

TABLE 5-11 CSM CRYOGENIC LOADING & USAGE SUMMARY

Description	Cryogenic usage		Cryogenic remaining	
	H <sub>2</sub> , lb	O <sub>2</sub> , lb	H <sub>2</sub> , lb	O <sub>2</sub> , lb
Total loaded			58.6	660.2
Unusable				
Residual	2.4	13.0	56.2	647.2
Gauging error	1.5	17.5	54.7	629.7
Available for mission planning			54.7	629.7
Mission requirements				
Prelaunch				
T - 28.5 hr to T - 6 hr at 40A	2.38	18.4		
6-hr built in hold at 40A	.63	4.9		
T - 6 hr to T - 2 hr at 40A	.42	3.3		
ECS requirements from crew	--	.7		
ingress (T - 3 hr				
T - 2 hr to T (hr) at 75A	<u>.39</u>	<u>3.1</u>		
	3.82	30.4	50.88	599.3
EPS	36.56	273.2	14.32	326.1
ECS	--	98.4	14.32	227.7
Uncertainties				
4.5 launch window at 75A	.87	7.8	13.45	219.9
5% EPS uncertainty	1.83	13.7	11.62	206.2
Margin			11.62	206.2

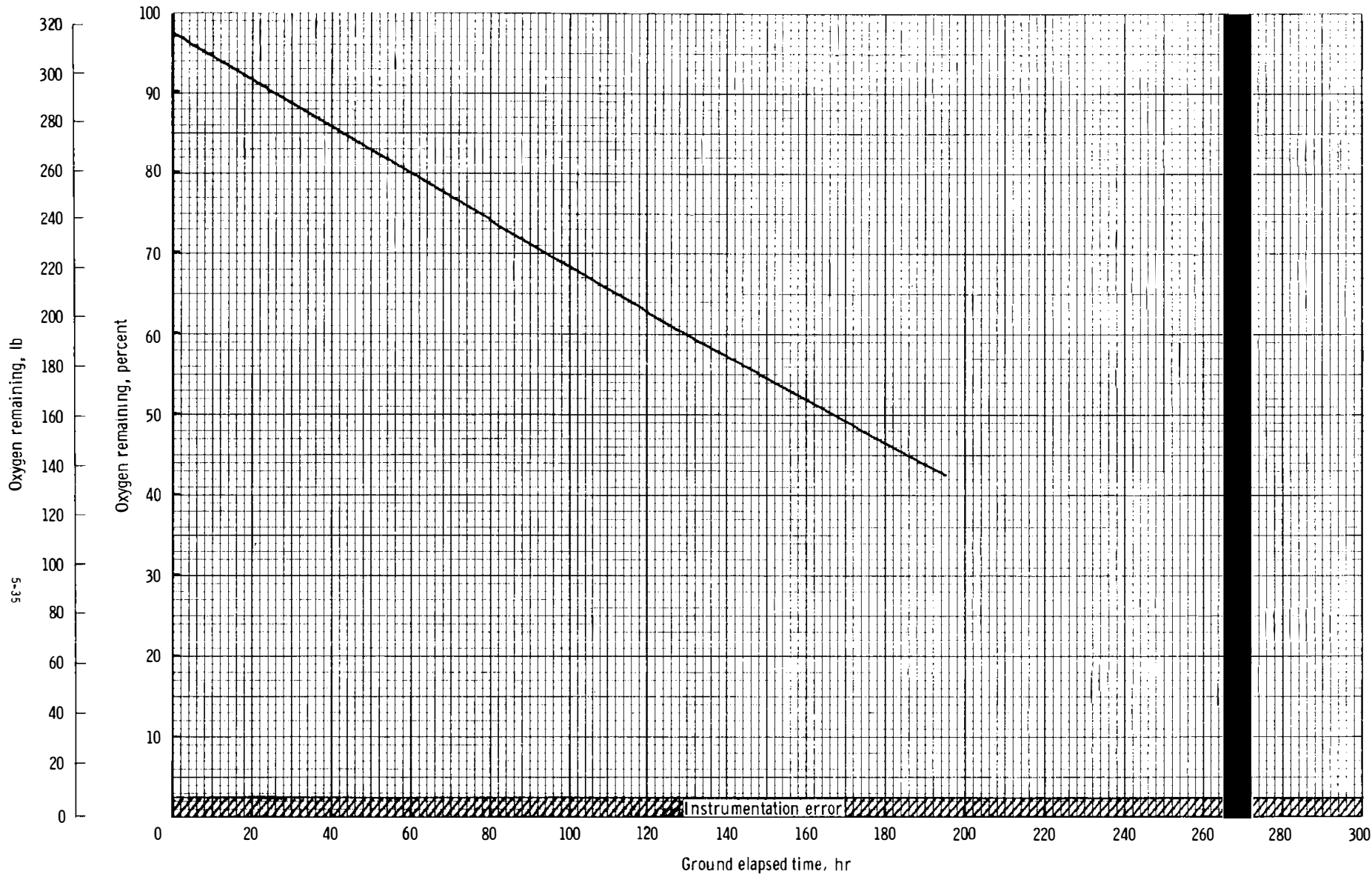


FIGURE 5-5 CSM O<sub>2</sub> PROFILE (ONE TANK)

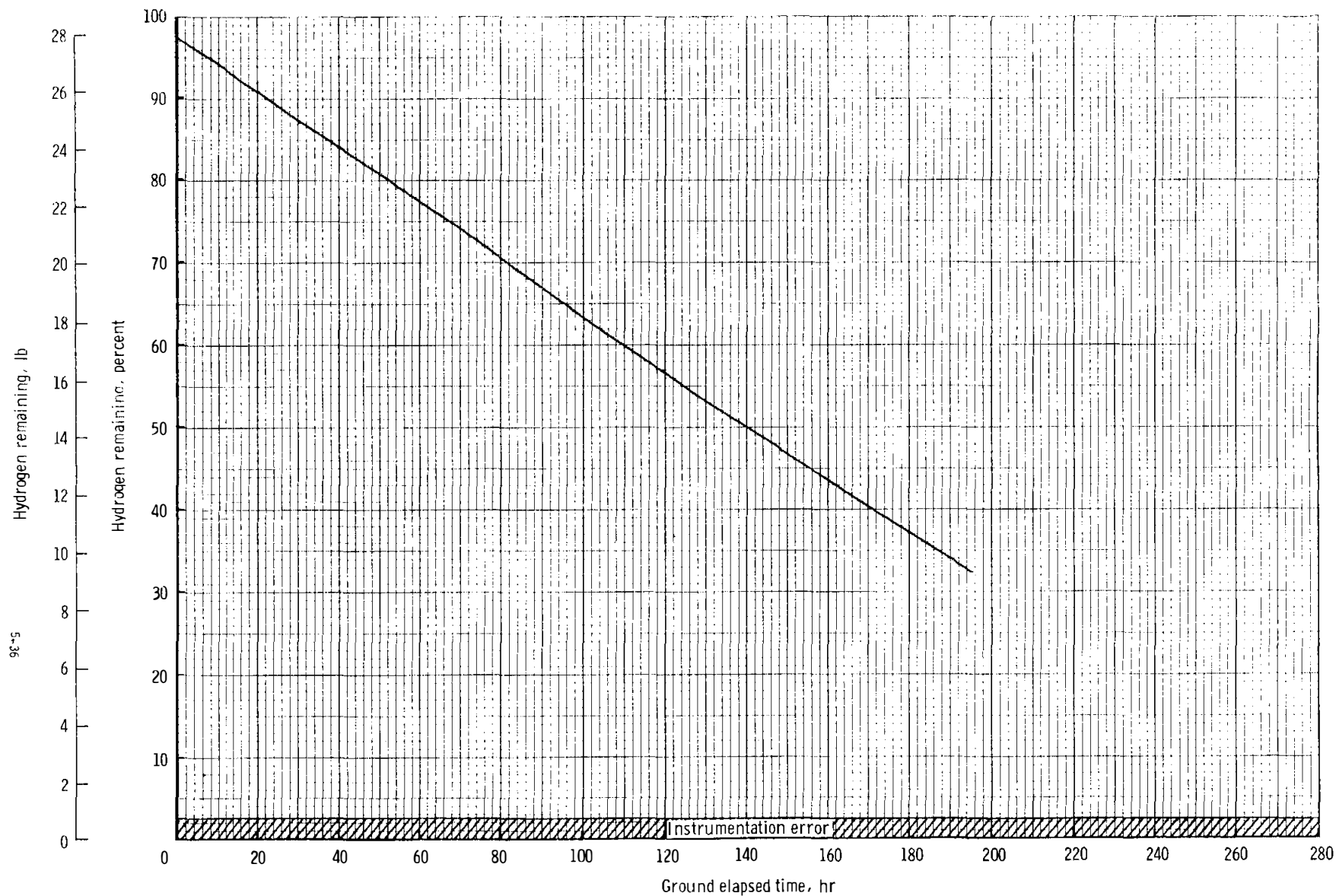


FIGURE 5-6 CSM H<sub>2</sub> PROFILE (ONE TANK)

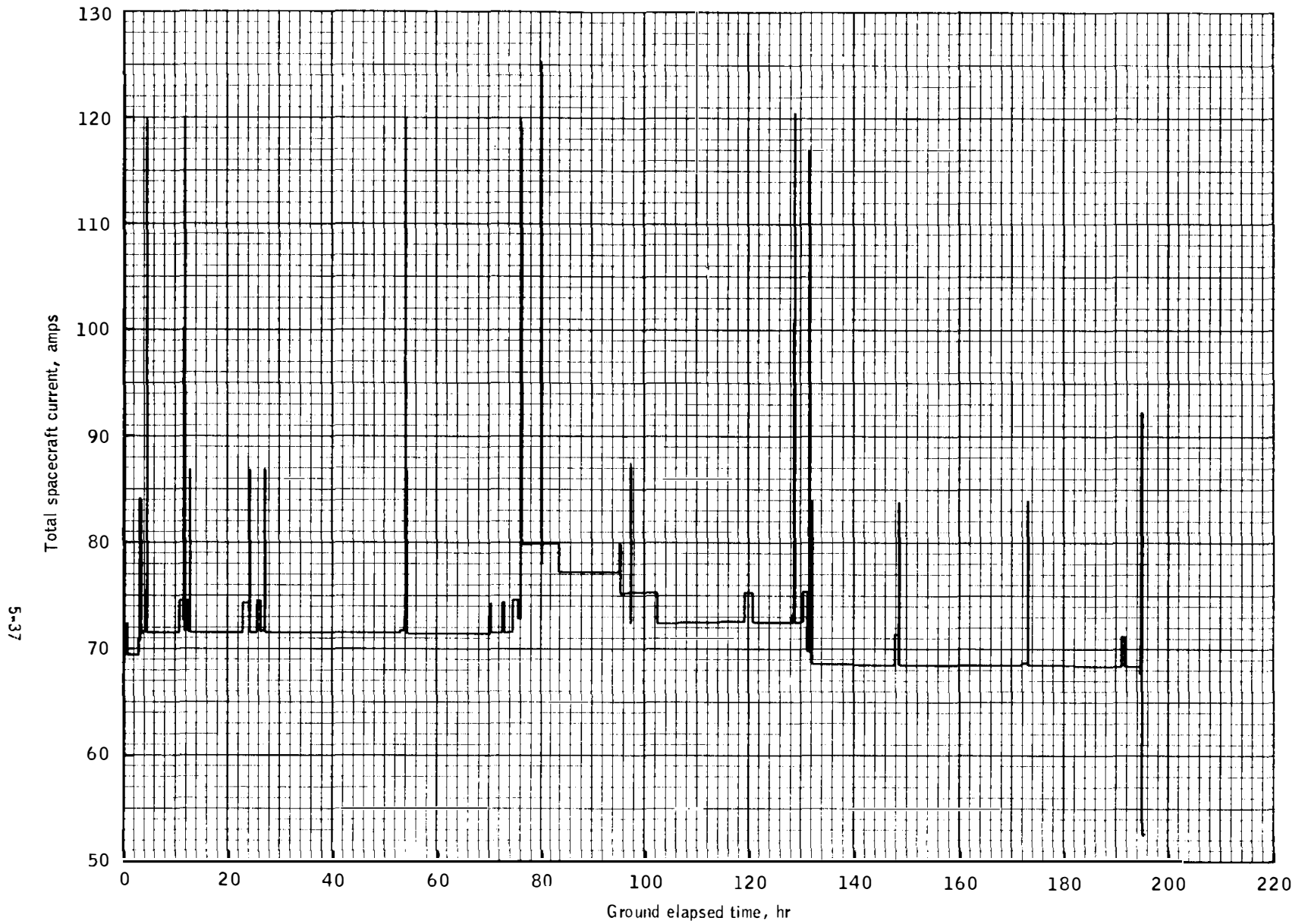


FIGURE 5-7 CSM CURRENT PROFILE

## LM EPS ANALYSIS

### GROUND RULES AND ASSUMPTIONS

1. The descent state batteries go on the line 30 minutes prior to earth liftoff.
2. A 3.6-hour checkout was assumed for lunar orbit.
3. Ascent and descent batteries were paralleled for the powered descent burn and prior to liftoff from the lunar surface.
4. The S-band equipment was assumed on 100 percent from initial activation in lunar orbit until completion of the mission.
5. The rendezvous radar electronics was assumed to be operational for the period of time dictated by the current G Mission flight plan.
6. The primary navigation and guidance subsystem (PGNCS) was left in the operate mode for the entire lunar stay.
7. The forward window heaters were left off for the lunar stay.

### TABLE 12 SUMMARY FOR DESCENT STAGE EPS ANALYSIS

Total load = 1600 A-h

Total unusable for premission planning = 131 A-h (8.2%)

Total used = 1243.0 A-h (77.7%)

Usable remaining at liftoff = 226 A-h (14.1%)

Figure 5-8 presents the descent power profile

### TABLE 13 SUMMARY FOR THE ASCENT STAGE EPS ANALYSIS

Total loaded = 592.0 A-h

Total unusable for premission planning = 31.0 A-h (5.2%)

Total used = 326.0 A-h (55.1%)

Usable remaining at completion of crew transfer = 235.0 A-h (39.7%)

