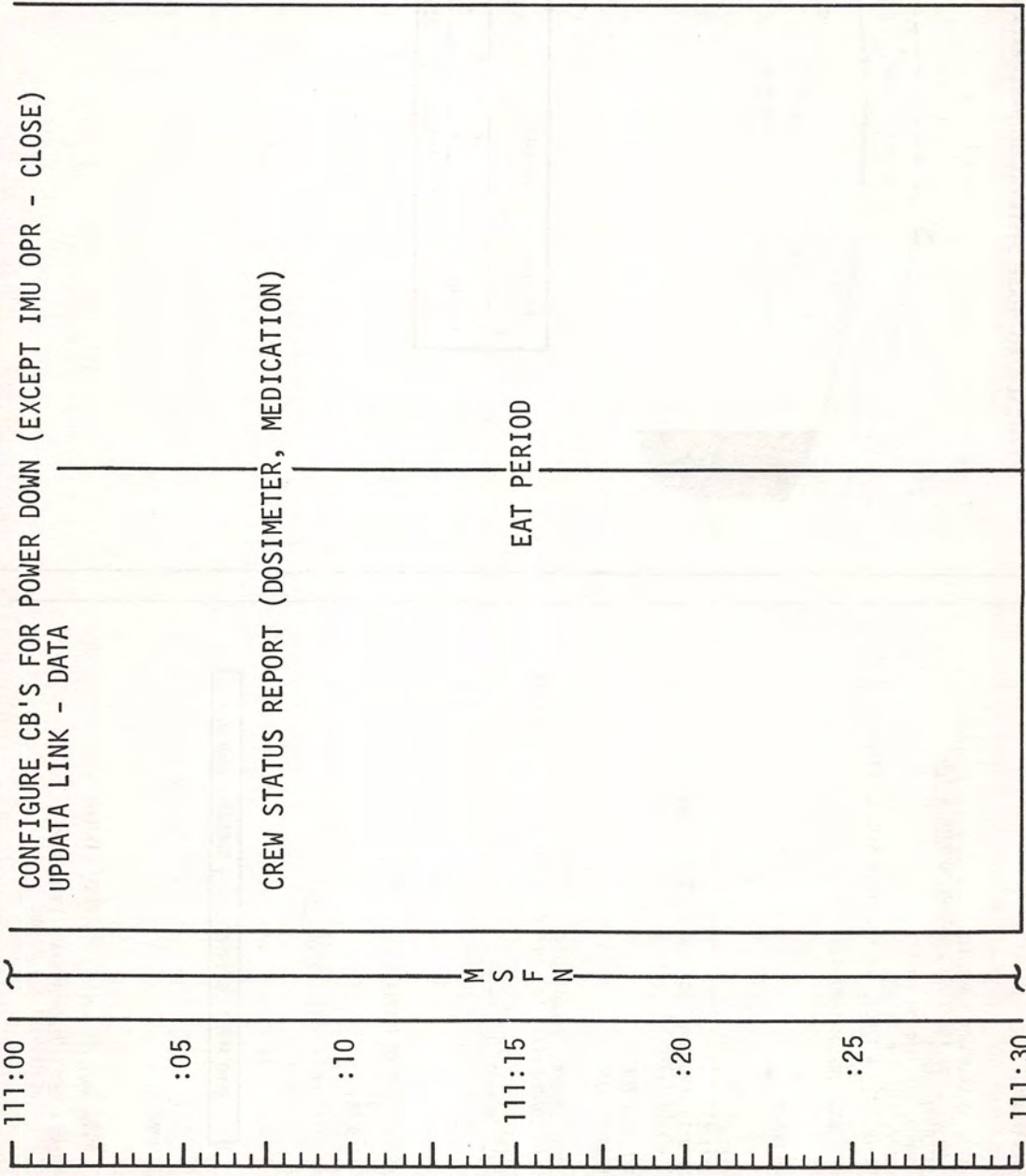
UPDATE TO LM

TIME OF LIFT-OFF
FOR REV 16 THRU 19

UPDATE TO CSM

MAP UPDATE REV 16

ZERO PHASE PADS



2153

CSM FLIGHT PLAN

111:30
 (11101)
 (X1111)

CHANGE TO 24fps & 1/500, RUN DAC FOR 2 SEC, LIGHTS UP
 ENABLE - A3,C4,B3,D4 THRUSTERS
 V49 MNVR TO MOULTON PT ATT (111:34)
 (197,272,346)

INHIBIT - A3,C4,B3,D4 THRUSTERS
 DAC - ON AT 24fps FOR 2 SEC, CHANGE TO TIME & 1/60
 DIM INTERIOR LIGHTS
 2 FRAMES, EXP TIME 20 SEC
 1 FRAME, EXP TIME 5 SEC
 CHANGE TO 24fps & 1/500, RUN DAC FOR 2 SEC, LIGHTS UP
 ENABLE - A3,C4,B3,D4 THRUSTERS

RECORD MAG % _____

V48 (11102)
 (X1111)

V49 MNVR TO ZERO PHASE TGT 1 & 2 ATT (111:50)
 (196.8,358.1,359.3)

O₂ FUEL CELL PURGE
 WASTE WATER DUMP

CONFIGURE CAMERA: (ZERO PHASE)
 CM3/DC/80/MBW-BRKT, IVL, PCM CABLE (f5.6,1/250,[∞]) (46 FR)

MAG (R) _____, FR # _____

SC CONT - CMC/AUTO (VERIFY)
 V79 (-0.0507)
 (+000.50)
 (+00001)
 PRO TO START PITCH RATE (196.8,268/358.1,359.3)

SELECT OMNI A

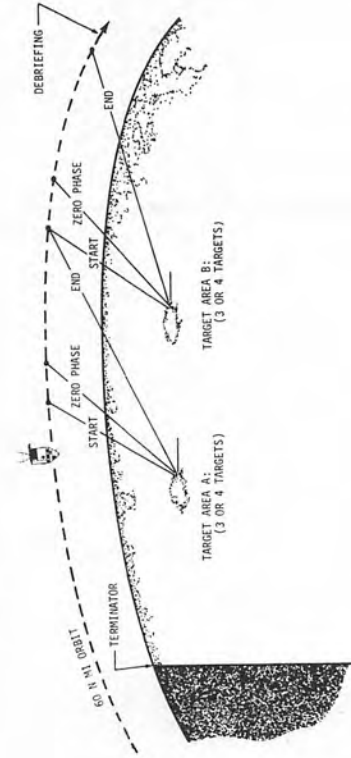
111:50
 (-.0507)
 (+00.50)

ZERO PHASE OBSERVATIONS - BACKWARD LOOKING

111:58 TERMINATE WASTE WATER DUMP
 111:58:40 - DET - ZERO/UP/START (T START)
 REVIEW TGT 1 & 2 MAPS

112:00

TYPICAL ZERO PHASE OBSERVATION PASS - BACKWARD LOOKING



ZERO PHASE PAD (BACKWARD)

R --- °P --- °Y --- °

T START: --- ° --- ° --- °

START DET AT 1ST TGT AREA ACQ -5 MIN

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE (JAN)	DECEMBER 23, 1970	3-128

JANUARY 11, 1971.

CRB
 11/17/70

LM FLIGHT PLAN

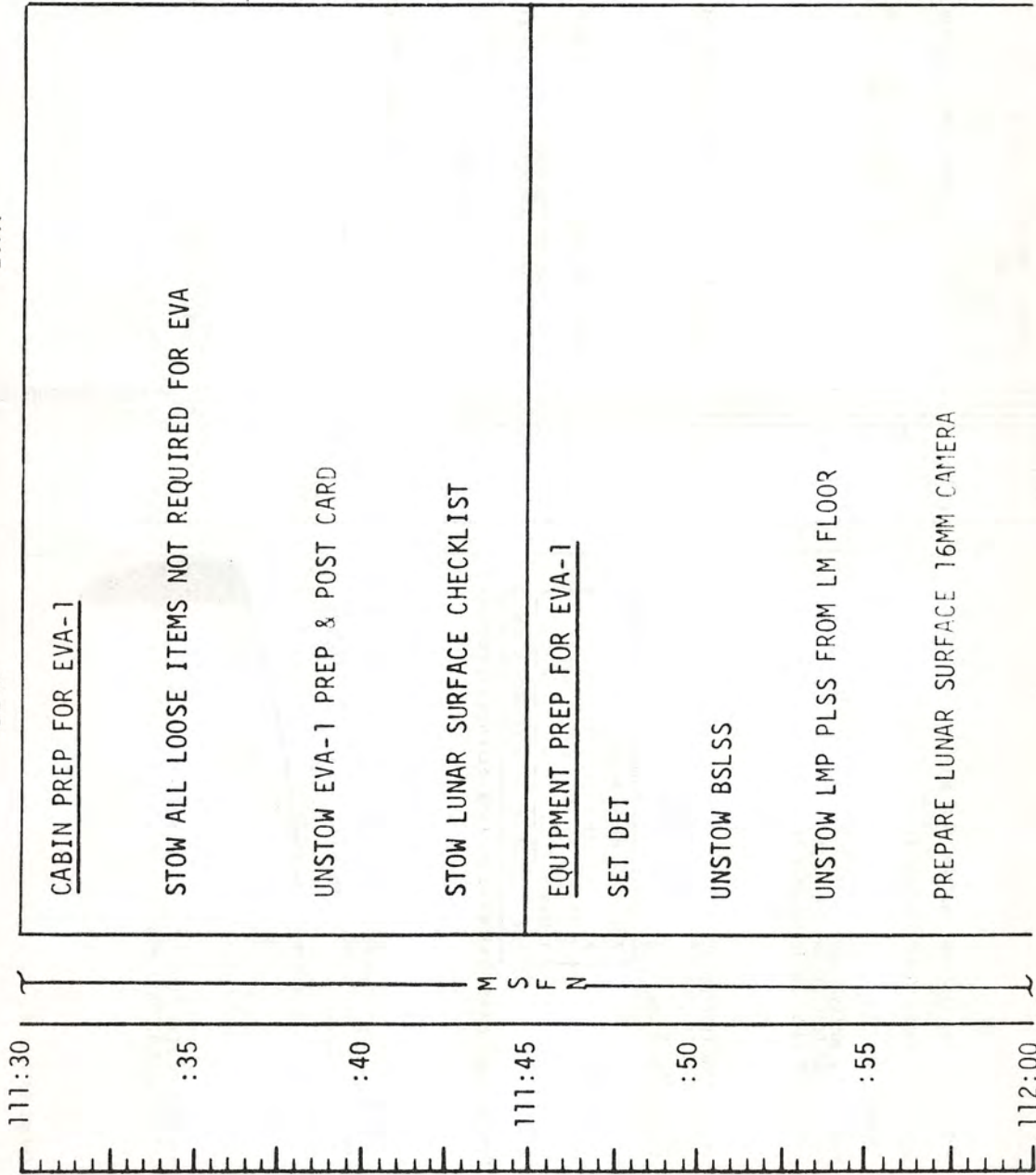
MCC-H

0553 CST

CDR

LMP

NOTES



2153

2223

-1:45

-1:40

-1:30

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	111:30 - 112:00	5/15-16	3-129

CSM FLIGHT PLAN

112:00 (-.0507) (+00.50)

5:00 - DC - ON, START OBSERVATIONS (TGT AREA 1)
 6:40 - ZERO PHASE POINT (TGT AREA 1)
 ACQ MSFN OMNI A

8:24 - STOP OBSERVATIONS
 START OBSERVATIONS (TGT AREA 2)
 8:54 - ZERO PHASE POINT (TGT AREA 2)

11:54 - STOP OBSERVATIONS
 DEBRIEF (~30 SEC)
 12:24 - DC - OFF
 ACQ MSFN HGA P -76, Y 80

ZERO PHASE PAD (FORWARD)

R °p °y

T START: ° °

START DET AT 1ST TGT AREA ACQ -5 MIN

TYPICAL ZERO PHASE OBSERVATION PASS - FORWARD LOOKING

112:10

112:20

112:30 (11102) (X1111)

ZERO PHASE OBSERVATIONS - FORWARD LOOKING

SC CONT - CMG/AUTO (VERIFY)
 V79 (-.0507)
 (+000.50)
 (+00001)
 PRO TO START PITCH RATE (346.9, 276/239.8, 358.5)

112:35:38 - DET - ZERO/UP/START (T START)
 REVIEW TGT 3 & 4 MAPS

5:00 - DC - ON, START OBSERVATIONS (TGT AREA 3)

8:40 - ZERO PHASE POINT (TGT AREA 3)

9:32 - STOP OBSERVATIONS
 START OBSERVATIONS (TGT AREA 4)

11:16 - ZERO PHASE POINT (TGT AREA 4)

12:02 - STOP OBSERVATIONS
 DEBRIEF (~30 SEC)

12:32 - DC - OFF, REMOVE CAMERA FROM WINDOW

RECORD FR # _____

V48 (11111)
 (X1111)

V49 MNVR TO ZODIACAL LIGHT ATT (113:10)
 (180,200,000) OMNI C

CONFIGURE CAMERA: (ZODIACAL LIGHT)
 CM4/DAC/18/VHBM-BRKT, MIR, CONT (T1,1/500,∞) 24 fps (3% MAG)

MAG (J) MAG % _____
 UTILITY PWR - ON

112:40

112:50 (11111) (X1111)

113:00

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-130

LM FLIGHT PLAN

MCC-H

CDR

LMP

NOTES

0623 CST

112:00

DUMP DSE

:10

DEPLOY EVA ANTENNA

UNSTOW AND DON LUNAR BOOTS

UNSTOW AND CHECK BOTH OPS

-1:20

TERMINATE
GRAVITY
MEASUREMENT

POWER DOWN IMU LGC TO STANDBY
UPDATE LINK - OFF

-1:10

M S F N

112:30

PLSS DONNING

CONFIGURE LMP PLSS/OPS FOR DONNING

LMP DON PLSS/OPS

CONFIGURE CDR PLSS/OPS FOR DONNING

CDR DON PLSS/OPS

UNSTOW RCU'S

VERIFY RCU CONTROLS AND CONNECT TO PLSS/PGA

-1:00

:40

:50

PLSS COMM CHECK

TV - ON, FM VOICE CHECK, CONFIGURE EVA COMM MODE
BIOMED - OFF, RECORDER - ON
VERIFY PLSS COMM AND TM WITH MCC-H
TV - OFF
FINAL SYSTEMS PREP

- :40

113:00

- :30

2223
ACTUAL 2240

2308

2311

2318

2326

2323

116 488K-MND

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	112:00 - 113:00	5/16	3-131

CSM FLIGHT PLAN

MSFN UPDATE:
ZODIACAL PHOTO PAD
MAP UPDATE REV 17

MAP UPDATE REV 17

LOS : _____
180° : _____
AOS : _____

ZODIACAL LIGHT PHOTO PAD(SR)
T START : _____
START DET AT SUNRISE -30 MIN

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507)
(+005.00)
(+00001)
PRO TO START PITCH RATE (180, 352/200, 000)

ZODIACAL LIGHT PHOTOGRAPHY

113:17:34 - DET - ZERO/UP/START (T START) (SR-30 MIN)
INHIBIT - A3,C4,B3,D4 THRUSTERS
DAC - ON AT 24fps FOR 2 SEC
CHANGE FRAME RATE TO TIME & SHUTTER SPEED TO 1/60
VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)
DIM INTERIOR LIGHTS

5:00 - 1 FRAME, 20 SEC EXP TIME (SR -25:00)
1 FRAME, 10 SEC EXP TIME
1 FRAME, 5 SEC EXP TIME

8:20 - 1 FRAME, 20 SEC EXP TIME (SR -21:40)
1 FRAME, 10 SEC EXP TIME
1 FRAME, 5 SEC EXP TIME

11:40 - 1 FRAME, 16 SEC EXP TIME (SR -18:20)
1 FRAME, 8 SEC EXP TIME
1 FRAME, 4 SEC EXP TIME

113:30
(-0.0507)
(+005.00)

113:40

REV 17

113:50

114:00

15:00 - 1 FRAME, 16 SEC EXP TIME (SR -15:00)
1 FRAME, 8 SEC EXP TIME
1 FRAME, 4 SEC EXP TIME

18:20 - 1 FRAME, 8 SEC EXP TIME (SR -11:40)
1 FRAME, 4 SEC EXP TIME
1 FRAME, 2 SEC EXP TIME

21:40 - 1 FRAME, 8 SEC EXP TIME (SR -8:20)
1 FRAME, 4 SEC EXP TIME
1 FRAME, 2 SEC EXP TIME

25:00 - 1 FRAME, 4 SEC EXP TIME (SR -5:00)
1 FRAME, 2 SEC EXP TIME
1 FRAME, 1 SEC EXP TIME
SET FRAME RATE TO 1fps

29:00 - DAC ON FOR 1 SEC (SR -1:00)
CHANGE SHUTTER TO 1/125
29:15 - DAC ON FOR 1 SEC (SR -0:45)
CHANGE SHUTTER TO 1/250
29:30 - DAC ON FOR 1 SEC (SR -0:30)
CHANGE SHUTTER TO 1/500
29:45 - DAC ON FOR 1 SEC (SR -0:15)
CHANGE TO 24 FPS AND RUN DAC FOR 2 SEC PRIOR TO SUNRISE LIGHTS UP

ENABLE - A3,C4,B3,D4 THRUSTERS
RECORD MAG % _____

ZODIACAL LIGHT PHOTOGRAPHY

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-132

LM FLIGHT PLAN

MCC-H

UPDATE TO CSM
ZODIACAL LIGHT
PHOTO PAD
MAP UPDATE REV 17

CDR

LMP

NOTES

0723 CST

113:00

:10

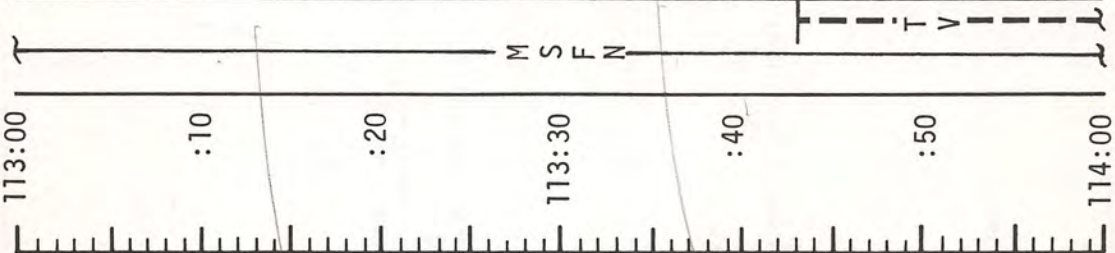
:20

113:30

:40

:50

114:00



OPS CONNECT LMP UNSTOW OPS AND CONNECT TO RCU & PLSS CDR UNSTOW OPS AND CONNECT TO RCU & PLSS		- :30
HELMET/GLOVES DOWNING DON HELMETS AND LEVA'S STOW LM HOSES VERIFY PGA CONFIGURATION VERIFY CB CONFIGURATION FOR EVA DON GLOVES		- :20
PRESSURE INTEGRITY CHECK PLSS O ₂ ON		- :10
CABIN DEPRESS DEPRESS CABIN TO 3.5 PSIA START EVA WATCH FWD DUMP VALVE - OPEN PARTIALLY OPEN FORWARD HATCH FINAL PREP FOR EGRESS		0:00 START EVA
PLSS FEEDWATER - OPEN, FORWARD HATCH - OPEN VERIFY CWEA & PGA STATUS RELEASE PLSS ANTENNAS, LOWER VISOR		0:10
CDR EGRESS EQUIP JETT, DEPLOY LEC & MESA, DESCEND TO SURFACE	ASSIST AND MONITOR CDR PASS LEC TO CDR, TV-ON	0:10
ENVIRONMENT FAMILIARIZATION	LMP EGRESS	0:20
MET OFFLOAD UNSTOW AND MOUNT TV ON TRIPOD	CLOSE HATCH AND DESCEND ENVIRONMENT FAMILIARIZATION	0:30

- :30

- :20

- :10

0:00 START EVA

0:10

0:20

0:30

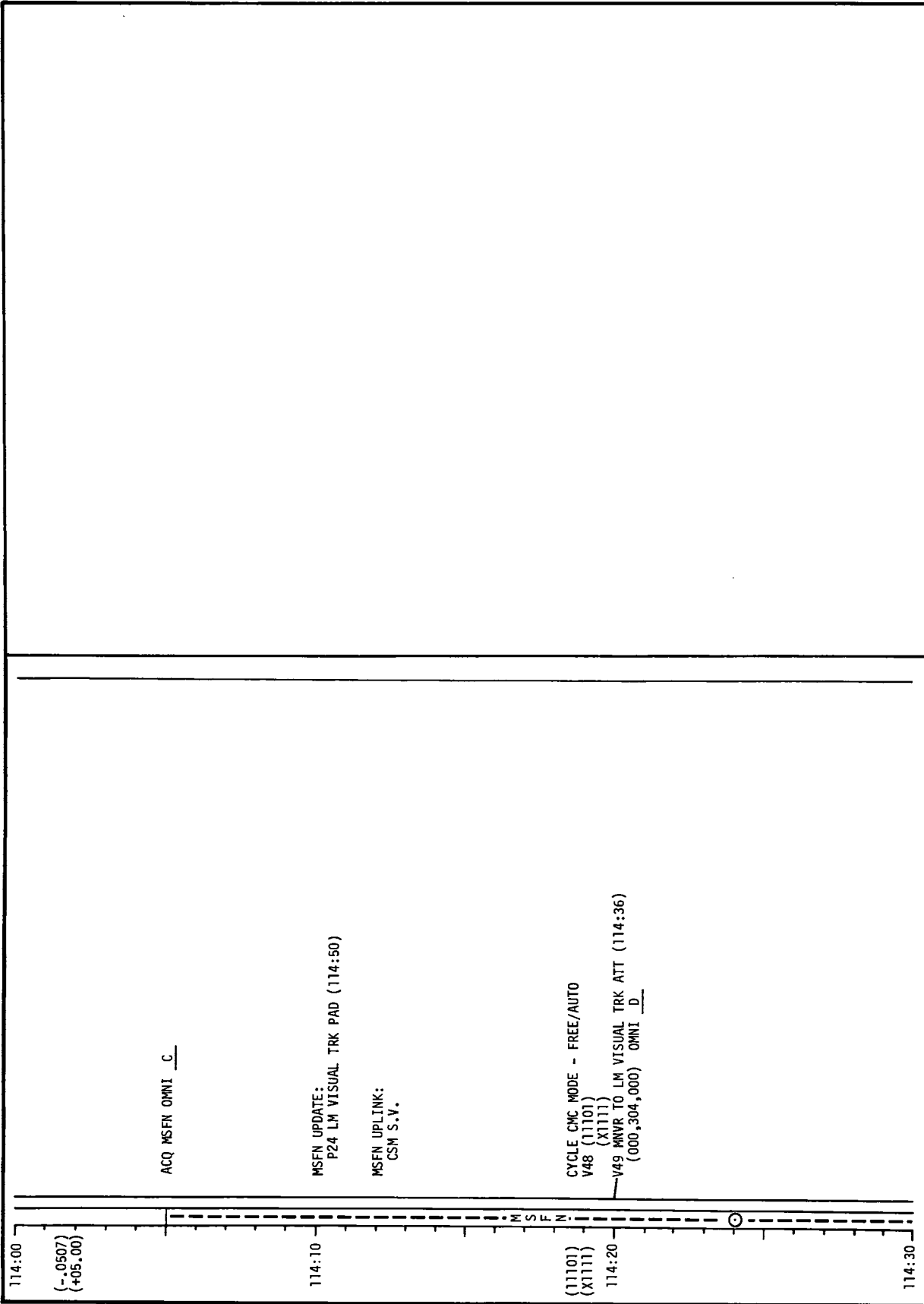
0014

1224

8023

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	113:00 - 114:00	5/16-17	3-133

CSM FLIGHT PLAN



114:00
 (-.0507)
 (+05.00)
 114:10
 114:20
 114:30

ACQ MSFN OMNI C

MSFN UPDATE:
 P24 LM VISUAL TRK PAD (114:50)

MSFN UPLINK:
 CSM S.V.

CYCLE CMC MODE - FREE/AUTO
 V48 (11101)
 (X1111)
 V49 MWVR TO LM VISUAL TRK ATT (114:36)
 (000,304,000) OMNI D

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-134

LM FLIGHT PLAN

MCC-H

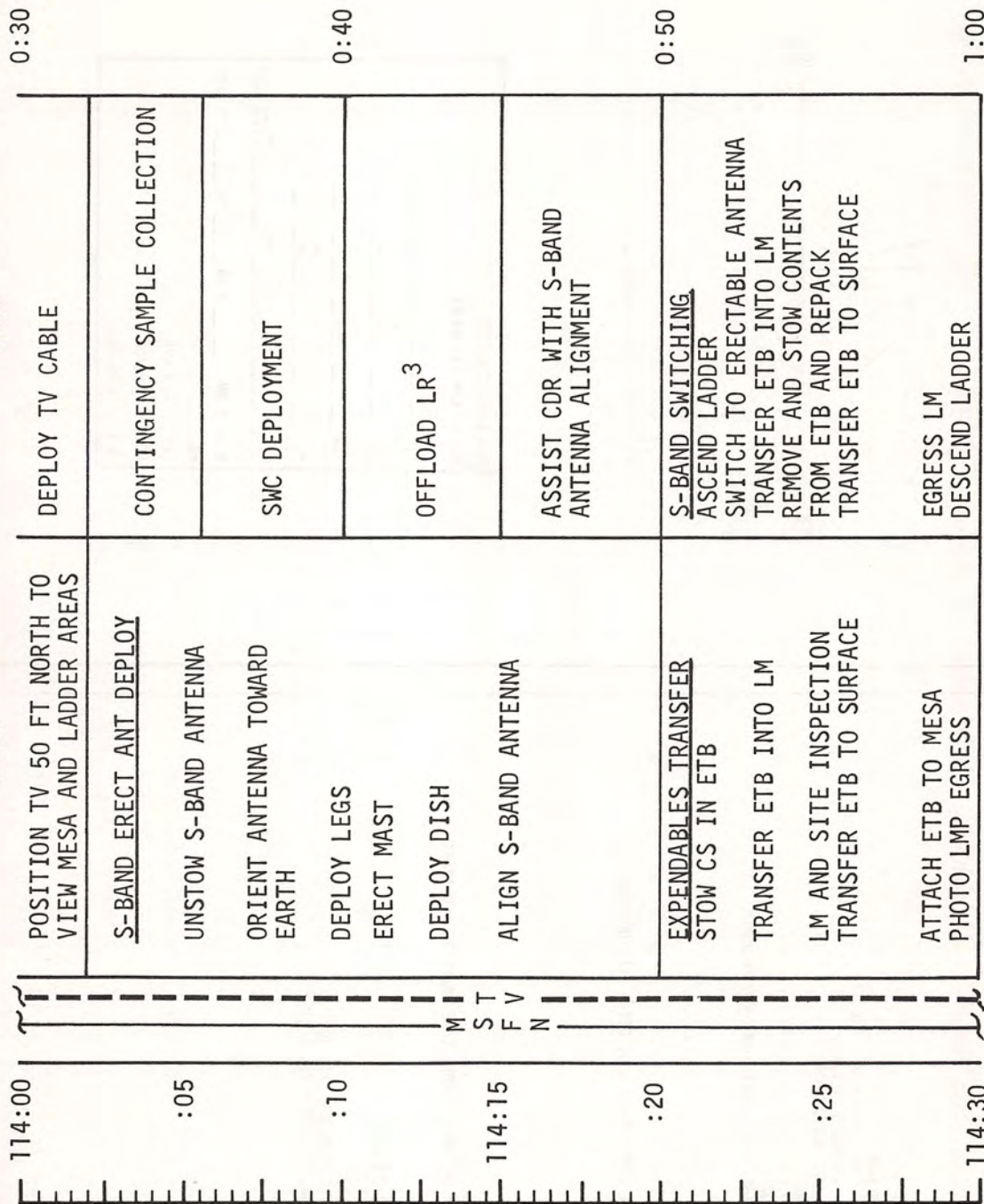
6023

0823 CST

CDR

LMP

NOTES



UPDATE TO CSM
P24 LM VISUAL TRACK
PAD

UPLINK TO CSM
CSM S.V.

6053

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	114:00 - 114:30	5/17	3-135

CSM FLIGHT PLAN

114:30

11101
(X1111)

P24 (LM VISUAL)
OPT ZERO - OFF, OPT MODE - CMC
SC CONT - CMC/AUTO (VERIFY)
V79 (NT6 LOAD ALL ZERO'S)
(-0.0507)
(+000.50)
(+00001)

PRO TO START PITCH RATE (000,000/304,000)

114:40

0:00 - T1 (HORIZON-LM ACQ) DET - ZERO/UP/START

5:00 - T2 OPT MODE - MAN, TAKE MARKS TO SEC APART

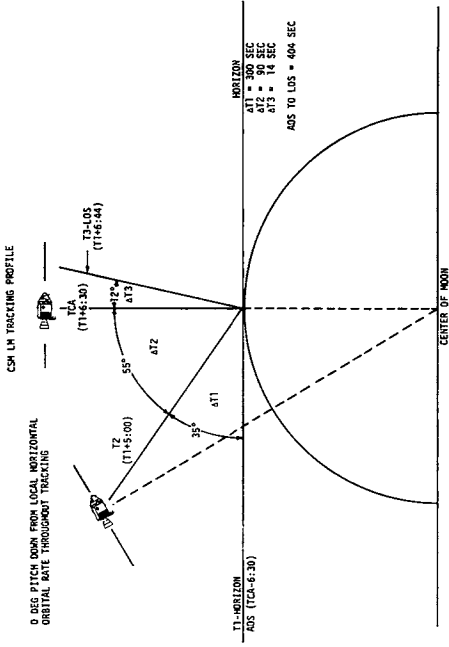
6:30 - TCA
6:44 - T3 (LM LOSS)
V48 (11111)
(X1111)

V49 MNVR TO COMM ATT (114:56)
(060,268,000) HGA P 29, Y 236

114:50

11111
(X1111)

115:00



P24 LDMK TRACKING	
TGT: LM VISUAL	
T1	_____ °
T2	_____ °
TCA	_____ °
T3	_____ °
R	_____ °
N or S	_____ / SA _____ TA _____
NB9	
LAT	-03.672
LONG/2	-08.732
ALT	-000.76

MISSION	EDITION	DATE	PAGE
APOLLO 14	Orange	DECEMBER 1968	3-136

January 11, 71

chart
B
11/11/71

LM FLIGHT PLAN

MCC-H

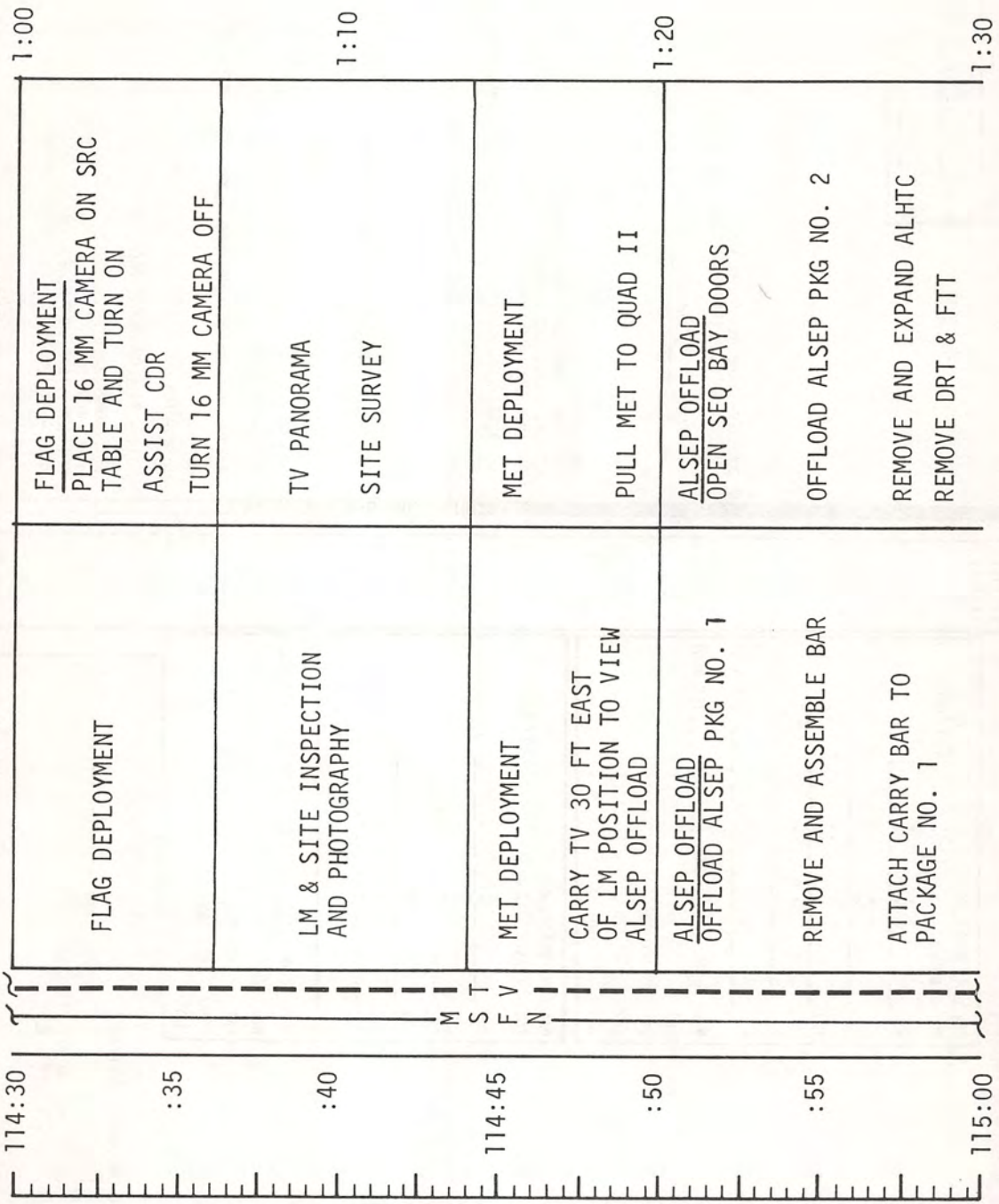
RECORD PCM LBR
ON DSE DURING P24
0053

0853 CST

CDR

LMP

NOTES



DUMP DSE

0123

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	114:30 - 115:00	5/17	3-137

LM FLIGHT PLAN

MCC-H

RECORD RTG REPORT
 UPDATE TO CSM **0123**
 P24 TRACK PADS
 MAP UPDATE REV 18
 PRELIM TEI 34 PAD

0923 CST



CDR

TIP PKG NO. 2 AND POSITION FOR FUELING, TAKE 70MM PHOTOS IF TIME PERMITS CARRY TV 50 FT NORTH OF LM BW TV CAM TO +Y FOOTPAD POSITION TO VIEW ALSEP SITE UNSTOW THUMPER/GEOPHONE AND PLACE ON MET

ALSEP TRAVERSE
 CARRY LR³, PULL MET

DESCRIBE MET HANDLING AND STABILITY

ALSEP SITE SURVEY
 16 MM CAMERA - ON

ALSEP DEPLOYMENT
 PLACE SUBPALLET ABOUT 10 FEET NE OF C/S

PACK SURFACE FOR PSE STOOL
 10 FEET NORTH

PSE OFFLOAD
 16 MM CAMERA - OFF

SUNSHIELD DEPLOYMENT

ALSEP ANTENNA INSTALLATION

LMP

REPORT: FUEL RTG, DRT, & FIT TEMP
 PULL MET TO MESA
 DISCARD TV BRACKET
 PUT 70MM CAMERA ON MET
 PLACE 16MM CAMERA ON STAFF UNSTOW AND OPEN SRC 1
 UNSTOW CLOSEUP STEREO CAMERA

ALSEP TRAVERSE
 CARRY ALSEP

ALSEP SITE SURVEY

ALSEP DEPLOYMENT
 POSITION PKG NO. 1 & BAR 10 FEET WEST OF PKG NO. 2

THUMPER/GEOPHONE OFFLOAD

MORTAR PACKAGE DEPLOYMENT

CPLLEE DEPLOYMENT

SIDE/CCIG DEPLOYMENT

NOTES

1:30

1:40

1:50

2:00

2:10

2:20

2:30

0723

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	115:00 - 116:00	5/17-18	3-139

LM FLIGHT PLAN

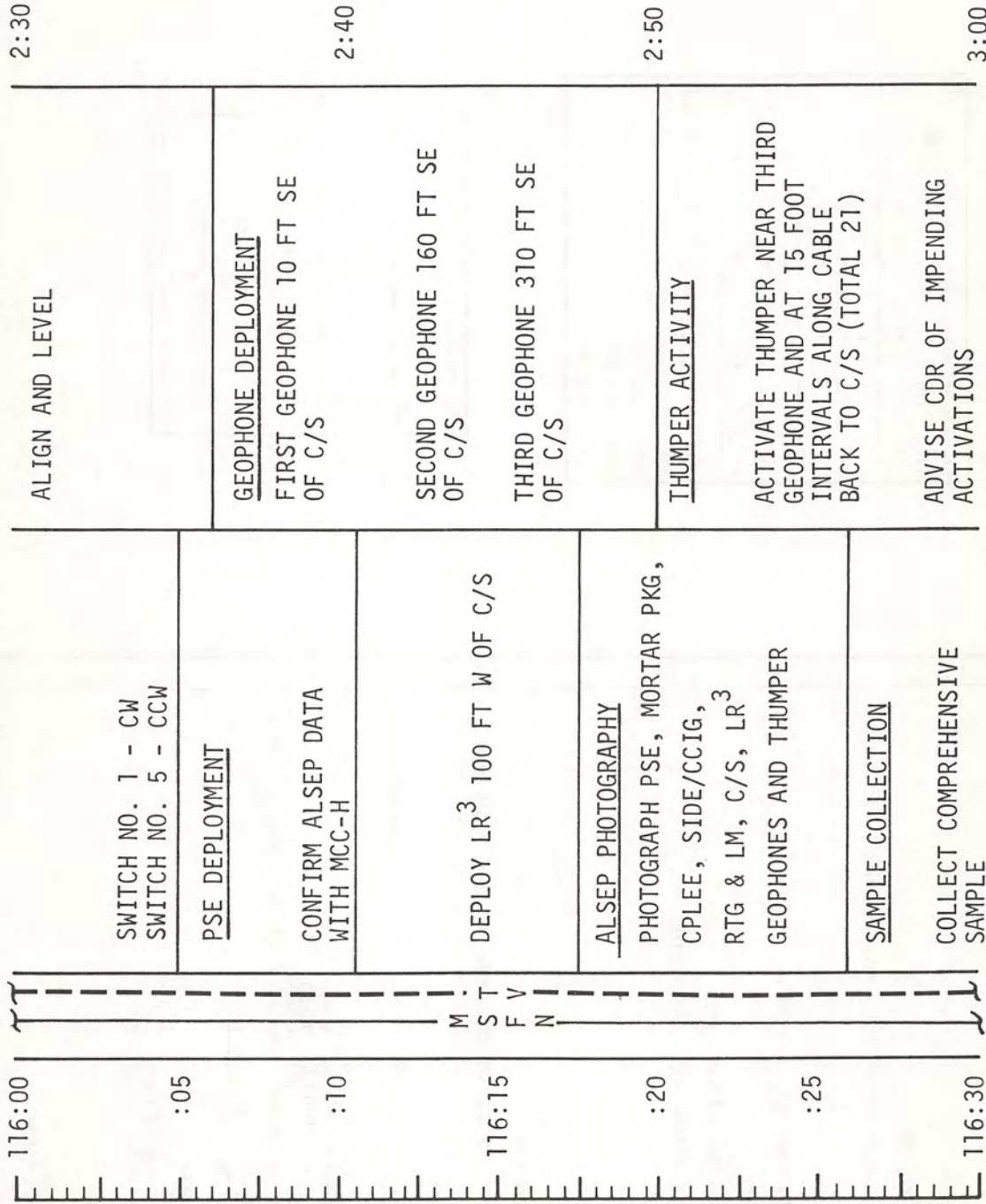
1023 CST

MCC-H

CDR

LMP

NOTES



RECORD PCM LBR ON DSE DURING P24

0223

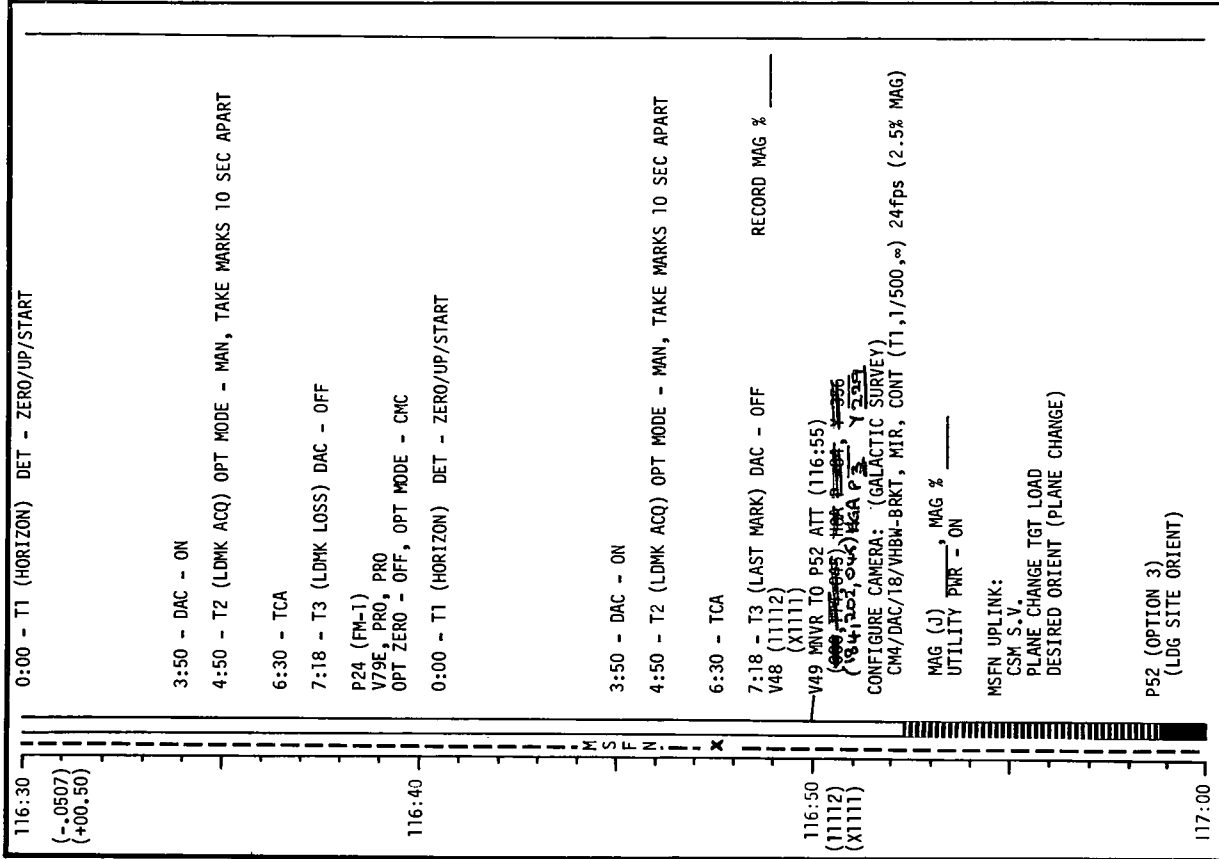
CONFIRM ALSEP DATA

UPDATE TO CSM
MAP UPDATE REV 19
PLANE CHANGE MNVR
PAD

0253

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	116:00 - 116:30	5/18	3-141

CSM FLIGHT PLAN



P24 LDMK TRACKING (1/60)

TGT: FM-1

T₁ _____

T₂ _____

TCA _____

T₃ _____

R _____ °P _____ °Y _____ ° (T2 ACQ)

N or S NM _____ / SA _____ TA _____ (T2 ACQ)

N89

LAT -03.246

LONG/2 -08.659

ALT +000.00

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

MISSION	EDITION	DATE	PAGE
APOLLO 14	CH.C	DECEMBER 5, 1970	3-142
		JANUARY 18, 71	

CH.C
11/18/71

LM FLIGHT PLAN

1053 CST

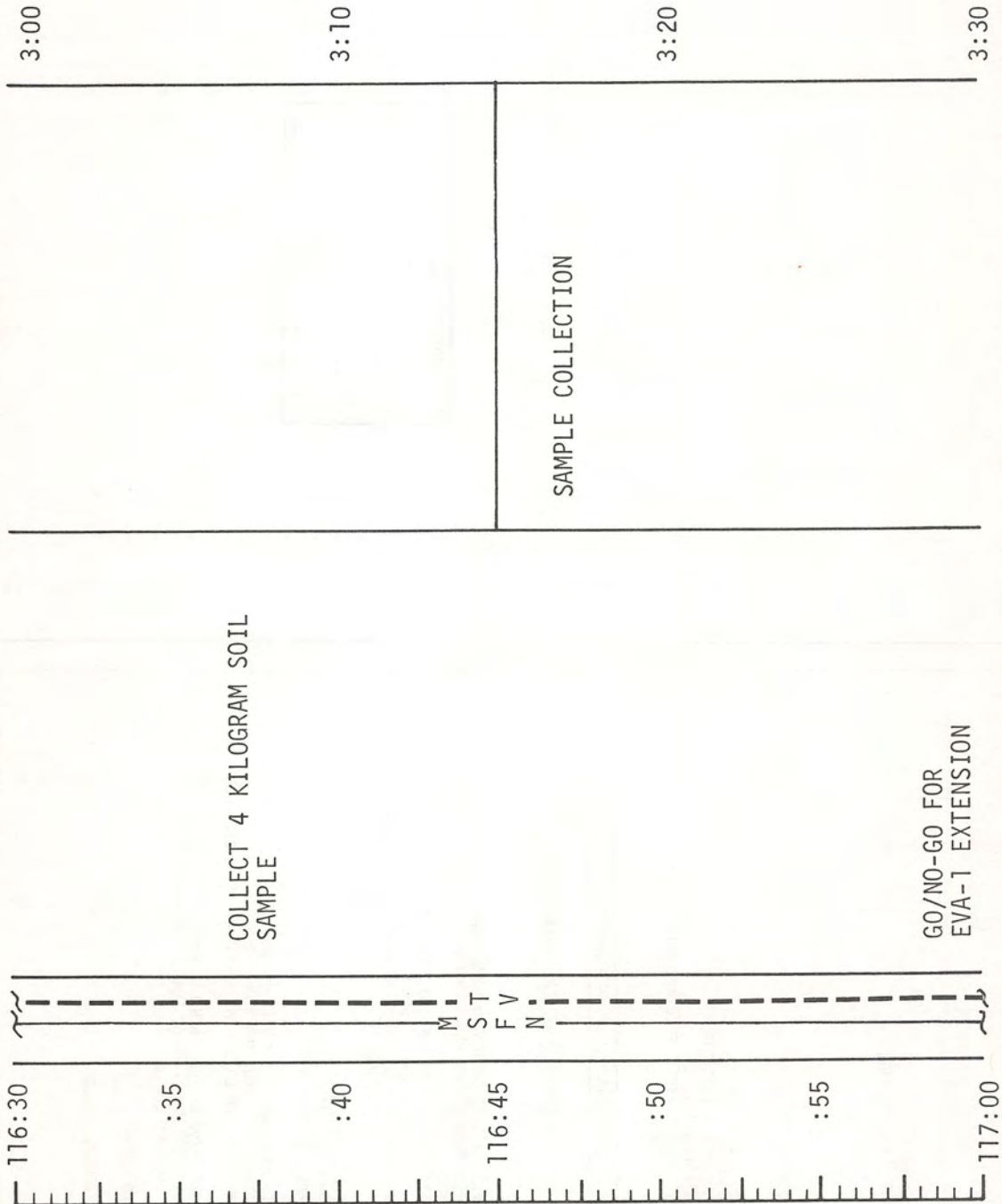
MCC-H

0253

CDR

LMP

NOTES



UPLINK TO CSM
 CSM S.V.
 PLANE CHANGE TGT
 LOAD
 DESIRED ORIENT
 (PLANE CHANGE)
 GO/NO-GO FOR
 EVA-1 EXTENSION
0323

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	116:30 - 117:00	5/18	3-143

CSM FLIGHT PLAN

REPORT: GYRO TORQUING ANGLES

117:00

(11112)
(X1111)

P52 (OPTION 1)
(PLANE CHANGE ORIENT)

GDC ALIGN
VERIFY ORDEAL
CYCLE CMC MODE - FREE/AUTO
V48 (11101)(X1111)
V49 MNVR TO N. ECLIPTIC POLE ATT (117:16)
(272,009,356)

117:10
(11101)
(X1111)

GALACTIC SURVEY PHOTOGRAPHY

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

DAMP RATES:
VERIFY FDAI SCALE - 5/1
DISABLE ALL JETS ON TWO ADJACENT QUADS
WAIT 5 MINUTES FOR RATES TO DAMP
CMC MODE - FREE
VERIFY RATES ON FDAI ARE $< 0.2^\circ/\text{SEC}$ IN ALL AXIS
DAMP ON AT 24 fps FOR 2 SEC
CHANGE FRAME RATE TO TIME & SHUTTER SPEED TO 1/60
DIM INTERIOR LIGHTING

START PHOTO SEQUENCE:
2 FRAMES, EXP TIME 20 SEC
1 FRAME, EXP TIME 5 SEC

VERIFY RATES NOT $> 0.2^\circ/\text{SEC}$ IN ANY AXIS,
IF RATES $> 0.2^\circ/\text{SEC}$, AND TIME PERMITS -
DAMP RATES FOR 60 SEC AND REPEAT EXPOSURE SEQUENCE

CHANGE TO 24fps & 1/500, RUN DAC FOR 2 SEC
LIGHTS UP, CMC MODE - AUTO, ENABLE ALL QUADS
REMOVE DAC FROM WINDOW

RECORD MAG % _____
REMOVE CAMERA SHIELD

117:20

117:30

MAP UPDATE REV <u>19</u>	
LOS : _____	•
180° : _____	•
AOS : _____	•

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-144

LM FLIGHT PLAN

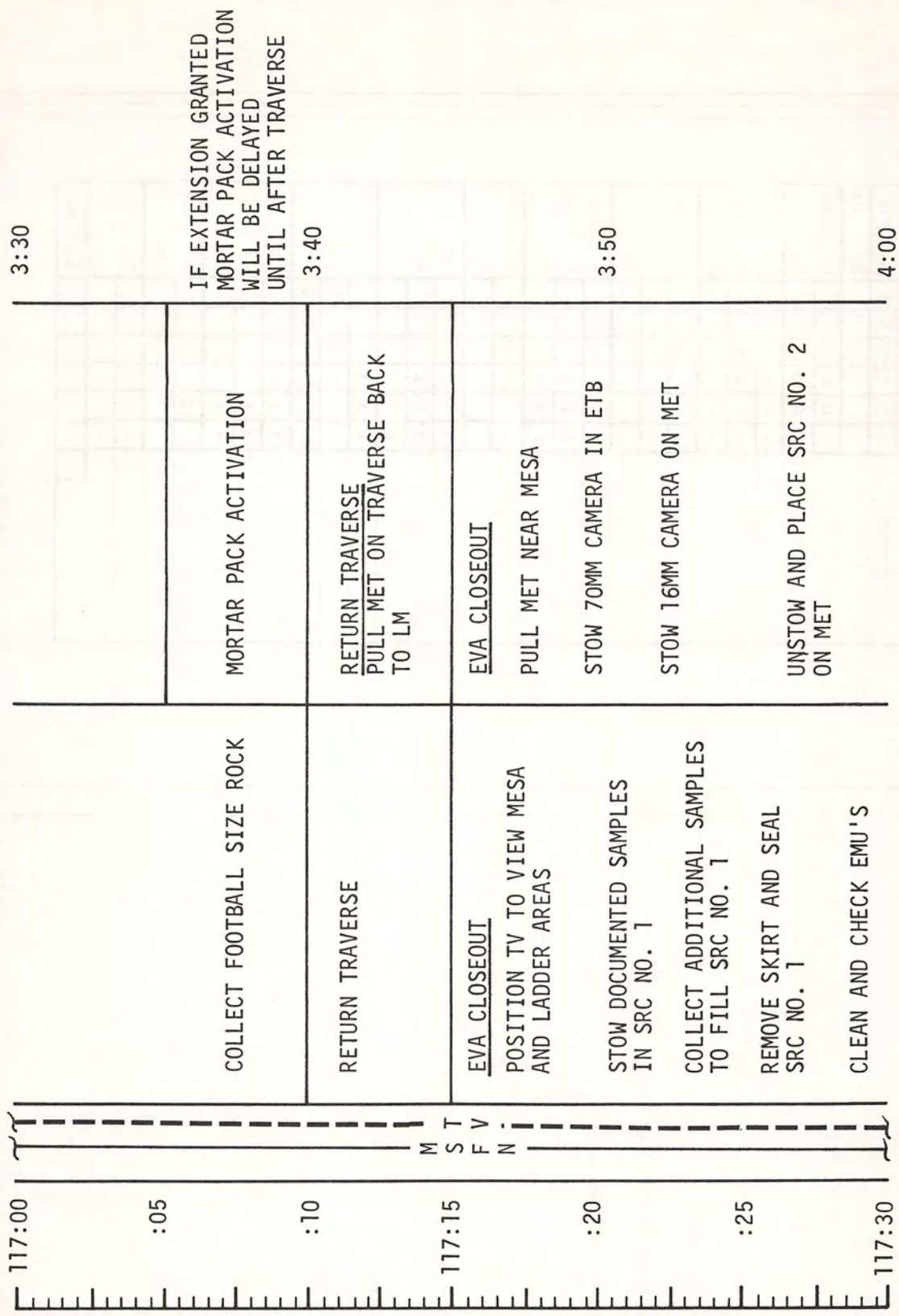
MCC-H

1123 CST

CDR

LMP

NOTES



DUMP DSE

0323

0353

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	117:00 - 117:30	5/18	3-145

CSM FLIGHT PLAN

P30; VERIFY PC-1 TIG AND ΔV's
 V49 MNVR TO PC-1 BURN PAD ATT (117:38)

SXT STAR CHECK

SET DET COUNTING UP TO PLANE CHANGE

SECURE EQUIPMENT FOR PC-1

V48 (11112)
 (X1111)

P40 (TRIM)

117:30

(11101)
 (X1111)

117:40

REV 19

(11112)
 (X1111)
 117:50
 (P40)
 (0.5° DB)

118:00

P30 MANEUVER

SET STARS		C	S	M	P	C	T	PURPOSE
R	P	S	S	G	&	N		PROP/GUID
ALIGN		+						WT N47
ALIGN		0	0					P TRIM N48
ALIGN		0	0					Y TRIM
		+	0	0				HRS GETI
		+	0	0	0			MIN N33
		+	0					SEC
ULLAGE								ΔV _X N81
								ΔV _Y
								ΔV _Z
		X	X	X				R (180)
		X	X	X				P (354)
		X	X	X				Y (003)
		+						H _A N44
								H _P
		+						ΔVT
HORIZON/WINDOW		X	X	X				BT
		X						ΔVC
		X	X	X	X			SXTS
		+						SFT
		+						TRN
		X	X	X				BSS
		X	X	X				SPA
		X	X	X				SXP
OTHER		0						LAT N61
								LONG
		+						RTGO EMS
		+						V10
								GET 0.05G

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-146

LM FLIGHT PLAN

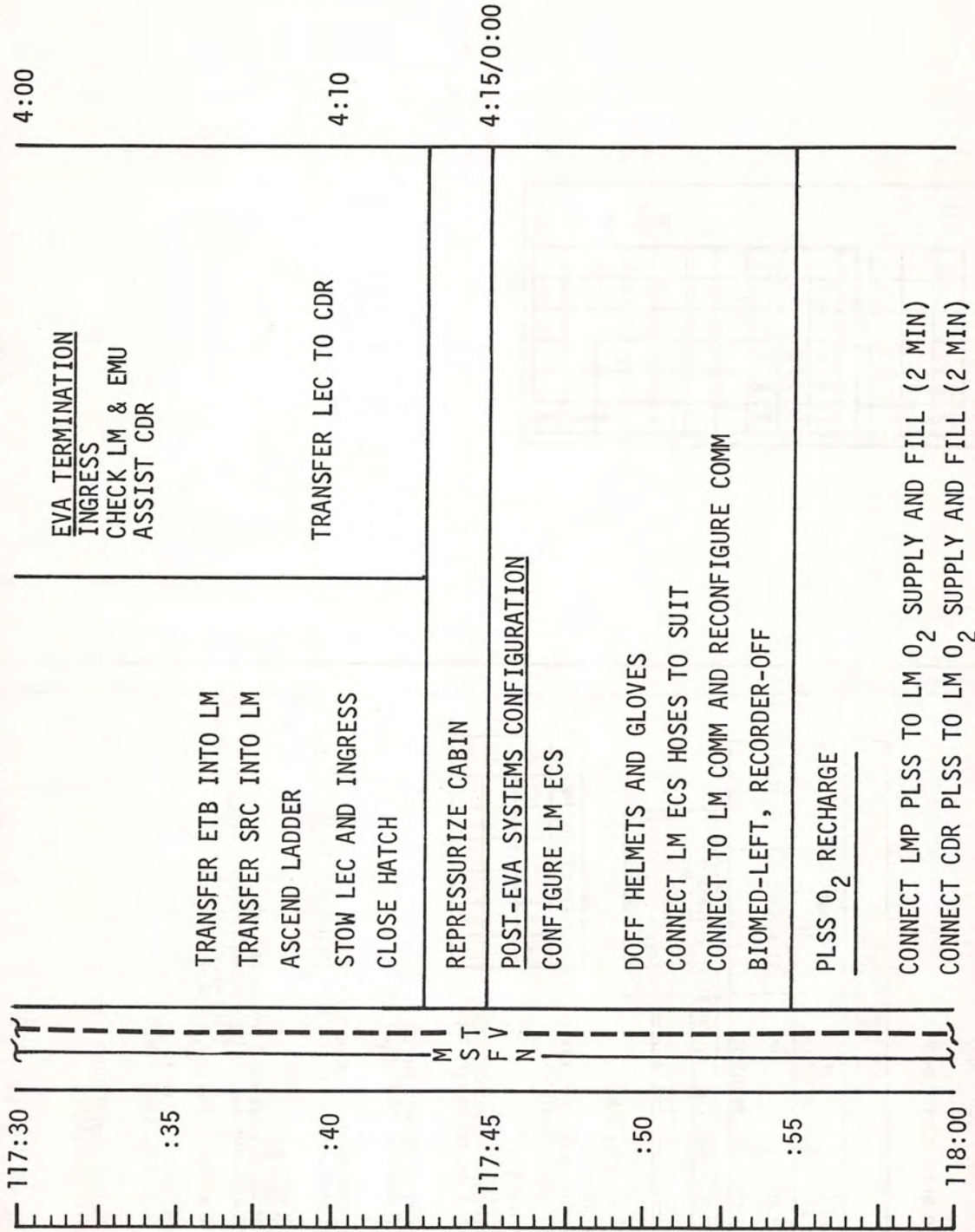
1153 CST

MCC-H

CDR

LMP

NOTES



0353

0423

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	117:30 - 118:00	5/18-19	3-147

LM FLIGHT PLAN

NOTES

LMP

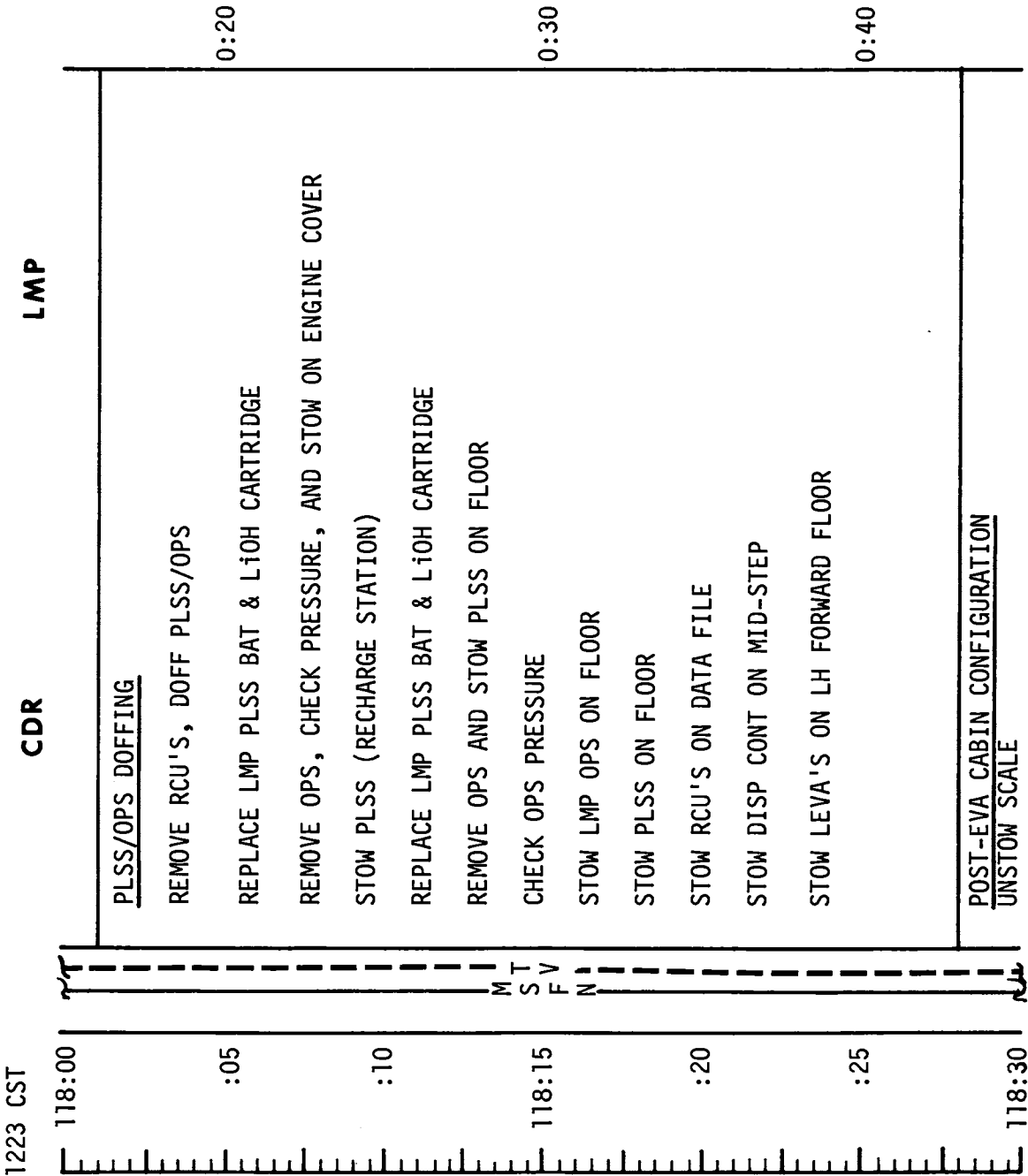
CDR

MCC-H

GO/NO-GO FOR PLANE CHANGE

UPLINK TO CSM
 DESIRED ORIENT
 (LIFT-OFF)
 RLS (IF REQ'D)
UPDATE TO CSM
 REFSMMAT 00 TIME
 EARTHSHINE PHOTO
 PAD
 MAP UPDATE REV 20

