

CSM SEP PAD

33	00	000	0	.
81	+ 0000.0	+ 0000.0	- 0002.5	
22	XXX	XXX	XXX	

DOI PAD

84	•	•	•	
33	•	•	•	

PDI₁ +12 ABORT PAD

84	•	•	•	
33	•	•	•	

"CSM RESCUE" PAD

PHAS	33	00	000	0	.
TPI(PDI < 10)	37	00	000	0	.
TPI(PDI > 10)	37	00	000	0	.

"CSM RESCUE UPDATE" PAD

PHAS	33	00	000	0	.
TPI(PDI < 145)	37	00	000	0	.
TPI(T ₂)	37	00	000	0	.

RESCUE TWO PAD

47	+	.	+	00000.	X
48	.	.	.		
33	00	000	0		
81	.	.	.		
22	XXX	XXX	XXX		
ΔV _C	X	.	X	X	X
11	00	000	0		
37	00	000	0		
N					

CSI ONE

11	•	000	•	0	.
81
N					

P22 PAD

T1	•	•	•	(HOR)
T2	•	•	•	(LMK)
	•	•	•	
89	LAT	LONG/2	ALT	

NOMINAL LM IGNITION TIMES

CSI 11	00	000	0	.
PC 33	00	000	0	.
TPI 37	00	000	0	.

APOLLO II

CMP SOLO BOOK

PART NO

S/N

SKB32I00080-353

1001

CSI TWO

11	00	000	0	.
81
N				

CSI THREE

11	00	000	0	.
81
N				

CSI FOUR

11	00	000	0	.
81
N				

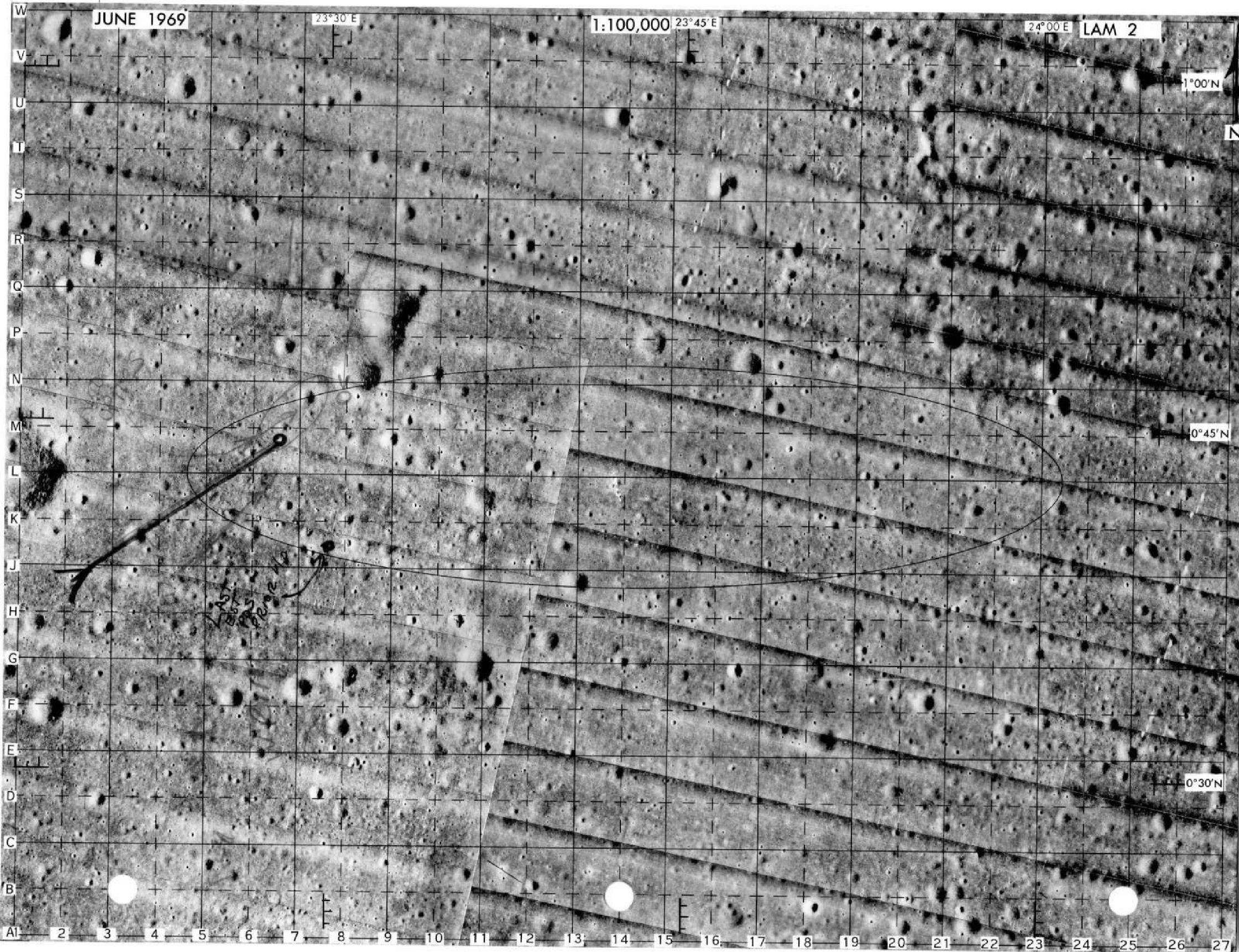
CDH

13	00	000	0	.
81

TPI

37	00	000	0	.
81
59
LOS BT	XX	XX	XX	

LAM 2



X
X 00692
/ / 3 / 2
00144
X
W 9

CSM RENDEZVOUS
RESCUE PADS

CSM SEP PAD

33	00	•	000	•	0	.
81	+	0000.0	+	0000 0	-	0002 5
22	XXX		XXX		XXX	

DOI PAD

84	•		•		•	
33	•		•		•	

PDI₁ +12 ABORT PAD

84	•		•		•	
33	•		•		•	

"CSM RESCUE" PAD

PHAS	33	00	•	000	•	0	.
TPI(PDI < 10)	37	00	•	000	•	0	.
TPI(PDI > 10)	37	00	•	000	•	0	.

"CSM RESCUE UPDATE" PAD

PHAS	33	00	•	000	•	0	.
TPI(PDI < 145)	37	00	•	000	•	0	.
TPI(T ₂)	37	00	•	000	•	0	.

RESCUE TWO PAD

47	+	.	+	00000	X	X	X
48	.			-			
33	00	•	000	•	0		
81	.			.			
22	XXX		XXX		XXX		
ΔV _C	X	•		X	X	X	X
11	00	•	000	•	0	.	.
37	00	•	000	•	0	.	.
N							

CSI ONE

11		•	000	•	0	.
81
N						

CSI TWO

11	00	•	000	•	0	.
81
N						

CSI THREE

11	00	•	000	•	0	.
81
N						

CSI FOUR

11	00	•	000	•	0	.
81
N						

P22 PAD

T1	•	•	•		(HOR)
T2	•	•	•		(LMK)
	•	•	•		
89	•	•	•		NM (N OR S)
	•	•	•		
LAT		LONG/2		ALT	

NOMINAL LM IGNITION TIMES

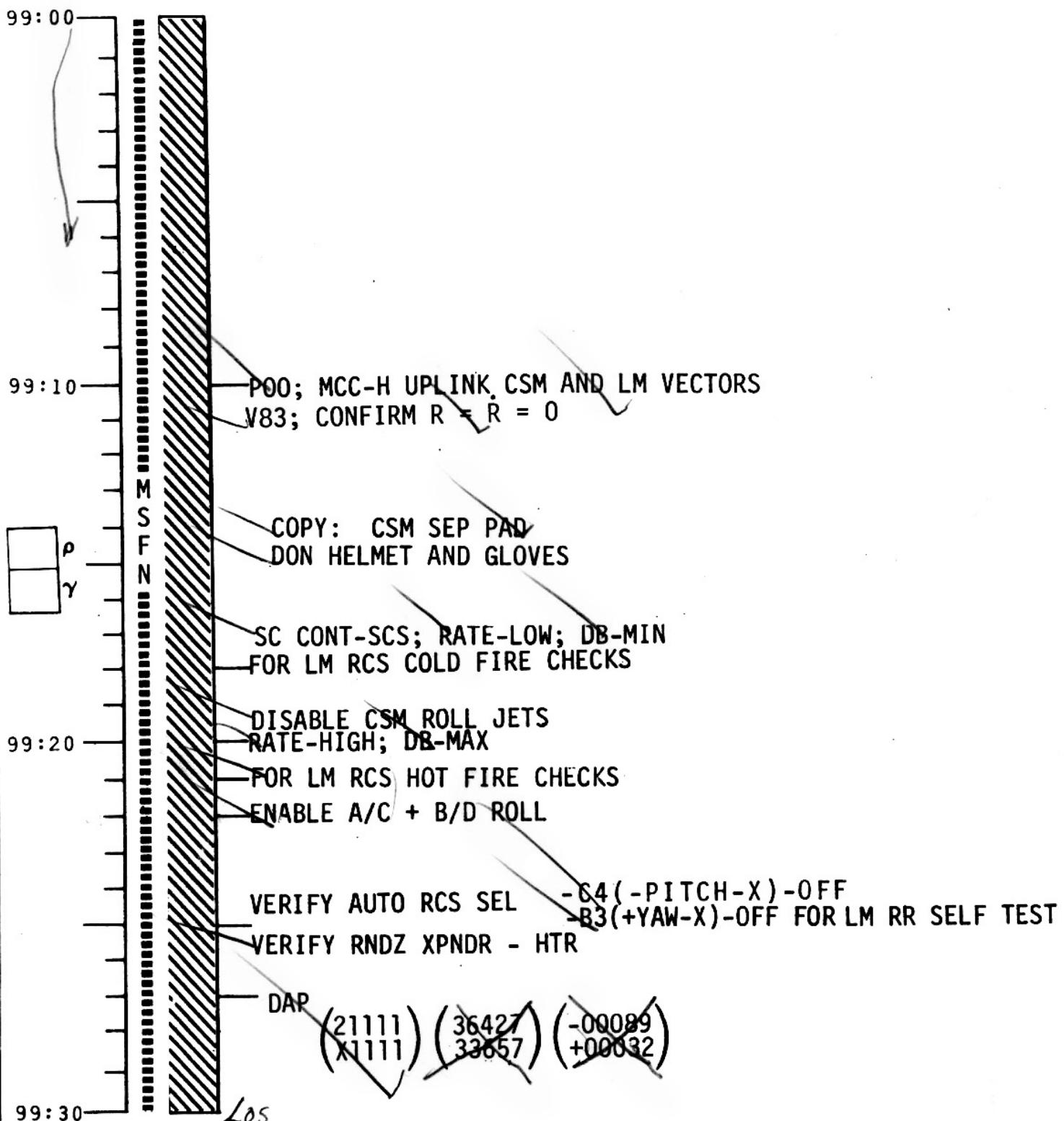
CSI 11	00	•	000	•	0	.
PC 33	00	•	000	•	0	.
TPI 37	00	•	000	•	0	.

CDH

13	00	•	000	•	0	.
81
N						

TPI

37	00	•	000	•	0	.
81
59
LOS BT	XX	•	XX	•	XX	•



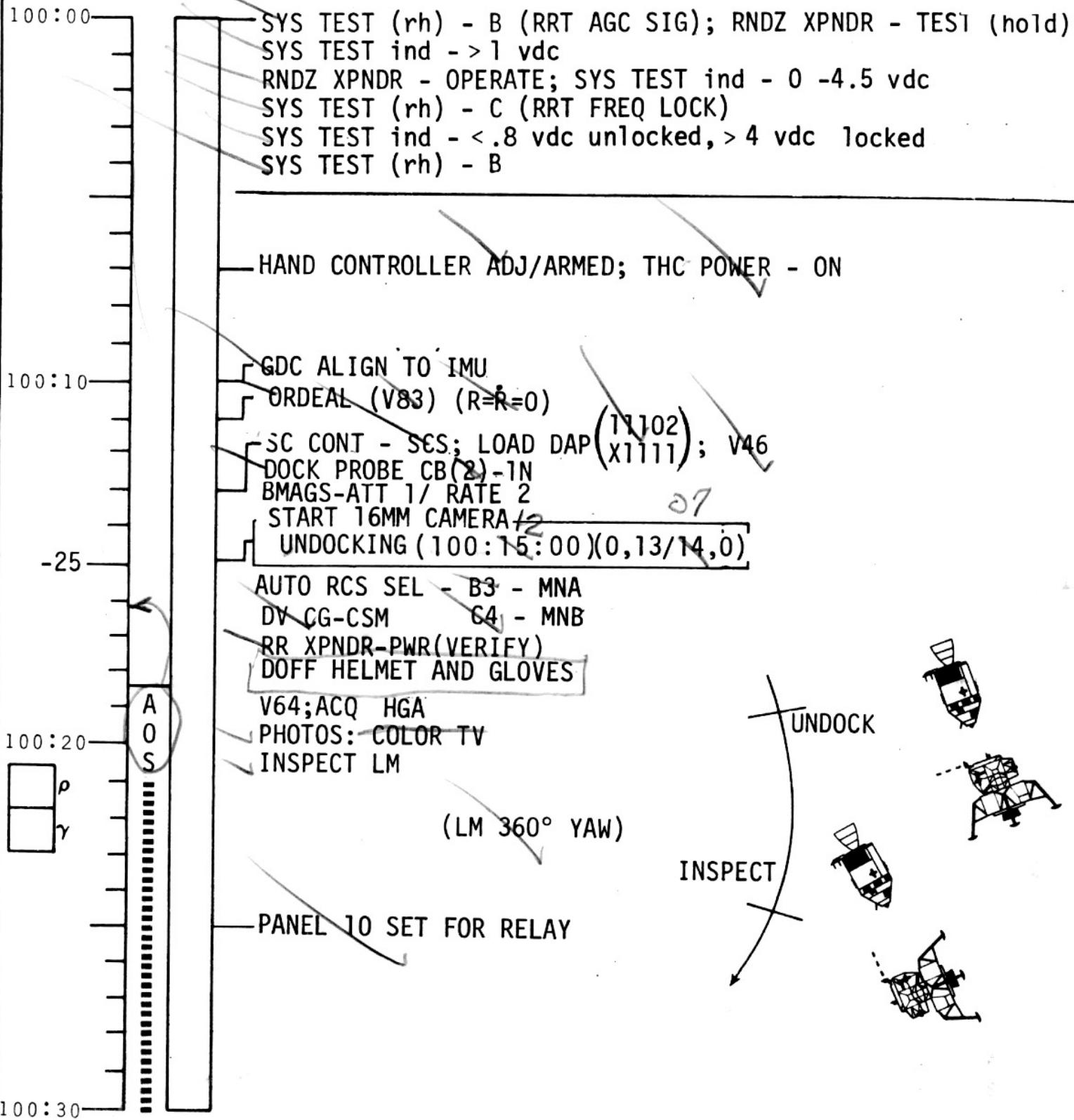
99:30 L
O
S V62-SC CONT-CMC-AUTO
V49; MNVR TO AGS CALIBRATION ATTITUDE (7~~5~~,252.5/22.5,337.5)
UNDOCK GET 100:15:00
SIMPLEX A RCV ONLY - B DATA
RECORD, FWD, LBR (AS REQUESTED BY LM)
WHF ANT - RT (VERIFY)
PREPARE TV CAMERA FOR USE (WINDOW NO.2) NO!

99:40 SYSTEMS CHECKS
SHOULD HAVE BEEN FOR GLOVER ON HERE

99:50 S/C CONT - SCS
MAN ATT(3)-MIN IMP
DAMP RATES <.075 DEG/SEC
STOP THRUSTER FIRINGS AND NOTIFY LM
SYSTEMS CHECKS AND SWITCH VERIFICATION
WAIT FOR LM TO COMPUTE AGS ALIGN & GIVE GO.
THEN: SC CONT - CMC - AUTO
V49; MNVR TO UNDOCKING ATTITUDE (0,~~313~~⁰⁷/14,⁰⁷)
(INERTIAL SEP ATTITUDE)
RR XPNDR CHECKS: (CONFIRM LM RR SELF TEST COMPLETE)
RNDZ XPNDR ACTIVATION & SELF TEST
cb RNDZ XPNDR FLT BUS - close (verify)
RNDZ XPNDR - HTR for 24 min (1 min if self test only)
RNDZ XPNDR - PWR
SYS TEST (Lh) - XPNDR; SYS TEST (rh) - A (RRT XMTR OUT PWR)
SYS TEST ind -> 1 vdc
100:00

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

REV B JULY 8, 1969



DATE BD JULY 1, 1969
 CMP SOLO BOOK
 SOURCE GARDNER

P30 MANEUVER			
	Sep		PURPOSE
SET STARS	RCS / RD N		PROP/GUID
	+ /		WT N47
R ALIGN	0 0	•	P TRIM N48
P ALIGN	0 0	•	Y TRIM
Y ALIGN	+ 0 0 1 0 0		HRS GETI
	+ 0 0 0 3 9		MIN N33
	+ 0 5 0 0 0	•	SEC
ULLAGE	/ / /	•	ΔV_X N81
	/ / /	•	ΔV_Y
	/ / /	•	ΔV_Z
	X X X 0 0 0		R
	X X X 0 0 7		P
	X X X 0 0 0		Y
	+ / /	•	H _A N42
		•	H _P 44
	+ / /	•	ΔV_T
HORIZON/WINDOW	X X X	•	BT
	X / /	•	ΔV_C
	X X X X		SXTS
	+ / /	0	SFT
	+ / /	0 0	TRN
	X X X		BSS
	X X /	•	SPA
	X X X	•	SXP
OTHER	0 / /	•	LAT N61
		•	LONG
	+ / /	•	RTGO EMS
	+ / /	•	V10
		•	GET 0.05G

P30
 SEP
 PAD

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

100:30
M S F N
100:40
100:50
101:00

P YO
P 20
SET EMS = 102.5

BMAGS - RATE 2

SC CONT - CMC - AUTO

P30

LOAD (VG_Z = -2.5)

P41 AUTO MNVR (TRIM)

RCS SETUP

50
CSM SEP (100:39:58) (0, 0, -2.5)

(THRUST AFT)

(BURN 2.5, 0, 0 → 5, 0, 0) DON'T TRIM RESIDUALS
THC AND RHC - LOCKED; FOUR ROLL THRUSTERS OFF

P20; AUTO MNVR TO SXT TRACK (42°) (0, 148/56, 0)

COORDINATE WITH LM

VHF B - DUPLEX; RANGING - ON

MONITOR LM RR CHECKS

COMPARE EMS VHF AND V83 RANGE

OPTICS CHECKS (ONLY DO NOT MARK) *OK*

Entered DOI P76 PAD

84 -00758 +00000 +00098

33 101 : 36 : 14 . 07

PDI₁ +12 ABORT P76 PAD

84 +01223 -00000 +01889

33 102 : 44 : 27 . 00

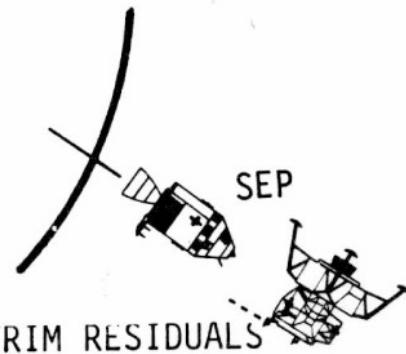
CSM RESCUE PAD

33 103 : 40 : 00 . 00

37 105 : 12 : 30 . 00

37 107 : 11 : 30 . 00

CSM SEP PAD					
33	00	:	000	:	0
81	+ 0000.0		+ 0000.0	-	0002.5
22	XXX 000		XXX 007	XXX	000



NO VOICE AT LOCK - ON

VHF V83
72 . 62



P20
(100:44)
(0, 148/56, 0)

046

030

PHASING

PDI₁ < 10

PDI₁ > 10

100:52
R= 0.37
R= 3.5

101:00 P52 (OPTION 3)

05 . 01 01 1D1

93 + . 084 03 1D2

+ . 124 — 1D3

- . 010

101:15 : :

T TORQUE

101:10

IMSEN

101:20

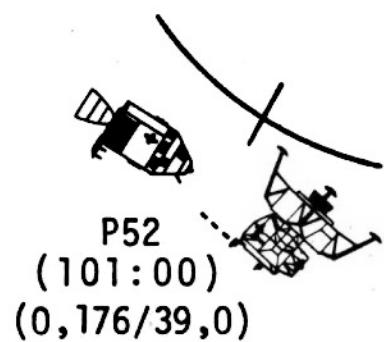
101:30 LOS

GDC ALIGN TO IMU
VERIFY ORDEAL (V83)
POO; MCC-H UPLINK
CSM AND LM VECTORS
CONFIRM PROPER SOLO CONFIG
ECS HOSES, COUCHES
CAMERA, STOWAGE

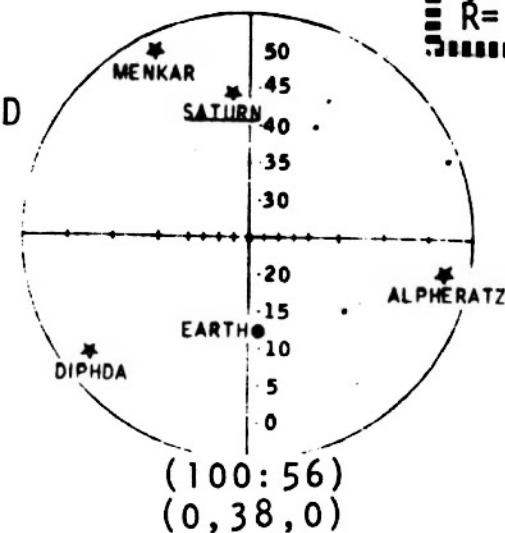
MASTER ALARM AMPLIFIER - RIGGED

SYSTEM CHECKS PRIOR TO LOS

05	. 01	01	1D1
93	+ . 084	03	1D2
	+ . 124	—	1D3
	- . 010		
	101:15	:	.



101:09
R= 1.10
R= 4.8



101:26
R= 1.84
R= 2.9

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

REV B JULY 8, 1969

101:30

VHF SIMPLEX A - REC ONLY - B DATA
(RECORD, FWD, LBR)

P20 AUTO MNVR TO SXT TRACK (67°) (0,217/332,0)

9.30
8.00
21.30
65



101:40

LM DOI (101:38:19)(-72.4,0,15.9)

VHF B - DUPLEX RANGING - ON

VHF RCV ONLY B DATA - OFF

COMPUTE RDOT FOR LM

CONFIRM LM DOI

P76 (ADD: 20 SEC); V82 (LM R2=2)(60X9)

P20 AUTO MNVR TO SXT TRACK (TRIM) (0,224/313,0)

NO VOICE AT
LOCK - ON

(0,214/321,0)

101:42
R = 3.67
R = 70.2

R1 64.2 x 56.1
R2 57.0 x 8.8

P20
(101:44)
(0,224/313,0)



101:50

START CAMERAS REMOTE OPERATION
INITIATE OPTICS TRACK

102:00

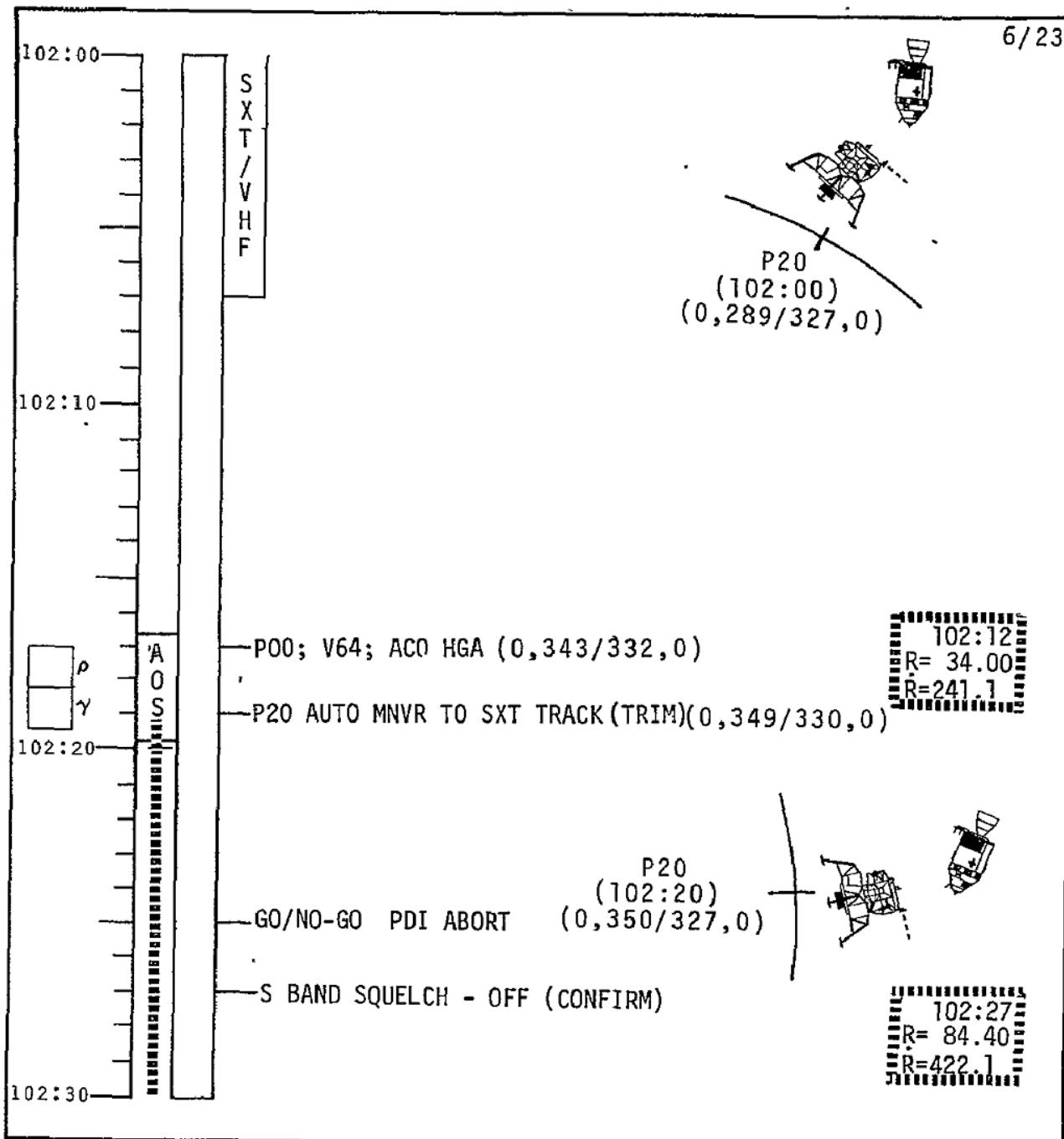
V93;V57; V87

S
X
T
/
V
H
F

OPTICS
06 49

+000000
+00061
+00001
+000000
+00071
+00001
+000000
+00037
+00001

101:57
R = 13.02
R = 68.7



102:30

Lost LM in SCA

P00; V48 (11101)
(X1111) ; V49 LOAD (0,140,0)
OPTICS - RESOLVED/MED/ZERO-OFF
TRACK LM MANUALLY
(EVENT TIMER START)
[LM PDI (102:35:14)]
PROCEED; PITCH DOWN -.2°/SEC
TO P52 ATT (0,206/80,0)

102:40

PDI
(0,18/310,0)

SWITCH TO OMNI-C (AS REQUIRED)

102:50

[LM TOUCHDOWN (102:47:11)]

MAN ATT PITCH - ACC CMD

TOUCHDOWN
(0,282/180,0)

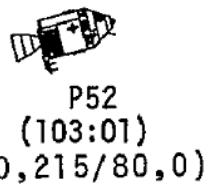
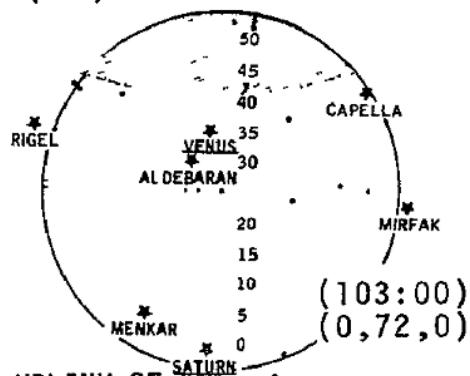
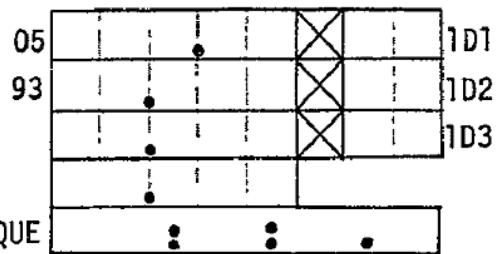
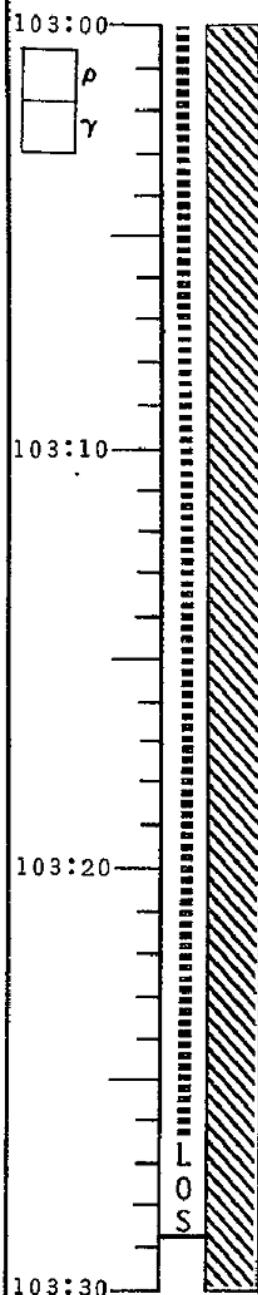
103:00

V44 SET LUNAR SURFACE FLAG
KEEP PITCHING TO P52 ATT (0, 206/80, 0)
✓ WHF RANGING - OFF
✓ WHF T/R (PANEL 9) TO RECEIVE
MSFN ENABLES S-BAND RELAY
RR XPNR - OFF
V46; STOP PITCH; MAN ATT PITCH-RATE CMD AT (0,206/80,0)

Eagle stay for T2(?)