Figure 5-9 presents the ascent power profile

Figure 5-10 presents the descent & ascent current profile

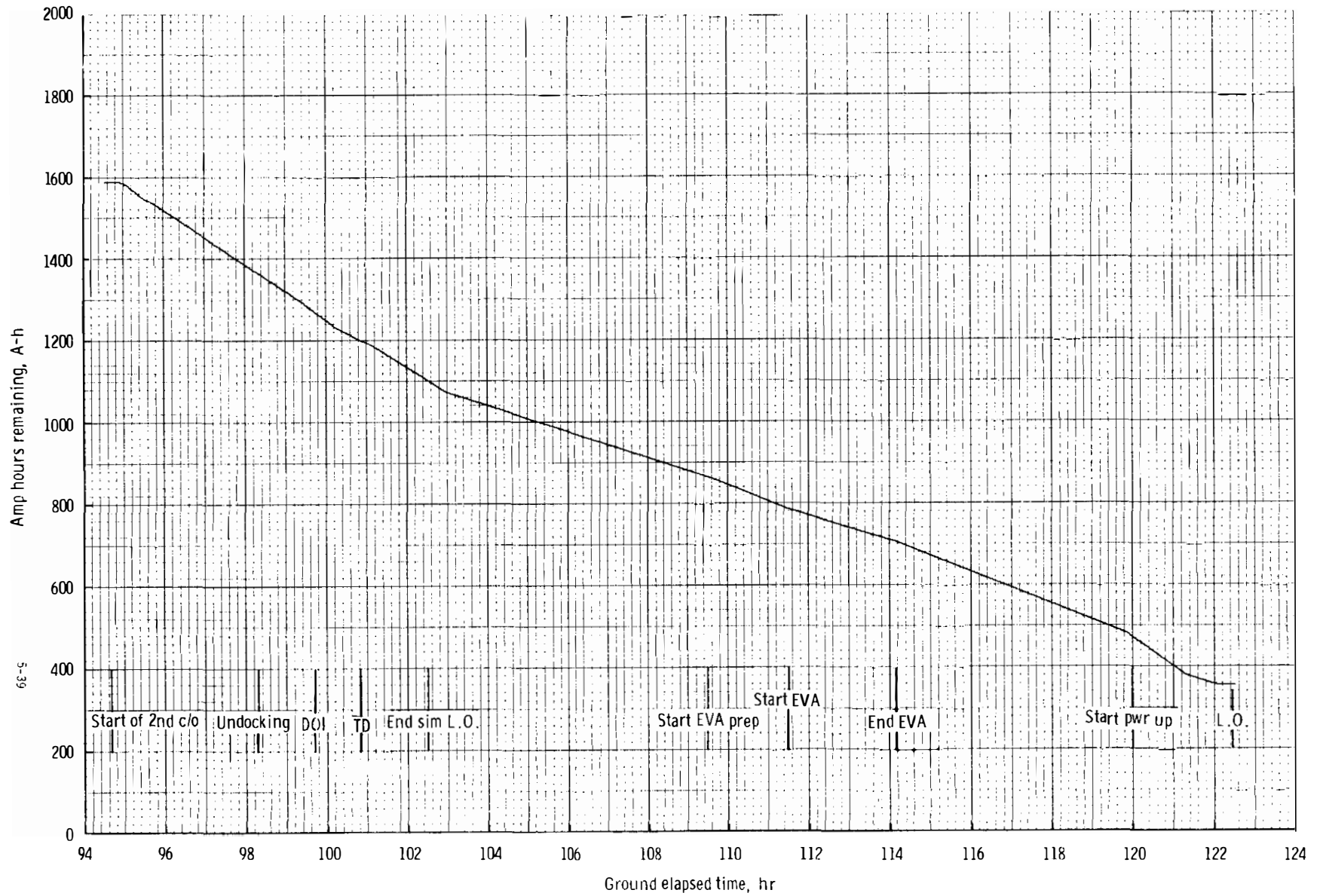


FIGURE 5-8 LM DESCENT POWER PROFILE

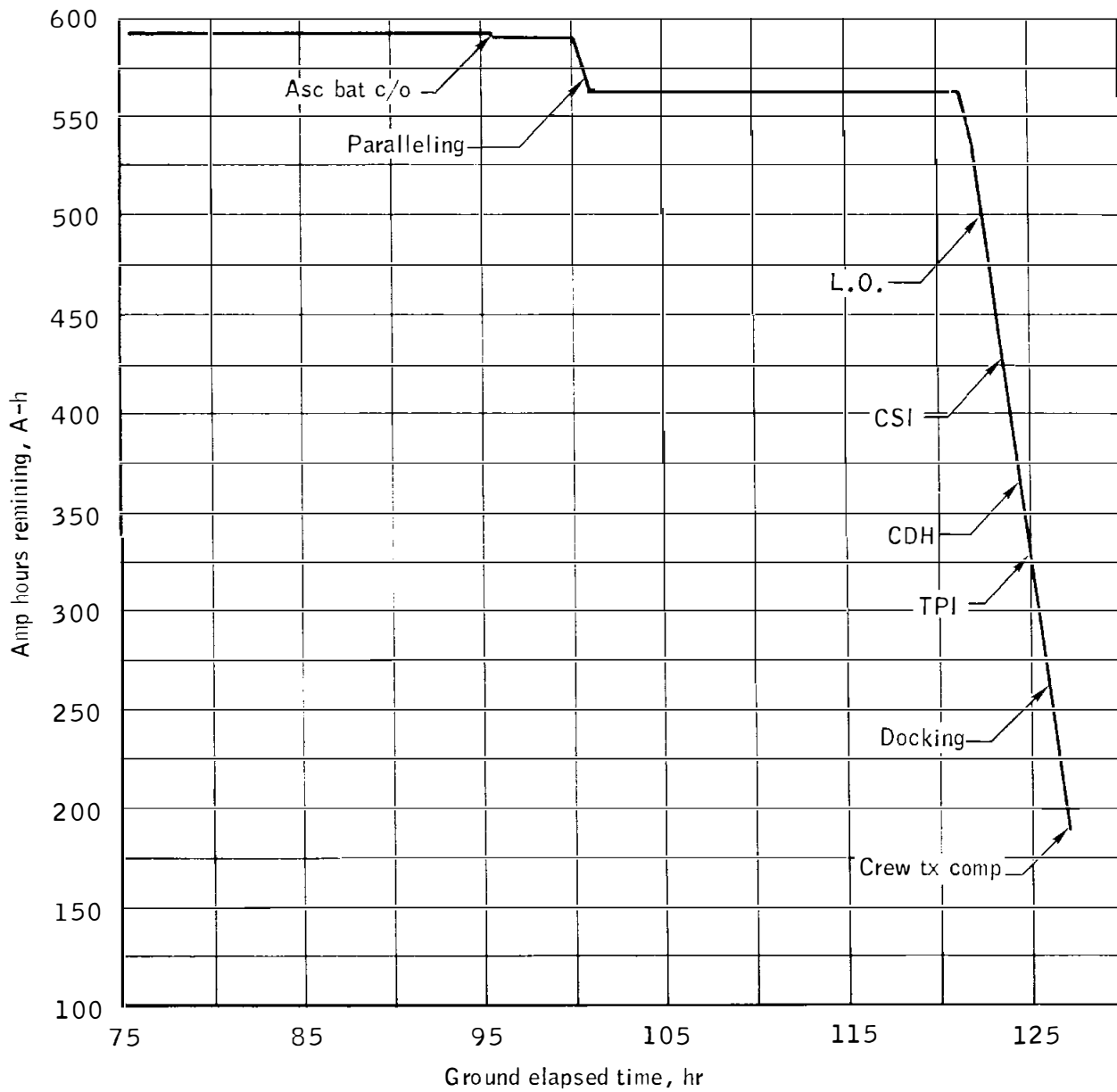


FIGURE 5-9 LM ASCENT POWER PROFILE

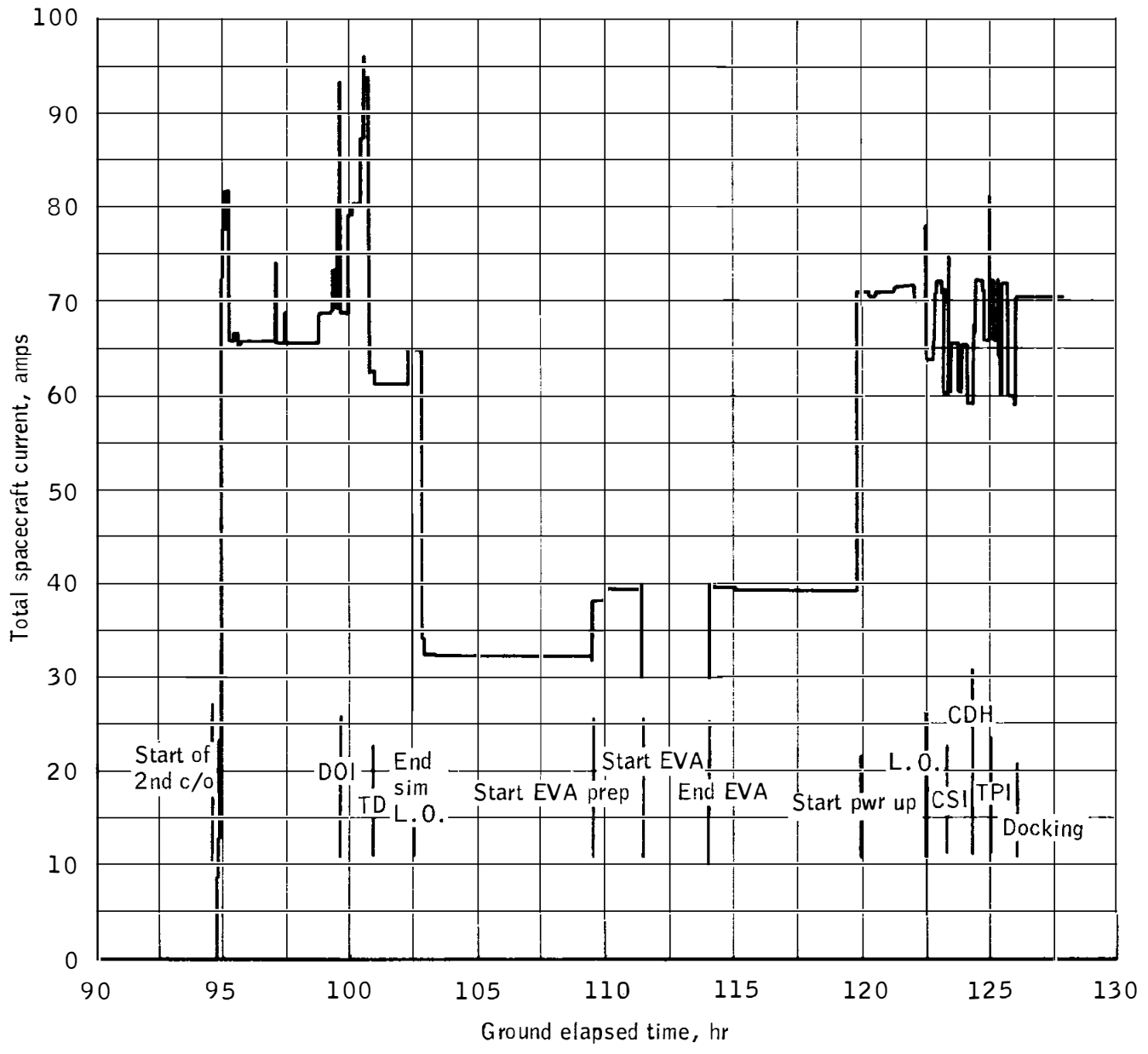


FIGURE 5-10 LM TOTAL CURRENT PROFILE



LM ECS BUDGET

GROUND RULES AND ASSUMPTIONS

1. Cabin O<sub>2</sub> leakage rate was 0.1 lb/hr while pressurized
2. Metabolic rates were varied according to Volume 2 of the Spacecraft Operational Data Book.
3. Metabolic O<sub>2</sub> consumed was  $(1.643 \times 10^{-4}) \times (\text{metabolic rate})$ .
4. LM pressurization requires 6.62 lb of O<sub>2</sub>.
5. Cabin pressure regulator check requires 2.65 lb of O<sub>2</sub>.
6. H<sub>2</sub>O consumed because of sublimator cooling was total heat removed divided by 1040 (Btu per lb) of H<sub>2</sub>O.
7. H<sub>2</sub>O lost due to urination was 0.11 lb/hr per man.
8. Cabin temperature control was set to 72° F.
9. Average glycol flow rate was 250 lb/hr.

TABLE 5-14 LM ECS SUMMARY

(a) Descent stage

Description	O <sub>2</sub> , lb	H <sub>2</sub> O, lb
Loaded . . . . .	48.00	210.6
Unusable . . . . .	3.40	16.0
Available for mission . . . . .	44.60	194.6
Required for mission . . . . .	21.81	140.61
Usable remaining in tanks . . . . .	22.79	53.99

(b) Ascent stage

Loaded . . . . .	4.86	85.00
Unusable . . . . .	.74	4.20
Available for mission . . . . .	4.12	80.80
Required for mission . . . . .	1.19	28.07
Usable remaining in tanks . . . . .	2.93	52.73