DUMP DSE



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	118:00 - 118:30	5/19	3-149

CSM FLIGHT PLAN

118:30

(11112)
(X1111)

GDC ALIGN
VERIFY ORDEAL
V49 MNVR TO EARTHSHINE ATT (118:41)
(000,164,000) HGA P -ZL, Y 180

118:40

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507)
(+005.00)
(+00001)

PRO TO START PITCH RATE (000,258/164,000)

(-0.0507)
(+05.00)

EARTHSHINE PHOTOGRAPHY

118:44:39 - DET-ZERO/UP/START (T START)(SS -13 MIN)
INHIBIT - A3,C4,B3,D4 THRUSTERS
DIM INTERIOR LIGHTS

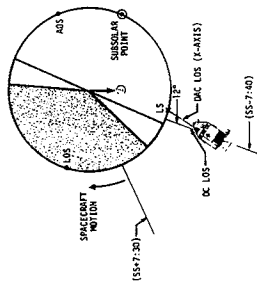
5:20 - DAC - ON (SS -7:40)
5:30 - DC - ON (SS -7:30)

118:50

7:30 - CHANGE DC SHUTTER TO 1/15 SEC (SS -5:30)
CHANGE DAC SHUTTER TO 1/60 SEC

119:00

EARTHSHINE PHOTOGRAPHY



EARTHSHINE PHOTO PAD

T START: _____
START DET AT SUNSET -13 MIN _____

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-150

LM FLIGHT PLAN

MCC-H

RECORD SAMPLE
BAG WEIGHT

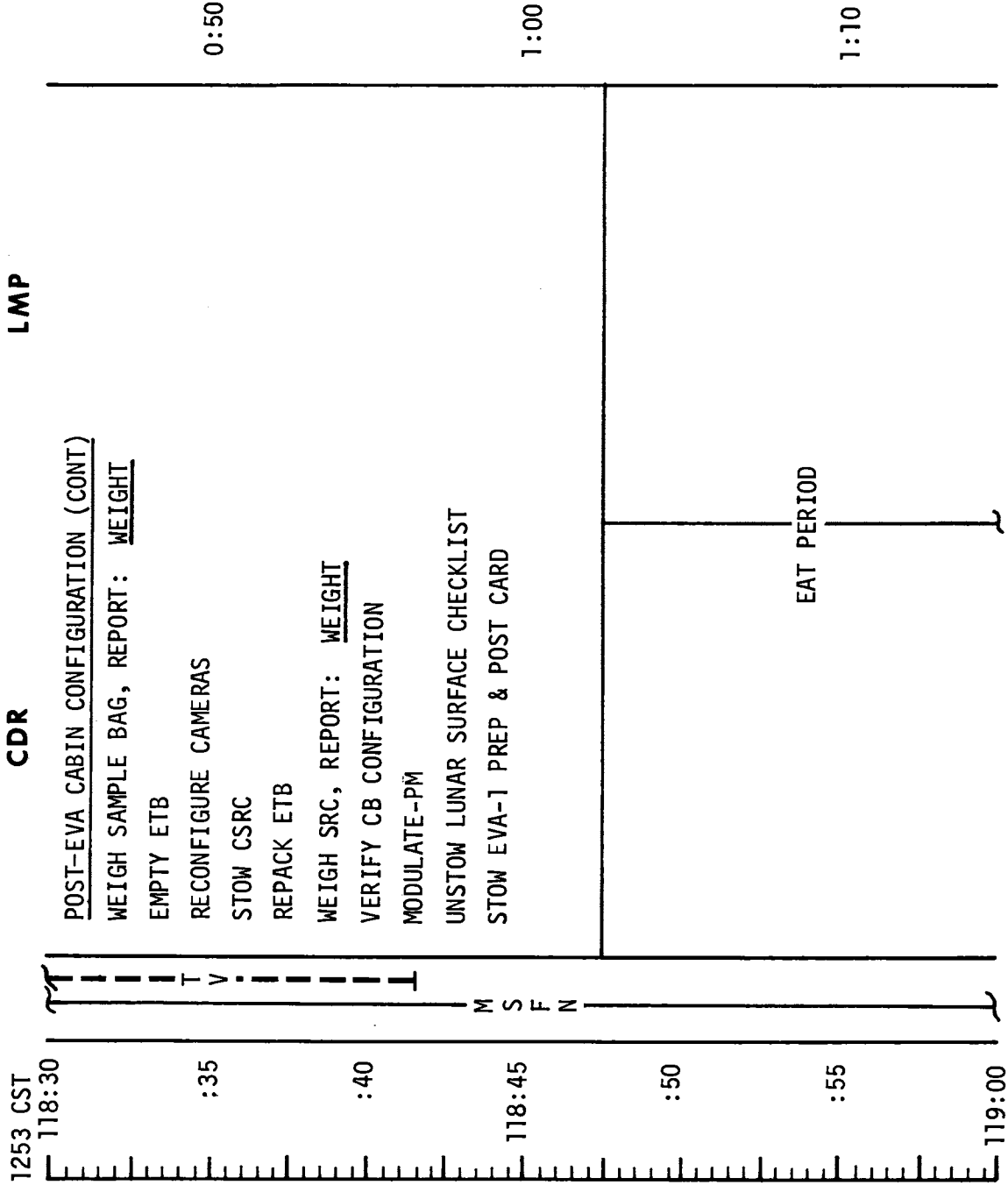
RECORD SRC WEIGHT

CDR

POST-EVA CABIN CONFIGURATION (CONT)
WEIGH SAMPLE BAG, REPORT: WEIGHT
 EMPTY ETB
 RECONFIGURE CAMERAS
 STOW CSRC
 REPACK ETB
WEIGH SRC, REPORT: WEIGHT
VERIFY CB CONFIGURATION
 MODULATE-PM
 UNSTOW LUNAR SURFACE CHECKLIST
 STOW EVA-1 PREP & POST CARD

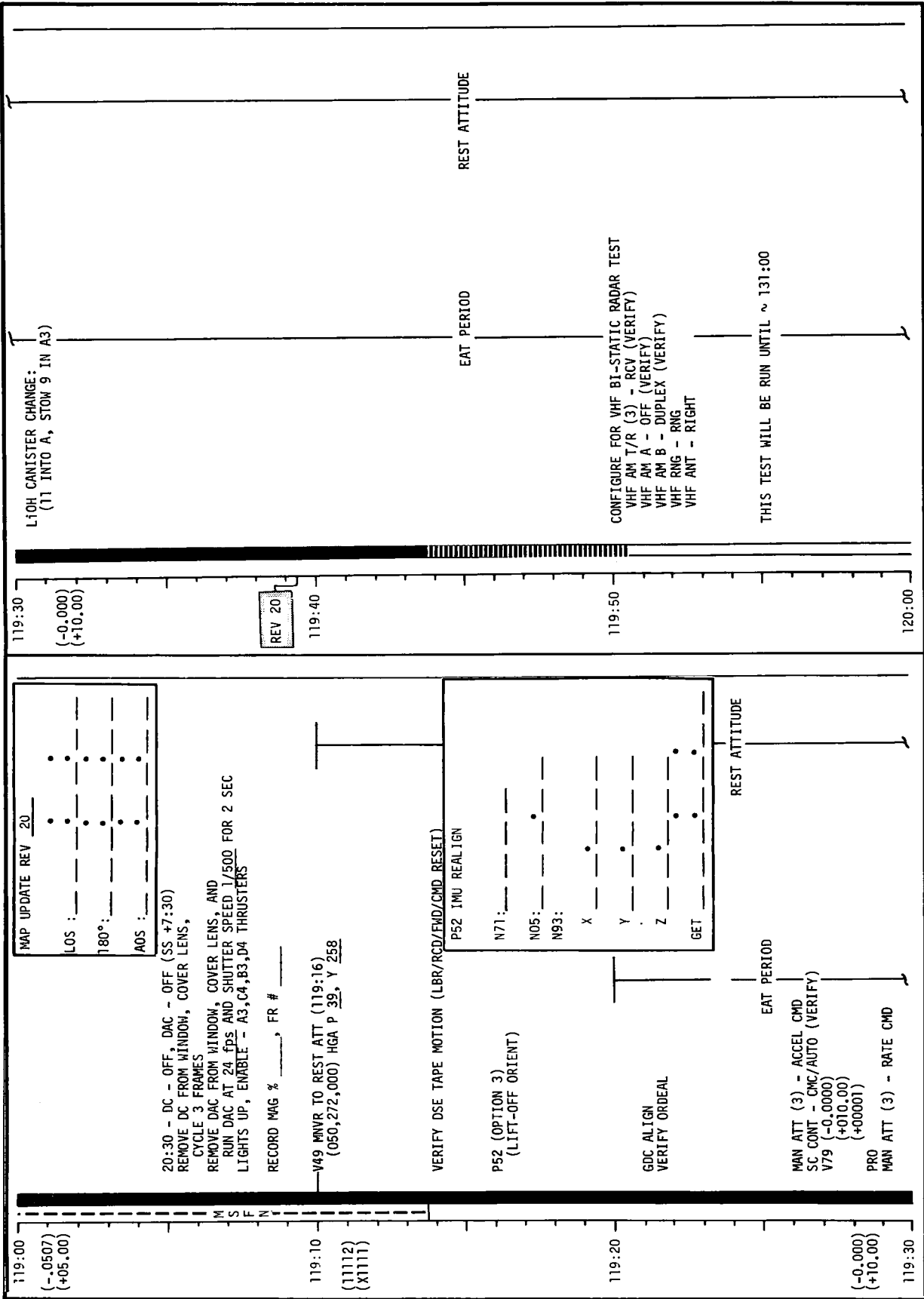
LMP

NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	118:30 - 119:00	5/19	3-151

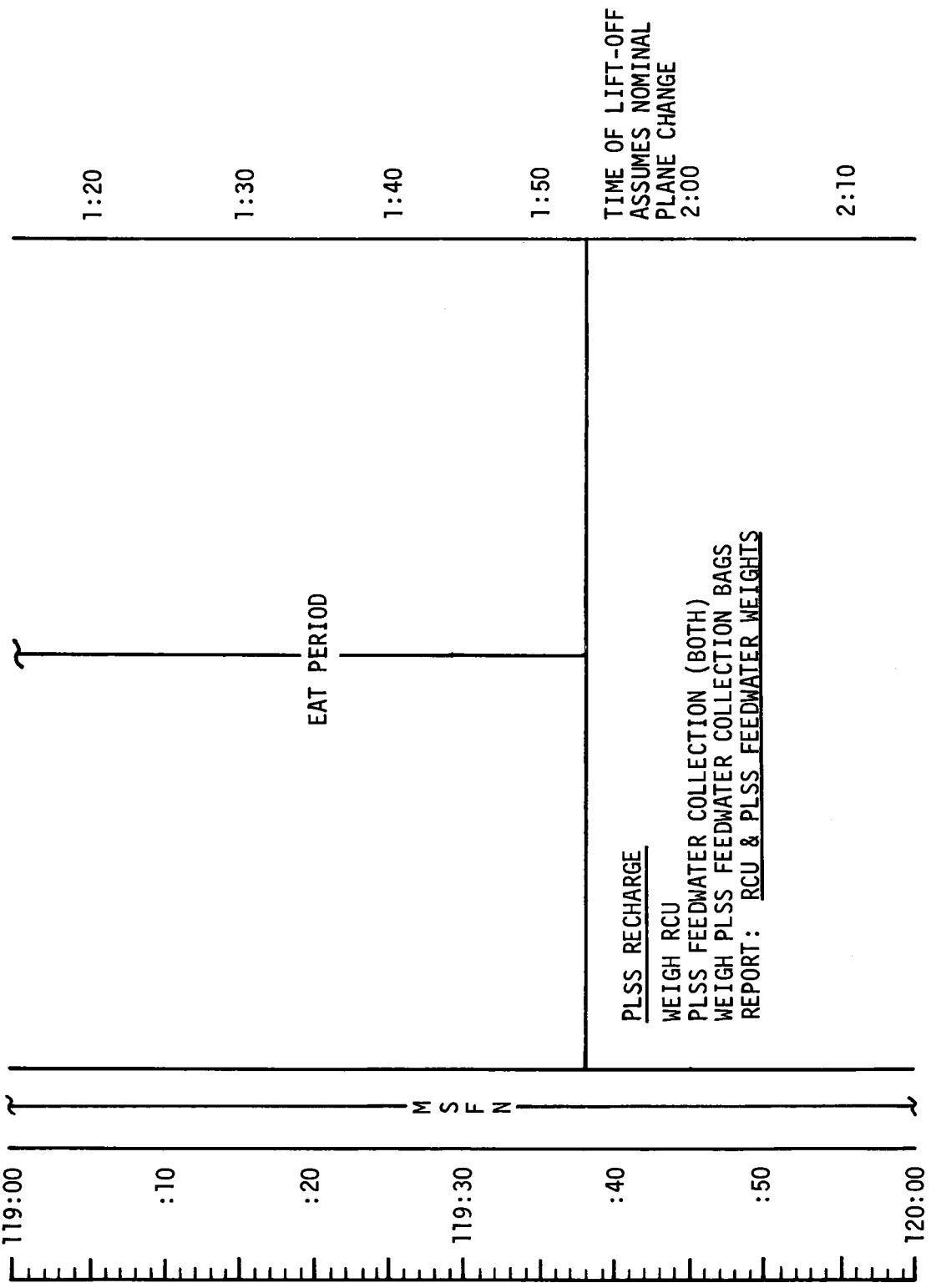
CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-152

LM FLIGHT PLAN

MCC-H 1323 CST CDR LMP NOTES

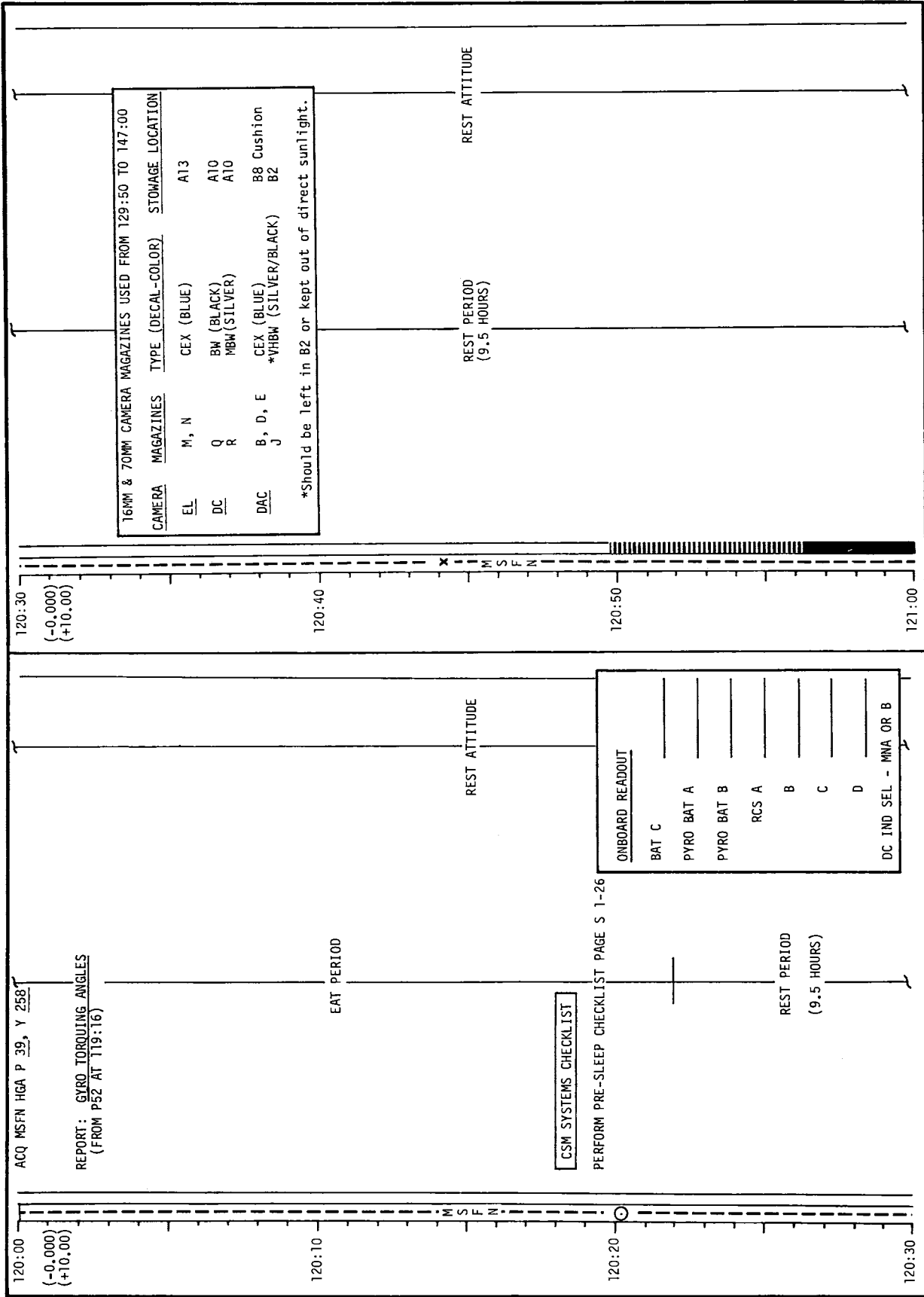


UPDATE TO LM
TIME OF LIFT-OFF
FOR REV 20 THRU 25

RECORD RCU & PLSS
FEEDWATER WEIGHTS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	119:00 - 120:00	5/19-20	3-153

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-154

LM FLIGHT PLAN

MCC-H

CDR

LMP

NOTES

1423 CST



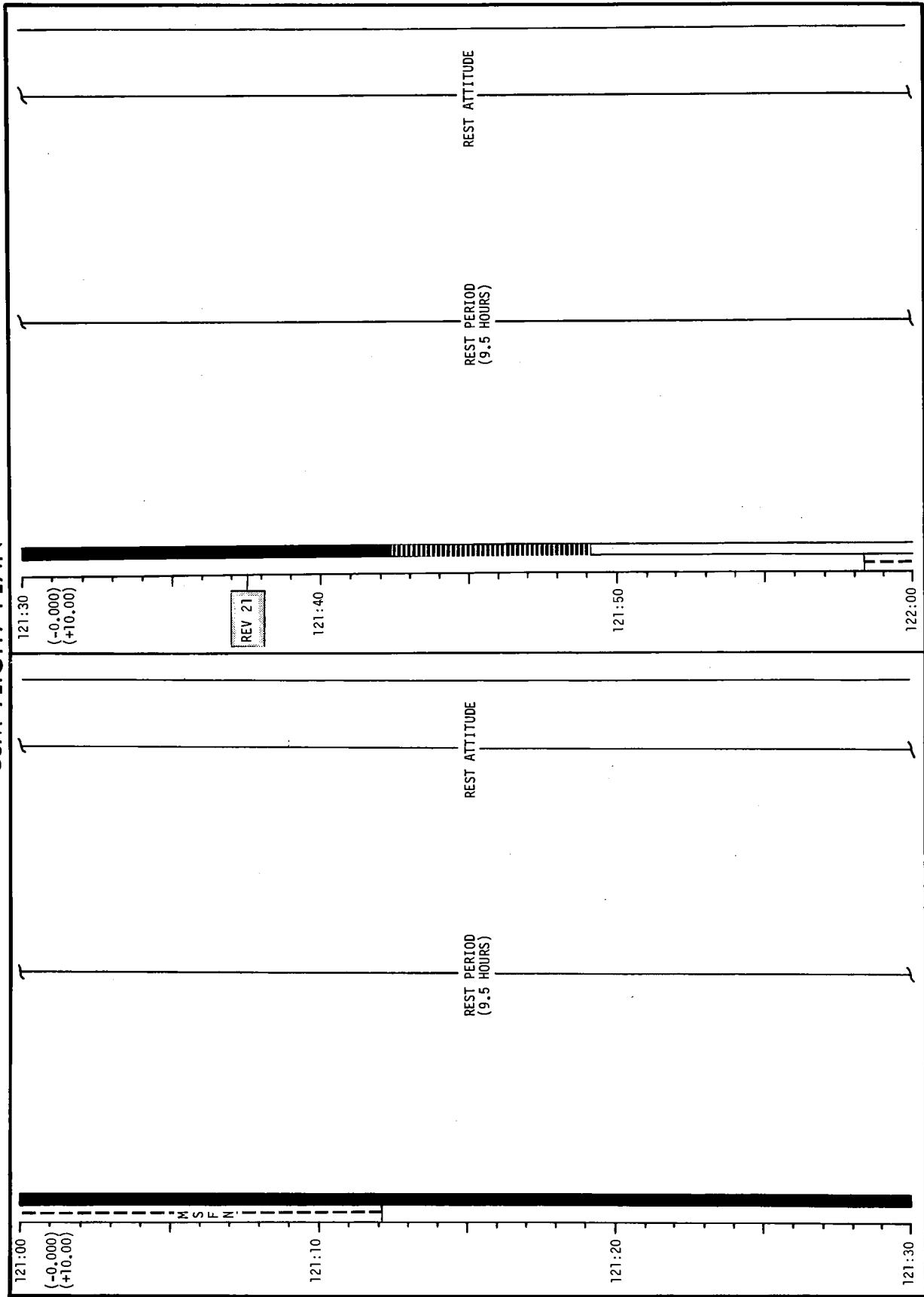
DUMP DSE

	LCG PUMP CB - OPEN CONNECT LM O ₂ SUPPLY TO PLSS AND FILL (10 MIN) CONNECT LM H ₂ O SUPPLY TO PLSS AND FILL (3 MIN) CONNECT LM O ₂ SUPPLY TO 2ND PLSS AND FILL (10 MIN) CONNECT LM H ₂ O SUPPLY TO 2ND PLSS AND FILL (3 MIN)	2:20
	<u>EVA DEBRIEFING (5 MIN)</u> CREW STATUS (RADIATION, MEDICATION) VOICE - DN VOICE BU S-BD PWR AMPL - OFF VHF ANT -AFT	2:30
	CONFIGURE SLEEP STATIONS	2:40
	REST PERIOD (10 HOURS)	2:50

UPDATE TO LM
 FLIGHT PLAN FOR
 POSSIBLE EVA-2
 EXTENSION

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	120:00 - 121:00	5/20	3-155

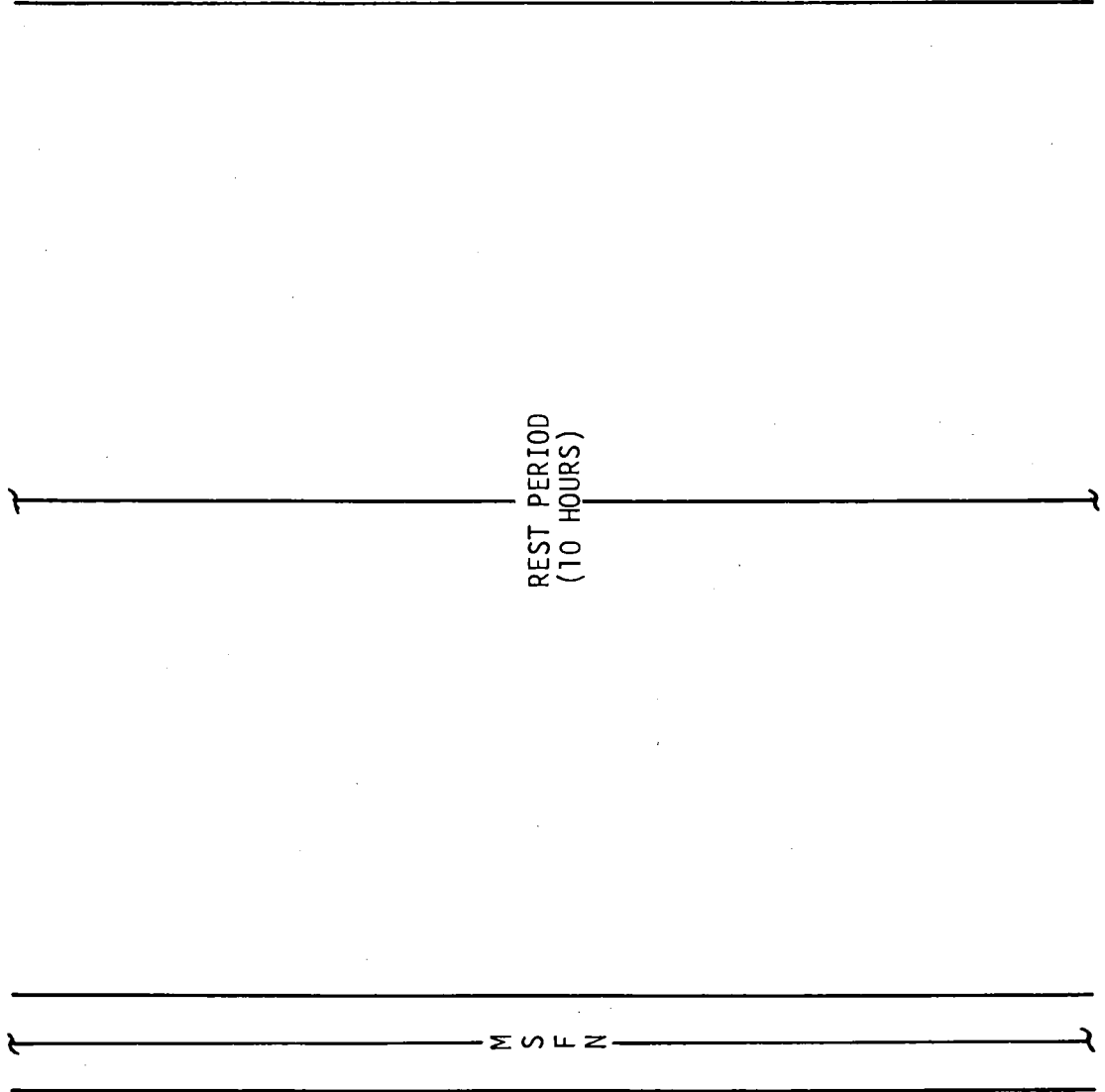
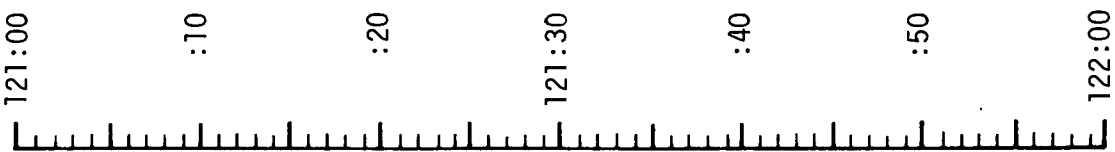
CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-156

LM FLIGHT PLAN

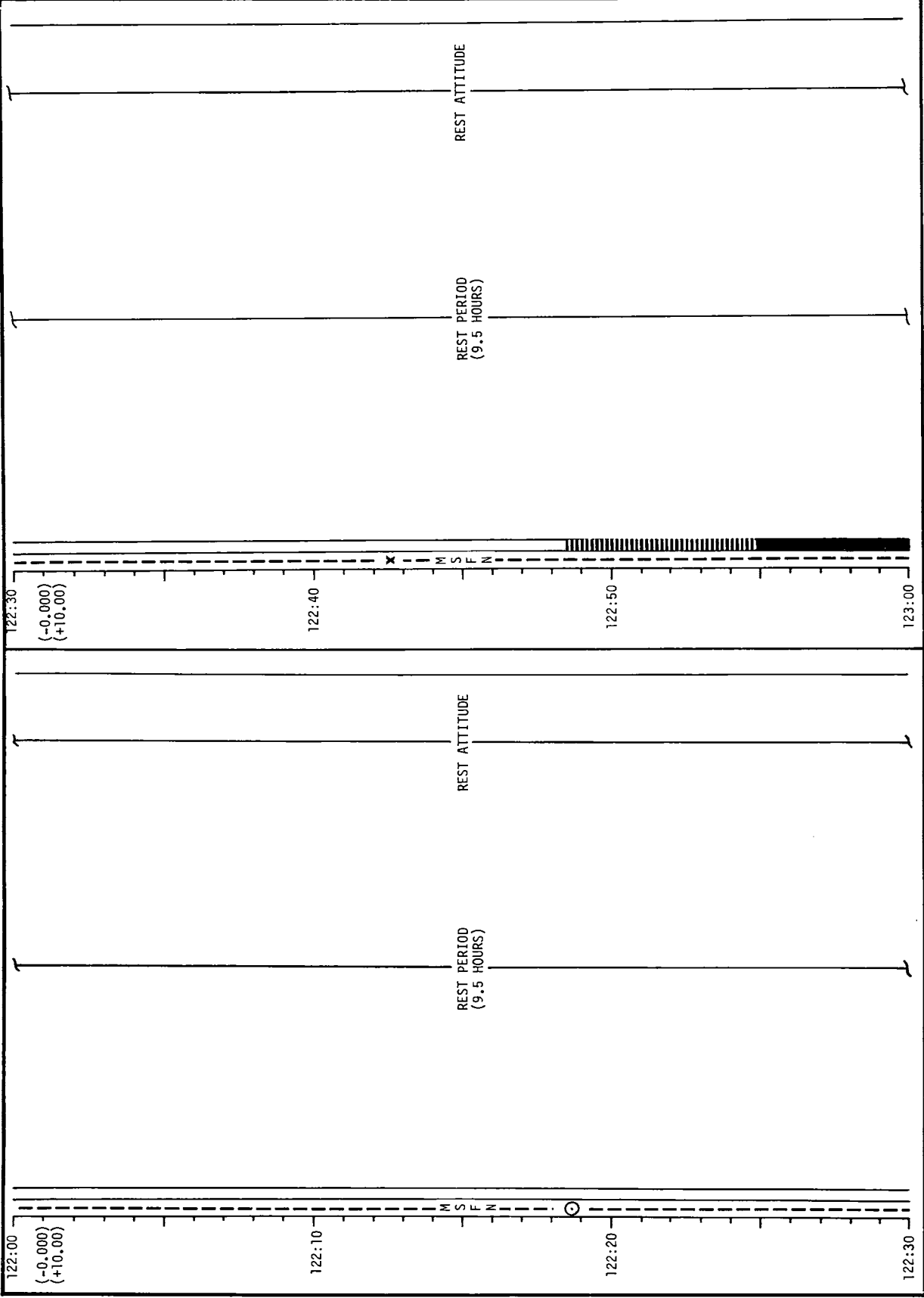
MCC-H 1523 CST CDR LMP NOTES



DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	121:00 - 122:00	5/20-21	3-157

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-158

LM FLIGHT PLAN

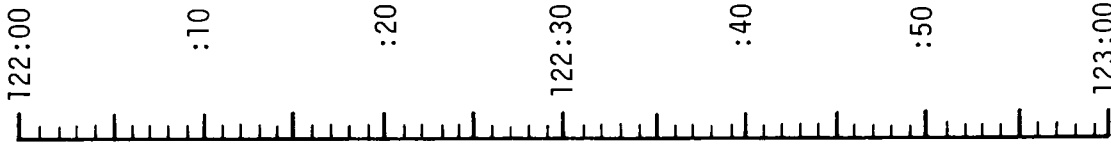
MCC-H

1623 CST

CDR

LMP

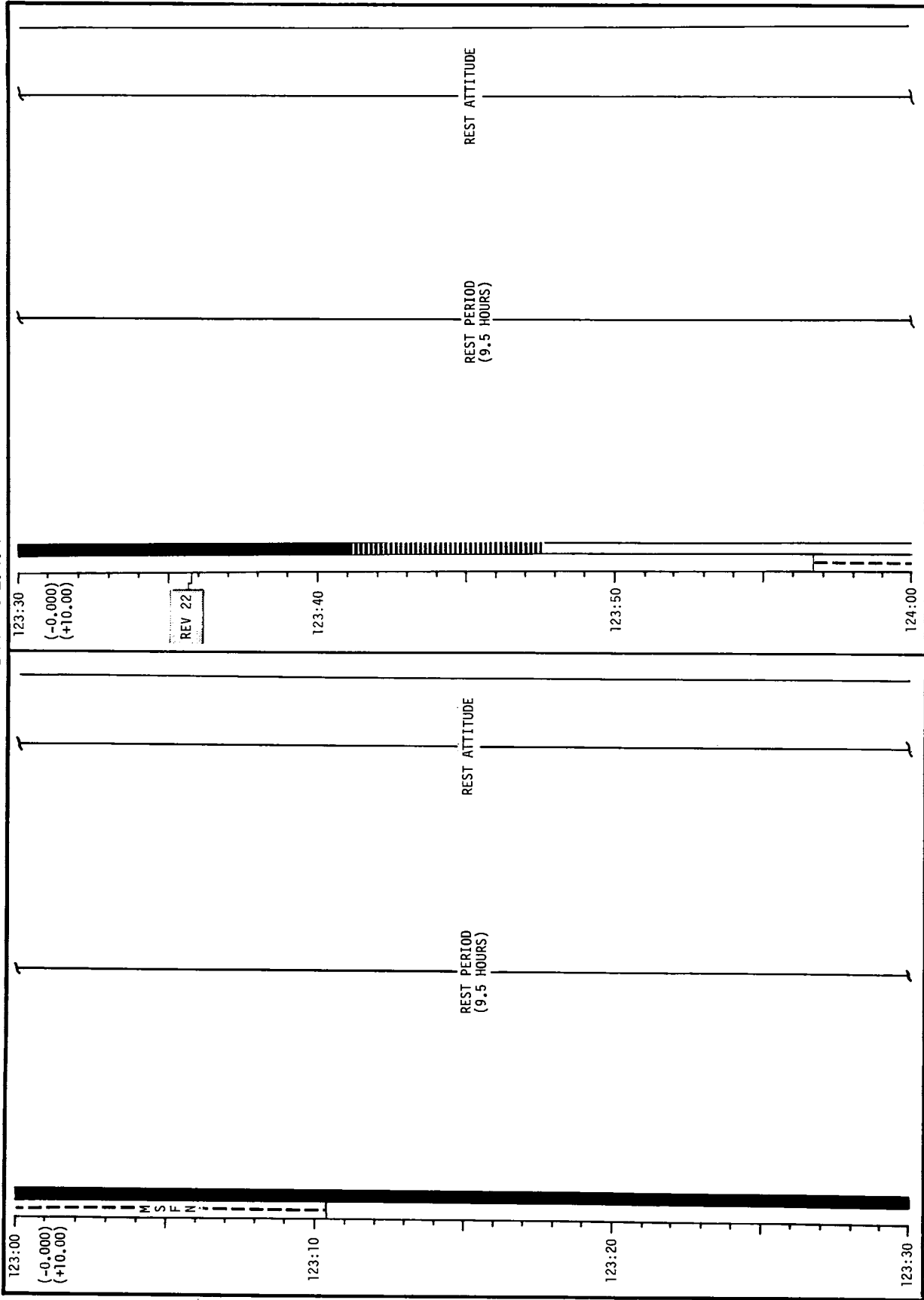
NOTES



REST PERIOD
(10 HOURS)

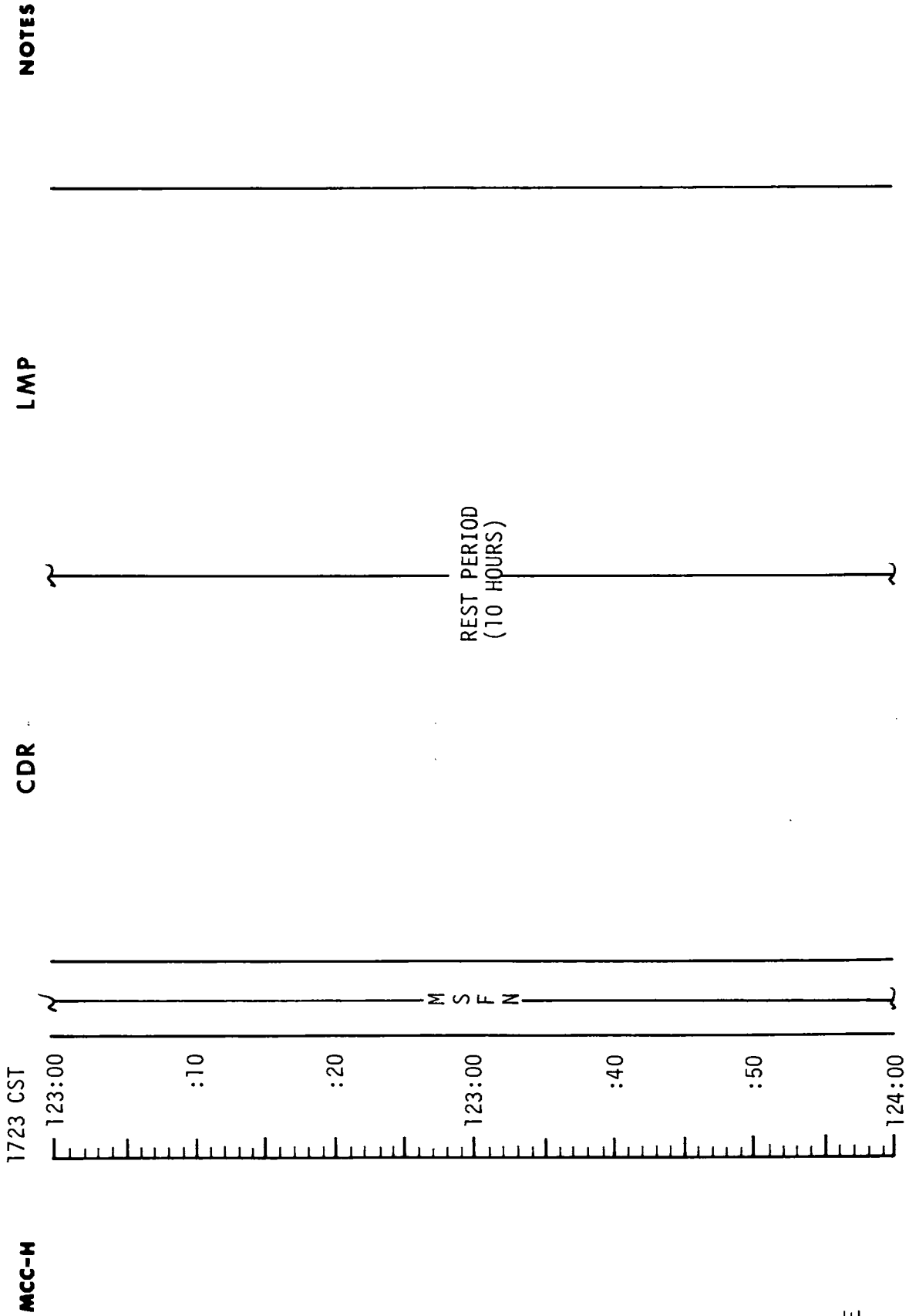
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	122:00 - 123:00	5/21	3-159

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-160

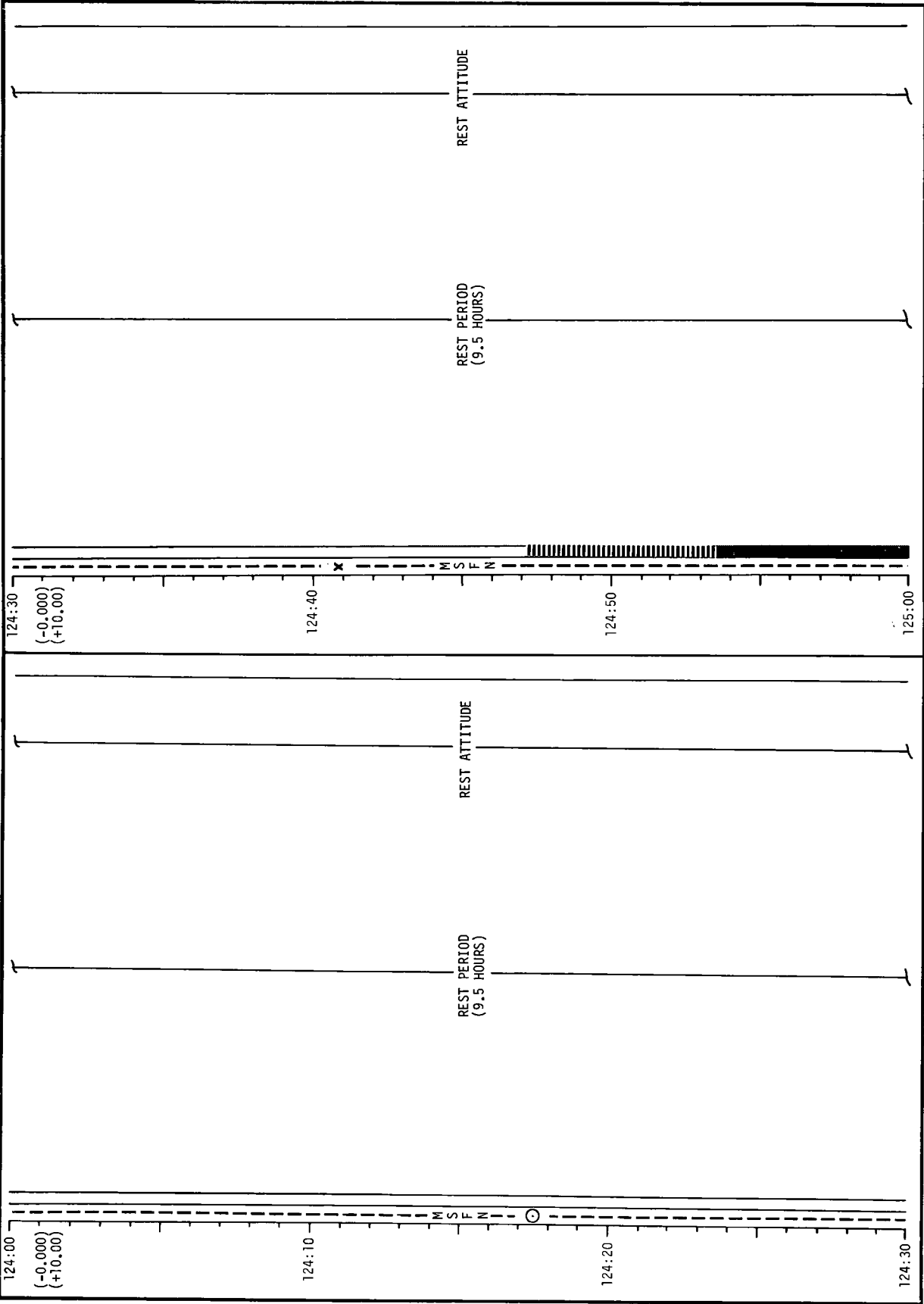
LM FLIGHT PLAN



DUMP DSE

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	123:00 - 124:00	5/21-22	3-161

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-162



LM FLIGHT PLAN

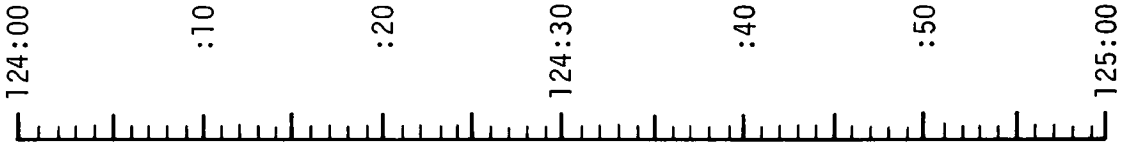
MCC-H

1823 CST

LMP

CDR

NOTES

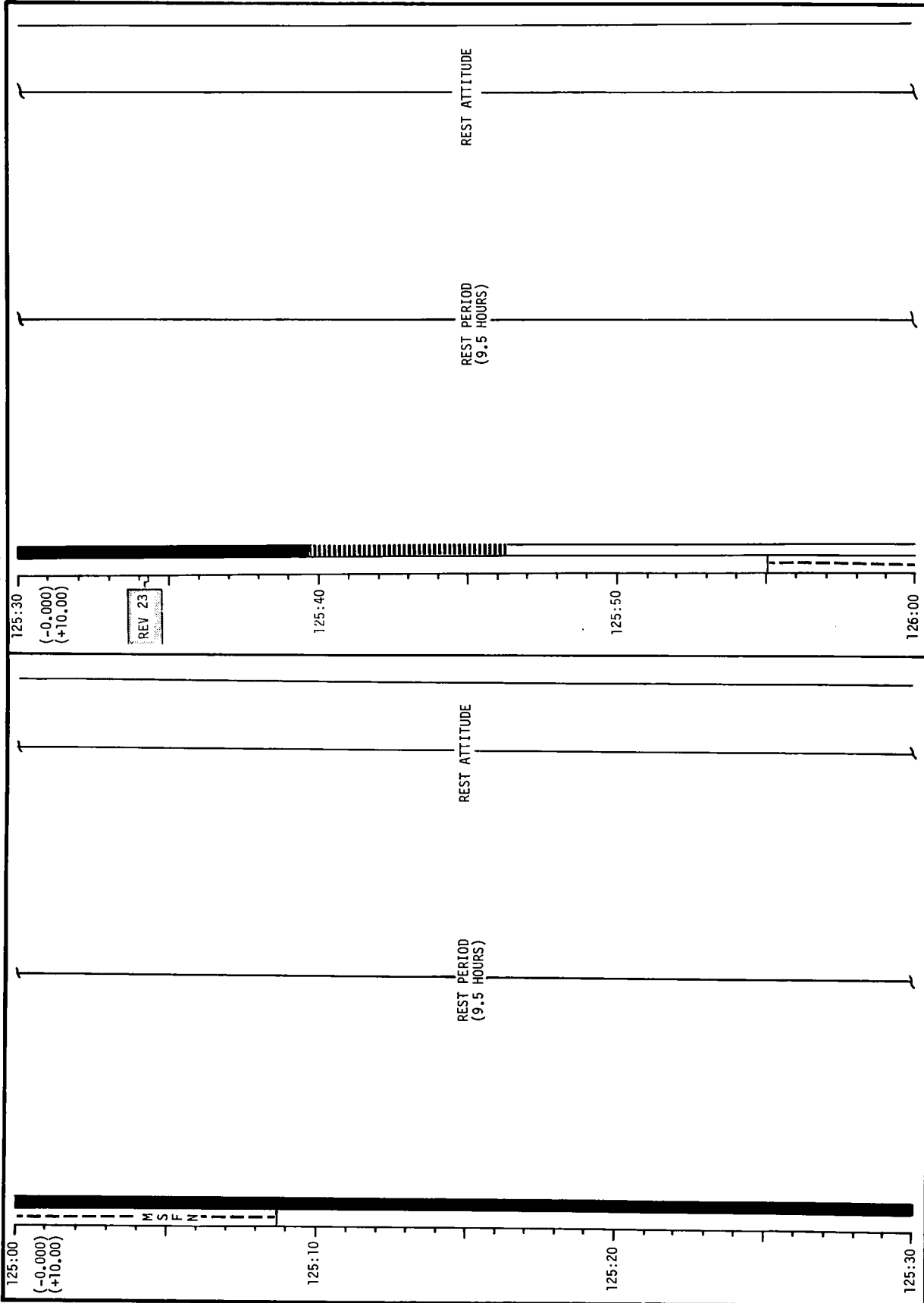


M S F N

REST PERIOD
(10 HOURS)

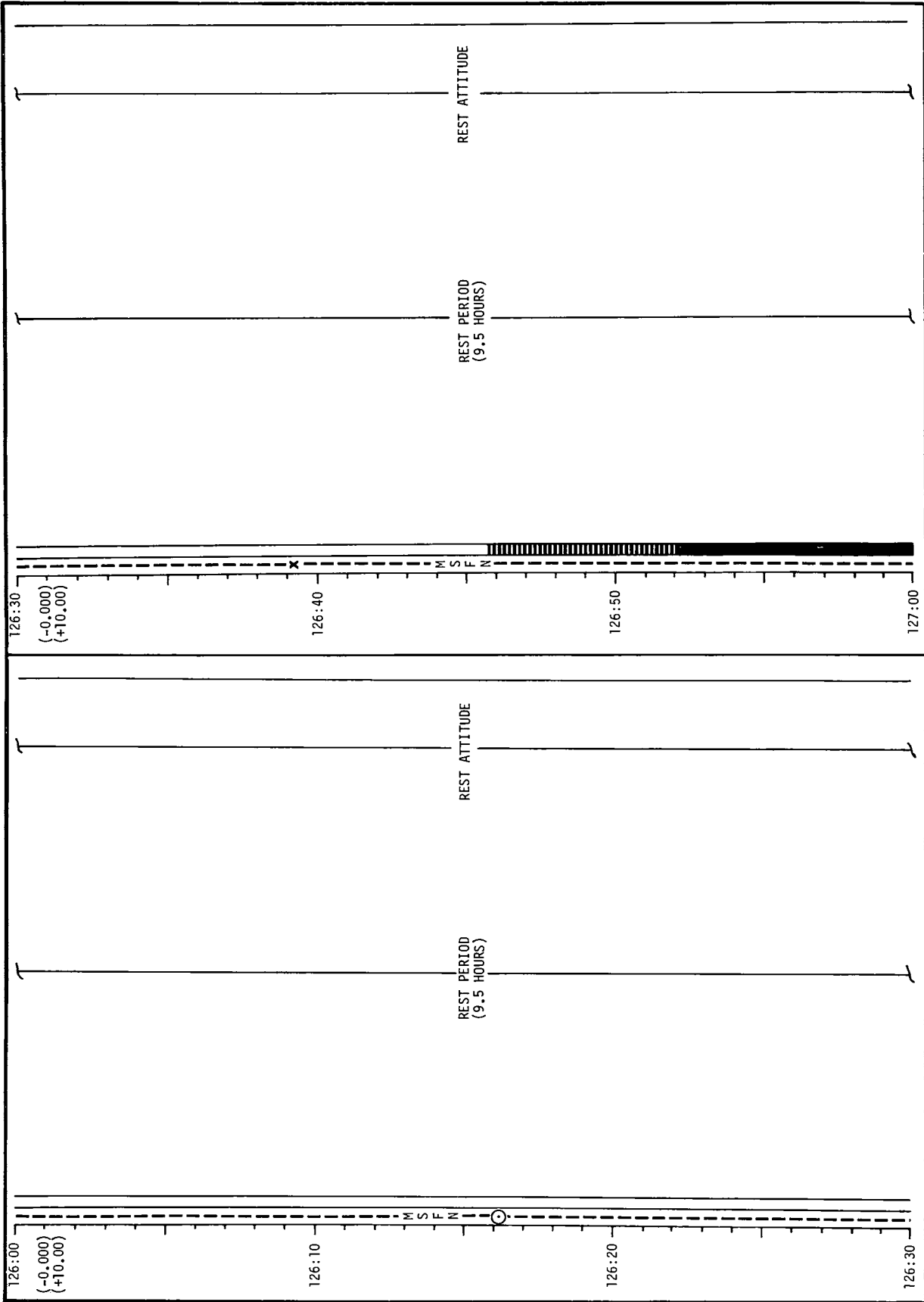
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	124:00 - 125:00	5/22	3-163

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-164

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-166

LM FLIGHT PLAN

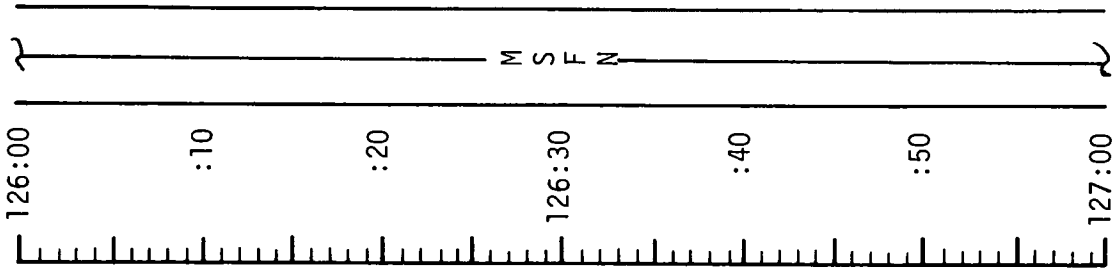
MCC-H

2023 CST

CDR

LMP

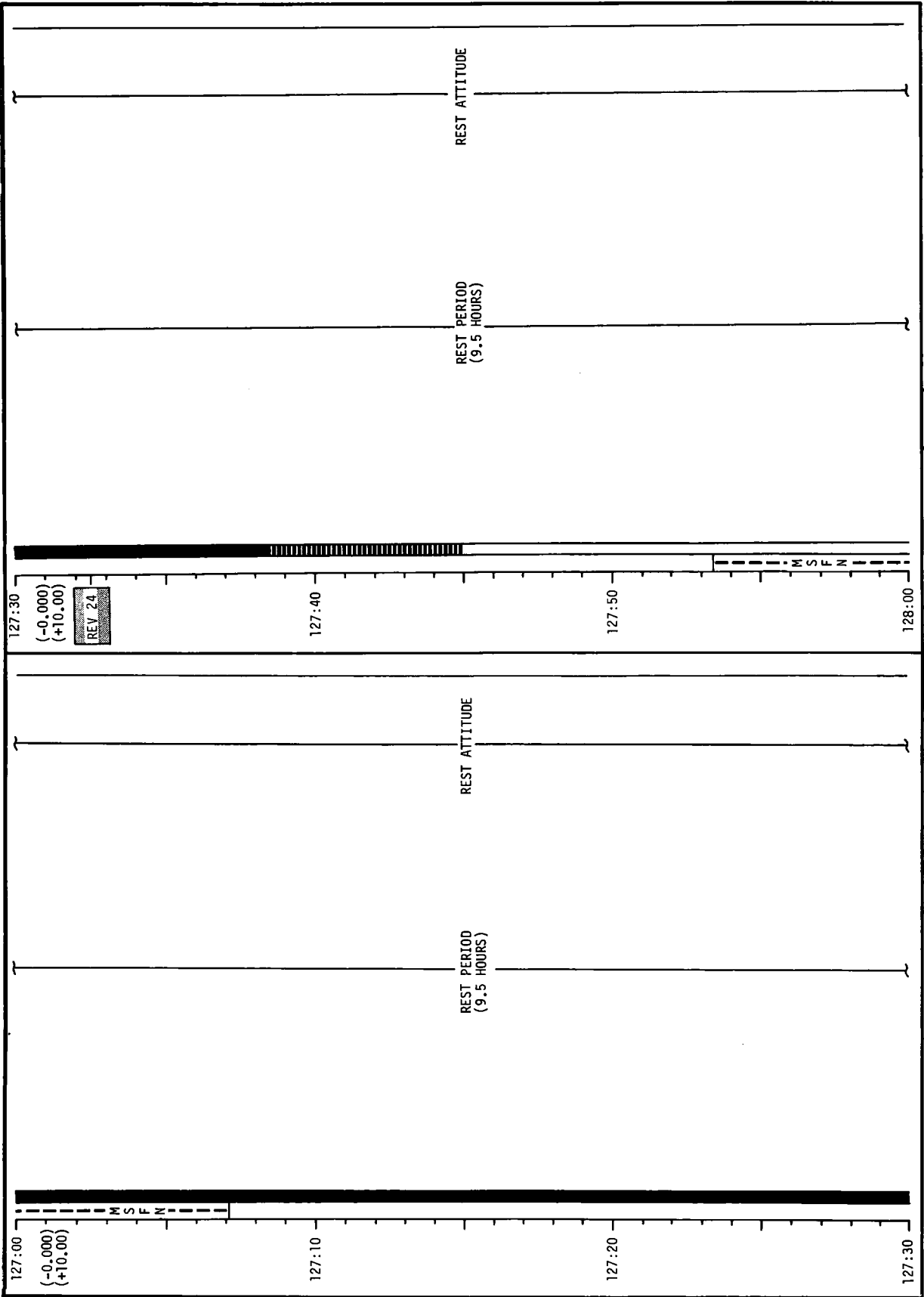
NOTES



REST PERIOD
(10 HOURS)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	126:00 - 127:00	5/23	3-167

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-168

LM FLIGHT PLAN

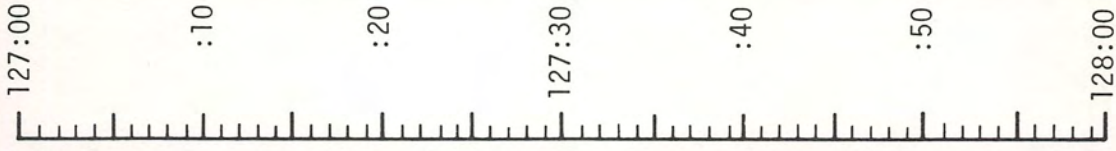
MCC-H

2123 CST

CDR

LMP

NOTES



M S F N

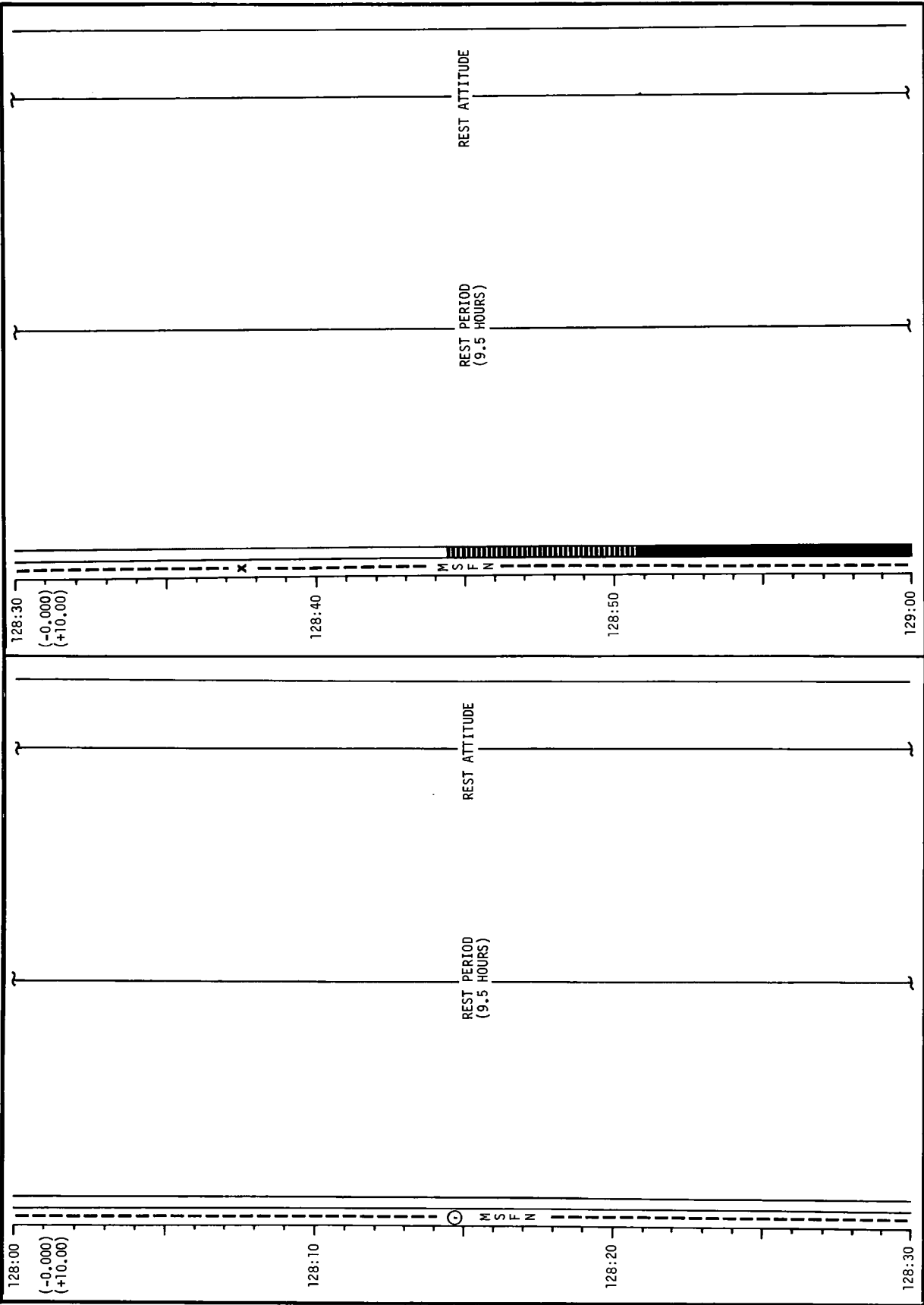
REST PERIOD
(10 HOURS)

DUMP DSE

1423

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	127:00 - 128:00	5/23-24	3-169

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-170

LM FLIGHT PLAN

MCC-H

1423

2223 CST

CDR

LMP

NOTES



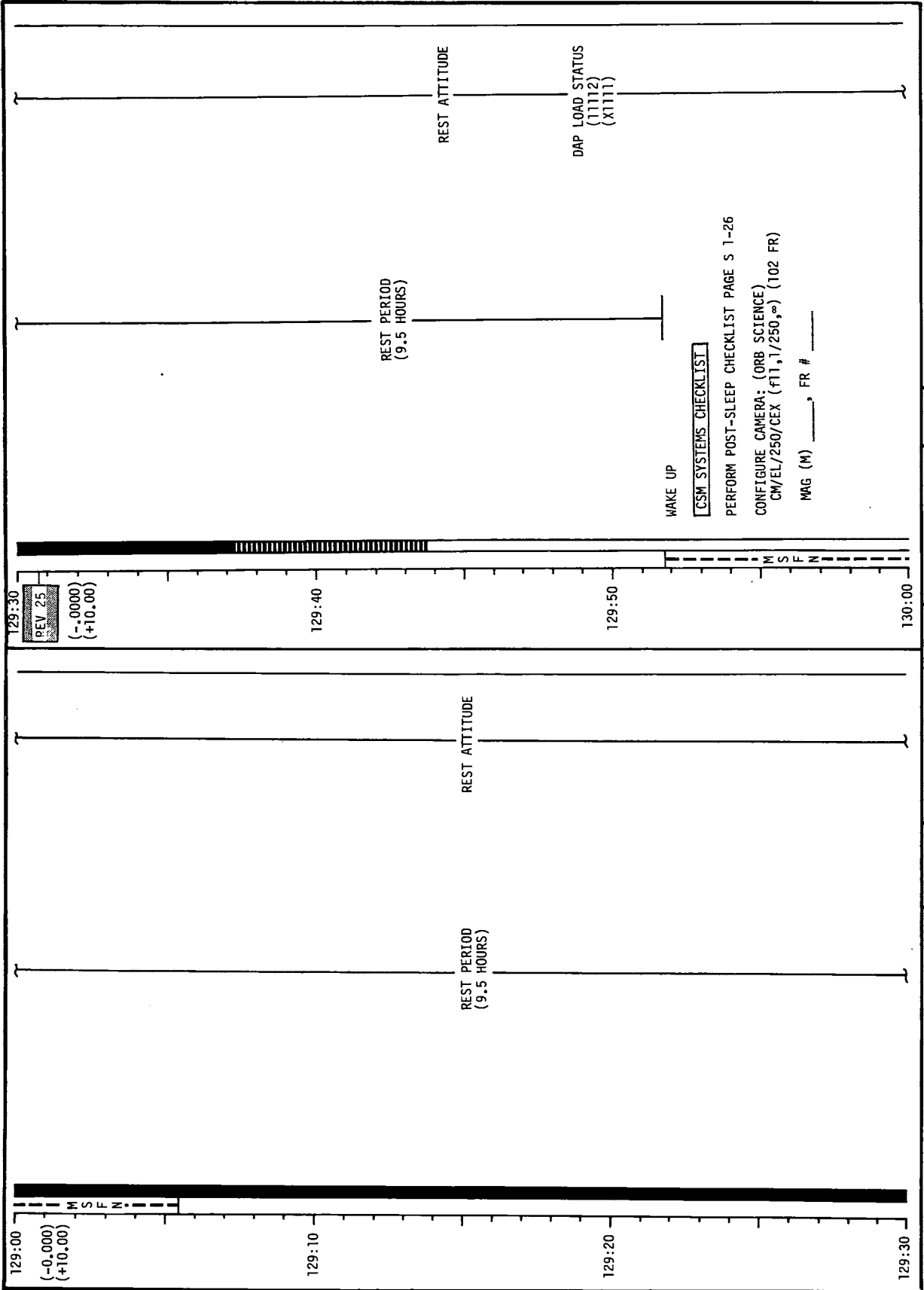
M S F N

REST PERIOD
(10 HOURS)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	128:00 - 129:00	5/24	3-171