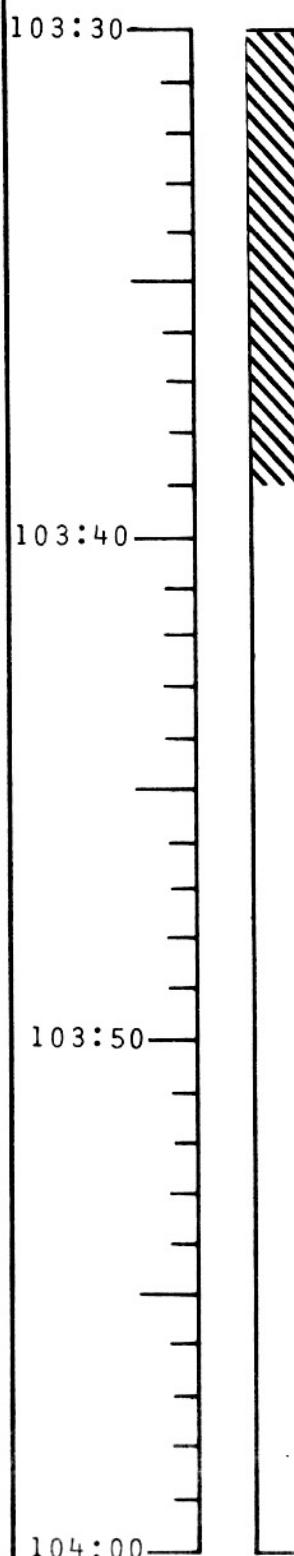
did not work, started move other way. Hit PHC to stop

6/23



P52
(103:01)
(0,215/80,0)

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL



~~Photography~~

EAT

Practices

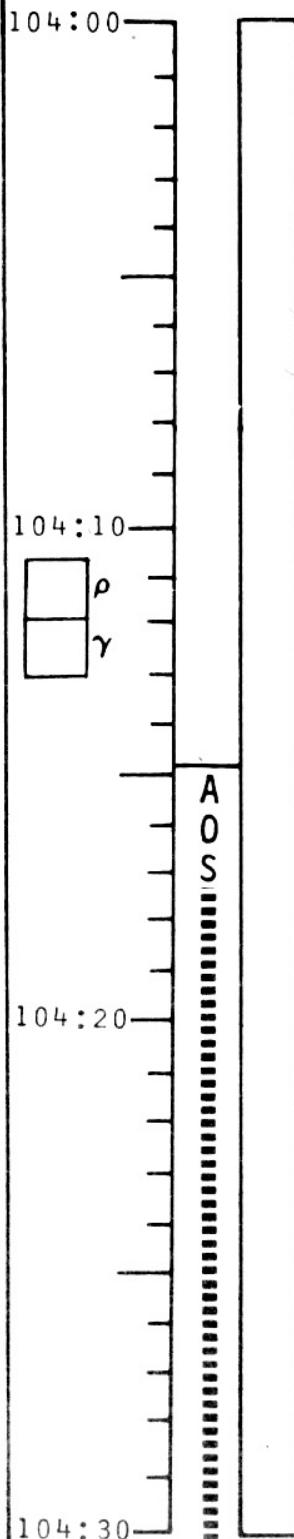
4:00

No lunch

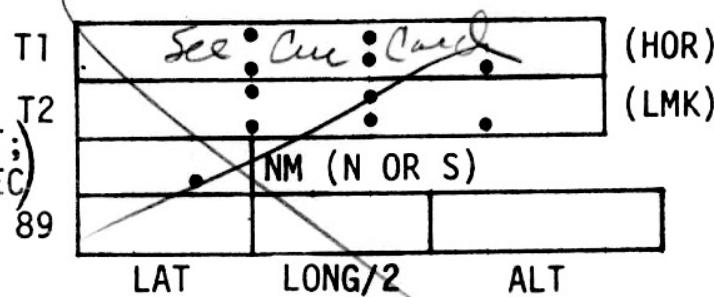
Local

Road test

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

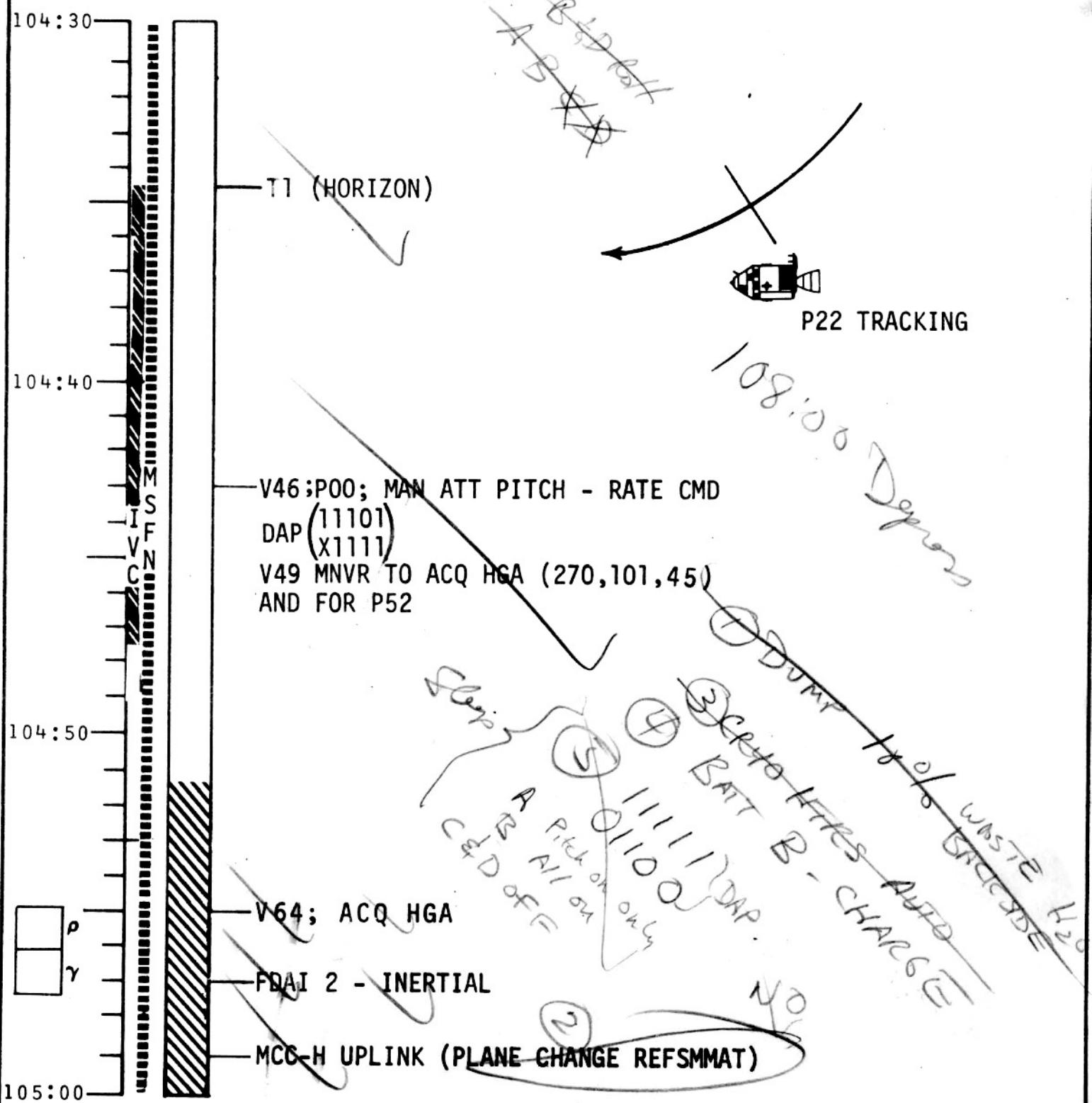


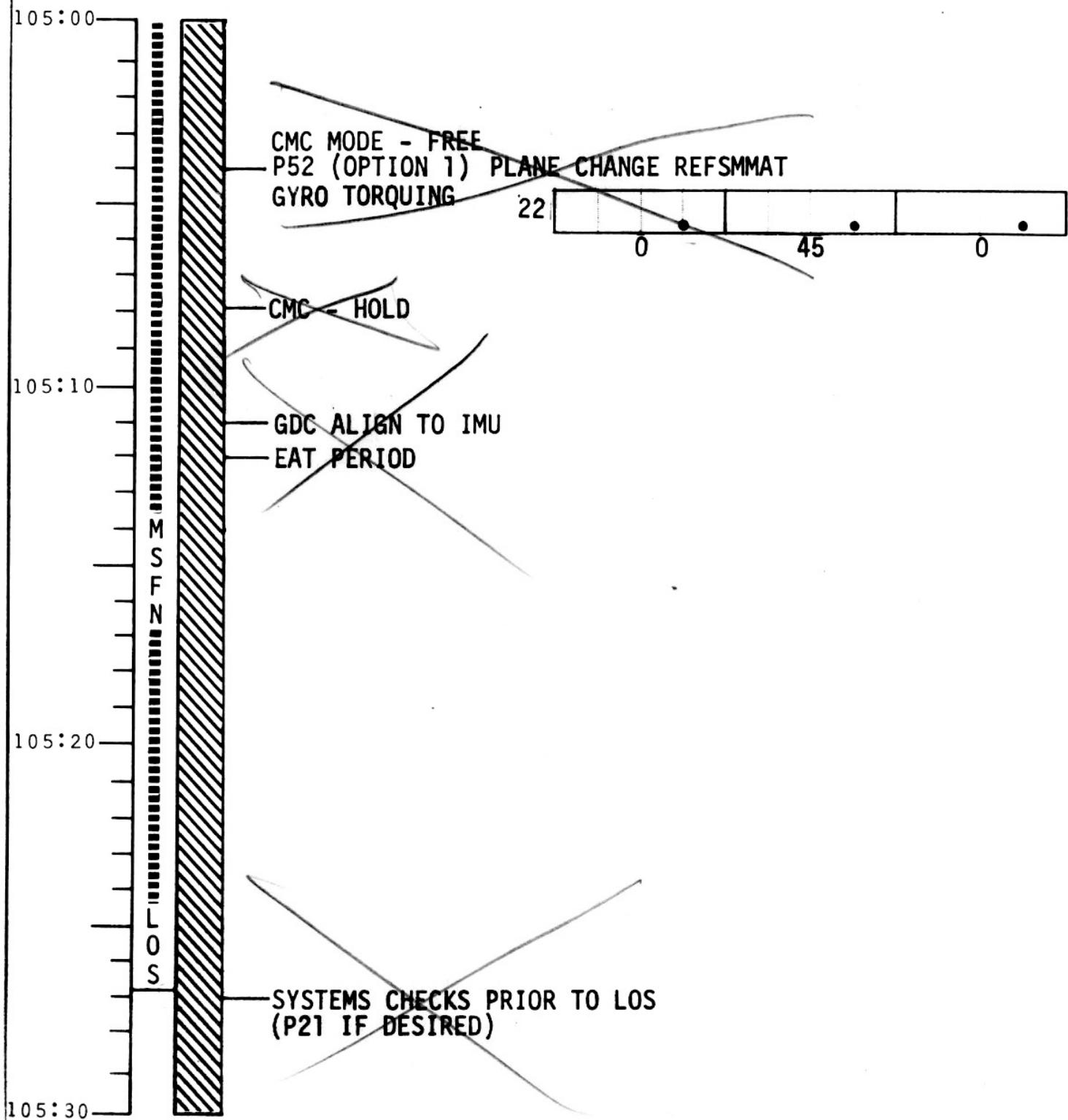
NOTE: POSSIBLE ALARM
407 IF TRUN>50°
RECALL 06 92
AND RESET WHEN<50°



DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

REV A JULY 2, 1969





DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

105:30—



-MNVR AS REQUIRED FOR PHOTOGRAPHY
P=0

P=0

ROLL AS REQUIRED

$$Y=0$$

105:40

V37E 21E

F 04 06 R1 00002, SPECIFY VEHICLE
R2 00001, CSM
PRO

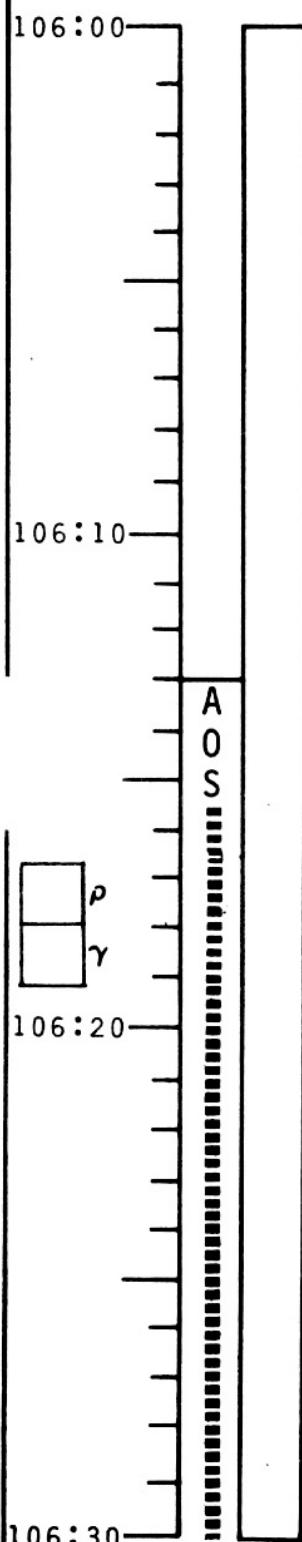
105:50-

F 06 34 GET LAT, LONG
LOAD DESIRED GET
PRO

F 06 43 LAT, LONG, ALT
(RECYCLE) V32E TO 2 (INCREMENT GET 10 MIN)
(EXIT) PRO

F37

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL



P

Stop Evap Out
Sur Temp = 44°
Sur Temp = 50°
Cabin = 60°

b

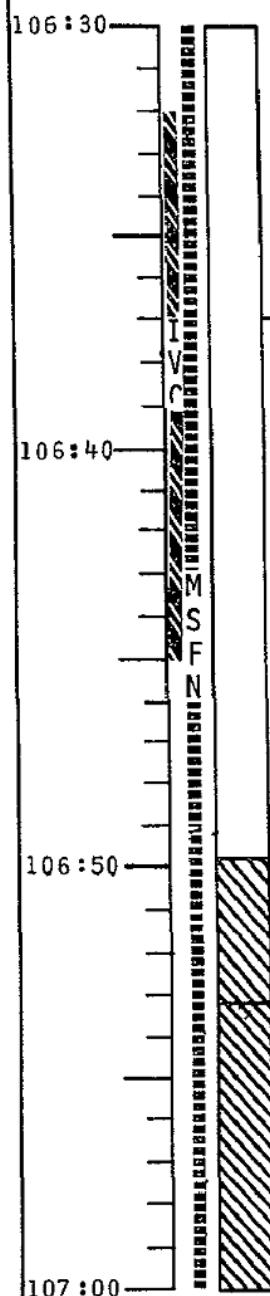
R
N
E
W
V
P
A

cool sign

22
106.30.31
106.35.41
2 NAR SOUTH

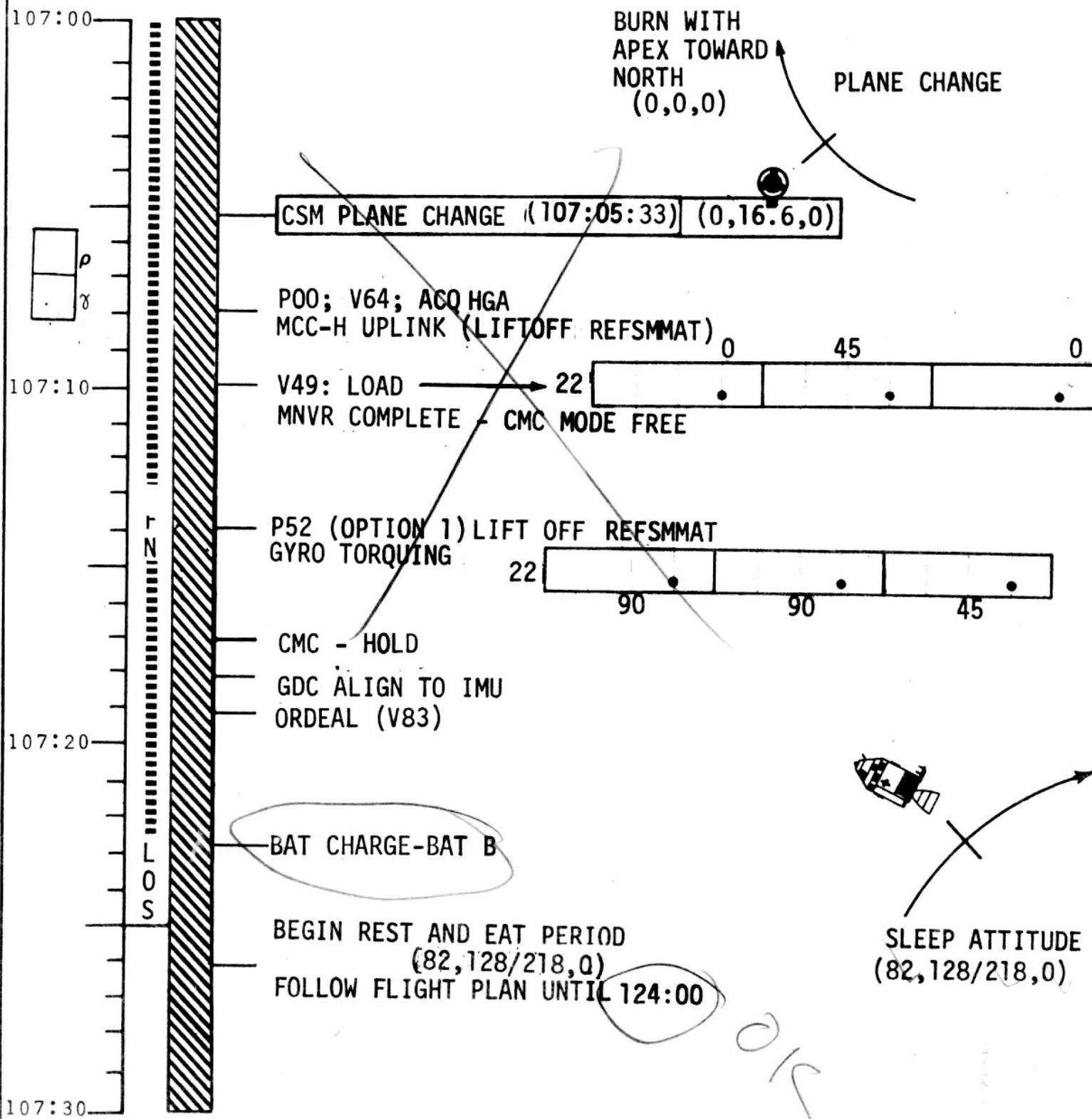
106.31.16
5K 35.19°
44.3°

6/23

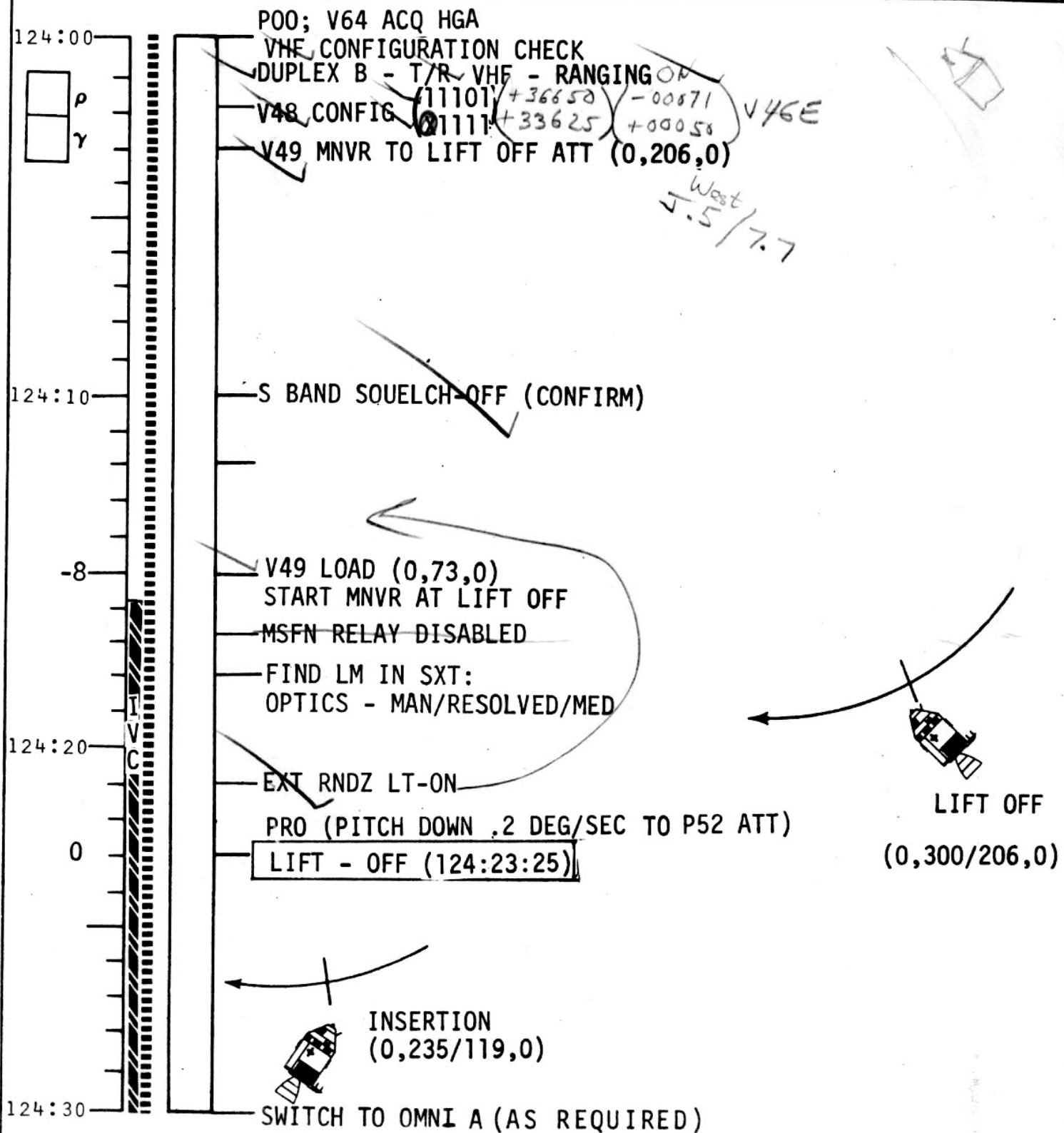


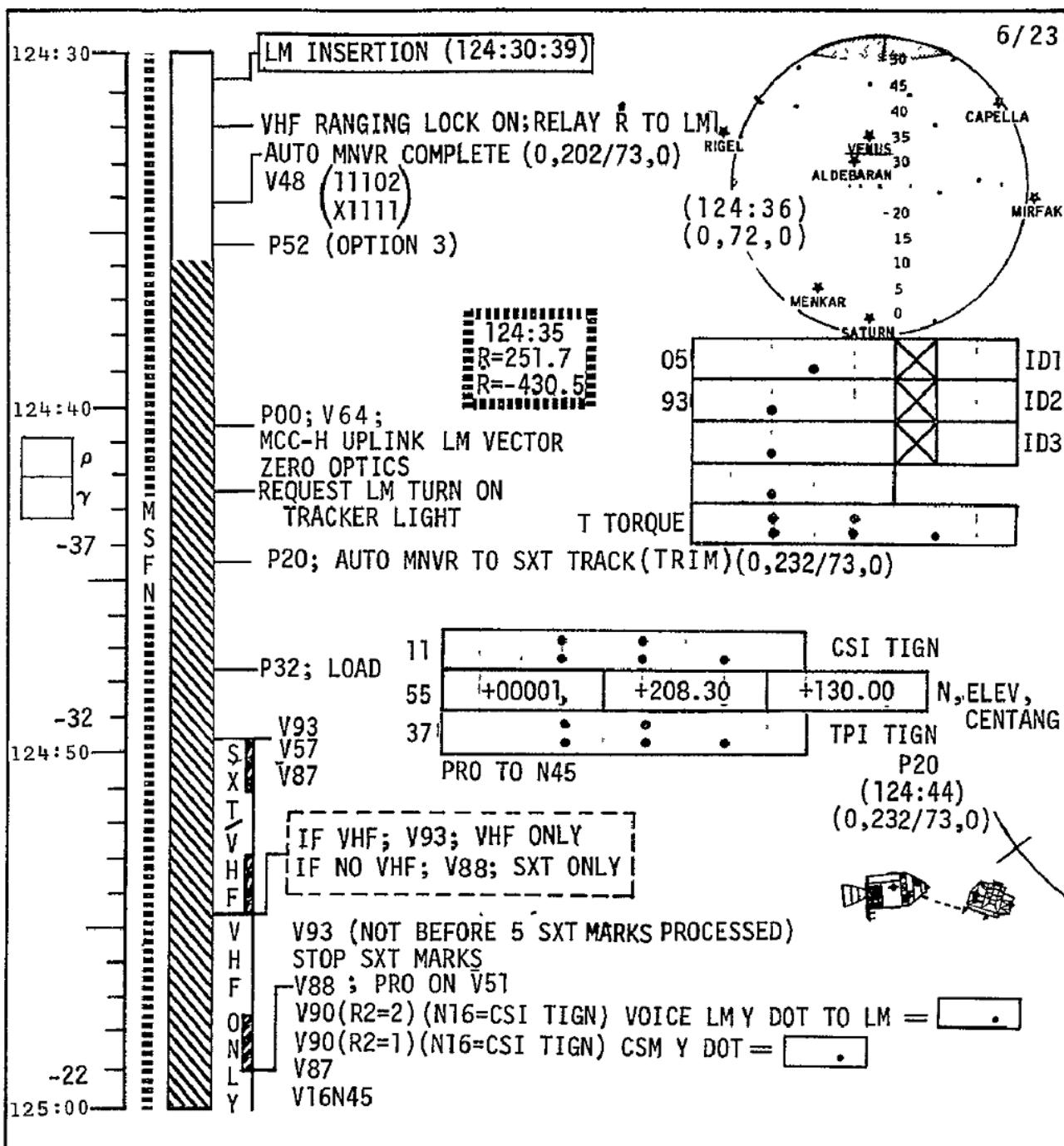
DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