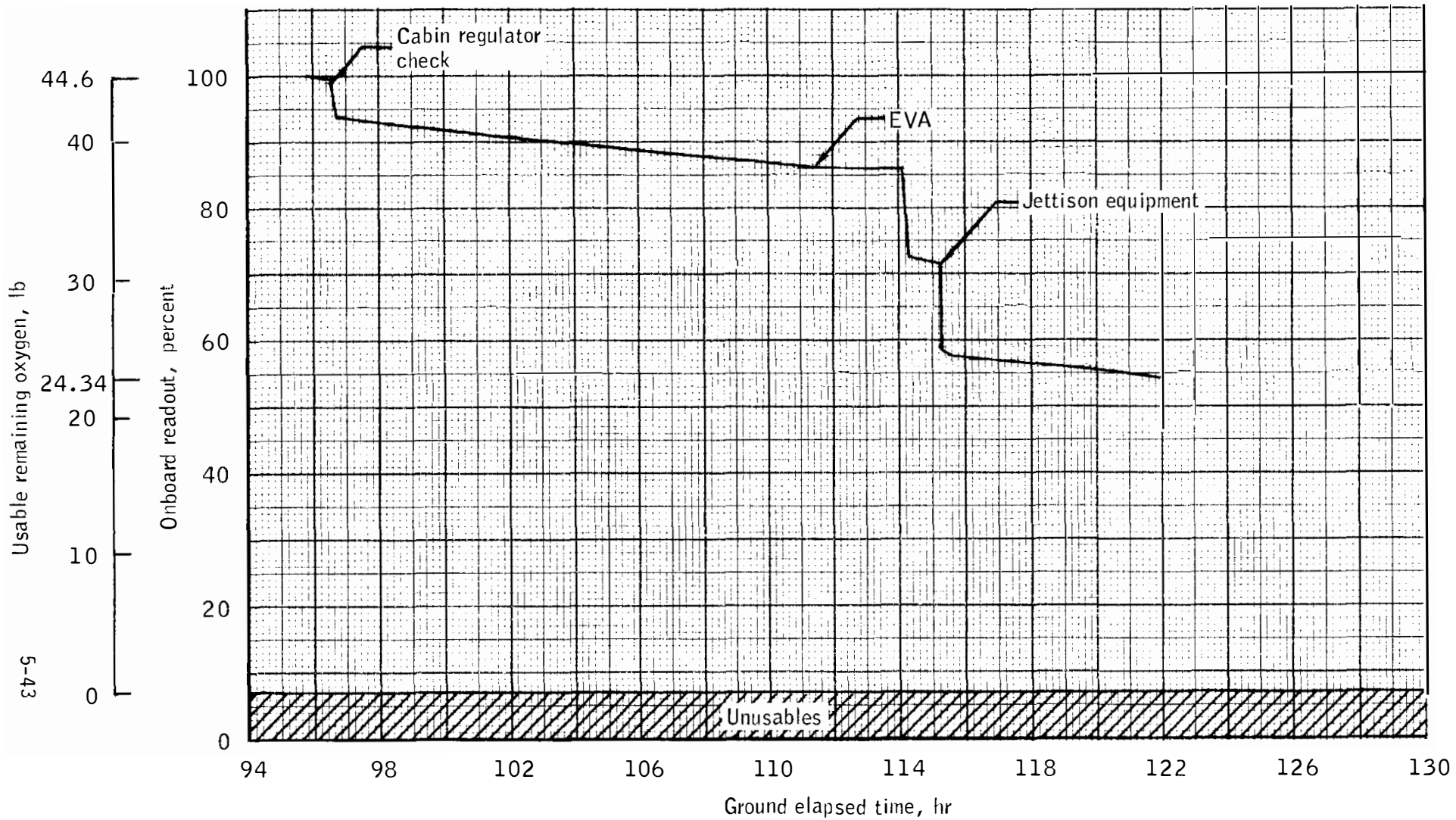


FIGURE 5-11 LM DESCENT O<sub>2</sub> PROFILE

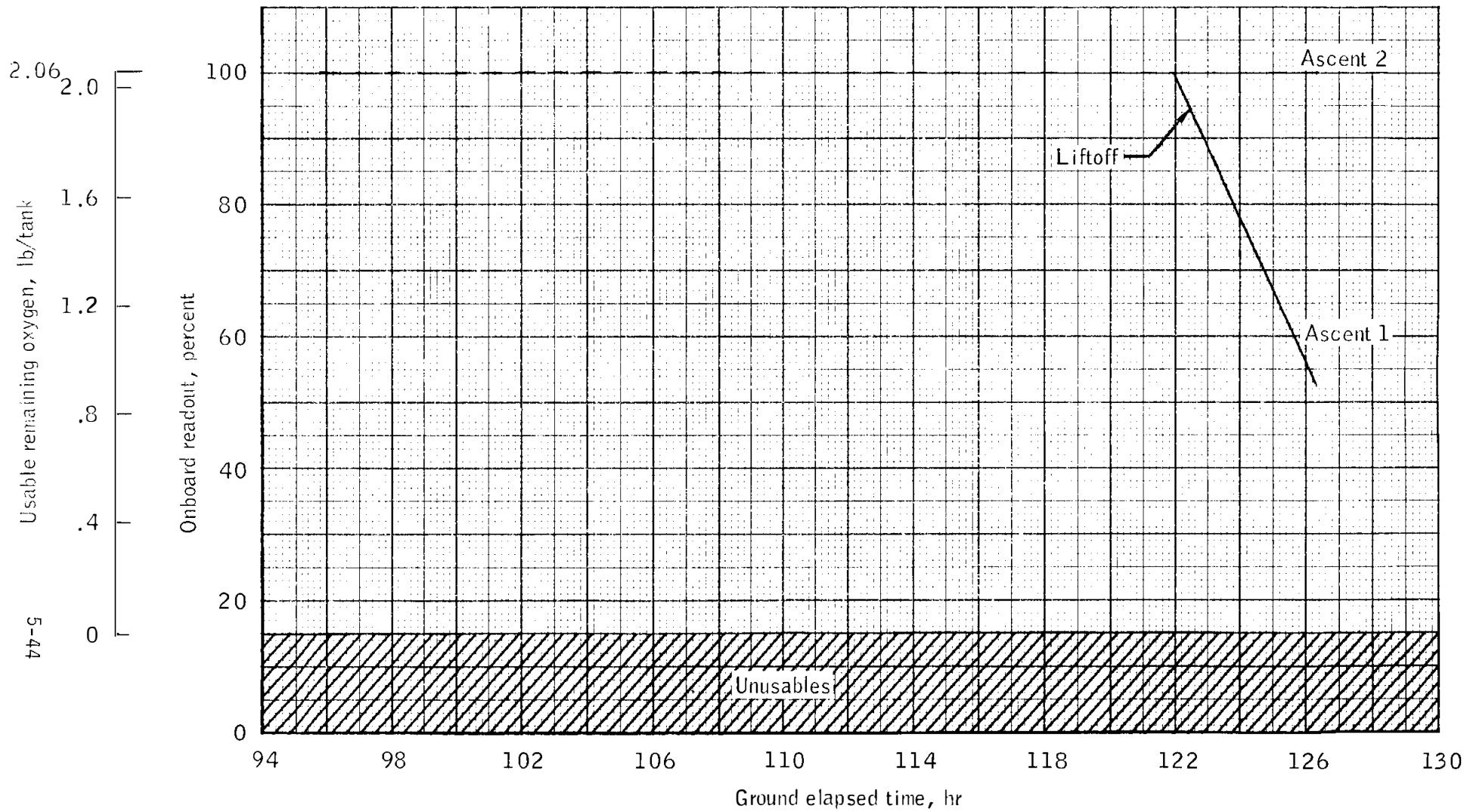


FIGURE 5-12 LM ASCENT O<sub>2</sub> PROFILE

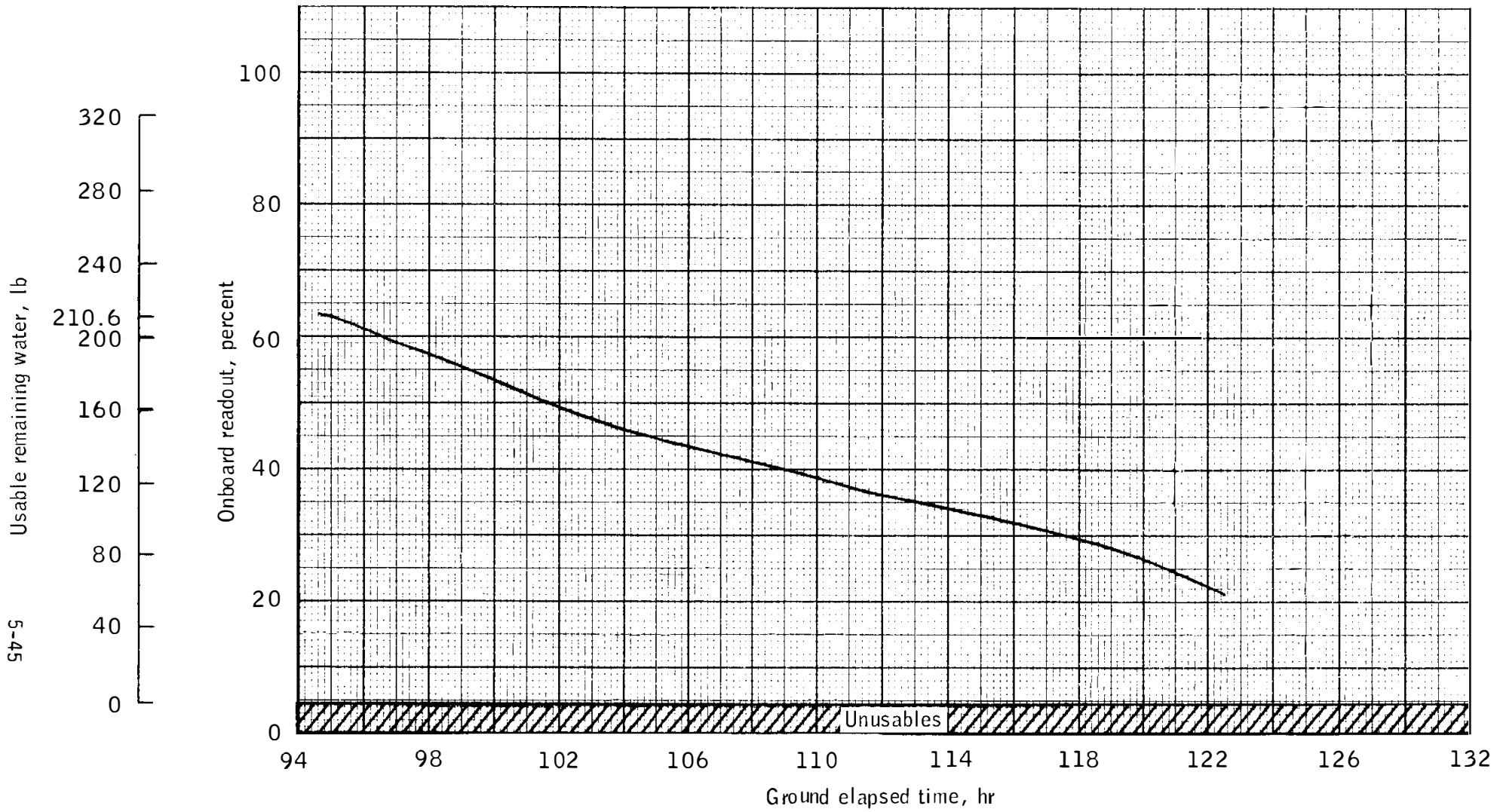


FIGURE 5-13 LM DESCENT H<sub>2</sub>O PROFILE

5-46

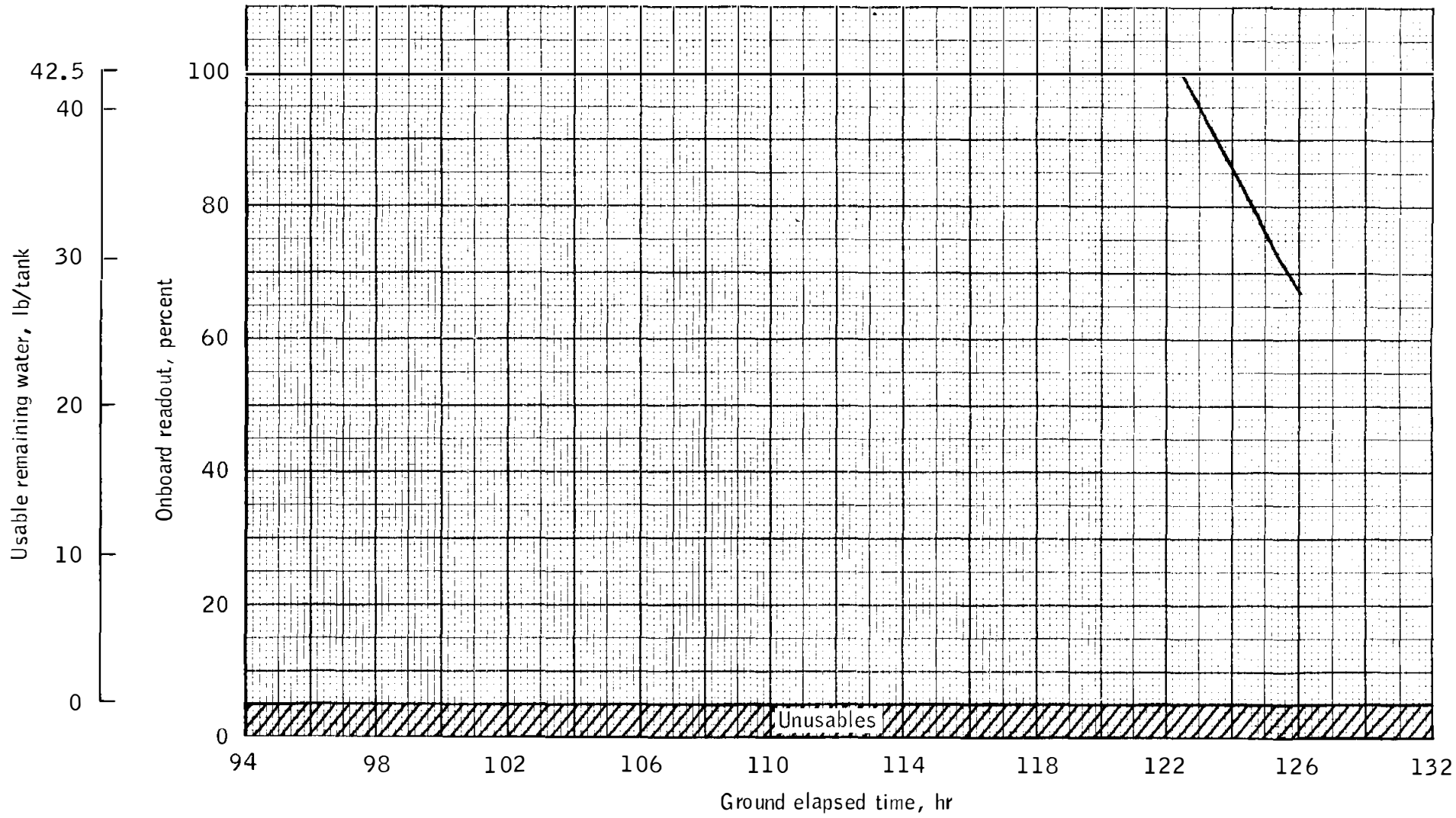


FIGURE 5-14 LM ASCENT H<sub>2</sub>O PROFILE

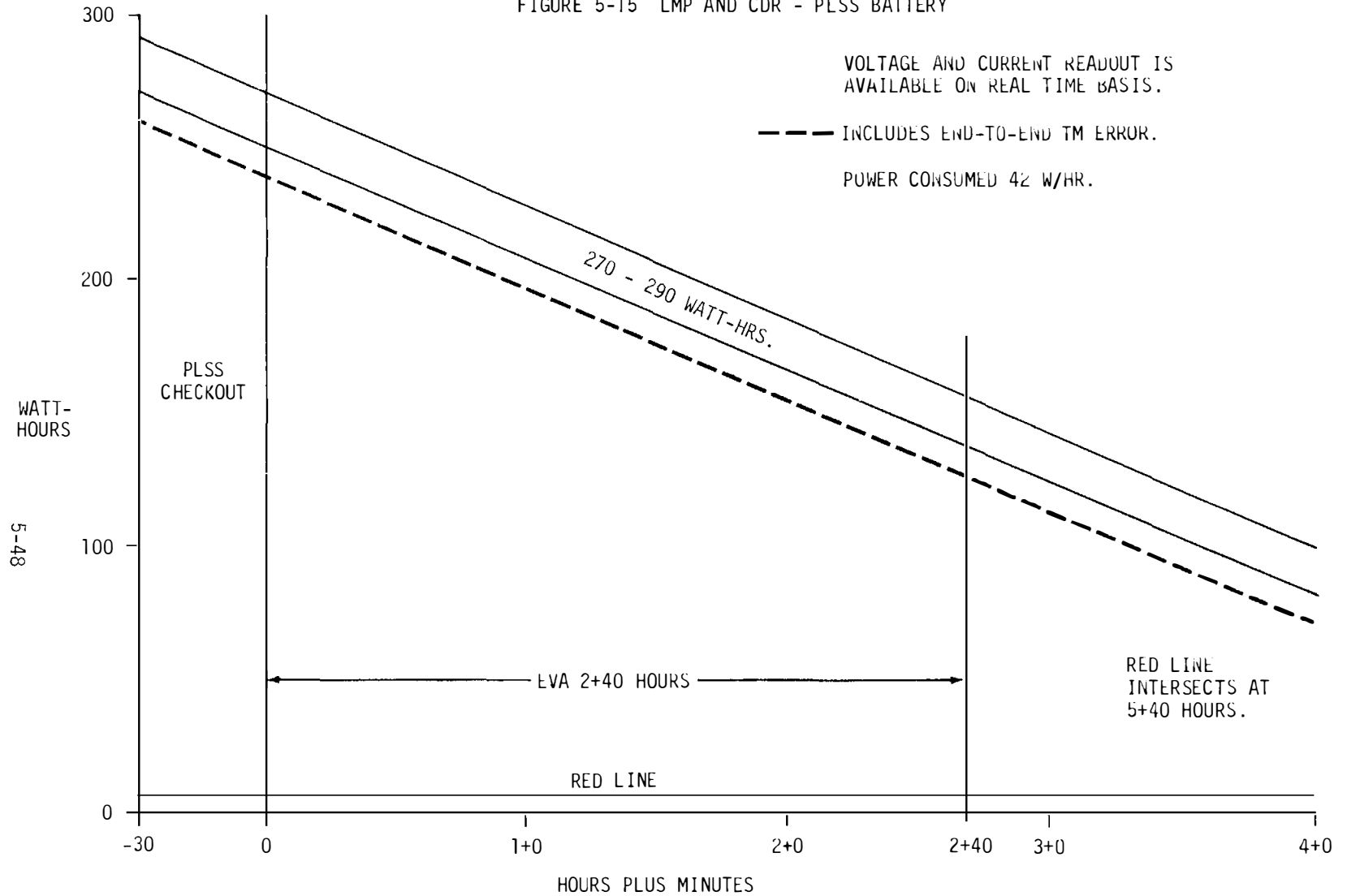
MISSION G PLSS CONSUMABLE ANALYSIS

THE RESULTS OF THE PLSS BATTERY, OXYGEN, WATER AND LiOH CONSUMABLE ANALYSIS ARE SUMMARIZED IN THE FOLLOWING FIGURES:

FIGURE 5-15	LMP AND CDR PLSS BATTERY PROFILE
FIGURE 5-16	CDR OXYGEN PROFILE
FIGURE 5-17	LMP OXYGEN PROFILE
FIGURE 5-18	CDR H <sub>2</sub> O PROFILE
FIGURE 5-19	LMP H <sub>2</sub> O PROFILE
FIGURE 5-20	LMP AND CDR LiOH CO <sub>2</sub> PROFILE