1523

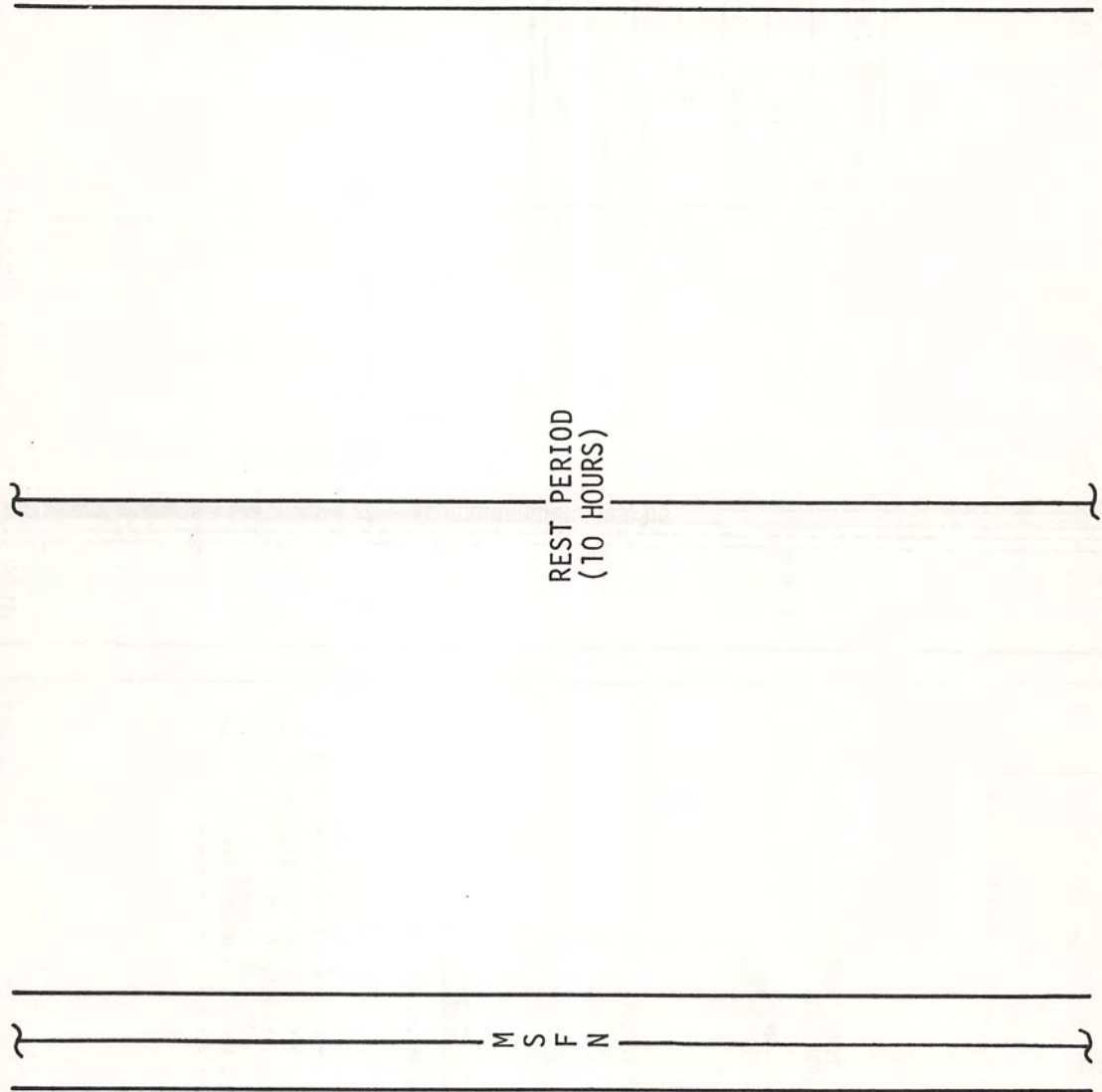
CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-172

LM FLIGHT PLAN

MCC-H 2323 CST LMP CDR NOTES



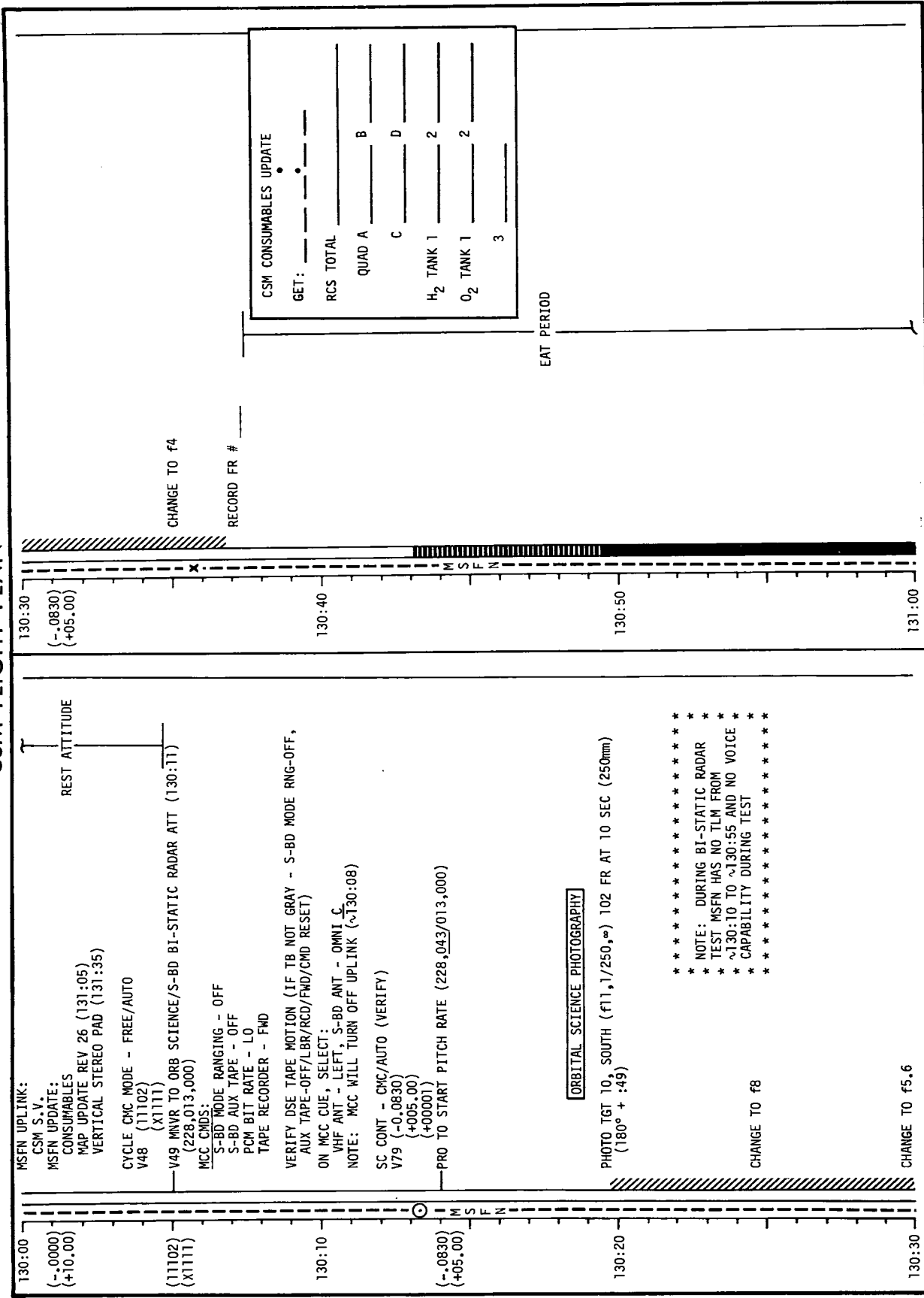
1523

DUMP DSE

1623-

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	129:00 - 130:00	5/24-25	3-173

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-174

LM FLIGHT PLAN

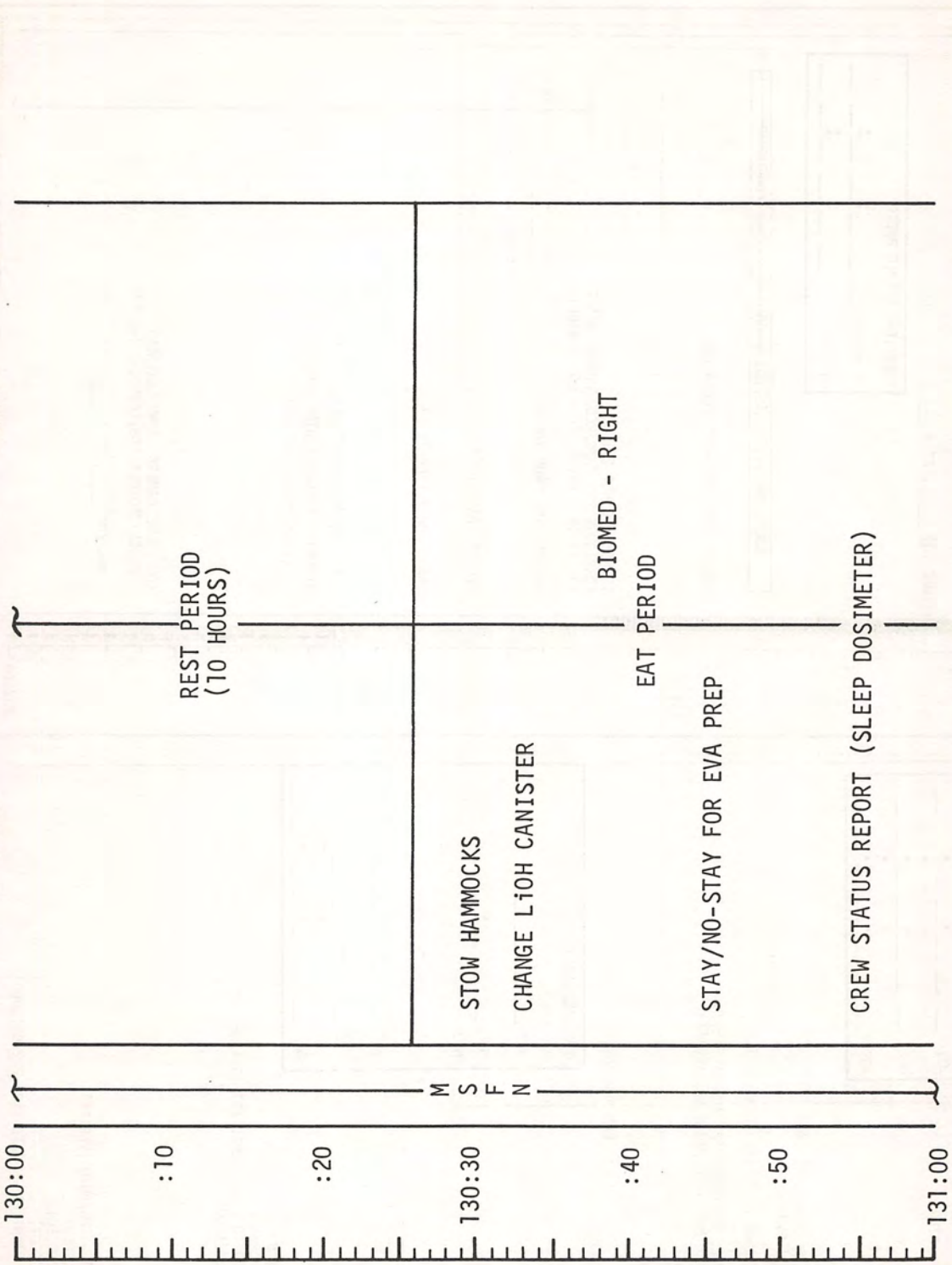
0023 CST

MCC-H

CDR

LMP

NOTES



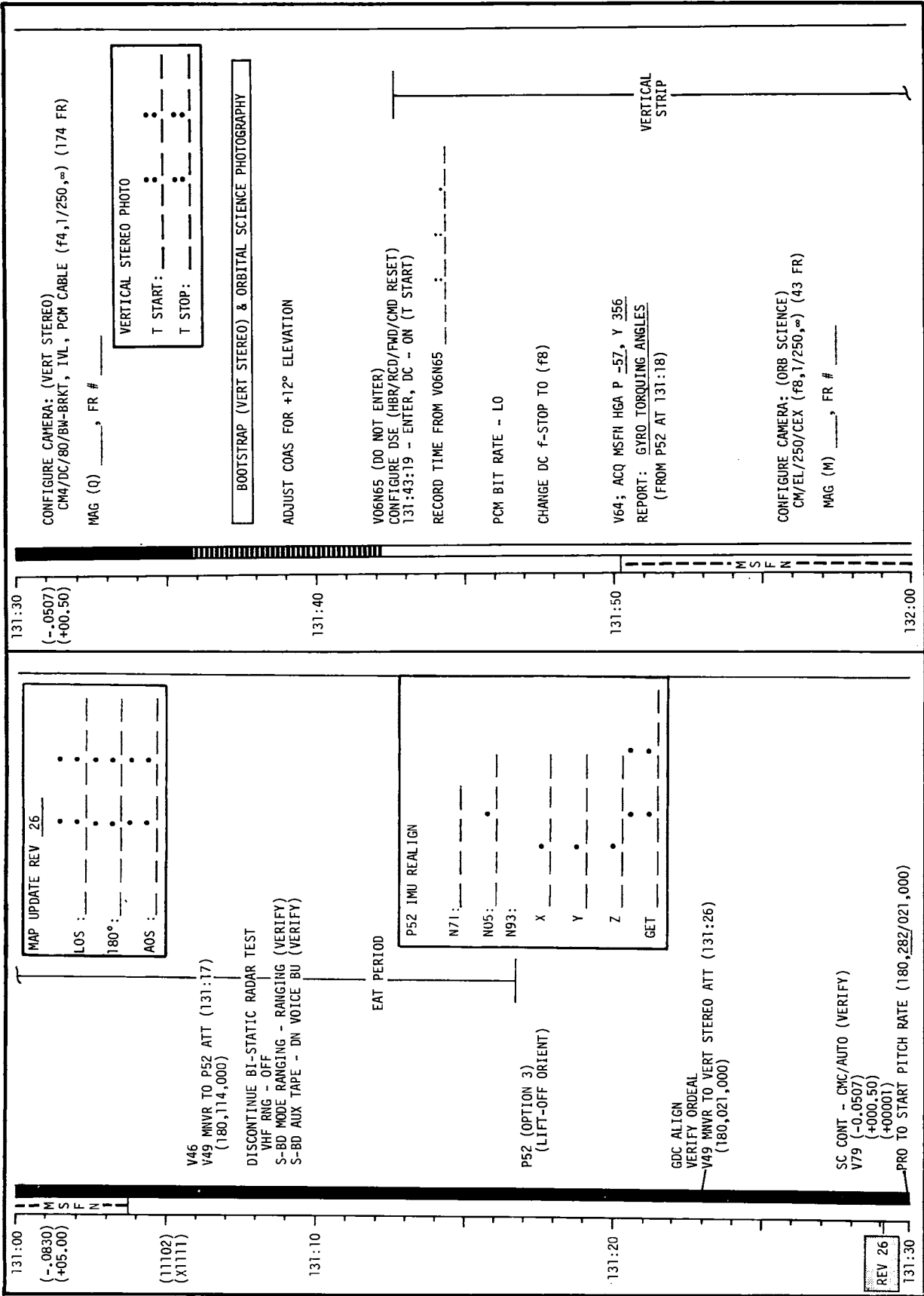
UPLINK TO CSM
CSM S.V. **623**
UPDATE TO CSM
CONSUMABLES
MAP UPDATE REV 26
VERTICAL STEREO PAD

STAY/NO-STAY FOR
EVA-2 PREP

1723

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	130:00 - 131:00	6/25	3-175

CSM FLIGHT PLAN



CONFIGURE CAMERA: (VERT STEREO)
CM4/DC/80/BW-BRKT, IVL, PCM CABLE (F4,1/250,∞) (174 FR)

MAG (Q) _____, FR # _____

VERTICAL STEREO PHOTO

T START: _____

T STOP: _____

BOOTSTRAP (VERT STEREO) & ORBITAL SCIENCE PHOTOGRAPHY

ADJUST COAS FOR +12° ELEVATION

V06N65 (DO NOT ENTER)
CONFIGURE DSE (HBR/RCD/FWD/CMD RESET)
131:43:19 - ENTER, DC - ON (T START)

RECORD TIME FROM V06N65 _____

PCM BIT RATE - LO

CHANGE DC f-STOP TO (f8)

V64; ACQ MSFN HGA P -5Z, Y 356
REPORT: GYRO TORQUING ANGLES
(FROM P52 AT 131:18)

CONFIGURE CAMERA: (ORB SCIENCE)
CM/EL/250/CEX (F8,1/250,∞) (43 FR)

MAG (M) _____, FR # _____

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-176

LM FLIGHT PLAN

MCC-H

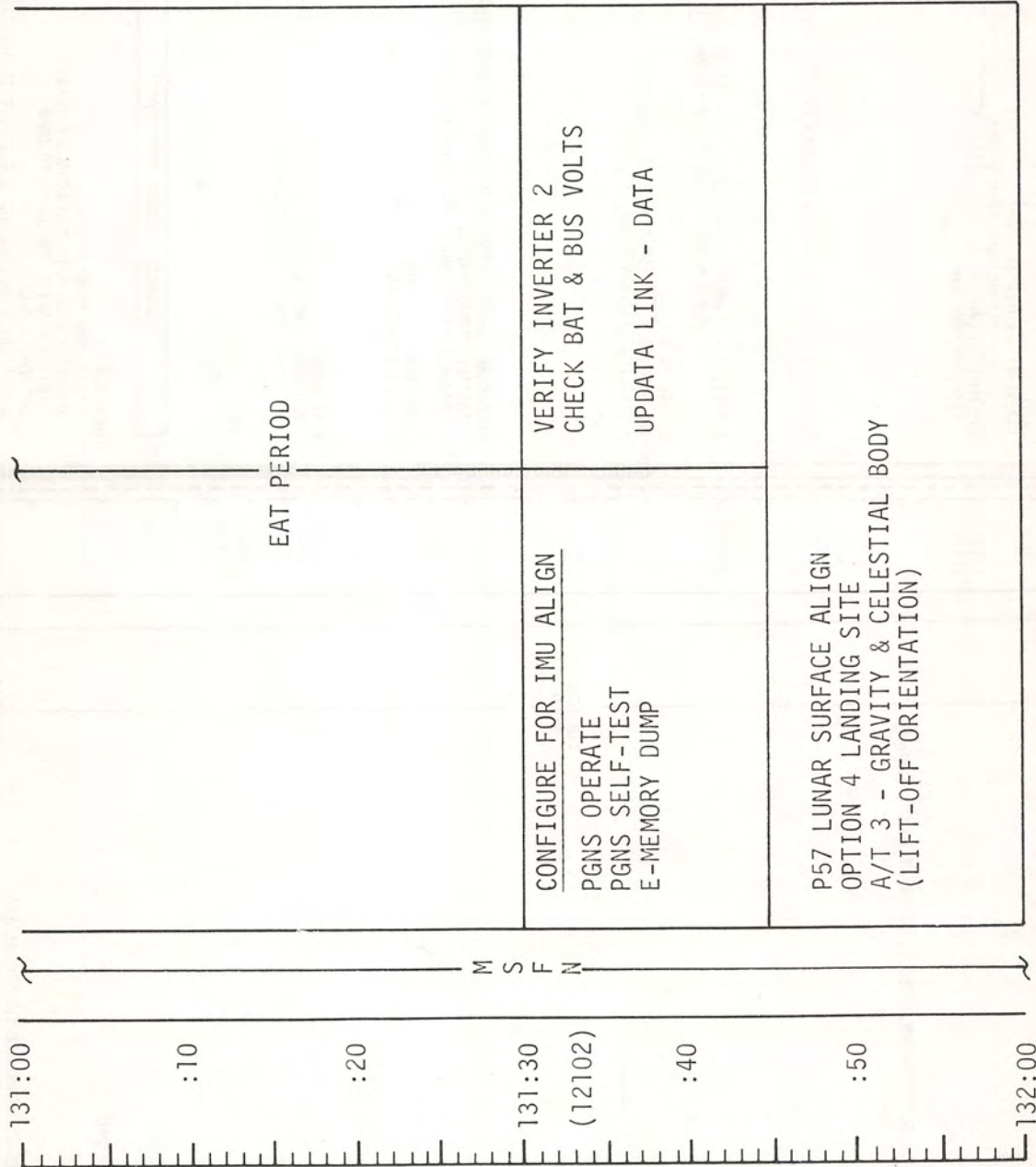
1723

0123 CST

CDR

LMP

NOTES



UPDATE TO LM
LM CONSUMABLES
TIME OF LIFT-OFF
FOR REVS 26
THROUGH 31

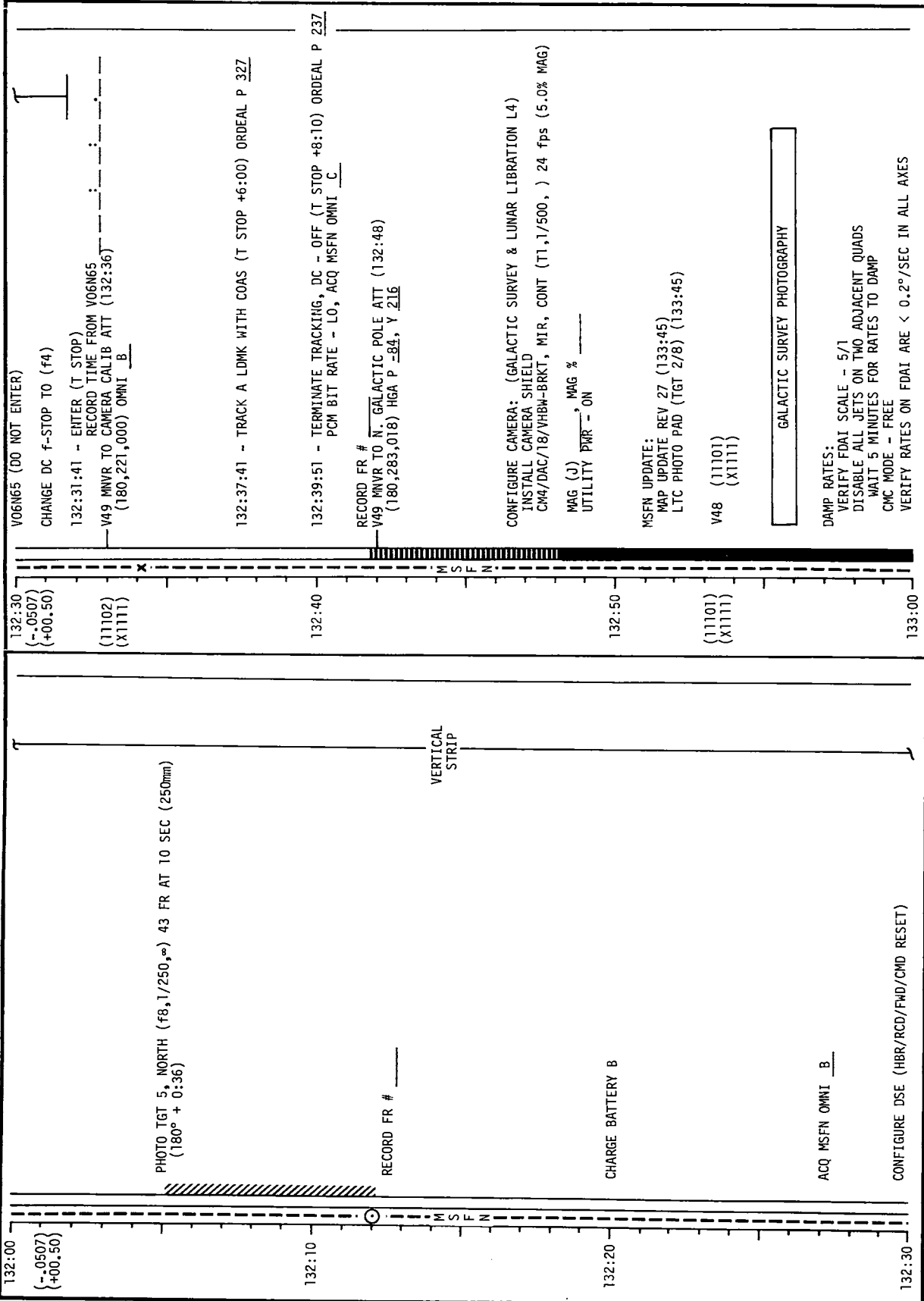
UPLINK TO LM
CSM S.V.
RLS (IF REQ'D)

DUMP DSE

1823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	131:00 - 132:00	6/25-26	3-177

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-178

LM FLIGHT PLAN

MCC-H

CDR

LMP

NOTES

0223 CST



EVA PLANNING PERIOD	
<u>CABIN PREP FOR EVA-2</u> CLEAN AND LUBRICATE SEALS AS REQUIRED STOW ALL LOOSE ITEMS NOT REQUIRED FOR EVA UNSTOW EVA-2 PREP & POST CARD STOW LUNAR SURFACE CHECKLIST	
<u>EQUIPMENT PREP FOR EVA-2</u> SET DET CDR DON BOOTS UNSTOW AND CHECK BOTH OPS VERIFY EQUIPMENT IN ETB AND STOW FOR EVA LMP DON BOOTS	-1:30 -1:20

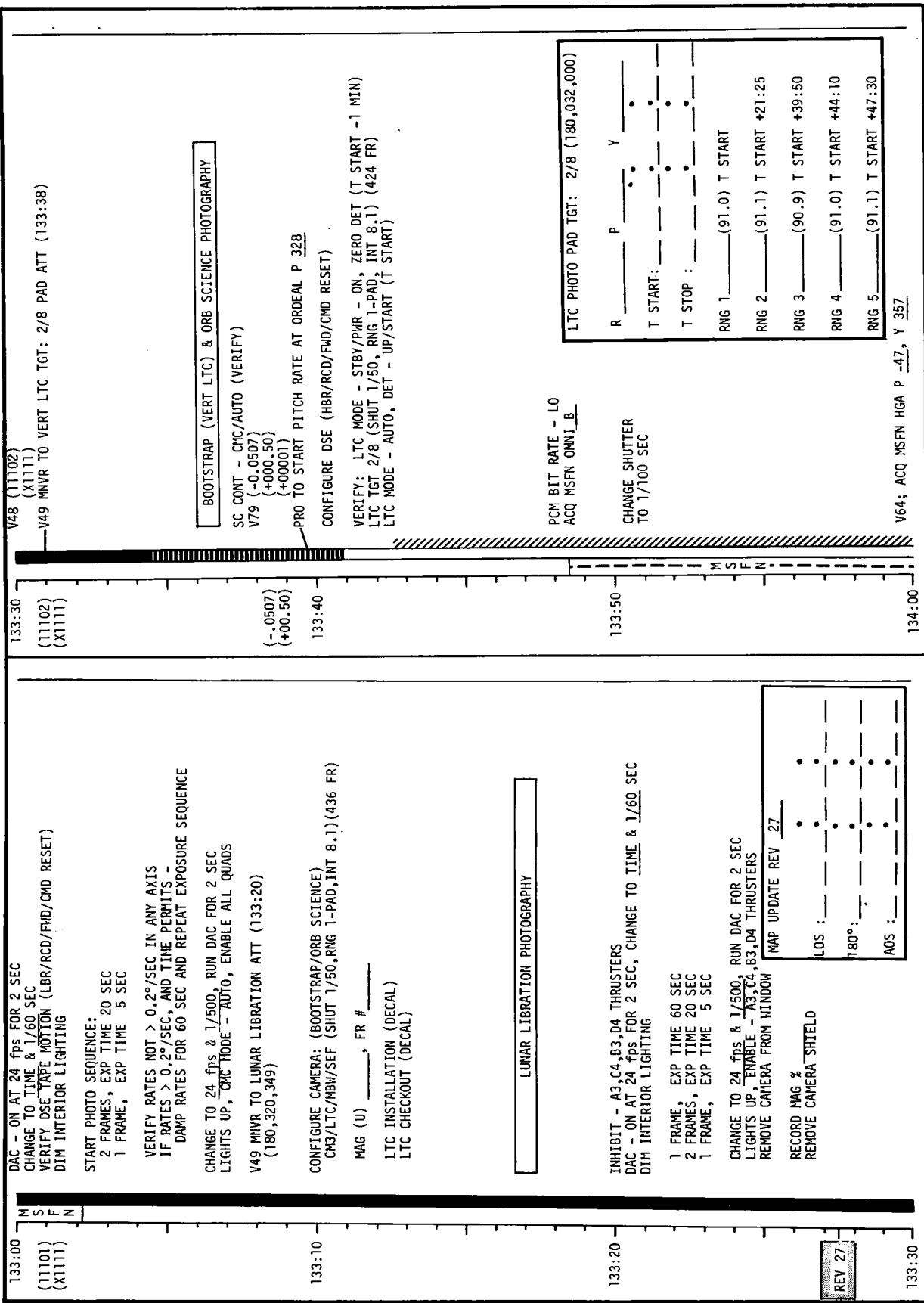
UPDATE TO CSM
LTC PHOTO PAD
MAP UPDATE REV 27

1823

1923

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	132:00 - 133:00	6/26	3-179

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-180

LM FLIGHT PLAN

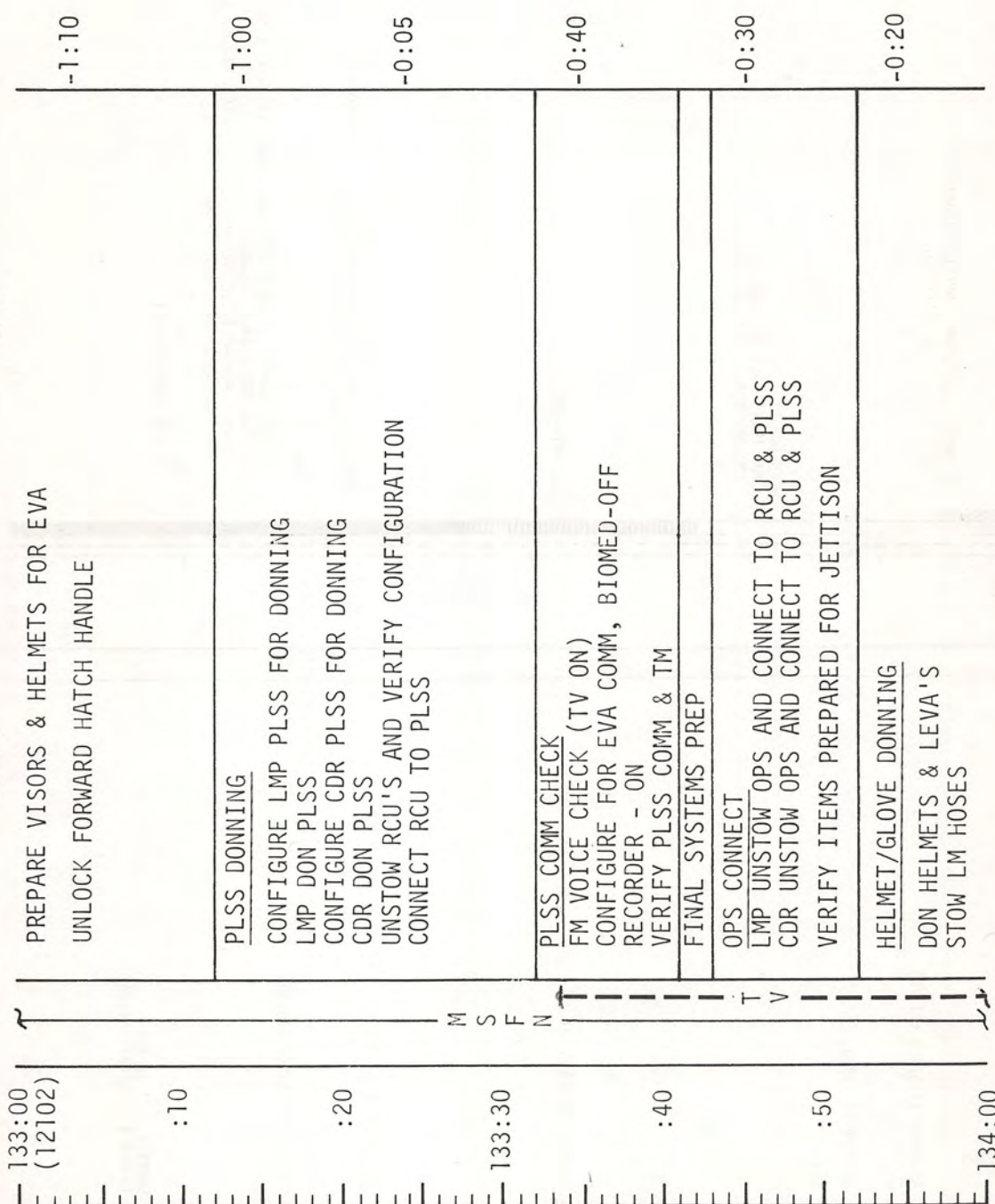
0323 CST

MCC-H

CDR

LMP

NOTES



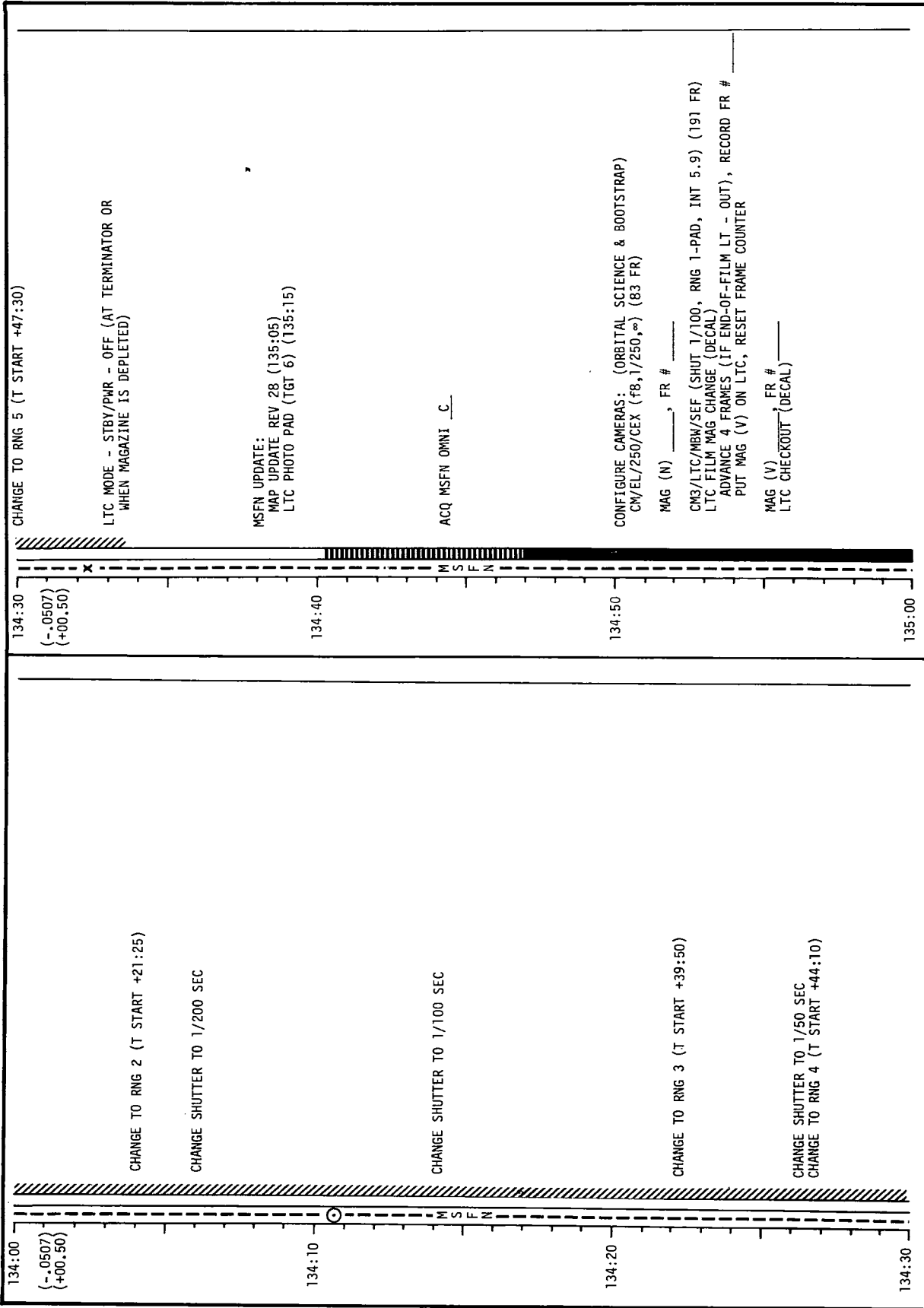
1923

1720

DUMP DSE 2023

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	133:00 - 134:00	6/26-27	3-181

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-182

LM FLIGHT PLAN

MCC-H

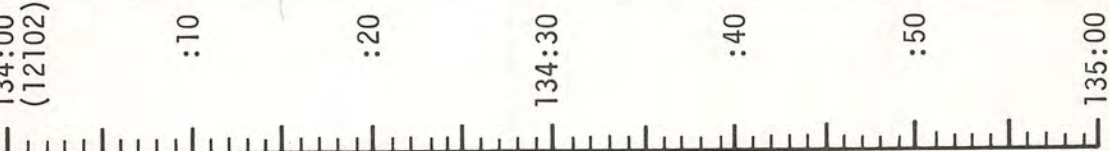
0423 CST

CDR

LMP

NOTES

134:00
(12102)



	VERIFY PGA CONFIGURATION VERIFY CB CONFIGURATION FOR EVA DON GLOVES	-0:10
:10	PRESSURE INTEGRITY CHECK PLS O_2 - ON CABIN DEPRESS DEPRESS CABIN TO 3.5 PSIA, START EVA WATCH OVHD OR FWD DUMP VALVE - OPEN PARTIALLY OPEN FWD HATCH FINAL PREP FOR EGRESS	0:00
:20	PLS FEEDWATER - OPEN, FWD HATCH - OPEN VERIFY CMEA & PGA STATUS RELEASE PLS ANTENNAS, LOWER VISOR	0:10
134:30	CDR EGRESS AND TRANSFER DESCEND TO SURFACE DEPLOY LEC TRANSFER ETB TO SURFACE AND STOW ON MESA	0:20
:40	MET LOAD MOVE MET NEAR MESA OPEN SRC AND STOW EQUIPMENT ON MET	0:30
:50	MAGNETOMETER OFFLOAD MET TRACK & FOOTPRINT EVAL TRAVERSE TO STATION A PHOTOGRAPH AND COMMENT ON MET TRACKS	0:40
135:00	STATION A TDS EXPERIMENT	

-0:10

0:00 START EVA

0:10

0:20

0:30

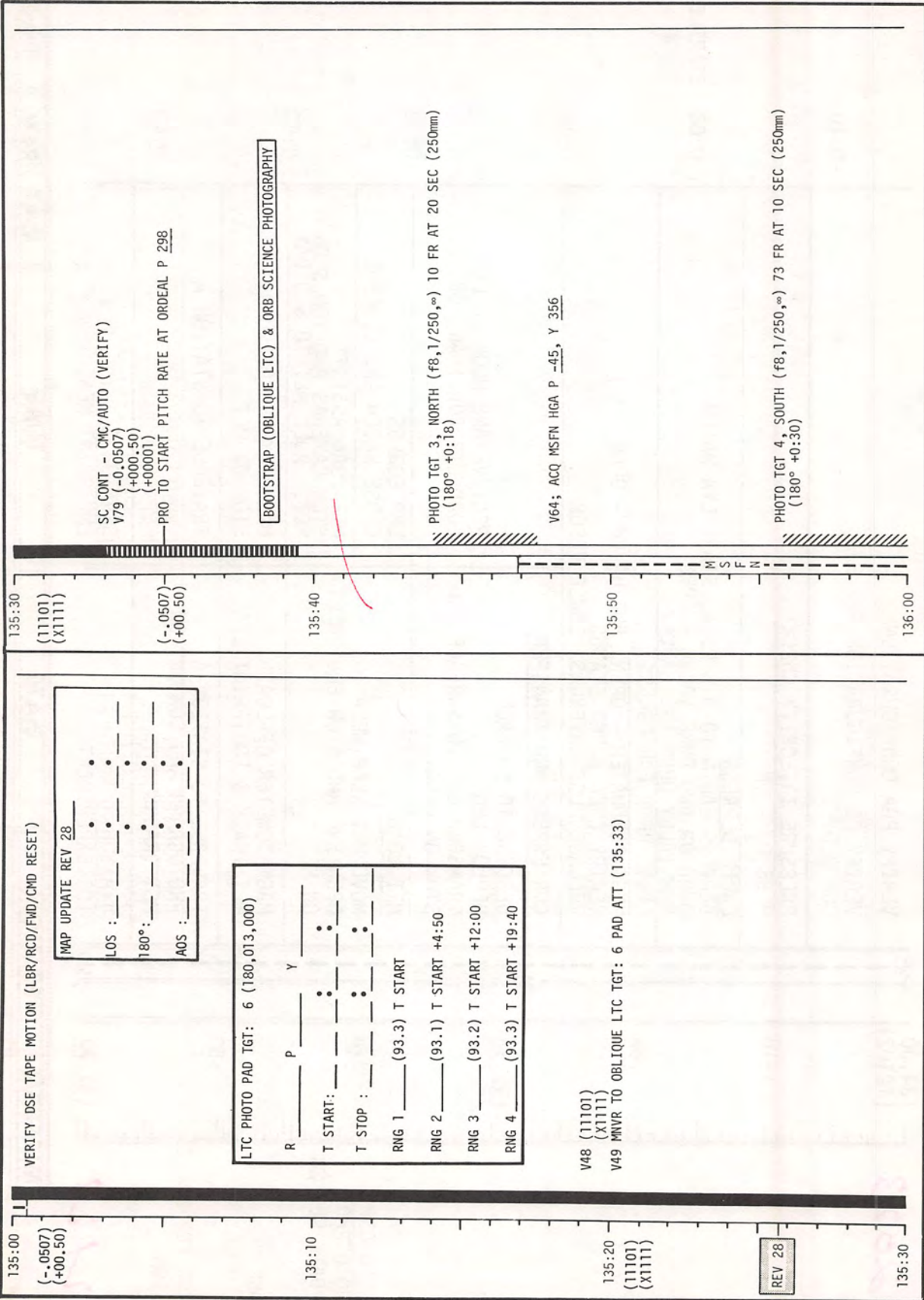
0:40

UPDATE TO CSM
LTC PHOTO PAD
MAP UPDATE REV 28

2123

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	134:00 - 135:00	6/27	3-183

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-184

LM FLIGHT PLAN

0523 CST

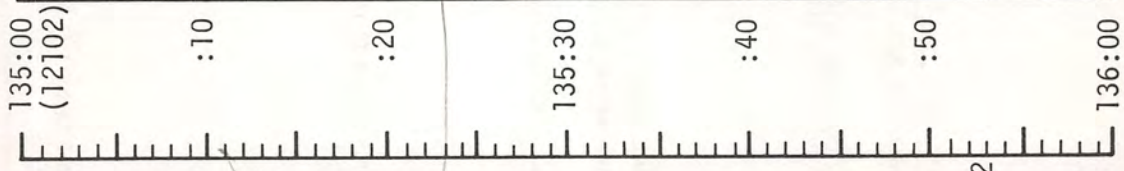
MCC-H

2123

CDR

LMP

NOTES



135:00 (12102)	REBAG AND STOW TDS SAMPLES PHOTO PANORAMA SITE DESCRIPTION COLLECT SAMPLES	REPORT X, Y, Z READINGS AT EACH OF THREE POSITIONS PHOTOGRAPH SITE	0:50
:10	DOUBLE CORE PLACE GNOMON HAMMER TUBES INTO SURFACE STOW HAMMER & GNOMON	STOW SENSOR/TRIPOD ON MET REWIND CABLE, STOW ON MET	1:00
:20	DOUBLE CORE ASSEMBLE TUBES PHOTOGRAPH TUBES IN SURFACE REMOVE AND STOW TUBES		
135:30	TRAVERSE TO STATION B STATION B <i>grab</i> SAMPLE COLLECTION	STATION B PHOTO PANORAMA SITE DESCRIPTION SAMPLE COLLECTION	1:10
:40	TRAVERSE TO BEND AREA BEND AREA: PHOTO PANORAMA AND SITE DESCRIPTION TRAVERSE TO CONE CRATER VIA STATION D		1:20
:50	REST EN ROUTE		1:30
136:00	CONE CRATER RIM SITE DESCRIPTION SAMPLE COLLECTION PROCEED TO SOUTH RIM	CONE CRATER RIM PHOTO PANORAMA SAMPLE COLLECTION PROCEED TO SOUTH RIM	1:40

1950.

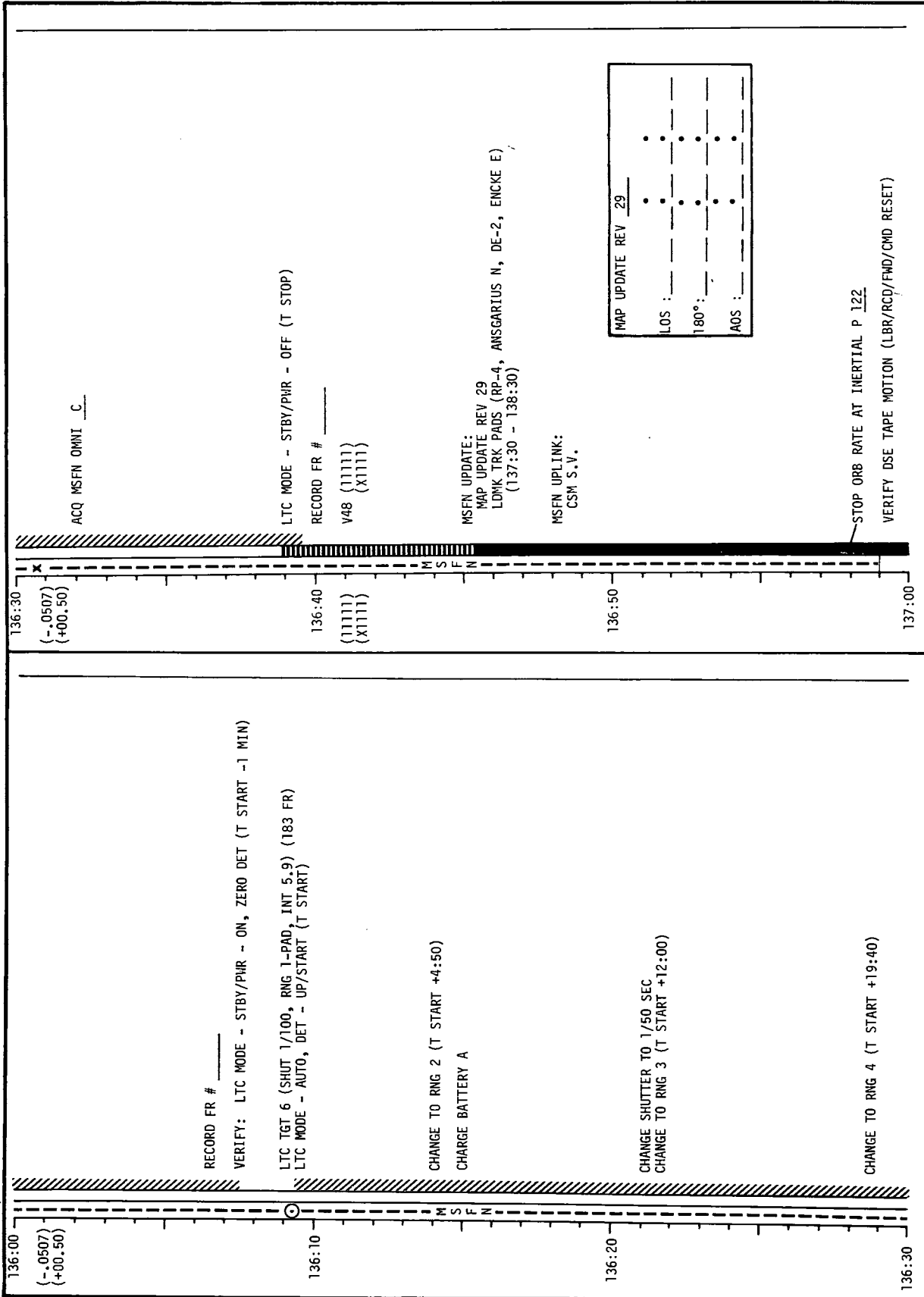
DUMP DSE

GO/NO-GO FOR EVA-2
EXTENSION

2223

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	135:00 - 136:00	6/27-28	3-185

CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-186

LM FLIGHT PLAN

0623 CST

MCC-H

2223

CDR

LMP

NOTES

136:00 (12102)	SAMPLE COLLECTION	SAMPLE COLLECTION	1:50
:10	SAMPLE BOULDER TRACKS	SAMPLE BOULDER TRACKS	
:20	ROLL BOULDERS INTO CRATER	PARTIAL PANORAMA TO WEST	2:00
	EVA COMM EVALUATION <i>ACCOMPL 2</i>		2:10
	SITE DESCRIPTION	PHOTO PANORAMA	
136:30	TRAVERSE TO STATION D		
	SAMPLE COLLECTION		
	STATION D	STATION D	
	SITE DESCRIPTION	PHOTO PANORAMA	2:20
	SAMPLE COLLECTION	SAMPLE COLLECTION	
:40	TRAVERSE TO STATION E		
	REST EN ROUTE		2:30
:50	STATION E	STATION E	
	DIG TRENCH 10° OFF DOWNSUN	LPM MEASUREMENT (SINGLE)	2:40
137:00	PHOTOGRAPH TRENCH		

UPDATE TO CSM
MAP UPDATE REV 29
LDMK TRACK PADS
UPLINK TO CSM
CSM S.V.

2223

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	136:00 - 137:00	6/28	3-187

CSM FLIGHT PLAN

137:00
(11111)
(X1111)

P52 (OPTION 3)
(LIFT-OFF ORIENT)

GDC ALIGN
VERIFY ORDEAL

CYCLE CMC MODE - FREE/AUTO
V48 (11101)
(X1111)

V49 MNVR TO LDMK TRK ATT (137:30)
(000,053,000)

CONFIGURE CAMERA (LDMK TRK)
CM/DAC/SXT/CEX (EXP - PAD) 1 fps (15.2% MAG)

MAG (B) _____, MAG % _____
UTILITY POWER - ON

LTC REMOVAL (DECAL) & STOW

137:10

137:20

137:30

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

REV 29

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-188

LM FLIGHT PLAN

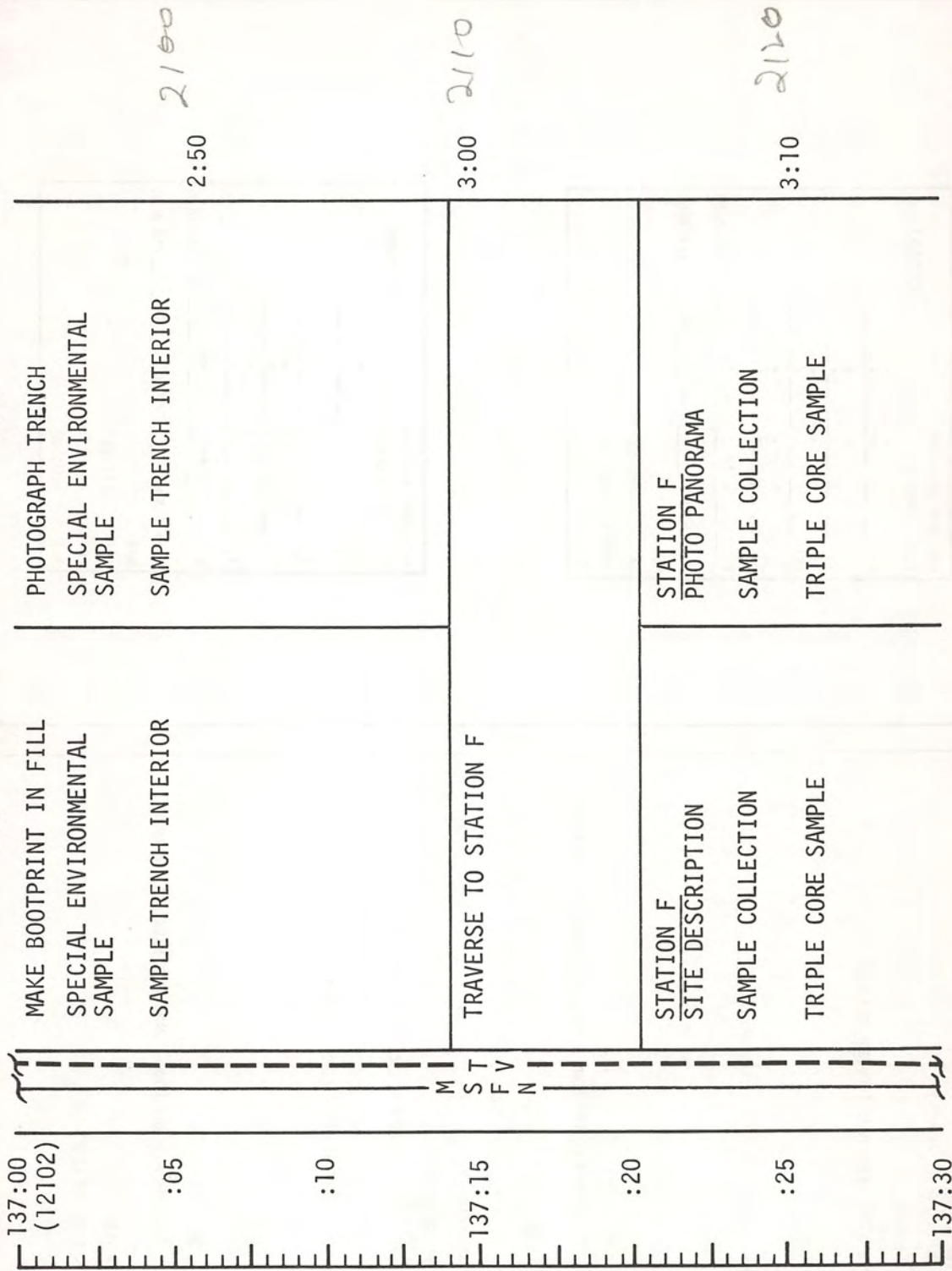
0723 CST

NOTES

LMP

CDR

MCC-H

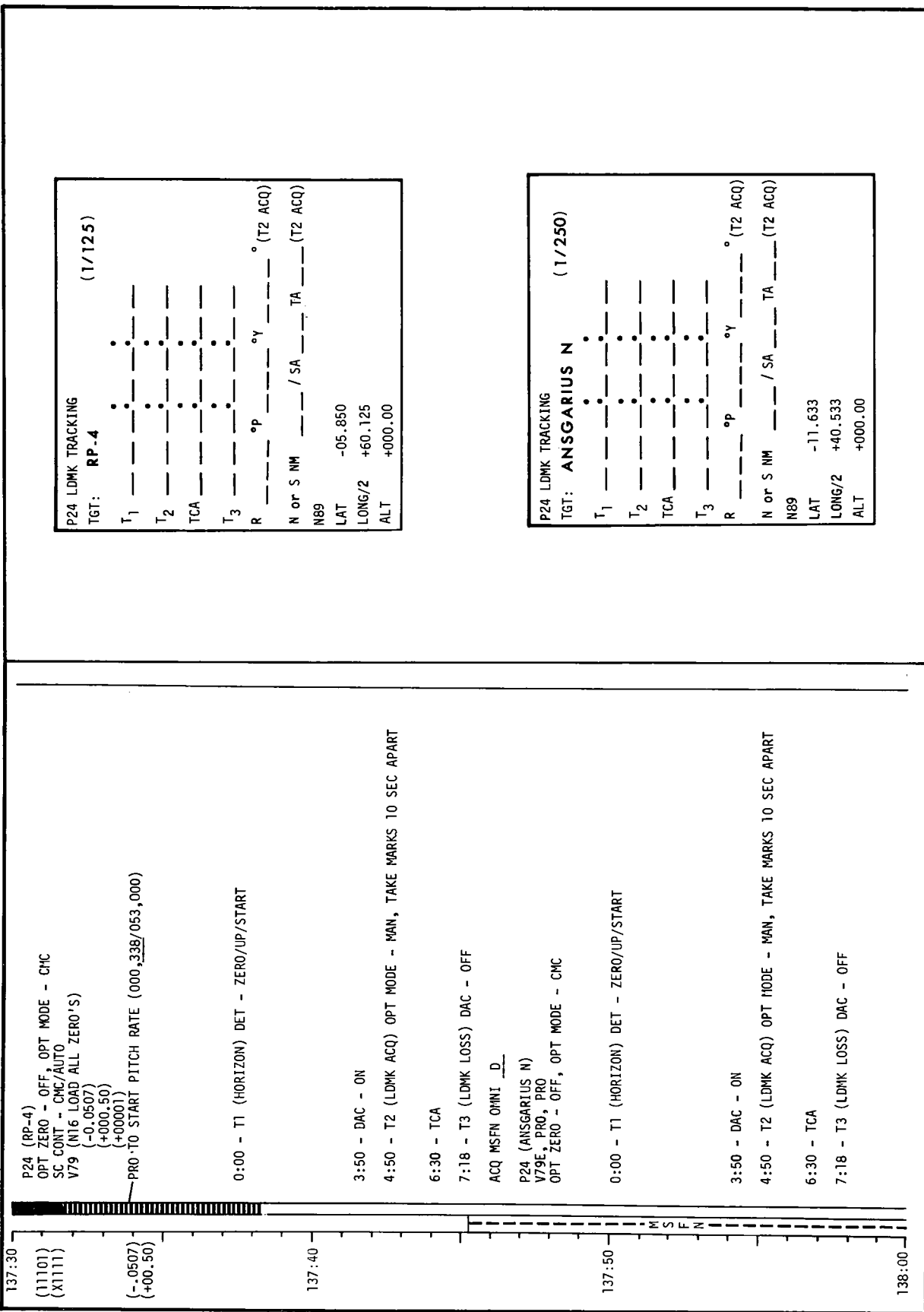


2323.

~~07/0003~~
2353.