REV B JULY 8, 1969



OMNI D

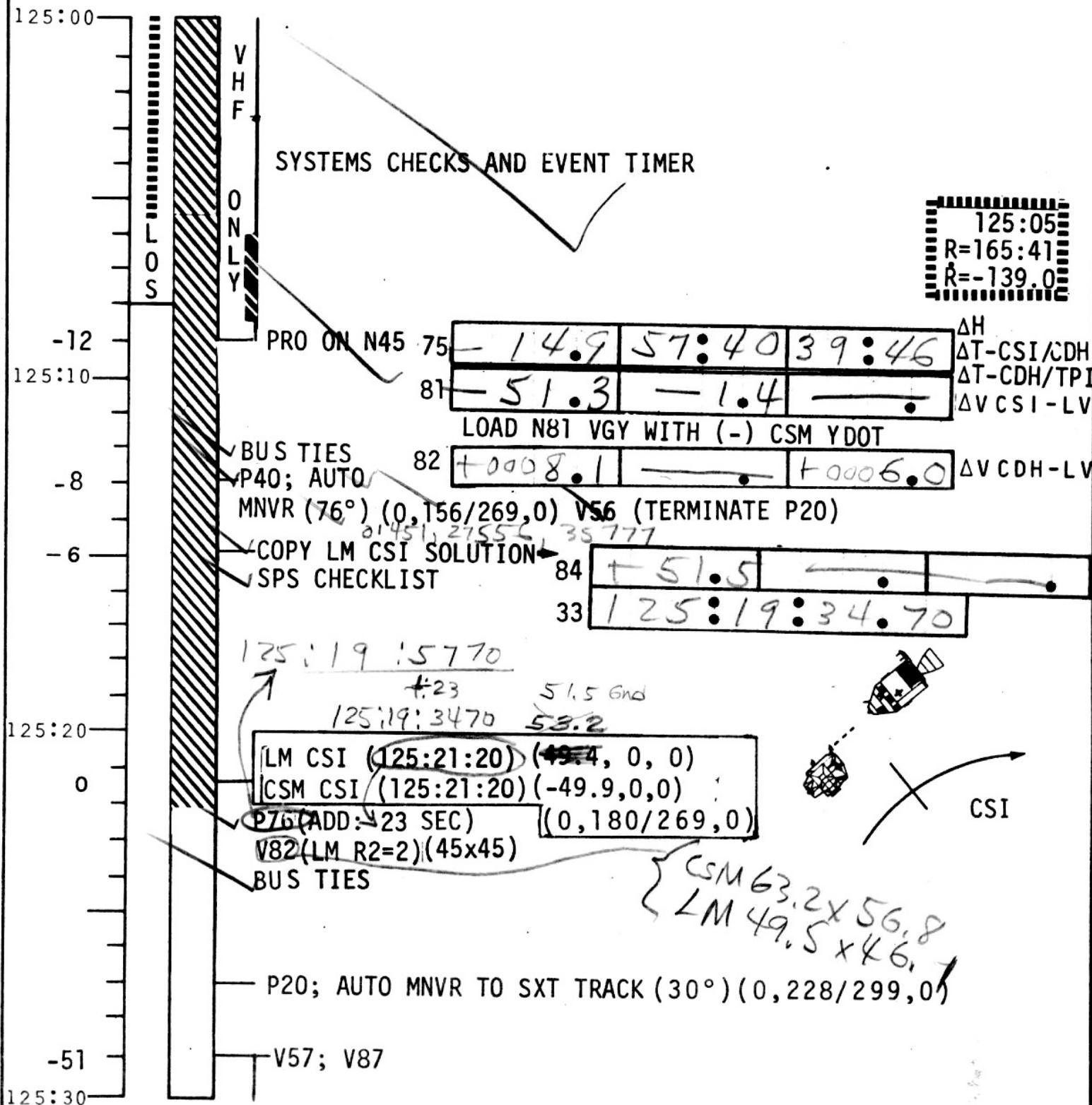




CMP SOLO BOOK
SOURCE-MOSEL

CSI COMPARISON LIMIT=+3 FPS

BURN: LGC IF LGC=CMC OR CHART
CHART IF LGC≠CMC OR CHART AND CMC=CHART
CMC IF LGC≠CMC OR CHART AND CHART≠CMC



DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

REV A JULY 2, 1969

N49: 00004, 00031, 00002

125:30

PRO ON V51 AFTER 3 MARKS
V67; LOAD N99 (+02000,+00020,+00001)

S
X
T
/
V
H
F

V57

V16 N45

125:36
R= 113.77
R= -129.1

NOT VIS IN SXA
TRUN SH = 0.790
would track now
Acc to recy de
20 sec 3 sec SW

125:40

PRO ON V51

V88 OBTAIN LM PC TIGN → 16 125:47:45.58 LM Y DOT TO LM = -2.3

V90 (R2=2) (N16=PC TIGN) VOICE LM Y DOT TO LM =

COPY LM PC P76 PAD

V57, V87

V16 N45

84
33
No P/c Burn

IF NO PLANE CHANGE CONTINUE MARKS

PRO ON V51; V88

PC

P76 LOAD LM PC BURN DATA

LM PLANE CHANGE (125:49:40)(0,226/228,0)

P76 INCORPORATE

-30

125:50

-27

-24

126:00

A
O
S

P20 V57; V87

VHF Range Broke lock

V93 AFTER THREE MARKS PROCESSED

CDH COMPARISON LIMIT = VGX+2 AND VGZ+6

BURN: LGC IF LCG=CMC OR CHART

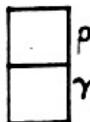
CHART IF LGC≠CMC OR CHART AND CHART=CMC

CMC IF LGC≠CMC OR CHART AND CHART≠CMC

CMP SOLO BOOK
SOURCE - MOSEL

126:00

-15



126:10

M
S
F
N

P33
FINAL COMP

P41; BYPASS
MNVR FOR
SMALL BURNS;
V56

RCS SETUP

LM CDH P76 →

LOAD LM CDH TIGN (LM ACTIVE)

13 126:17:45.58

75 -15.5 42:23 +03:08

81 + 9.1 + 2.4 +114.6

LOAD N81 WITH (-) CSM Y DOT

126:05

R = 94.61

R = -131.4

ΔH

ΔT-CDH/TPI

ΔT-TPI/TPI

ΔV CDH-LV

84 - 8.1 - 1.8 - 18.2

33 126:17:45.58

0

LM CDH (126:19:40) (-1.9,0,4.1)

CSM CDH (126:19:40) (2.2,0,-2.7)

(0,239/160,0)

CDH

+25

P20; AUTO MNVR TO SXT TRACK(27°)(0,232/133,0)

359,133.7,359

+29

V57; V87

Sunshaft @ 126:25

126:30

V93 (AFTER 3 MARKS)
CONTINUE MARKS UNTIL SUNSHAFTING)

PRO ON V51

37 127:00:08.36

126:26

R = 69.91

R = -119.8

+32

P34 (ELEVATION
ANGLE OPTION)

55 +00000 +208.30 +130.00

TPI TIGN

N, ELANG, WT
PRO ON N45 TO 37 BOX NEXT PAGE

VNF broke lock

PRO ON V51; V88

V90 (R2=2) (N16=CDH TIGN) VOICE LM Y DOT TO LM = +2.2
V90 (R2=1) (N16=CDH TIGN) CSM Y DOT = - 2.4

P
Y-30
Y/80

126:17:14 says cmc



TPI COMPARISON LIMIT = VGX \pm 2; VGY \pm 5; VGZ \pm 6

BURN: LGC IF LGC=CMC OR CHART

CHART IF LGC \neq CMC OR CHART AND CHART=CMC

CMC IF LGC \neq CMC OR CHART AND CHART \neq CMC

CMP SOLO BOOK
SOURCE - MOSEL

126:30

Slow Comp Cycle!

37 127:02:34.50 TPI TIGN

RECALL P20

COMPARE

V32E 20E
V57; V87

Still Sunshafting

+36

COPY LM TPI TIGN

33

127:02:02
03 15

126:40

LM tracking jittery in SXT
SAP excessive pitch thruster firings

126:46
R = 46.48
R = -116.6

+47

V88;
PRO ON V51

+48

R34

LM TPI TIGN

37	127 : 03 : 39 . 00	
55	+000000	+000000
58	+ 42.4	+ 26.7
81	- 22.9	- 2.1
59	+ 26.5	- 2.6
		+130.00
		+ 32.3
		+1 3.6
		- 1.0

N, ELANG WT
HP DVTP1 DVTPF
VG-LV VG-LOS

126:50

SET MDC EVENT TIMER

R40 AUTO MNVR;

V56 (TERMINATE P20) (52°) (0,191/5,0)

COPY LM TPI P76 PAD

SPS CHECKLIST

4282
12

84 127 0.3 308.2
33 0.0 0.0 0.0

+22.7 +1.7 -10.6

LM TPI (126:58:27)(21.8, -1, -11.0)

CSM TPI (126:58:27)(-22.3, 0.1, 10.9)

P76 (ADD: 12 SEC) (0, 208/5, 0)

BUS TIES

P20, AUTO MNVR TO SXT TRACK (34°) (0,248/39,0)

P35



TPI

DATE BD JUNE 27, 1969
CMP SOLO BOOK
SOURCE MOSEL

127:00

+4

L
O
S

S

X

T

/

V

H

P35

V93; V57; V87

NOTE: DO NOT KEY V93 IF
SXT OR VHF ONLY

+12

V88

PRO ON V51

P35 FINAL COMP → 81

(PRO AT TPI +12)

COPY LM MCC1 (P76) → 59

P41(BYPASS
AUTO MNVR)

+15

MCC1 (127:13:27)

(0,266/18,0)

+18

P76; P35 AUTO MNVR TO SXT
TRACK (TRIM)

V93; V57; V87

127:20

NOTE: DO NOT KEY V93 NOW. IF SXT OR VHF
ONLY, V93 AFTER 3 MARKS PROCESSED

127:11
R = 17.19
R = -104.9

COPY CSM MCC1 SOLUTION

—	1	3	—	6	—	•
+	.	9	-	.7	+	1.0
84	—	•	+	.4	+	.9
33	1	2	7	1	8	: 31.00

36

+27

V88

PRO ON V51

P35 FINAL COMP

(PRO AT TPI +27)

MCC1+12

COPY LM MCC2 P76 PAD

P41 (BYPASS AUTO MNVR)

+30

MCC2 (127:28:27) (0,300/7,0)

+32

P76

V89 (R2=2), AUTO MNVR TO
COAS TRACK (37°) (0,275/330,0)

COPY CSM MCC2 SOLUTION

→	.	1	—	1.0	+	.6
+	.	5	—	1.0	—	•
84	+	.	1	+	1.2	+
33	:	:	:	•	•	

MCC2

6/23

127:30

16 RCS JETS - ON



P47; V83 AT R = 1.25 N.M.

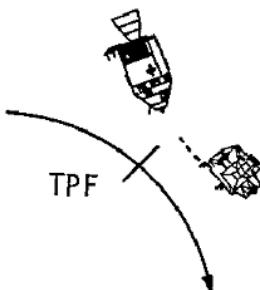
BRAKING GATES

R(FPS)	R(FT)	R(N.M.)	RETICLE ANGLE (DEG)
30	6000	1.0	.13
20	3000	.5	.26
10	1500	.25	.54
5	500	.08	1.6
	300	.05	2.7
	200	.03	4.0
	100	.02	8.5

127:26
R = 5.60
R = -52.2

127:41
R = 0.06
R = -12.3

TPF (127:40:38)



DOCK CHECKLIST;

CB DOCK PROBE (2) - IN
CB SECS ARM (2) - IN
PROBE RETRACT -VERIFY
SECS PYRO ARM A AND B - ON
4 QUADS - ON (8 T/B - GRAY)
CMC - AUTO

AT CONTACT;

CMC MODE FREE
NULL RATES
BOTTLES PRIM (2), SEC (2)

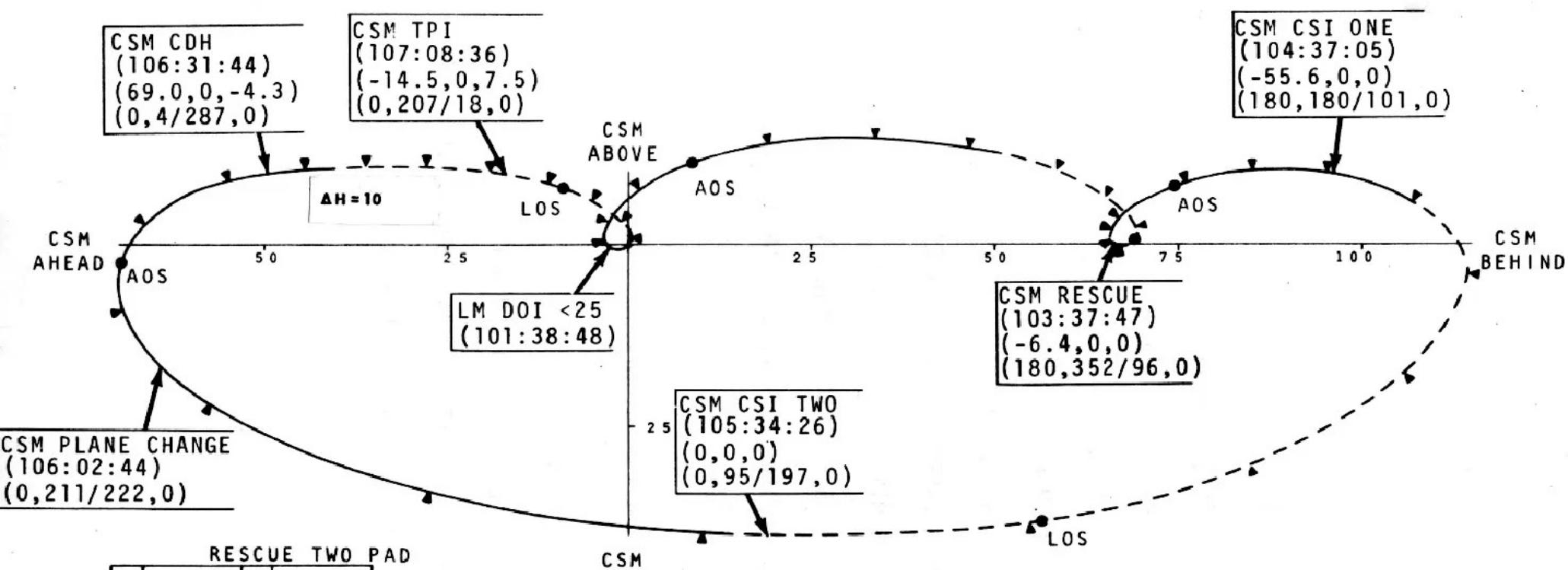
DAP (61112)
(11111)

128:00

A
O
S

RESCUE INDEX

- CASE 1 - PARTIAL DOI (<25 FPS)(CSM ACTIVE)
- CASE 2 - PARTIAL DOI (>25 FPS)(CSM ACTIVE)
- CASE 3 - NO PDI₁ +12 (LM ACTIVE)
- CASE 4 - <60 NO PDI₁ +12 (CSM ACTIVE)
- CASE 5 - >60 NO PDI₁ +12 (CSM ACTIVE)
- CASE 6 - PDI₁ <10 VARIABLE INSERTION (LM ACTIVE)
- CASE 7 - PDI₁ +12 (10-12.5 MINUTES)(CSM ACTIVE)
- CASE 8 - PDI₁ +14:12 (12.5-15 MINUTES)(CSM ACTIVE)
- CASE 9 - PDI₁ +21:24 PREFERRED LIFT-OFF(T₂)(CSM ACTIVE)
- CASE 10- NO PDI₂ +12 (LM ACTIVE)
- CASE 11- <40 NO PDI₂ +12 (CSM ACTIVE)
- CASE 12- 40-90 NO PDI₂ +12 (CSM ACTIVE)
- CASE 13- >90 NO PDI₂ +12 (CSM ACTIVE)
- CASE 14- PDI₂ <14:30 VARIABLE INSERTION (LM ACTIVE)
- CASE 15- PDI₂ +19:22 PREFERRED LIFT-OFF (T₂)(CSM ACTIVE)
- CASE 16- CONTINGENCY INSERTION ORBITS (CSM ACTIVE)
- CASE 17 - MANUAL INSERTION (CSM ACTIVE)
- CASE 18 - ANYTIME LIFT-OFF (CSM ACTIVE)



47	+	+	
48	-	+	
33	:	:	
81			-
22			
ΔV_C			
11	:	:	
37	:	:	
N			

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

13	:	.	:
75	.	:	:
81	.	.	.
82	.	.	.

84	.	.	.
33	:	:	

37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

84	.	.	.
33	:	:	

84	.	.	.
33	:	:	

84	.	.	.
33	:	:	

SOURCE MOSEL

DATE BD JUNE 27, 1969

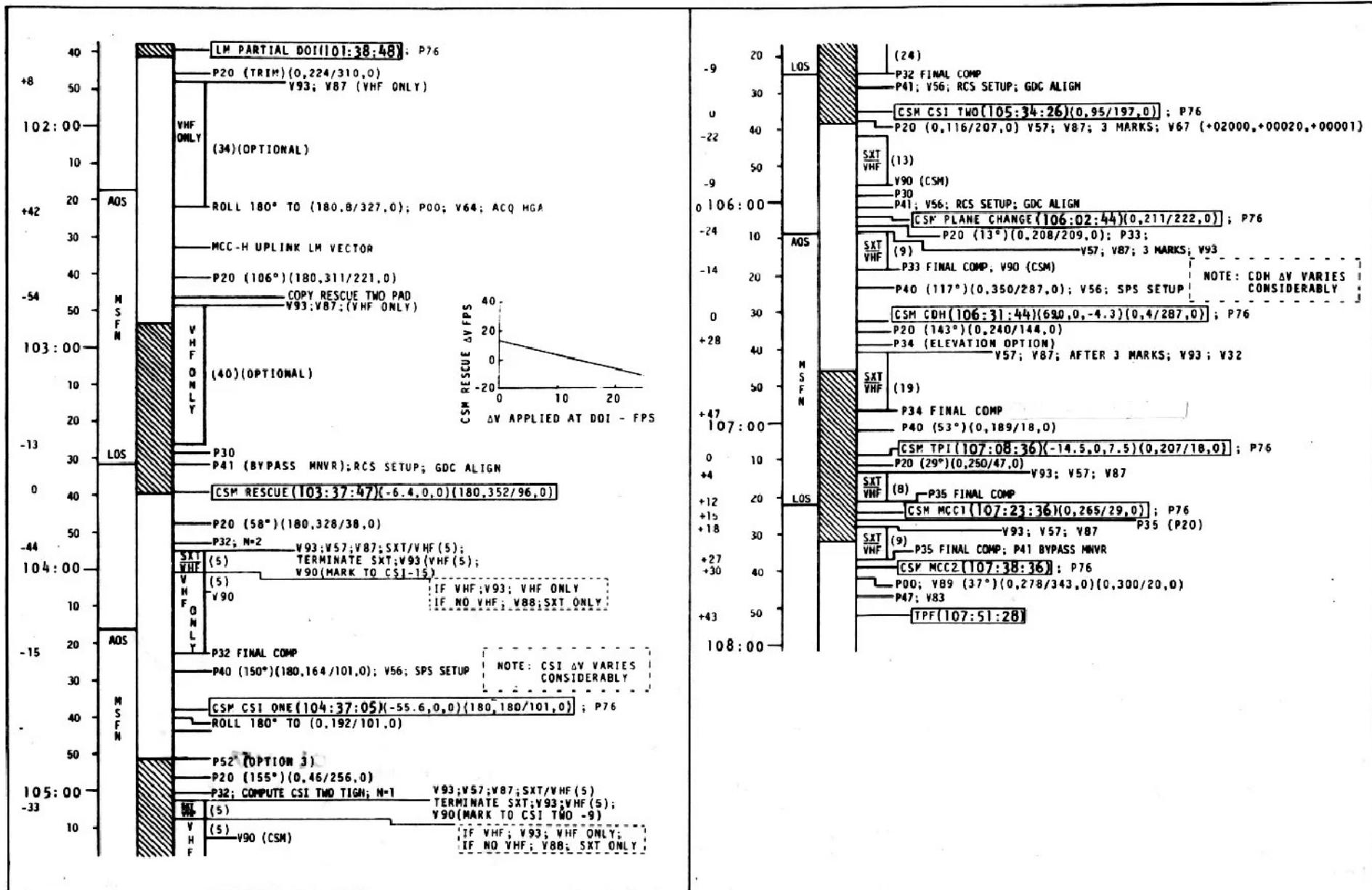


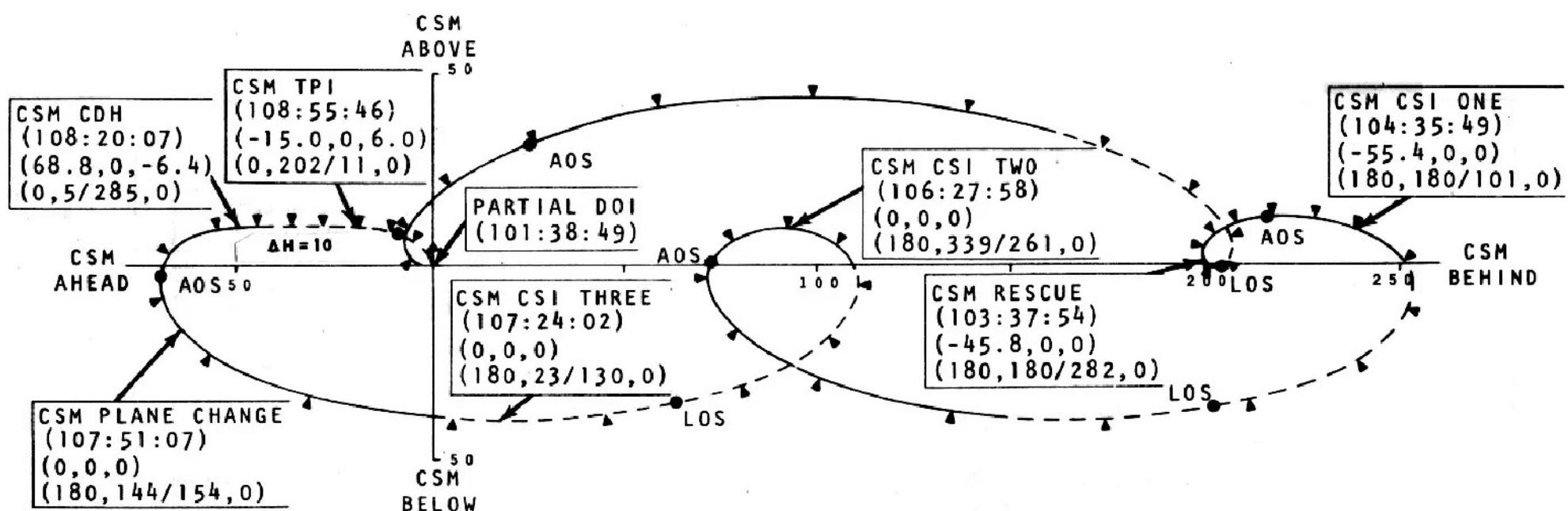
CMF SOLO BOOK



CASE 1 - PARTIAL DOI (<25 FPS)(CSM ACTIVE)

(CHECKLIST GENERATED FOR 20 FPS)





RESCUE TWO PAD			
47			
48			
33	:	:	
81			
22			
V C			
11	:	:	
37	:	:	
N			

CSM CSI TWO COPY			
11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

LM CSI TWO P76

84	.	.	.
33	:	:	

LM PC P76			
84	.	.	.
33	:	:	

CSM CDH COPY

13	:	:	
75	.	:	:
81	.	.	.

LM CDH P76

84	.	.	.
33	:	:	

CSM CSI ONE COPY			
11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

CSM CSI THREE COPY			
11	:	:	
81	.	.	.

LM CSI THREE P76

84	.	.	.
33	:	:	

CSM TPI COPY			
37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

LM CSI ONE P76			
84	.	.	.
33	:	:	

CSM PC COPY			
33	:	:	
81	.	.	.

LM TPI P76			
84	.	.	.
33	:	:	

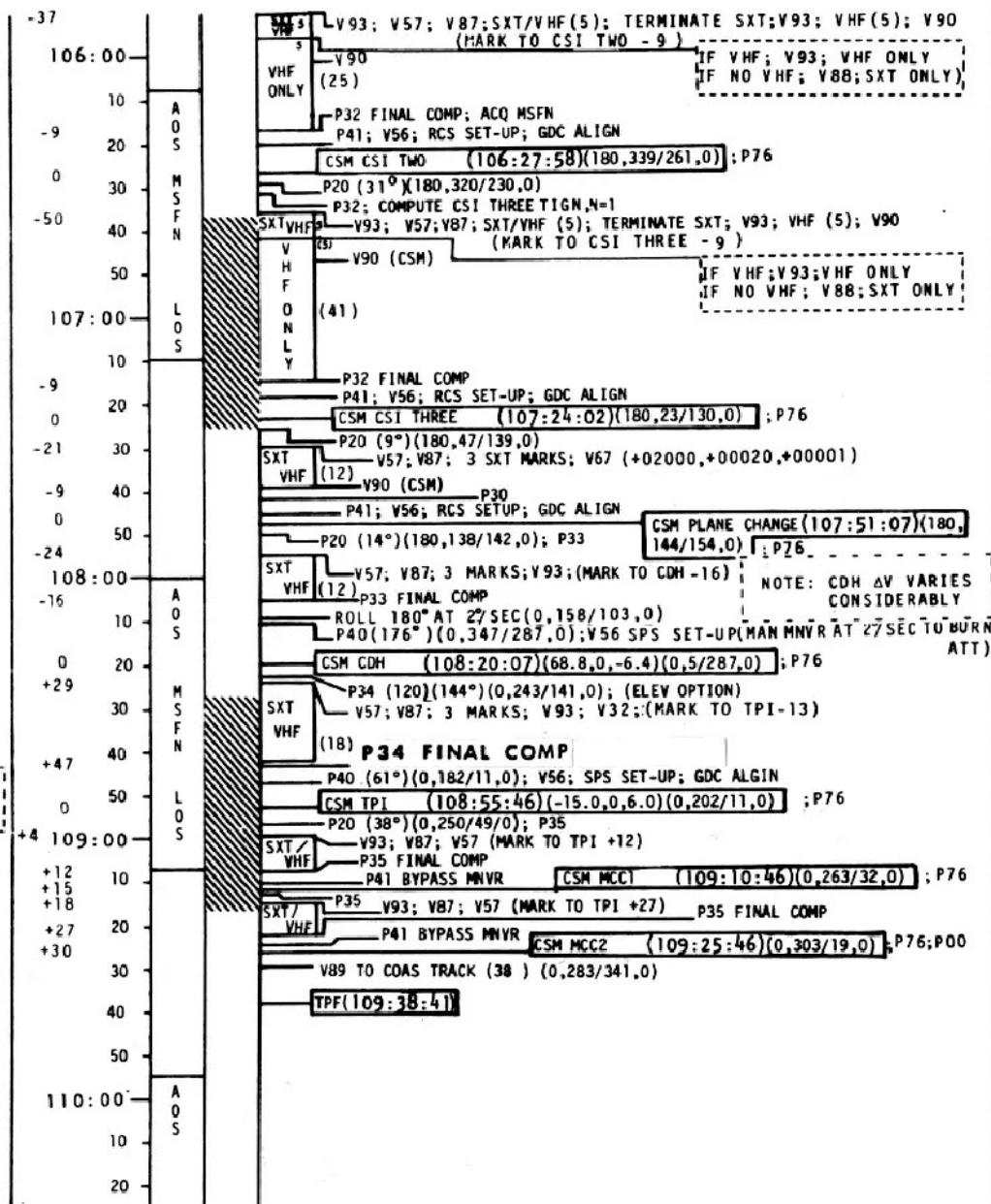
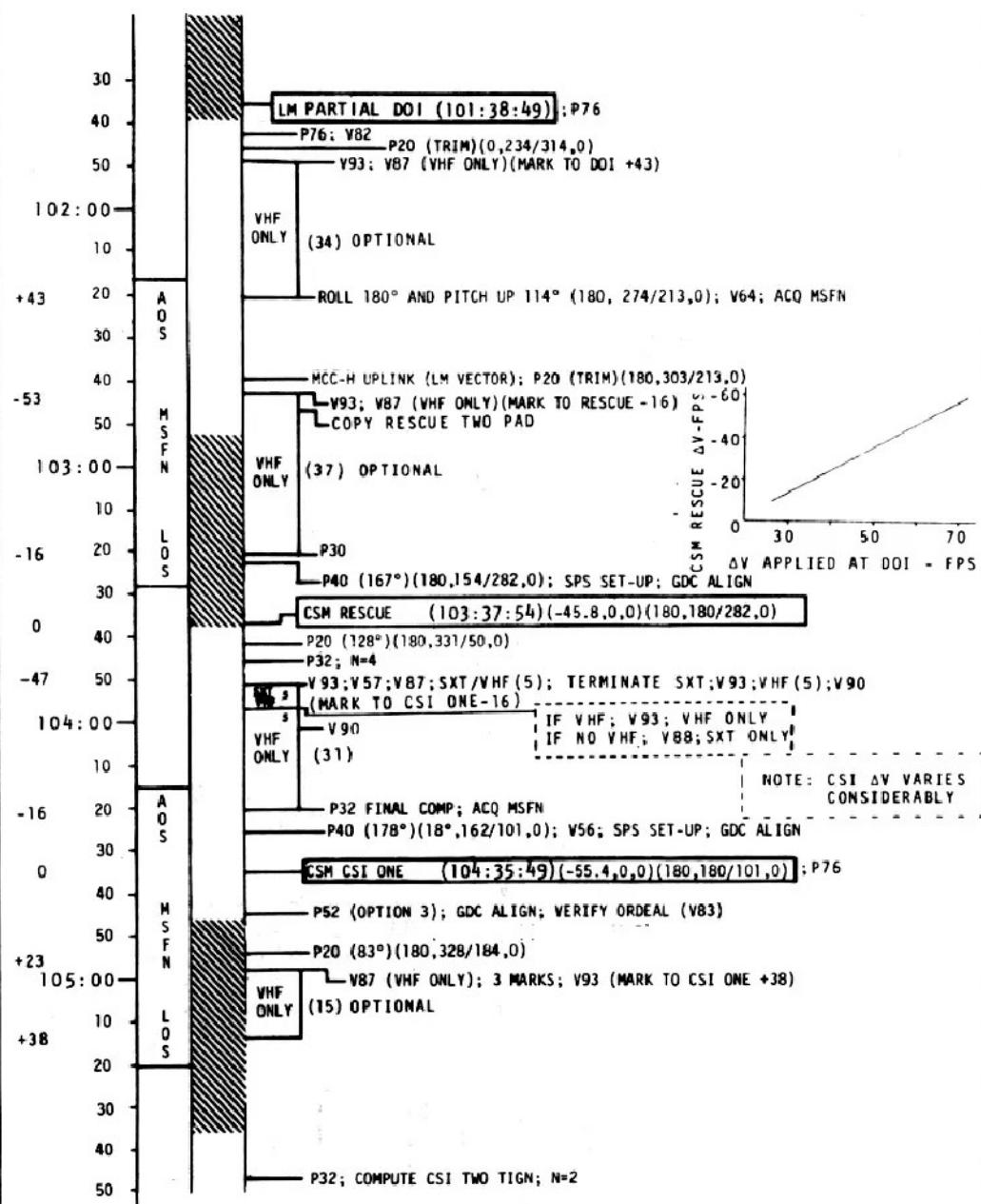
SOURCE MOSEL