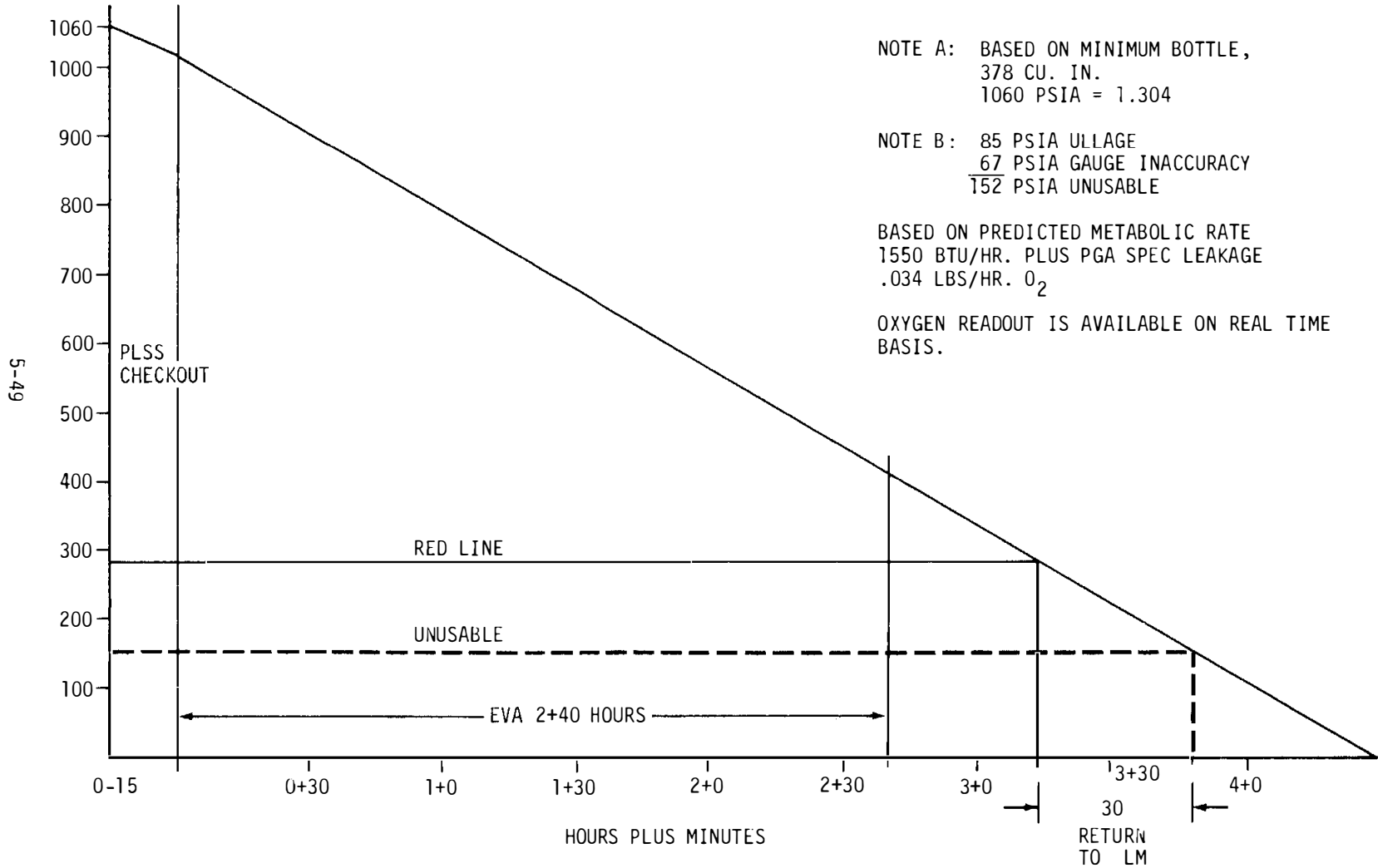
NOMINAL LUNAR SURFACE EVA

FIGURE 5-15 LMP AND CDR - PLSS BATTERY



NOMINAL LUNAR SURFACE EVA

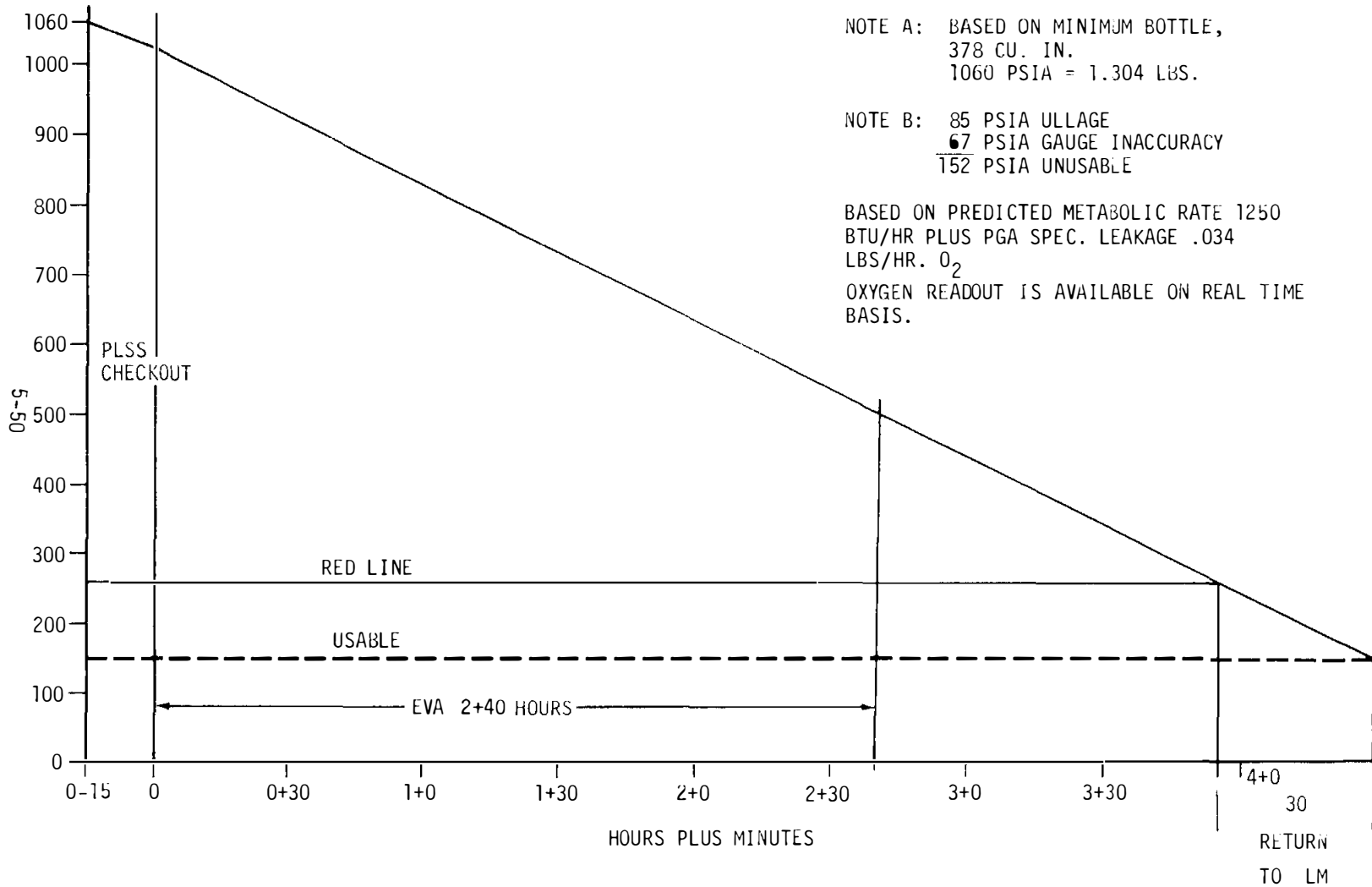
FIGURE 5-16 CDR - OXYGEN





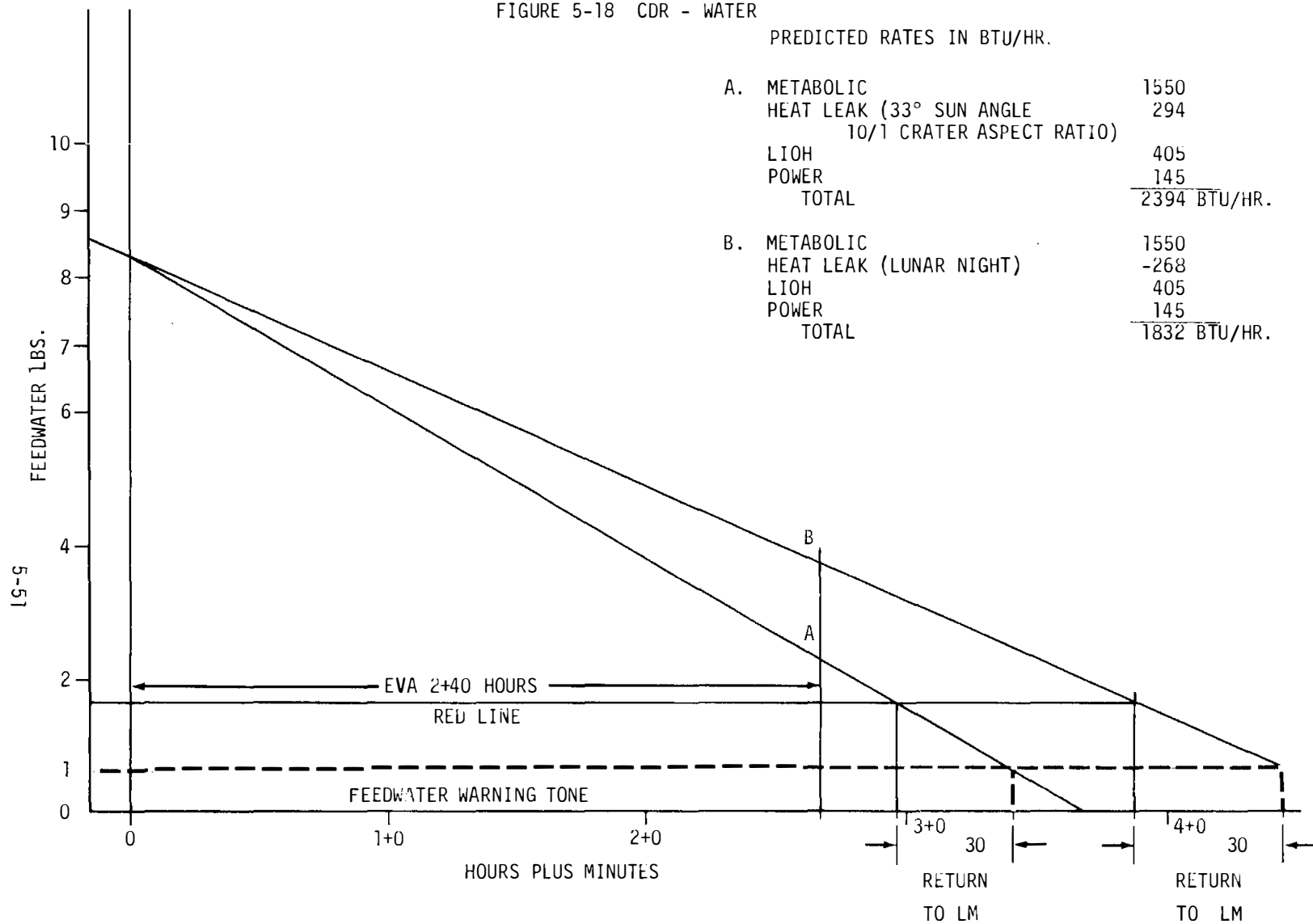
NOMINAL LUNAR SURFACE EVA

FIGURE 5-17 LMP - OXYGEN



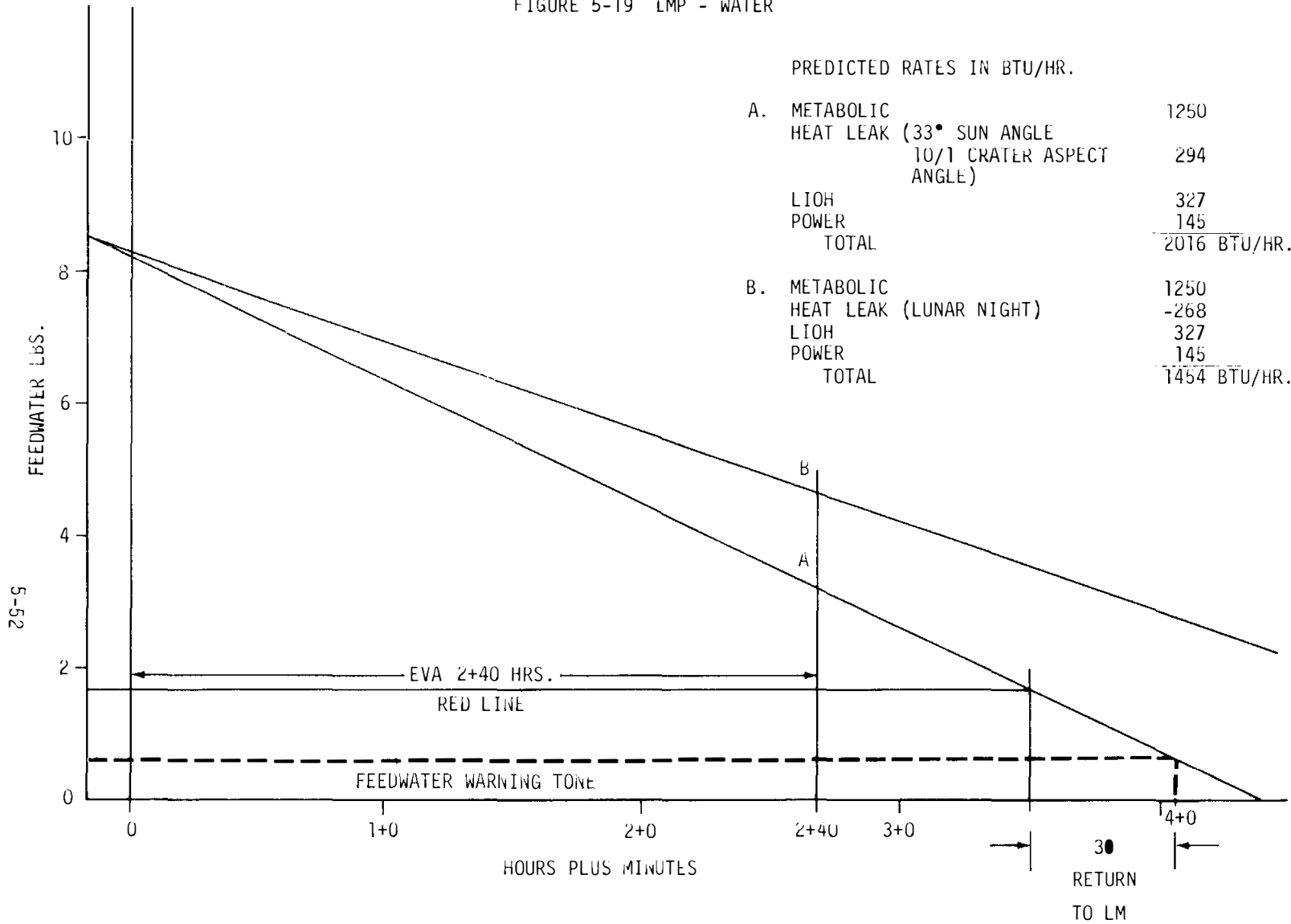
NOMINAL LUNAR SURFACE EVA

FIGURE 5-18 CDR - WATER



NOMINAL LUNAR SURFACE EVA

FIGURE 5-19 LMP - WATER

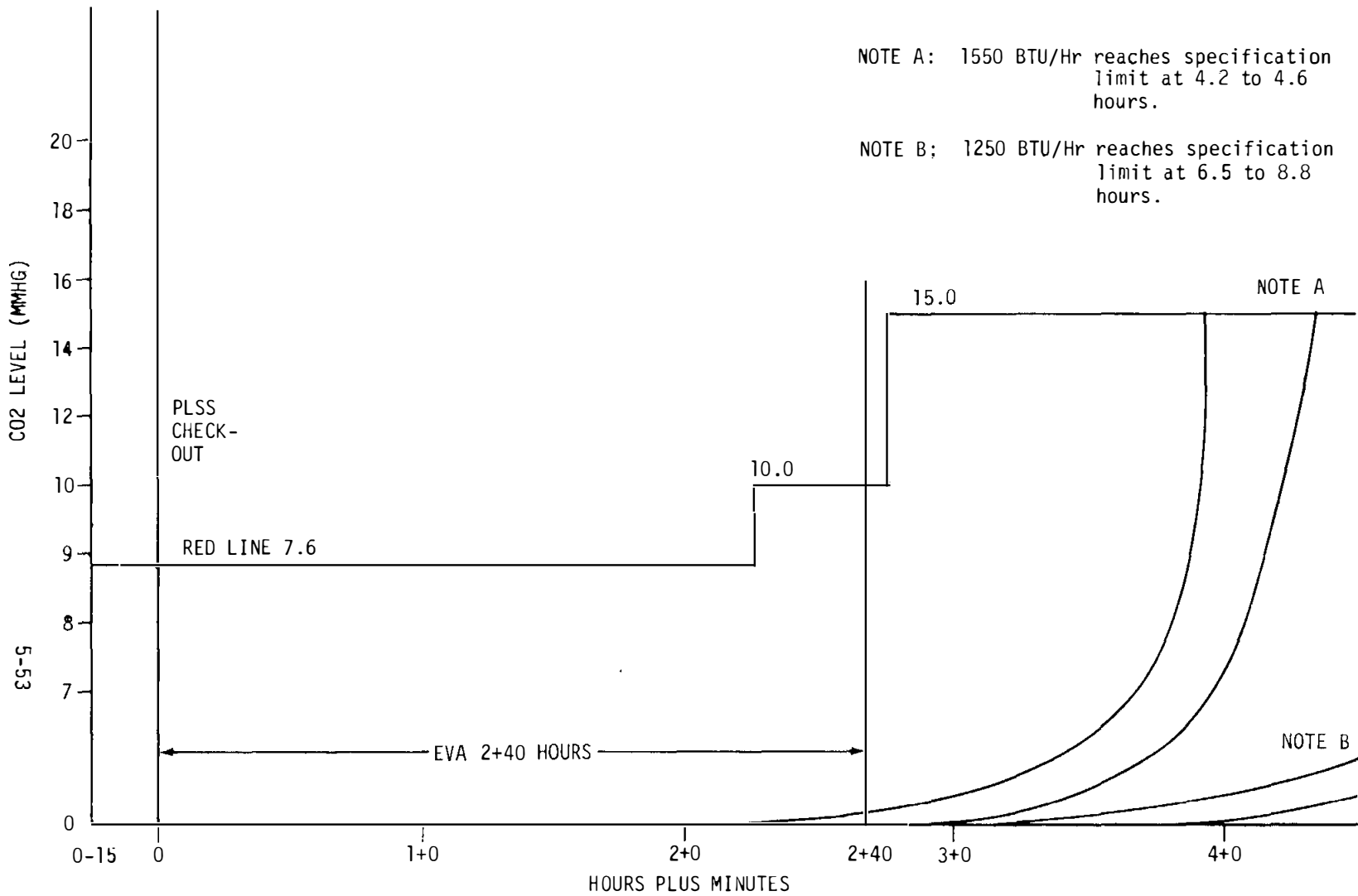


PREDICTED RATES IN BTU/HR.

A.	METABOLIC	1250
	HEAT LEAK (33° SUN ANGLE 10/1 CRATER ASPECT ANGLE)	294