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	137:00 - 137:30	6/28-29	3-189

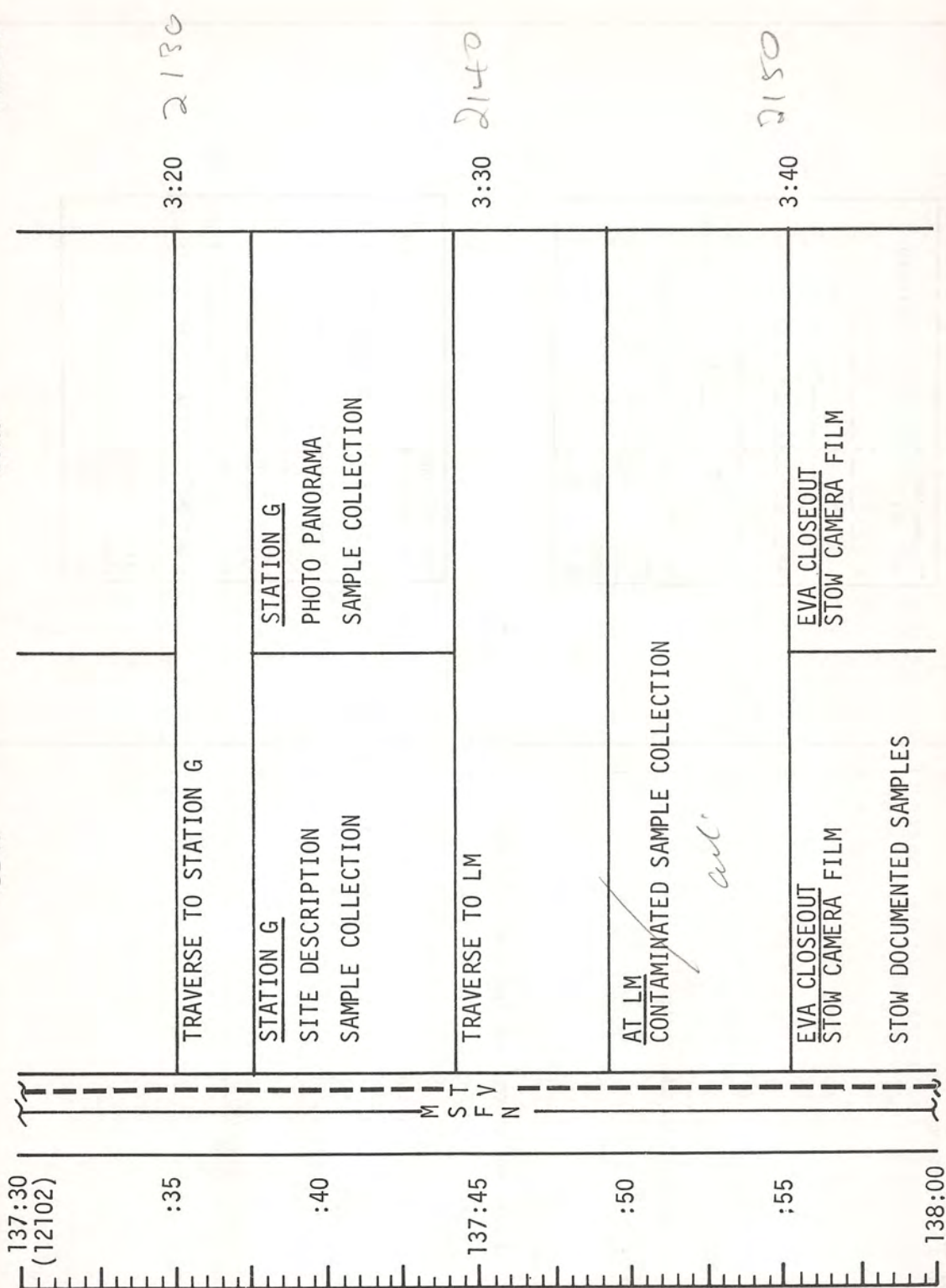
CSM FLIGHT PLAN



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-190

LM FLIGHT PLAN

MCC-H
0753 CST
CDR
LMP
NOTES



RECORD PCM LBR
ON DSE DURING P24'S

07/0023

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	137:30 - 138:00	6/29	3-191

CSM FLIGHT PLAN

138:00

(-.0507)
(+00.50)

P24 (DE-2)
V79E, PRO, PRO
OPT ZERO - OFF, OPT MODE - CMC

138:10

0:00 - T1 (HORIZON) DET - ZERO/UP/START

3:50 - DAC - ON

4:50 - T2 (LOMK ACQ) OPT MODE - MAN, TAKE MARKS 10 SEC APART

6:30 - TCA

7:18 - T3 (LOMK LOSS) DAC - OFF

P24 (ENCKE E)
V79E, PRO, PRO
OPT ZERO - OFF, OPT MODE - CMC

138:20

REPORT: GYRO TORQUING ANGLES
(FROM P52 AT 137:00)

138:30

P24 LDMK TRACKING		(1/250)	
TGT:	DE-2		
T ₁	---	°	---
T ₂	---	°	---
TCA	---	°	---
T ₃	---	°	---
R	°P	°	---
		SA	TA
N or S	NM		
N89			
LAT	-09.250		
LONG/2	+09.796		
ALT	+000.00		

P24 LDMK TRACKING		(1/60)	
TGT:	ENCKE E		
T ₁	---	°	---
T ₂	---	°	---
TCA	---	°	---
T ₃	---	°	---
R	°P	°	---
		SA	TA
N or S	NM		
N89			
LAT	+00.283		
LONG/2	-20.150		
ALT	+000.00		

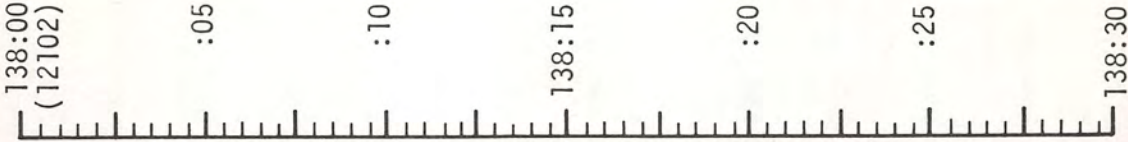
MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-192

LM FLIGHT PLAN

MCC-H

0823

0823 CST



CDR

LMP

NOTES

PACK AND SEAL SRC STOW WEIGH BAGS IN ETB CLEAN AND CHECK EMU'S HAND SRC TO LMP TRANSFER ETB VIA LEC EVA TERMINATION ASCEND TO PLATFORM DISCARD LEC INGRESS REPRESSURIZE CABIN	RETRIEVE AND STOW SMC FOIL ASSIST CDR <u>EVA TERMINATION</u> CLEAN EMU'S ASCEND TO MIDDLE LADDER RUNG RIG LEC FOR ETB AND TRANSFER INGRESS TRACKING LIGHT TEST PLACE ETB ON ASC ENG COVER CHECK EMU & LM SYSTEMS PASS LEC TO CDR STOW SRC ON ASC ENG COVER ASSIST CDR CLOSE HATCH
--	--

3:50 2200

4:00 2210

4:10 2220

4:15/0:00 2225

Handwritten signature
0053

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	138:00 - 138:30	6/29	3-193

CSM FLIGHT PLAN

0:00 - T1 (HORIZON) DET - ZERO/UP/START

3:50 - DAC - ON

4:50 - T2 (LDMK ACQ) OPT MODE - MAN, TAKE MARKS TO SEC APART

6:30 - TCA

7:18 - T3 (LDMK LOSS) DAC - OFF
 V48 (11112)
 (X1111)

V49 MNVR TO COMM ATT (138:42)
 (110,216,000) HGA P = 2, Y 194

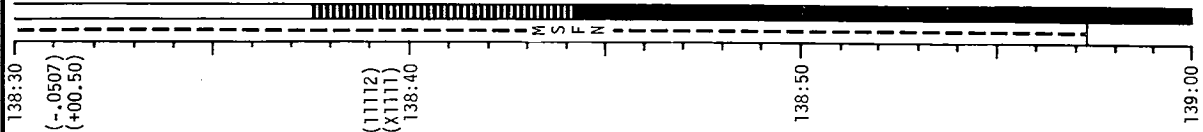
RECORD MAG % _____

MSFN UPDATE:
 MAP UPDATE REV 30
 ZERO PHASE PADS (139:20, 140:15)

MAP UPDATE REV 30	•	•	•	•	•
LOS :	---	---	---	---	---
180°:	---	---	---	---	---
AOS :	---	---	---	---	---

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

H₂ PURGE LINE HEATERS - ON



MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-194

LM FLIGHT PLAN

0853 CST

CDR

LMP

NOTES

138:30
(12102)

POST-EVA SYSTEMS CONFIGURATION
CONFIGURE LM ECS, DOFF GLOVES

4:15/0:00

CONNECT LM ECS HOSES TO SUIT

:35

CONNECT TO LM COMM AND RECONFIGURE
BIOMED - LEFT, RECORDER - OFF

DUMP DSE

:40

PLSS/OPS DOFFING

0:10

DISCONNECT OPS & RCU FROM PLSS

UPDATE TO CSM
MAP UPDATE REV 30
ZERO PHASE PADS

138:45

DISCONNECT AND DOFF PLSS/OPS (LMP FIRST)

:50

CDR, THEN LMP, DISASSEMBLE PLSS/OPS
CHECKOUT AND STOW OPS

0:20

VERIFY POWER DOWN CB CONFIGURATION

:55

PREP FOR EQUIPMENT JETTISON
DOFF LUNAR BOOTS, STOW IN DISPOSABLE CONTAINER
STOW RCU'S IN DISPOSABLE CONTAINER
STOW PLSS CONDENSATE CONTAINER IN DISPOSABLE CONTAINER

139:00

0:30

M T F V N

MCC-H

6053

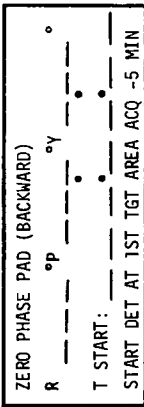
6123

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	138:30 - 139:00	6/29	3-195

CSM FLIGHT PLAN

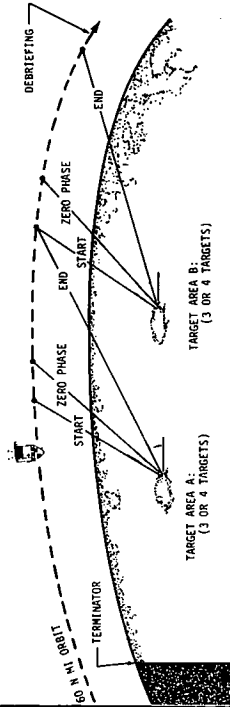
CONFIGURE CAMERA: (ZERO PHASE)
 CM3/DC/80/MBH-BRKT, IVL, PCM CABLE (F5.6, 1/250, ∞) (41 FR)
 MAG (R) _____, FR # _____

RR XPNDR ACTIVATION AND SELF-TEST (DECAL)



V48 (11101)
 (X1111)
 V49 MNVR TO ZERO PHASE TGT 5 & 6 ATT (139:30)
 (196.1, 341.6, 359.3)

H₂ & O₂ FUEL CELL PURGE
 WASTE WATER DUMP
 H₂ PURGE LINE HEATERS - OFF
 TYPICAL ZERO PHASE OBSERVATION PASS - BACKWARD LOOKING



139:30
 (11101)
 (X1111)
 (-.0507)
 (+00.50)

SC CONT - CMC/AUTO (VERIFY)
 V79 (-0.0507)
 (+000.50)
 (+00001)
 PRO TO START PITCH RATE (196.1, 268/341.6, 359.3)

ZERO PHASE OBSERVATIONS - BACKWARD LOOKING

139:40:12 - DET - ZERO/UP/START (T START)
 REVIEW TGT 5 & 6 MAPS

ACQ MSFN HGA P -68, Y 34
 5:00 - DC - ON, START OBSERVATIONS (TGT AREA 5)

6:40 - ZERO PHASE POINT (TGT AREA 5)
 8:06 - STOP OBSERVATIONS
 START OBSERVATIONS (TGT AREA 6)
 8:46 - ZERO PHASE POINT (TGT AREA 6)

11:48 - STOP OBSERVATIONS
 DEBRIEF (~ 30 SEC)
 12:18 - DC - OFF

CONFIGURE CAMERA: (ORBITAL SCIENCE)
 CM/EL/250/CEX (F5.6, 1/250, ∞) (41 FR)
 MAG (N) _____, FR # _____

V48 (11102)
 (X1111)

139:00
 (-.0507)
 (+00.50)

REV 30

139:30

MISSION	EDITION	DATE	PAGE
APOLLO 14	Ch. C	DECEMBER 29, 1970	3-196

JANUARY 18, 1971

Ch. C
 181/171

LM FLIGHT PLAN

0923 CST

MCC-H

0123

CDR

LMP

NOTES

139:00 (12102)	REMOVE AND STOW ARMREST IN DISPOSABLE CONTAINER POSITION PLSS'S FOR JETTISON DON EV GLOVES	0:30
:10	PRESSURE INTEGRITY CHECK	0:40
:20	CABIN DEPRESS FOR JETTISON OPEN HATCH, JETTISON DISPOSABLE CONTAINER AND PLSS'S CLOSE HATCH	0:50
139:30	DUMP VALVES - AUTO REPRESSURIZE CABIN <u>POST-EVA CABIN CLEANUP</u>	1:00
:40	SECURE OPS ON CABIN FLOOR STOW EQUIPMENT FOR RETURN WEIGH SRC, ISA, & WEIGH BAGS, REPORT TO MCC-H STOW SCALE & SRC STOW LM EVA ANTENNA	1:10
:50	INSTALL ISA IN AFT CABIN STOW EVA ONBOARD DATA IN FLIGHT DATA FILE	1:20
140:00		1:30

M T F V N

DUMP DSE

0223

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	139:00 - 140:00	6/29-30	3-197

CSM FLIGHT PLAN

140:00 V49 MNVR TO ZERO PHASE TGT 7 & 8 ATT (140:06)
 (11102)
 (X1111) (347.0, 222.4, 358.7) OMNI D

PHOTO TGT 7, NORTH (180° + 1:15) (180, 1250, 000) 31 FR AT 10 SEC (250mm)
 (8, 1250, 000)

SC CONT - CMC/AUTO (VERIFY)
 V79 (-0.0507)
 (+000.50)

PRO TO START PITCH RATE (347.0, 276/222.4, 358.7)

ZERO PHASE OBSERVATIONS - FORWARD LOOKING

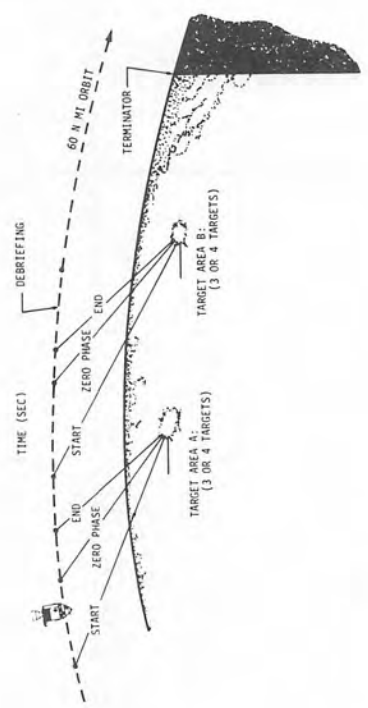
140:17:24 - DET - ZERO/UP/START (T START)
 REVIEW TGT 7 & 8 MAPS

5:00 - DC-ON, START OBSERVATIONS (TGT AREA 7)

8:40 - ZERO PHASE POINT (TGT AREA 7)
 9:00 - STOP OBSERVATIONS
 START OBSERVATIONS (TGT AREA 8)
 9:56 - ZERO PHASE POINT (TGT AREA 8)
 10:38 - STOP OBSERVATIONS
 DEBRIEF (~ 30 SEC)
 11:08 - DC-OFF, REMOVE CAMERA FROM WINDOW

RECORD FR #

TYPICAL ZERO PHASE OBSERVATION PASS - FORWARD LOOKING



ZERO PHASE PAD (FORWARD)
 R _____ °P _____ °Y _____ °
 T START: _____
 START DET AT 1ST TGT AREA ACQ -5 MIN

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL	DECEMBER 2, 1970	3-198

January 18, 1971

change 1/18/71

LM FLIGHT PLAN

MCC-H

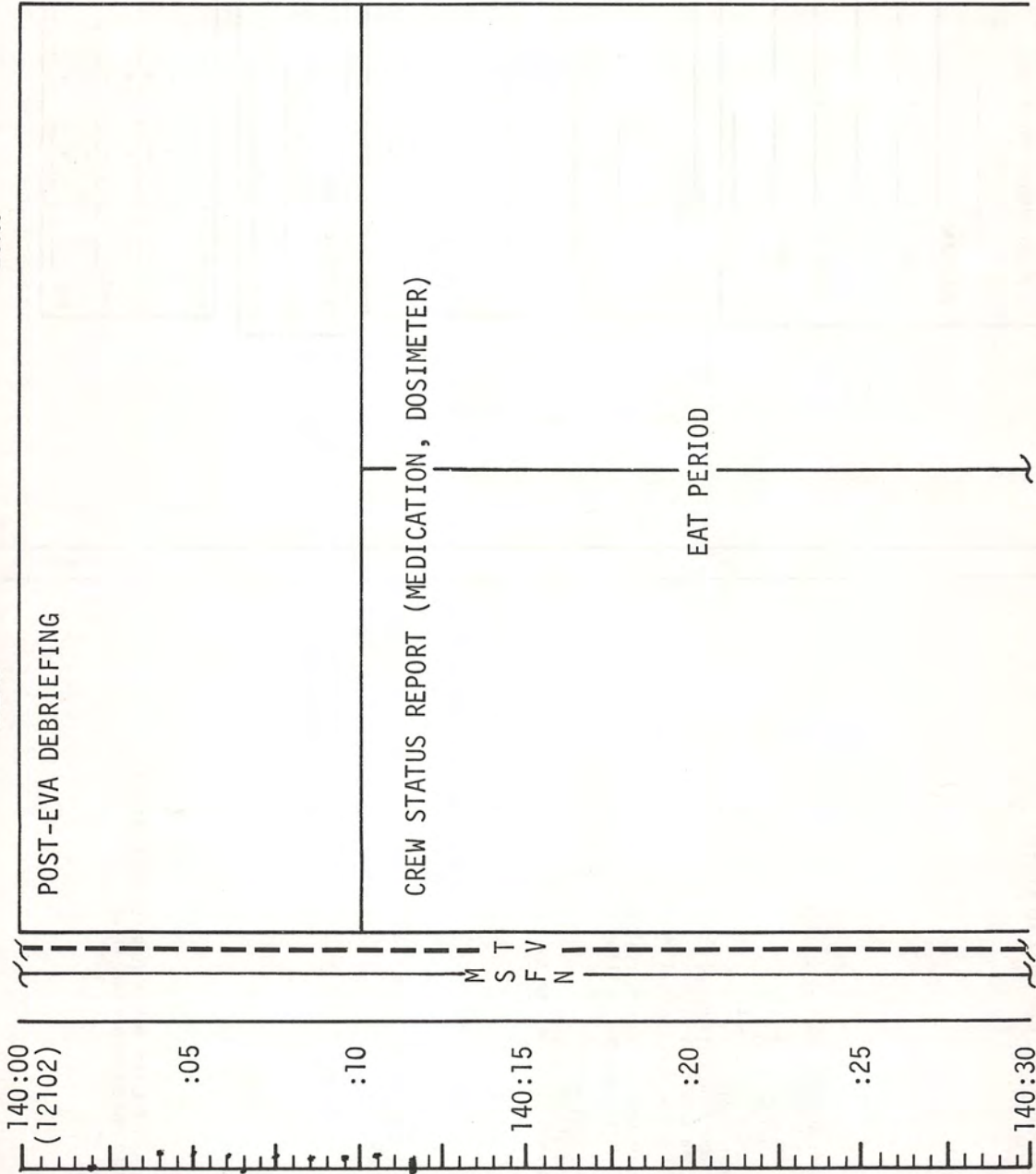
0223

1023 CST

CDR

LMP

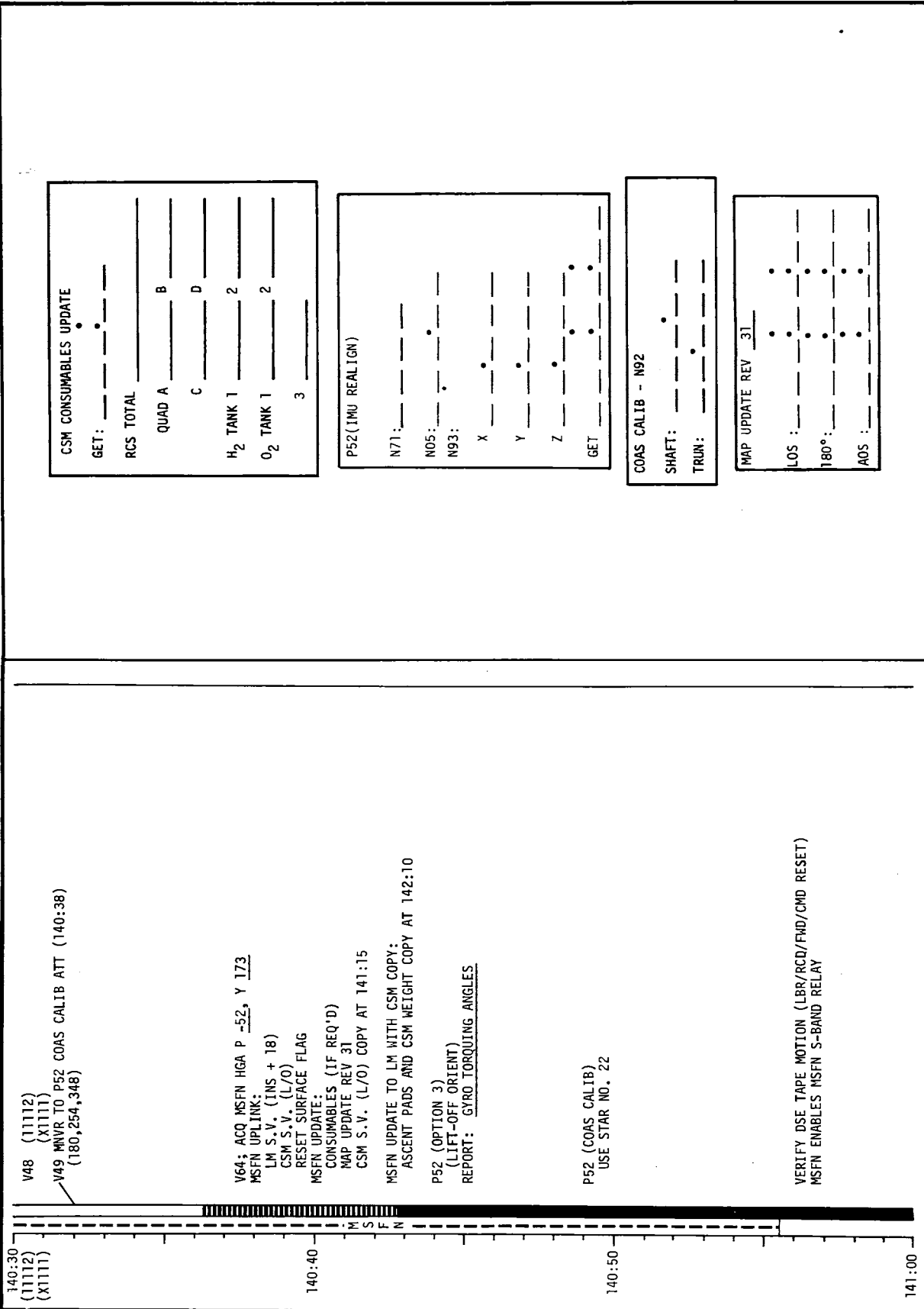
NOTES



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	140:00 - 140:30	6/30	3-199

0253

CSM FLIGHT PLAN



140:30
(11112)
(X1111)

V48 (11112)
(X1111)
V49 MVR TO P52 COAS CALIB ATT (140:38)
(180,254,348)

V64; AGO MSFN HGA P -52, Y 173
MSFN UPLINK:
LM S.V. (INS + 18)
CSM S.V. (L/O)
RESET SURFACE FLAG
MSFN UPDATE:
CONSUMABLES (IF REQ'D)
MAP UPDATE REV 31
CSM S.V. (L/O) COPY AT 141:15

MSFN UPDATE TO LM WITH CSM COPY:
ASCENT PADS AND CSM WEIGHT COPY AT 142:10

P52 (OPTION 3)
(LIFT-OFF ORIENT)
REPORT: GYRO TORQUING ANGLES

P52 (COAS CALIB)
USE STAR NO. 22

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)
MSFN ENABLES MSFN S-BAND RELAY

140:40

M
S
F
N

140:50

141:00

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

P52 (IMU REALIGN)

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

COAS CALIB - N92

SHAFT: _____

TRUN: _____

MAP UPDATE REV 31

LOS: _____

180°: _____

AOS: _____

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-200

LM FLIGHT PLAN

MCC-H
 1053 CST
 CDR
 LMP
 NOTES



- 0253**
- UPLINK TO CSM
- LM S.V. (INS +18)
- CSM S.V. (L/O)
- RESET SURFACE FLAG
- UPDATE TO CSM
- CONSUMABLES
- (IF REQ'D)
- MAP UPDATE REV 31
- CSM S.V. (L/O)
- UPDATE TO CSM
- ASCENT PADS
- CSM WEIGHT
- UPDATE TO LM
- LM CONSUMABLES
- ASCENT PADS
- CSI PAD
- UPLINK TO LM
- CSM S.V. (L/O)
- ZERO POS/NEG CELLS

ENABLE MSFN
 S-BD RELAY
0323

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	140:30 - 141:00	6/30	3-201

CSM FLIGHT PLAN

CONFIGURE CAMERAS FOR DOCKING:

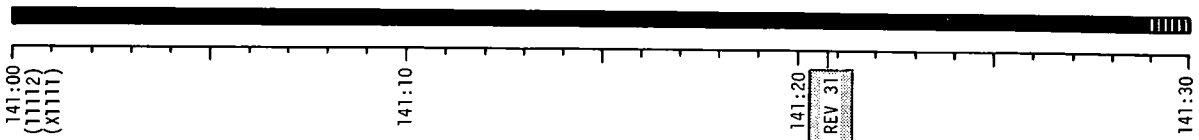
CM2/DAC/18/CEX-BRKT, MIR (T8, 1/250, 7) 6 fps (100% MAG)

MAG (D) _____, MAG % _____
 UTILITY PWR - ON

CM/EL/80/CEX (F8, 1/250, FOCUS) (10 FR)

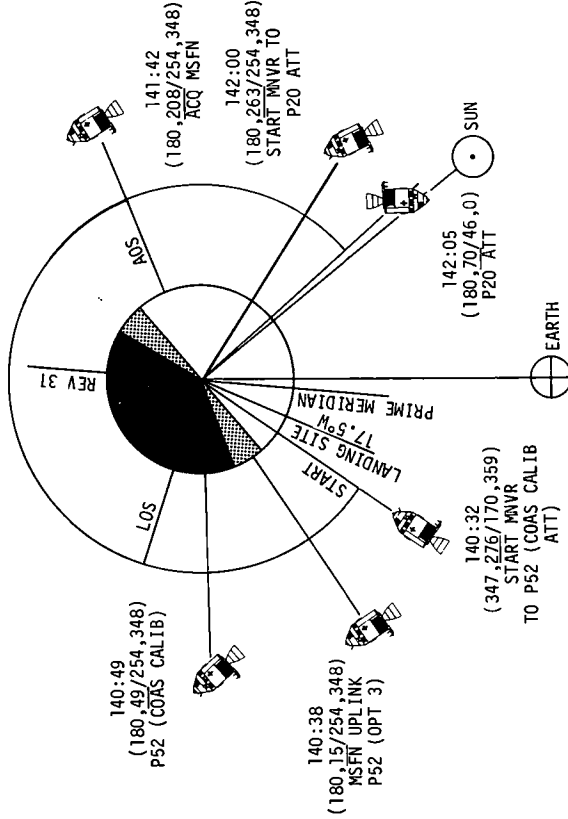
MAG (N) _____, FR # _____

CM4/TV/PEAK, BRKT
 (F44) 11 MIN



PURP	CSM S.V. (L/O)			P27 UPDATE		
	V	:	:	V	:	:
GET	:	:	:	:	:	:
304 01	INDEX			INDEX		
02						
03						
04						
05						
06						
07						
10						
11						
12						
13						
14						
15						
16						
17						
20						
21						
22						
23						
24						

EAT PERIOD



(XXX, XXX/XXX, XXX)
 YAW
 PITCH
 ORDEAL
 ROLL

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-202

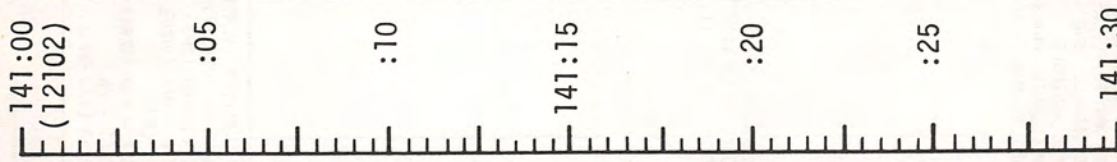
LM FLIGHT PLAN

NOTES

LMP

CDR

1123 CST



VERIFY GUIDANCE CONFIGURATION CONFIGURE CB'S (TV-OFF) V63 RR SELF-TEST	EAT PERIOD CONFIGURE COMM CONFIGURE CB'S FOR L/O PREP AGS STATUS-OPERATE ALIGN AGS TO PGNS AGS GYRO CALIBRATION LOAD AGS ASCENT TARGETING
--	---

0313

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	141:00 - 141:30	6/30-31	3-203

CSM FLIGHT PLAN

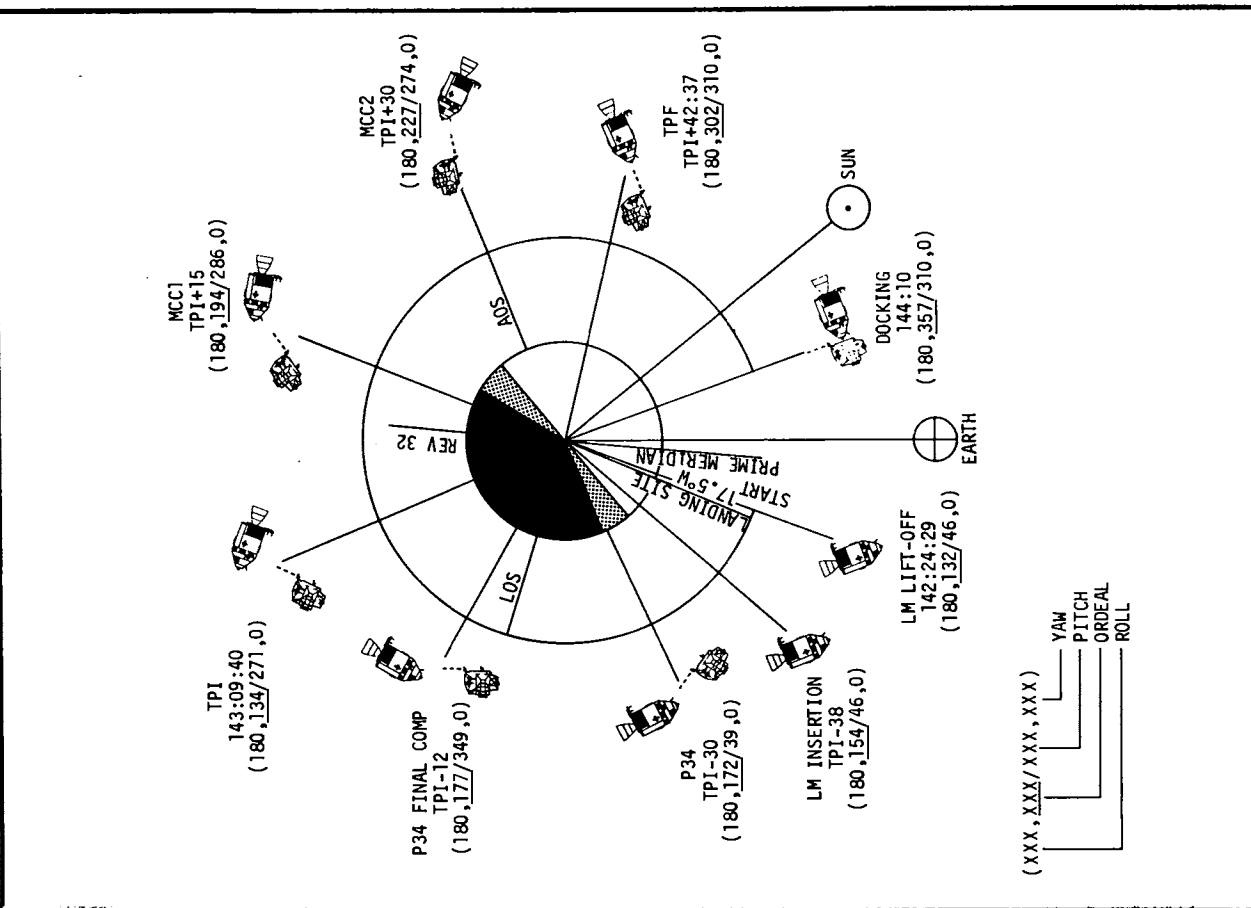
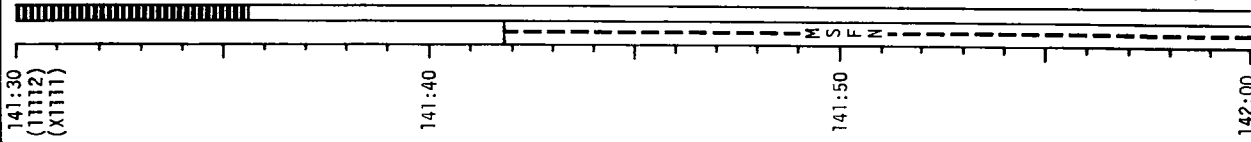
DON PGA WITHOUT HELMET AND GLOVES

- UNSTOW JETTISON BAG (R13)
- PACK JETTISON ITEMS
- INSTALL CABIN FAN LUNAR DUST FILTER (PGA BAG)
- INSTALL SPRINGS AND CLIPS ON A8, A6, A3, AND PNL 350
- INSTALL TEMP STORAGE BAGS ON LH AND RH SIDES OF LEB
- REMOVE B5 AND B6 POUCHES
- REMOVE COVERALLS, CMG AND INSTALL T-ADAPTERS
- UNSTOW AND ASSEMBLE:
 - VACUUM CLEANER, PWR CABLE, HOSE AND BAG (SIDE A12, SIDE A8)
 - REMOVE DECONTAMINATION BAGS (A8, U1)

ACQ MSFN HGA P -52, Y 173
 MSFN UPDATE TO LM WITH CSM COPY:
 ASCENT UPDATE PAD (IF REQ'D) COPY AT 142:15

EAT PERIOD

VHF AM B - DUPLEX (VERIFY)
 VHF AM A - OFF (VERIFY)
 VHF RANGING - ON (UP)
 VHF AM T/R - OFF (PANEL 9)
 VHF ANT - LEFT
 RNDZ XPNDR - PWR (VERIFY)
 EXT RNDZ LT - ON
 EXT RUIN/EVA LT - ON



(XXX, XXX/XXX, XXX)
 YAW
 PITCH
 ORDEAL
 ROLL

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE B (JAN)	JANUARY 11, 1971	3-204

LM FLIGHT PLAN

MCC-H

0353

1153 CST

CDR

LMP

NOTES

141:30 (12102)	:35	:40	141:45	:50	:55	142:00
M S F N						
RATE GYRO TEST	LGC CLOCK SYNC V47 AGS INITIALIZATION (SET BIAS)					
RCS CHECKOUT	P57 LUNAR SURFACE ALIGN OPTION 4 LANDING SITE A/T 3 - GRAVITY AND CELESTIAL BODY (LIFT-OFF ORIENTATION)					
PT2 POWERED ASCENT	ALIGN AGS TO PGNS BATS 5&6-ON, 1&3-OFF/RESET SET CAMERA: LM3/DAC					
PRELAUNCH SWITCH CHECKS	AGS LUNAR ALIGN PRELAUNCH SWITCH CHECKS					

- DUMP DSE
- UPDATE TO CSM
- ASCENT PAD
(IF REQ'D)
- UPDATE TO LM
- ASCENT PAD
(IF REQ'D)
- UPLINK TO LM
- CSM S.V. (L/O)
(IF REQ'D)
- RLS (IF REQ'D)
- LGC GYRO COMP
(IF REQ'D)

0423

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	141:30 - 142:00	6/31	3-205

CSM FLIGHT PLAN

142:00
(11102)
(X1111)

CYCLE CMC MODE - FREE/AUTO
V48 (11102)
(X1111)
V49 MWVR TO P20 ATT (142:05)
(180,46.0) OMNI D

GDC ALIGN
VERIFY ORDEAL

GO/NO GO FOR LM LIFT-OFF
AND DIRECT ASCENT RNDZ
MSFN UPDATE:
MMP UPDATE REV 32
COPY AT 142:50

V67 (+10000, +00100, +00001)
LOAD N37 AND N55

VHF VOICE CHECK

VHF ANT - RIGHT
VHF RNG - RESET

LM LIFT-OFF

142:24:29

CONFIGURE SWITCHES FOR BAILLOUT:
FDAL SCALE - 5/5
MAN ATT (3) - RATE CMD
ATT DB - MIN
RATE - HIGH
THC PMR - ON (UP)
RHC PMR DIR (BOTH) - MNA/MNB
BMAG MODE (3) - RATE 2

142:24:29

DIRECT ASCENT RNDZ PAD			UPDATE (IF REQ'D)		
GETI	HRS	+ 0 0			+ 0 0
LIFT-OFF	MIN	+ 0 0 0			+ 0 0 0
	SEC	+ 0			+ 0
GETI	HRS	+ 0 0			+ 0 0
TPI	MIN	+ 0 0 0			+ 0 0 0
N37	SEC	+ 0			+ 0

CSM WT	+			
LM WT	+	0	5	7 0 0

COELLIPTIC RNDZ PAD			UPDATE (IF REQ'D)		
GETI	HRS	+ 0 0			+ 0 0
LIFT-OFF	MIN	+ 0 0 0			+ 0 0 0
	SEC	+ 0			+ 0
GETI	HRS	+ 0 0			+ 0 0
CSI	MIN	+ 0 0 0			+ 0 0 0
N11	SEC	+ 0			+ 0
GETI	HRS	+ 0 0			+ 0 0
TPI	MIN	+ 0 0 0			+ 0 0 0
N37	SEC	+ 0			+ 0

142:10
(11102)
(X1111)

-15

142:10

-5

142:20

0

142:30

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-206

LM FLIGHT PLAN

MCC-H

CDR

LMP

NOTES

1223 CST



VENT DPS FUEL, OXID, & SHE DON HELMET & GLOVES PRESSURIZE APS CONFIGURE ASCENT FEEDS	DON HELMET & GLOVES V47 VERIFY AGS BIAS LIFT-OFF COMM, RECORDER - ON BATS 2 & 4 - OFF/RESET DEADFACE DES BATS VERIFY CB STATUS FOR LIFT-OFF	CHECK APS, RCS, EPS, ECS VHF VOICE CHECK LM TIMELINE BOOK DAC-ON
GO/NO-GO FOR LIFT-OFF VERIFY CB STATUS FOR LIFT-OFF	CHECK APS BURN CARD LM LUNAR LIFT-OFF YAW RIGHT 30°	

TIG: 142:24:29
 BT: 7 MIN 10.7 SEC
 ΔVT: 6053.4 FPS
 ULLAGE: NONE
 ORBIT: 50.96x9.14 NM

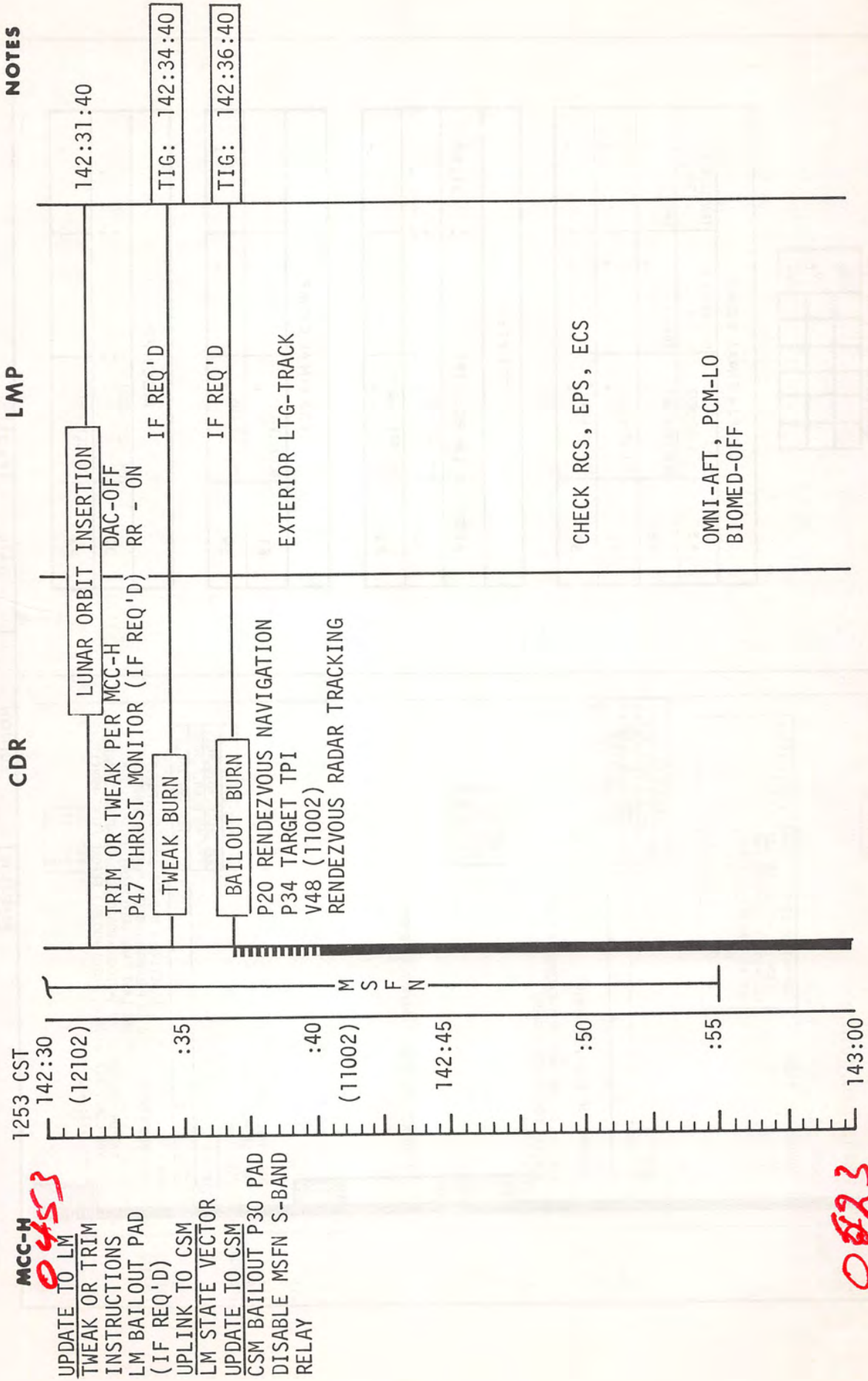
0423

GO/NO-GO FOR LIFT-OFF ON REV 31, GUIDANCE RECOMMENDATION & DIRECT ASCENT UPDATE TO CSM MAP UPDATE REV 32

0453

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	142:00 - 142:30	6/31	3-207

LM FLIGHT PLAN



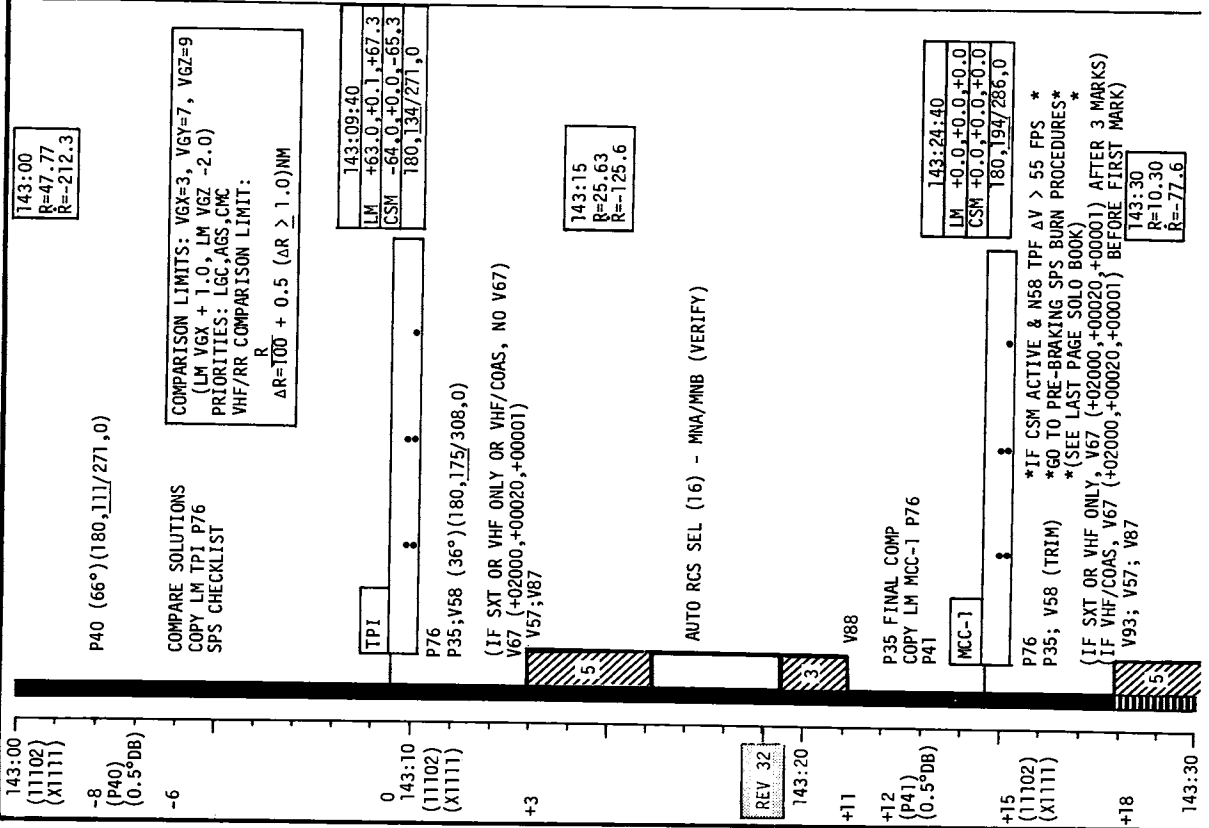
MCC-W
0453

- UPDATE TO LM
- TWEAK OR TRIM INSTRUCTIONS
- LM BAILOUT PAD (IF REQ'D)
- UPLINK TO CSM
- LM STATE VECTOR
- UPDATE TO CSM
- CSM BAILOUT P30 PAD
- DISABLE MSFN S-BAND RELAY

0823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	142:30 - 143:00	6/31	3-209

CSM FLIGHT PLAN



GROUND TPI FOR LM

					ΔV_X
					ΔV_Y
					ΔV_Z

P34 FINAL COMP

55	INTEG OPT +00000	ELEVATION \int .	TRANSFER \int +130.00
58	PERILUNE ALT	TPI ΔV	TPF ΔV
81	TPI ΔV -LV	.	.
59	TPI ΔV -LOS	.	.

TPI P76

ADD FOR LM RCS TPI		:	21.00
33	LM GETI-TPI	:	.
84	LM TPI ΔV -LV	:	.

P35 FINAL COMP

81	MCC1 ΔV -LV	.	.
59	MCC1 ΔV -LOS	.	.

MCC1 P76

33	LM GETI-MCCT	:	.
84	LM MCC1 ΔV -LV	.	.

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-210

LM FLIGHT PLAN

MCC-H

CDR

LMP

NOTES

1323 CST

143:00
(11002)

(12012)

:05

:10

143:15

REV 32

:25

143:30

FINAL TPI COMPUTATION

V48 (12012)

P42 APS THRUSTING

MANUAL ULLAGE

TPI

NULL RESIDUALS
P35 TARGET MCC-1
RENDEZVOUS RADAR TRACKING

FINAL MCC-1 COMPUTATION

P41 RCS THRUSTING

MCC-1

NULL RESIDUALS
P35 TARGET MCC-2
RENDEZVOUS RADAR TRACKING

LOAD AGS TPI EXTERNAL ΔV

LOAD AGS MCC-1 EXTERNAL ΔV

EXTERNAL LTG - OFF

TIG: 143:09:40
BT: 4.0 SEC
ΔVT: 92.2 FPS
ULLAGE: 4 JET, 10 SEC
ORBIT: 61.0x44.6 NM

TIG: 143:24:40
ΔVT: NOM ZERO

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	143:00 - 143:30	6/31-32	3-211

0523

0553

CSM FLIGHT PLAN

143:30
R=10.30
R=-77.6

V88

P35 FINAL COMP
COPY LM MCC-2 P76
P41

143:39:40
LM +0.0,+0.0,+0.0
CSM +0.0,+0.0,+0.0
180,227/274,0

MCC-2

P76

P00;V89 (R2=2)(35°)(180,271/310,0)

V64; ACQ MSFN HGA P -73, Y 349
V83

PERFORM PRE-DOCK CHECKLIST

143:45
R=2.40
R=-35.4

IF CSM ACTIVE:

- P47 AT R=1.25 NM
- SEC PRPLINT FUEL PRESS (4) - OPEN
- V83E
- N83E
- KEY REL

UTILITY PMR - ON (VERIFY)

143:52:17
LM 31.3 (TOTAL)
CSM 32.5 (TOTAL)
180,302/310,0

DAC - ON
LM PHOTOS WITH DAC/TV

TPF

TV

EMS MODE - STBY

EMS FUNC - OFF

EXT RNDZ LT - OFF

LM STATIONKEEP

P00

DAC/TV - OFF

CONFIGURE SWITCHES FOR PHOTO MNVR:

BMAG MODE (ROLL,YAW) - ATT 1/RATE 2

SC CONT - SC5

MAN ATT (PITCH) - ACCEL CMD

CSM PITCH UP 360° AT 2°/SEC

NULL RATES AFTER PHOTO MNVR

143:30
(11102)
(X1111)

+26

+27
(P41)
(0.5 DB)

+30

143:40
(11102)
(X1111)

143:50

+42

144:00

P35 FINAL COMP		
81	MCC2 ΔV-LV	•
59	MCC2 ΔV-LOS	•

MCC2 P76		
33	LM GET1-MCC2	•
84	LM MCC2 ΔV-LV	•

PRE-DOCK CHECKLIST

MAN ATT (3) - RATE CMD (VERIFY)
LIMIT CYCLE - OFF (VERIFY)
ATT DB - MIN
RATE - LOW (VERIFY)
TRANS CONTR PMR - ON (UP)
ROT CONTR PMR DIRECT (BOTH) - MNA/MNB
SC CONT - CHC (VERIFY)
CMC MODE - AUTO (VERIFY)
AUTO RCS SEL (16) - MNA/MNB (VERIFY)

CB DOCK PROBE (2) - CLOSED
PROBE RETR (2) - OFF (VERIFY)
PROBE EXT/REL - RETR
PROBE EXT/REL TB (2) - GRAY (VERIFY)
(IF TB NOT GRAY, GO TO PG S/2-12, E)
CB SECS LOGIC (2) - CLOSED (VERIFY)
CB SECS ARM (2) - CLOSED
EXT LIGHTS RUN/EVA - ON (UP) (VERIFY)
COAS PMR - ON (UP) (VERIFY)

BRAKING GATES		
R, NM	R, FPS	RETICLE ANG, DEG
1.50	45	.08
1.00	30	.13
.50	20	.26
.25	10	.54
.08	5	1.60
.05		2.70
.03		4.00
.02		8.50

MISSION	EDITION	DATE	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	3-212

LM FLIGHT PLAN

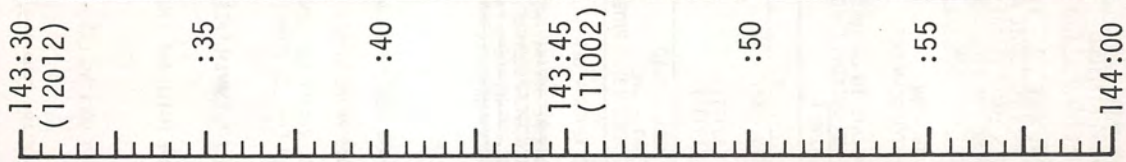
MCC-H

1353 CST

CDR

LMP

NOTES



FINAL MCC-2 COMPUTATION

P41 RCS THRUSTING

MCC-2

NULL RESIDUALS
TPI BURN REPORT (IF REQ'D)

V48 (11002)

P47 THRUST MONITOR

BRAKING GATES

LOAD AGS MCC-2 EXTERNAL ΔV

BIOMED - RIGHT, PCM-HIGH
STEERABLE ANTENNA
P 114, Y -46

CSM PHOTOGRAPHY
LM 3/DC, LM 3/DAC

TIG: 143:39:40
ΔVT: NOM ZERO

TIG: 143:48:44 to
143:54:44
TOTAL ΔV: 32.6 FPS
ORBIT: 60.2x58.1 NM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	143:30 - 144:00	6/32	3-213

DUMP DSE

0553

0623

CSM FLIGHT PLAN

TRANSFER TO CDR AT HIS REQUEST:

- PROBE
- DROGUE
- VACUUM CLEANER (ASSEMBLED)
- DECONTAMINATION BAGS
- HELMET & ACCESSORY BAG (2) (R6)

MSFN UPLINK:
 CSM S.V. (CSM SEP-10)
 LM S.V. (TIG LM DEORBIT -10)
 MSFN UPDATE:
 MAP UPDATE REV 33
 DAP LOAD - UPDATE WEIGHTS COPY AT 145:25
 CSM SEPARATION PAD COPY AT 145:35
 LM JETTISON PAD COPY AT 145:45

VERIFY DSE TAPE MOTION (LBR/RCD/FMD/CMD RESET)

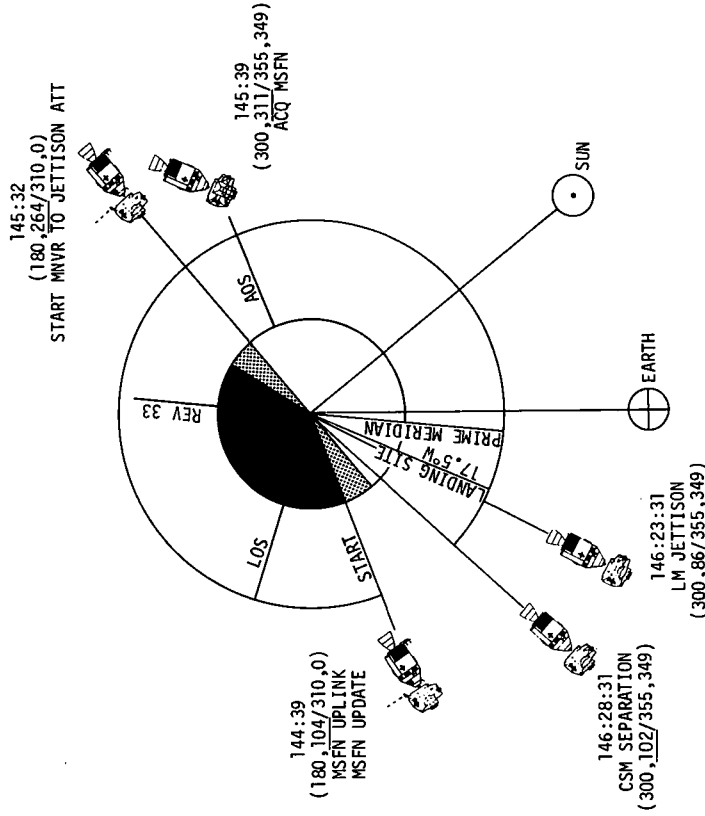
144:30
 (61111)
 (11111)

144:40

144:50

145:00

MAP UPDATE REV	33
LOS	---
180°	---
AOS	---



MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE 1 (JAN)	DECEMBER 23, 1970	3-216

January 11, 71

ch. 6
 11/11/71

LM FLIGHT PLAN

1453 CST

MCC-H

0653

CDR

LMP

NOTES

RECEIVE PROBE FROM CMP AND STOW
 RECEIVE DROGUE FROM CMP AND STOW OVER PROBE
 RECEIVE DECONTAMINATION BAGS & VACUUM CLEANER FROM CSM

UNSTOW, VACUUM/WET-WIPE, BAG AND TRANSFER TO CSM:

70 MM MAG BAG (3 MAGS)

SURFACE 16 MM BAG (6 MAGS)

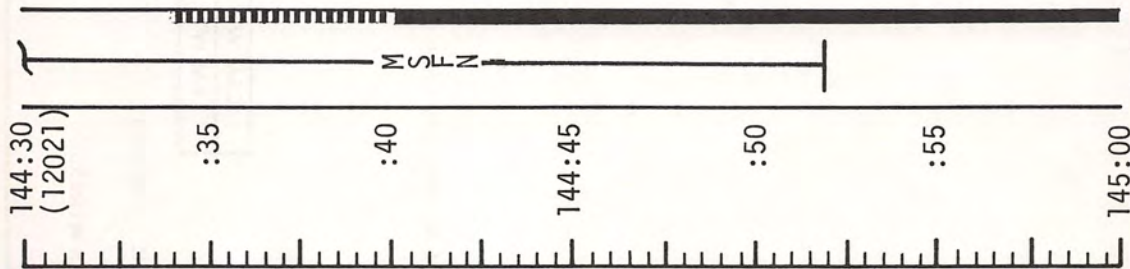
2 SAMPLE ROCK BAGS

HELMETS (WITH IV GLOVES)

ISA

LM S.V. IS
 TIME TAGGED FOR
 DEORBIT BURN MINUS
 10 MIN

CSM S.V. IS
 TIME TAGGED FOR
 CSM SEP MINUS
 10 MIN



JPLINK TO CSM
 CSM S.V. (SEP-10)
 LM S.V. (TIG-10)

UPDATE TO CSM
 MAP UPDATE REV 33
 CSM SEP BURN PAD
 LM JETTISON PAD
 DAP LOAD (WEIGHTS)

0723

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	144:30 - 145:00	6/32	3-217

MSC FORM 809B (APRIL 1970) OT

FLIGHT PLANNING BRANCH

NASA — MSC

CSM FLIGHT PLAN

145:00
(61111)
(11111)

RECEIVE ITEMS FROM LM & STOW

145:10

REV 33

145:20

TRANSFER B5 & B6 CONTAINERS TO LM

(61102)
(11111)

CYCLE CMC MODE - FREE/AUTO
V48 (61102)
(11111)
LOAD CSM & LM WEIGHTS

145:30

CSM WT	+								
LM WT	+								

LM TO CSM TRANSFER LIST	
ITEM	CM STORAGE LOCATION
16MM MAGS (6) w/DECOM BAG	R13
70MM MAGS (3) w/DECOM BAG	R13
B1 BAG	TEMP STOWAGE (ON A8)
PURSE	TEMP STOWAGE (ON A8)
ISA w/DECOM BAG	ON A1
ROCK BAGS w/DECOM BAG (2)	ON A10, ON A13
ROCK BOXES w/DECOM BAG (2)	B5, B6
VACUUM CLEANER	SIDE A12
VACUUM HOSE, BRUSH, CABLE	SIDE A8
PGA (2)	PGA BAG
UCTA (2)	PGA BAG
FCS (2)	PGA BAG
LCG (2)	UI
HELMET & ACCESSORY BAGS (2)	PGA BAG
GLOVES (2 PR.)	
HELMET (2)	
BIO INSTRUMENTATION EQUIP (2)	ON CREW
COMM. CARRIER (2)	ON CREW

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE B (JAN)	JANUARY 11, 1971	3-218

LM FLIGHT PLAN

MCC-H

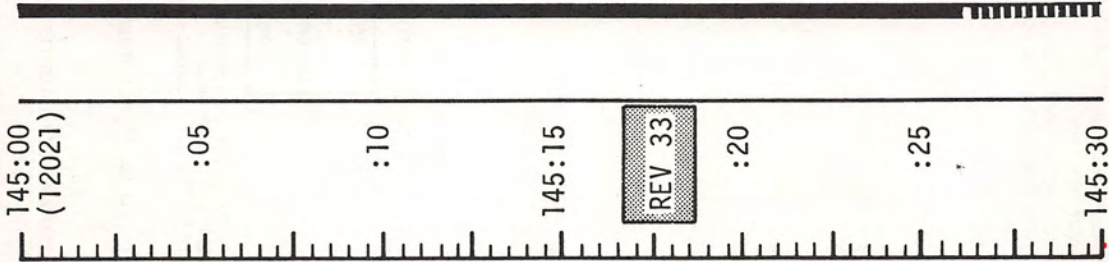
0723

1523 CST

CDR

LMP

NOTES



UNSTOW SRC'S, VACUUM AND BAG, TRANSFER TO CSM

RECEIVE B5 & B6 FROM CMP AND STOW IN SRC RACK

VACUUM PGA'S

TRANSFER VACUUM CLEANER TO CSM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	145:00 - 145:30	6/32-33	3-219

0753

CSM FLIGHT PLAN

P30; LOAD CSM SEP PAD DATA

V49 MNVR TO LM JETTISON PAD ATT (145:38)

DOFF PGA
ZIP SUIT & INSTALL ELECTRICAL COVER PRIOR TO STOWING (PGA BAG)
STOW COMM CARRIERS & UCTA (PGA BAG)

ACQ MSFN OMNI D

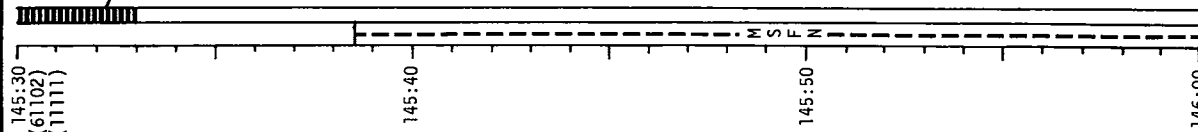
CDR - TRANSFER CM JETTISON ITEMS TO LM

WARNING
NO URINE/FECES
ALL OPENED FOOD MUST
BE TREATED AND
STORED IN BETA BAG

GO/NO-GO FOR LM CLOSEOUT
LMP - CLOSE LM HATCH
DIRECT O₂ VLV - CLOSED (CW)

UNSTOW AND INSTALL FORWARD HATCH (DECAL)

PERFORM HATCH INTEGRITY CHECK (DECAL)



P30 MANEUVER

SET STARS		C	S	M	S	P	PURPOSE
		R	C	S	G	N	PROP/GUID
						A	WT
R ALIGN	_____	+	0	0	0		N47
P ALIGN	_____		0	0	0		P TRIM N48
Y ALIGN	_____		0	0	0		Y TRIM
	_____	+	0	0	0		HRS GETI
	_____	+	0	0	0		MIN N33
	_____	+	0	0	0		SEC
ULLAGE	_____	-	0	0	1	0	ΔV _X N81
	_____	+	0	0	0	0	ΔV _Y
	_____	+	0	0	0	0	ΔV _Z
	_____	X	X	X			R (300)
	_____	X	X	X			P (355)
	_____	X	X	X			Y (349)

LM JETTISON PAD

	HRS	GETI
	MIN	N33
	SEC	
+	0	0
+	0	0
+	0	0
X	X	X
X	X	X
X	X	X

	R (300)	N22
	P (355)	
	Y (349)	
X	X	X
X	X	X
X	X	X

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-220

LM FLIGHT PLAN

1553 CST

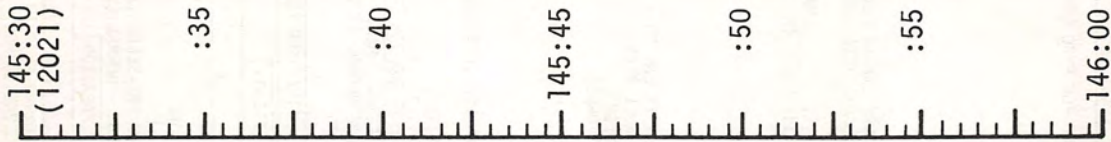
MCC-H

0753

CDR

LMP

NOTES



STEERABLE ANTENNA
P -40, Y 49

CONFIGURE S-BAND
VERIFY COMM

INITIALIZE AGS
ALIGN AGS TO PGNS
DOFF SUIT

P30 TARGET PGNS
TARGET AGS ΔV FOR DEORBIT
CONFIGURE LM FOR JETTISON
STOW CSM JETTISON ITEMS

CLOSE HATCH, IVT TO CSM

VERIFY LM JETTISON ATTITUDE

DISABLE AUDIO COMM
DISCONNECT LM HOSE AND STOW

DOFF SUIT

IVT TO CSM WITH SUITS

GO/NO-GO FOR
LM CLOSEOUT

0823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	145:30 - 146:00	6/33	3-221

CSM FLIGHT PLAN

146:00
(61102)
(11111)

LM PWR - OFF (VERIFY)
CB SECS ARM (2) - CLOSED
CUE MSFN FOR LOGIC ARM
SECS LOGIC (BOTH) - ON (UP)
MSFN GO FOR PYRO ARM

CONFIGURE CAMERA FOR LM JETTISON PHOTOS
CM2/DAC/18/CEX-BRKT, MIR (F8,250,7) 12 fps (50% MAG)

MAG (E) _____, MAG % _____
UTILITY PWR - ON

LOAD ΔV IN EMS TO + 100.0
CHECK NULL BIAS
GDC ALIGN
VERIFY ORDEAL

PERFORM PRE-JETTISON CHECKLIST

V48 (11102)
(11111)
SECS PYRO ARM (2) - ARM
P47 (JETT - 1 MIN)
EMS MODE NORMAL (JETT - 30 SEC)
DAC - ON

CSM/LM FINAL SEP (BOTH) - ON (0.4 FPS SEP)

LM JETTISON
146:23:31
300,86/355,349

P00
DAC - OFF

PERFORM PRE-SEPARATION CHECKLIST
EMS MODE - NORMAL (SEP - 30 SEC)