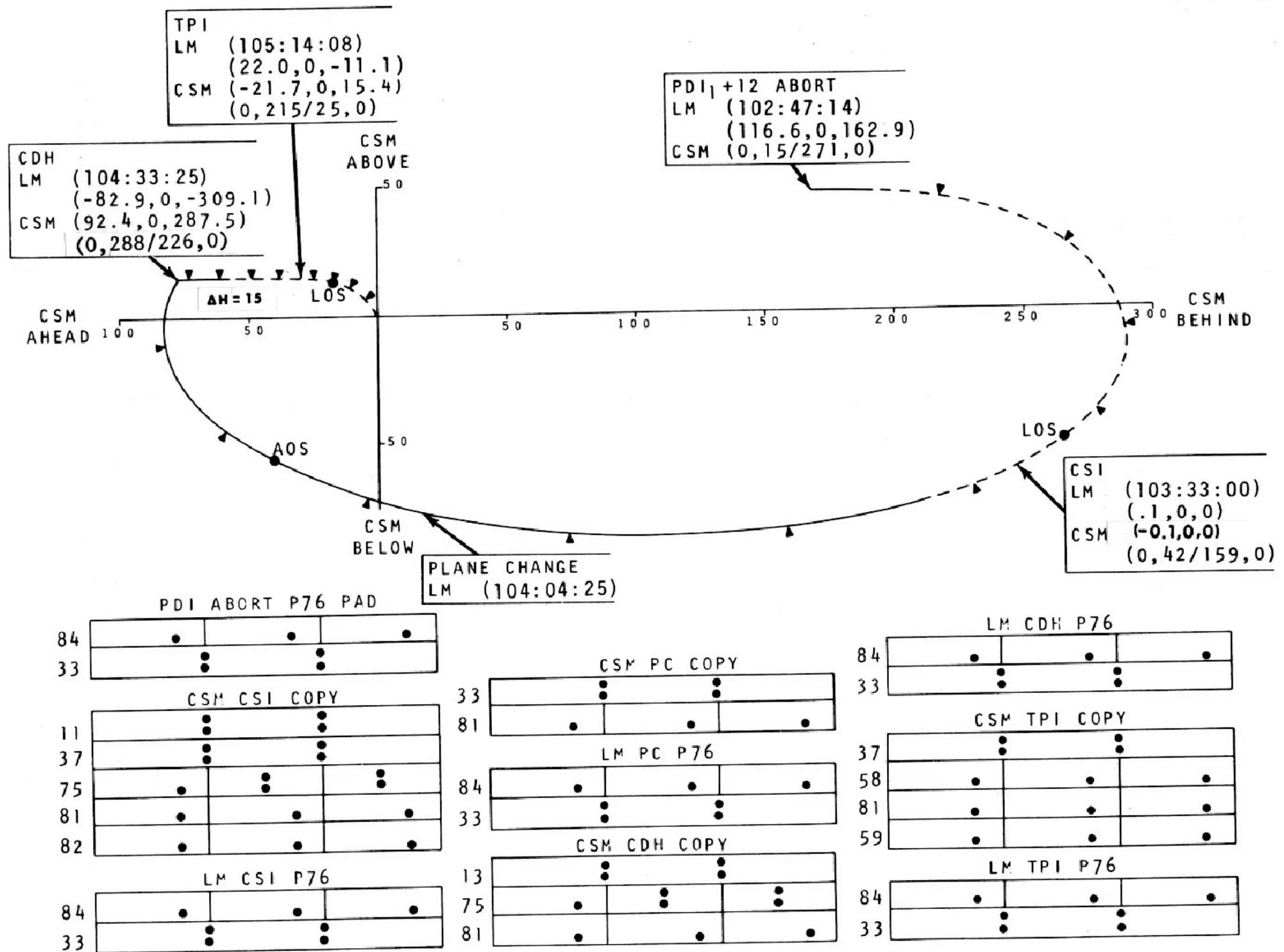
DATE BD JUNE 23, 1969

CMP SOLO BOOK

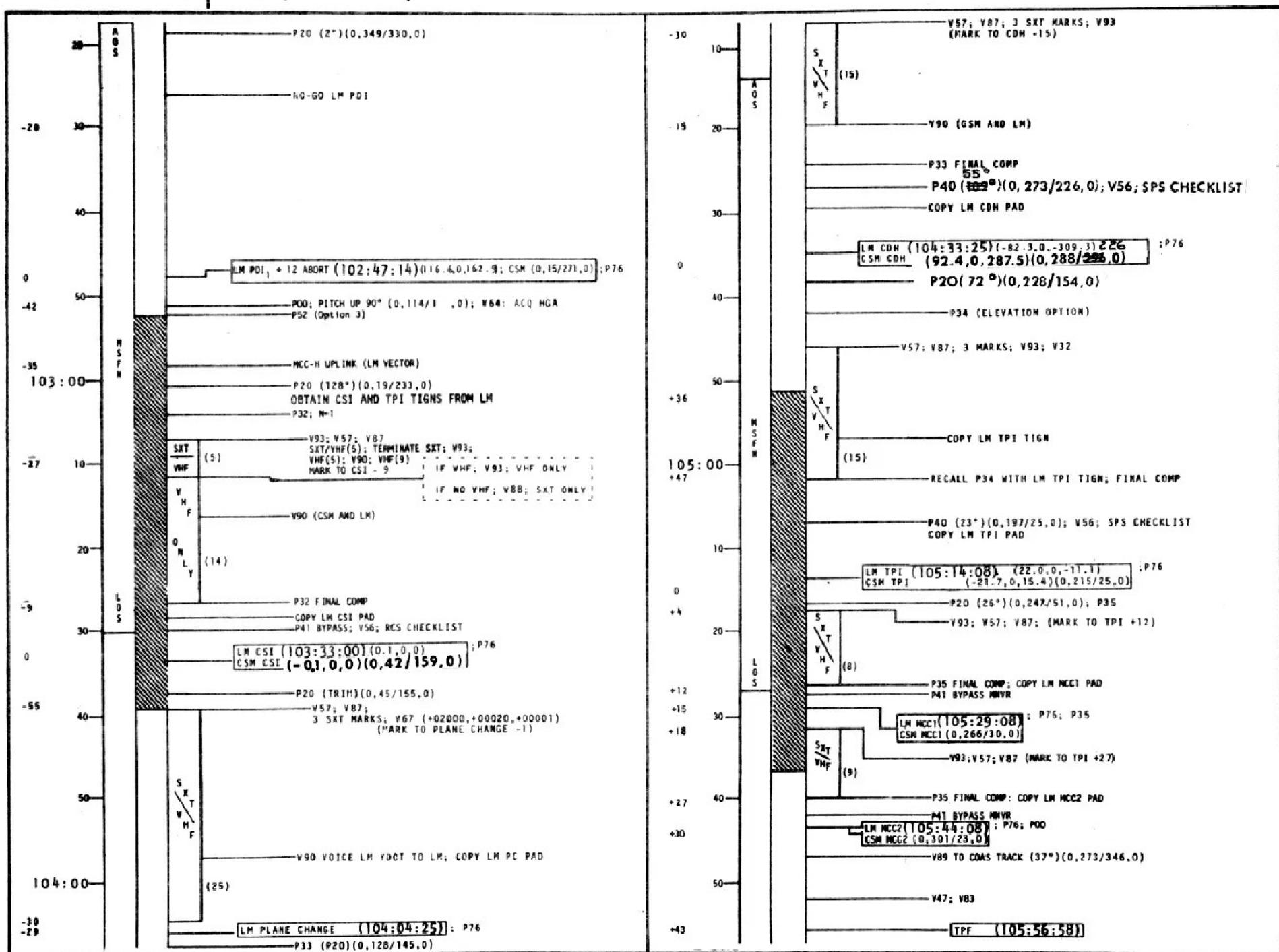
CASE 2 - PARTIAL DOI (>25 FPS)(CSM ACTIVE)

(CHECKLIST GENERATED FOR 60 FPS)





CASE 3 - NO PDI₁ +12 (LM ACTIVE)



CASE 4

RESCUE TWO PAD

47	+		+		
48	-		+		
33	00	:	000	:	0
81					
22	XXX		XXX		XXX
ΔV_C	X		X		X
11	00	:	000	:	0
37	00	:	000	:	0
N					

CSM CSI ONE COPY

11	:	:
37	:	:
75	.	.
81	.	.
82	.	.

LM CSI ONE P76

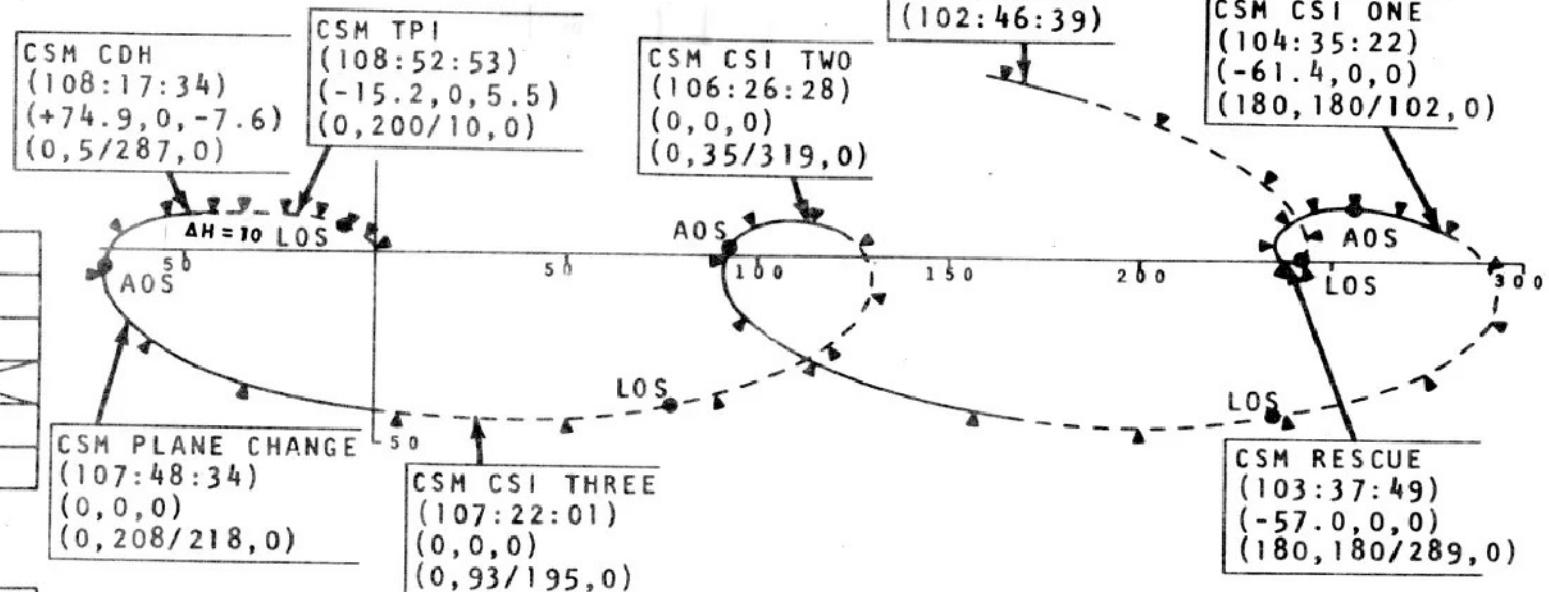
84	.	.	.
33	:	:	

CSM CSI TWO COPY

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

LM CSI TWO P76

84	.	.	.
33	:	:	



CSM CSI THREE COPY

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

LM CSI THREE P76

84	.	.	.
33	:	:	

CSM PC COPY

33	:	:
81	.	.

LM PC P76

84	.	.	.
33	:	:	

CSM CDH COPY

13	:	:
37	:	:
75	.	.
81	.	.

LM CDH P76

84	.	.	.
33	:	:	

CSM TPI COPY

37	:	:
58	.	.
81	.	.
59	.	.

LM TPI P76

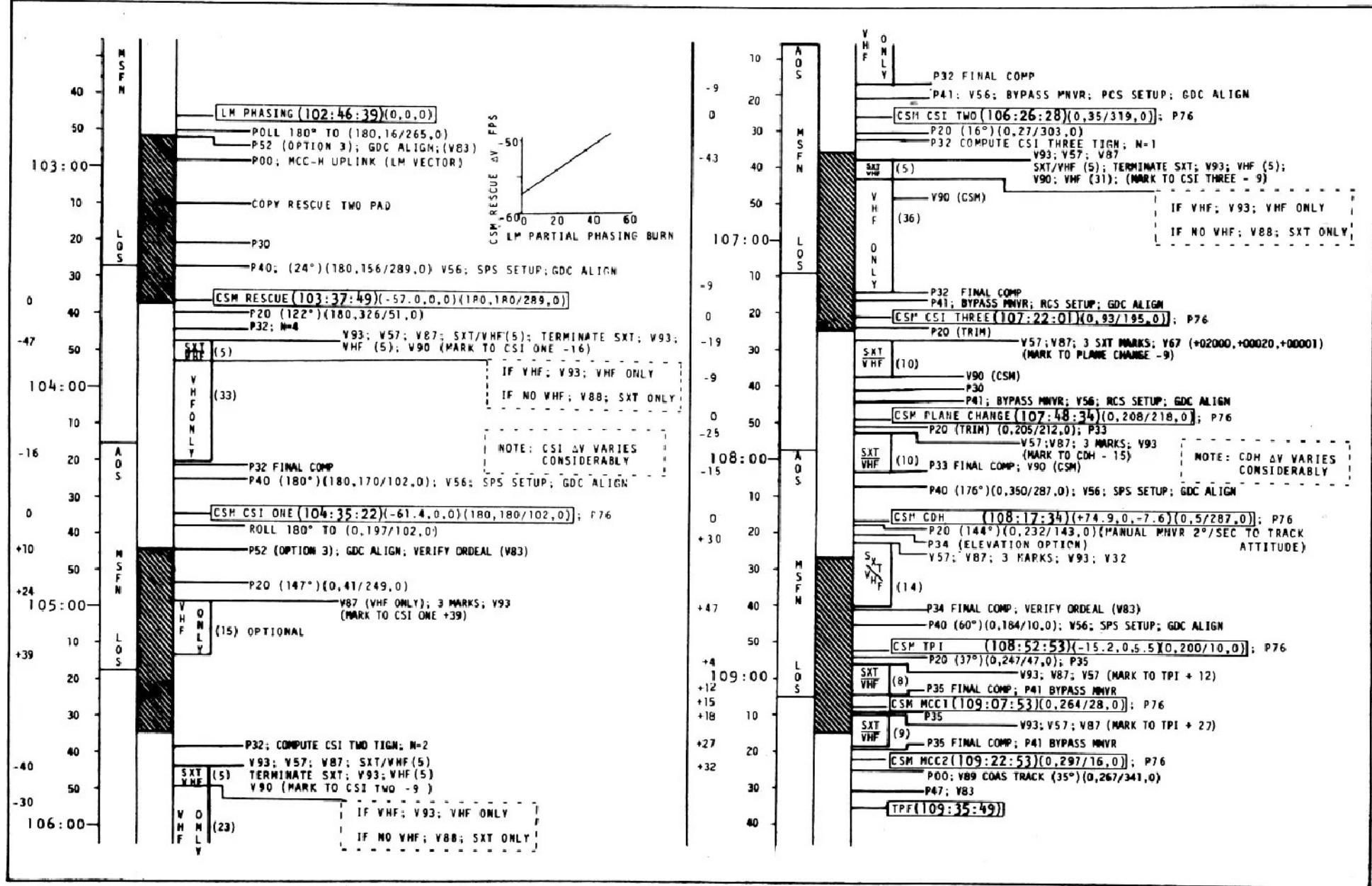
84	.	.	.
33	:	:	

SOURCE MOSEL

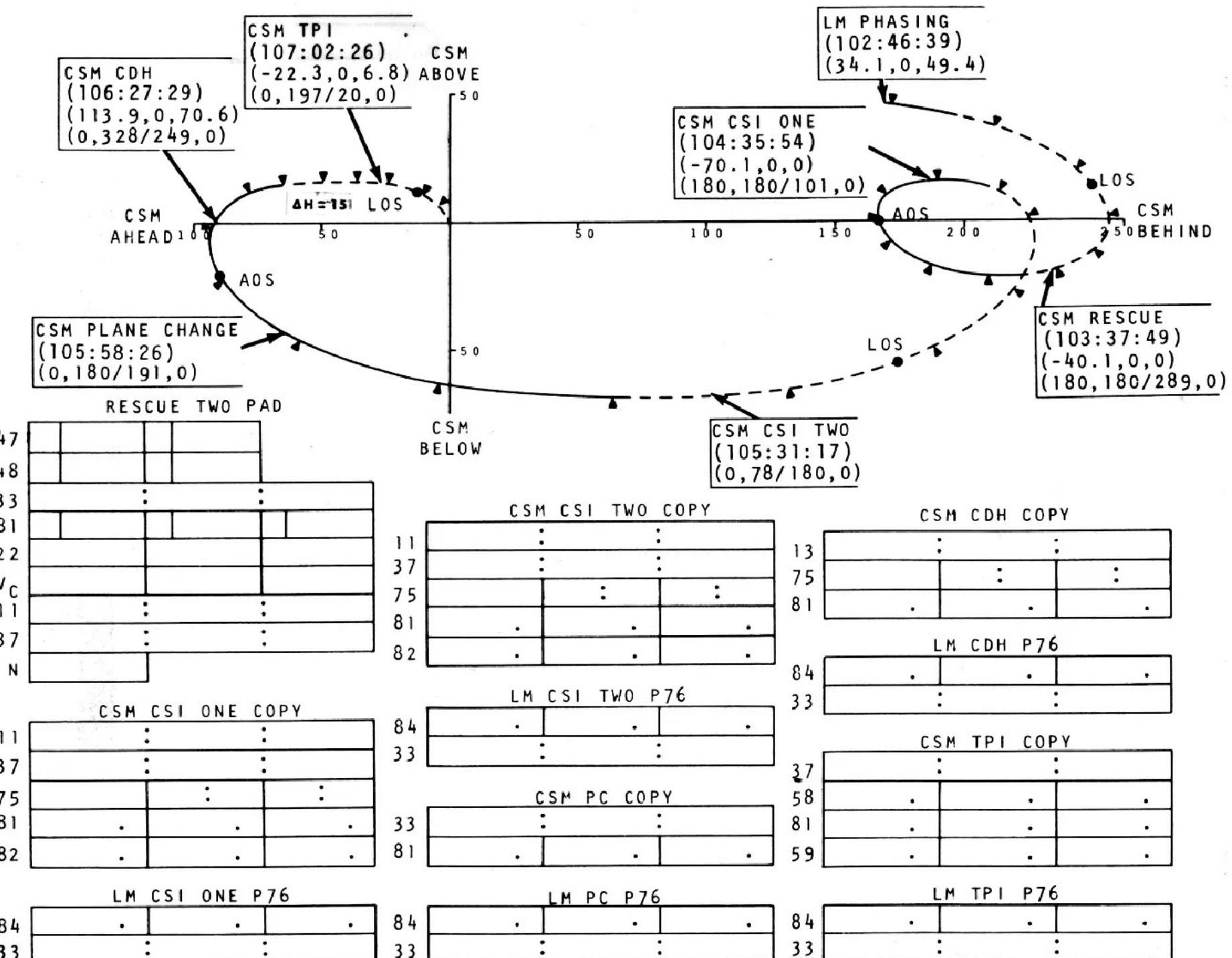
DATE BD JUNE 27, 1969

CMP SOLO BOOK

CASE 4 - <60 NO PDI, +12 (CSM ACTIVE) (CHECKLIST GENERATED FOR ZERO FPS)



CASE 5



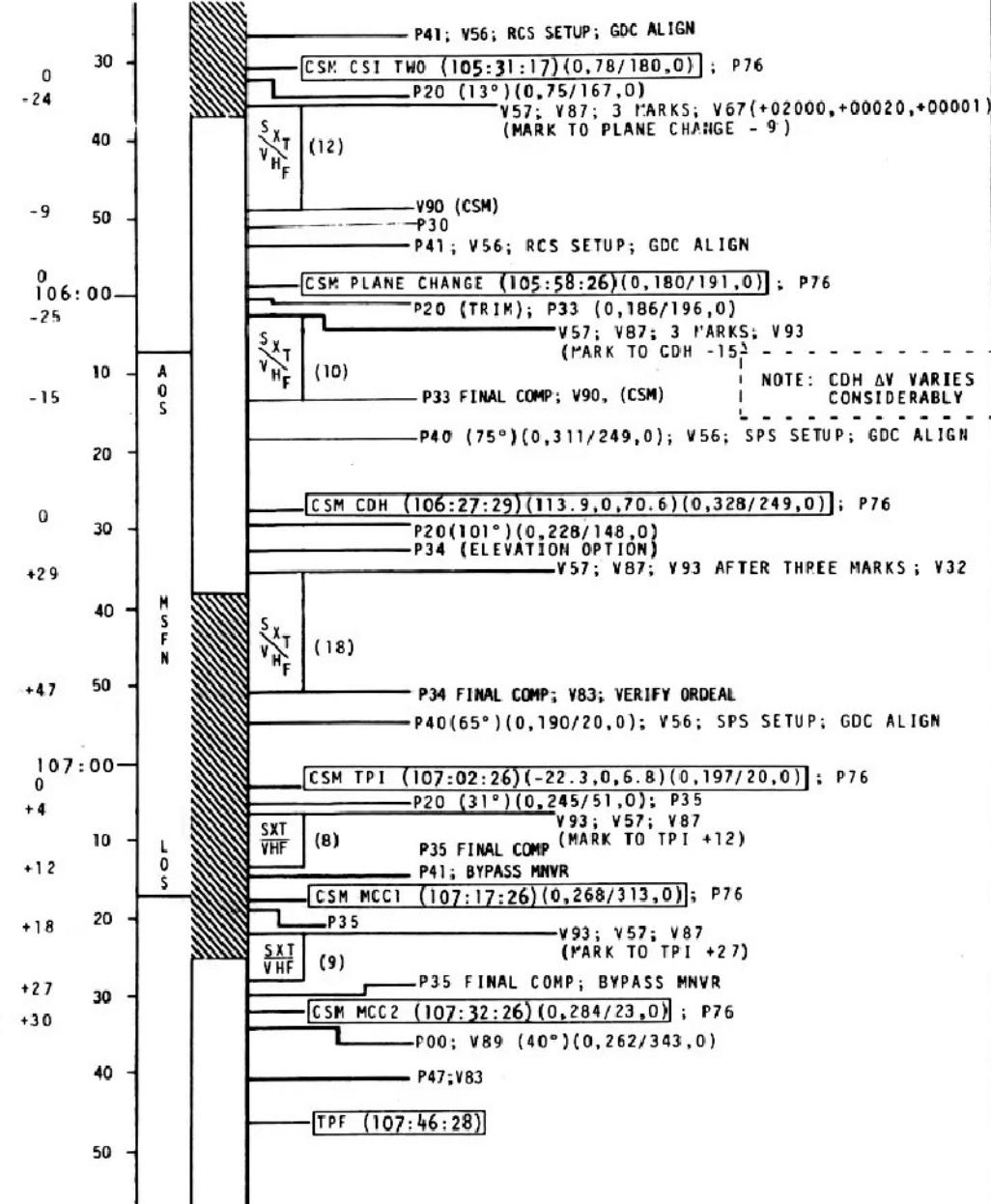
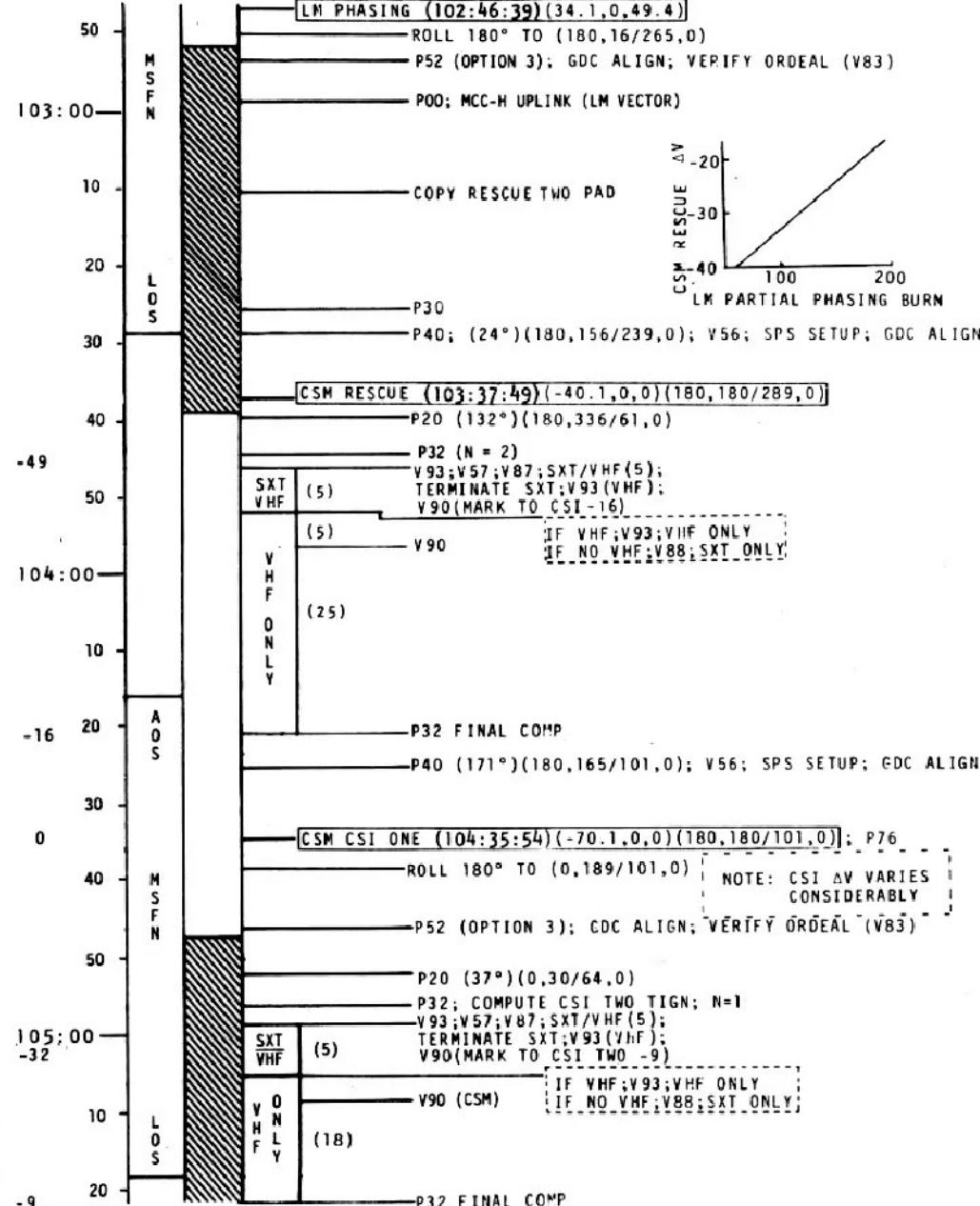
SOURCE MOSEL

DATE BD JUNE 27, 1969

CMP SOLO BOOK

CASE 5 - >60 NO PDI, +12 (CSM ACTIVE)

(CHECKLIST GENERATED FOR 60 FPS)

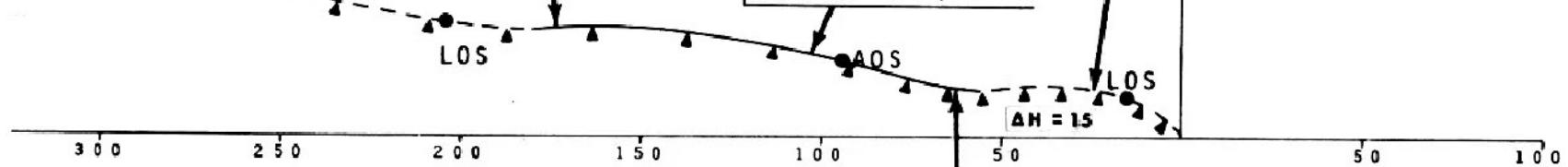


LM INSERTION
(102:52;20)

CSI
LM (103:42:12)
(50.1,0,0)
CSM (-50.9,0,0)
(0,180/268,0)

TPI
LM (105:14:06)
(21.7,0,-10.9)
CSM (-22.0,0,10.3)
(0,205/18,0)

LM PLANE CHANGE
(104:10:53)



CDH
LM (104:39:36)
(21.6,0,6.2)
CSM (-21.3,0,-2.9)
(0,172/91,0)

CSM CSI COPY			
11	.	.	
37	.	.	
75	.	:	:
81	.	.	.
82	.	.	.