	LiOH	327
	POWER	145
	TOTAL	<u>2016 BTU/HR.</u>
B.	METABOLIC	1250
	HEAT LEAK (LUNAR NIGHT)	-268
	LiOH	327
	POWER	145
	TOTAL	<u>1454 BTU/HR.</u>

NOMINAL LUNAR SURFACE EVA

FIGURE 5-20 LMP & CDR LiOH

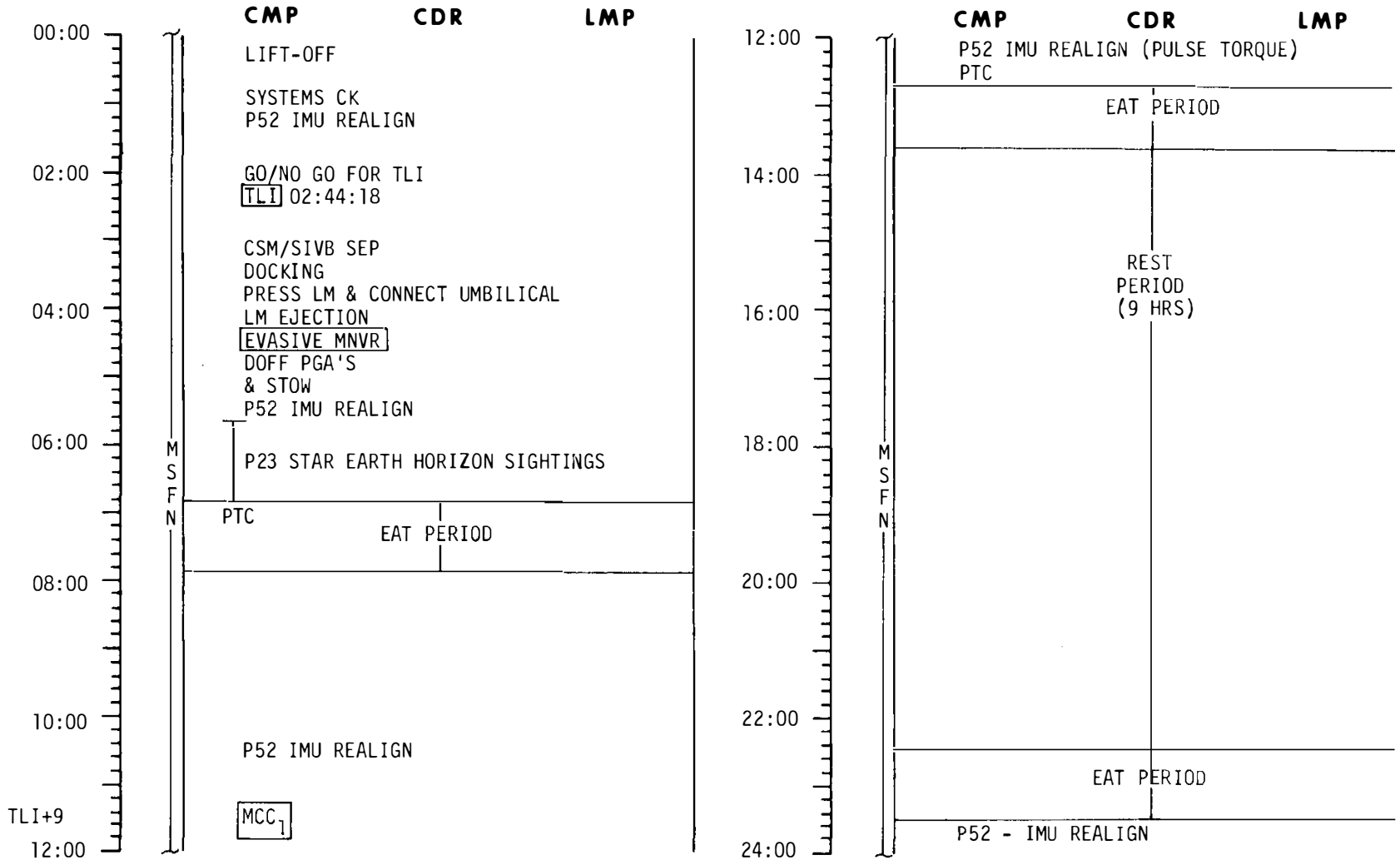


NOTE A: 1550 BTU/Hr reaches specification limit at 4.2 to 4.6 hours.

NOTE B: 1250 BTU/Hr reaches specification limit at 6.5 to 8.8 hours.

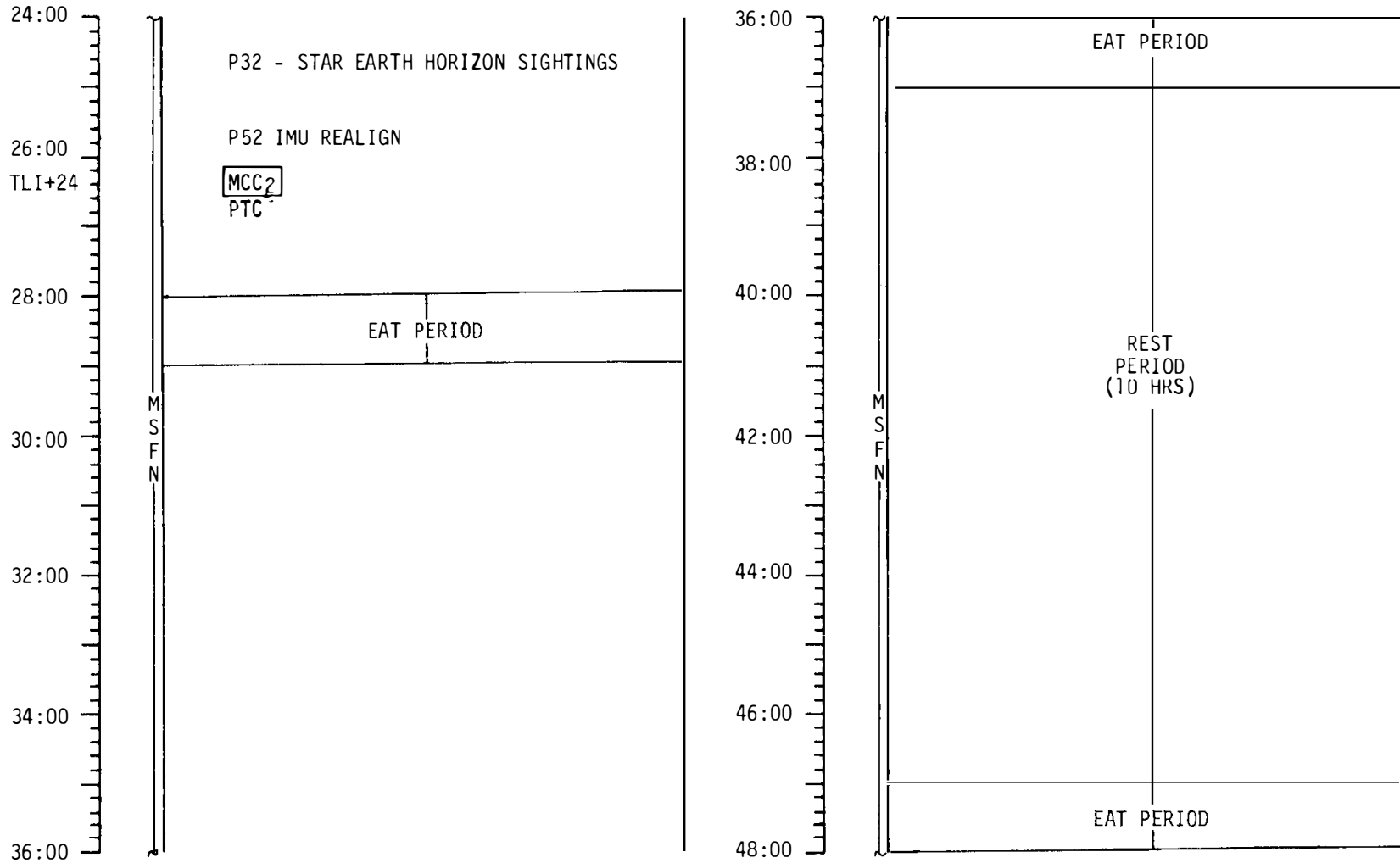
SECTION VI - SUMMARY FLIGHT PLAN

# FLIGHT PLAN



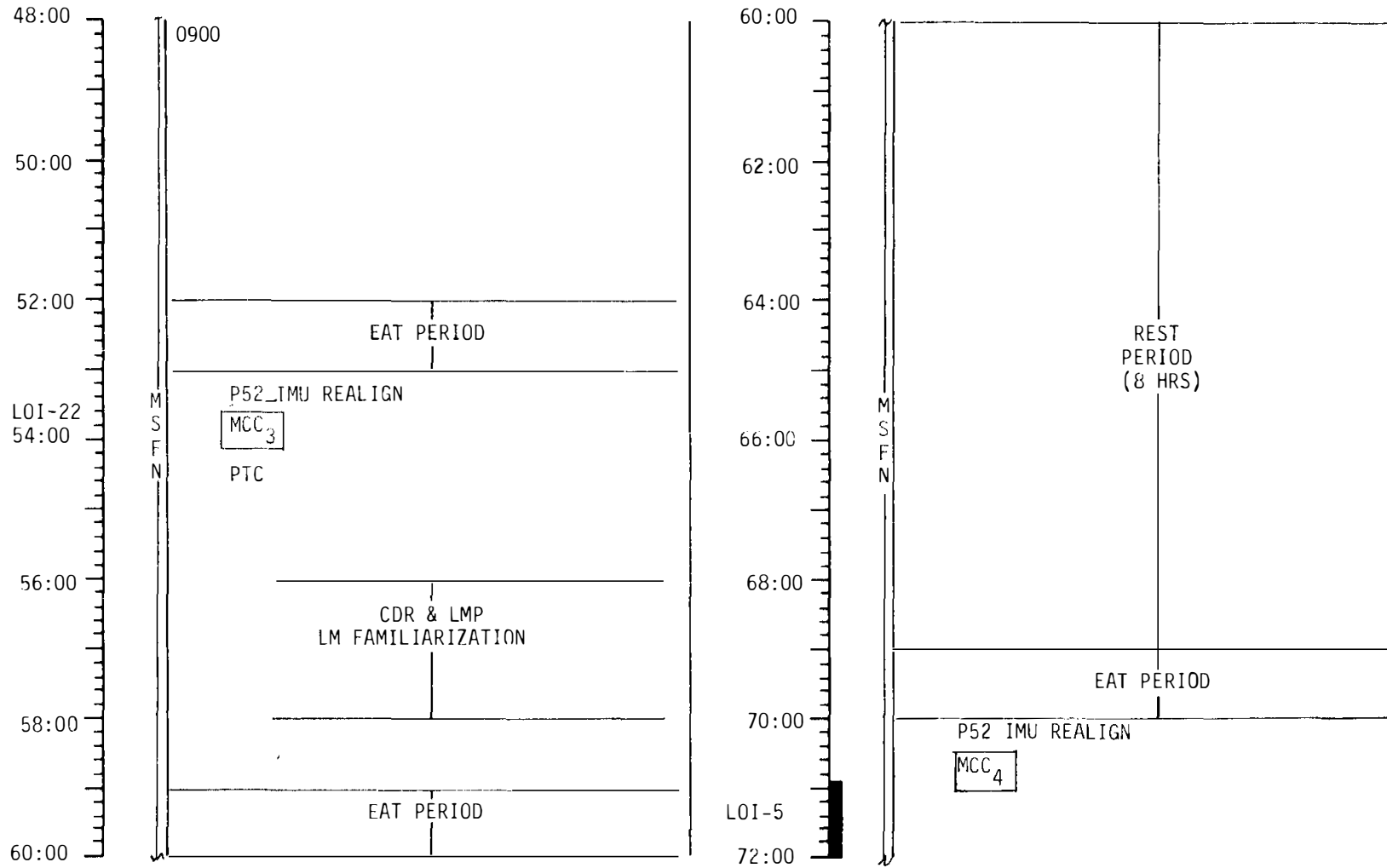
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	00:00 - 24:00	1/TLC	6-1

# FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	24:00 - 48:00	2/TLC	6-2

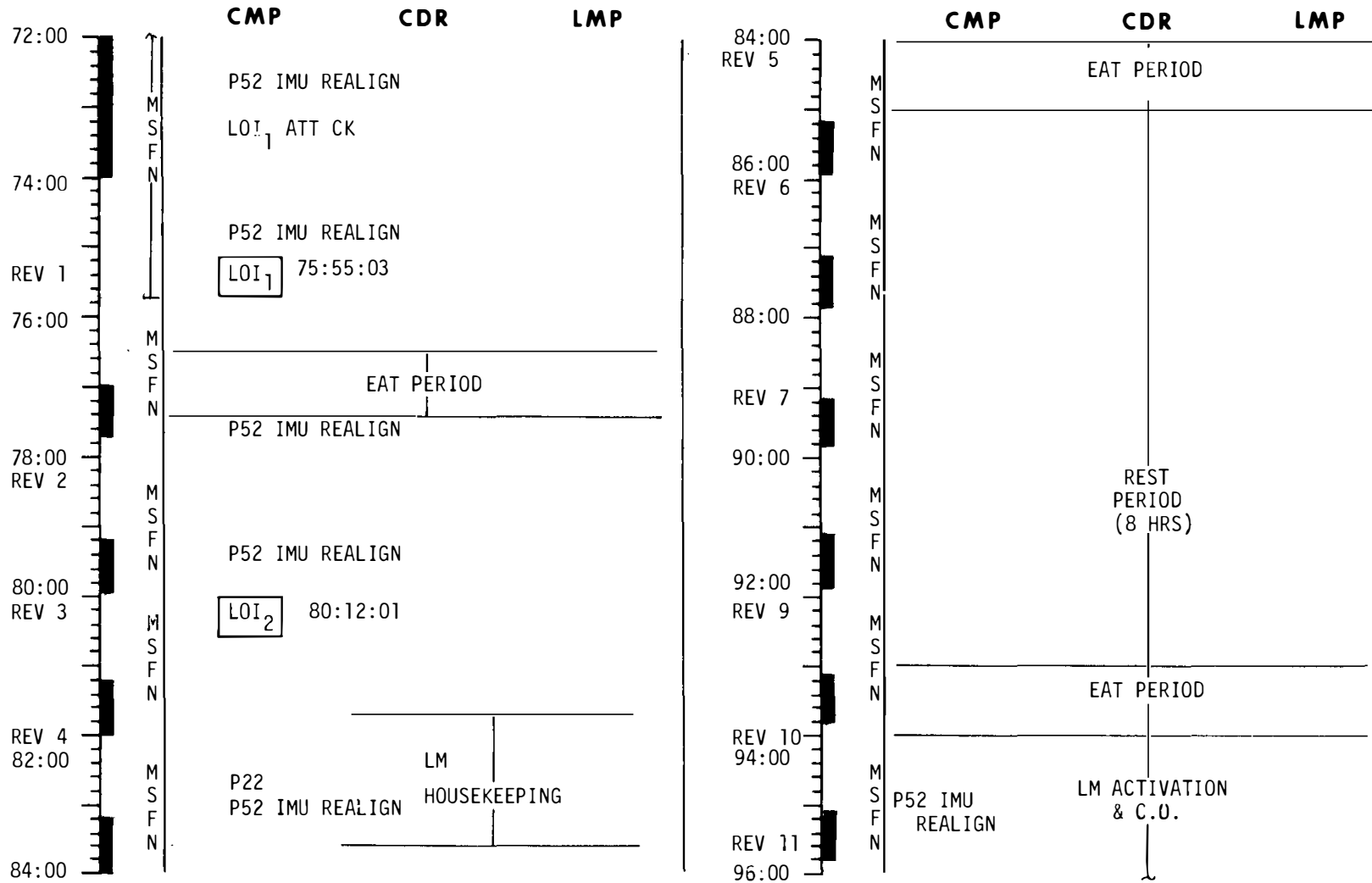
# FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	48:00 - 72:00	3/TLC	6-3

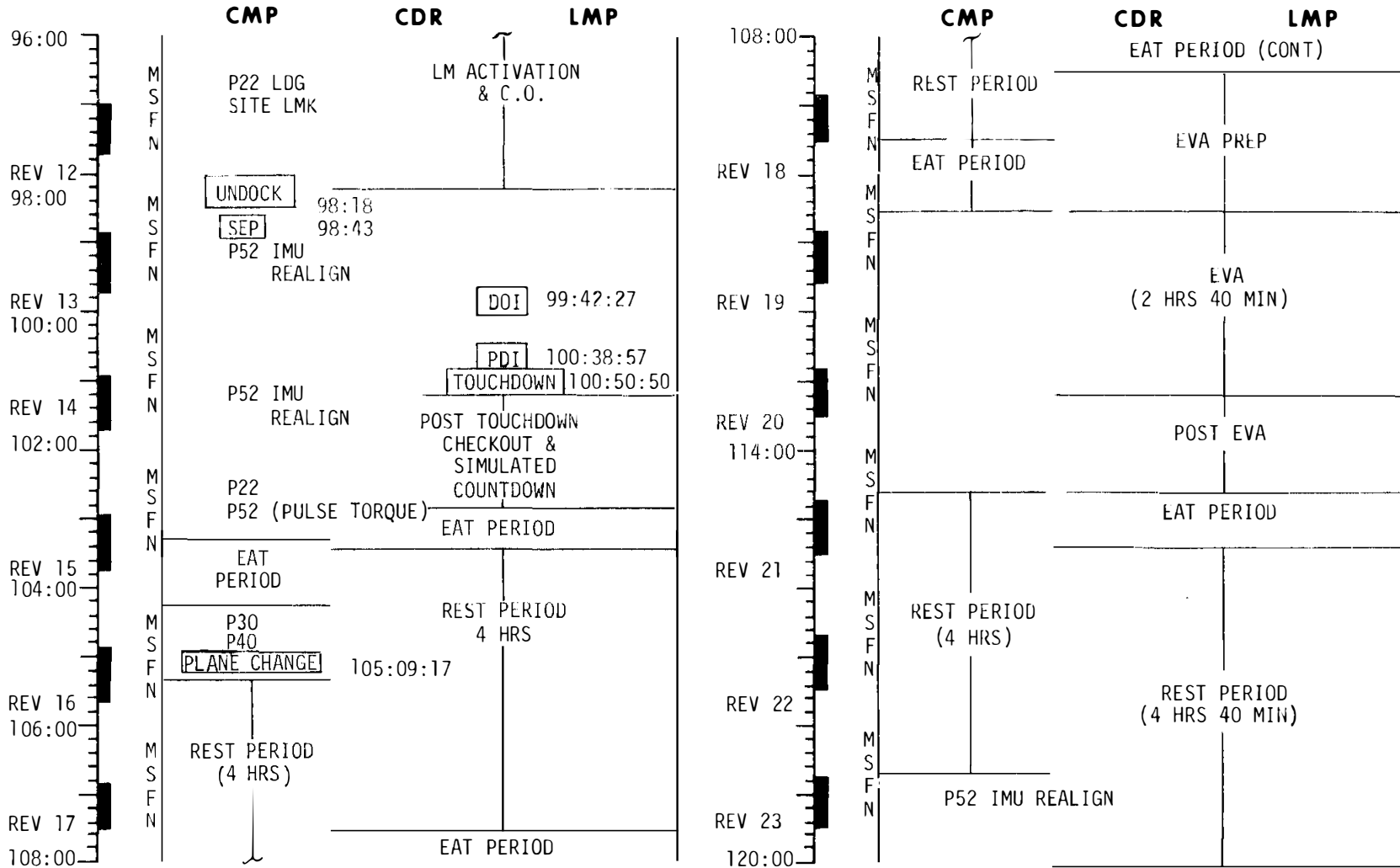


# FLIGHT PLAN



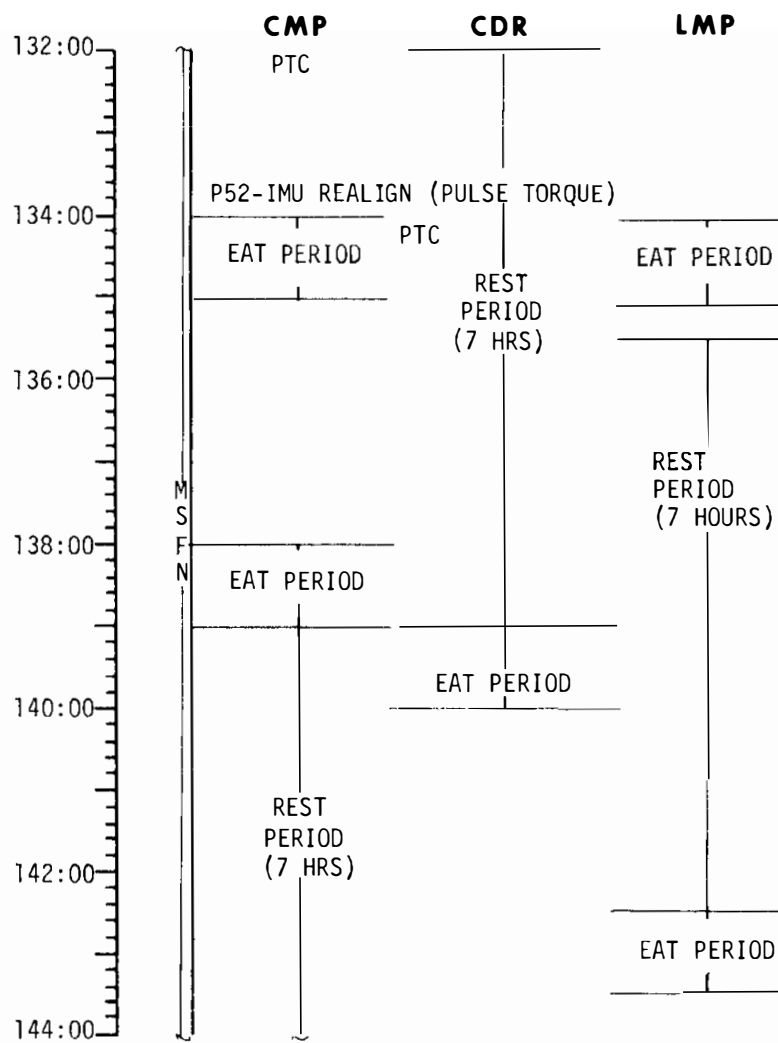
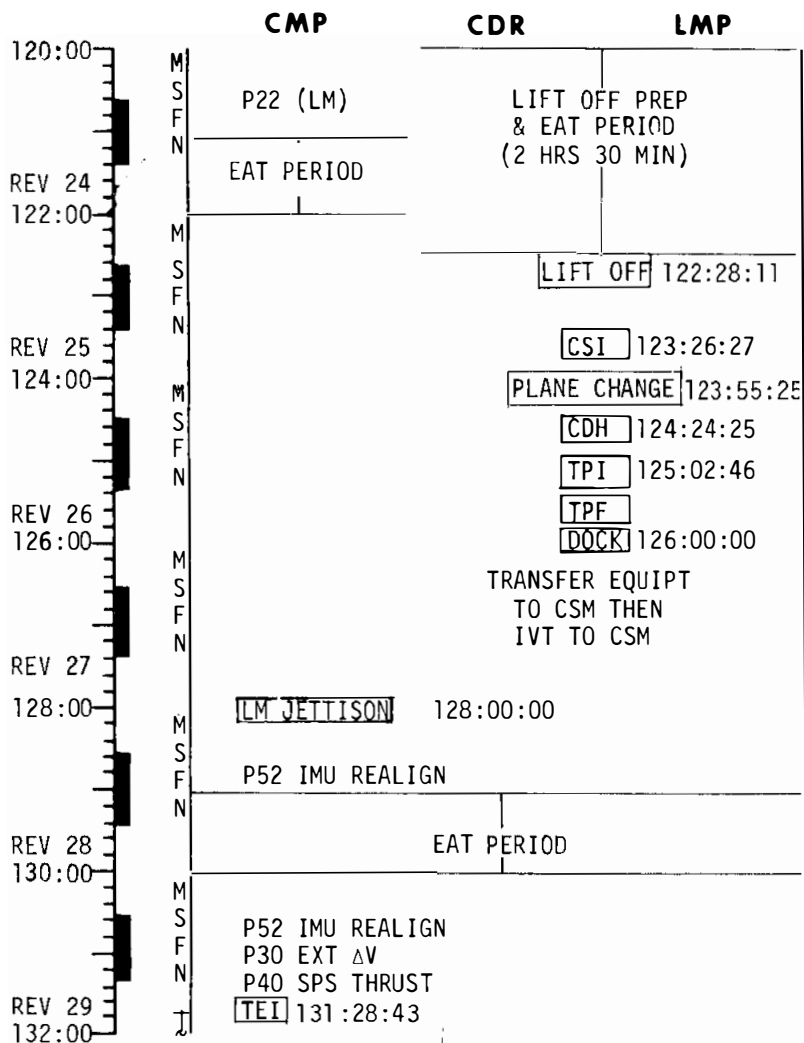
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	72:00 - 96:00	4/1 THRU 10	6-4

# FLIGHT PLAN



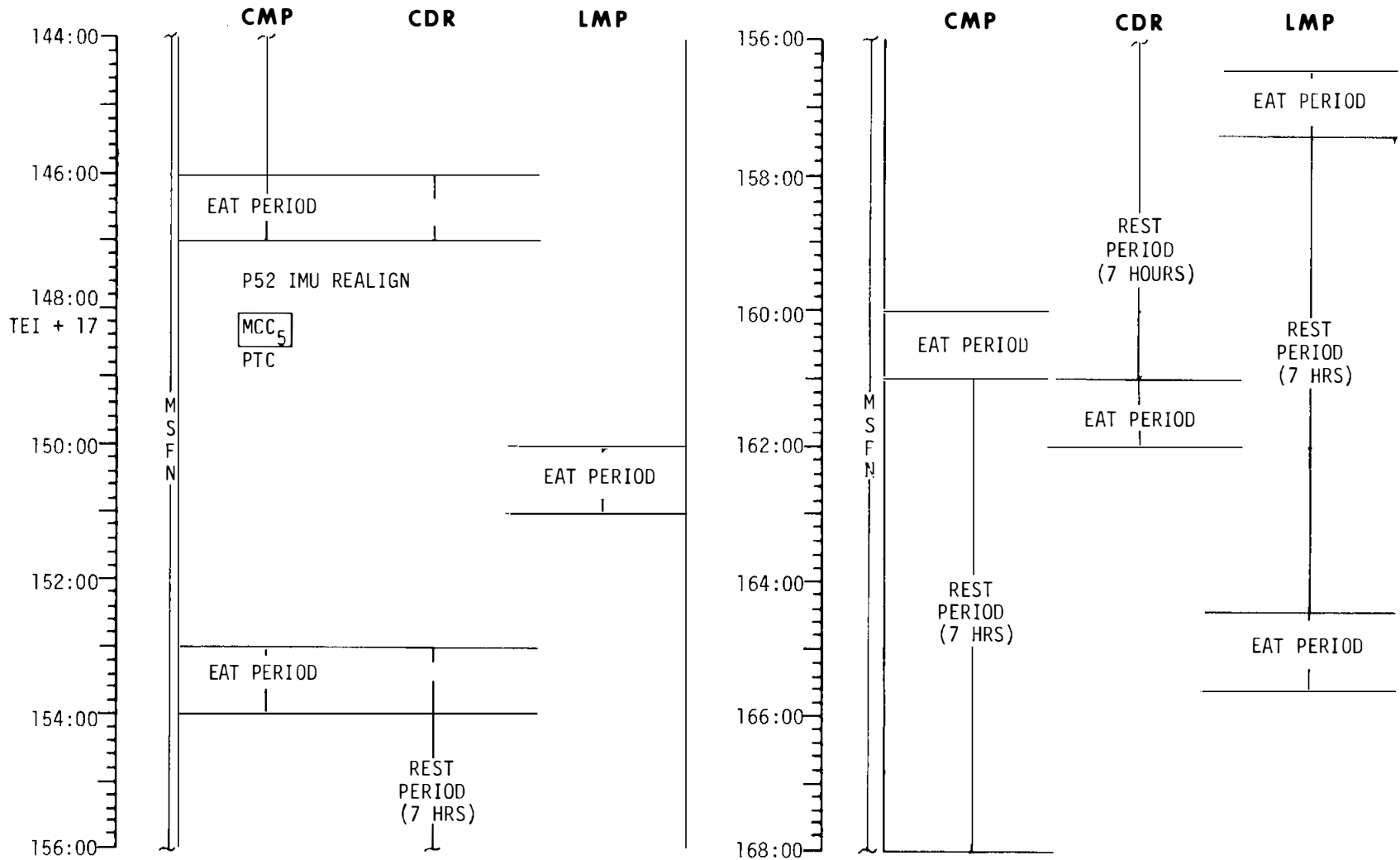
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	96:00 - 120:00	5/LPO	6-5