CSM SEPARATION
146:28:31
-1.0,+0.0,+0.0
300,102/355,349

P00;V66;V49 MNVR TO P52 ATT (146:36)
(180,245,0) HGA -39, Y 185

(11102)
(11111)
146:30

PRE-JETTISON CHECKLIST
BMAG MODE (3) - ATT 1/RATE 2
ATT DB - MIN
RATE - LOW
SC CONT - SCS
EMS FUNC - ΔV
AUTO RCS SEL (16) - MNA/MNB
THC PWR - ON
RHC PWR DIR - MNA/MNB
THC - ARMED
RHC - ARMED

PRE-SEPARATION CHECKLIST
EMS MODE - STBY
SC CONT - CHC
BMAG MODE (3) - RATE 2
P41 (BYPASS MNVR)
SECS PYRO ARM (2) - SAFE
SECS LOGIC (BOTH) - OFF
CB SECS ARM (2) - OPEN

MISSION	EDITION	DATE	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	3-222

0823

0853

CSM FLIGHT PLAN

146:30
(111102)
(111111)

EMS MODE - STBY
EMS FUNC - OFF
THC PMR - OFF
AUTO RCS SEL B/D ROLL (4) - OFF
RHC PMR DIR - OFF
THC - LOCKED
RHC - LOCKED

SC CLEAN-UP
MSFN: DUMP DSE

MSFN UPLINK:
DESIRED ORIENT (TEI)

MSFN UPDATE:
LTC PHOTO PAD (TGT 11) (COPY IN FLIGHT PLAN AT 147:00)
MAP UPDATE REV 34

P52 (OPTION 3)
(LIFT-OFF ORIENT)
REPORT: GYRO TORQUING ANGLES

146:40

M

S

F

N

P52 (OPTION 1)
(TEI ORIENT)

146:50

GDC ALIGN
VERIFY ORDEAL

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

WIPE EXCESSIVE MOISTURE FROM TUNNEL HATCH AREA

PERFORM CONTAMINATION CONTROL PROCEDURE

147:00

P52 IMU REALIGN

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

MAP UPDATE REV 34

LOS: ---
180°: ---
AOS: ---

CONTAMINATION CONTROL
NOTE: IF WATER IS TO BE COLLECTED,
USE WATER COLLECTION PROCEDURE,
UNSTOW VAC CLEANER & COMPONENTS
AC UTIL PMR - OFF (VERIFY)
ASSEMBLE COMPONENTS & CONNECT PMR CABLE
AC UTIL PMR - ON (UP)
VAC CLEANER PMR SW - ON
VACUUM/BRUSH CM INTERIOR WITH SPECIAL
ATTENTION TO THE FOLLOWING:
TRANSFER TUNNEL WALL AND TOP HATCH SURFACES
OPEN B5 AND B6 COVER AND CLEAN COMPARTMENT
AND SRC BAGS SURFACES
OPEN A5 AND CLEAN COMPARTMENT AND CSC BAG AND
FILM CASSETTE BAGS SURFACES
OPEN R13 AND CLEAN COMPARTMENT AND FILM
MAGAZINE BAG SURFACE
OPEN FOOD CONTAINERS AND CLEAN COMPARTMENT
AND HELMET STORAGE BAGS SURFACES
PGA BAG SURFACES
MOVE VACUUM CLEANER BRUSH INTO ALL POTENTIAL
"DEAD AIR" POCKETS TO ENSURE THOROUGH
MIXING OF CM ATMOSPHERE,
VAC CLEANER PMR SW - OFF
AC UTIL PMR - OFF
DISCONNECT PMR CABLE & DISASSEMBLE COMPONENTS
STOW VAC CLEANER & COMPONENTS

MISSION
APOLLO 14

EDITION
CHANGE A (JAN)

DATE
DECEMBER 23, 1970

PAGE
3-223

0883

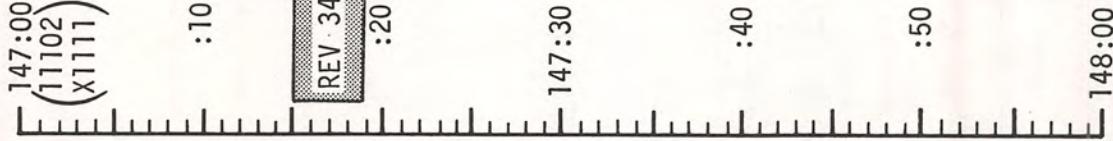
0923

FLIGHT PLAN

MCC-H

0923

1723 CST



L10H CANISTER CHANGE
(12 INTO B, STOW 10 IN A3)

V49 MNVR TO LTC PHOTO PAD ATTITUDE (147:30)

EAT PERIOD

ACQ MSFN HGA P-31, Y178

CONFIGURE CAMERA: (S-IVB/LM IMPACT)
CM3/LTC/MBW/SEF (SHUT 1/50, RNG 90.5, INT 8.1)
(73 FR), MAG (V) FR #
LTC INSTALLATION (DECAL)
LTC CHECKOUT (DECAL)

DUMP DSE
UPDATE TO CSM
TEI 34 MNVR PAD
TEI 35 MNVR PAD
MAP UPDATE REV 35

0023

NOTES

LTC PHOTO PAD TARGET 11
T START: _____
APOLLO 12 LM (208.8, 126.1, 014.4)
R _____, P _____, Y _____
RNG (90.5) _____
T START +2:33
APOLLO 13 S-IVB (213.1, 120.6, 010.3)
R _____, P _____, Y _____
RNG (90.6) _____
T START +4:31
APOLLO 14 S-IVB (214.3, 115.6, 008.0)
R _____, P _____, Y _____
RNG (90.6) _____
T STOP: _____:_____:_____
MAP UPDATE REV 35
LOS : _____:_____:_____
180° : _____:_____:_____
AOS W/TEI : _____:_____:_____
AOS W/O TEI : _____:_____:_____
LM DEORBIT BURN
TIG: 147:52:58.9
BT: 77 SEC
ΔV: 183.7 FPS

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	147:00 - 148:00	6/33-34	3-224

FLIGHT PLAN

MCC-H

1023

1823 CST

148:00
(11102)
(X1111)

:10

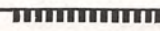
:20

148:30

:40

:50

149:00



X M S F N

CSM SYSTEMS CHECKLIST

- C&WS OPERATIONAL CHECKS
- CM RCS MONITORING CHECK
- SM RCS MONITORING CHECK
- SPS MONITORING CHECK
- PAGE S 1-17
- PAGE S 1-1
- PAGE S 1-1
- PAGE S 1-1
- CABIN FAN (2) - OFF; REMOVE AND STOW
- CABIN FAN LUNAR DUST FILTER WITH BAG (PGA BAG)
- LTC MODE-STANDBY/POWER-ON
- ZERO DET (T START -1 MIN)
- LTC MODE - AUTO, DET - UP/START (T START)
- PHOTO TGT 11 (APOLLO 12 LM, APOLLO 13 S-IVB, APOLLO 14 S-IVB)
- MNVR BETWEEN TARGETS PER LTC PHOTO PAD
- LTC MODE-STANDBY, RECORD FR # _____
- LTC REMOVAL (DECAL), AND STOW _____
- P30 EXTERNAL ΔV
- V49 MNVR TO PAD BURN ATTITUDE (148:35)
- (180,000,000) OMNI D

P40 SPS THRUSTING

VERIFY DSE TAPE MOTION (LBR/RCD/FWD/CMD RESET)

NOTES

LM LUNAR IMPACT
GET: 148:20:58
LAT: 3.5°S
LONG: 19.2°W

NOTE: IF APOLLO 14
ALSEP IS INOPERABLE,
THE LM WILL BE IM-
PACTED NEAR APOLLO
12 ALSEP AT:
LAT 3.2°S
LONG 22.0°W 24.6°W

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE <input checked="" type="checkbox"/> (JAN)	DECEMBER 23, 1970 JANUARY 11, 1971	148:00 - 149:00	6/34	3-225

1123

RECORD VG IMU DATA

UPLINK TO CSM
CSM S.V. & V66
TEI 34 TGT LOAD

FLIGHT PLAN

TEI
BURN TABLE

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

TABLE 3-8
3-226

POST-TEI PHOTO SEQUENCE

TEI + 26 MIN

TEI + 32 MIN

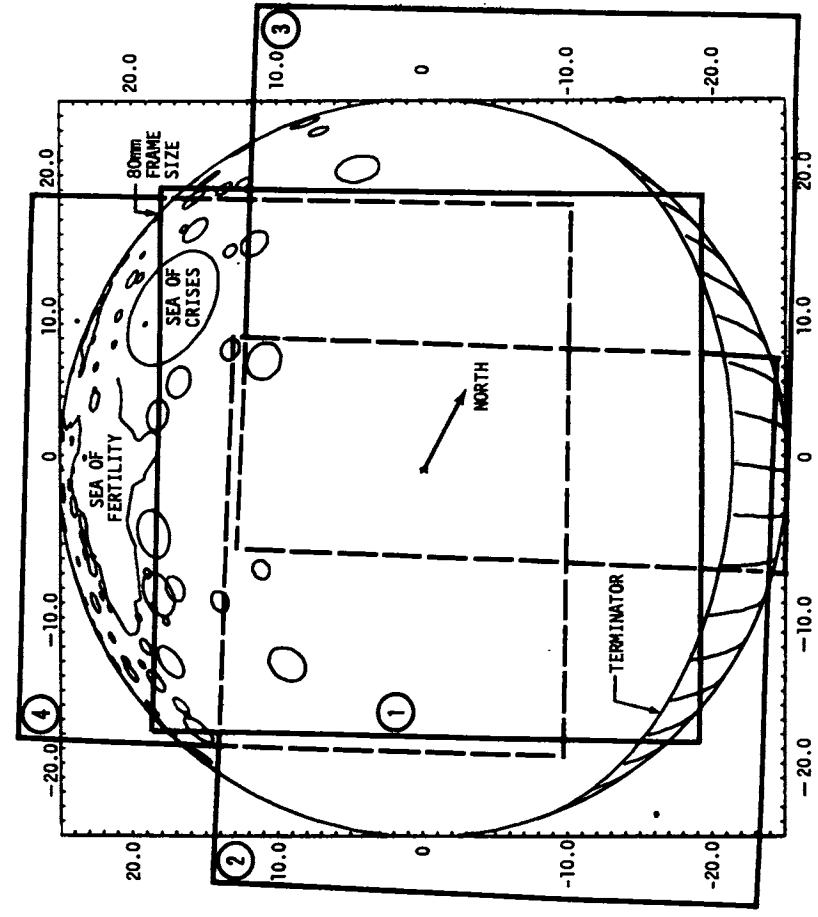
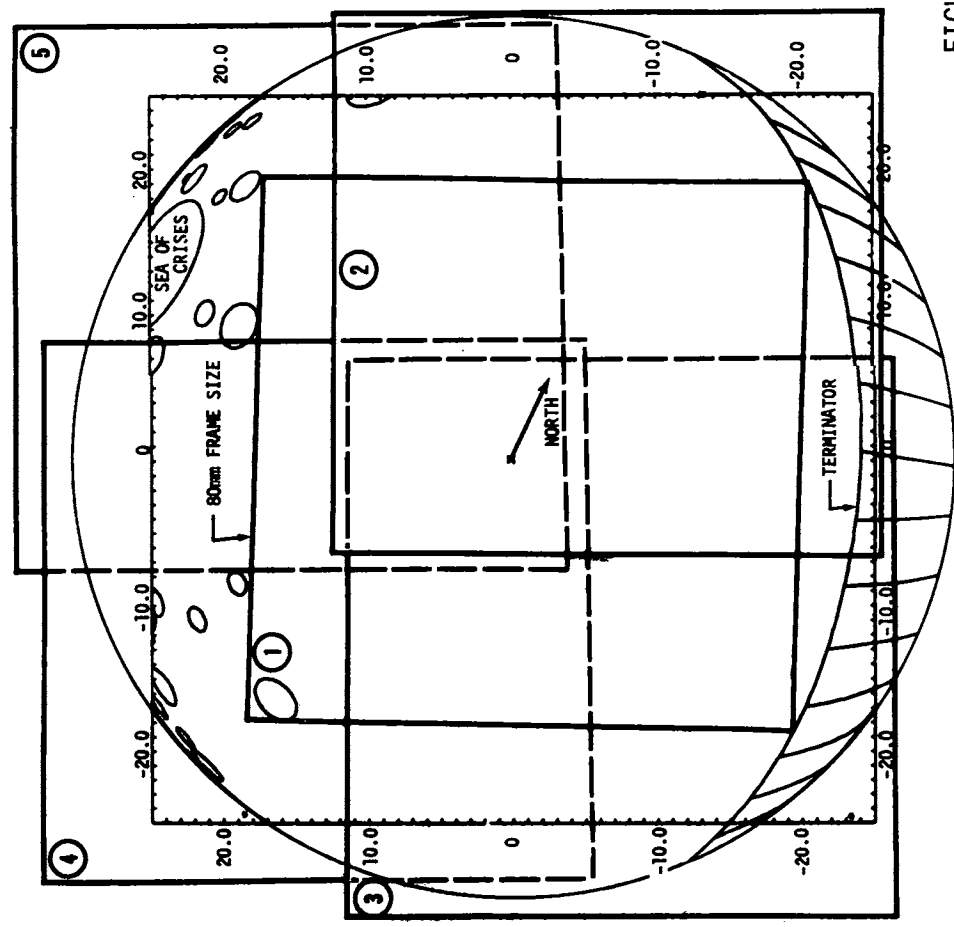
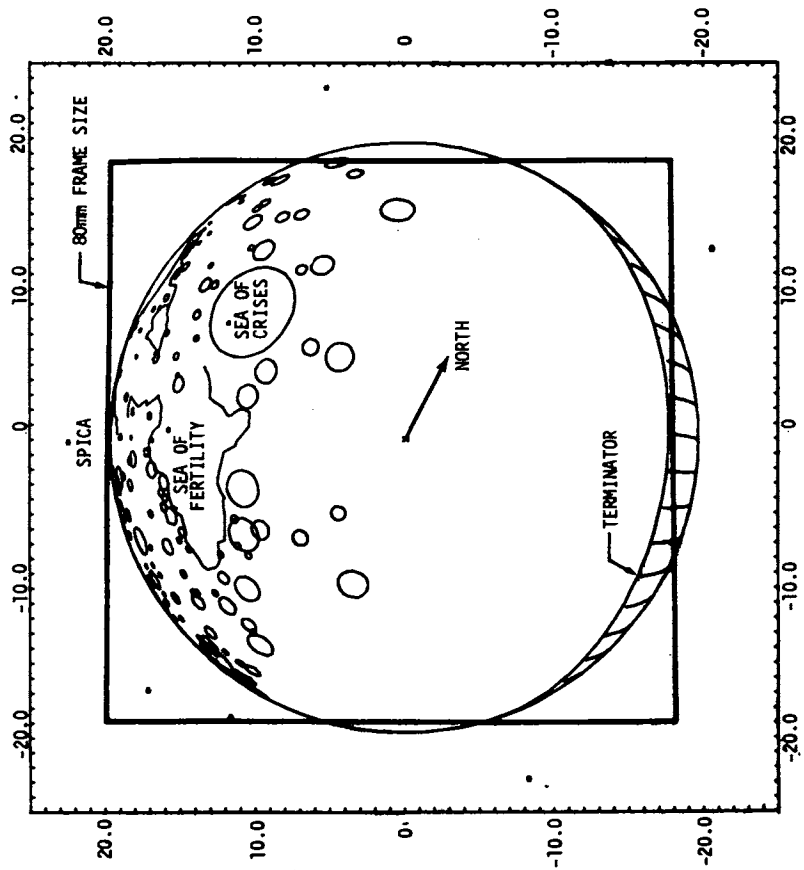


FIGURE 3-3
3-228

POST-TEI PHOTO SEQUENCE

TEI + 42 MIN

(TWO PHOTOS, CENTER LUNAR DISC IN FRAME)



TEI + 1 HR

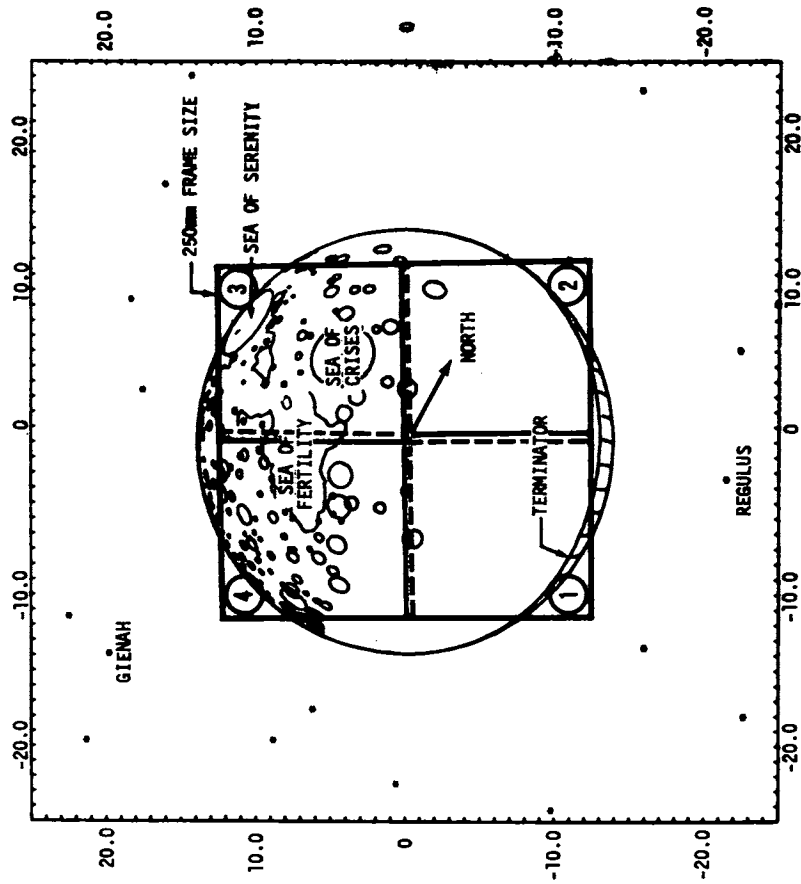
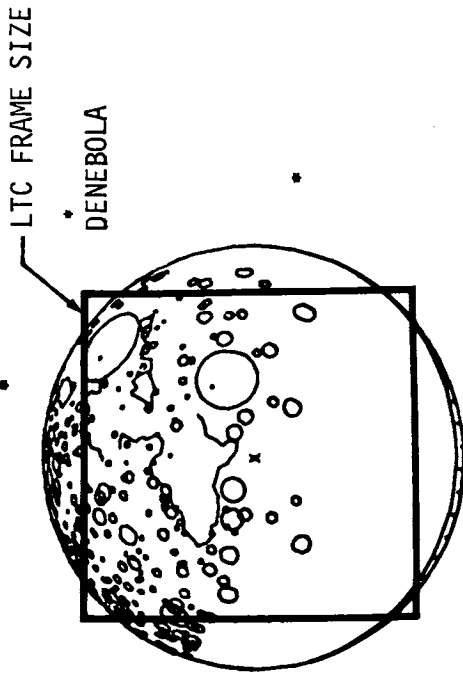


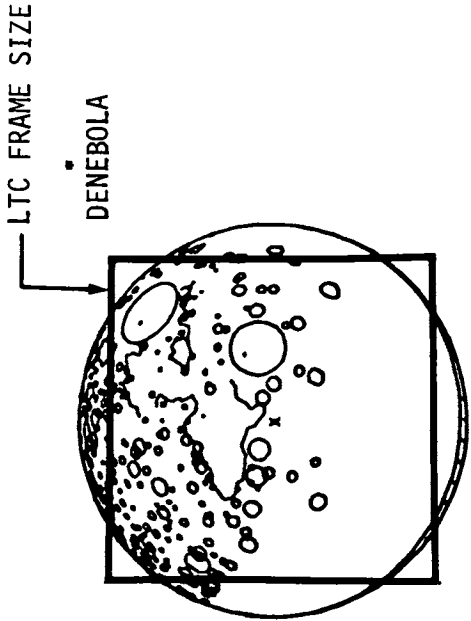
FIGURE 3-4
3-229

POST-TEI PHOTO SEQUENCE

TEI+ 01:40

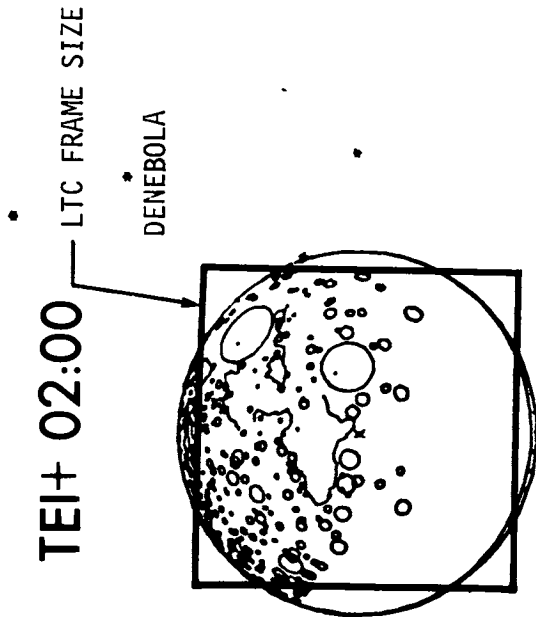


TEI+ 01:50



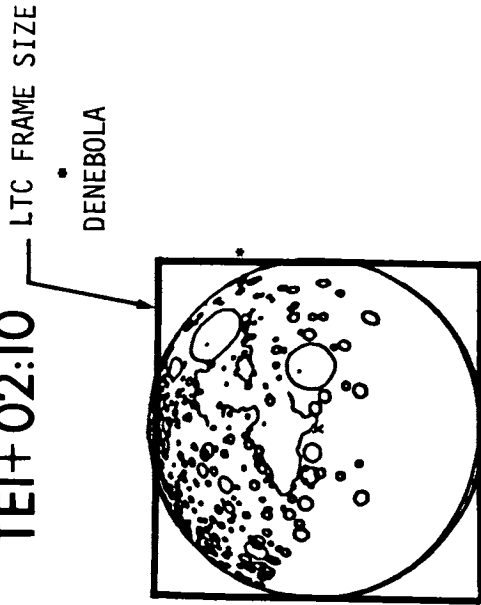
REGULUS

TEI+ 02:00



REGULUS

TEI+ 02:10



REGULUS

FIGURE 3-5
3-230



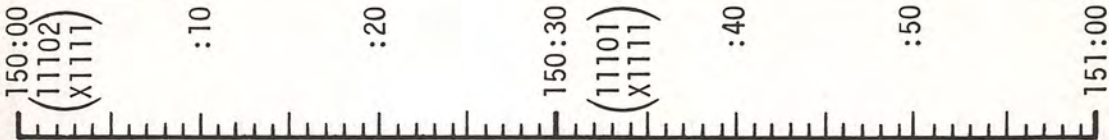
MCC-H

1223

2023 CST

FLIGHT PLAN

NOTES



P52 IMU ALIGN
 OPTION 3 REFMMAT STARS _____
 (TEI ORIENTATION) SA _____
 REPORT GYRO TORQUE ANGLES TA _____
 OPTION 1 PREFERRED
 (PTC ORIENTATION)

V49 MNVR TO PHOTOGRAPH LUNAR SURFACE (150:15)
 (040,314,352) HGA P -33, Y 29]
 LUNAR PHOTOGRAPHY TEI + 1 HR (150:15)
 CM3/EL/250/MBW (f5.6,1/250,∞) (4 FR)
 HAND-HELD, COVER VISIBLE DISC
 STOW EL CAMERA, RECORD FR # _____

VISUAL ASSESSMENT OF VISUAL TARGETS 1 & 2
 V48 (11101)(X1111)

V49 MNVR LTC PHOTO PAD ATTITUDE (150:50)
 (046.8,315.7,359.1)
 CONFIGURE CAMERA: (LUNAR SURFACE PHOTOS)
 CM3/LTC/MBW/SEF-(SHUT 1/200, RNG 99.9 CW, INT-SINGLE FRAME)
 MAG (V) _____, FR # _____
 LTC INSTALLATION (DECAL)
 LTC CHECKOUT (DECAL)
 VERIFY LTC MODE-STANDBY/POWER-ON (T START -1 MIN)
 LTC MODE-SINGLE
 TEI +1 HR 40 MIN (150:55) SINGLE FRAME
 GET OF EXPOSURE: _____ : _____ : _____
 V49 MNVR TO LTC PHOTO PAD ATTITUDE (151:00)
 (047.8,315.8,000.1)

P52 IMU REALIGN

N71: _____, _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____

LTC PHOTO PAD (TEI +01:40)

R _____, P _____, Y _____

LTC PHOTO PAD (TEI +01:50)

R _____, P _____, Y _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	150:00 - 151:00	6/TEC	3-231

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

UPDATE TO CSM
LTC PHOTO ATT
(IF REQ'D)

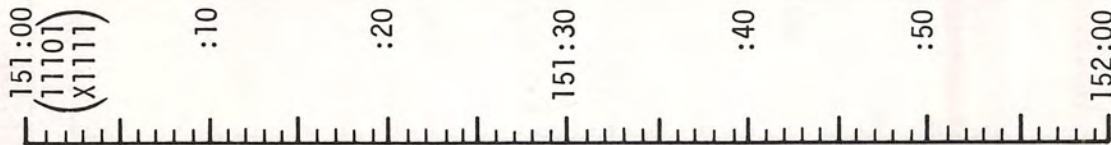
1323

FLIGHT PLAN

MCC-H

1323

2123 CST



TEI + 1 HR 50 MIN (151:05) SINGLE FRAME
GET OF EXPOSURE : : :

V49 MNVR TO LTC PHOTO PAD ATTITUDE (151:10)
(048.6,315.9,001.0)
TEI + 2 HR (151:15) SINGLE FRAME
GET OF EXPOSURE : : :

V49 MNVR TO LTC PHOTO PAD ATTITUDE (151:20)
(049.3,316.0,001.7)
TEI + 2 HR 10 MIN (151:25) SINGLE FRAME
GET OF EXPOSURE : : :

LTC MODE-STANDBY, RECORD FR # _____
LTC REMOVAL (DECAL), AND STOW
CSM G&C CHECKLIST
PASSIVE THERMAL CONTROL (G&N)
V49 MNVR TO PTC ATTITUDE
(N20,270,000)
V79 (-0.3750)
(+030.00)
(+000000)

PAGE G 8-2

PAGE S 1-26

CSM SYSTEMS CHECKLIST

PRE-SLEEP CHECKLIST
COMM - OMNI'S

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP
CSM S.V.

UPLINK TO CSM
CSM S.V. (MSFN)
(NO V47)

1423

NOTES

LTC PHOTO PAD (TEI + 02:00)
R _____, P _____, Y _____

LTC PHOTO PAD (TEI + 02:10)
R _____, P _____, Y _____

EARTH DISTANCE
≈ 206 148 NM
DAP LOAD STATUS
(11101)(X1111)

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

PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	151:00 - 152:00	6/TEC	3-232

MSC FORM 109B (APRIL 1970) OT

FLIGHT PL _____ING BRANCH

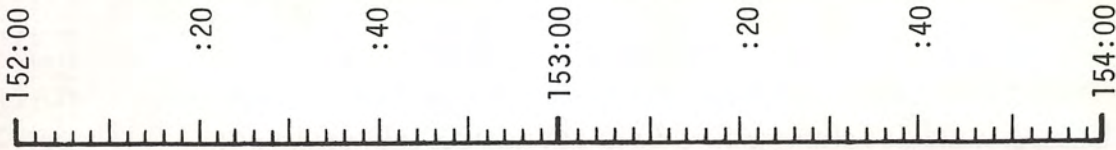
MSC

FLIGHT PLAN

MCC-H

1423

2223 CST



M S F N

REST PERIOD
(10 HOURS)

PTC

NOTES

DAP LOAD STATUS
(11101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	152:00 - 154:00	6/TEC	3-233

1523.

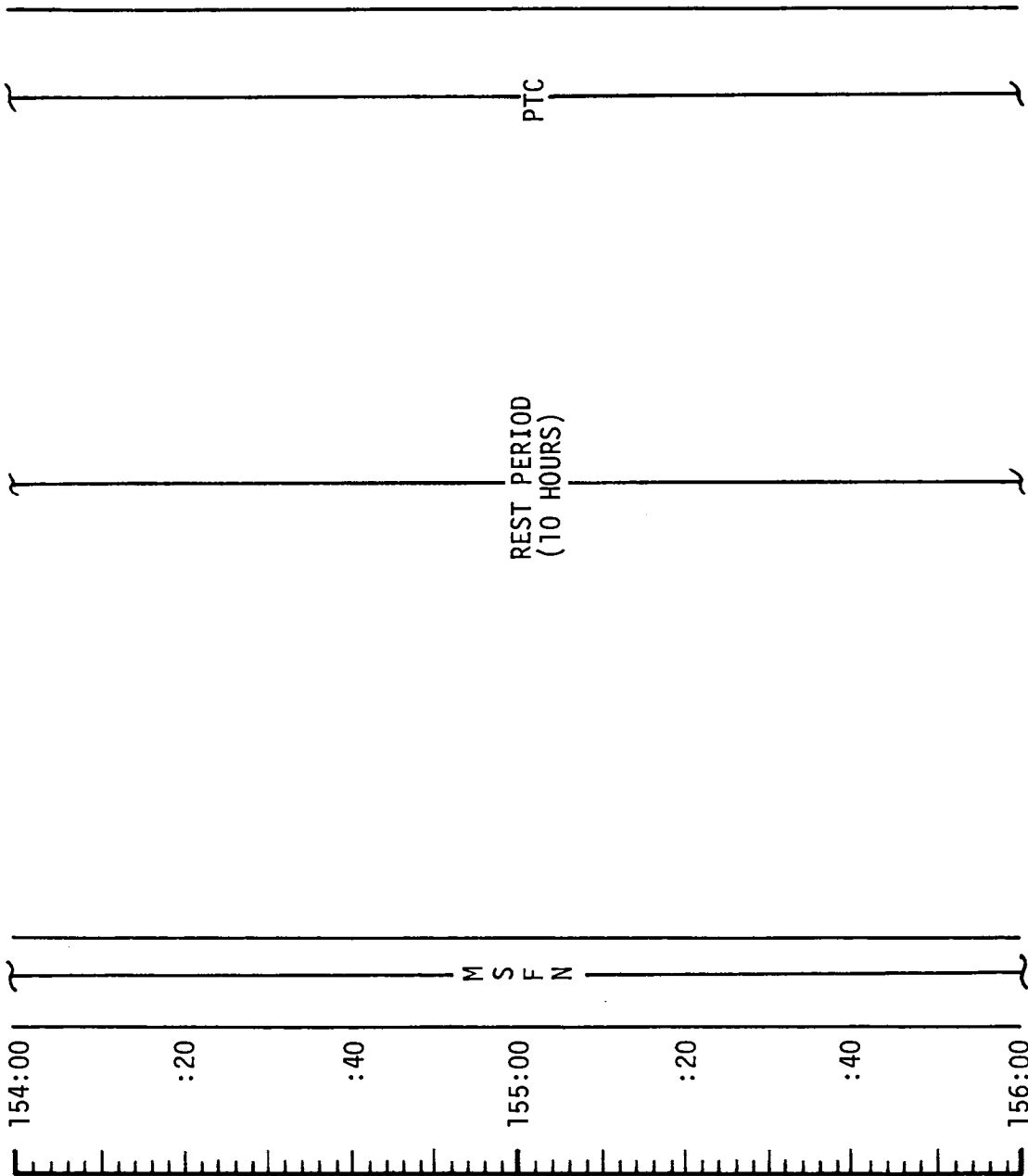
FLIGHT PLAN

MCC-H

0023 CST

NOTES

DAP LOAD STATUS
(111101)(X11111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	154:00 - 156:00	6/TEC	3-234

NASA — MSC

FLIGHT PLANNING BRANCH

MSC Form 29 (May 69)

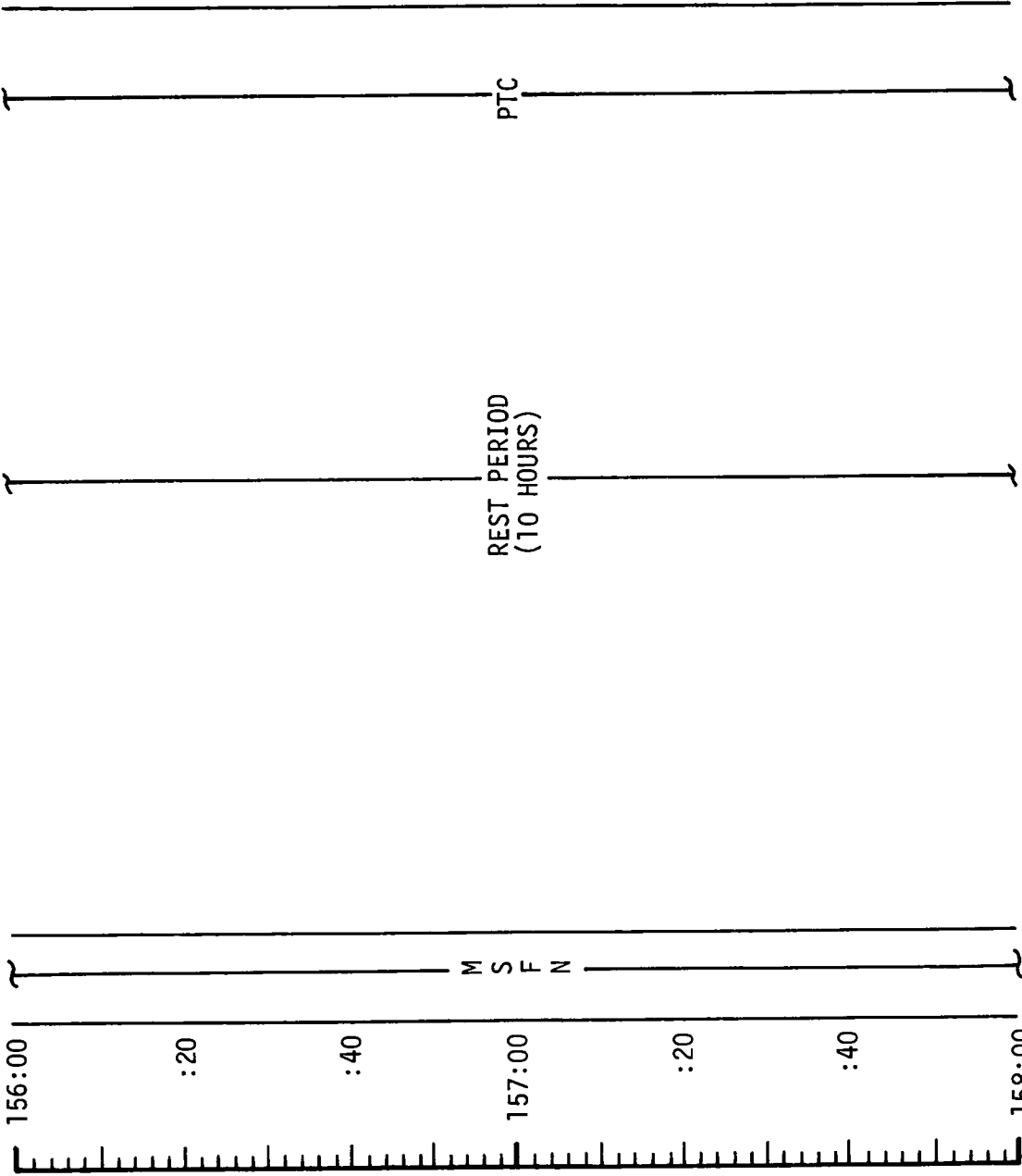
MCC-H

0223 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(111101)(X11111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	156:00 - 158:00	6/TEC	3-235

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

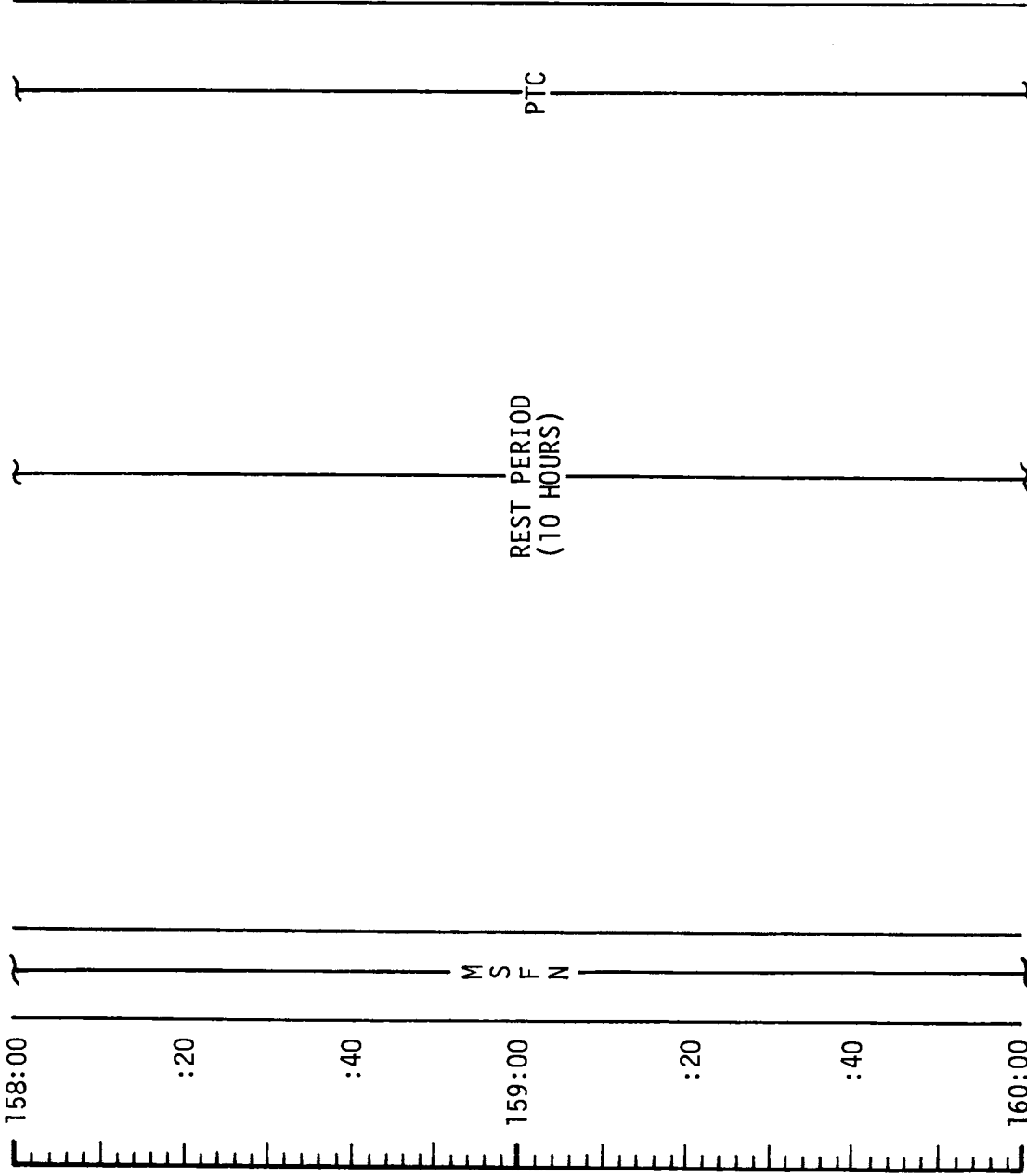
FLIGHT PLAN

MCC-H

0423 CST

NOTES

DAP LOAD STATUS
(111101)(X11111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	158:00 - 160:00	6/TEC	3-236

MSC Form 29 (May 69)

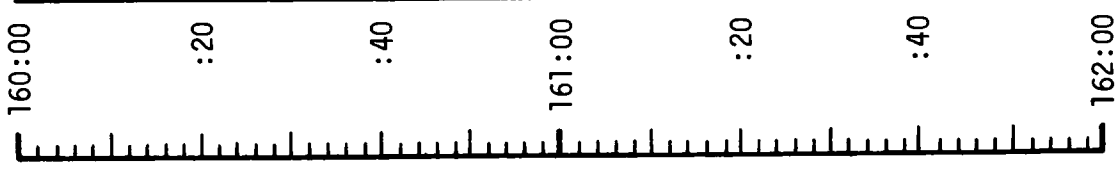
FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

FLIGHT PLAN

0623 CST



M S F N

REST PERIOD
(10 HOURS)

PTC

NOTES

DAP LOAD STATUS
(11101)(X11111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	160:00 - 162:00	6/TEC	3-237

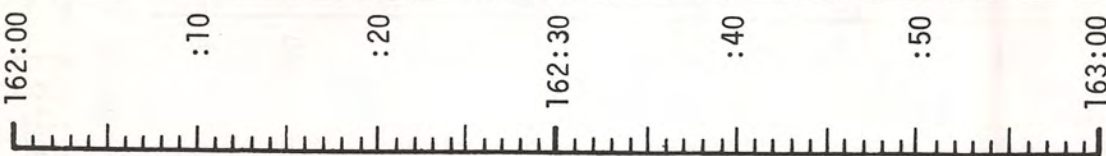
MCC-H

0023

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

0823 CST

FLIGHT PLAN



CSM SYSTEMS CHECKLIST

POST-SLEEP CHECKLIST
 COMM - HGA REACQ MODE
 LiOH CANISTER CHANGE
 (13 INTO A, STOW 11 IN A3)
 O₂ HEATER 2 (1) - OFF

PAGE S 1-26

M S F N

EAT PERIOD

PTC

NOTES

DAP LOAD STATUS
(11101)(X1111)

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

_____ 3 _____

EARTH DISTANCE
≈ 184 381 NM

DURING PTC CREW
 AWAKE PERIODS,
 THE ANTENNA
 CONFIGURATION
 WILL BE HGA/OMNI
 COMMANDED FROM
 MCC-H

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	162:00 - 163:00	7/TEC	3-238

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

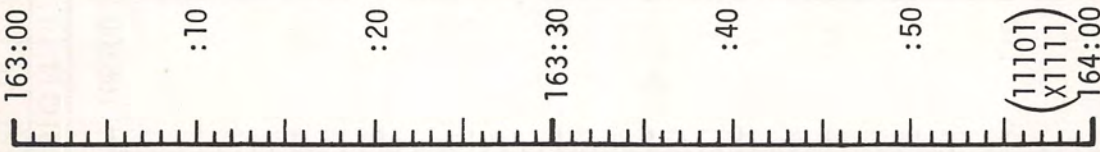
0123

FLIGHT PLAN

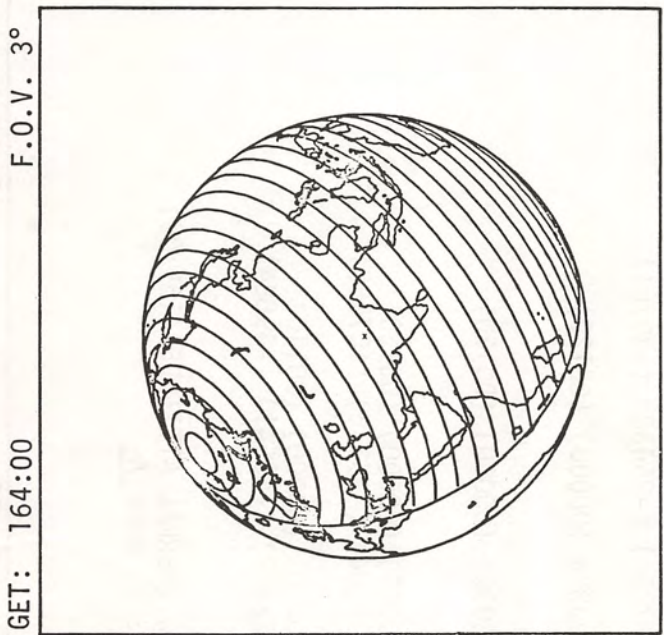
MCC-H

0123

0923 CST



NOTES
DAP LOAD STATUS
(11101) (X1111)



PTC

P52 IMU REALIGN
N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

EXIT G&N PTC PAGE G 8-3

(11101
X1111)
164:00

0223

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970.	163:00 - 164:00	7/TEC	3-239

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

0223

1023 CST

164:00
(11101)
(X1111)

:10

:20

164:30

:40

:50

165:00

M S F N

FLIGHT PLAN

V49 MNVR TO OPTICS CALIBRATION ATTITUDE (113,323,002) HGA P -68, Y 73

P23 CISELUNAR NAVIGATION

OPTICS CALIBRATION STAR N70 (00033)

P00

V49 MNVR TO SIGHTING ATTITUDE

(094,325,335) HGA P -55, Y 3

V67 (+99000) (+00020) (+00003)

P23 CISELUNAR NAVIGATION

3 MARKS ON EACH STAR

1. N70 (00040) (00000) (00110)

2. N70 (00000) (00000) (00120)

N88 (+07234) (-86438) (-49761)

3. N70 (00033) (00000) (00120)

*4. N70 (00035) (00000) (00120)

*5. N70 (00000) (00000) (00120)

N88 (-07804) (-99375) (+07982)

*6. N70 (00000) (00000) (00110)

N88 (+22712) (-83641) (-49884)

V49 MNVR TO THERMAL ATTITUDE (165:00)

(184,325,335) OMNI A

NOTES

EARTH HORIZON
LOAD W MATRIX

40 ALTAIR (ENH)

212 DELTA
SAGITTARI (EFH)

33 ANTARES (EFH)

35 RASALHAGUE (EFH)

211 BETA
OPHIUCHI (EFH)

214 ZETA
SAGITTARI (ENH)

*OPTIONAL TEST
STARS, DO NOT
UPDATE S.V.

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	164:00 - 165:00	7/TEC	3-240

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

0223

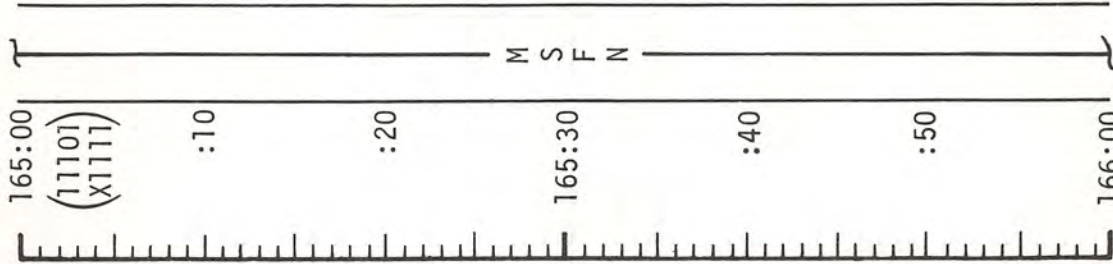
FLIGHT PLAN

NOTES

MCC-H
0323
 UPLINK TO CSM
 CSM S.V. & V47E
 MCC-5 TGT LOAD

UPDATE TO CSM
 MCC-5 MNVR PAD

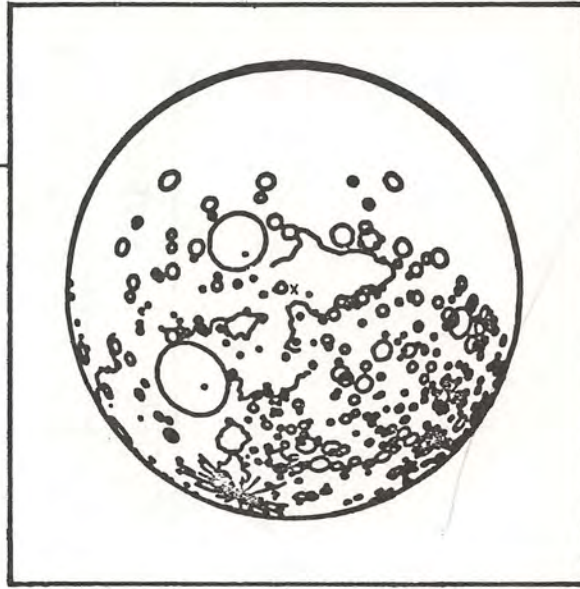
1123 CST



THE TEI CMC S.V. WILL BE UPDATED BY ONBOARD NAVIGATION (P-23's) DURING TEC. MCC'S WILL BE PERFORMED WITH A MSFN CALCULATED S.V. RE-PLACING THE CMC CALCULATED S.V., WHICH WILL BE DOWN-LINKED PRIOR TO THE BURNS. AFTER THE MCC, THE PREVIOUS CMC S.V. (CORRECTED FOR THE BURN) WILL BE UPLINKED TO THE LM SLOT AND TRANSFERRED TO THE CSM SLOT, THUS PRESERVING THE ORIGINAL CMC S.V. AND THE W MATRIX. AFTER THE BURN, MCC-H WILL ALSO UPLINK A CURRENT MSFN S.V. TO THE LM SLOT FOR REFERENCE PURPOSES.

GET: 166:00

F.O.V. 3°



- P30 EXTERNAL ΔV
- V49 MNVR TO PAD ATT
- SXT STAR CHECK
- P40 SPS THRUSTING OR
- P41 RCS THRUSTING

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	165:00 - 166:00	7/TEC	3-241

FLIGHT PLAN

MCC-5
BURN TABLE

MANEUVER	P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
CORRIDOR CONTROL	10°/SEC COMPLETE	+10° COMPLETE	BT + 1 SEC AND $\Delta V_C = 0$	TRIM X AXIS ONLY TO 0.2 FPS
IP CONTROL	10°/SEC TERMINATE	+10° TERMINATE	BT + 1 SEC AND $\Delta V_C = 0$	TRIM X & Z AXIS TO 0.2 FPS

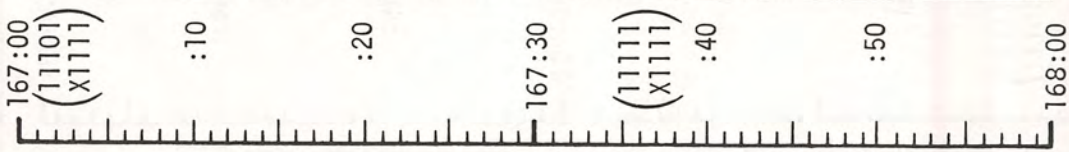
TABLE 3-9
3-242

MCC-H

0423

FLIGHT PLAN

1323 CST



167:00
(11101)
(X1111)

:10

:20

167:30

(11111)
(X1111)
:40

:50

168:00

M S F N

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(057,098,359) HGA P -63, Y 261
P23 Cislunar Navigation
OPTICS CALIBRATION STAR N70 (00035)
P00

V49 MNVR TO SIGHTING ATTITUDE
(081,094,325) HGA P -57, Y 0
P23 Cislunar Navigation
3 MARKS ON EACH STAR

1. N70 (00040) (00000) (00110)

2. N70 (00000) (00000) (00120)
N88 (+07234) (-86438) (-49761)

3. N70 (00033) (00000) (00120)

V48 (11111)(X1111)

V49 MNVR TO O₂ FLOW RATE TEST ATTITUDE (167:45)
(345,130,344) HGA P 10, Y 279

DISABLE RCS QUADS A&B

UNSTOW ELECTRICAL CABLE FROM R10
REMOVE PROTECTIVE PLUG FROM SIDE HATCH
DUMP NOZZLE

CONNECT CABLE TO HEATER CONNECTOR
PANEL 15 UTILITY PWR - OFF (VERIFY)
CONNECT CABLE TO UTILITY OUTLET
UTILITY PWR - ON

O₂ FLOW
RATE TEST

NOTES

EARTH DISTANCE
≈ 175 091 NM

EARTH HORIZON

40 ALTAIR (ENH)

212 DELTA
SAGITTARI (EFH)

33 ANTARES (EFH)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE C (JAN)	JANUARY 18, 1971	167:00 - 168:00	7/TEC	3-244

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

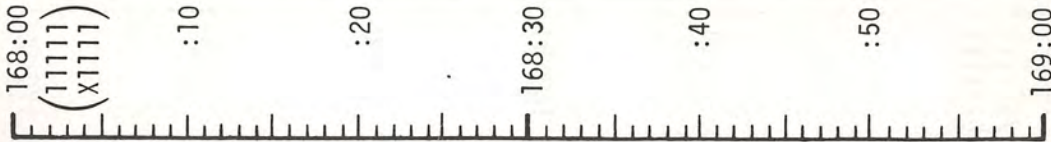
0623

MCC-H

1423 CST

FLIGHT PLAN

NOTES



CREW EXERCISE PERIOD

- O₂ HEATER 3 (1) - AUTO
- REPRESS PKG VLV - OFF (VERIFY)
- CB O₂ ISOL/AUX BAT - CLOSE
- O₂ TANK 3 ISOL VLV - CLOSE (MOMENTARY)
- O₂ TANK 3 ISOL VLV TB-BP
- O₂ PRESS IND - SRG/3

M S F N

UNSTOW SCREEN & ADAPTER FROM R6
 REMOVE PLUG FROM SIDE HATCH ORIFICE AND STOW
 INSTALL ADAPTER ON HATCH ORIFICE
 INSTALL SCREEN ON ADAPTER

WHEN SURGE TANK PRESSURE REACHES 750 PSIA,
 (CRYO O₂ PRESS 1/SRG IND \leq 750 PSIA)

SURGE TANK O₂ VLV - OFF

O₂ FLOW RATE TEST

TEST WILL BE TERMINATED 2.5 HOURS AFTER SURGE TANK REACHES 750 PSIA

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE C (JAN)	JANUARY 18, 1971	168:00 - 169:00	7/TEC	3-245

MSC Form 29 (May 69)

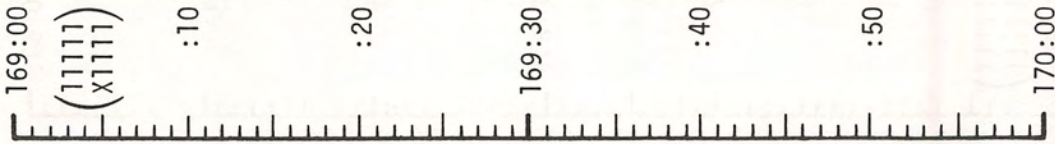
FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

0723

1523 CST



(11111)
(X1111)

M S F N

EAT PERIOD

O₂ FLOW
RATE
TEST

FLIGHT PLAN

NOTES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	169:00 - 170:00	7/TEC	3-246

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

0723

FLIGHT PLAN

NOTES

EARTH DISTANCE
 ≈ 168 662 NM

1623 CST



MCC-H

0823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	170:00 - 171:00	7/TEC	3-247

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

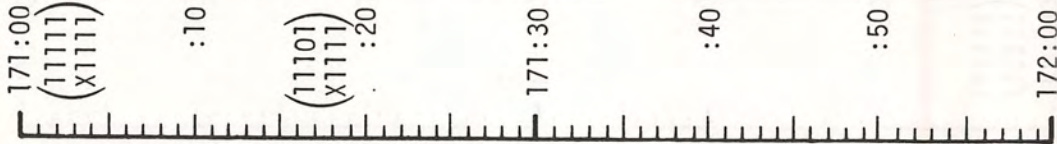
NASA — MSC

0923

MCC-H

0923

1723 CST



FLIGHT PLAN

ON CUE FROM MCC-H, APPROXIMATELY 10 MINUTES PRIOR TO TEST COMPLETION, SURGE TANK O₂ VLV - ON UTILITY PWR $\frac{2}{2}$ OFF
 DISCONNECT CABLE FROM HEATER AND UTILITY OUTLET AND STOW IN R10
 REMOVE AND STOW SCREEN & ADAPTER IN BAG IN R6 UNSTOW PLUG AND REPLACE IN SIDE HATCH ORIFICE
 INSTALL PROTECTIVE PLUG ON HATCH NOZZLE V48 (11101)(X1111)
 ENABLE RCS QUADS A&B
 V49 MNVR TO THERMAL ATTITUDE (171:30) (144,002,027) HGA P -29, Y 116
 O₂ TANK 3 ISOL VLV - OPEN
 O₂ TANK 3 ISOL VLV TB - GRAY
 CB O₂ ISOL/AUX BAT - OPEN

WHEN SURGE TANK PRESSURE REACHES 865 PSIA, O₂ HEATER 1 - OFF

O₂ FLOW RATE TEST

NOTES

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE C (JAN)	JANUARY 18, 1971	171:00 - 172:00	7/TEC	3-248

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

1023

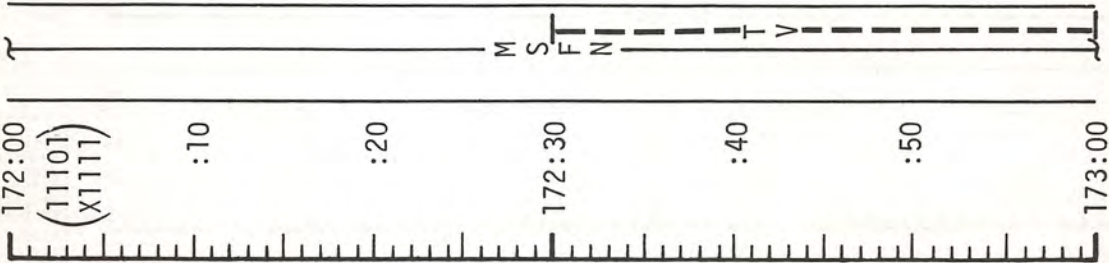
MCC-H

1022

1823 CST

FLIGHT PLAN

NOTES

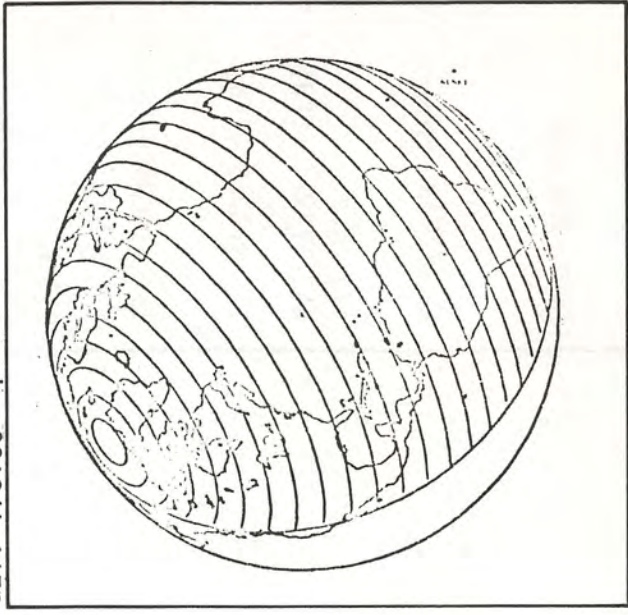


CSM SYSTEMS CHECKLIST

CONTAMINATION CONTROL PAGE S 1-16

TV(GDS) 172:30 TO 173:00
CM/TV - AVG (f5.6)
USE MONITOR TO ADJUST APERTURE
FOR INFLIGHT DEMONSTRATION

GET: 173:00 F.O.V. = 3°



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	172:00 - 173:00	7/TEC	3-249

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

1123

1123

FLIGHT PLAN

1920 CST

173:00
(111101)
(X11111)

:10

:20

173:30

:40

:50

174:00

M
S
F
N

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(094,103,358) HGA P -79, Y 101
P23 C ISLUNAR NAVIGATION
OPTICS CALIBRATION STAR N70 (00040)
P00

V49 MNVR TO SIGHTING ATTITUDE
(082,098,325) HGA P -5Z, Y 0
P23 C ISLUNAR NAVIGATION

3 MARKS ON EACH STAR

1. N70 (00040) (00000) (00110)

2. N70 (00000) (00000) (00120)
N88 (+07234) (-86438) (-49761)

3. N70 (00033) (00000) (00120)

*4. N70 (00035) (00000) (00120)

*5. N70 (00000) (00000) (00120)
N88 (-07804) (-99375) (+07982)

*6. N70 (00042) (00000) (00110)

L10H CANISTER CHANGE
(14 INTO B, STOW 12 IN A3)

NOTES

EARTH DISTANCE
≈ 162 018 NM

EARTH HORIZON

40 ALTAIR (ENH)

212 DELTA
SAGITTARI (EFH)

33 ANTARES (EFH)

35 RASALHAGUE (EFH)

211 BETA
OPHIUCHI (EFH)

42 PEACOCK (ENH)

*OPTIONAL TEST
STARS, DO NOT
UPDATE S.V.