LM CSI P76			
84	.	.	.
33	:	:	

CSM PC COPY			
33	:	:	
81	.	.	.

CSM CDH COPY			
13	:	:	
75	.	:	:
81	.	.	.

LM CDH P76			
84	.	.	.
33	:	:	

CSM TPI COPY			
37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

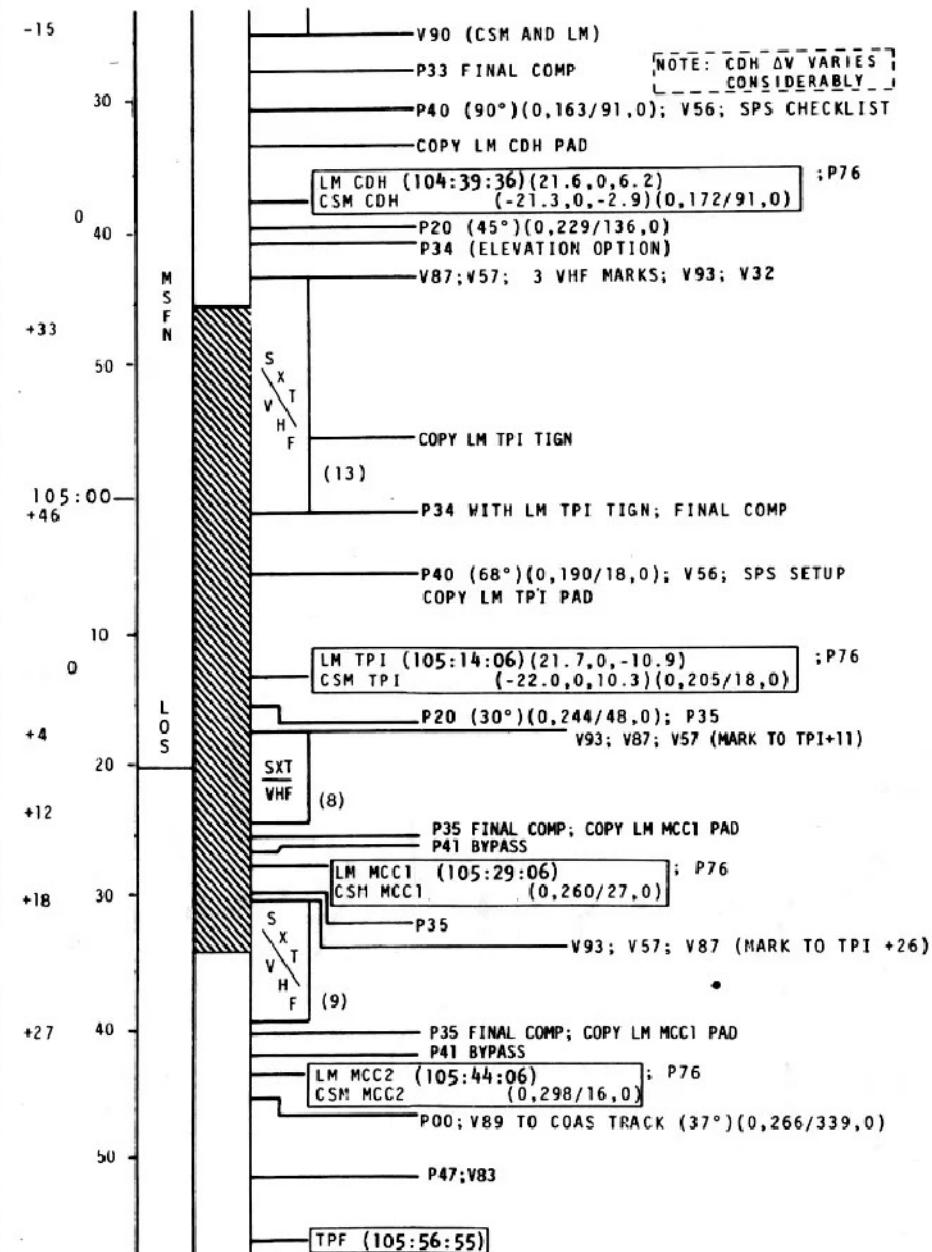
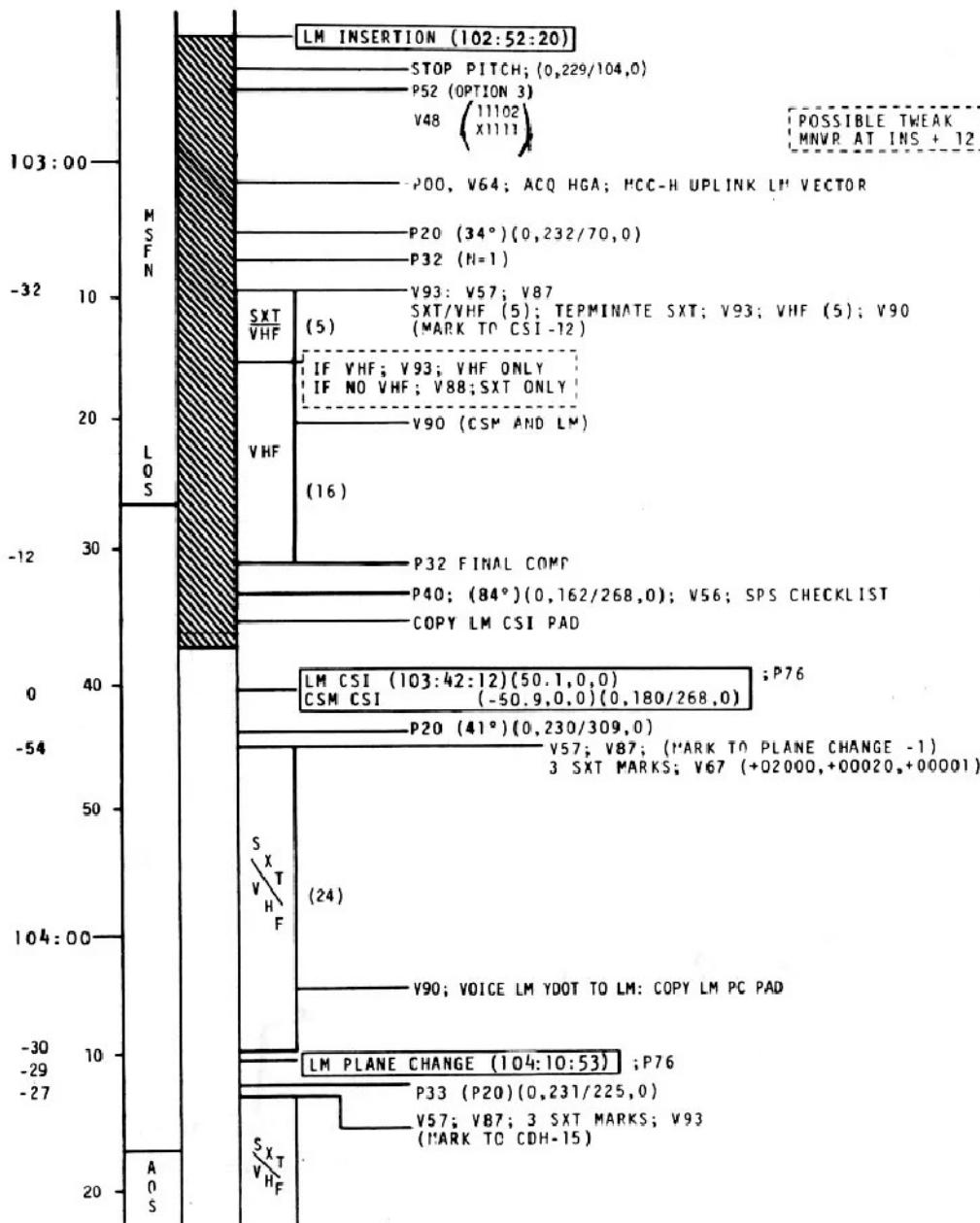
LM TPI P76			
84	.	.	.
33	:	:	

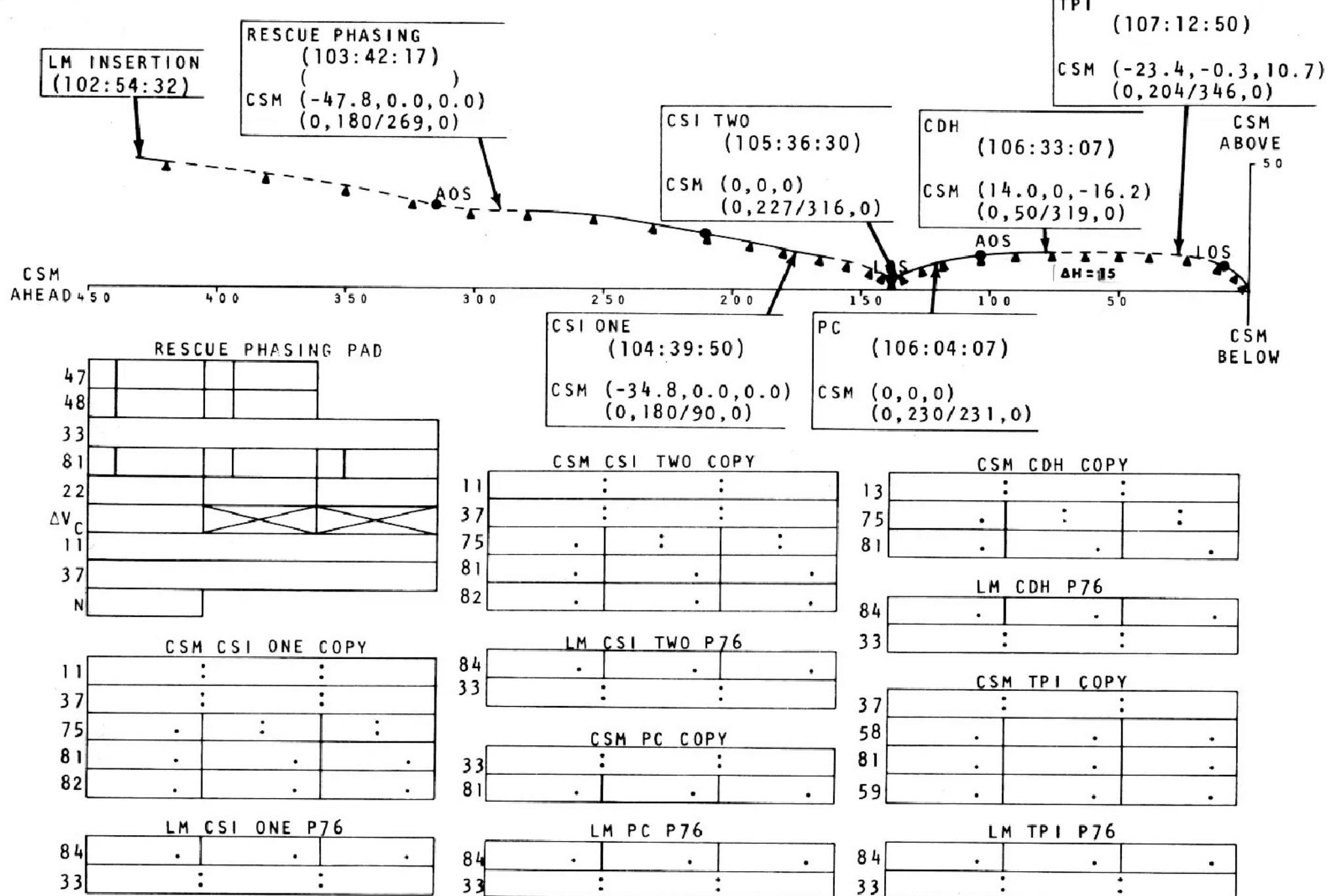
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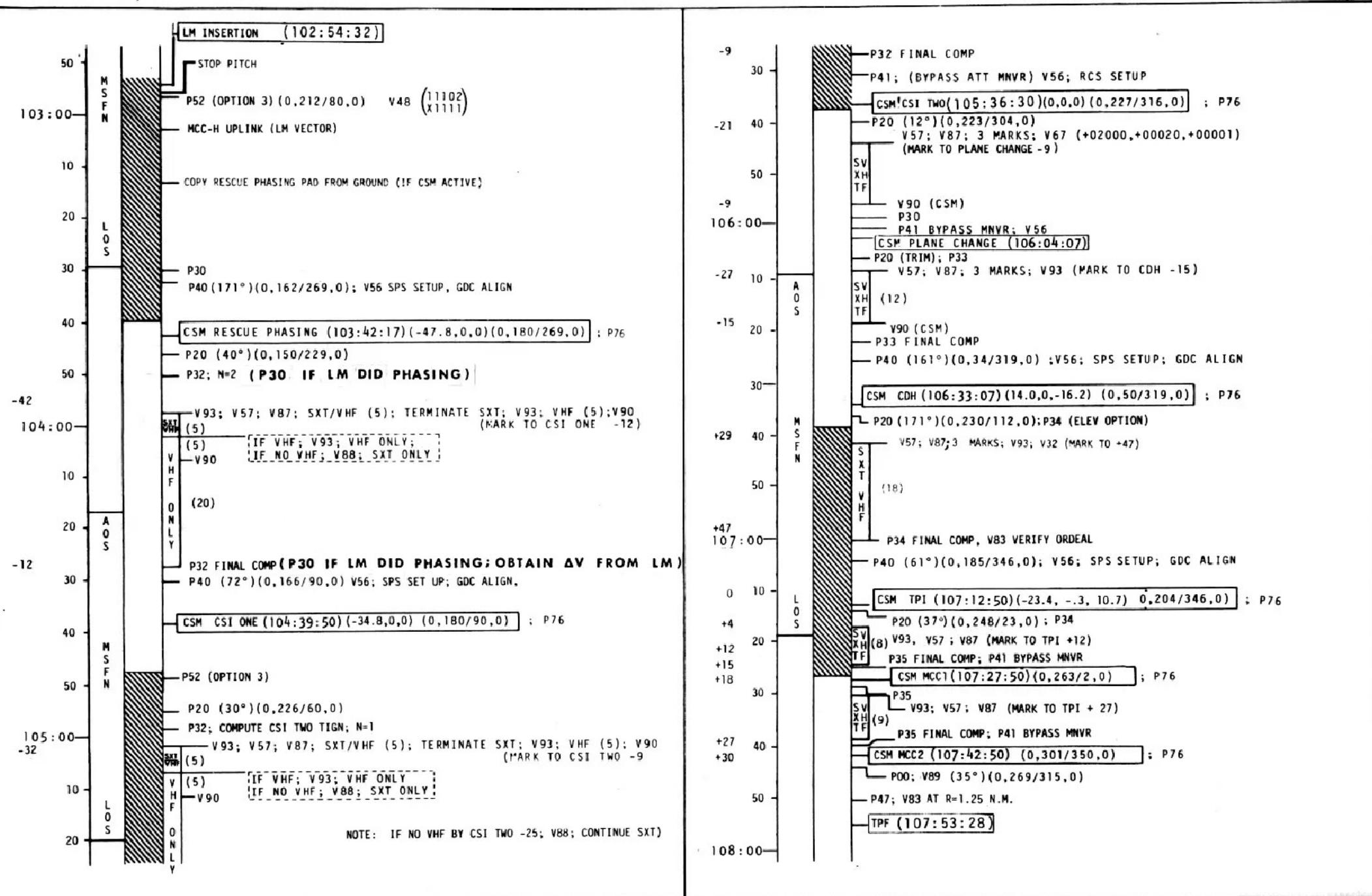
DATE BD JUNE 27, 1969

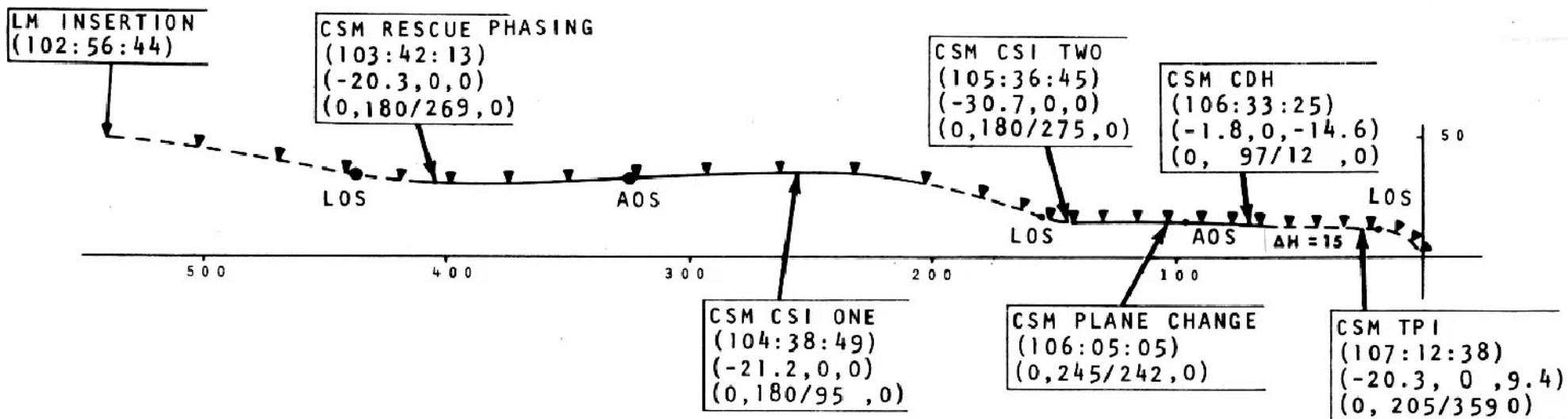
CNP SOLO BOOK

CASE 6 - PDI₁ <10 VARIABLE INSERTION (LM ACTIVE)(CHECKLIST GENERATED FOR ABORT AT PDI₁ +10)





CASE 7 - PDI₁ +12 (10-12.5 MINUTES)(CSM ACTIVE)



RESCUE PHASING PAD			
47			
48			
33	:	:	
81			
22			
ΔV _C	X	X	X
11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
N			

CSM CSI TWO COPY			
11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

CSM CDH COPY			
13	:	:	
75	.	:	.
81	.	.	.

LM CDH P76			
84	.	.	.
33	:	:	

CSM TPI COPY			
37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

LM CSI ONE P76			
84	.	.	.
33	:	:	

LM PC P76			
84	.	.	.
33	:	:	

LM TPI P76			
84	.	.	.
33	:	:	

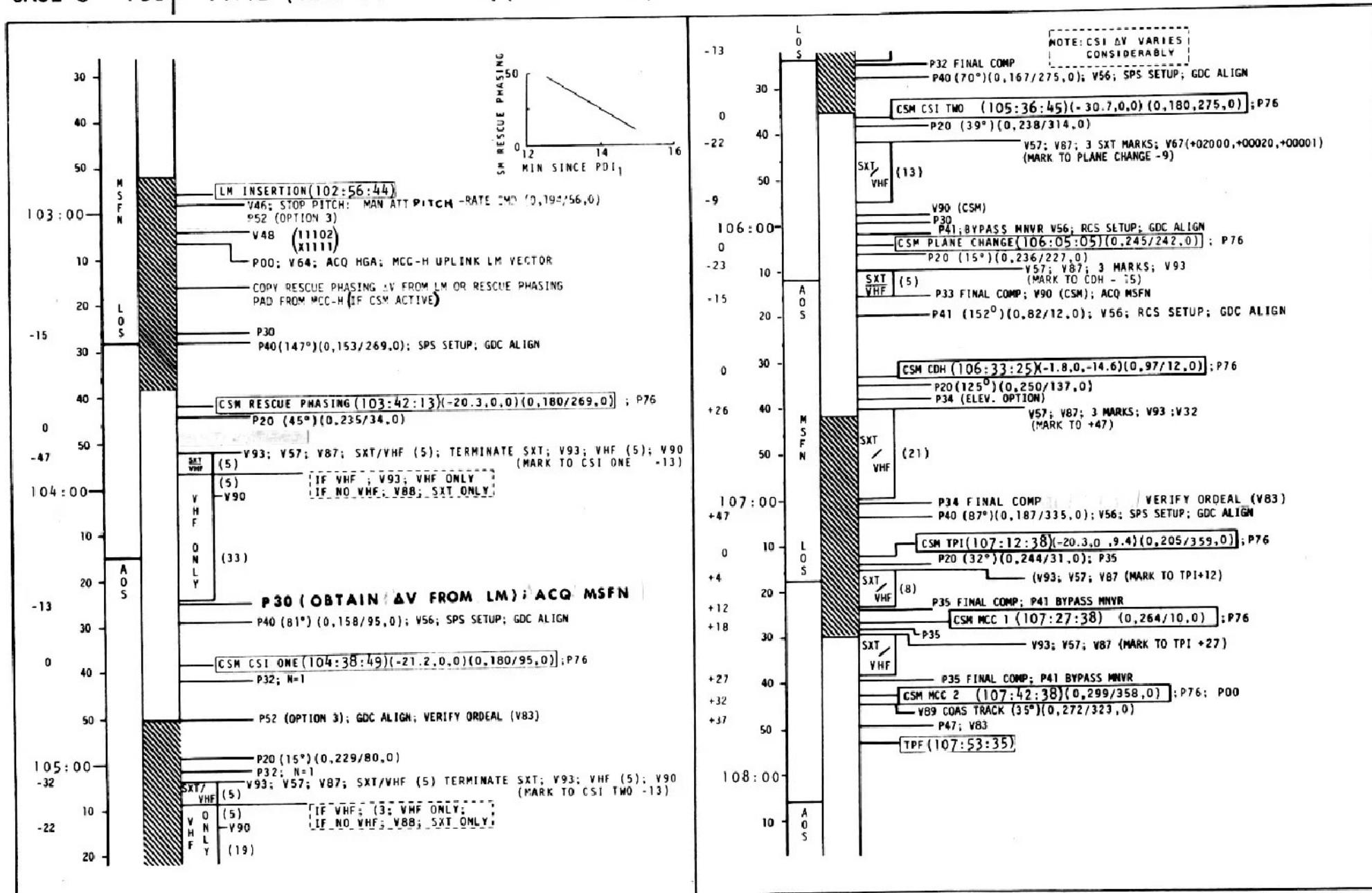
SOURCE MOSEL

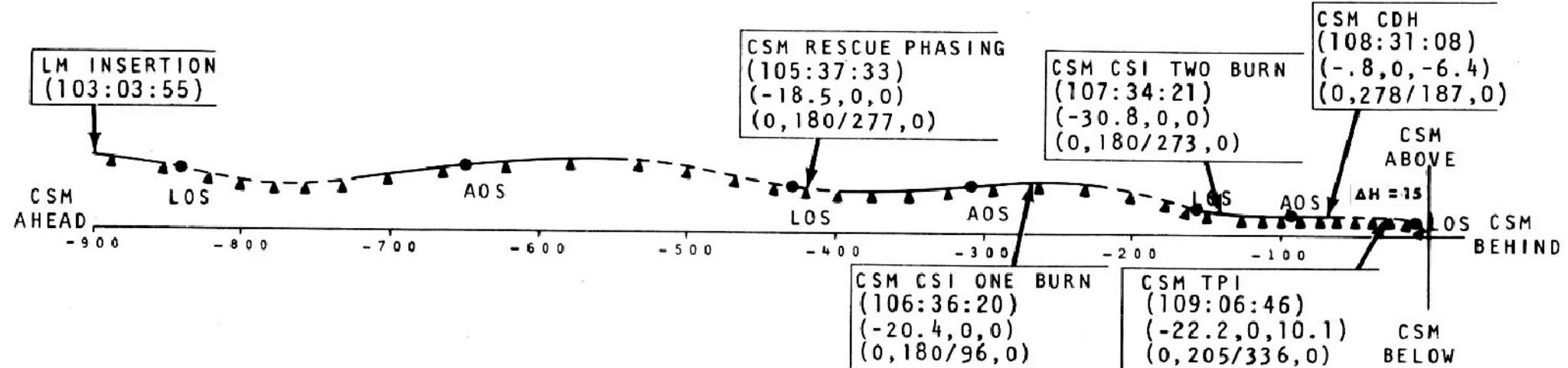
DATE BD JUNE 27, 1969

CMP SOLO BOOK



CASE 8 - PDI₁ +14:12 (12.5-15 MINUTES)(CSM ACTIVE)



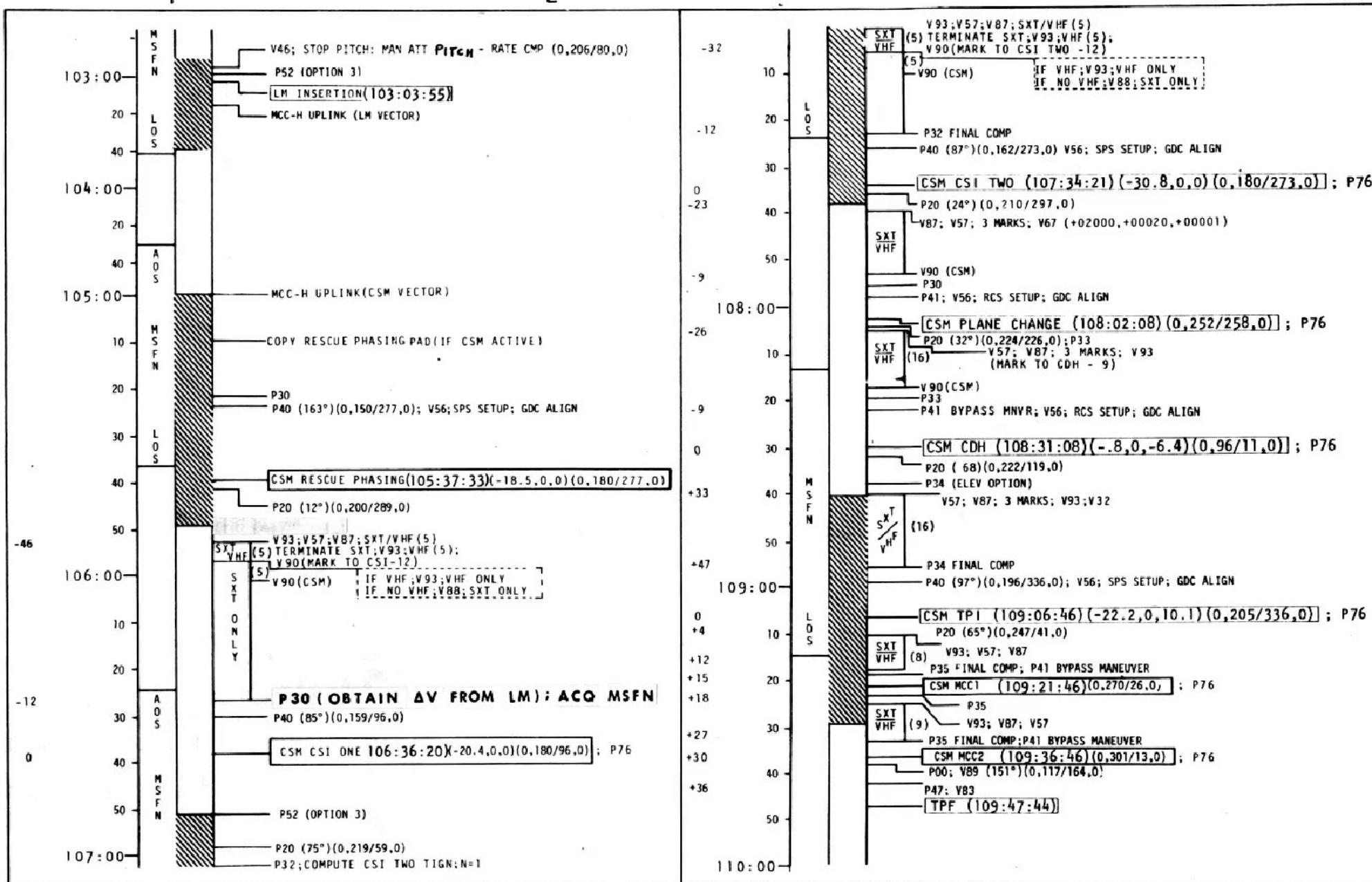


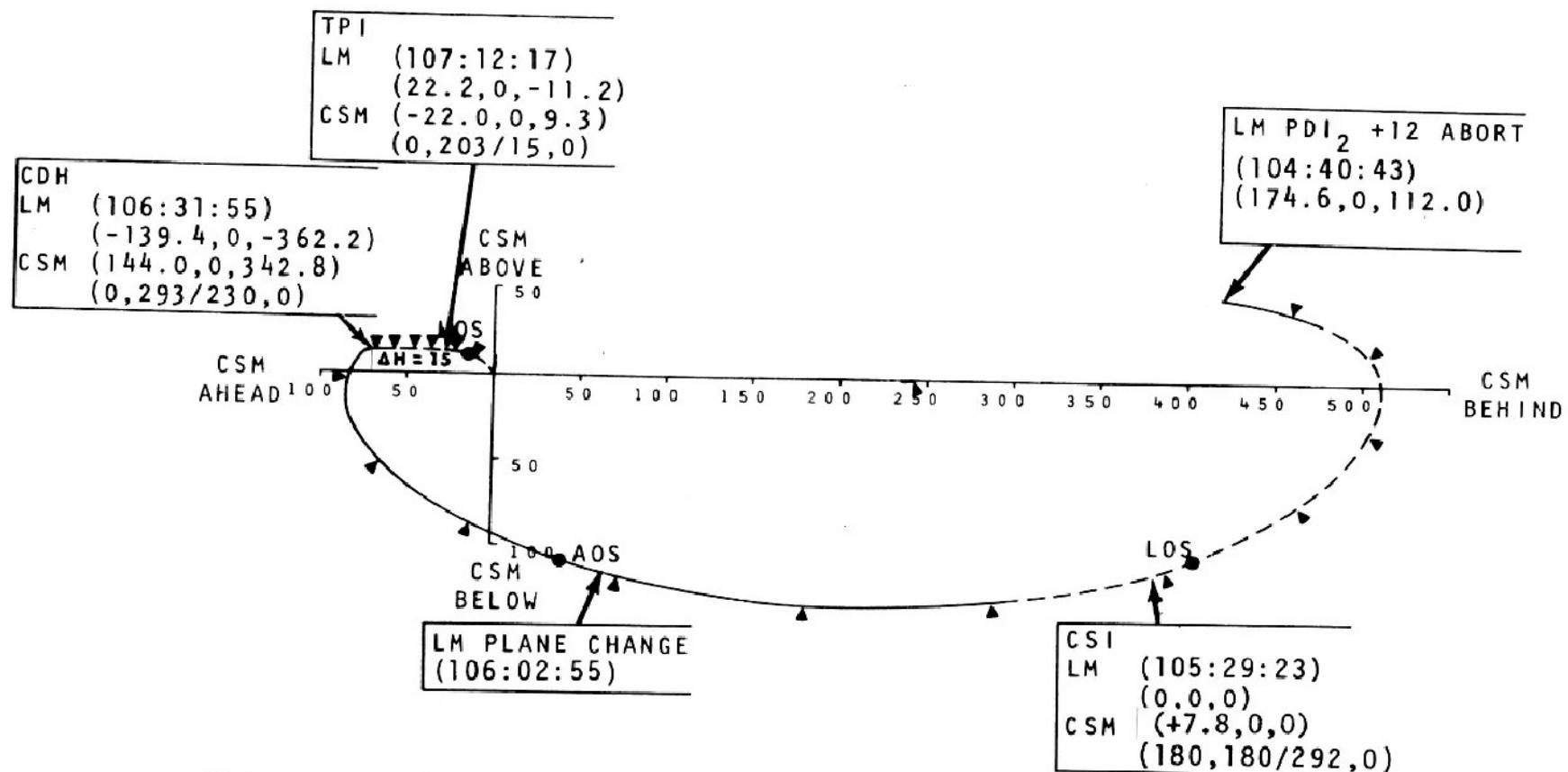
SOURCE MOSEL

DATE BD JUNE 27, 1969

CMP SOLO BOOK

CASE 9 - PDI₁ +21:24 PREFERRED LIFT-OFF(T₂)(CSM ACTIVE)