# FLIGHT PLAN



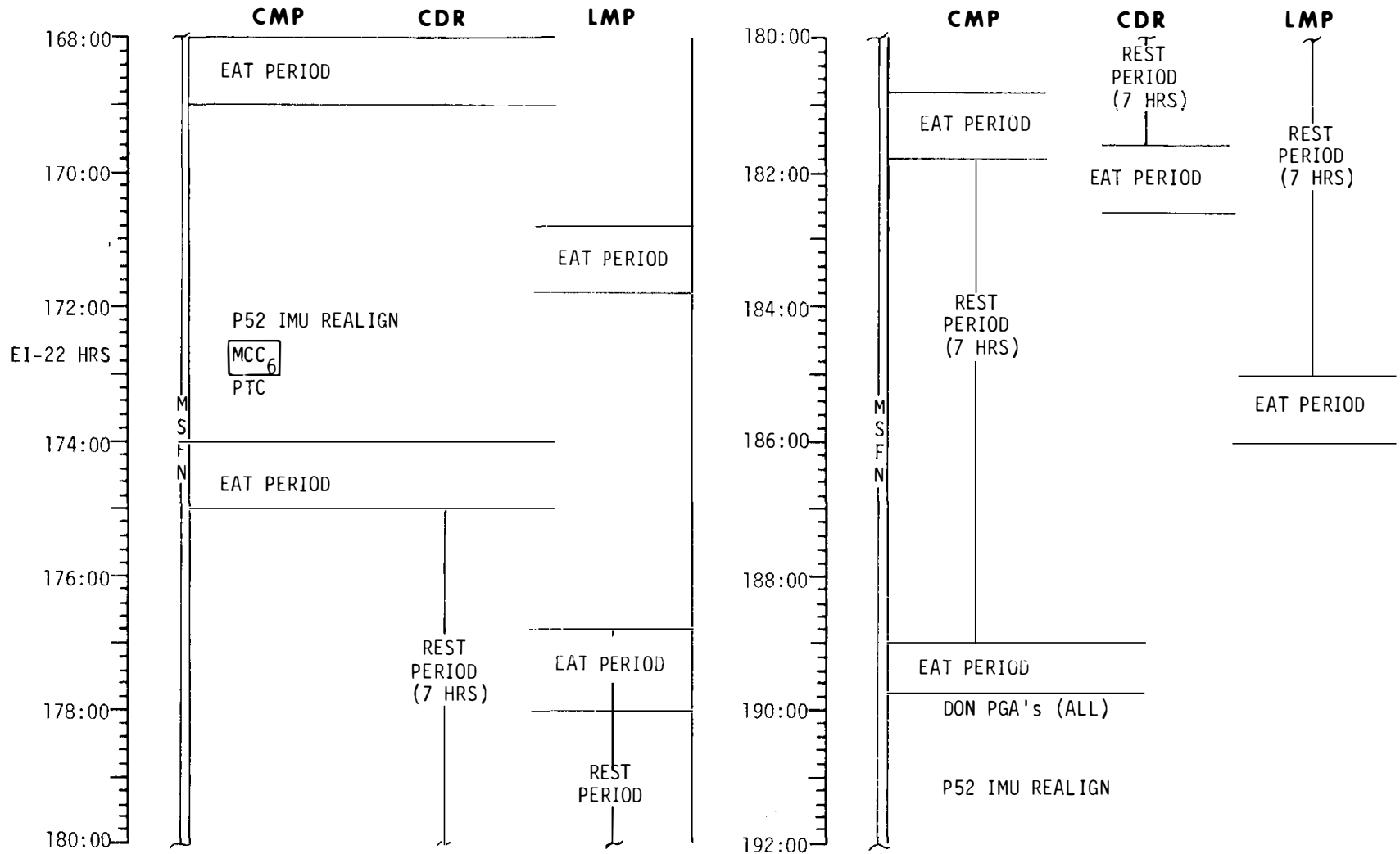
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	120:00-144:00	6/LP0	6-6

# FLIGHT PLAN



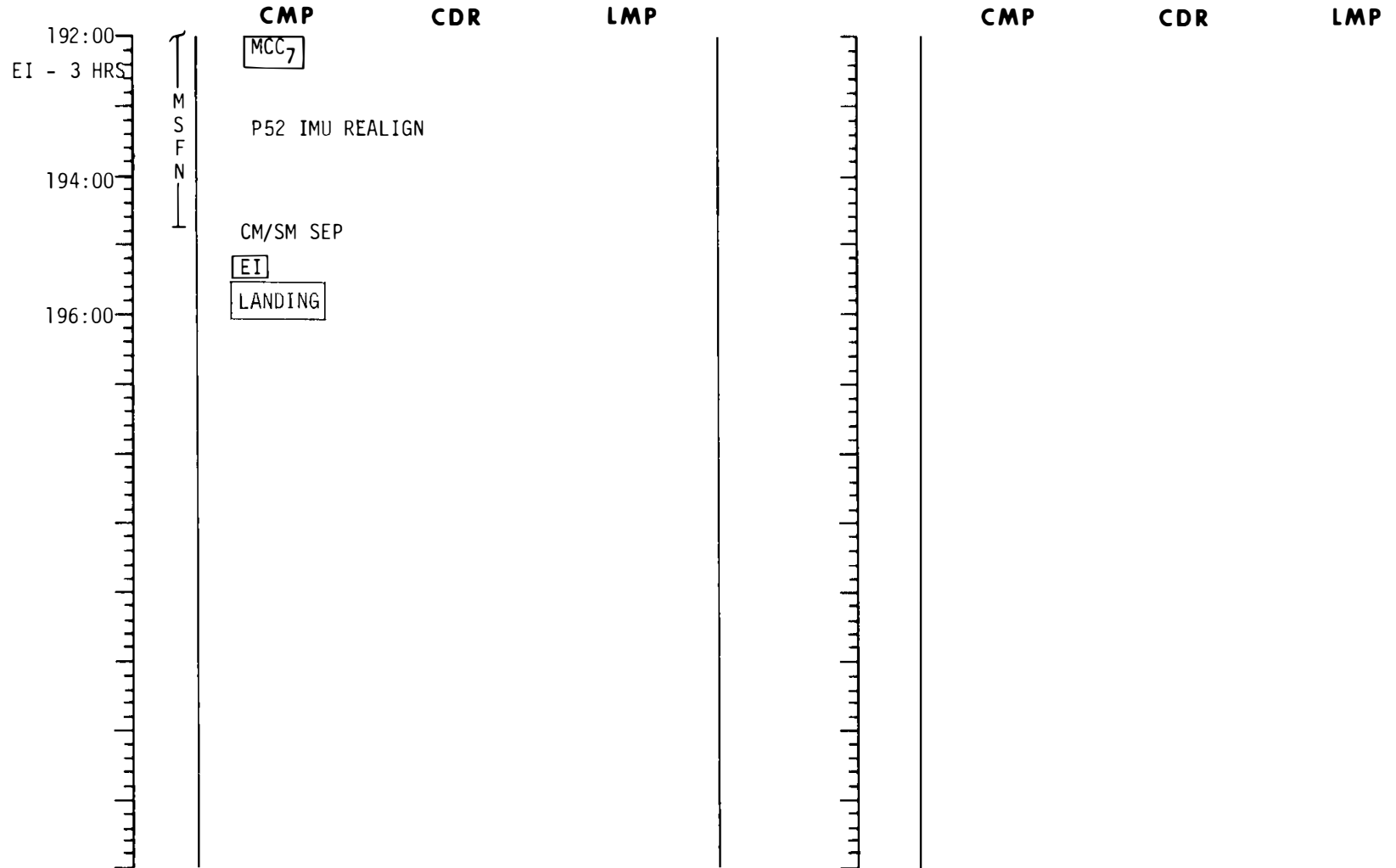
MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINARY	APRIL 15, 1969	144:00-178:00	7/TEC	6-7

# FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINRY	APRIL 15, 1969	168:00-192:00	8/TEC	6-8

# FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIMINRY	APRIL 15, 1969	192:00-195:00	9	6-9

UNITED STATES GOVERNMENT

# Memorandum

TO : Distribution

DATE: MAY 12 1969

FROM : CF/Chief, Flight Crew Support Division

In reply refer to:  
CF34-9M-78

SUBJECT: Revision A and Option 1 to Apollo 11 Preliminary Flight Plan

Enclosed is Revision A and Option 1 to the Apollo 11 Preliminary Flight Plan. Revision A includes:

a. Revisions to the DOI, PDI, Lunar Surface, CSI, CDH, TPI, LM update forms and a new LM form, PDI + 10 minutes abort (Enclosure 1).

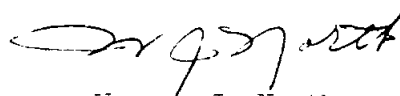
b. Revision of the post-EVA period of the detailed timeline to include back contamination procedures (Enclosure 2).

c. A comparison of the LM activation and checkout procedures for the July launch windows (Enclosure 3).

The Option 1 plan includes:

a. A new detailed timeline from docking to splashdown (Enclosure 4). This incorporates a sleep period prior to TEI (TEI delayed 12 hours from the nominal plan) and incorporates the postdocking back contamination procedures.

b. A new summary flight plan (Enclosure 5) which agrees with the Option 1 detailed timeline of (a.) above.



Warren J. North

CF34:TAGuillory:avg 5-8-69



P30 LM MANEUVER (REV A, MAY 9, 1969)

PURPOSE		PURPOSE OF MANEUVER (SUCH AS DOI TARGETING)
TIG N33		
HR	XXX	
MIN	XX	IGNITION TIME FOR THE MANEUVER
SEC	XX.XX	
LOCAL VERT N81		
$\Delta V_X$	$\pm$ XXXX.X (fps)	LOCAL VERTICAL $\Delta V$ COMPONENTS OF THE MANEUVER
$\Delta V_Y$	$\pm$ XXXX.X(FPS)	
$\Delta V_Z$	$\pm$ XXXX.X(fps)	
$\Delta V_R$	+XXXX.X(fps)	TOTAL $\Delta V$ REQUIRED FOR THE MANEUVER
BT	X:XX(MIN:SEC)	DURATION OF THE MANEUVER
FDAI INER		
R	XXX (DEG)	INERTIAL FDAI ANGLES AT THE BURN ATTITUDE
P	XXX (DEG)	
N86		
$\Delta V_X$ AGS	$\pm$ XXXX.X(fps)	LOCAL VERTICAL $\Delta V$ COMPONENTS OF THE MANEUVER USED TO TARGET THE AGS: ROTATED THROUGH THE HALF-ANGLE OF THE BURN
$\Delta V_Y$ AGS	$\pm$ XXXX.X(fps)	
$\Delta V_Z$ AGS	$\pm$ XXXX.X(fps)	
COAS STAR CHECK STAR	XX(OCTAL)	IDENTIFIER FOR COAS STAR USED TO VERIFY SPACECRAFT ATTITUDE AT THE BURN ATTITUDE
AZ	$\pm$ XX.X (DEG)	THE AZIMUTH AND ELEVATION ANGLE OF THE COAS STAR
EL	$\pm$ XX.X (DEG)	



DOI DATA CARD (REV A, MAY 9, 1969)

P57 N70 2 \_\_\_\_\_, 2 \_\_\_\_\_, 2 \_\_\_\_\_ N85 \_\_\_\_\_ N93 \_\_\_\_\_

P30, 410 + 5

N33

( )

( )

N81

ΔVX ΔVY ΔVZ

( ) ( ) ( )

( ) ( ) ( )

N93

ΔVR

( )

( )

BT

( )

N86

VX AGS VY AGS VZ AGS

( ) ( ) ( )

( ) ( ) ( )

FDAI INER

R P

( ) ( )

( ) ( )

COAS STAR CHECK

STAR AZ EL

( ) ( ) ( )

( ) ( ) ( )

RESIDUALS

PONCS AGS

ΔVX ΔVY ΔVZ ΔVX ΔVZ

( ) ( ) ( ) ( ) ( )

S-BD ACQ

PITCH YAW

( ) ( )

HA HP

\_\_\_\_\_

\_\_\_\_\_

RR / VHF / TM

R<sub>RR</sub> R<sub>VHF</sub> R<sub>TM</sub>

\_\_\_\_\_

\_\_\_\_\_

R<sub>DOT</sub><sub>RR</sub> R<sub>DOT</sub><sub>VHF</sub> R<sub>DOT</sub><sub>TM</sub>

\_\_\_\_\_

\_\_\_\_\_

LR SELF TEST

ALT ALT RT N66, RING

( ) ( ) ( )

\_\_\_\_\_

N67

VX VY VZ

( ) ( ) ( )

2-23a

DOI DATA PAD (REV A, MAY 9, 1969)

TIG N33

HR	XXX	
MIN	XX	IGNITION TIME FOR THE MANEUVER
SEC	XX.XX	

LOCAL VERT N81

$\Delta V_X$	<u>+XXXX.X</u> (fps)	LOCAL VERTICAL $\Delta V$ COMPONENTS OF THE MANEUVER
$\Delta V_Y$	<u>+XXXX.X</u> (fps)	
$\Delta V_Z$	<u>+XXXX.X</u> (fps)	
$\Delta V_R$	+XXXX.X (fps)	TOTAL $\Delta V$ REQUIRED FOR THE MANEUVER
BT	X:XX (MIN:SEC)	DURATION OF THE MANEUVER

N86

VX AGS	<u>+XXXX.X</u> (fps)	LOCAL VERTICAL $\Delta V$ COMPONENTS OF THE MANEUVER USED TO TARGET THE AGS: ROTATED THROUGH THE HALF-ANGLE OF THE BURN
VY AGS	<u>+XXXX.X</u> (fps)	
VZ AGS	<u>+XXXX.X</u> (fps)	

FDAI INER

R	XXX (DEG)	INERTIAL FDAI ANGLES AT THE BURN ATTITUDE
P	XXX (DEG)	

COAS STAR CHECK

STAR	XX(OCTAL)	IDENTIFIER FOR COAS STAR USED TO VERIFY SPACECRAFT ATTITUDE AT THE BURN ATTITUDE
AZ	<u>+XX.X</u> (DEG)	THE AZIMUTH AND ELEVATION ANGLES OF THE COAS STAR
EL	<u>+XX.X</u> (DEG)	

		P27 UPDATE														
PURP		V				V				V						
GET		:		:		:		:		:		:				
APRIL 1, 1969	306 01	INDEX				INDEX				INDEX					P27	
	02															
	03															
	04															
	05															
	06															
	07															
	10															
	11															
	12															
	13															
	14															
	15															
	16															
	17															
	20															
	21															
	22															
	23															
	24															
		N34	HRS	X	X	X				X	X	X				
			MIN	X	X	X	X			X	X	X	X			
		NAV CHECK	SEC	X	X					X	X					
		N43	LAT		0						0					
		LONG														
		ALT	+	0					+	0						

MISSION APOLLO 11 SOURCE FC/BALES

P76 UPDATE PAD (REV A, MAY 9, 1969)

PURPOSE                    XXXXXX

PURPOSE OF MANEUVER

N33 GETI                    XX:XX:XX

TIME OF IGNITION  
(HR:MIN:SEC)

N84 DELTA VX(O VEH) XXXXX.X (FPS)  
DELTA VY(O VEH) XXXXX.X (FPS)  
DELTA VZ(O VEH) XXXXX.X (FPS)

COMPONENTS OF  
 $\Delta V$  APPLIED ALONG  
LOCAL VERTICAL AXIS  
AT TIG (LM VEH)

CSI DATA CARD (REV A, MAY 9, 1969)

April 25, 1969

P52

N78

2

2

2

N05

N93

P32;410+1

( N 1 )  
 ( : : . )  
 +0116.8

373

(275)

N37

( : : . )

275

(277)

+0211.9

N95: +00001, +02660, +13000

605 + 00777 → 416 + 1

(+10006)

(417 + 1)

N79  
 ΔH CSI/CDH CDH/TPI

N81  
 ΔVX CSI ΔVY CSI  
 ( ) ( )  
 ( ) ( )

N90

N82  
 ΔVY CDH ΔVY CDH ΔVZ CDH  
 ( ) ( ) ( )

CSM 7

(-)

492

372

(373)

(274) 267

N86

AGS

371

ΔVX ΔVY ΔVZ  
 ( ) ( ) ( )  
 ( ) ( ) ( )

PGNCS

RESIDUALS

AGS

ΔVX

ΔVY

ΔVZ

ΔVX

ΔVY

ΔVZ

PLM FDAI

( ) ( ) ( )

P32 CSI UPDATE (REV A, MAY 9, 1969)