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	173:00 - 174:00	7/TEC	3-250

1223

MCC-H

1223
UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

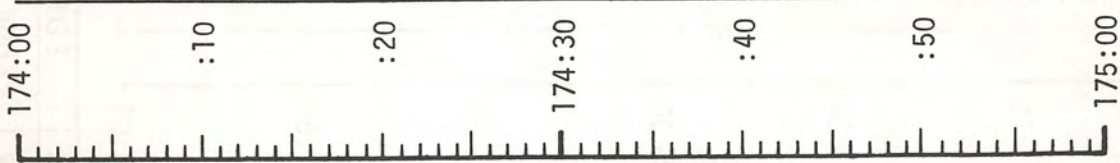
FLIGHT PLAN

2023 CST

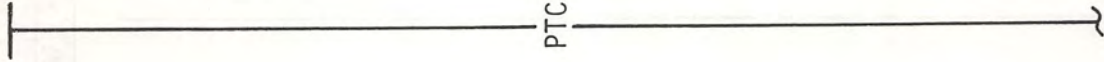
CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N)
V49 MNVR TO PTC ATTITUDE
(N20,270,000)
V79 (-0.3750)
(+030.00)
(+000000)

REESTABLISH HGA REACQ MODE



M S F N



NOTES

DAP LOAD STATUS
(11101)(X1111)

PAGE G 8-2

1323

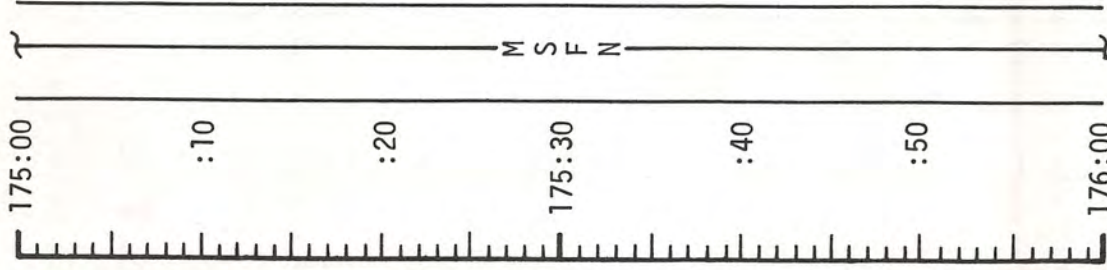
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	174:00 - 175:00	7/TEC	3-251

FLIGHT PLAN

2123 CST

MCC-H

1323



CSM SYSTEMS CHECKLIST
 PRE-SLEEP CHECKLIST
 COMM - OMNI'S

PAGE S 1-26

NOTES

DAP LOAD STATUS
 (11101)(X1111)

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

EARTH DISTANCE
 ≈ 155 133 NM

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	175:00 - 176:00	7/TEC	3-252

MSC Form 28 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

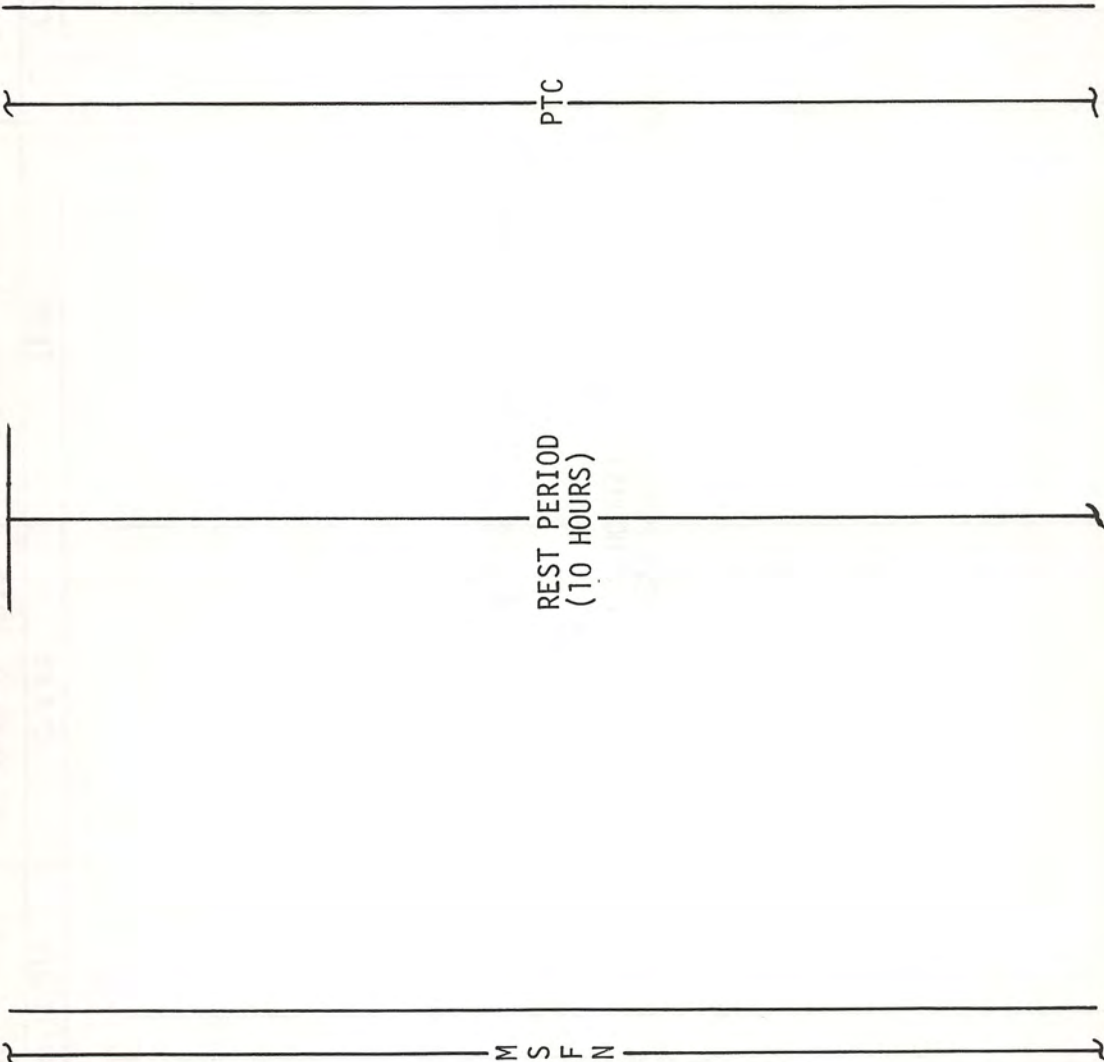
1423

FLIGHT PLAN

MCC-H

1423

2223 CST

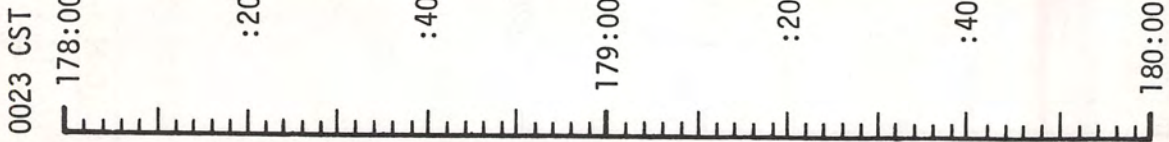


NOTES

DAP LOAD STATUS
(11101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	176:00 - 178:00	7/TEC	3-253

FLIGHT PLAN



MCC-H

16

17

18

NOTES

DAP LOAD STATUS
(11101)(X1111)

MISSION	EDITION	DATE	TIME	Y/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	178:00 - 180:00	7/TEC	3-254

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

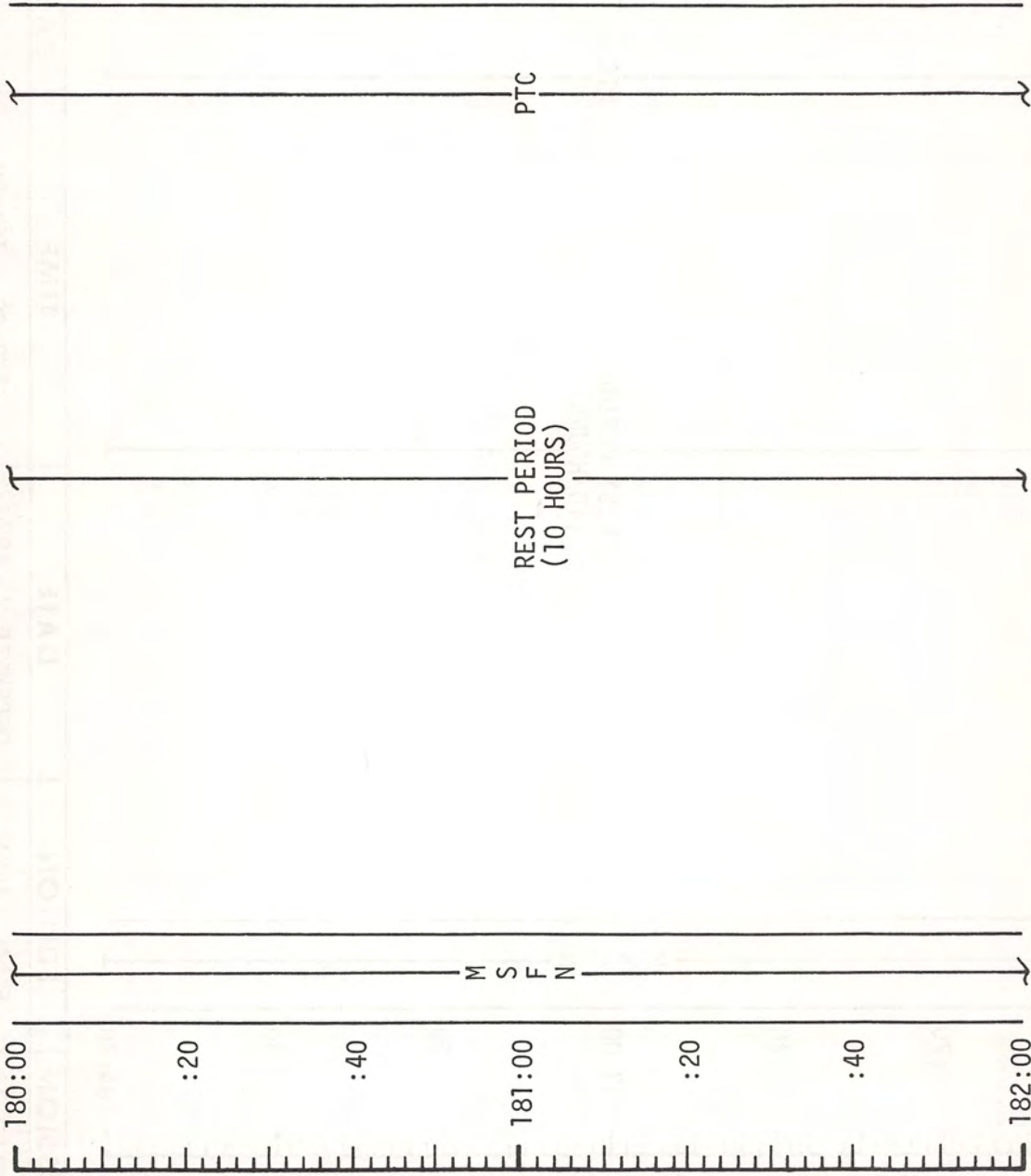
18

0223 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(111101)(X11111)



MISSION	EDITION	DATE	TIME	DAY / REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	180:00 - 182:00	7/TEC	3-255

19

20

FLIGHT PLAN

MCC-H

0423 CST



M S F N

REST PERIOD
(10 HOURS)

PTC

NOTES

DAP LOAD STATUS
(11101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	182:00 - 184:00	7/TEC	3-256

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

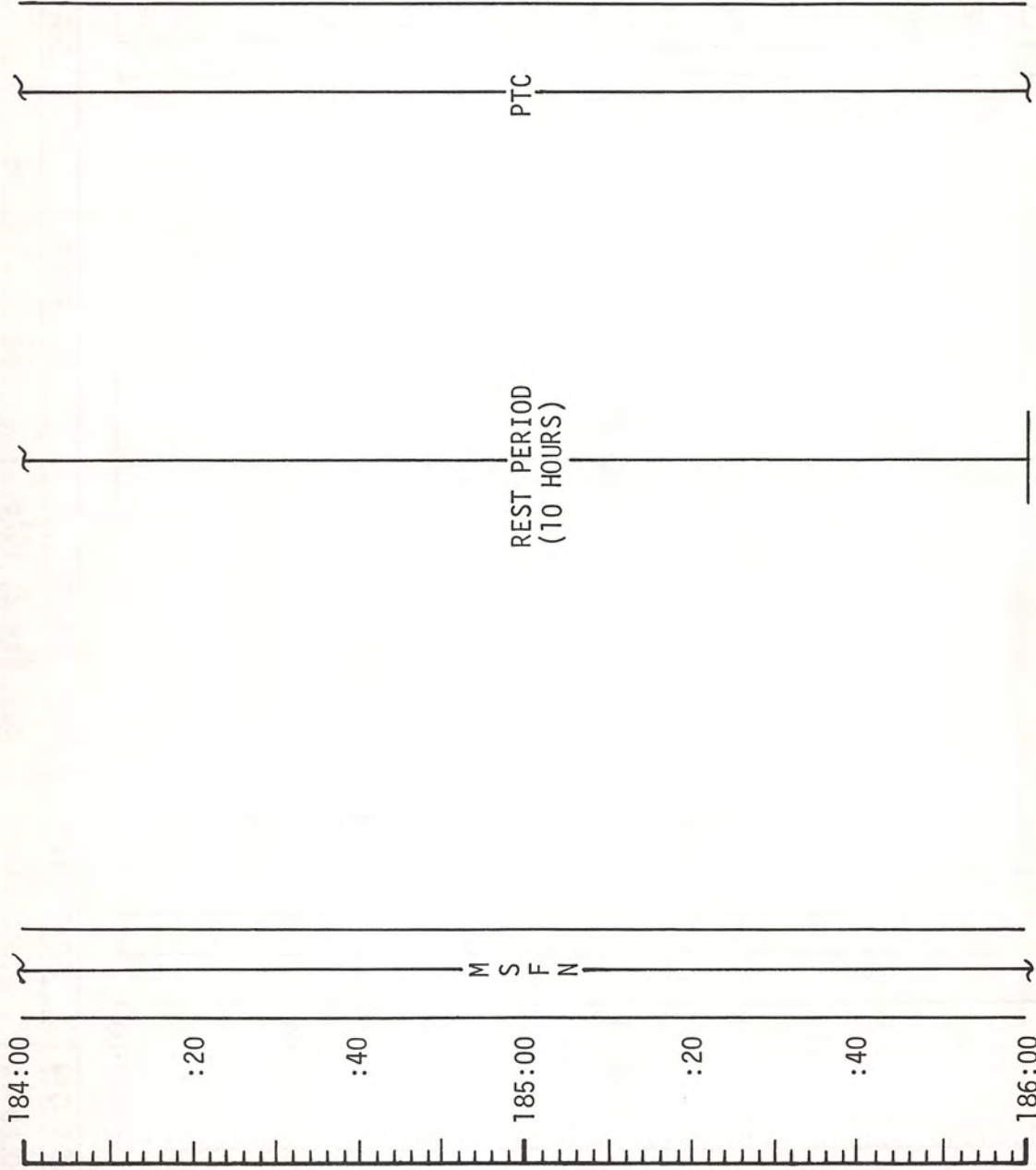
NASA — MSC

FLIGHT PLAN

0623 CST

MCC-H

NOTES
DAP LOAD STATUS
(11101)(X1111)



22

23

0023

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	184:00 - 186:00	7/TEC	3-257

MCC-H

0023

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

FLIGHT PLAN

0823 CST



CSM SYSTEMS CHECKLIST

POST-SLEEP CHECKLIST PAGE S 1-26
COMM - HGA REACQ MODE

CHARGE BATTERY A

EAT PERIOD

P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

PTC

NOTES

DAP LOAD STATUS
(11101)(X1111)

CSM CONSUMABLES UPDATE

GET: _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

EARTH DISTANCE
≈ 127 376 NM

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	186:00 - 187:00	8/TEC	3-258

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

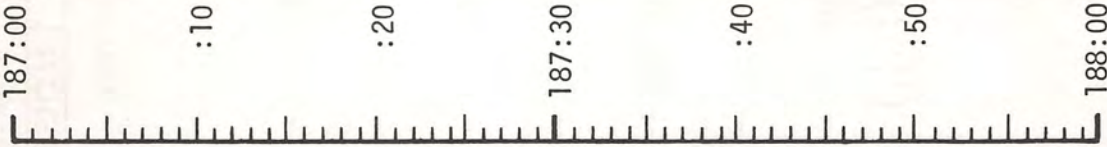
0223

MCC-H

0123

FLIGHT PLAN

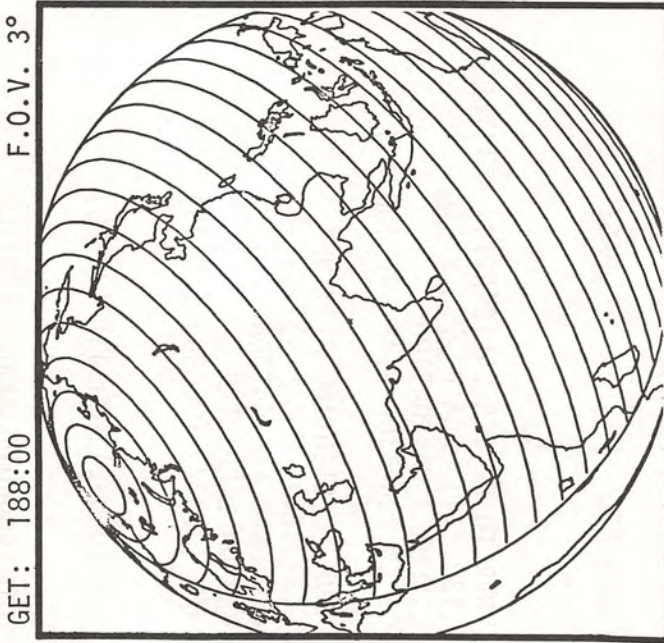
0923 CST



LIQH CANISTER CHANGE
(15 INTO A, STOW 13 IN A4)

CSM ENTRY CHECKLIST
EMS ENTRY CHECK

PAGE E 1-4



PTC

NOTES

DAP LOAD STATUS
(111101)(X11111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	187:00 - 188:00	8/TEC	3-259

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

0223

FLIGHT PLAN

1023 CST



NOTES
DAP LOAD STATUS
(11101)(X1111)

PTC

EXIT G&N PTC PAGE G 8-3

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(073,138,354) HGA P -75, Y 278
P23 CISELUNAR NAVIGATION
OPTICS CALIBRATION STAR N70 (00040)
P00

V49 MNVR TO SIGHTING ATTITUDE
(087,137,325) HGA P -57, Y 0
P23 CISELUNAR NAVIGATION
3 MARKS ON EACH STAR

1. N70 (00037) (00000) (00120)
2. N70 (00033) (00000) (00120)
3. N70 (00000) (00000) (00110)
N88 (+59879) (-32372) (-73257)

EARTH DISTANCE
≈121 814 MIN

EARTH HORIZON

37 NUNKI (EFH)

33 ANTARES (EFH)

120 AL NA'IR (ENH)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	188:00 - 189:00	8/TEC	3-260

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

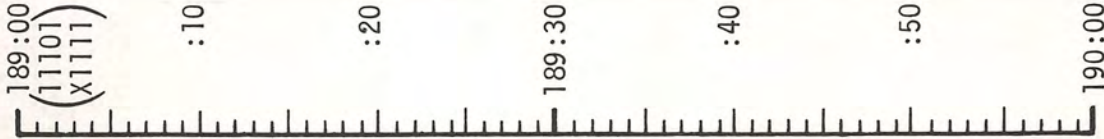
6323

MCC-H

0323

FLIGHT PLAN

1123 CST



*4. N70 (00040) (00000) (00110)

*5. N70 (00035) (00000) (00120)

*6. N70 (00000) (00000) (00120)
N88 (-07804) (-99375) (+07982)

NOTES

40 ALTAIR (ENH)

35 RASALHAGUE (EFH)

211 BETA
OPHIUCHI (EFH)

*OPTIONAL TEST
STARS, DO NOT
UPDATE S.V.

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N)
V49 MNVR TO PTC ATTITUDE
(N20, 270, 000)
V79 (-0.3750)
(+030.00)
(+00000)

REESTABLISH HGA REACQ MODE

PAGE G 8-2

PTC

DAP LOAD STATUS
(11101) (X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	189:00 - 190:00	8/TEC	3-261

0423

FLIGHT PLAN

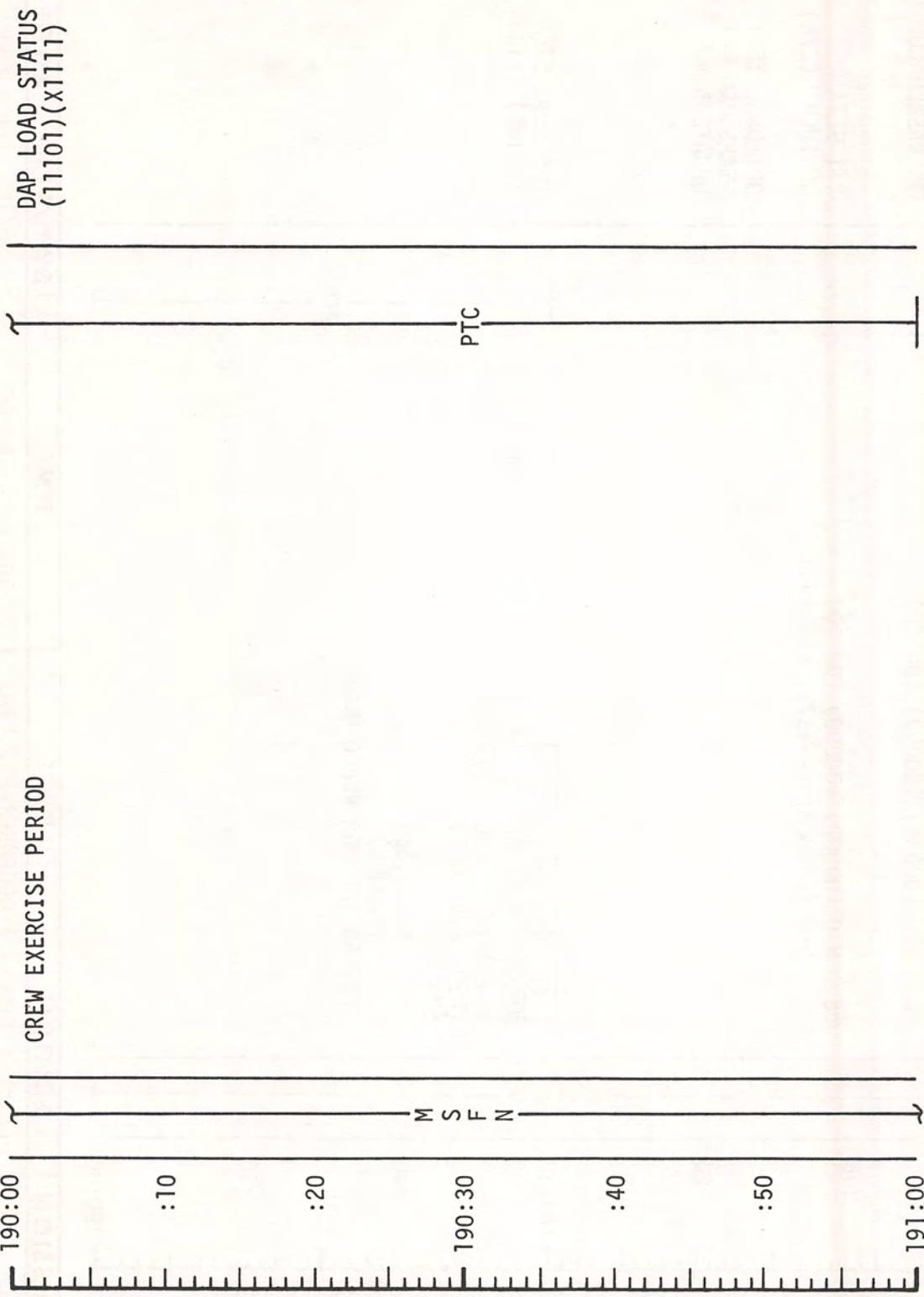
1223 CST

MCC-H

0423

0

1150



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	190:00 - 191:00	8/TEC	3-262

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

MCC-H

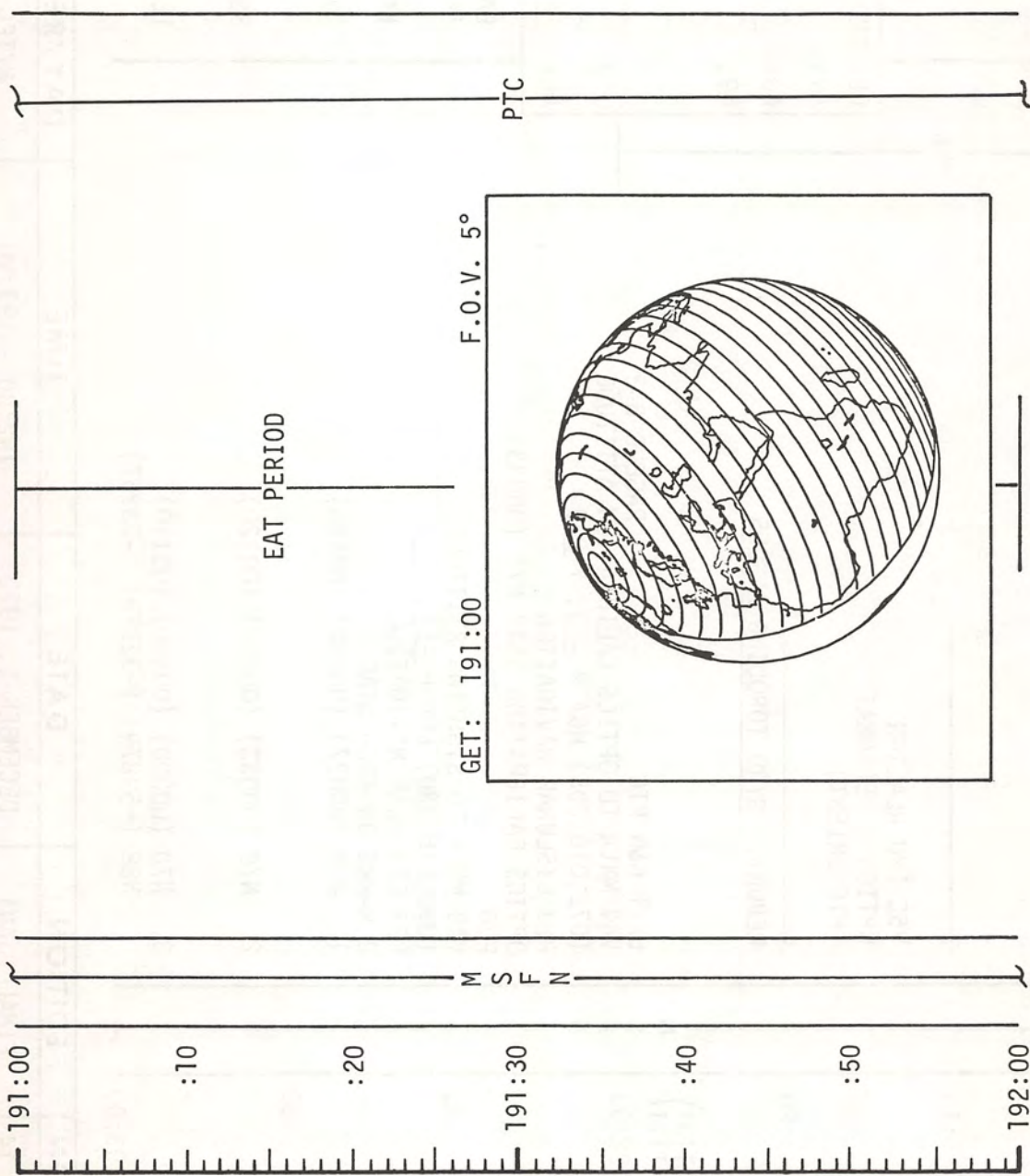
0523

1323 CST

FLIGHT PLAN

NOTES

DAP LOAD STATUS
(111101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	191:00 - 192:00	8/TEC	3-263

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

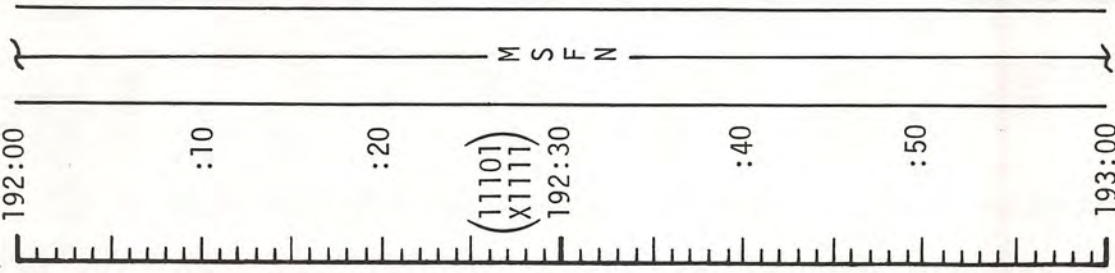
0623

FLIGHT PLAN

1423 CST

MCC-H

0623



P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

REPORT: GYRO TORQUING ANGLES

EXIT G&N PTC
V49 MNVR TO OPTICS CALIBRATION ATTITUDE
(072,016,005) HGA P -73, Y 270

PAGE G 8-3

P23 CISELUNAR NAVIGATION
OPTICS CALIBRATION STAR N70 (000033)
P00

V49 MNVR TO SIGHTING ATTITUDE
(090,016,330) HGA P -55, Y 3

P23 CISELUNAR NAVIGATION
3 MARKS ON EACH STAR

1. N70 (00037) (00000) (00120)
2. N70 (00033) (00000) (00120)
3. N70 (00000) (00000) (00110)
N88 (+59879) (-32372) (-73257)

NOTES

DAP LOAD STATUS
(11101)(X1111)

PTC

P52 IMU REALIGN
N71: ---
N05: ---
N93: ---
X ---
Y ---
Z ---
GET ---

EARTH DISTANCE
≈ 113 101 NM

EARTH HORIZON

37 NUNKI (EFH)

33 ANTARES (EFH)

120 AL NA'IR (ENH)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	192:00 - 193:00	8/TEC	3-264

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

0723

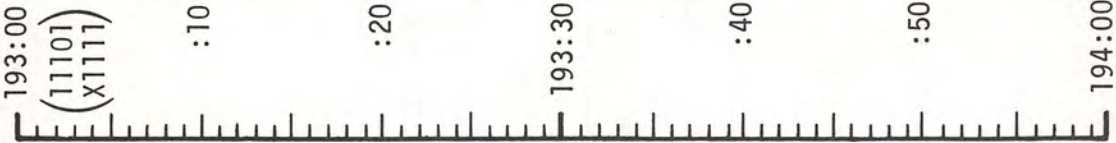
MCC-H

0723

1523 CST

FLIGHT PLAN

NOTES



H₂ PURGE LINE HEATER-ON } IF MCC-6 NOT REQUIRED
 H₂ PURGE LINE HEATER-OFF } IF MCC-6 NOT REQUIRED

UPDATE TO CSM
 MCC-6 MNVR PAD
 ENTRY PAD (ASSUMES
 MCC-6)
 CSM S.V.

UPLINK TO CSM
 CSM S.V. & V47E
 MCC-6 TGT LOAD

UPDATE TO CSM
 QUADS TO ENABLE
 FOR PTC SPINUP

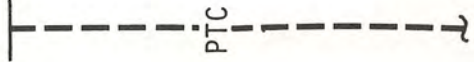
H₂ & O₂ FUEL CELL PURGE
 WASTE WATER DUMP
 H₂ PURGE LINE HEATER - OFF

IF MCC-6 NOT REQUIRED

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N) PAGE G 8-2
 V49 MNVR TO PTC ATTITUDE
 (N20,270,000)
 V79 (-0.3750)
 (+030.00)
 (+000000)
 REESTABLISH HGA REACQ MODE
 P30 EXTERNAL ΔV
 V49 MNVR TO PAD BURN ATT
 H₂ PURGE LINE HEATERS - ON } IF NOT PERFORMED
 AT 193:00

RESTART PTC IF
 MCC-6 NOT REQ'D
 DAP LOAD STATUS
 (11101)(X1111)



0823

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	193:00 - 194:00	8/TEC	3-265

FLIGHT PLAN

MCC-6
BURN TABLE

MANEUVER	P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
CORRIDOR CONTROL	10°/SEC COMPLETE	+10° COMPLETE	BT + 1 SEC AND $\Delta V_c = 0$	TRIM X AXIS ONLY TO 0.2 FPS
IP CONTROL	10°/SEC TERMINATE	+10° TERMINATE	BT + 1 SEC AND $\Delta V_c = 0$	TRIM X & Z AXIS TO 0.2 FPS

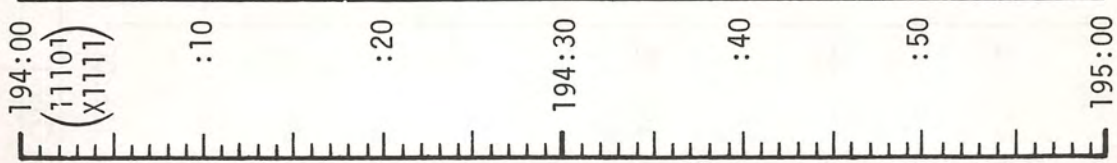
TABLE 3-10
3-266

FLIGHT PLAN

1623 CST

MCC-H

0823



SXT STAR CHECK
P40 SPS THRUSTING OR
P41 RCS THRUSTING

H₂ & O₂ FUEL CELL PURGE
WASTE WATER DUMP
H₂ PURGE LINE HEATERS-OFF

IF NOT PERFORMED
AT 193:20

EI - 22 HR

UPLINK TO CSM
CSM S.V. (CMC) V47E
CSM S.V. (MSFN)
(NO V47)

MCC-6

BURN STATUS REPORT

TIG: 194:26:59
BT: NOM ZERO
ΔVT: NOM ZERO
ULLAGE: N/A
ORBIT: N/A

NOTES

DAP LOAD STATUS
(11101)(X1111)

PTC

BURN STATUS REPORT		BURN STATUS REPORT	
X	X	ΔTIG	•
X	X	BT	•
		V gx	•
		TRIM	
X	X	R	•
X	X	P	•
X	X	Y	•
		V gx	•
		V gy	•
		V gz *	•
		ΔV C	•
X	X	FUEL *	•
X	X	OX *	•
X	X	UNBAL	•

*ITEMS TO BE
REPORTED TO MSFN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	194:00 - 195:00	8/TEC	3-267

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

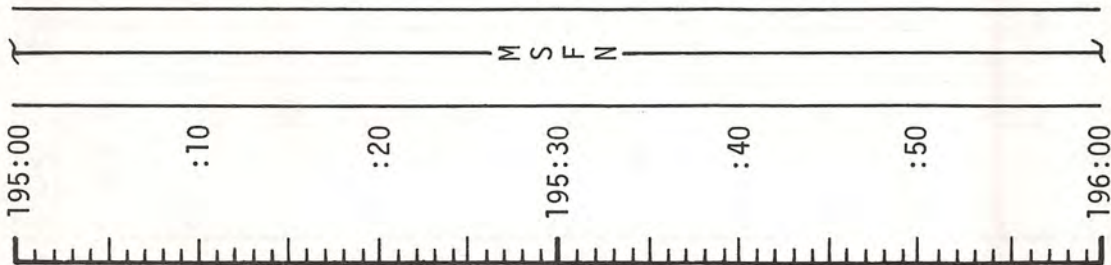
NASA — MSC

0923

MCC-H
 0923
 UPDATE TO CSM
 QUADS TO ENABLE
 FOR PTC SPINUP

FLIGHT PLAN

1723 CST



CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N)
 V49 MNVR TO PTC ATTITUDE
 (N20,270,000)
 V79 (-0.3750)
 (+030.00)
 (+00000)
 REESTABLISH HGA REACQ MODE

CSM SYSTEMS CHECKLIST

CONTAMINATION CONTROL

PAGE G 8-2

PAGE S 1-16

NOTES

DAP LOAD STATUS
 (11101) (X1111)

GET: 196:00

F.O.V. 5°



PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	195:00 - 196:00	8/TEC	3-268

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

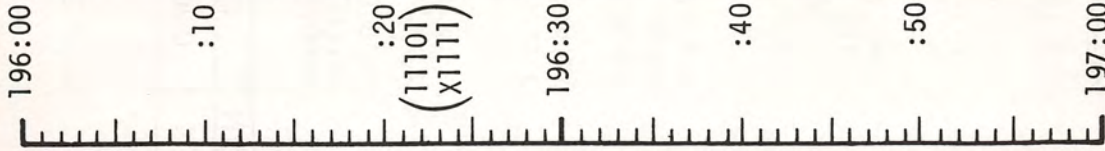
1023

MCC-H

1023

FLIGHT PLAN

1823 CST



P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (PTC ORIENT)

REPORT: GYRO TORQUING ANGLES
 REPORT: CM RCS INJECTOR VALVE TEMPS
 (SYS TEST METER 5C, 5D, 6A, 6B, 6C, 6D)

EXIT G&N PTC PAGE G 8-3

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
 (086,062,012) HGA P -72, Y 191
 P23 CISLUNAR NAVIGATION
 OPTICS CALIBRATION STAR N70 (000035)
 P00

V49 MNVR TO SIGHTING ATTITUDE
 (090,062,329) HGA P -57, Y 3
 P23 CISLUNAR NAVIGATION
 3 MARKS ON EACH STAR

1. N70 (00037) (00000) (00120)
2. N70 (00033) (00000) (00120)
3. N70 (00000) (00000) (00110)
 N88 (+59879) (-32372) (-73257)

NOTES

DAP LOAD STATUS
 (11101) (X1111)

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

PTC

EARTH DISTANCE
 ≈ 97 415 NM

EARTH HORIZON

37 NUNKI (EFH)

33 ANTARES (EFH)

120 AL NA'IR (ENH)

P52 IMU REALIGN
N71: _____
N05: _____
N93: _____
X _____
Y _____
Z _____
GET _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	196:00 - 197:00	8/TEC	3-269

1123

EARTH DARKSIDE DIM LIGHT PHOTOGRAPHY

CONFIGURE CAMERA
CM/DAC/SXT/VHBW, (EXP 1/500) 24 fps (2.5% MAG)
MAG (J) _____ MAG % _____

UTILITY POWER - ON

V49 MNVR TO EARTH DARKSIDE PHOTO ATTITUDE (197:20)
(122,270,000) HGA P -59, Y 90

DAMP VEHICLE RATES PER PTC PROCEDURE STEP 5
AFTER 20 MIN, DISABLE ALL JETS
P22 ORBIT NAVIGATION (NO MARKS)

LDMK: LAT + 10.000
LONG/2 -17.500
ALT +000.00
SA +130.60
TA +44.800

VERIFY THRU SXT THAT OPTICS BORESIGHTED ON EARTH DARKSIDE
MOUNT DAC ON SXT, DAC-ON AT 24 fps FOR 2 SEC
CHANGE DAC TO TIME & 1/60

1 FRAME, EXP TIME 60 SEC
1 FRAME, EXP TIME 20 SEC
1 FRAME, EXP TIME 5 SEC

CHANGE DAC TO 24 fps & 1/500; DAC ON AT 24 fps for 2 SEC
CYCLE CMC MODE - FREE/AUTO
ENABLE JETS
RECORD MAG %
REMOVE AND STOW DAC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	197:20 - 198:00	8/TEC	3-270

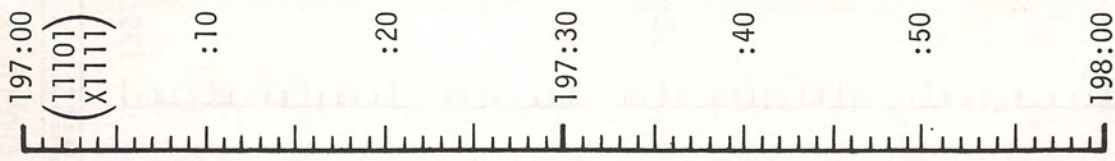
MCC-H

1123

1923 CST

FLIGHT PLAN

NOTES



- *4. N70 (00040) (00000) (00110)
- *5. N70 (00000) (00000) (00120)
N88 (-07804) (-99375) (+07982)
- *6. N70 (00000) (00000) (00120)
N88 (+22712) (-83641) (-49884)

EARTH DARKSIDE
DIM LIGHT PHOTOGRAPHY

- 40 ALTAIR (ENH)
- 211 BETA
OPHIUCHI (EFH)
- 214 ZETA
SAGITTARIUS (EFH)

*OPTIONAL TEST
STARS, DO NOT
UPDATE S.V.

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	197:00 - 198:00	8/TEC	3-271

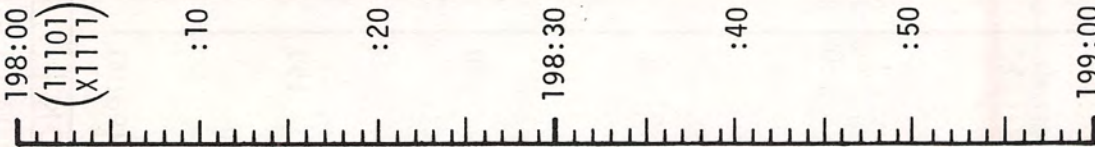
1223

FLIGHT PLAN

NOTES

ONLY THE GDC
ALIGN WILL BE
PERFORMED

2023 CST



CSM G&C CHECKLIST

BACKUP GDC AND/OR IMU ALIGNMENT
V06 N20 (DO NOT ENTER)

PAGE G 7-3

AT RELEASE OF GDC ALIGN PB, KEY ENTER,
RECORD ANGLES AND REPORT TO MCC-H

PAGE G 7-11

CRESCENT ALIGN
V06 N20 (DO NOT ENTER)

AT RELEASE OF GDC ALIGN PB, KEY ENTER,
RECORD ANGLES AND REPORT TO MCC-H

PAGE G 8-2

CSM G&C CHECKLIST

PASSIVE THERMAL CONTROL (G&N)
V49 MNVR TO PTC ATTITUDE
(N20, 270, 000)
V79 (-0.3750)
(+030.00)
(+00000)
REESTABLISH HGA REACQ MODE

DAP LOAD STATUS
(11101)(X1111)

PTC

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	198:00 - 199:00	8/TEC	3-272

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

1323

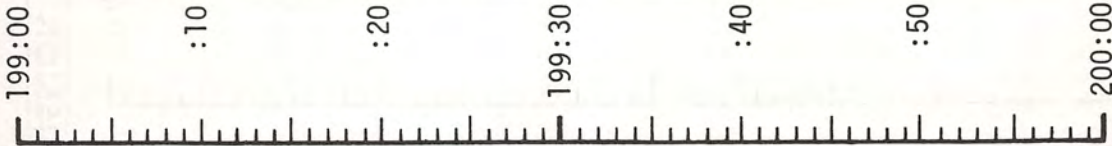
1323

MCC-H

1423

FLIGHT PLAN

2123 CST



LiOH CANISTER CHANGE
(16 INTO B, STOW 14 IN A4)

M S F N

EAT PERIOD

PTC

NOTES

DAP LOAD STATUS
(111101)(X1111)

EARTH DISTANCE
≈ 87 143 NM

ONBOARD READOUT

BAT C

PYRO BAT A

PYRO BAT B

RCS A

B

C

D

DC IND SEL - MNA OR B

CSM SYSTEMS CHECKLIST

PRE-SLEEP CHECKLIST PAGE S 1-26
COMM - OMNI'S

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	199:00 - 200:00	8/TEC	3-273

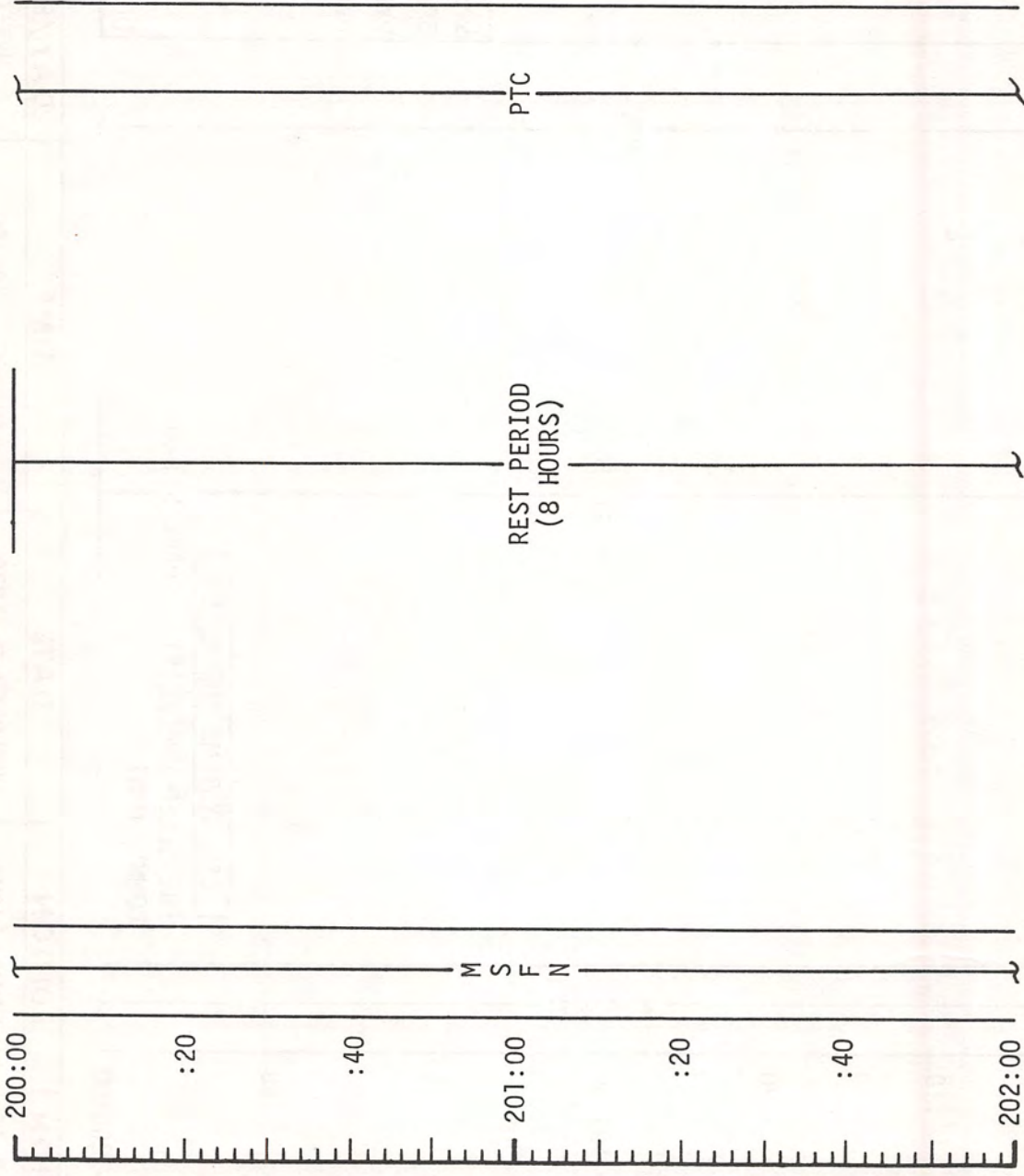
1423

FLIGHT PLAN

2223 CST

MCC-H

NOTES
DAP LOAD STATUS
(11101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	200:00 - 202:00	8/TEC	3-274

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

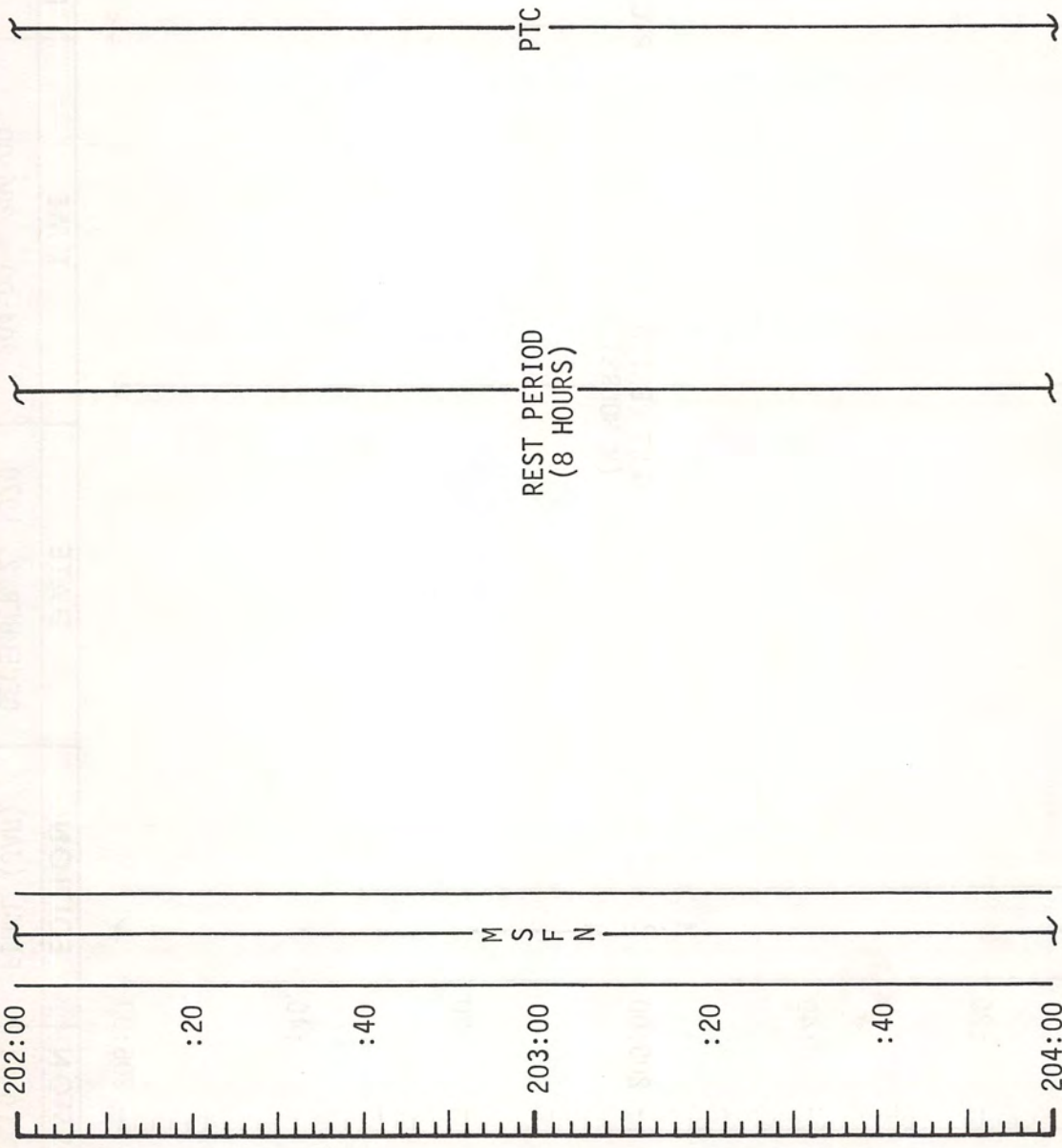
NASA — MSC

FLIGHT PLAN

0023 CST

MCC-H

NOTES
DAP LOAD STATUS
(11101)(X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	202:00 - 204:00	8/TEC	3-275

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

16

17

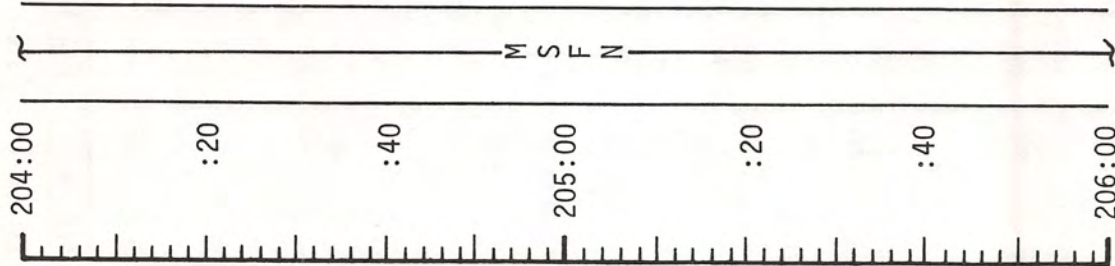
18

FLIGHT PLAN

MCC-H

18

0223 CST



M S F N

REST PERIOD
(8 HOURS)

PTC

NOTES

DAP LOAD STATUS
(111101)(X11111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	204:00 - 206:00	8/TEC	3-276

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

29

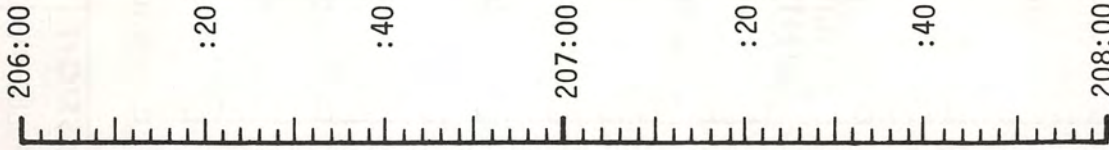
20

FLIGHT PLAN

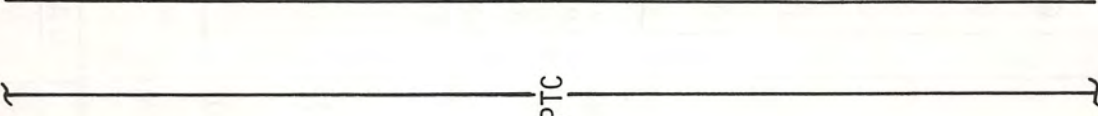
MCC-H

10

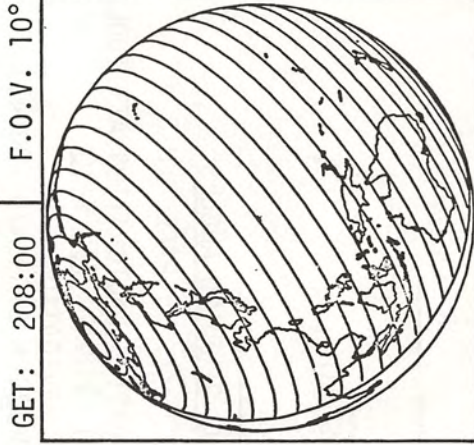
0423 CST



M S F N



REST PERIOD
(8 HOURS)



PTC

NOTES

DAP LOAD STATUS
(TTTTT)(XTTTT)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	206:00 - 208:00	8/TEC	3-277

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

21

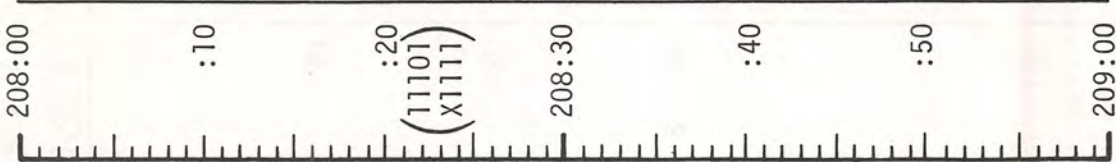
22

FLIGHT PLAN

MCC-H

UPDATE TO CSM
 2223
 FLIGHT PLAN
 CONSUMABLES

1223 CST



CSM SYSTEMS CHECKLIST

POST-SLEEP CHECKLIST PAGE S 1-26

P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (PTC ORIENT)

REPORT: GYRO TORQUING ANGLES
 EXIT G&N PTC PAGE G 8-3

V49 MNVR TO OPTICS CALIBRATION ATTITUDE
 (099,252,003) HGA P -73, Y 10
 P23 CISELUNAR NAVIGATION
 OPTICS CALIBRATION STAR N70 (00042)
 P00

V49 MNVR TO SIGHTING ATTITUDE
 (078,245,325) HGA P -57, Y 354
 P23 CISELUNAR NAVIGATION
 3 MARKS ON EACH STAR

1. N70 (00044) (00000) (00110) 44 ENIF (ENH)

2. N70 (00000) (00000) (00120) 212 DELTA
 N88 (+07234) (-86438) (-49761) SAGITTARI II (EFH)

3. N70 (00000) (00000) (00120) 213 LAMBDA
 N88 (+10293) (-89715) (-42956) SAGITTARI II (EFH)

4. N70 (00045) (00000) (00110) 45 FOMALHAUT (ENH)

EARTH HORIZON

NOTES

DAP LOAD STATUS
 (11101) (X1111)

CSM CONSUMABLES UPDATE

GET: _____ : _____

RCS TOTAL _____

QUAD A _____ B _____

C _____ D _____

H₂ TANK 1 _____ 2 _____

O₂ TANK 1 _____ 2 _____

3 _____

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____ : _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	208:00 - 209:00	9/TEC	3-278

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

2323

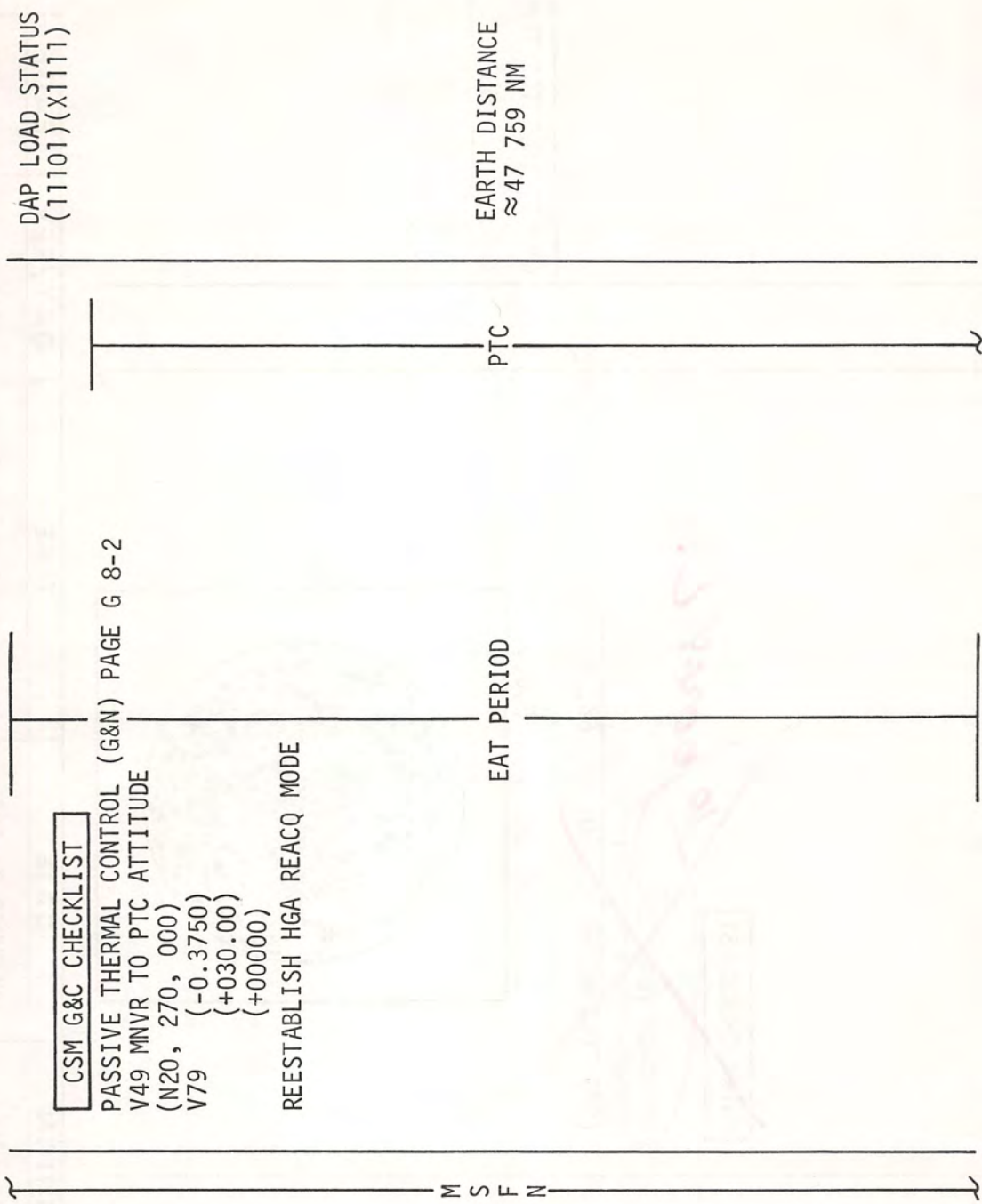
FLIGHT PLAN

MCC-H

2323

UPDATE TO CSM
QUADS TO ENABLE
FOR PTC SPINUP

0723 CST



NOTES

DAP LOAD STATUS
(11101)(X1111)

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	209:00 - 210:00	9/TEC	3-279

10/0023

FLIGHT PLAN

0823 CST

MCC-H

10/0023

LiOH CANISTER CHANGE
(17 INTO A, STOW 15 IN A4)

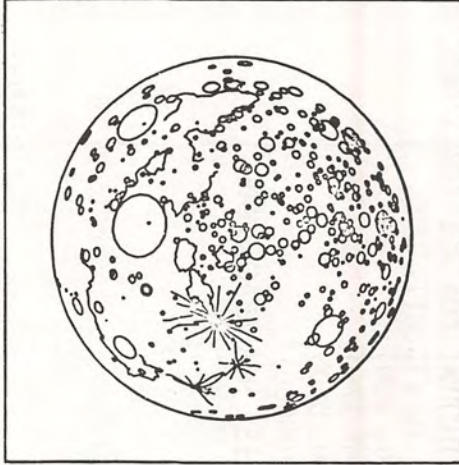
~~ENTRY CHECKLIST~~

~~GO/NO-GO FOR MCC-7
EI - 6 HR~~

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

10 boxes

GET: 211:00 F.O.V. 1°

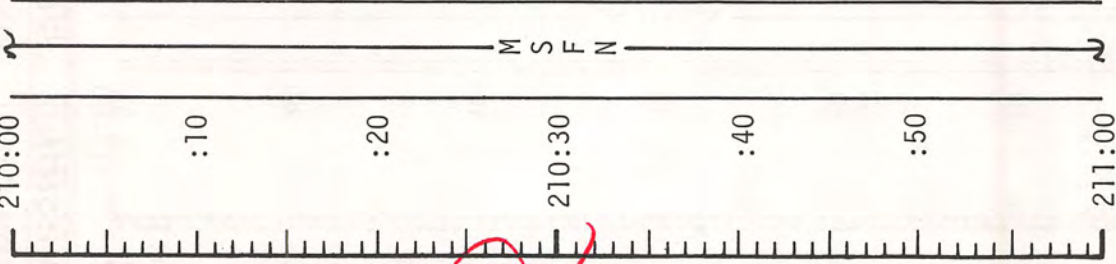


PTC

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

NOTES

DAP LOAD STATUS
(11101) (X1111)



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	210:00 - 211:00	9/TEC	3-280

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

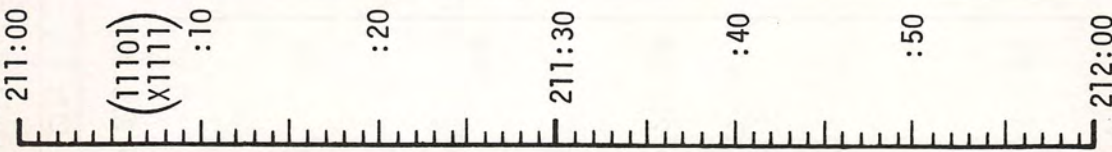
0123

FLIGHT PLAN

MCC-H

0923 CST

0123.