PDI ABORT P76 PAD			
84	•	•	•
33	•	•	•
CSM CSI COPY			
11	•	•	•
37	•	•	•
75	•	•	•
81	•	•	•
82	•	•	•
LM CSI P76			
84	•	•	•
33	•	•	•

CSM PC COPY			
33	•	•	•
81	•	•	•
LM PC P76			
84	•	•	•
33	•	•	•
CSM CDH COPY			
13	•	•	•
75	•	•	•
81	•	•	•

LM CDH P76			
84	•	•	•
33	•	•	•
CSM TPI COPY			
37	•	•	•
58	•	•	•
81	•	•	•
59	•	•	•
LM TPI P76			
84	•	•	•
33	•	•	•



SOURCE MOSEL

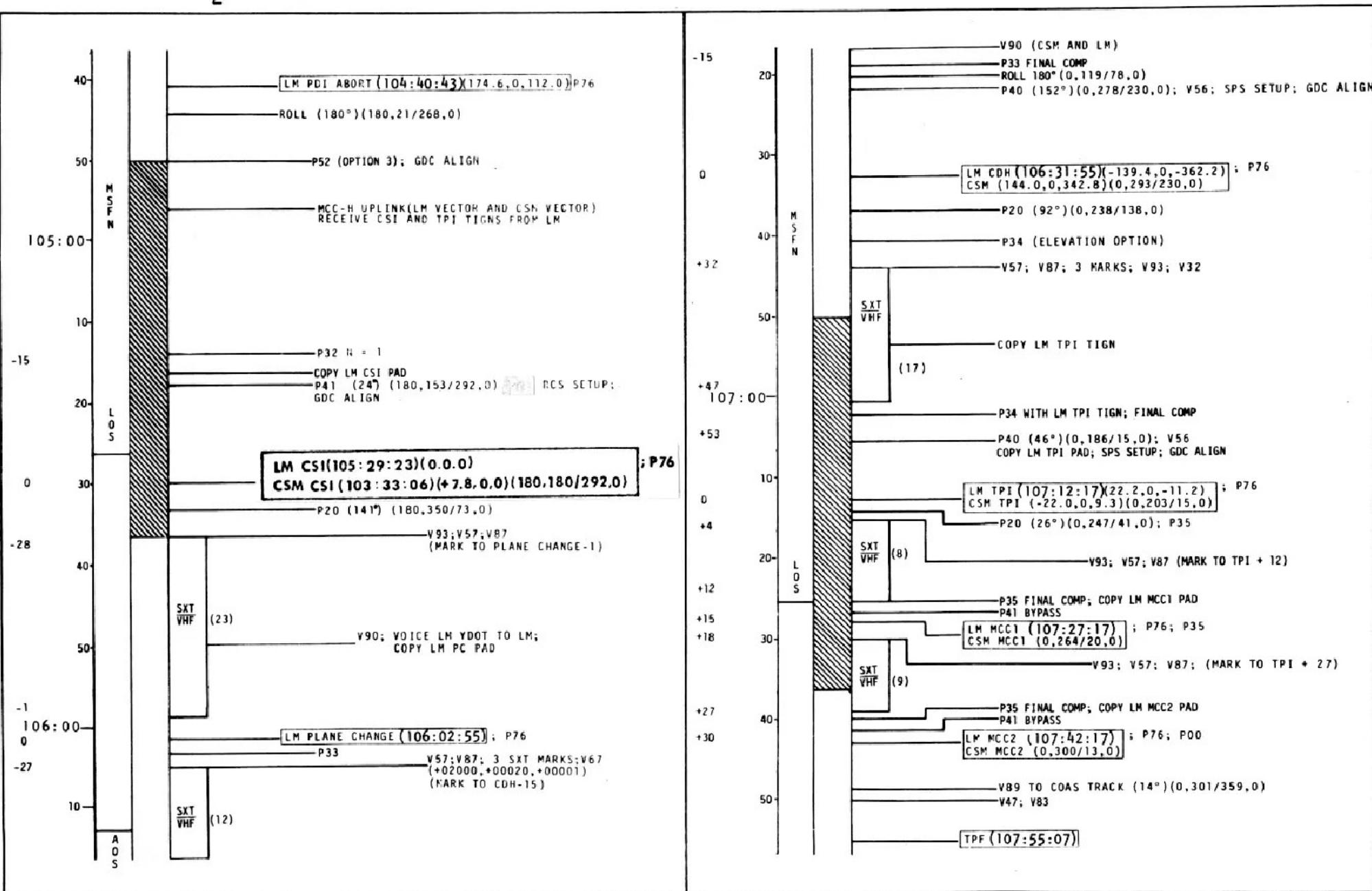
DATE BD JUNE 27, 1969



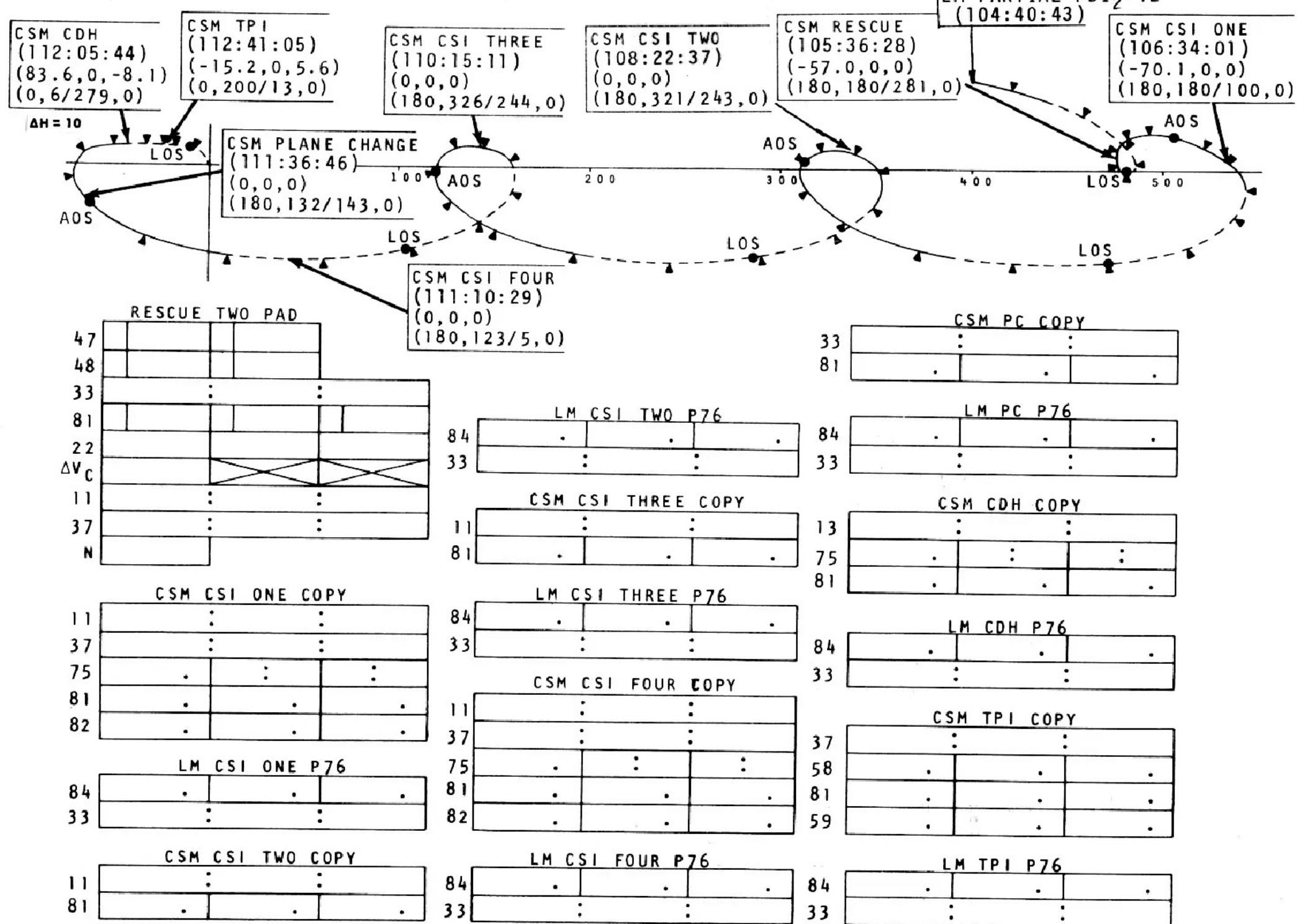
CMP SOLO BOOK



CASE 10 - NO PDI₂ +12 (LM ACTIVE)



CASE 11



SOURCE MOSEL

DATE BD JUNE 27, 1969

CMP SOLO BOOK

CASE 11 - <40 NO PDI₂ +12 (CSM ACTIVE) (CHECKLIST GENERATED FOR ZERO FPS)

	<p>105:00</p> <p>NO PDI₂ + 12 (102:44:26) (104:40:43)</p> <p>ROLL 180° (180,35/281,0)</p> <p>P52 (OPTION 3)</p> <p>MOC-H UPLINK (LM VECTOR AND CSM VECTOR)</p> <p>COPY RESCUE TWO PAD</p> <p>P30</p> <p>P40 (TRIM) (180,165/281,0); SPS SETUP; GDC ALIGN</p> <p>CSM RESCUE (105:36:28) (-57.0,0,0) (180,180/281,0)</p> <p>106:00</p> <p>P32; N=6</p> <p>P40 (179°) (180,165/100,0); SPS SETUP; GDC ALIGN</p> <p>CSM CSI ONE (106:34:01) (-70.1,0,0) (180,180/100,0) ; P76</p> <p>P52 (OPTION 3); GDC ALIGN, VERIFY ORDEAL (V83)</p> <p>107:00</p> <p>P20 (60°) (180,326/40,0)</p> <p>P32; COMPUTE CSI TWO TIGN; N=4 — V83 (VERIFY RANGE)</p> <p>SXT (5) VHF V93; V57; V87; SXT/VHF (5); TERMINATE SXT; V93; VHF (5); V90 (MARK TO CSI TWO -9)</p> <p>(5) IF VHF; V93; VHF ONLY; V90 IF NO VHF; V88; SXT ONLY</p> <p>108:00</p> <p>P32 FINAL COMP</p> <p>P41 (BYPASS ATT MNVR); V56; RCS SETUP GDC ALIGN</p> <p>CSM CSI TWO (108:22:37) (180,321/243,0) ; P76</p> <p>P20 (26°) (180,317/217,0)</p> <p>V93; V87 (VHF ONLY); 3 MARKS; V93 (MARK TO CSI THREE +32) (22 OPTIONAL)</p>	<p>109:00</p> <p>LOS</p> <p>P32; COMPUTE CSI THREE TIGN; N=2 SXT (5) VHF V93; V57; V87; SXT/VHF (5); TERMINATE SXT; V93; VHF (5); V90 (MARK TO CSI THREE -9)</p> <p>(5) IF VHF; V93; VHF ONLY; V90 IF NO VHF; V88; SXT ONLY</p> <p>110:00</p> <p>AOS</p> <p>P32 FINAL COMP P41; (BYPASS ATT MNVR) V56; RCS SETUP; GDC ALIGN</p> <p>CSM CSI THREE (110:15:11) (180,326/244,0) ; P76</p> <p>P20 (TRIM)</p> <p>P32; COMPUTE CSI FOUR TIGN; N=1</p> <p>SXT (5) VHF V93; V57; V87; SXT/VHF (5); TERMINATE SXT; V93; VHF (5); V90 (MARK TO CSI FOUR -9)</p> <p>(5) IF VHF; V93; VHF ONLY; V90 IF NO VHF; V88; SXT ONLY</p> <p>111:00</p> <p>LOS</p> <p>P32 FINAL COMP P41; (BYPASS ATT MNVR) V56; RCS SETUP; GDC ALIGN</p> <p>CSM CSI FOUR (111:10:29) (180,123/5,0) ; P76</p> <p>P20 (TRIM) V57; V87; 3 MARKS; V67 {02000,+00020,+00001} (MARK TO PLANE CHANGE -9)</p> <p>SXT (13) VHF V90 P30</p> <p>P41; (BYPASS ATT MNVR) V56; RCS SETUP; GDC ALIGN</p> <p>CSM PLANE CHANGE (111:36:46) (180,132/143,0) ; P76</p> <p>P20(11°) (180,138/132,0) SXT (8) VHF V57; V87; 3 MARKS; V93</p> <p>P33 FINAL COMP; V90 (CSM) ROLL 180° AT 2°/SEC (0,155/109,0) ACQ MSFN P40 (170°) (0,349/279,0); SPS SETUP; GDC ALIGN NOTE: CDH AV VARIES CONSIDERABLY</p> <p>112:00</p> <p>AOS</p> <p>CSM CDH (112:05:44) (83.6,0,0,-8.1) (0,6/279,0) ; P76</p> <p>P20 (137°) (0,243/142,0)</p> <p>P34 (ELEV. OPTION) V57; V87; 3 MARKS; V93; V32</p> <p>SXT (12) VHF</p> <p>P34 FINAL COMP; VERIFY ORDEAL (V83)</p> <p>P40 (58°) (0,176/13,0); V56; SPS SETUP; GDC ALIGN</p> <p>CSM TPI (112:41:05) (-15.2,0,0,5.6) (0,200/13,0) ; P76</p> <p>P20(41°) (0,241/54,0) V93; V57; V87 (MARK TO TPI +12)</p> <p>SXT (8) VHF P35 FINAL COMP; P41 BYPASS MNVR</p> <p>CSM MCC1 (112:56:05) (0,270/35,0) ; P76</p> <p>SXT (9) V93; V57; V87 P35 FINAL COMP; P41 BYPASS MNVR</p> <p>CSM MCC2 (113:11:05) (0,308/28,0) ; P76</p> <p>V89 COAS TRACK (35°) (0,285/353,0)</p> <p>P47; V83</p> <p>113:00</p> <p>TPF (113:24:00)</p>
	<p>CASE 11</p>	<p>PAGE 23</p>

CASE 12

RESCUE TWO PAD

47			
48			
33	:	:	
81			
22			
ΔV_C			
11			
37	:	:	
N			

CSM CSI ONE COPY

11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

LM CSI ONE P76

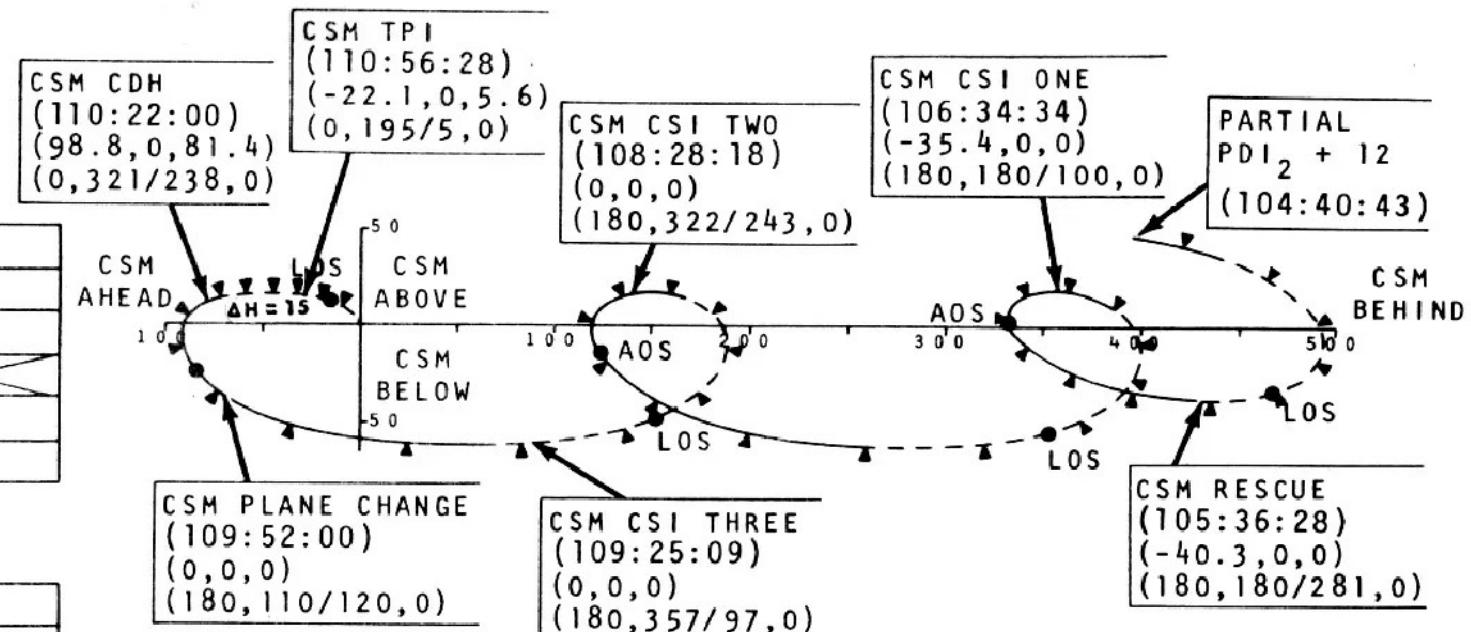
84	.	.	.
33	:	:	

CSM CSI TWO COPY

11	:	:	
37	:	:	
75	.	.	.
81	.	.	.
82	.	.	.

LM CSI TWO P76

84	.	.	.
33	:	:	



CSM CSI THREE COPY

11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

LM CSI THREE P76

84	.	.	.
33	:	:	

CSM PC COPY

33	:	:	
81	.	.	.

LM PC P76

84	.	.	.
33	:	:	

CSM CDH COPY

13	:	:	
75	.	:	:
81	.	.	.

LM CDH P76

84	.	.	.
33	:	:	

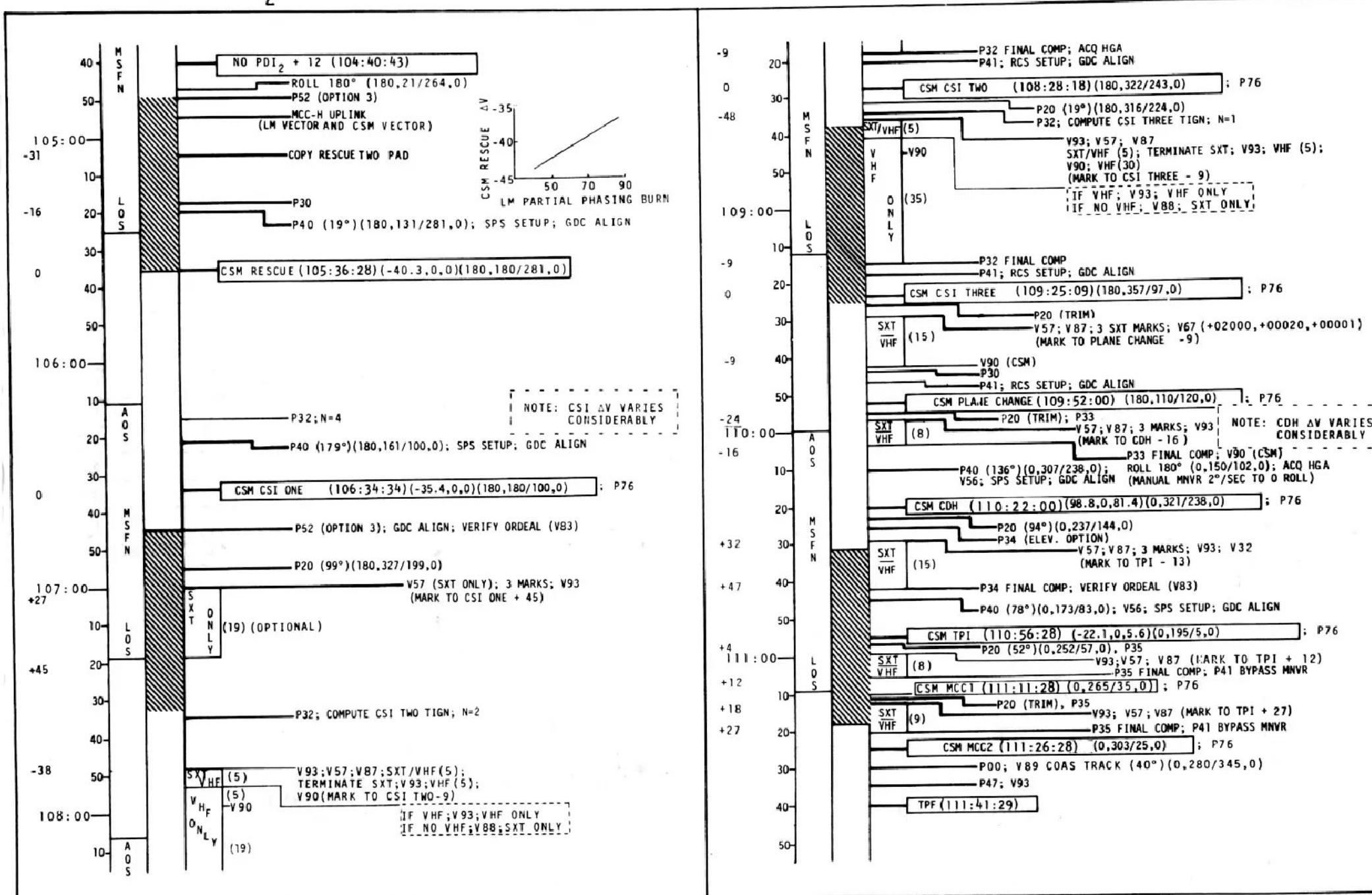
CSM TPI COPY

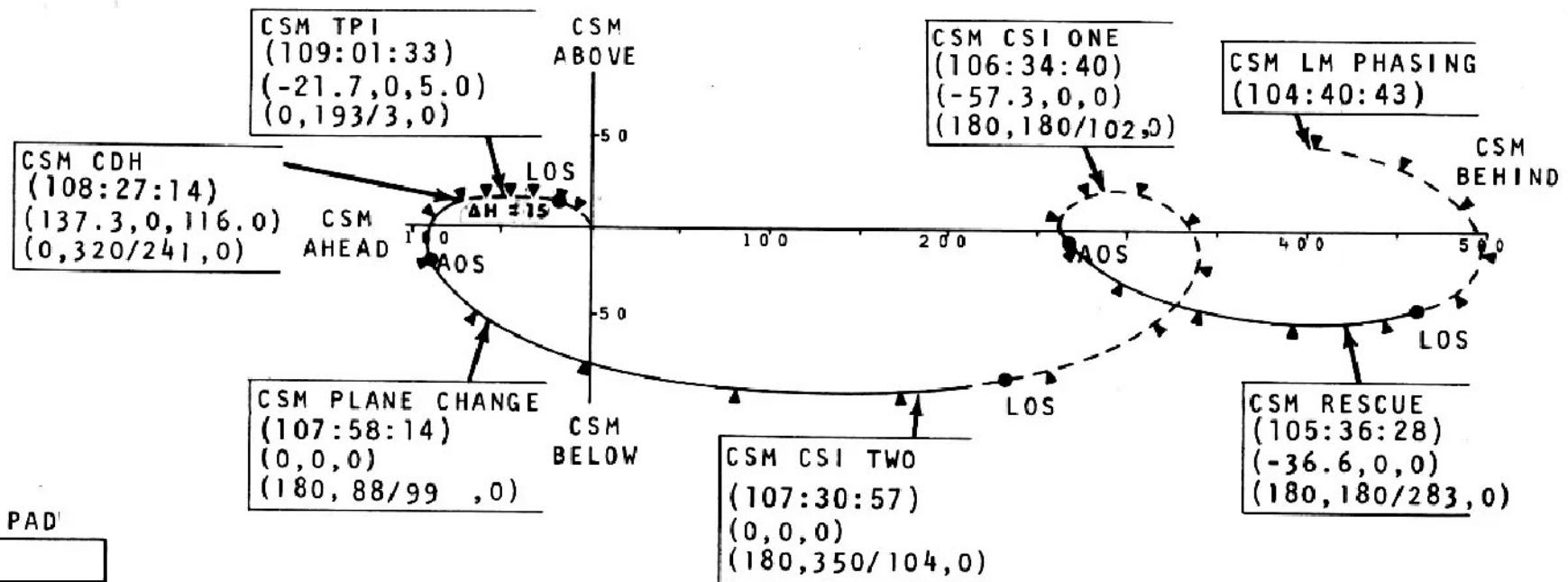
37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

LM TPI P76

84	.	.	.
33	:	:	

CASE 12 - 40-90 NO PDI, +12 (CSM ACTIVE)(CHECKLIST GENERATED FOR 65 FPS)





47		
48		
33	:	:
81		
22		
ΔV		
0	X	X
11	.	.
37	.	.
N		

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

84	.	.	.
33	:	:	

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

84	.	.	.
33	:	:	
33	:	:	

33	:	:	
81	.	.	.