N11 TIG CSI

HR XXX  
MIN XX  
SEC XX.XX

IGNITION TIME FOR THE  
CSI MANEUVER

N37 TIG TPI

HR XXX  
MIN XX  
SEC XX.XX

IGNITION TIME FOR THE  
TPI MANEUVER

N81 LOCAL VERT

$\Delta V_X$   $\pm XXX.X$  (fps)  
 $\Delta V_Y$   $\pm XX.X$  (fps)

LOCAL VERTICAL  
 $\Delta V$  COMPONENTS  
OF CSI MANEUVER

N86

$\Delta V_X$  AGS  $\pm XX.X$  (fps)  
 $\Delta V_Y$  AGS  $\pm XX.X$  (fps)  
 $\Delta V_Z$  AGS  $\pm XX.X$  (fps)

LOCAL VERTICAL  $\Delta V$   
COMPONENTS OF CSI  
USED TO TARGET AGS  
EXT  $\Delta V$ : ROTATED  
THROUGH THE HALF-ANGLE  
OF THE BURN

PLM FDAI

XXX(DEG)

LM FDAI INERTIAL  
PITCH ANGLE AT CSI  
BURN ATTITUDE



P33 CDH UPDATE (REV A, MAY 9, 1969)

N13 TIG CDH

IGNITION TIME FOR THE  
CDH MANEUVER

HR                   XXX  
MIN                   XX  
SEC                   XX.XX

N81 LOCAL VERT

$\Delta V_X$                 $\pm XX.X$  (fps)  
 $\Delta V_Y$                 $\pm XX.X$  (fps)  
 $\Delta V_Z$                 $\pm XX.X$  (fps)

LOCAL VERTICAL  $\Delta V$   
COMPONENTS OF  
THE CDH MANEUVER

N86

$\Delta V_X$  AGS            $-XX.X$  (fps)  
 $\Delta V_Y$  AGS            $\pm XX.X$  (fps)  
 $\Delta V_Z$  AGS            $\pm XX.X$  (fps)

LOCAL VERTICAL  $\Delta V$   
COMPONENTS OF CDH  
USED TO TARGET AGS  
EXT  $\Delta V$ : ROTATED  
THROUGH THE HALF-ANGLE  
OF THE BURN

PLM FDAI

XXX (DEG)

LM FDAI INERTIAL  
PITCH ANGLE AT  
CDH BURN ATTITUDE



TPI DATA CARD REV A, MAY 9, 1969

P34,410+3

N37

( )

( )

N58

HP

( ) ( ) ( )

ΔVTPI ΔVTPF

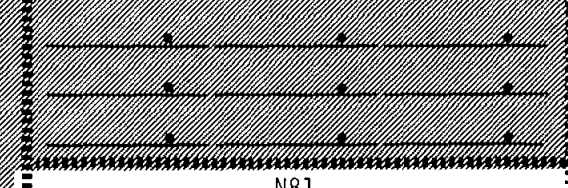
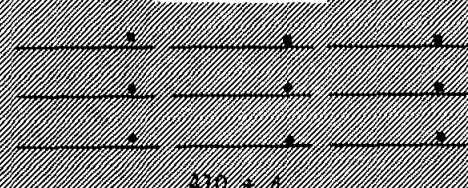
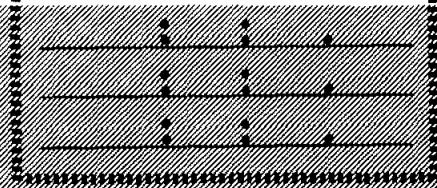
( ) ( ) ( )

N59

( ) ( ) ( )

ΔV F/A ΔVR/L ΔV D/U

( ) ( ) ( )



N55

+0, +026.60, +130.00

307 + 43.0

410 + 4

267 371

26.60

N81

( ) ( ) ( )

ΔVX ΔVY ΔVZ

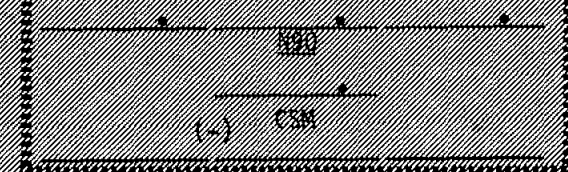
( ) ( ) ( )

310 + 028.00

+ 013.00

N86

ΔVX ΔVY ΔVZ



PENS		RESIDUALS		AGS	
ΔVX	ΔVY	ΔVZ	ΔVX	ΔVY	ΔVZ

N42

RLM PLM + R TPI TPI-5 R TPI

( ) ( ) + ( ) ( ) ( )

BT

( )

P34 UPDATE (REV A, MAY 9, 1969)

N37 TIG TPI

HR XXX  
 MIN XX  
 SEC XX.XX

IGNITION TIME FOR  
 THE TPI MANEUVER

$\Delta V$  TPI  $\pm$ XX.X (fps)

TOTAL  $\Delta V$  REQUIRED  
 FOR THE MANEUVER

N59  $\Delta V$  LOS

F/A  $\pm$ XX.X (fps)  
 R/L  $\pm$ XX.X (fps)  
 D/U  $\pm$ XX.X (fps)

LINE-OF-SIGHT  $\Delta V$   
 COMPONENTS OF THE  
 TPI MANEUVER

N81 LOCAL VERT

$\Delta V_X$   $\pm$ XX.X (fps)  
 $\Delta V_Y$   $\pm$ XX.X (fps)  
 $\Delta V_Z$   $\pm$ XX.X (fps)

LOCAL VERTICAL  $\Delta V$   
 COMPONENTS OF THE  
 TPI MANEUVER

N42 FDAI INER

R LM XXX (DEG)  
 P LM XXX (DEG)

LM FDAI ROLL & PITCH  
 ANGLE AT TPI BURN  
 ATTITUDE

N54 TIG-5

R TPI XX.XX (FT)  
 R TPI  $\pm$ XX.X (fps)

RANGE AT TPI TIG -5 MIN  
 RANGE RATE AT TPI TIG -5 MIN

BT XX:XX (MIN:SEC)

DURATION OF THE MANEUVER



AGS STATE VECTOR UPDATE

PURP		PURPOSE FOR AGS STATE VECTOR UPDATE
240	+XXXXX	LM STATE VECTOR-POSITION COMPONENTS
241	+XXXXX	
242	+XXXXX	
260	+XXXXX	LM STATE VECTOR-VELOCITY COMPONENTS
261	+XXXXX	
262	+XXXXX	
254	+XXXXX	LM TIME FOR WHICH THE STATE VECTOR IS ACCURATE
244	+XXXXX	CSM STATE VECTOR-POSITION COMPONENTS
245	+XXXXX	
246	+XXXXX	
264	+XXXXX	CSM STATE VECTOR-VELOCITY COMPONENTS
265	+XXXXX	
266	+XXXXX	
272	+XXXXX	CSM TIME FOR WHICH THE STATE VECTOR IS ACCURATE

PDI DATA CARD (REV A, MAY 9, 1969)

P63

TIG			N61			FDAI @ TIG			231
			TG0	CR		R	P	γ	
(	:	:	(	:	:	(	:	:	(
:	:	.	:	:	.				
:	:	.	:	:	.				

2-36

PDI+10 ABORT

N33			N81			Δ VR	BT
			Δ VX	Δ VY	Δ VZ		
(	:	:	(	:	:	(	:
:	:	.	:	:	.	:	.
:	:	.	:	:	.	+	.
:	:	.	:	:	.		.

FDAI		N8b		
R	P	Δ VX	Δ VY	Δ VZ
(	:	(	:	(
:	:	:	:	:
:	:	:	:	:

PDI PAD (REV A, MAY 9, 1969)

TIG PDI

TIME OF IGNITION FOR PDI

HRS                   XXX

MIN                   XX

SEC                   XX.XX

N61 TGO               XX:XX(HRS:MIN)

TIME FROM THROTTLE UP  
TO 1ST TARGET POINT

CR(CROSSRANGE)       ±XXXX.X (N.M.)

OUT OF PLANE DISTANCE  
BETWEEN LM ORBITAL PLANE  
AND LANDING SITE (POSITIVE  
INDICATES LANDING SITE IS  
NORTH OF ORBITAL PLANE)

FDAI AT TIG

R                   XXX (DEG)

INERTIAL FDAI ANGLES  
AT IGNITION

P                   XXX (DEG)

Y                   XXX (DEG)

DEDA 231              XXXXX (100's FT)

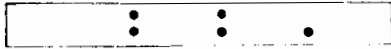
LUNAR RADIUS AT THE  
LANDING SITE

PDI +10 ABORT PAD

SAME AS LM P30 PAD WITHOUT THE COAS CHECK STAR

LUNAR SURFACE PAD  
(REV A, MAY 9, 1969)

T2



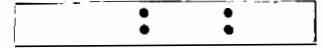
T3



P



P+ T



N37  
TIG TPI



LUNAR SURFACE PAD (REV A, MAY 9, 1969)

T2

HRS	XXX	LIFT OFF TIME -SECOND
MIN	XX	PREFERRED TIME AFTER
SEC	XX.XX	TOUCHDOWN ( $\approx$ T.D. + 11 MIN)

T3

HRS	XXX	LIFT OFF TIME -AFTER
MIN	XX	FIRST CSM REVOLUTION
SEC	XX.XX	

P XXX:XX:XX (HRS:MIN:SEC) CSM PERIOD

P +  $\Delta t$  XXX:XX:XX (HRS:MIN:SEC) CSM PERIOD PLUS THE TIME  
INTERVAL BETWEEN CLOSEST  
APPROACH AND LIFT OFF TIME

TPI

HRS	XXX	TIME OF IGNITION FOR TPI
MIN	XX	AFTER ABORT FROM POWER
SEC	XX.XX	DESCENT



		LM ASCENT PAD																
APRIL 1, 1969	ASCENT		+	0	0											HRS		
			+	0	0	0											MIN	TIG
			+	0			•										SEC	
																	*CROSSRANGE N76	
			X	X	X												R	
			X	X	X												P	FDAI
			X	X	X												Y	AT TIG
			+	0	0												HRS	N11
			+	0	0	0											MIN	CSI
			+	0			•										SEC	
	+	0	0												HRS	N37		
	+	0	0	0											MIN	TPI		
	+	0			•										SEC			
															DEDA 47			
															DEDA 53			
* NOTE: LOAD 8 MI IF CROSSRANGE IS GREATER THAN 8 COMMENTS:																		

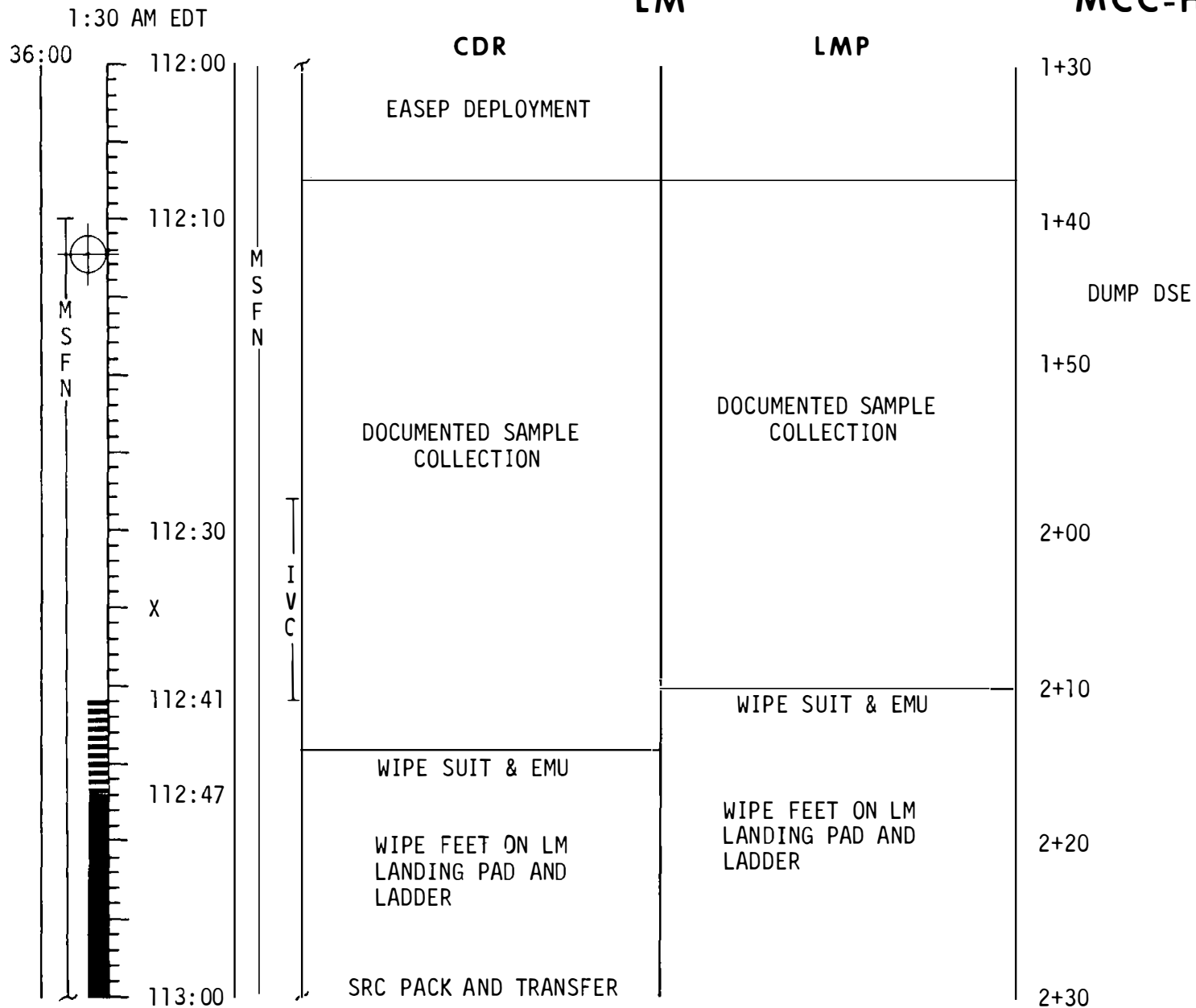
# FLIGHT PLAN

ENCLOSURE

CSM  
CMP

LM

MCC-H



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIM REV A	MAY 9, 1969	112:00 - 113:00	5/20	3/80

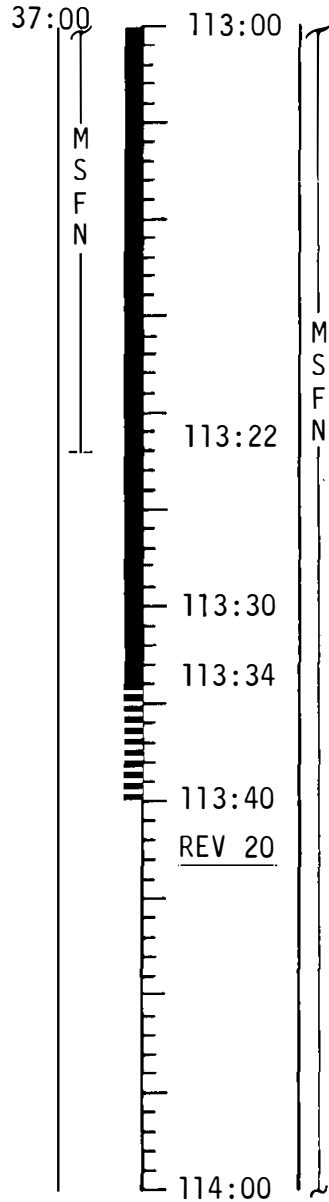
CSM

2:30 AM EDT

LM

MCC-H

CMP



CDR	LMP
TERMINATE EVA SECURE HATCH REPRESS CABIN	TERMINATE EVA
POST EVA SYSTEMS CONFIGURATION	
PLSS/OPS DOFFING	
FINAL SYSTEMS CONFIGURATION	
PREP FOR EQUIPMENT JETTISON	

2+30

END EVA  
2+40

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 11	PRELIM REV A	MAY 9, 1969	113:00 - 114:00	5/19-20	3-81

FLIGHT PL INING BRANCH