VHF SIMPLEX A - ON
 EXIT G&N PTC
 V49 MNVR TO OPTICS CALIBRATION ATTITUDE
 (299,041,337) OMNI C
 P23 CISELUNAR NAVIGATION
 OPTICS CALIBRATION STAR N70 (00023)
 P00
 V49 MNVR TO SIGHTING ATTITUDE
 (283,033,010) OMNI C
 P23 CISELUNAR NAVIGATION
 3 MARKS ON EACH STAR
 1. N70 (00022) (00000) (00220)
 2. N70 (00000) (00000) (00210)
 N88 (-15020) (+94736) (+28276)
 3. N70 (00023) (00000) (00220)
 4. N70 (00000) (00000) (00220)
 N88 (-84888) (+40318) (+34184)
 5. N70 (00016) (00000) (00210)

ATT DEADBAND - MIN
 RATE - LOW
 BMAG (3) - ATT 1/RATE 2
 SC CONT - SCS

NOTES

DAP LOAD STATUS
 (11101)(X1111)
 LUNAR HORIZON
 22 REGULUS (MFH)
 64 ALHENA (MNH)
 23 DENEbola (MFH)
 151 GAMMA PRIME
 LEONIS (MFH)
 16 PROCYON (MNH)

Handwritten in red:
 H/06 CREO 212:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	211:00 - 212:00	9/TEC	3-281

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA - MSC

EI - 5 HR

UPDATE TO CSM
 MCC-7 MNVR PAD
 ENTRY PAD
 UPLINK TO CSM
 CSM S.V. & V47
 MCC-7 TGT LOAD
 DESIRED ORIENT (ENT)
 ENTRY LAT & LONG

0223

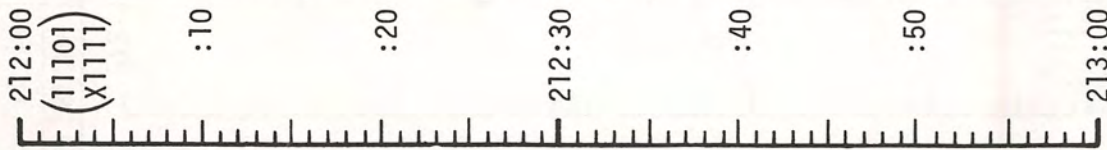
MCC-H

0223

1023 CST

FLIGHT PLAN

NOTES



P52 IMU REALIGN
OPTION 3 REFSMMAT
(PTC ORIENT)

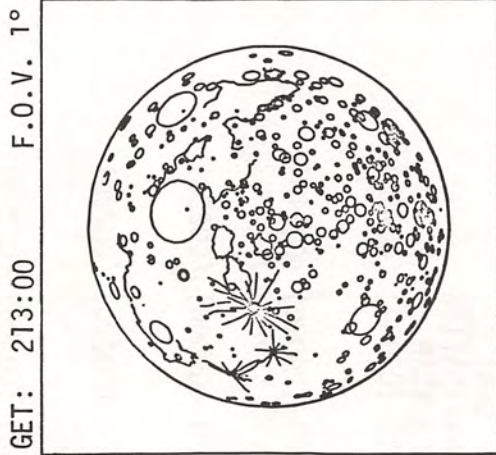
REPORT: GYRO TORQUING ANGLES

P52 IMU REALIGN
OPTION 1 PREFERRED
(ENTRY ORIENT)

SC CONT - CMC
BMAG (3) - RATE 2

STARS _____
SA _____
TA _____

P52	IMU REALIGN
N71:	_____
N05:	_____
N93:	_____
X	_____
Y	_____
Z	_____
GET	_____



P30 EXTERNAL ΔV

EI - 4 HR

0323

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	CHANGE A (JAN)	DECEMBER 23, 1970	212:00 - 213:00	9/TEC	3-282

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

NASA — MSC

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FLIGHT PLAN

MCC-7
BURN TABLE

MANEUVER	P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
CORRIDOR CONTROL	10°/SEC COMPLETE	+10° COMPLETE	BT + 1 SEC AND $\Delta V_C = 0$	TRIM X AXIS ONLY TO 0.2 FPS

TABLE 3-11
3-284

MCC-H

0423

1223 CST

FLIGHT PLAN

NOTES

214:00
 (11101)
 (X1111)

:10

:20

214:30

:40

:50

215:00

M S F N

P23 CISLUNAR NAVIGATION
 OPTICS CALIBRATION STAR N70 (00022)
 P00
 V49 MNVR TO SIGHTING ATTITUDE
 (017,270,000) OMNI C
 P23 CISLUNAR NAVIGATION
 3 MARKS ON EACH STAR

1. N70 (00022) (00000) (00220)

2. N70 (00023) (00000) (00220)

3. N70 (00016) (00000) (00210)

LOGIC SEQUENCE CHECK PAGE E 1-2
 GO/NO-GO FOR PYRO ARM SEQUENCE (CUE MSFN)
 LOGIC - ON
 V49 MNVR TO ENTRY PAD ATTITUDE (214:45)

BORESIGHT AND SXT STAR CHECK

P52 IMU REALIGN
 OPTION 3 REFSMMAT
 (ENTRY ORIENT)

REPORT: GYRO TORQUING ANGLES

LUNAR HORIZON

22 REGULUS (MFH)

23 DENEbola (MFH)

16 PROCYON (MNH)

EI - 2 HR
GO/NO-GO

P52 IMU REALIGN

N71: _____

N05: _____

N93: _____

X _____

Y _____

Z _____

GET _____

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	214:00 - 215:00	9/TEC	3-286

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

0523

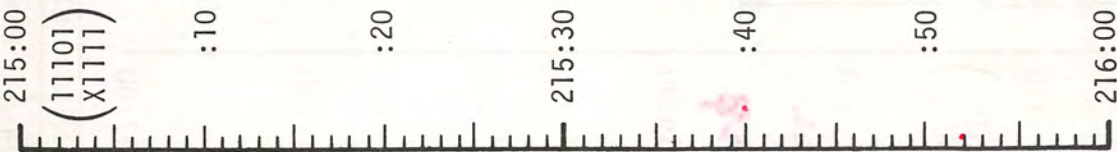
1323 CST

FLIGHT PLAN

MCC-H

0523

NOTES



GDC ALIGN	PAGE E 1-3	
EMS ENTRY CHECK	PAGE E 1-4	
PRIMARY WATER EVAP ACTIVATION	PAGE E 1-4	
CONFIGURATE CAMERA EQUIP FOR FIREBALL AND CHUTES PHOTOS	PAGE E 1-4	
SEC WATER EVAP ACTIVATION	PAGE E 1-4	
CM RCS PRE-HEAT (IF REQ'D)	PAGE E 1-4	
FINAL STOWAGE	PAGE E 1-5	
TERMINATE CM RCS PRE-HEAT	PAGE E 1-5	
CM RCS ACTIVATION	PAGE E 1-6	
GO/NO-GO FOR PYRO ARM (CUE MSFN)		
LOGIC - ON		
SET DET (UP, TO EI)	PAGE E 2-1	
EMS INITIALIZATION	PAGE E 2-1	
RSI ALIGNMENT	PAGE E 2-1	
CM RCS CHECK	PAGE E 2-1	

EI - 1 HR

GO/NO-GO FOR PYRO ARM

UPDATE TO CSM

ENTRY PAD

RECOVERY PAD

UPLINK TO CSM

CSM S.V. & V66

EI - 30 MIN
VHF A SIMPLEX
COMM CHECK

0623

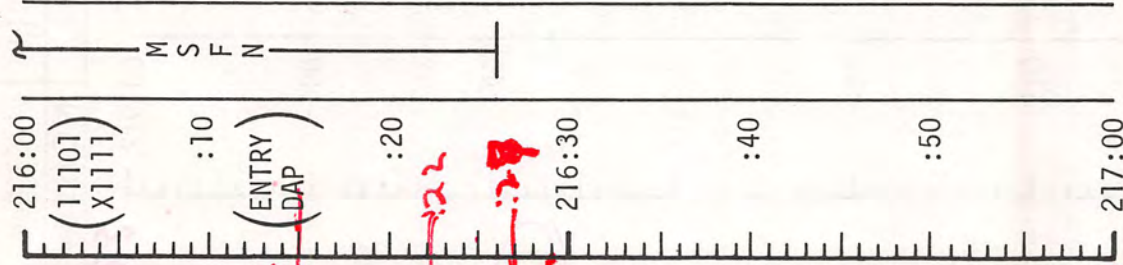
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	215:00 - 216:00	9/TEC	3-287

MCC-H

1423 CST

FLIGHT PLAN

NOTES



Y	=	<u>6</u> . <u>5</u>	<u>—</u>
L/D	=	<u>2</u> <u>9</u> <u>7</u> <u>8</u>	<u>4</u>
V	=	<u>3</u> <u>6</u> <u>1</u> <u>7</u>	<u>0</u>
R	=	<u>1</u> <u>2</u> <u>5</u> <u>0</u>	<u>—</u>

TIME FROM 400K FT,
MIN:SEC

00:00
00:18
00:30
00:52
01:18
01:20
02:06
02:10
03:32
07:16
08:17
09:04
13:54

PAGE E 2-2

SEPARATION CHECKLIST

MNVR TO HORIZON CHECK ATT PAGE E 2-2
 P61 ENTRY PREP PAGE E 2-2
 P62 CM/SM SEP & PRE-ENTRY MNVR PAGE E 2-3
 SECS PYRO ARM

0650L

CM/SM SEP 216:12

MNVR TO ENTRY ATT

P63 ENTRY INITIATE

EI 216:26:59

P64 ENTRY POST 0.05G

TRAJECTORY EVENTS
 400 000 FT (GET 216:26:59)
 ENTER S-BAND BLACKOUT
 0.05G
 KA - INITIATE CONSTANT DRAG
 RDOT = -700 FPS
 PEAK G (6.6)
 SUBCIRCULAR VELOCITY
 P64 TO P67
 EXIT S-BAND BLACKOUT
 GUIDANCE TERMINATION
 DROGUE DEPLOYMENT
 MAIN DEPLOYMENT
 SPLASHDOWN

0623
0638
0723
CR0LOS
HRKLOS
SPD

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	216:00 - 217:00	9/TEC	3-288

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH

216 26 59
65 54
13.
216 40.53

SECTION 4 - CONSUMABLES



ASSUMPTIONS FOR THE APS ANALYSIS

Propellant loading data were obtained from the Apollo 14 preflight data and were optimized for the nominal mission. The LM-8 data were used for engine performance, and ΔV requirements were coordinated with the Landing Analysis Branch and the Orbital Mission Analysis Branch. The ΔV requirement for the lunar ascent differs from that in the Operational Trajectory and Flight Plan because of an increase in the inert vehicle weight.

The budget shown in table 4-1 accounts for an APS TPI, engine valve-pair malfunction, and balanced couples. A touchdown abort was not considered because the nominal lift-off weight is heavier than the abort weight. The following data were used.

- a. $I_{sp} = 309.97 \pm 3.77$ seconds
- b. Mixture ratio = $1.605 \pm .0258$
- c. Lift-off weight = $10\ 841.5 \pm 38.7$ pounds

TABLE 4-1

APS PROPELLANT SUMMARY

Item	Total propellant, lb
Loaded	5224.8
Trapped and unavailable	-51.8
Outage	-10.3
Available for ΔV	5162.7
Required for ascent (6057.7 fps) . . .	-4931.1
Remaining	231.6
Required for APS TPI ^a (70.2 fps) . . .	-41.4
Remaining	190.2
Dispersions (-3σ)	-66.2
Pad	124.0
Contingencies	
Engine valve-pair malfunction ($\Delta MR = +.01$ or $-.018$)	-24.5
Balanced couples	-56.9
Half-degree out of plane (18 fps)	-10.6
Margin	32.0

^aThe total TPI ΔV is 92.2 fps. It is assumed that 22 fps is obtained by 10-sec, 4-jet ullage.

ASSUMPTIONS FOR THE DPS ANALYSIS

Propellant loading data were obtained from the Apollo 14 preflight data and were optimized for the nominal mission. The LM-8 data were used for engine performance, and ΔV requirements were coordinated with the Landing Analysis Branch. The ΔV requirement for lunar descent differs from that in the Operational trajectory and Flight Plan because of an increase in the inert vehicle weight.

The 3σ dispersions represent total propellant cost based on 3σ uncertainties in propellant loading, trapped propellant, I_{sp} , ΔV , separation weight, non- ΔV consumables weight, mixture ratio, and physical location of the low-level sensor.

The following philosophy changes have been included in the budget.

- a. A flying time of 2 minutes and 20 seconds below low gate will be called a nominal requirement.
- b. A contingency of 5 seconds has been included for a possible early low-level light based on a Grumman Aircraft Corporation presentation to a September 17, 1970, meeting of the Configuration Control Board.
- c. The separation weight is $34\ 101.0 \pm 36.9$ pounds.
- d. Integrated average I_{sp} is 302.5 ± 4.65 seconds.
- e. Mixture ratio is $1.598 \pm .0225$.
- f. Non- ΔV consumables from separation to PDI are 83.2 pounds.

TABLE 4-2
DPS PROPELLANT SUMMARY

Item	Total propellant, lb	Hover time, sec
Loaded	18 414.7	--
Trapped and unavailable	-213.1	--
Outage	-33.4	--
Available for ΔV	18 168.2	--
Required for ΔV (140-sec flying time from low gate, $\Delta V = 6957.8$)	-17 332.5	--
Remaining	835.7	90
Dispersions (-3σ)	-318.6	--
Pad	517.1	56
Operational allowances		
Low-level (5 sec, 26.5 fps)	-44.7	--
Abort reserve (20 sec, 106 fps)	-179.5	--
Margin (hover time before abort decision point)	292.9	31

12/8/70 Final

Ground Rules and Assumptions for the LM EPS Analysis

1. Energy available from the descent batteries is 1600 A-h and from the ascent batteries is 592 A-h.
2. Energy unusables caused by lack of continuous MSFN coverage for the descent and ascent stages are 6 and 3 A-h, respectively.
3. Energy unusables caused by TM inaccuracies for the descent and ascent stages were 77 and 11 A-h, respectively.
4. Energy unusables caused by checklist deviations (dispersion) for the descent and ascent stages were 25 and 4 A-h, respectively. This dispersion is obtained by calculating 2 percent of the energy used.
5. In accordance with the flight plan, the PGNCs was in standby mode from 1.3 hours following surface powerdown until 9.75 hours before powerup.
6. The RCS heaters were assumed to have a 100 percent duty cycle for 15 minutes after initial activation and then to decrease to a 7 percent duty cycle until undocking. From undocking until lunar landing plus 2 hours, the heaters were assumed to cycle at 0 percent, but, from landing plus 2 hours until lunar lift-off, the duty cycle was assumed to be 4.5 percent.
7. At the beginning of the analysis, it was assumed that a total of 10 A-h had been used from the descent batteries between 30 minutes before launch and the conclusion of transposition and docking.
8. The CDR and LMP forward window heaters were assumed not to be needed.
9. All floodlights were turned off at the beginning of EVA-1 and on again at powerup.
10. No duty cycle was assigned to the portable utility lights.
11. The liquid cooled garment pump was cycled as dictated by the time line.
12. The short (M=1) rendezvous was considered nominal.
13. The TV camera was assumed to be on from the beginning of EVA-1 until surface powerup.

TABLE 4-3
ASCENT STAGE EPS SUMMARY

Item	A-h required	A-h remaining
Initial capacity	--	592
Total unusables	18	574
Available for mission planning	--	574
Total requirement through crew transfer	216	358
Total usable margin	--	358 (60%)

Ritchey/GPB/MPAD (for LM Systems)

Data source *Light/Plan*

Data confirmed *USR*

Mission profile dependent

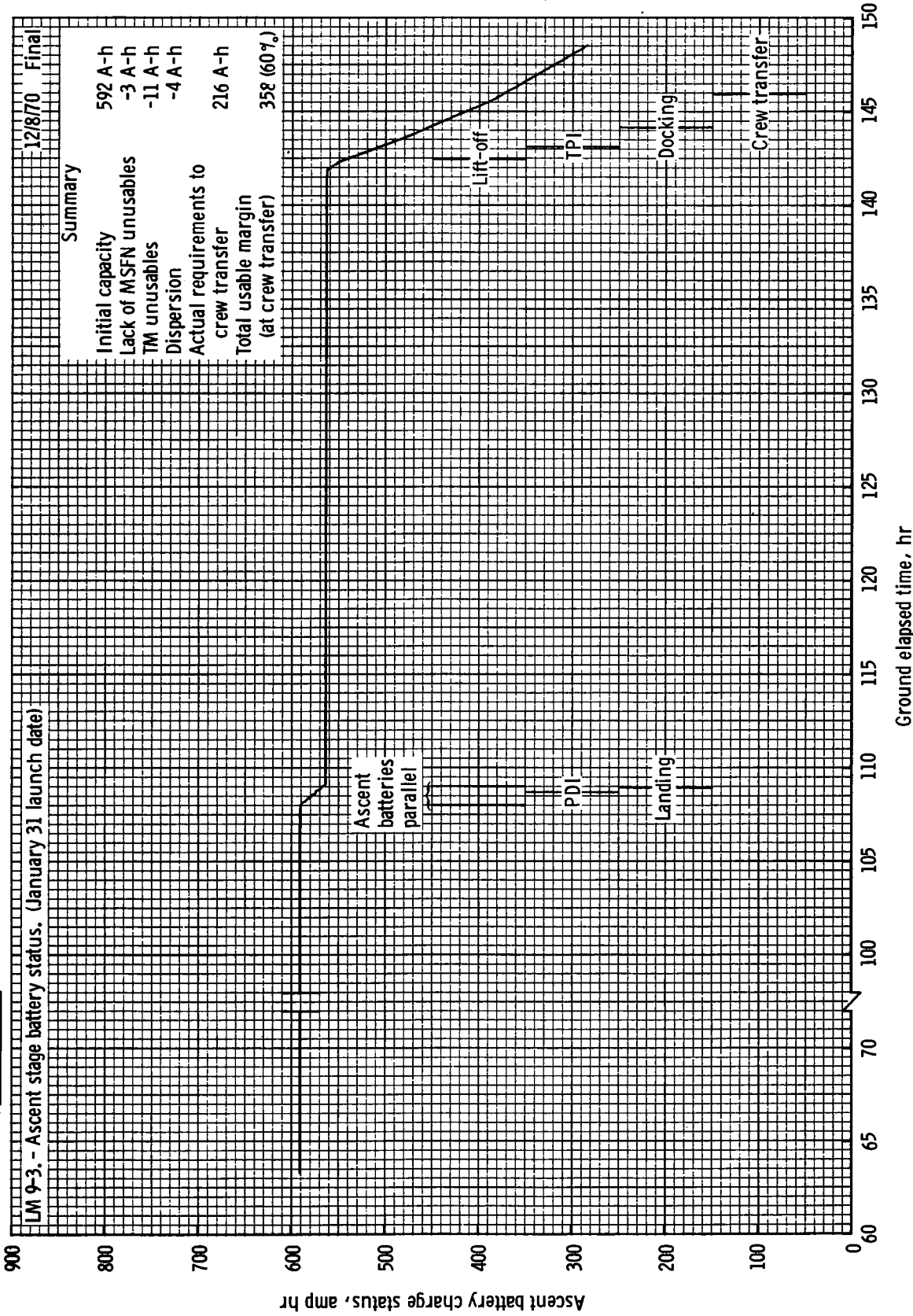


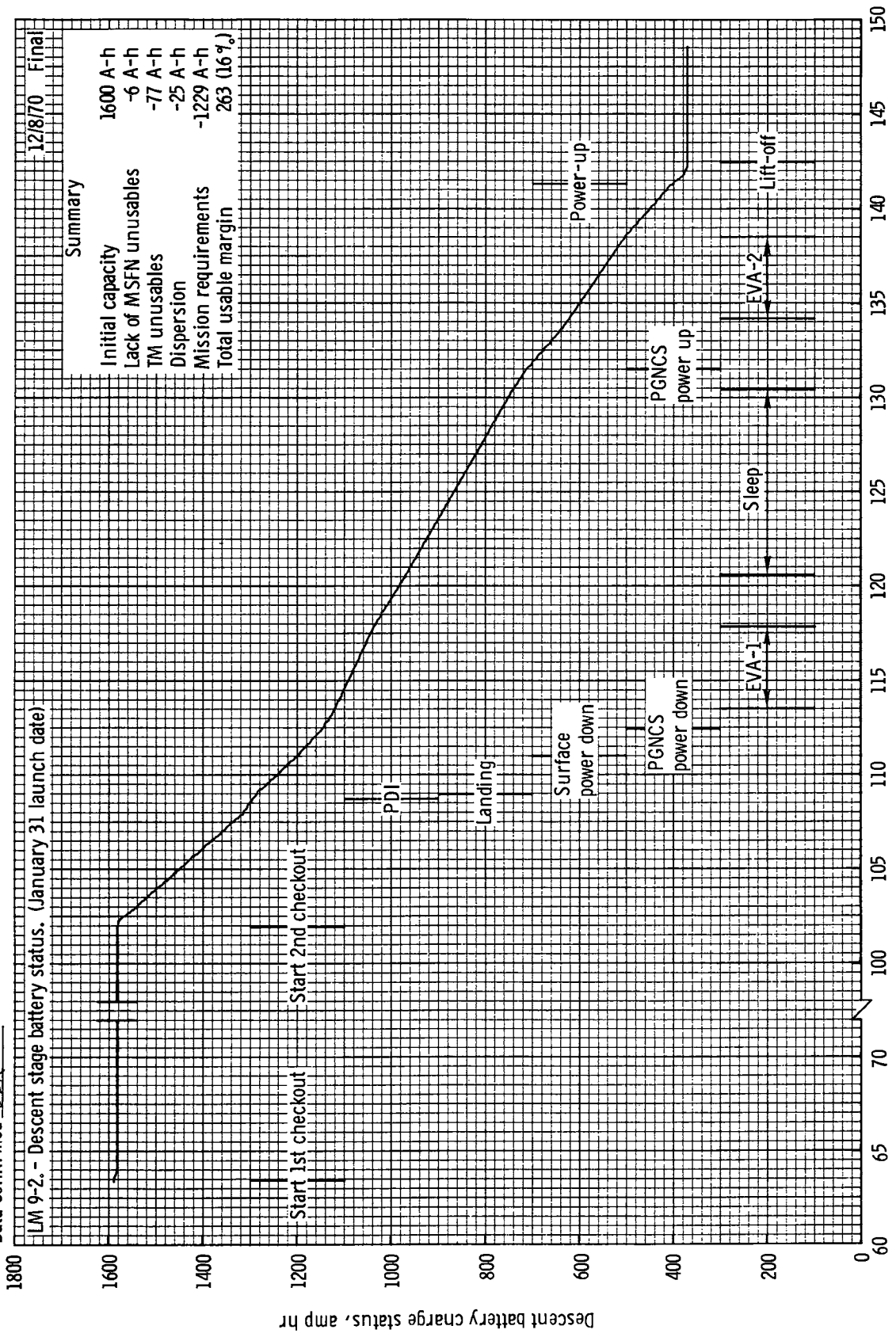
Figure 4-1.- LM-8 ascent stage amp hours remaining.

TABLE 4-4
DESCENT STAGE EPS SUMMARY

Item	A-h required	A-h remaining
Initial capacity	--	1600
Total unusables	108	1492
Available for mission planning	--	1492
Total mission requirement	1229	263
Total usable margin	--	263 (16%)

Ritchey/GPB/MPAD (for LM Systems)
 Data source *F. Light, Phoenix*
 Data confirmed *USR*

Mission profile dependent



Summary

Initial capacity	1600 A-h
Lack of MSFN unusables	-6 A-h
TM unusables	-77 A-h
Dispersion	-25 A-h
Mission requirements	-1229 A-h
Total usable margin	263 (16%)

Figure 4-2.- LM-8 descent stage amp hours remaining.

ASSUMPTIONS AND GROUND RULES FOR THE LM RCS PROPELLANT ANALYSIS

1. Data for the LM RCS engine performance and propellant requirements were obtained from the SODB, Volume II, and from postflight analyses of Apollo 9-12 missions.

2. It is assumed that there will be an RCS burn (tweak burn) of 30 fps following LM insertion. The tweak burn is nominally zero.

3. It is assumed that there will be a 10 fps trim following the APS TPI maneuver.

4. The ullage for PDI was defined, subsequent to this analysis, to be an 8-second, four-jet ullage. The increase in RCS propellant usage is approximately 1.0% and is negligible in view of the nominal RCS propellant remaining.

TABLE 4-5

LM RCS PROPELLANT LOADING AND USAGE SUMMARY

Item	Propellant required, lb	Propellant remaining, lb
Loaded		633.0
Trapped	40.6	592.4
Gaging inaccuracy and loading tolerance	43.5	548.9
Mixture ratio uncertainty	17.0	531.9
Usable		531.9
Nominal usage through lunar landing	158.8	373.1
Nominal usage from landing through docking	121.0	252.1
Nominal usage from docking through impact	110.0	142.1
Usable propellant remaining		142.1

Mayfield/GB/IMPAD (for LM Systems)
 Data source: SCDB, Post FLIGHT
 Data confirmed: 12/22/70

Mission profile dependent

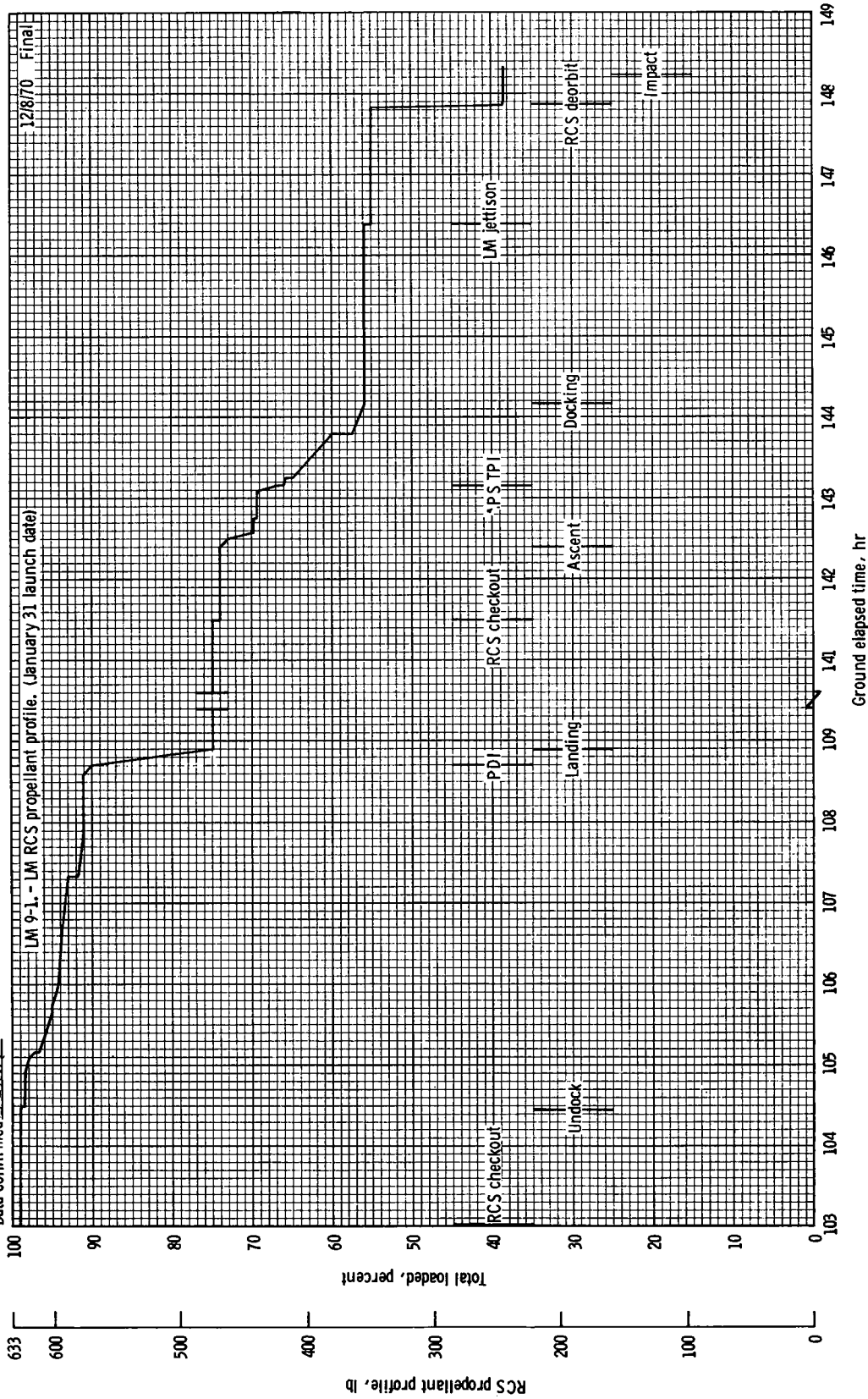


Figure 4-3.- LM RCS propellant profile.

4-12

LM ECS Assumptions

- a. The oxygen analyses were calculated using a cabin leak rate of 0.06 lb/hr based on previous Apollo postflight analyses.
- b. Metabolic rates were varied using the time line of reference 4 and table 4.3-II of reference 2.
- c. Metabolic oxygen consumed was calculated by $(1.643 \times 10^{-4} \text{ lb/Btu}) \times (\text{metabolic rate, Btu/hr})$.
- d. The cabin regulator check and the suit integrity check were assumed to require 0.5 pound of oxygen.
- e. The cabin was pressurized three times with 5.5 pounds required for each pressurization.
- f. The dispersion in the oxygen profile was calculated as 5 percent of the nominal oxygen requirement.
- g. The PLSS refill requires 15 pounds of water and 1.7 pounds of oxygen.
- h. Water lost through crew micturition was 0.11 lb/hr per man.
- i. Water required for thermal control was calculated by dividing the total spacecraft heat load by 1040 Btu/lb.
- j. The dispersion in the water profile was calculated as 10 percent of the nominal usage.
- k. The average glycol flow rate used in this analysis was 252 lb/hr.
- l. It was assumed that the liquid cooled garments were used throughout the LM-active periods.

TABLE 4-6
LM ECS SUMMARY

(a) Water

Description	Descent, lb	Ascent, lb
Loaded	266.0	85.0
Sampling	16.0	--
Residual	6.7	1.7
Loading uncertainty	7.7	2.5
Available for mission	235.6	80.8
Required to lunar landing	35.4	0.0
Required to lunar lift-off	108.1	0.0
Required to LM/CSM docking	0.0	8.7
Required to LM close-out	0.0	6.0
Remaining in tank(s)	92.1	66.1
Dispersion	14.3	1.5
Margin	77.8	64.6

(b) Oxygen

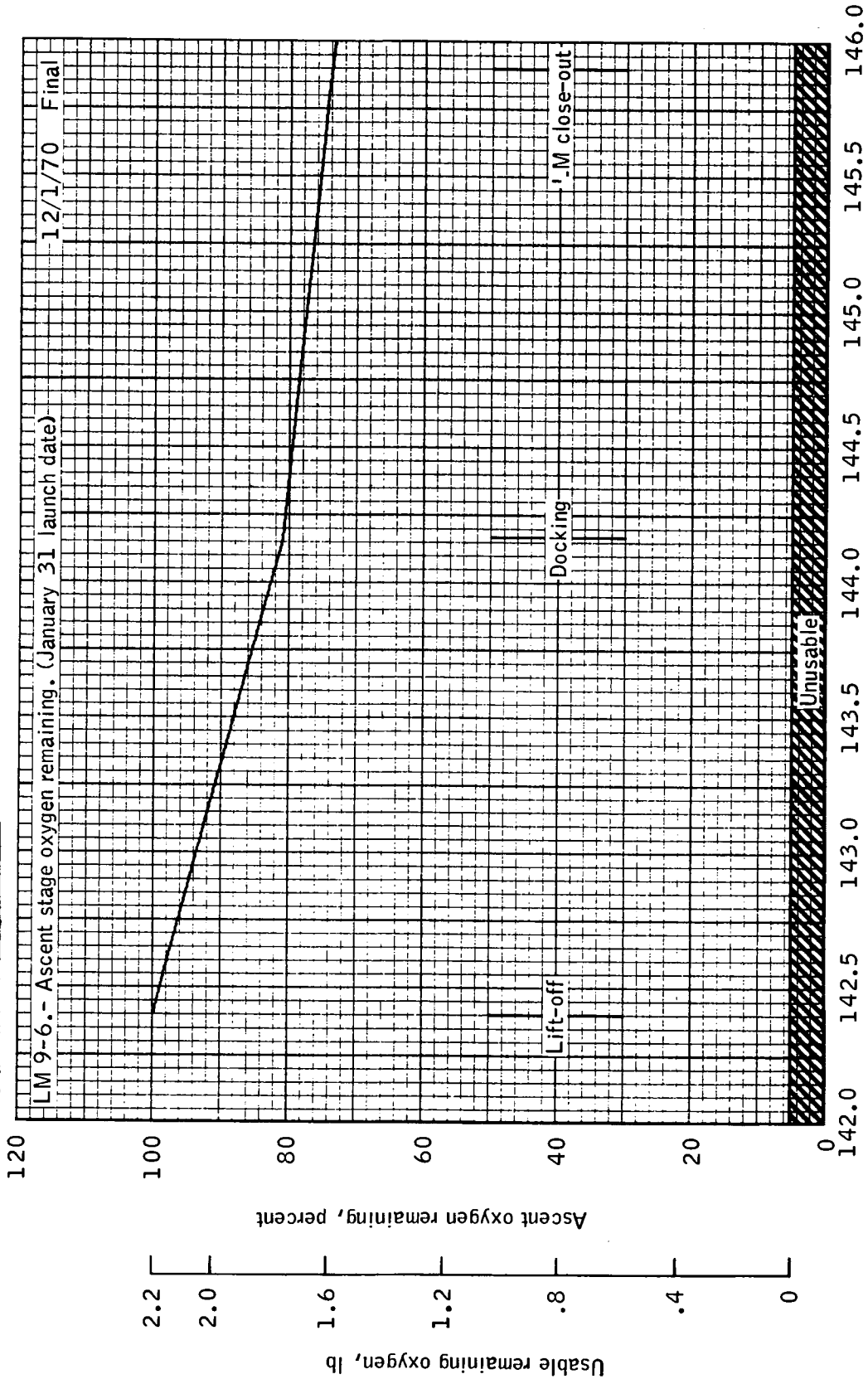
Description	Descent, lb	Ascent 1, lb	Ascent 2, lb
Loaded	41.3	2.4	2.4
Residual	0.8	0.1	0.1
Loading uncertainty	1.5	0.1	0.1
Available for mission	39.0	2.2	2.2
Required to lunar landing	2.2	0.0	0.0
Required to lunar lift-off	24.2	0.0	0.0
Required to LM/CSM docking	0.0	0.4	0.0
Required to LM close-out	0.0	0.5	0.0
Remaining in tank(s)	12.6	1.3	2.2
Dispersion	1.3	0.1	0.0
Margin	11.3	1.2	2.2

Swalin/GPB/MPAD (for LM Systems)

Data source FILE PLAN

Data confirmed Swal

Mission profile dependent



Ground elapsed time, hr

Figure 4-4.- Ascent tank 1 oxygen remaining.

Data source LLC
Data confirmed LLC

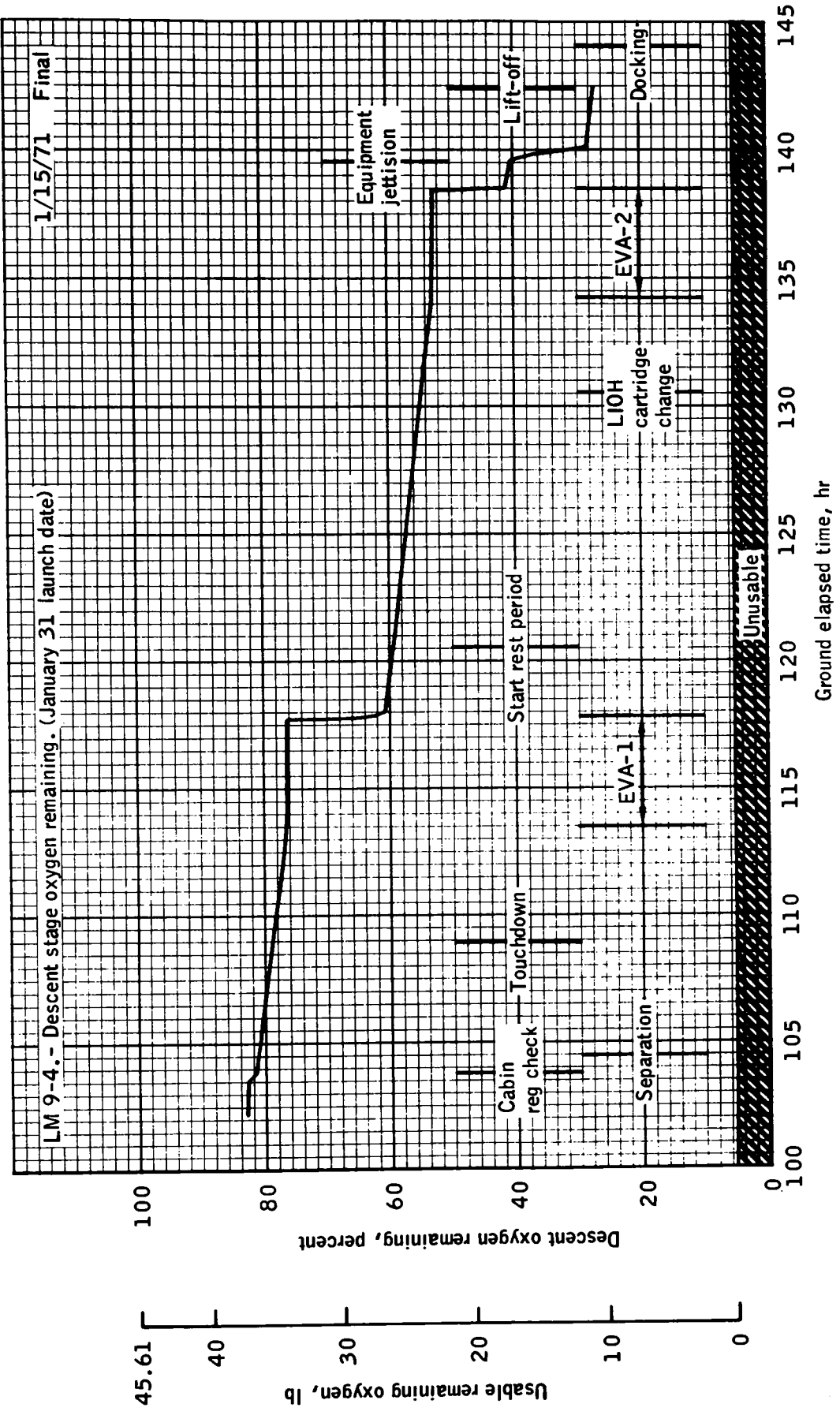


Figure 4.5- Descent oxygen remaining.
4-16

Mission profile dependent

Swalin/GPB/MPAD (for LM Systems)

Data source FLIGHT PLAN

Data confirmed Swal

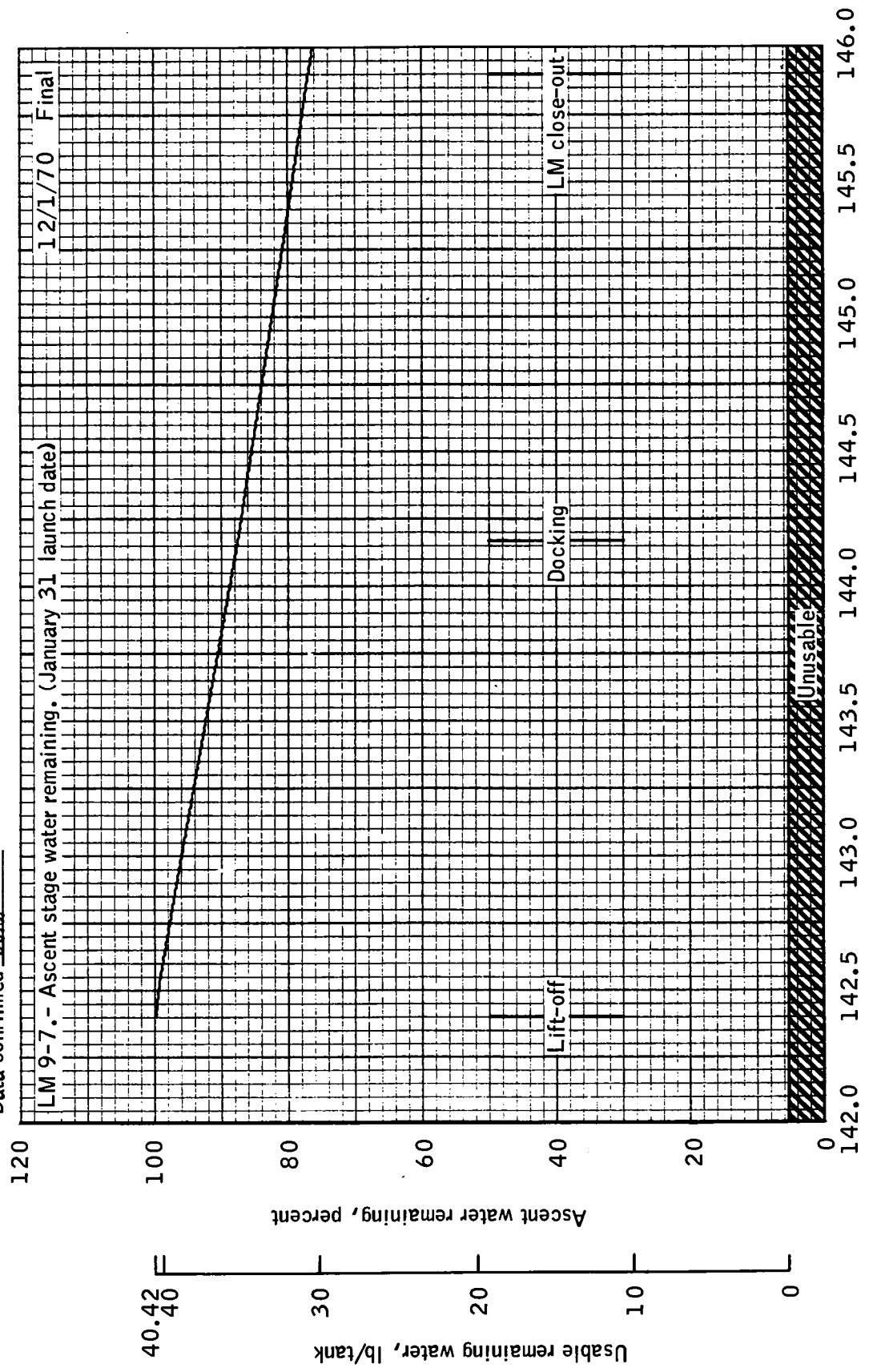


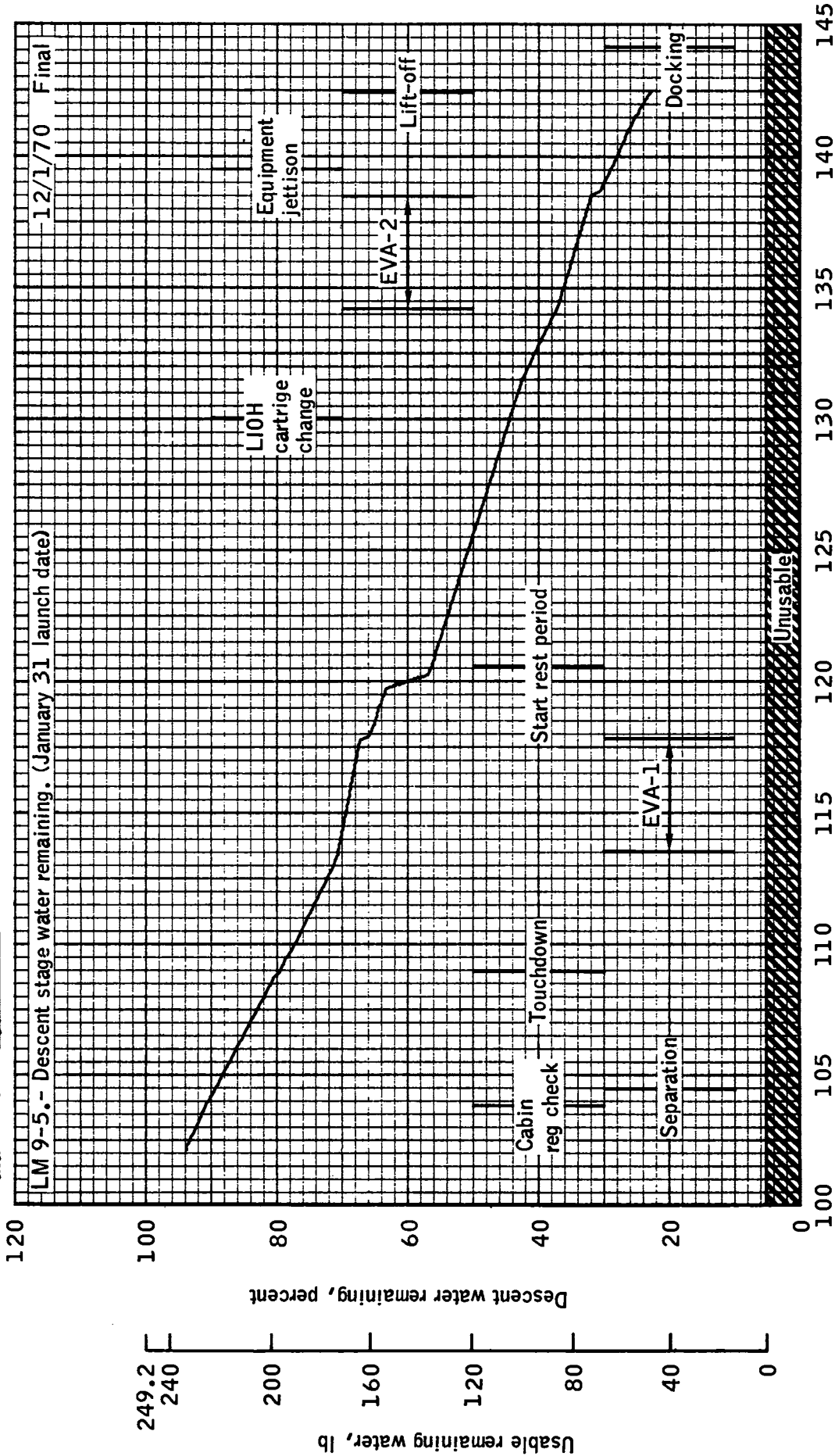
Figure 4-6.- Ascent water remaining.

Swalin/GPB/MPAD (for LM Systems)

Data source Flight Data

Data confirmed 3rd

Mission profile dependent



LM 9-5.- Descent stage water remaining. (January 31 launch date)

12/1/70 Final

Ground elapsed time, hr

Figure 4-7.- Descent water remaining.

4-18

12/8/70 Final

GROUND RULES AND ASSUMPTIONS FOR THE CSM CRYOGENICS

1. Three O_2 tanks and two H_2 tanks are available.
2. Fuel cell purging is included in the EPS requirements.
3. Both H_2 tanks and two of the three O_2 tanks are assumed to be fully loaded. The third O_2 tank is to be off-loaded to approximately 62 percent at lift-off.
4. No cryogenic venting was assumed in flight.
5. The EPS hydrogen consumption rate (\dot{H}_2) (lb/hr) = $0.00257 \times I_{fc}$ when I_{fc} is the total fuel cell current.
6. The EPS oxygen consumption rate (\dot{O}_2) (lb/hr) = $7.936 \times \dot{H}_2$.
7. The launch redlines for O_2 are defined as points on the curve. These points are contingent upon accomplishing DTO 4.6 which is greater than a tank loss requirement. However, if lift-off were to occur at these points, a somewhat different tank management scheme would have to be employed, even if no tank failed. If a tank failure were to occur then a nominal 40 Amp return level plus ECS would be employed on the remaining two tanks.

TABLE 4-7
 APOLLO 14 CRYOGENIC SUMMARY
 [31 Jan, 1971 Launch]

	H ₂ (lbs)	O ₂ (lbs)
Planning allowance		
Total loaded	58.6	990.3
Less residual	2.3	19.8
Less instrumentation error	<u>1.5</u>	<u>21.8</u>
Available for mission planning	54.8	948.7
Prelaunch requirement	3.7	130.4*
Flight requirement		
EPS (incl. F/C purge)	39.2	310.5
ECS (including cabin purge + EVA)	--	87.5
LM pressurization	--	12.5
Nominal reserves		
EPS uncertainty (2.5%)	1.0	7.8
ECS uncertainty (.08 #/hr)	--	17.3
Total requirement	43.9	566.0
Margin T = 0 (fill/launch)	10.9	382.7

*Prelaunch requirement includes off-loading of tank 3.

Scott/GPB/MPAD (for Flight Plan)

Data source: Scott/GPB/MPAD

Data confirmed: Scott

Launch day dependent
Launch month dependent
Mission profile dependent

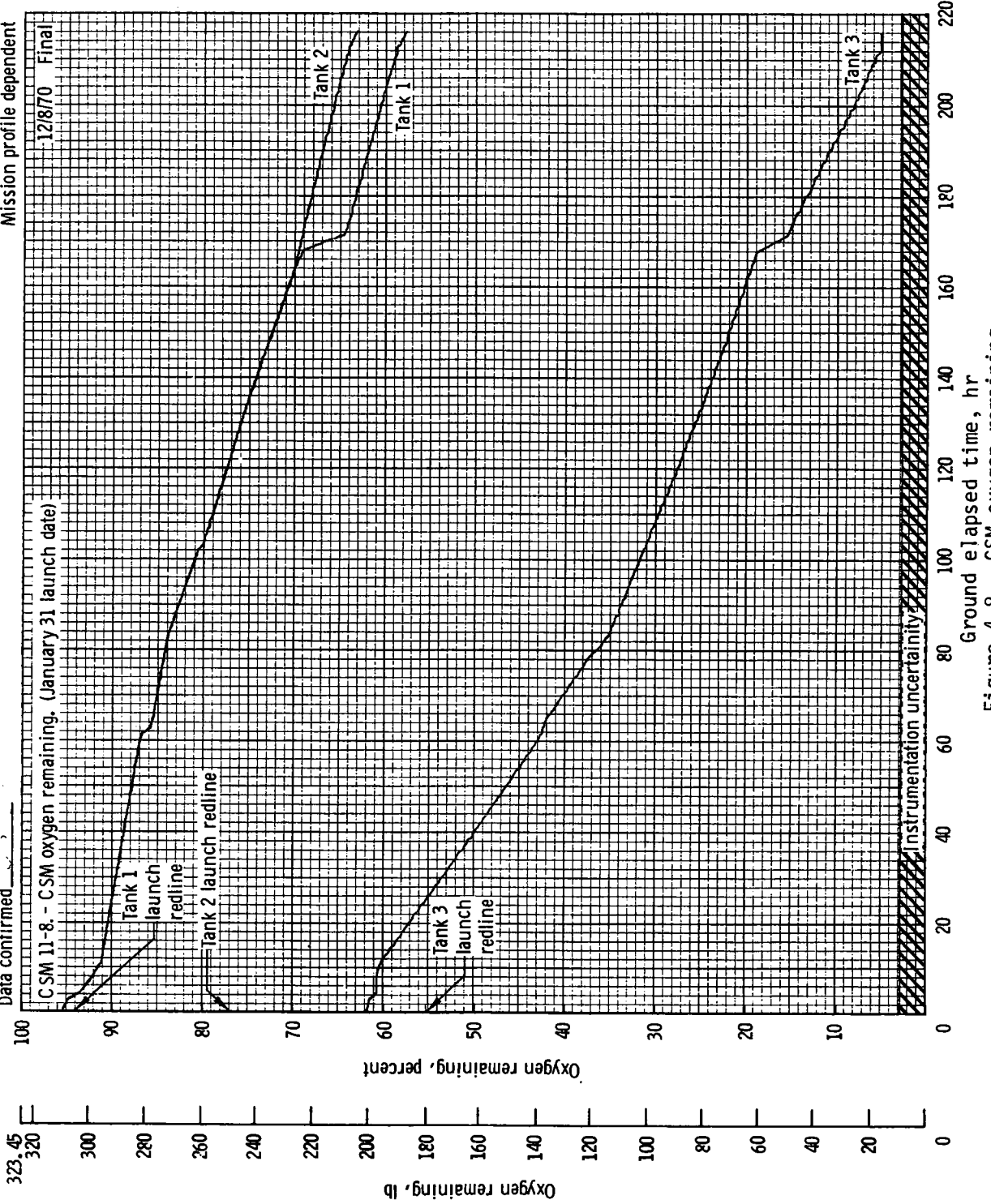


Figure 4-8.- CSM oxygen remaining.

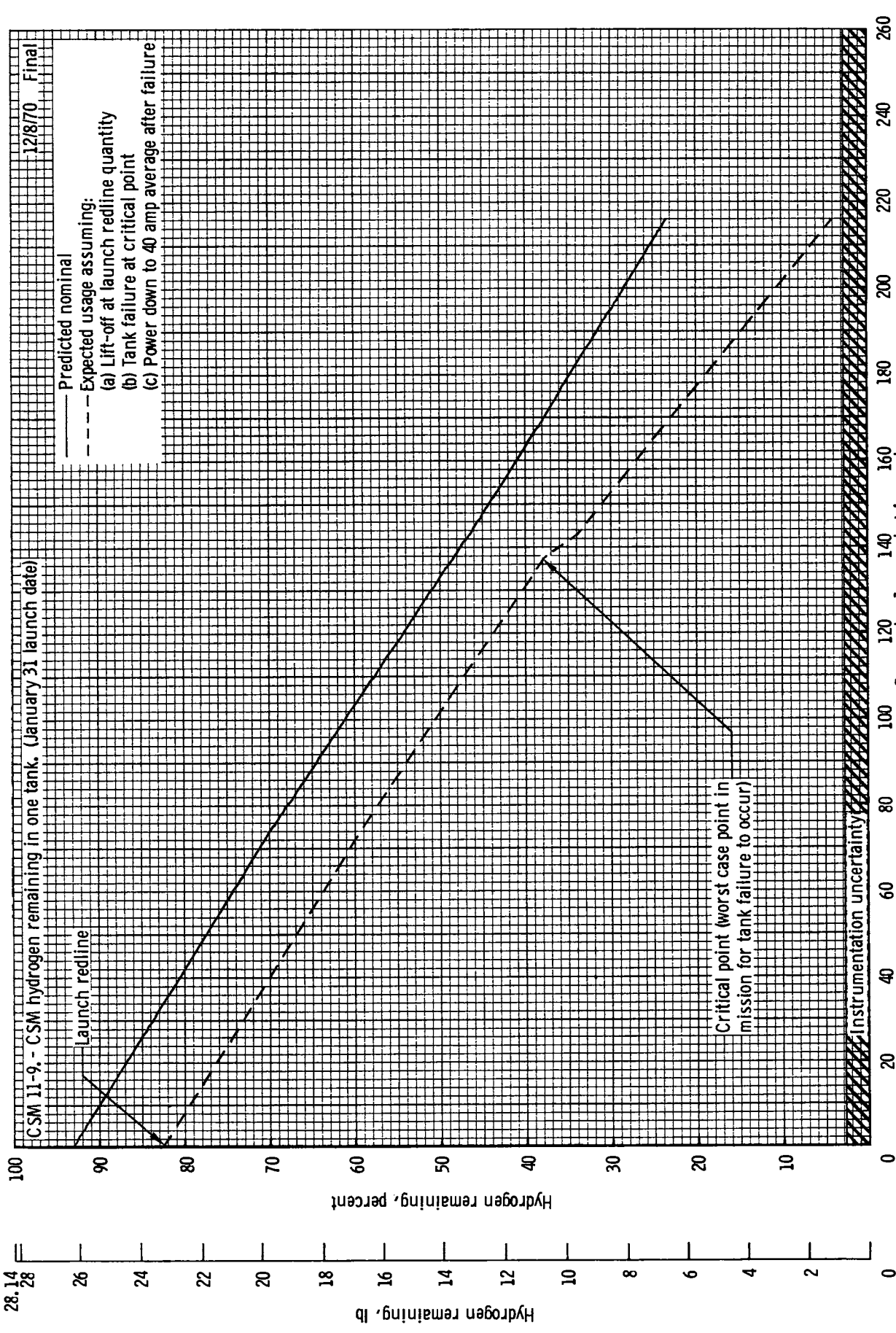


Figure 4-9.- CSM hydrogen remaining in one tank.
4-22

THE SPS ANALYSIS

Assumptions for the SPS Propellant Analysis

1. The 3σ dispersions are the RSS of the penalties imposed on the SPS margin by 3σ dispersions in propellant loading, mixture ratio, engine I_{sp} , maneuver ΔV , spacecraft weight, and consumable weight losses. The engine I_{sp} and dispersion utilized in this analysis were taken from Table 11 of the Apollo Mission H3/CSM-110/SPS Preflight Performance Report, NAS 9-8166, dated November 1970. All spacecraft weights and consumable losses are from Volume III, Amendment 88, of the Spacecraft Operational Data Book, dated October 5, 1970.

2. The allowance for the TLMC is now debited from the nominal remaining propellant along with the 3σ dispersions. It is only a format change, not a budgeting technique change.

3. The ground rule for a contingency allowance is to budget for either a LM rescue or a maneuver to avoid adverse weather conditions at entry, whichever produces the least SPS propellant margin. The ΔV for the LM rescue allowance is 600 fps. The ΔV for weather avoidance for previous missions has been 500 fps. However, for this mission, the ΔV requirement for weather avoidance has been reduced to 300 fps. The propellant margin when considering either contingency, LM rescue or the 300 fps for weather avoidance, is approximately the same.

TABLE 4-8

APOLLO 14 SPS PROPELLANT SUMMARY

[Jan. 31, 1971, launch; 72° launch azimuth]

Item	Propellant required, lb	Propellant remaining, lb
Total loaded		40 796.0
Trapped and unavailable	441.4	40 354.6
Outage	59.8	40 294.8
Unbalance meter	100.0	40 194.8
Available for ΔV		40 194.8
Requirement for ΔV		
Hybrid (73.4 fps)	724.2	39 470.6
LOI (2986 fps)	24 777.8	14 692.8
DOI (206.6 fps)	1 470.8	13 222.0
CIRC (72.5 fps)	272.8	12 949.2
LOPC (360.7 fps)	1 269.2	11 680.0
TEI (3449.5 fps)	10 059.4	1 620.6
Nominal remaining		1 620.6
Dispersions		
-3 σ performance	473.0	1 147.6
TLMC (33 fps)	346.2	801.4
Contingency (326 fps)*	301.4	0.0
Propellant margin		0.0

* Available for weather avoidance.

SM RCS BUDGET

Ground Rules and Assumptions

1. Following transposition and docking, the S-IVB performs the evasive maneuver.
2. Two midcourse corrections (translunar) are executed as SPS burns with one MCC followed by an RCS trim.
3. One midcourse correction (transearth) is executed as an RCS burn of 5 fps.
4. Quad management is to be determined during the mission.
5. Redlines have been defined by the Flight Control Division as an aid in assuring that mission rules are not violated during the mission. They are subject to review during the mission as mission phases are completed and systems capabilities are evaluated. In the event the rescue redline is violated prior to rendezvous, lunar orbit photography activities can be curtailed to conserve propellant. The lunar orbit redline includes a nominal transearth coast phase (with all navigational sightings) plus a 3 sigma G&N TEI cutoff error MCC. If a rescue is required and the lunar orbit redline is violated prior to the nominal TEI, TEI can be performed early and navigational sighting activity curtailed during the transearth phase. The rescue redline is based on the minimized activity during the transearth phase.

TABLE 4-9

SM RCS PROPELLANT LOADING AND USAGE SUMMARY

Item	Propellant required, lb	Propellant remaining, lb
Expected loading	--	1342.4
Initial outage caused by loading mixture ratio	15.6	--
Total trapped	26.4	--
Gaging inaccuracy	80.4	--
Deliverable	--	1220.0
Nominal usage		
Translunar coast	199	--
Lunar orbit	431	--
Transearth coast	220	--
Total	850	--
Nominal remaining usable propellant	--	370

Loyd/GBP/MPAD (for Flight Plan)

Data source *Jan 31 Flight Plan*

Data confirmed *A. J. Ford*

Launch day dependent
Launch month dependent
Mission profile dependent

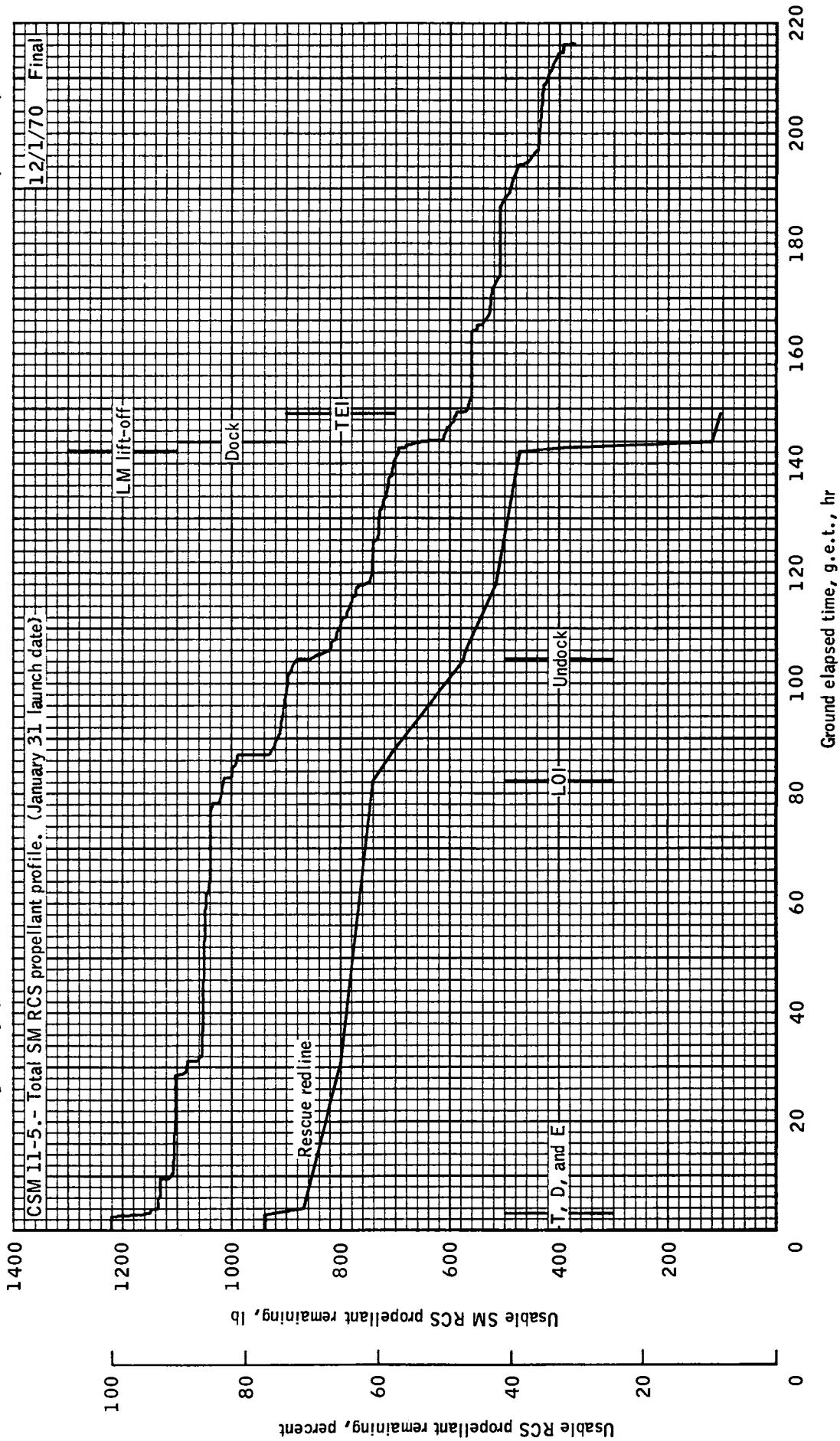


Figure 4-10.- Total SM RCS propellant usage profile.