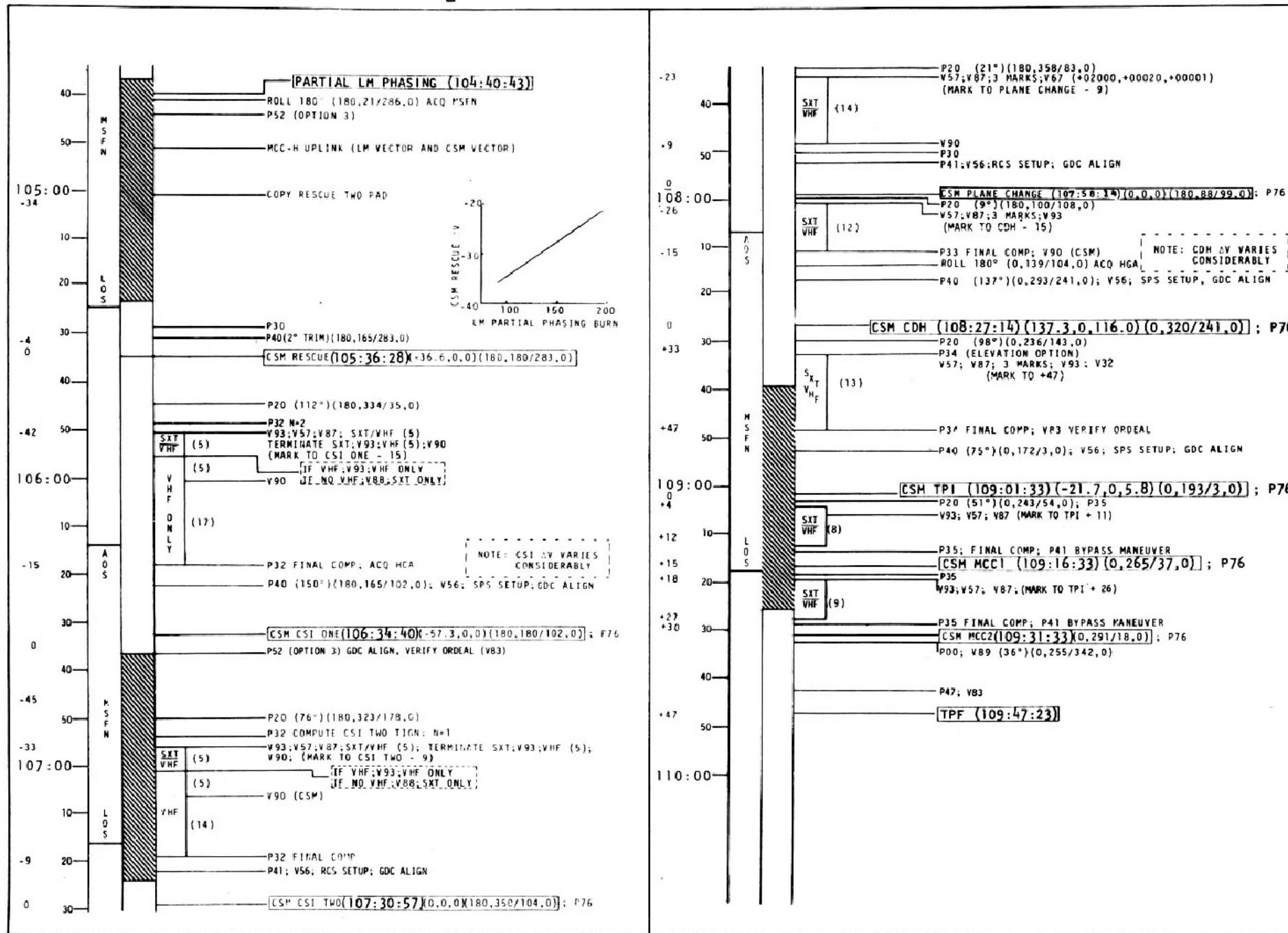
13	:	:
75	.	.
81	.	.
84	.	.
33	:	:

37	:	:
58	.	.
81	.	.
59	.	.
59	.	.

84	.	.	.
33	:	:	

84	.	.	.
33	:	:	

33	:	:	
81	.	.	.

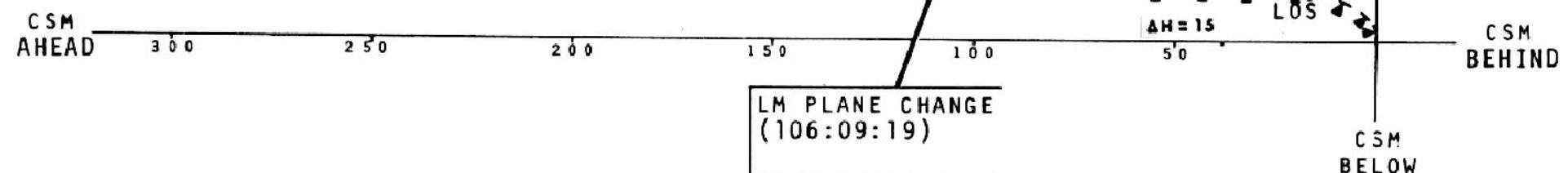
CASE 13 - ≥ 90 PDI₂ +12 (CSM ACTIVE) (CHECKLIST GENERATED FOR 90 FPS)

LM INSERTION
(104:50:38)

LM CSI
(105:40:27)
(49.6,0,0)
CSM
(-50.5,0,0)
(0,180/258,0)

LM CDH
(106:37:52)
(20.7,0,6.2)
CSM
(-20.5,0,-2.6)
(0,173/86,0)

LM TPI
(107:12:39)
(22.1,0,-11.1)
CSM ABOVE
(-22.2,0,13.3)
(0,211/19,0)

**CSM CSI COPY**

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

LM CSI P76

84	.	.	.
33	:	:	

CSM PC COPY

33	:	:
81	.	.

LM PC P76

84	.	.	.
33	:	:	

CSM CDH COPY

13	:	:
75	.	.
81	.	.

LM CDH P76

84			
33	:	:	

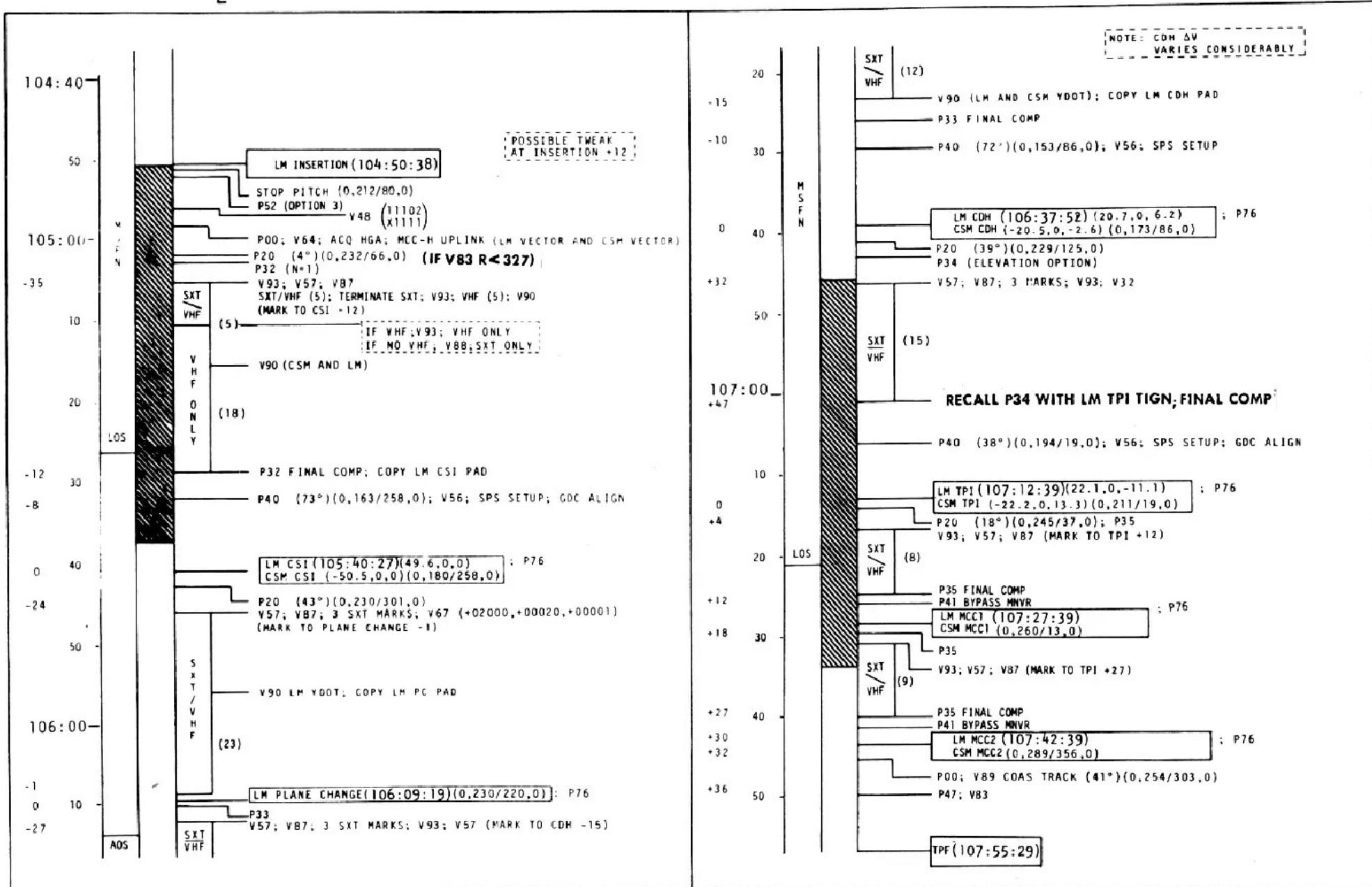
CSM TPI

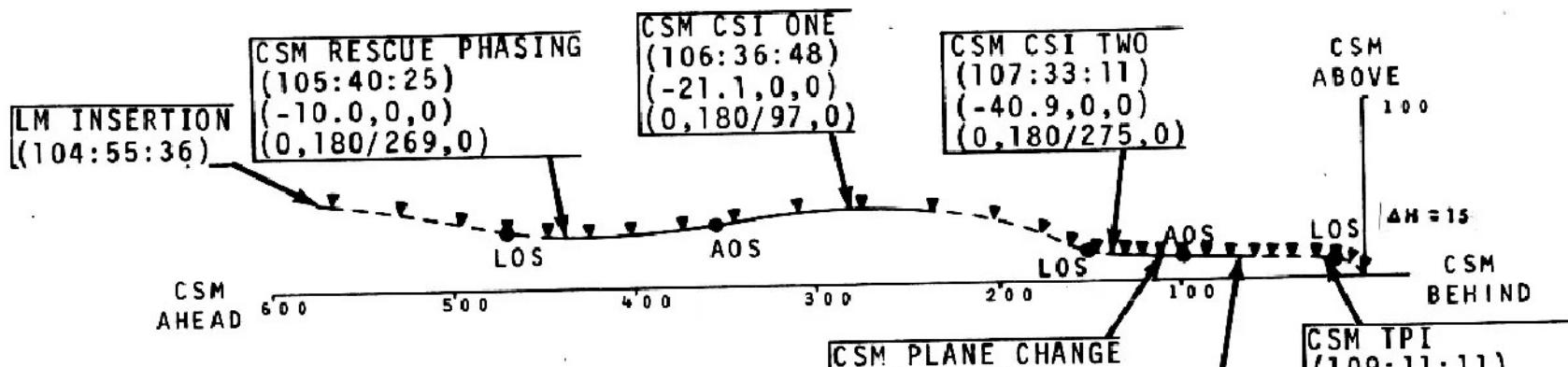
37	:	:
58	.	.
81	.	.
59	.	.

LM TPI P76

84	.	.	.
33	:	:	

CASE 14 - PDI₂ <14:30 VARIABLE INSERTION (LM ACTIVE) (CHECKLIST GENERATED FOR ABORT AT PDI₂ +14:24)





47			
48			
33	:	:	
81			
22			
ΔV_C			
11			
37			
N			

11			
37			
75	.	:	:
81	.	.	.
82	.	.	.

13			
75	.	:	:
81	.	.	.
84	.	.	.
33			

11			
37			
75	.	:	:
81	.	.	.
82	.	.	.

84	.	.	.
33			

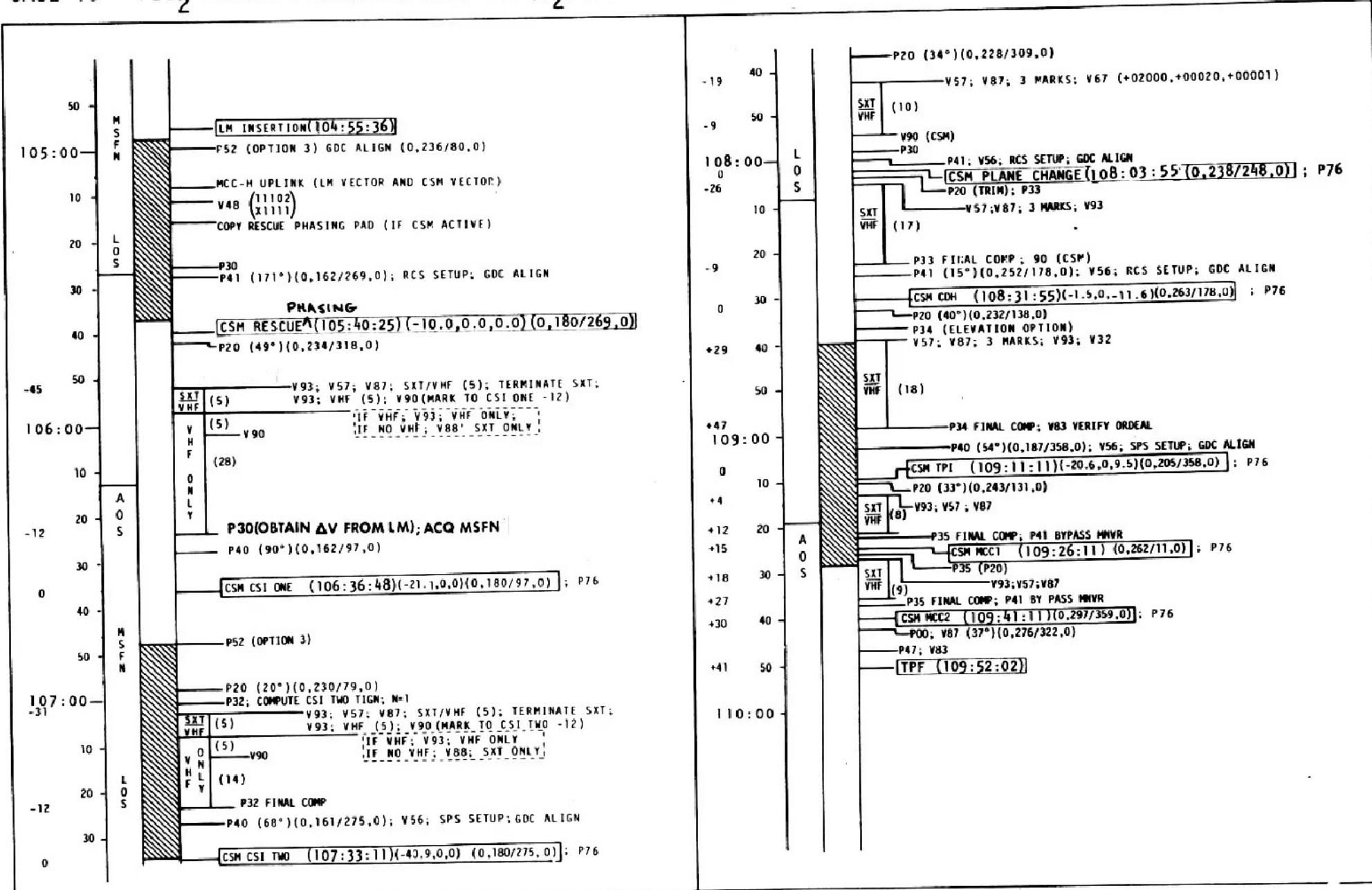
37			
58	.	.	.
81	.	.	.
59	.	.	.

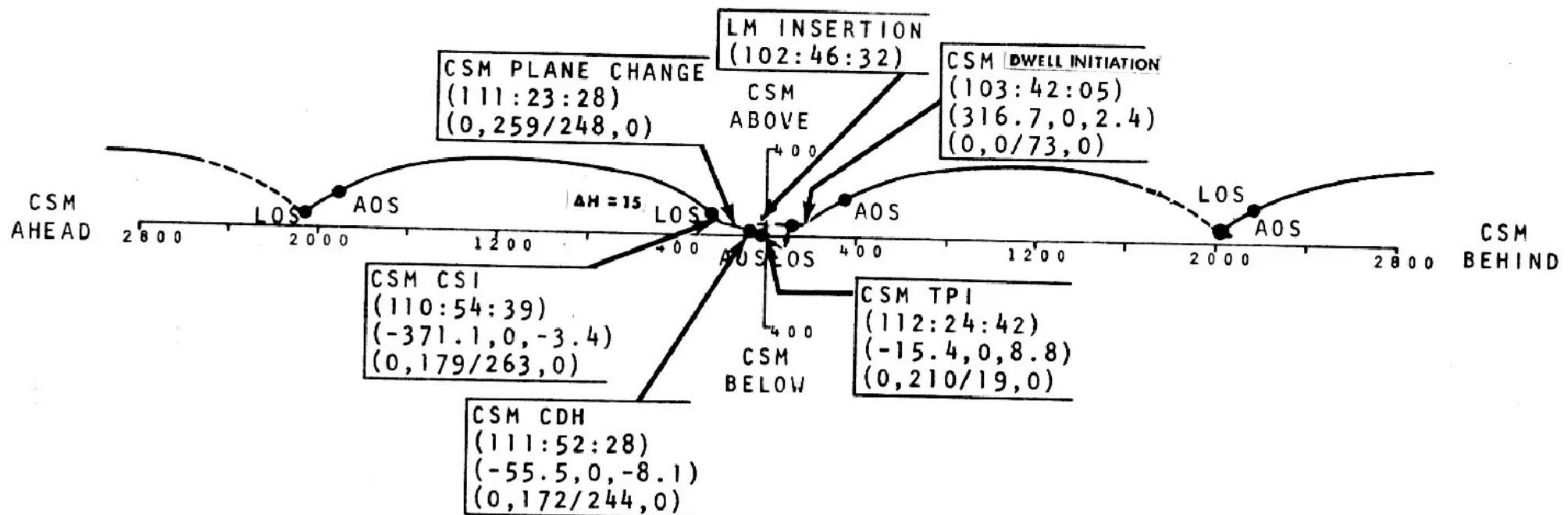
84	.	.	.
33			

84	.	.	.
33			

84	.	.	.
33			

CASE 15 - PDI₂ +19:22 PREFERRED LIFT-OFF(T₂)(CSM ACTIVE)





CSM RESCUE PAD

47			
48			
33	:	:	
81			
22			
ΔV_C			
11	:	:	
37	:	:	
N			

CSM CSI COPY

11	:	:	
37	:	:	
75	.	:	:
81	.	.	.
82	.	.	.

SOURCE MOSEL

DATE BD JUNE 27, 1969



LM CSI P76

84	.	.	.
33	:	:	

CSM PC COPY

33	:	:	
81	.	.	.

LM PC P76

84	.	.	.
33	:	:	

CSM CDH COPY

13	.	.	.
75	.	:	:
81	.	.	.

LM CDH P76

84	.	.	.
33	:	:	

CSM TPI COPY

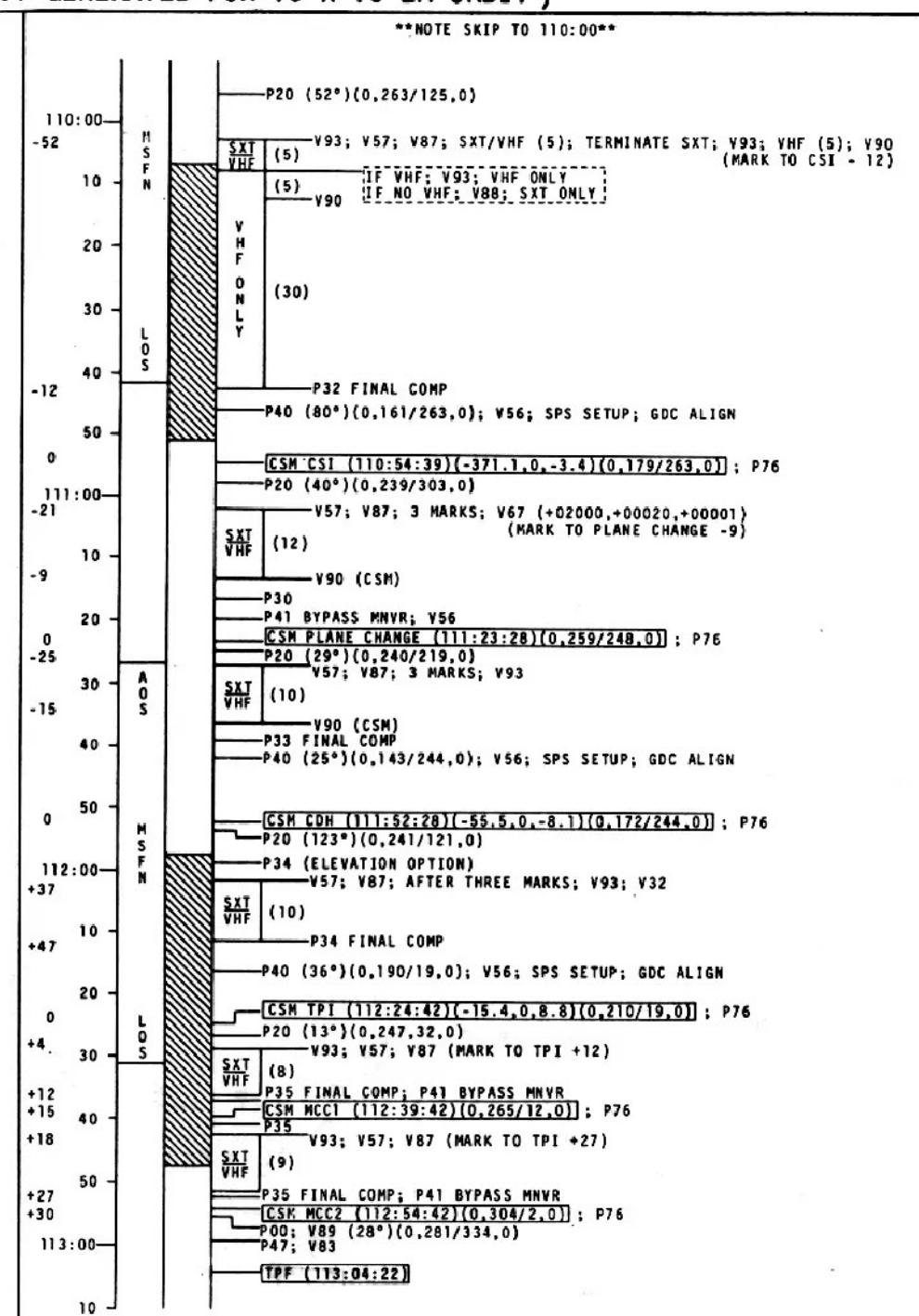
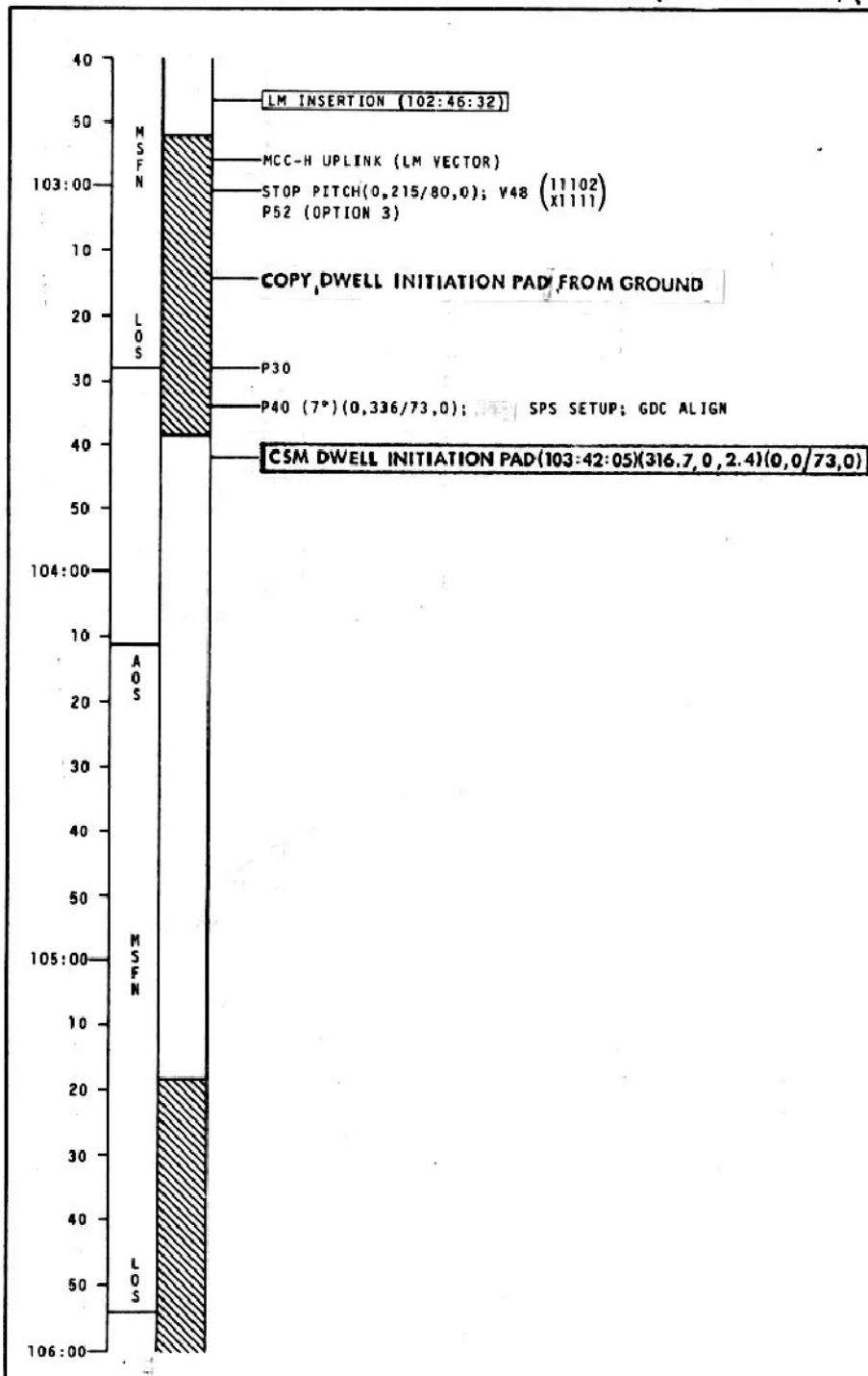
37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

LM TPI P76

84	.	.	.
33	:	:	

CMP SOLO BOOK

CASE 16 CONTINGENCY INSERTION ORBITS (CSM ACTIVE)(CHECKLIST GENERATED FOR 10 X 10 LM ORBIT)



MANUAL INSERTION (CSM ACTIVE)

CSM RESCUE PHASING (126:22:34)
 $(193.0, 0.0, 0.0)$
 $(0, 0/260, 0)$

CSM CSI (129:42:58)
 $(-45.2, 0.0, 0.0)$
 $(0, 180/258, 0)$

CSM ABOVE

CSM CDH (130:47:52)
 $(-8.1, 0.0, -85.8)$
 $(0, 95/352, 0)$

100

AOS

LOS

CSM AHEAD

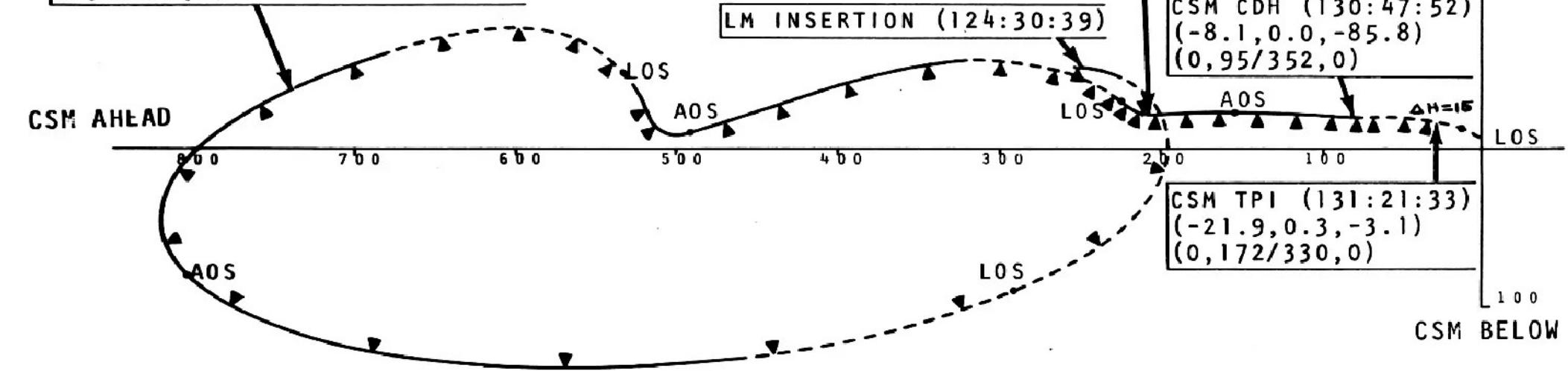
CSM TPI (131:21:33)
 $(-21.9, 0.3, -3.1)$
 $(0, 172/330, 0)$

100

CSM BELOW

LOS

LM INSERTION (124:30:39)

**CSM RESCUE PHASING PAD**

47			
48			
33	:	:	
81			
22			
ΔV_C	.	X	X
11	.	.	.
37	.	.	.
N			

CSM CSI COPY

11	.	.	.
37	.	.	.
75	.	:	:
81	.	.	.
82	.	.	.