Loyd/GPB/MPAD (for Flight Plan)

Data source Jan 31 Flight Plan

Data confirmed at 10/1/70

Launch day dependent
Launch month dependent
Mission profile dependent

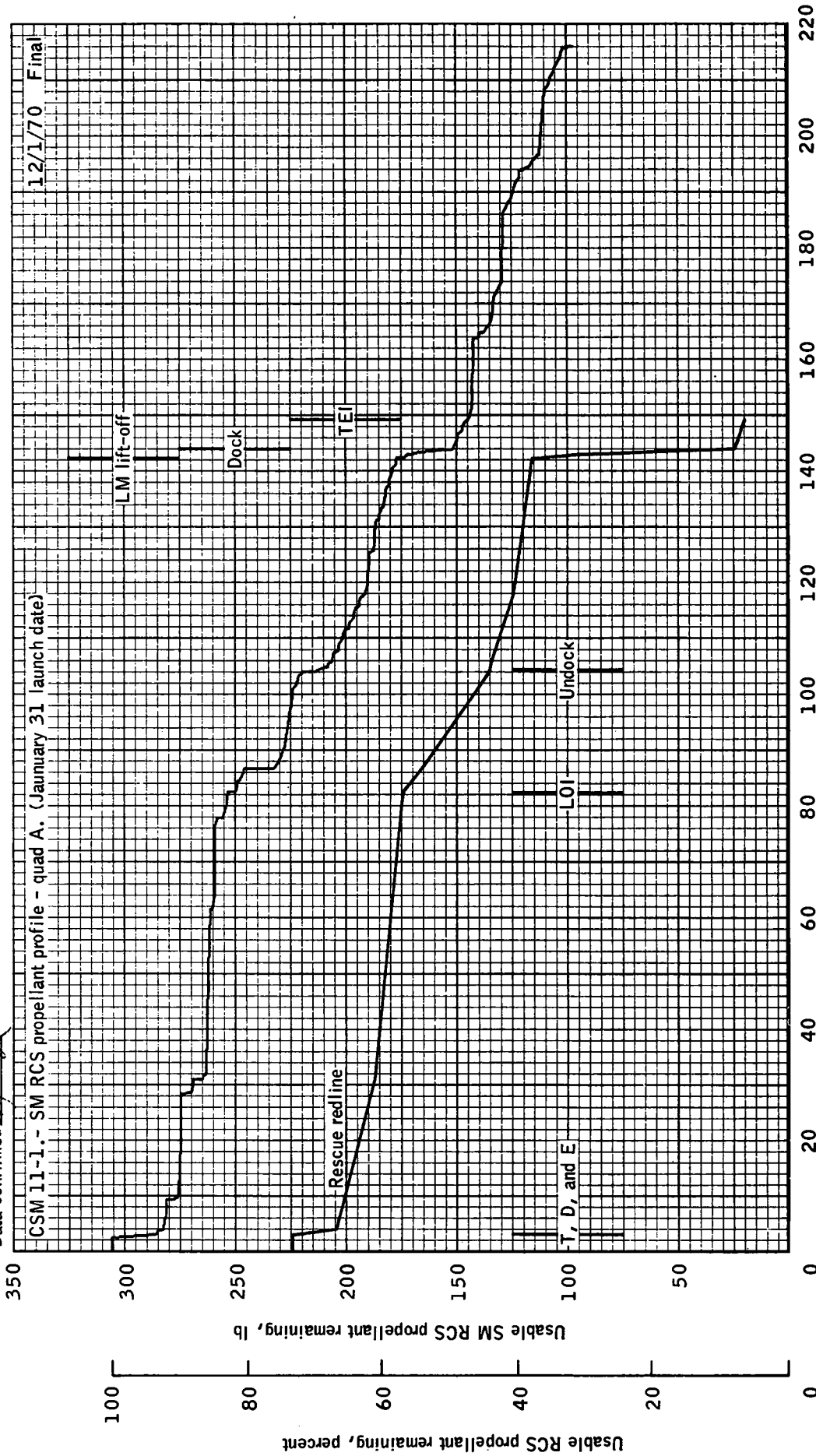


Figure 4-11.- SM RCS propellant profile - quad A.

Loyd/GPB/MPAD (for Flight Plan)
 Data source Jan 31 File Plan
 Data confirmed 6/10/70

Launch day dependent
 Launch month dependent
 Mission profile dependent

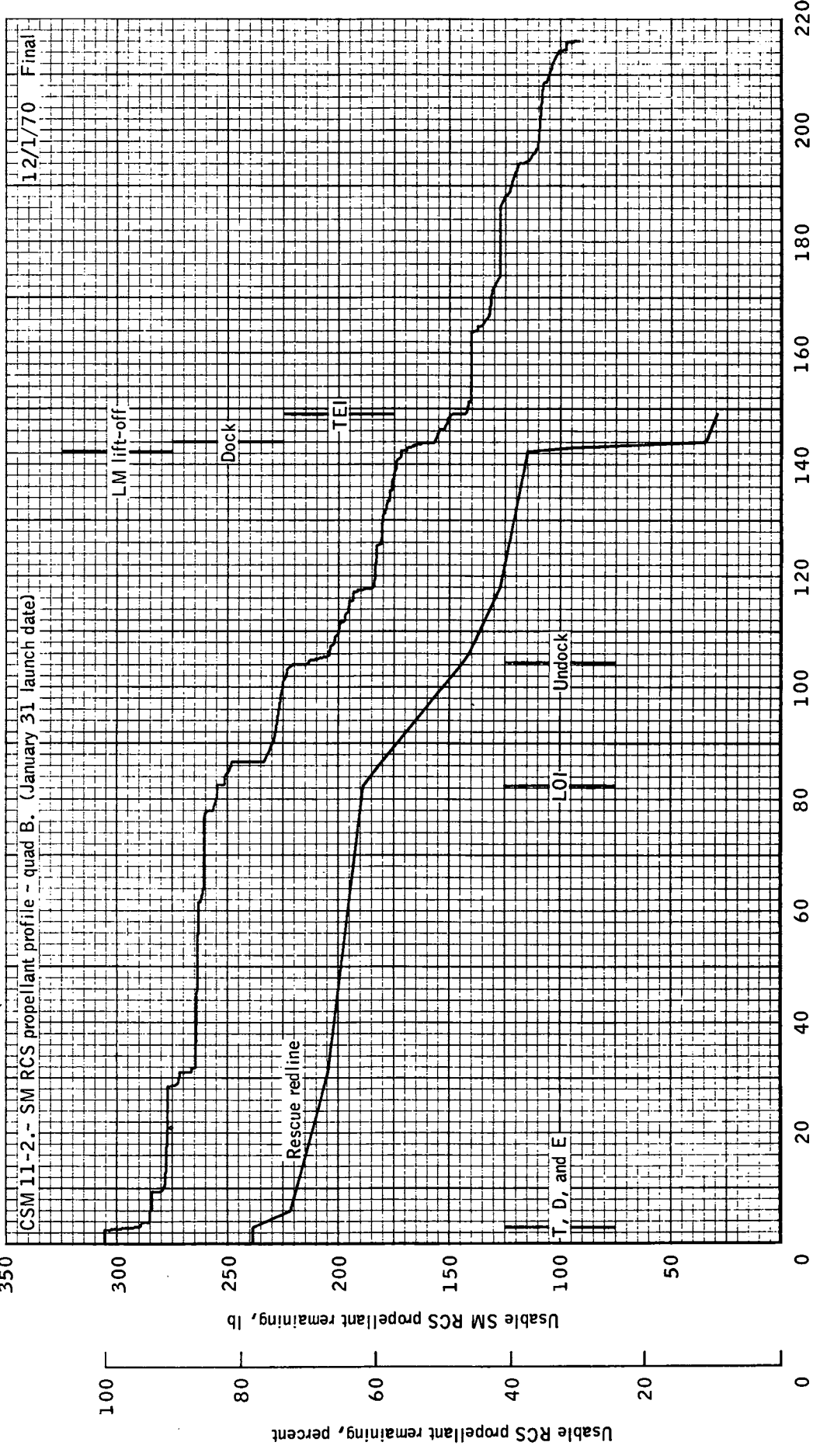


Figure 4-12.- SM RCS propellant profile - quad B.

Loyd/GPB/MPAD (for Flight Plan)
 Data source *Jan 31 Flight Plan*
 Data confirmed *APD-1023*

Launch day dependent
 Launch month dependent
 Mission profile dependent

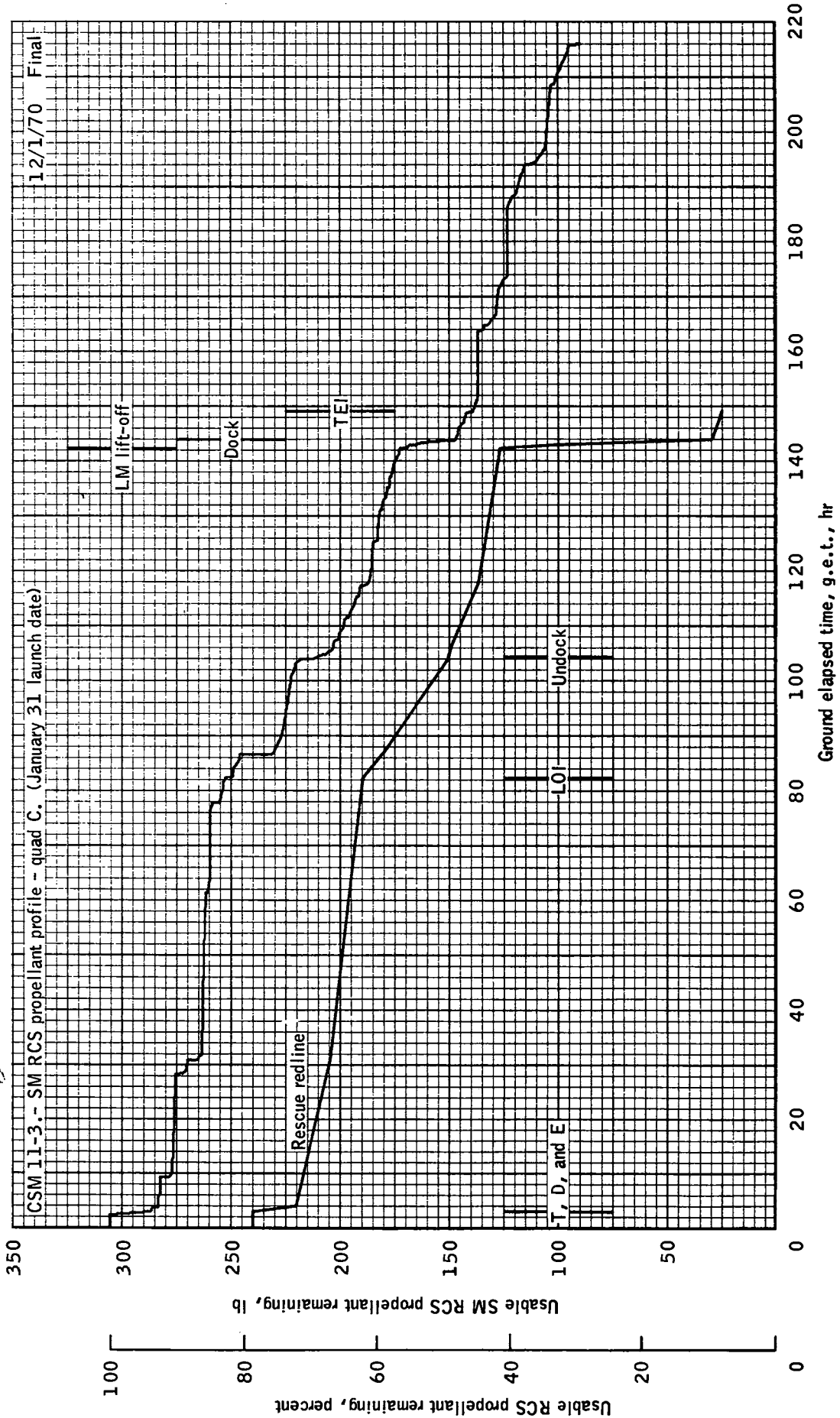


Figure 4-13.- SM RCS propellant profile - quad C.

Loyd/GPB/MPAD (for Flight Plan)

Data source Jan 31 1970

Data confirmed [Signature]

Launch day dependent
Launch month dependent
Mission profile dependent

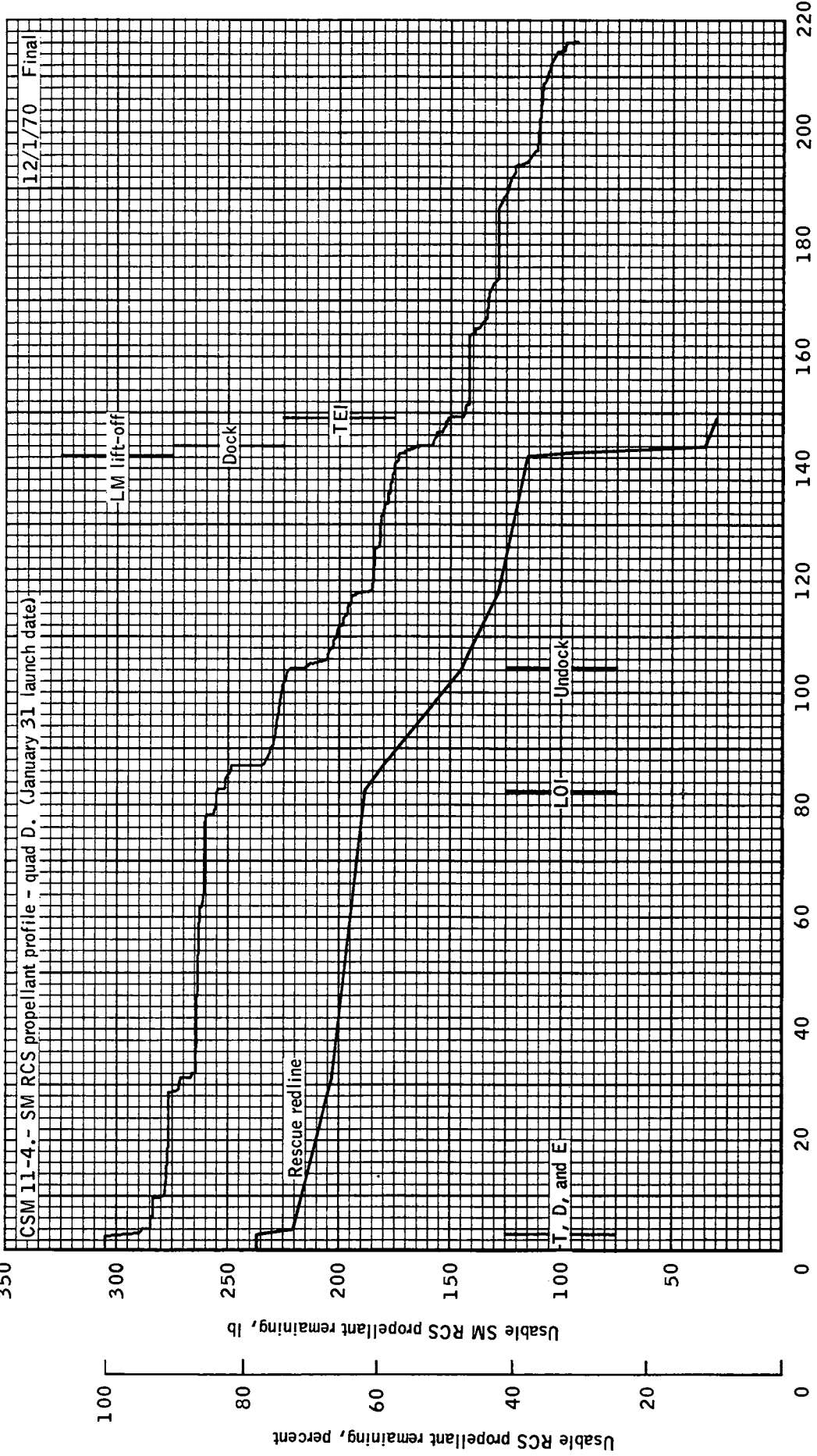


Figure 4-14.- SM RCS propellant profile - quad D.

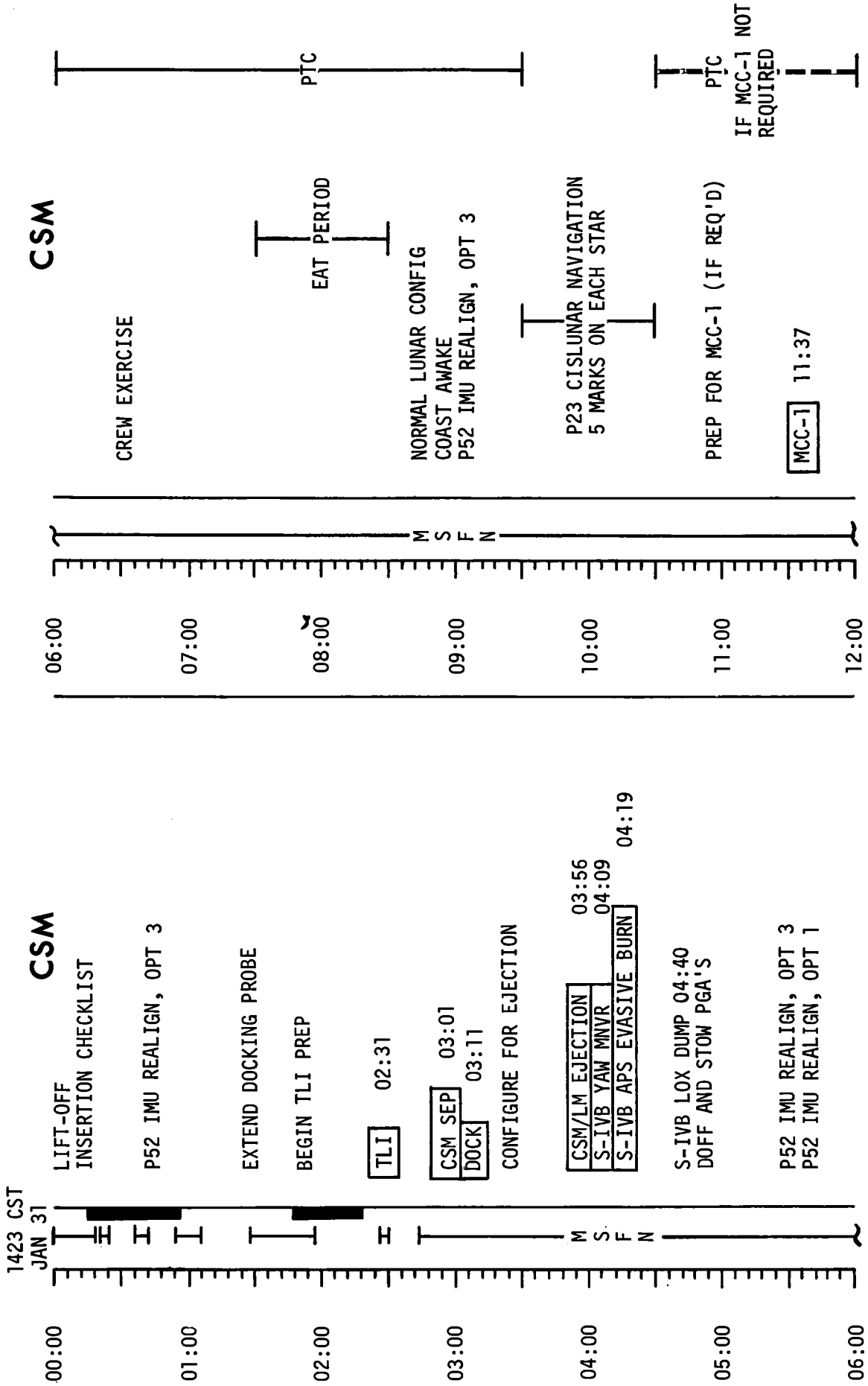
TABLE 4-10
CM RCS PROPELLANT SUMMARY

Item	Propellant required, lb	Propellant remaining, lb
Loaded	--	245.0
Trapped	36.4	208.6
Available for mission planning . . .	--	208.6
Nominal usage	38.9	169.7
Nominal remaining	--	169.7

SECTION 5 - ABBREVIATED TIMELINE



FLIGHT PLAN

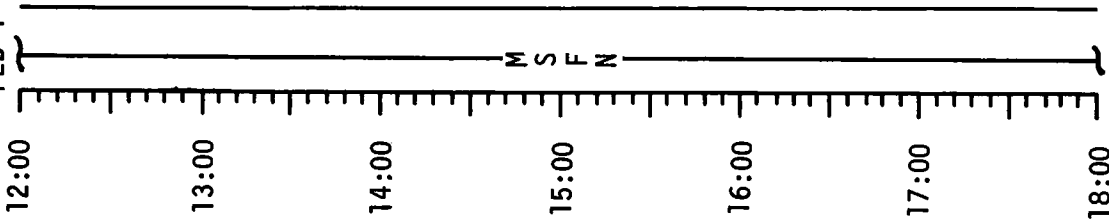


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	00:00 - 12:00	1/TLC	5-1

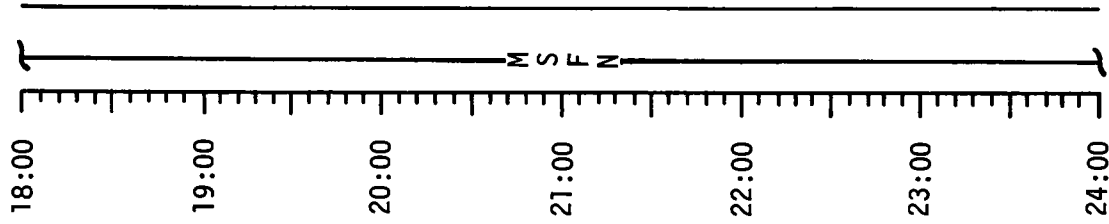
FLIGHT PLAN

0223 CST
FEB 1

CSM



CSM

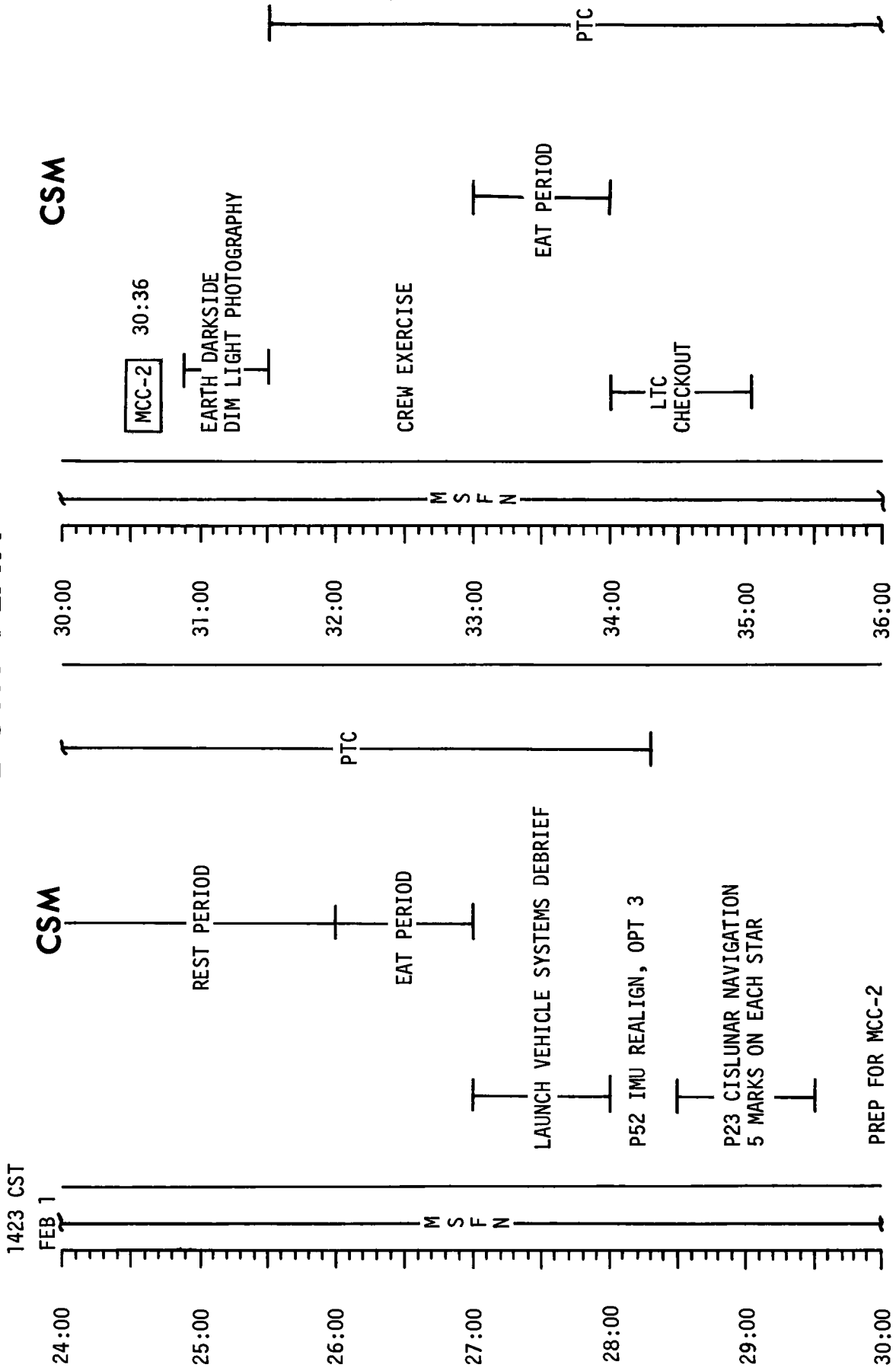


REST PERIOD (10 HR)

PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	12:00 - 24:00	1/TLC	5-2

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	24:00 - 36:00	1-2/TLC	5-3

FLIGHT PLAN

0223 CST

FEB 2

CSM



P52 IMU REALIGN, OPT 3

EAT PERIOD

REST PERIOD
(10 HR)

CSM



REST PERIOD
(10 HR)

PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	36:00 - 48:00	2/TLC	5-4

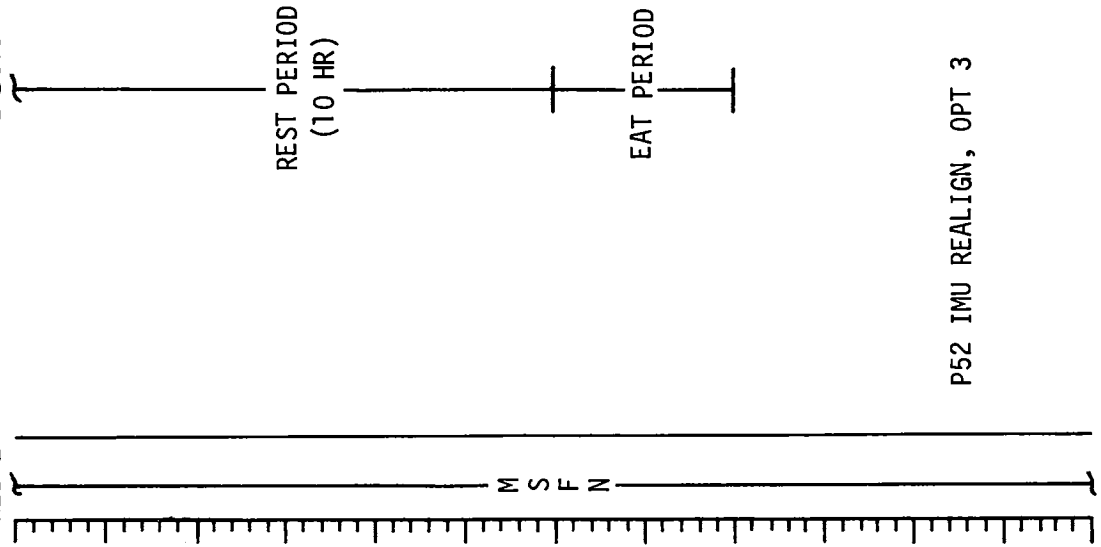
FLIGHT PLAN

1423 CST

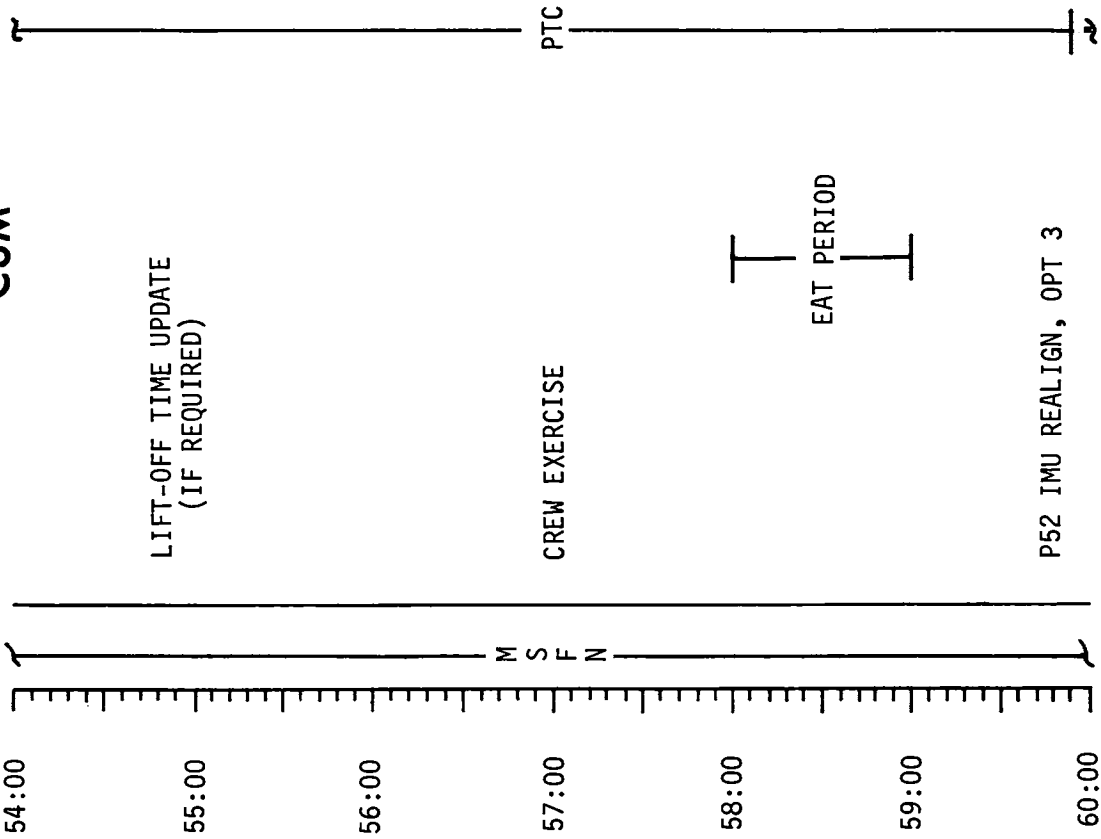
FEB 2

48:00
49:00
50:00
51:00
52:00
53:00
54:00

CSM

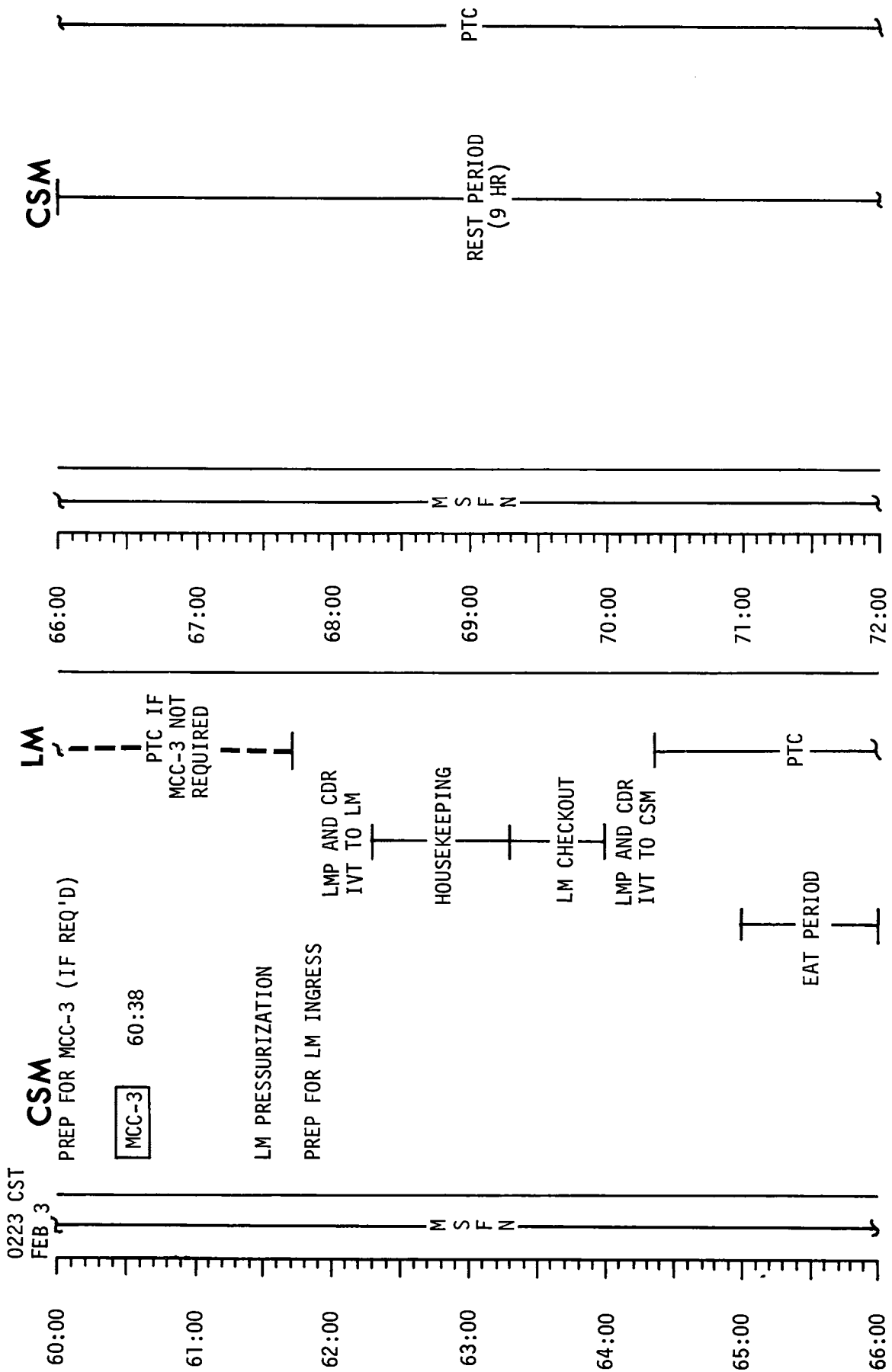


CSM



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	48:00 - 60:00	2-3/TLC	5-5

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	60:00 - 72:00	3/TLCQ	5-6

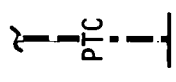
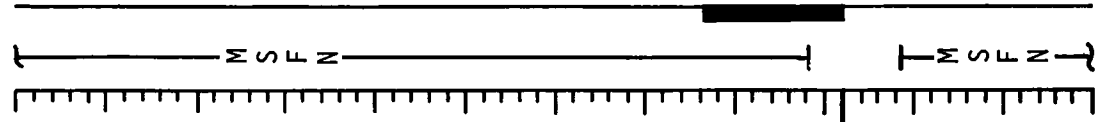
FLIGHT PLAN

1423 CST
FEB 3

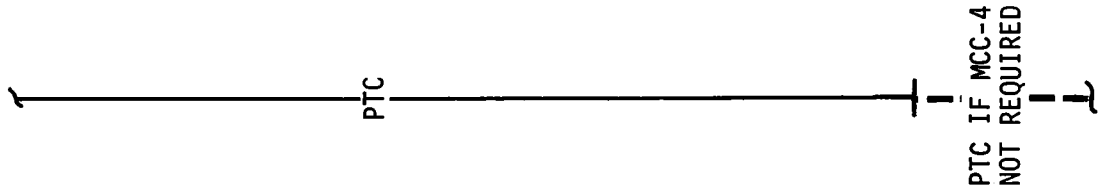
CSM



CSM



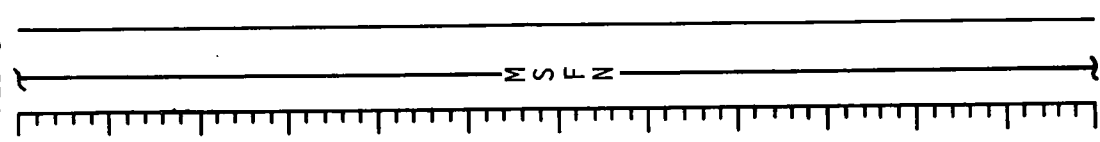
PRESSURIZE LM (IN CASE OF LOI ABORT)
P52 IMU REALIGN, OPT 3
P52 IMU REALIGN, OPT 1



REST PERIOD (9 HR)

IF NO MCC-4
EXTEND REST
PERIOD TO 78:00

EAT PERIOD



P52 IMU REALIGN, OPT 3

PREP FOR MCC-4 (IF REQ'D)

MCC-4 77:38

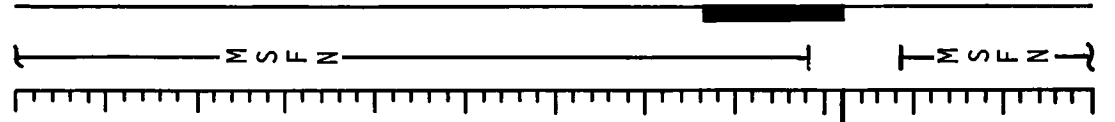
PRE-LOI SYSTEMS CHECKS

PREP FOR LOI

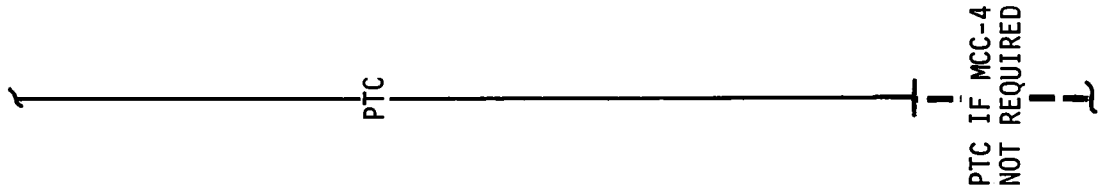
LOI 82:38

LOI BURN STATUS REPORT

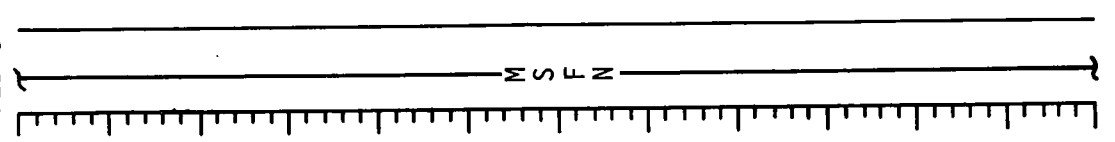
EAT PERIOD



REV 1

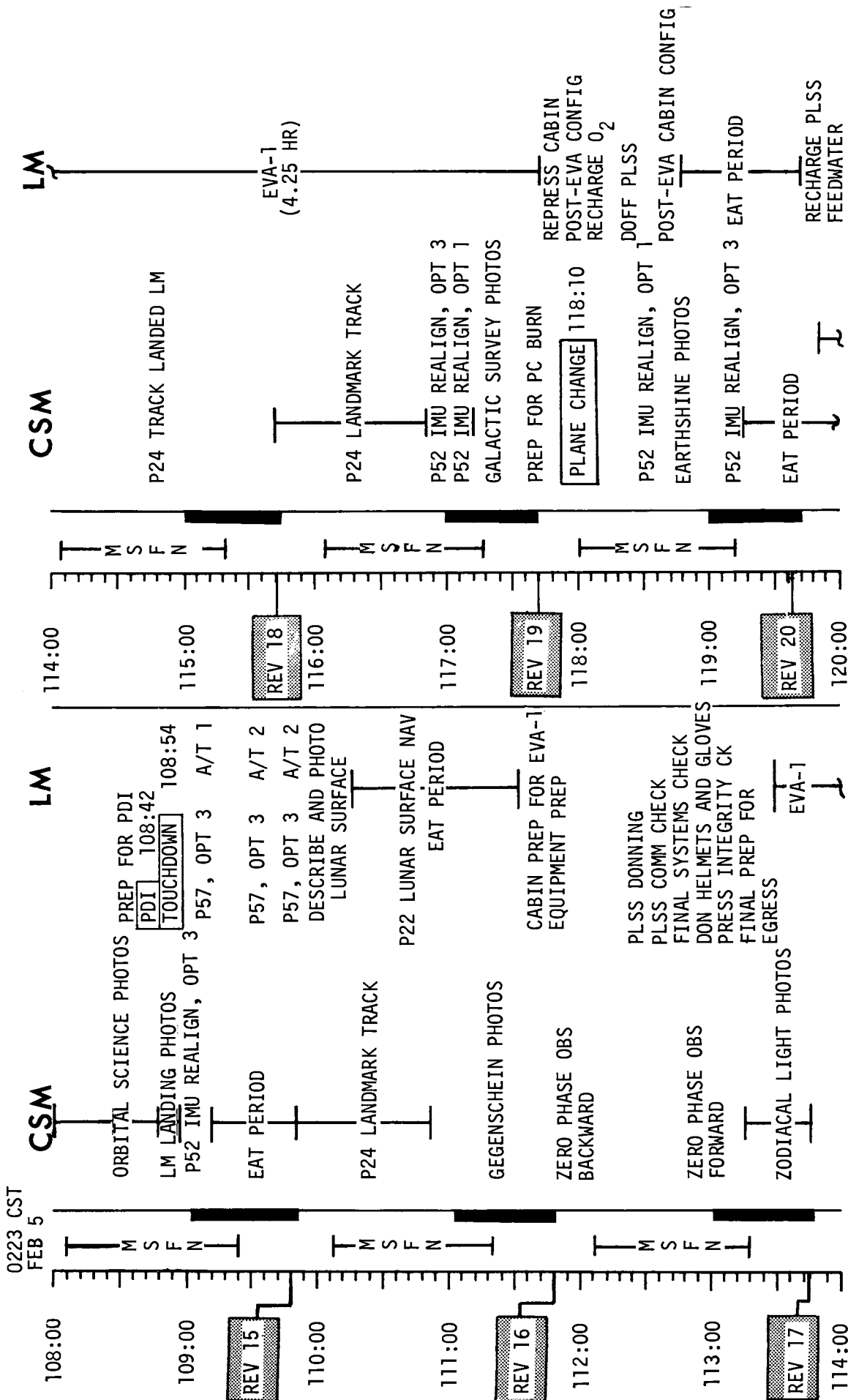


PTC IF MCC-4 NOT REQUIRED

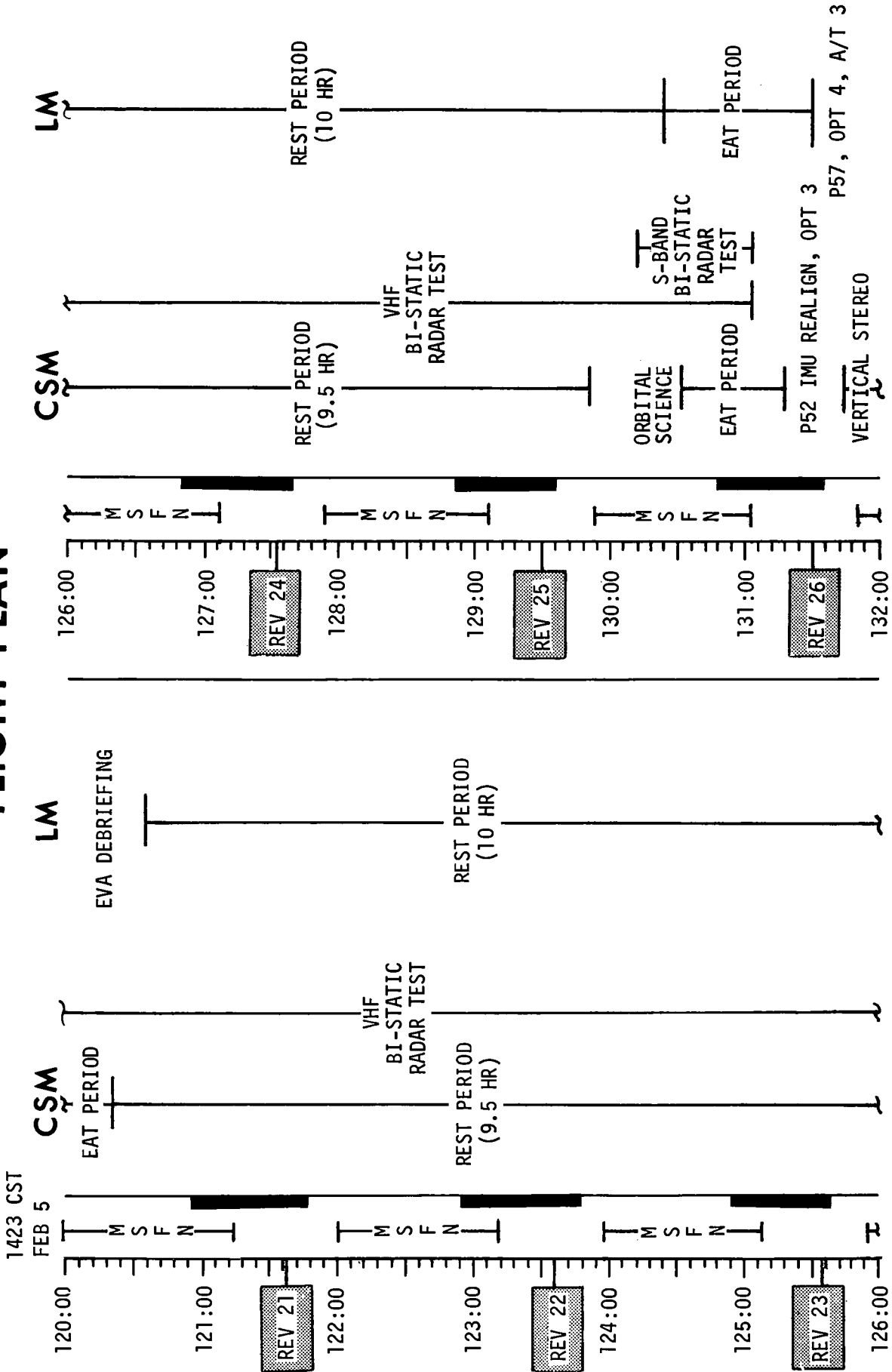


MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	72:00 - 84:00	3-4/TLC-1	5-7

FLIGHT PLAN



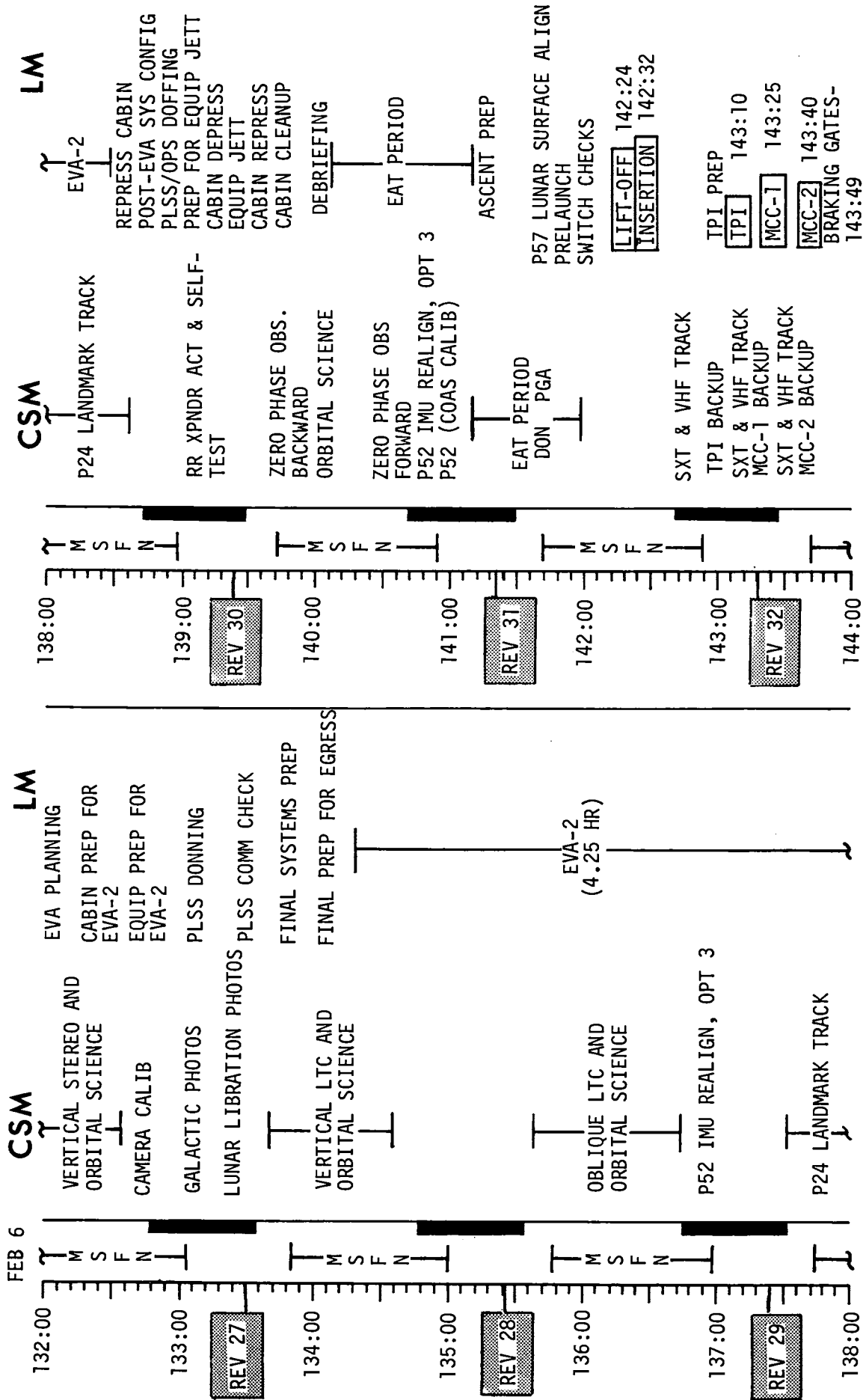
FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	120:00 - 132:00	5-6/20-26	5-11

FLIGHT PLAN

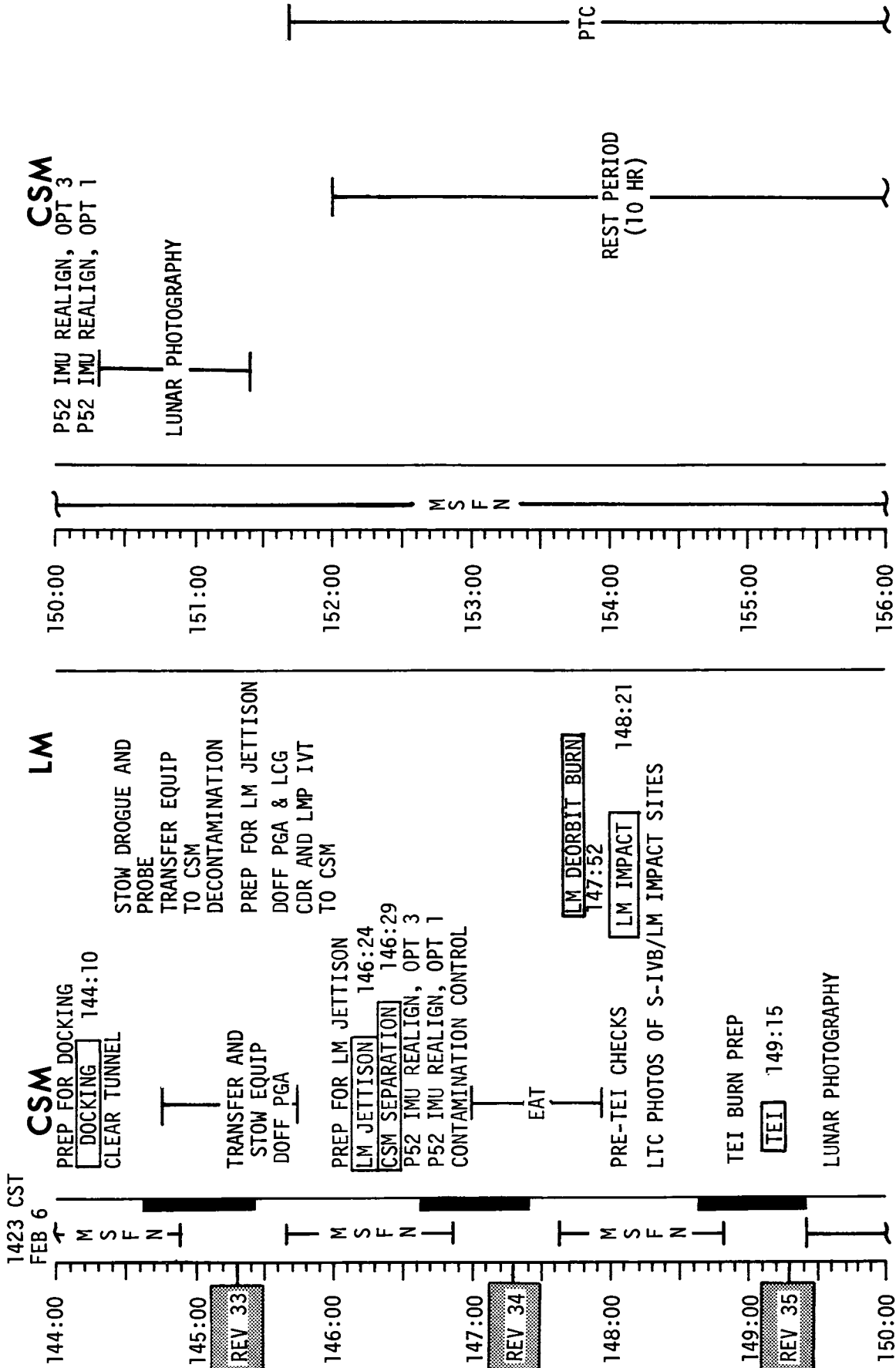
0223 CST
FEB 6



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	132:00 - 144:00	6/26-32	5-12



FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	144:00 - 156:00	6 / 32-TEC	5-13

FLIGHT PLAN

0223 CST
FEB 7

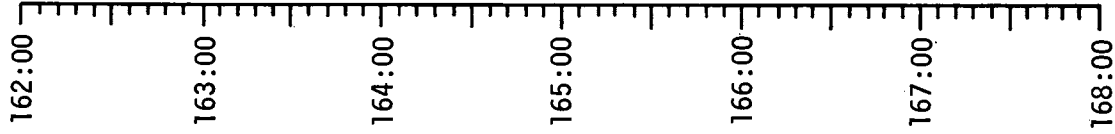
CSM



REST PERIOD
(10 HR)

PTC

CSM



EAT PERIOD

P52 IMU REALIGN, OPT 3

P23 CISELUNAR NAVIGATION
3 MARKS ON EACH STAR

PREP FOR MCC-5 (IF REQ'D)

MCC-5

166:15

P23 CISELUNAR NAVIGATION
3 MARKS ON EACH STAR
(3 LUNAR & 3 EARTH HORIZON SIGHTINGS)

THERMAL
ATTITUDE
(EXCEPT
FOR MCC-5)

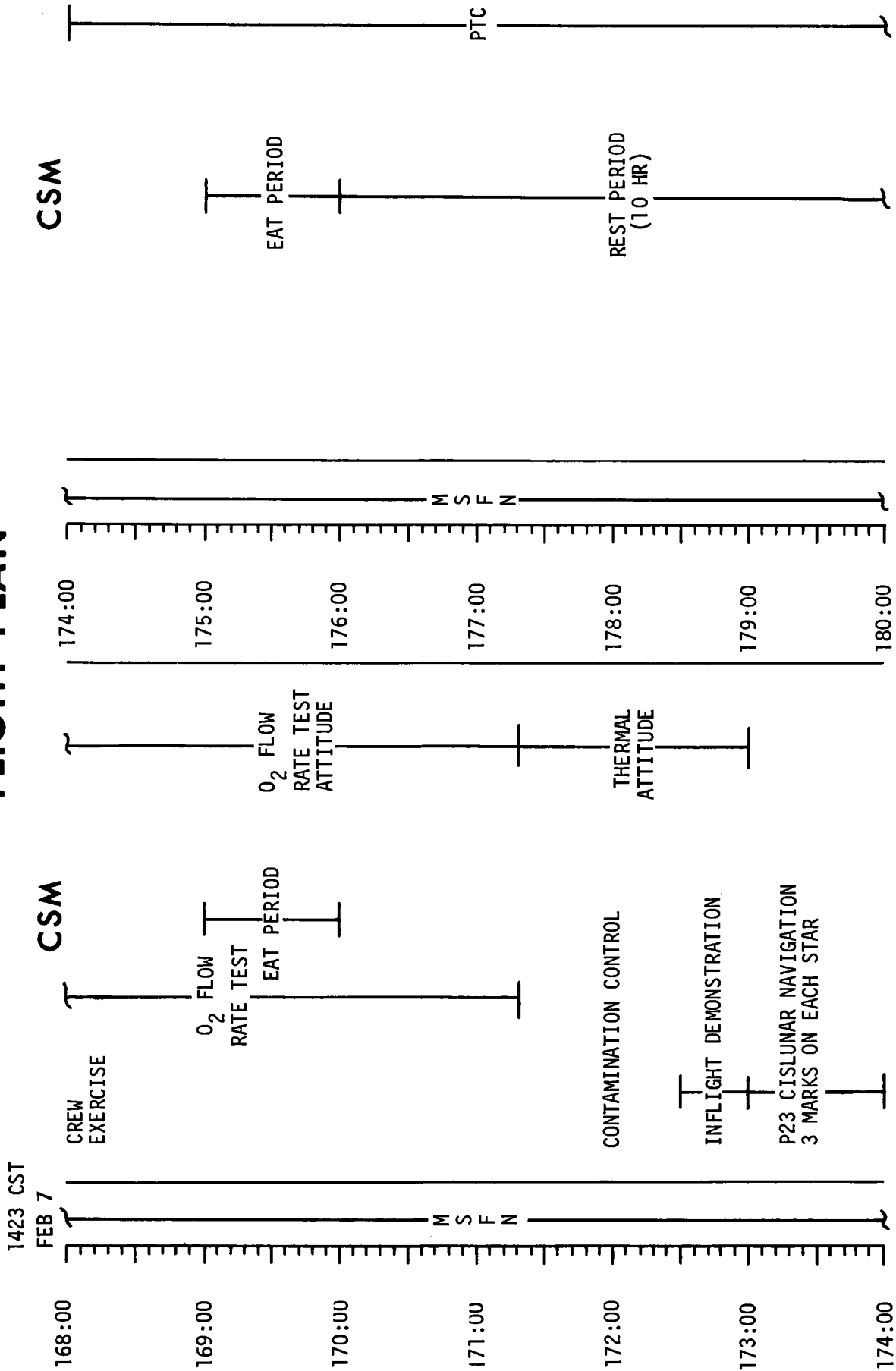
PTC

O₂ FLOW
RATE TEST
ATTITUDE

O₂ FLOW RATE TEST

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	156:00 - 168:00	6-7/TEC	5-14

FLIGHT PLAN



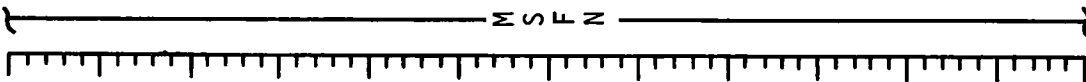
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	168:00 - 180:00	7/TEC	5-15

FLIGHT PLAN

0223 CST
FEB 8

CSM

180:00
181:00
182:00
183:00
184:00
185:00
186:00

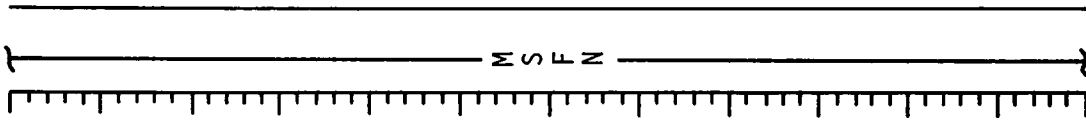


REST PERIOD
(10 HR)

PTC

CSM

186:00
187:00
188:00
189:00
190:00
191:00
192:00



EAT PERIOD

P52 IMU REALIGN,
OPT 3
EMS ENTRY CHECK

P23 CISELUNAR NAVIGATION
3 MARKS ON EACH STAR

CREW EXERCISE

EAT PERIOD

PTC

PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	180:00 - 192:00	7-8/TEC	5-16

FLIGHT PLAN

1423 CST
FEB 8

CSM

P52 IMU REALIGN, OPT 3

P23 CISLUNAR NAVIGATION
3 MARKS ON EACH STAR

PREP FOR MCC-6 (IF REQ'D)

MCC-6 194:27

CONTAMINATION CONTROL

P23 CISLUNAR NAVIGATION
3 MARKS ON EACH STAR

EARTH DARKSIDE
DIM LIGHT PHOTOS

192:00

193:00

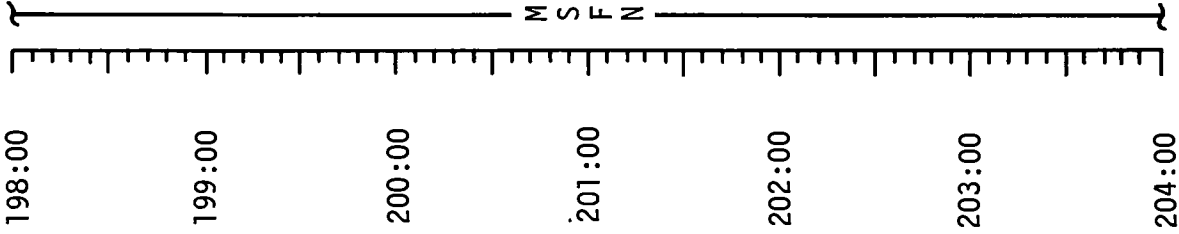
194:00

195:00

196:00

197:00

198:00



CSM

BACKUP GDC ALIGNMENT
CRESCENT ALIGN

EAT PERIOD

REST PERIOD
(8 HR)

PTC

198:00

199:00

200:00

201:00

202:00

203:00

204:00

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	192:00 - 204:00	8/TEC	5-17

0223 CST
FEB 9

FLIGHT PLAN

CSM

CSM

204:00
205:00
206:00
207:00
208:00
209:00
210:00

210:00
211:00
212:00
213:00
214:00
215:00
216:00

MSFN

MSFN

REST PERIOD
(8 HR)

P52 IMU REALIGN, OPT 3

P23 CISLUNAR NAVIGATION
3 MARKS ON EACH STAR

EAT PERIOD

PTC

PTC

P23 CISLUNAR NAVIGATION
3 MARKS ON EACH STAR

P52 IMU REALIGN, OPT 3
P52 IMU REALIGN, OPT 1

PREP FOR MCC-7 (IF REQ'D)

MCC-7

213:27

P23 CISLUNAR NAVIGATION
3 MARKS ON EACH STAR

P52 IMU REALIGN, OPT 3
EMS ENTRY CHECK

CM/SM SEP 216:12
E1 216:27

PTC

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 14	FINAL (JAN)	DECEMBER 2, 1970	204:00 - 216:00	8-9/TEC	5-18

SECTION 6 - ALTERNATE MISSION TIMELINES