LM CSI P76

84	.	.	.
33	:	:	

CSM PC COPY

33	:	:	
81	.	.	.

LM PC P76

84	.	.	.
33	:	:	

CSM CDH COPY

13	:	:	
75	.	:	:
81	.	.	.

LM CDH P76

84	.	.	.
33	:	:	

CSM TPI COPY

37	:	:	
58	.	.	.
81	.	.	.
59	.	.	.

LM TPI P76

84	.	.	.
33	:	:	

SOURCE
DATE

REV "D"

JULY 10, 1969



CMP SOLO BOOK



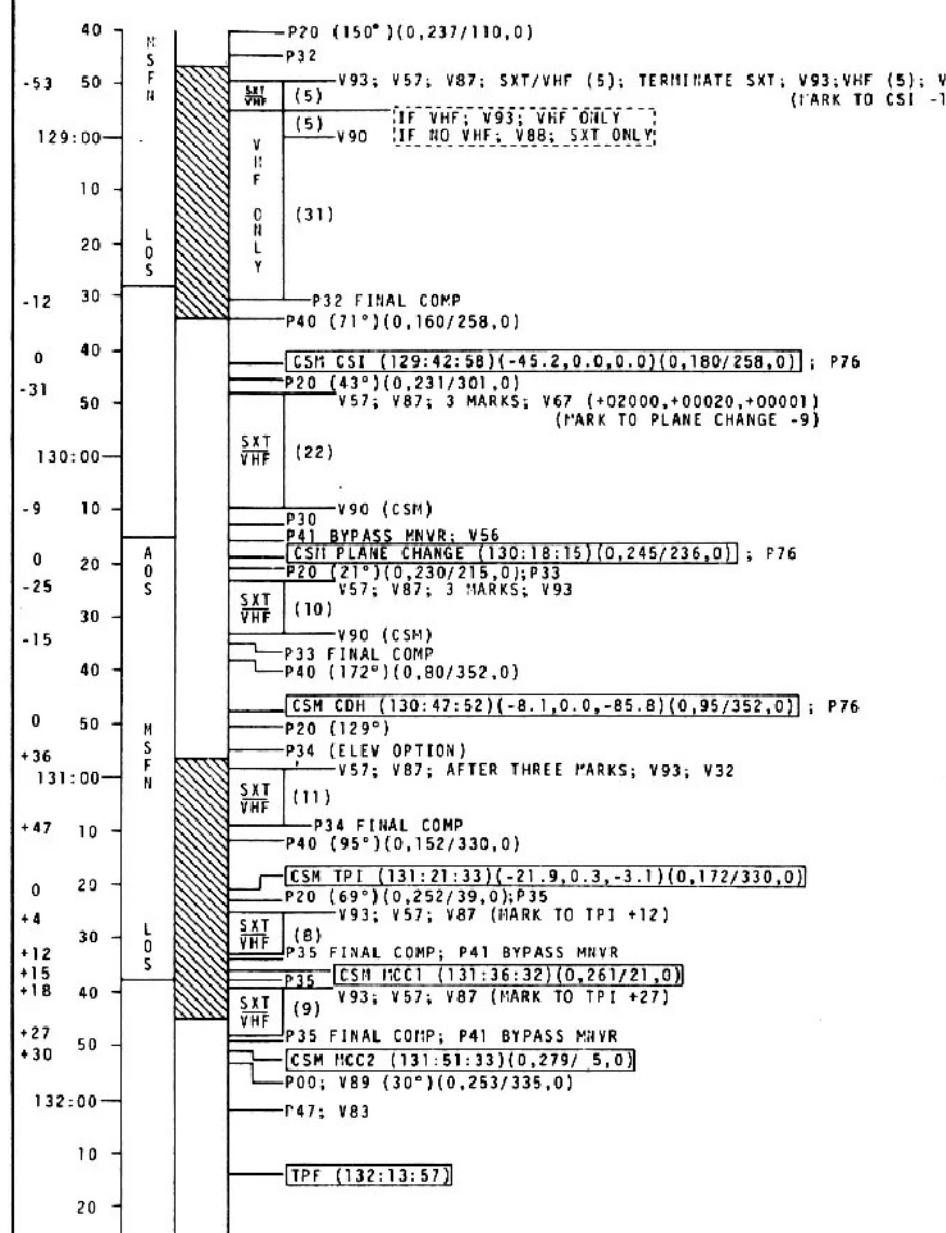
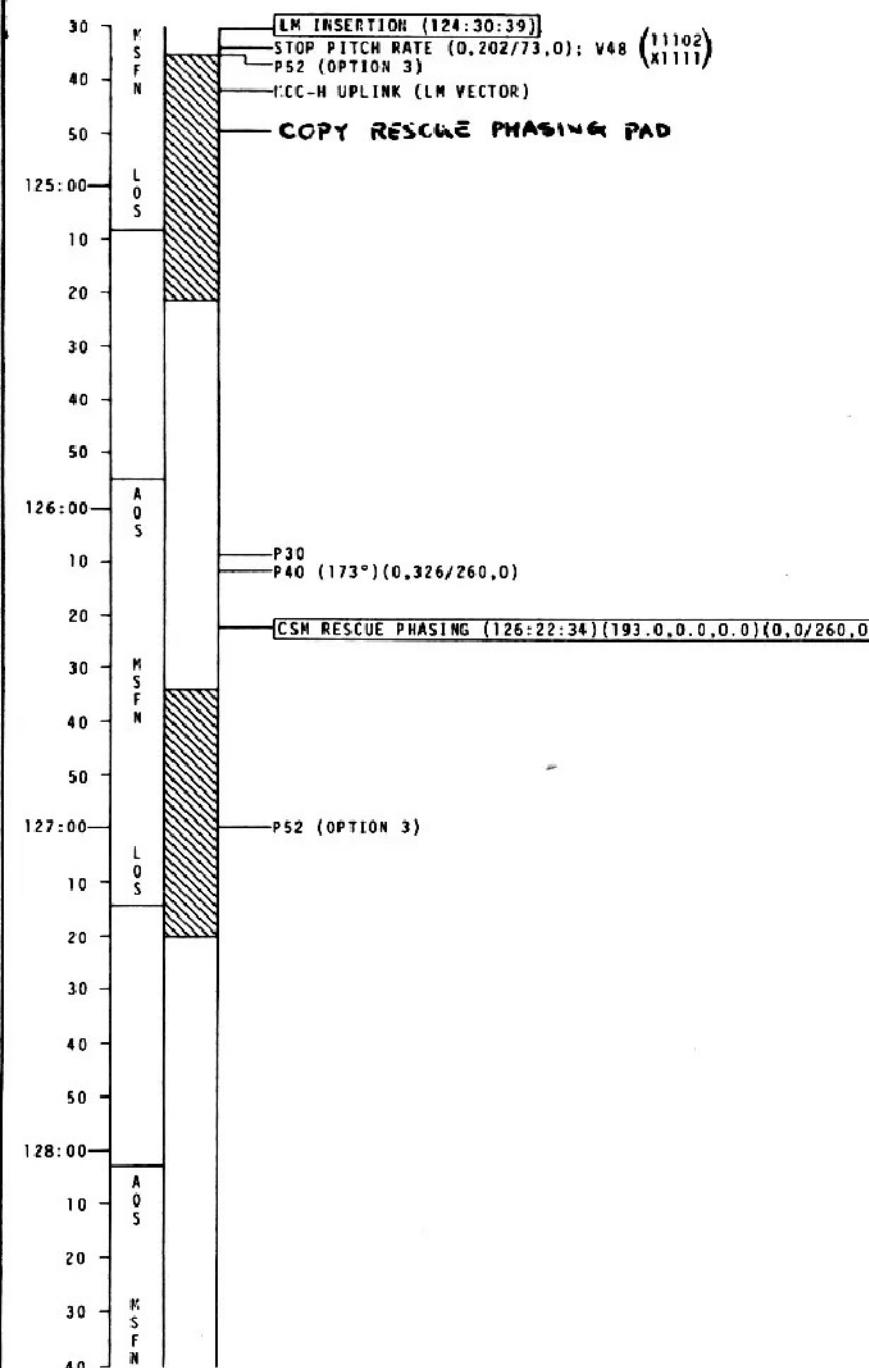
SOURCE
DATE

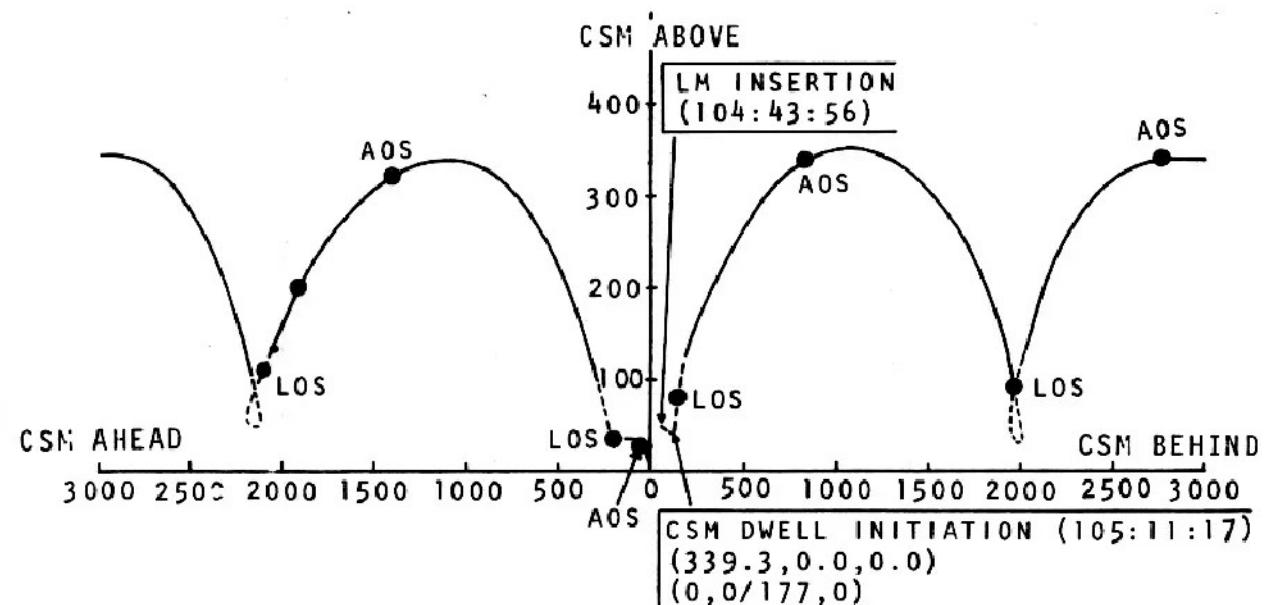
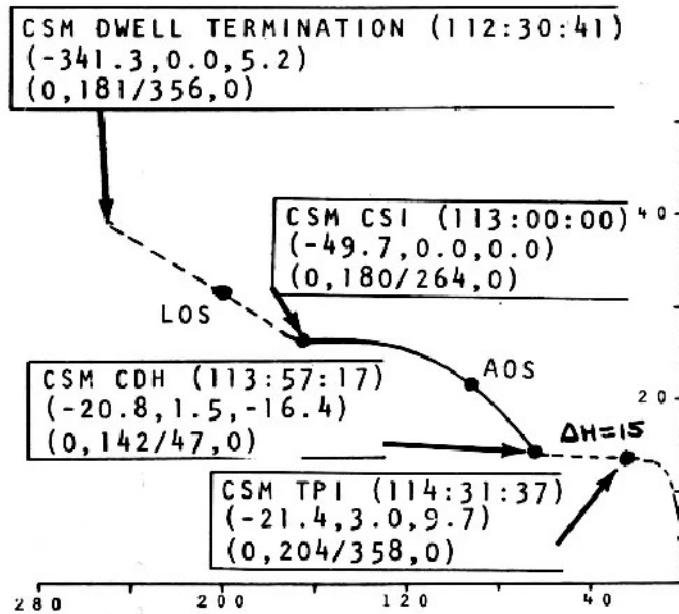
REV "D" JULY 10, 1969

CMP SOLO BOOK

CASE 17 MANUAL INSERTION (CSM ACTIVE)

(Checklist generated for 10x200 LM ORBIT)





CSM DWELL INITIATION PAD

47		
48		
33	:	:
81		
22		
ΔV _C	.	X
11	:	:
37	:	:
N		

CSM DWELL TERMINATION PAD

47		
48		
33	:	:
81		
22		
ΔV _C	.	X
11	:	:
37	:	:
N		

CSM CSI COPY

11	:	:
37	:	:
75	.	:
81	.	.
82	.	.

LM CSI P76

84	.	.
33	:	:

CSM PC COPY

33	:	:
81	.	.

LM PC P76

84	.	.
33	:	:

CSM CDH COPY

13	:	:
75	.	.
81	.	.

LM CDH P76

84	.	.
33	:	:

CSM TPI COPY

37	:	:
58	.	.
81	.	.
59	.	.

LM TPI P76

84	.	.
33	:	:

SOURCE

DATE

REV "D" JULY 10, 1969

CMP SOLO BOOK

SOURCE

DATE REV "D" JULY 10, 1969

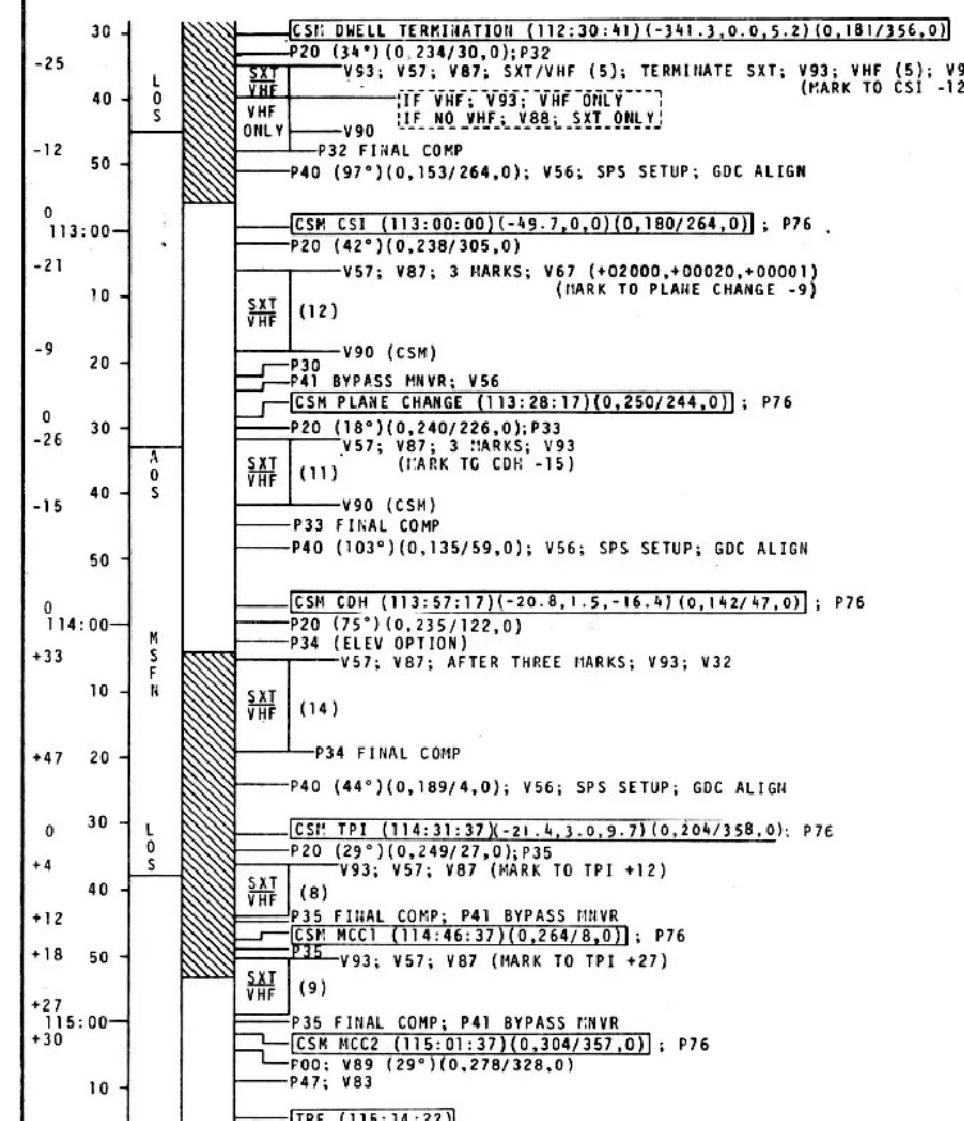
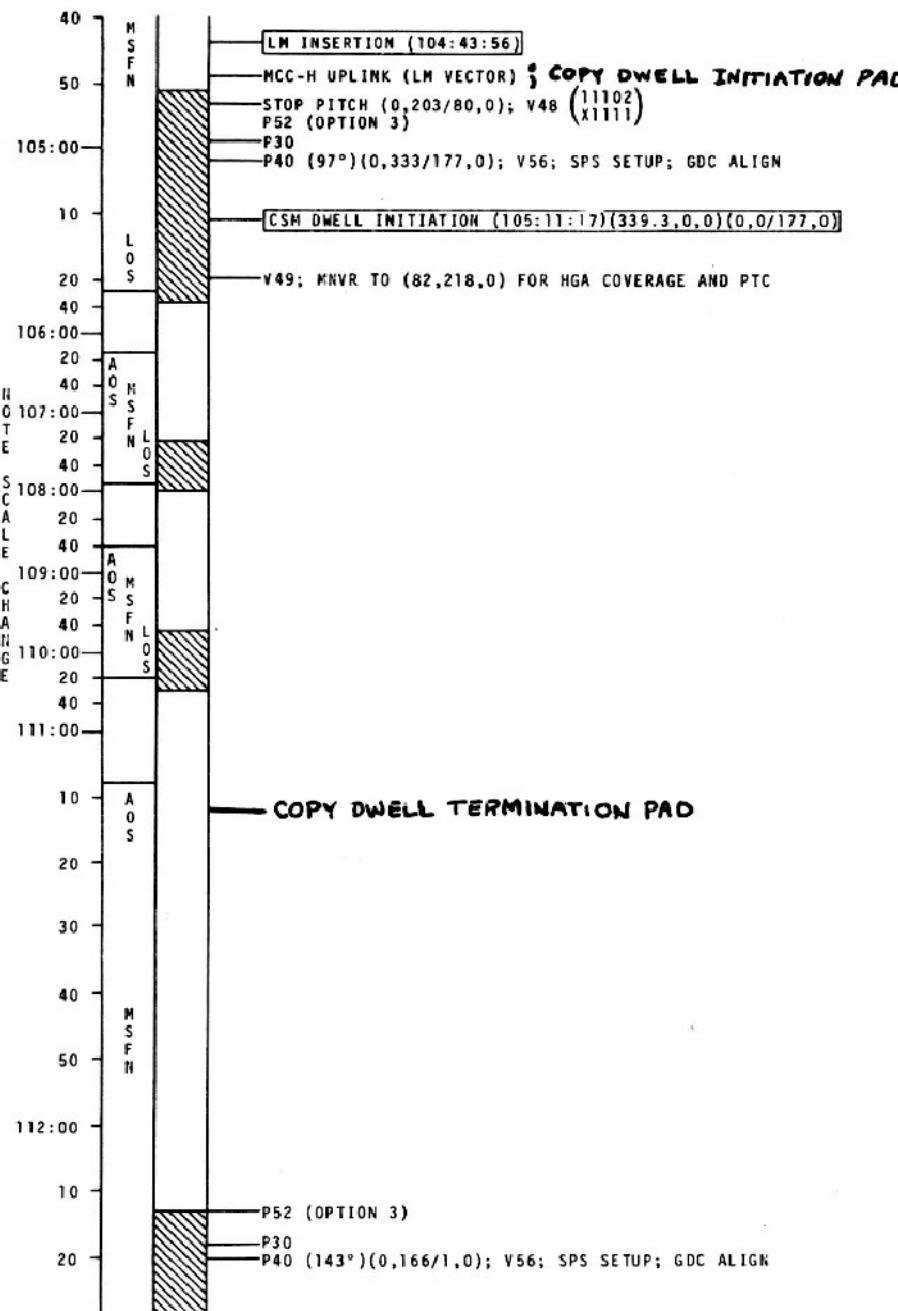
NOTE: CHECKLIST GENERATED FOR CASE WHERE
CSM IS APPROXIMATELY 15 DEG PRIOR
TO LANDING SITE AT LIFT-OFF

CASE 18 ANYTIME LIFT-OFF (CSM ACTIVE)

APOLLO 11

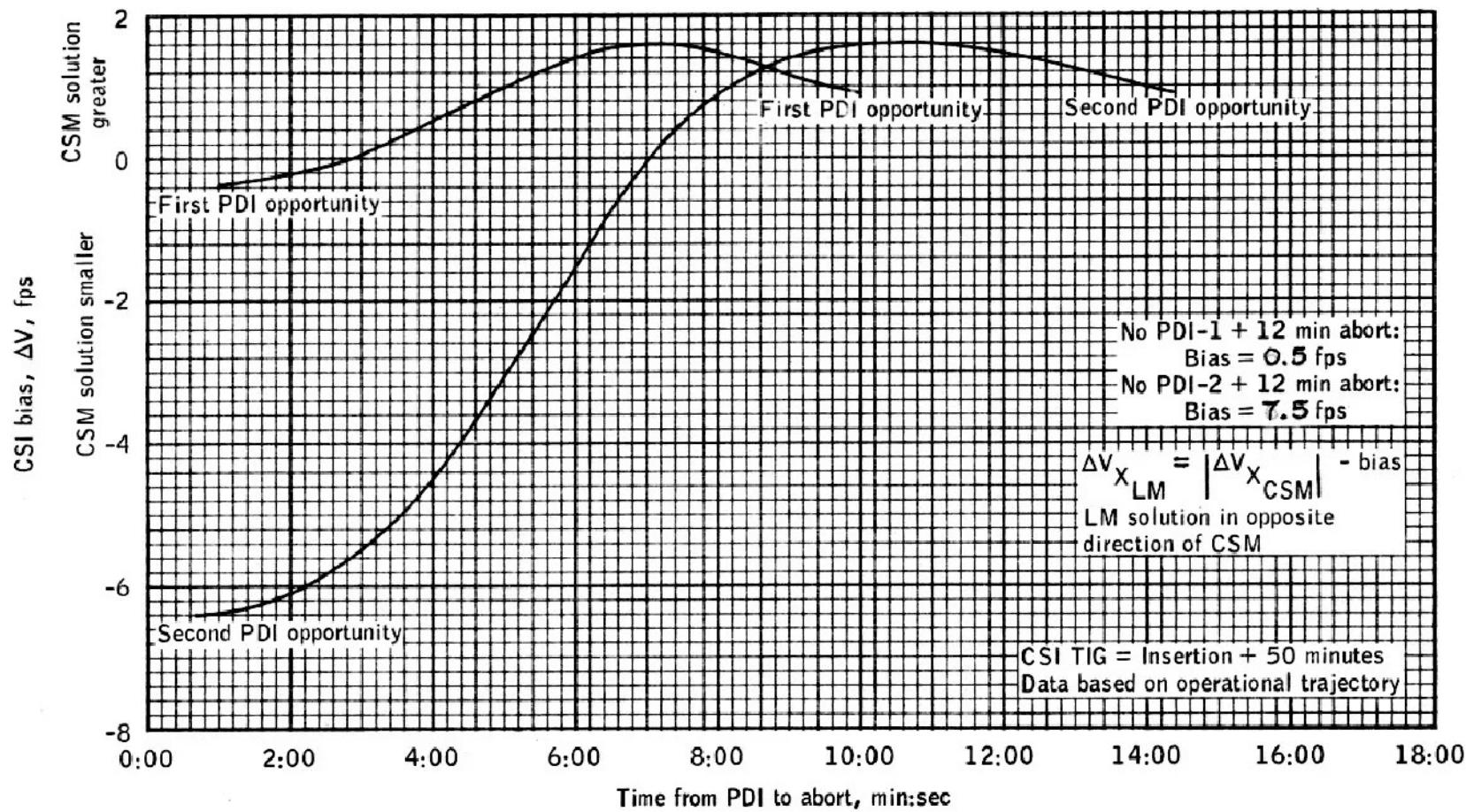
FLIGHT DATA FILE

PAGE 37



CSI BIAS

Bell/OMAB/MPAD
6/27/69



Comparison between the LM and CSM solutions for CSI maneuver as a function of abort time in powered descent.

SOURCE
DATE

REV "D" JULY 10, 1969
REV "E" JULY 11, 1969

CMP SOLO BOOK



SOURCE

DATE

REV "D" JULY 10, 1969

REV "E" JULY 11, 1969

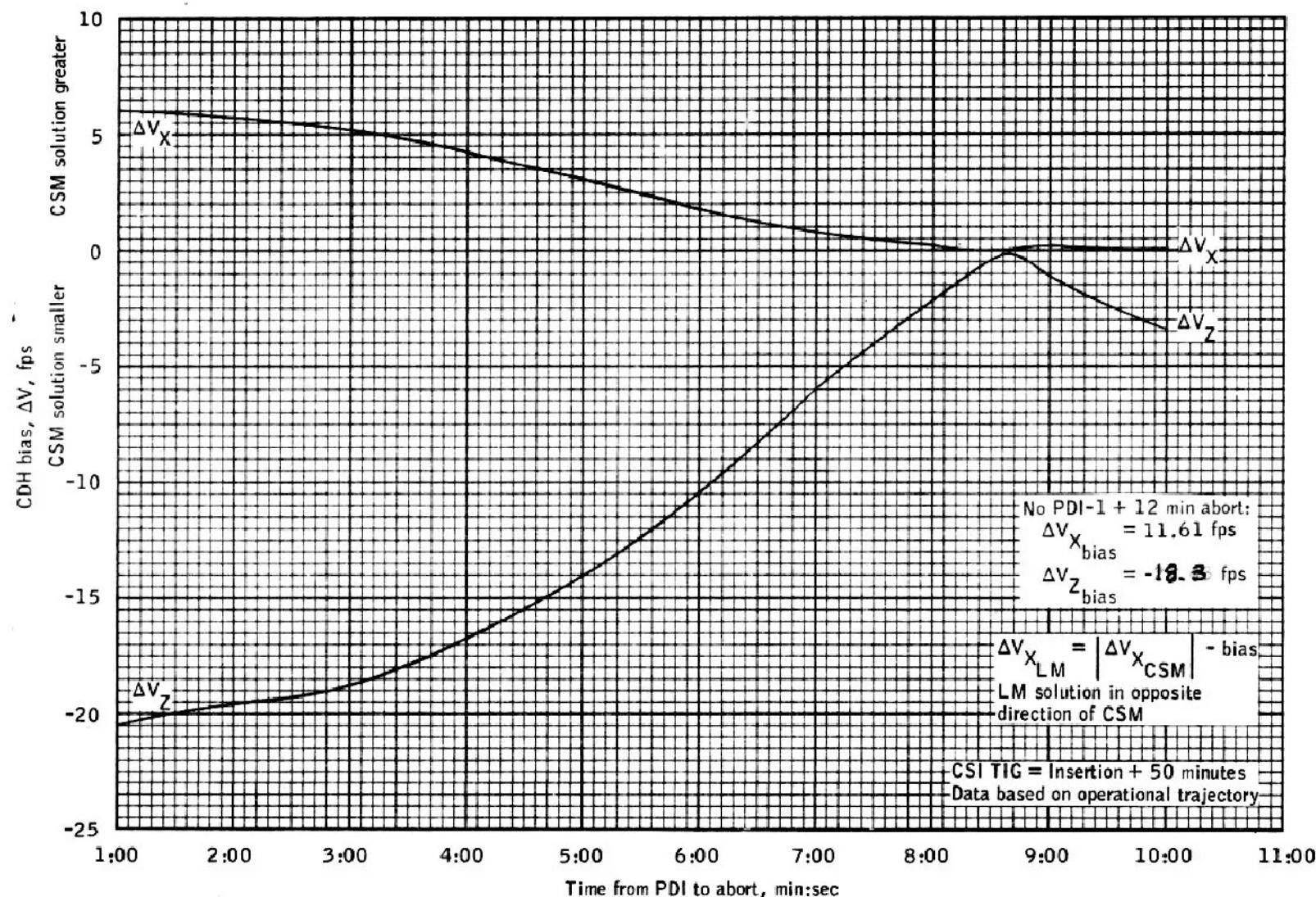


CMP SOLO BOOK

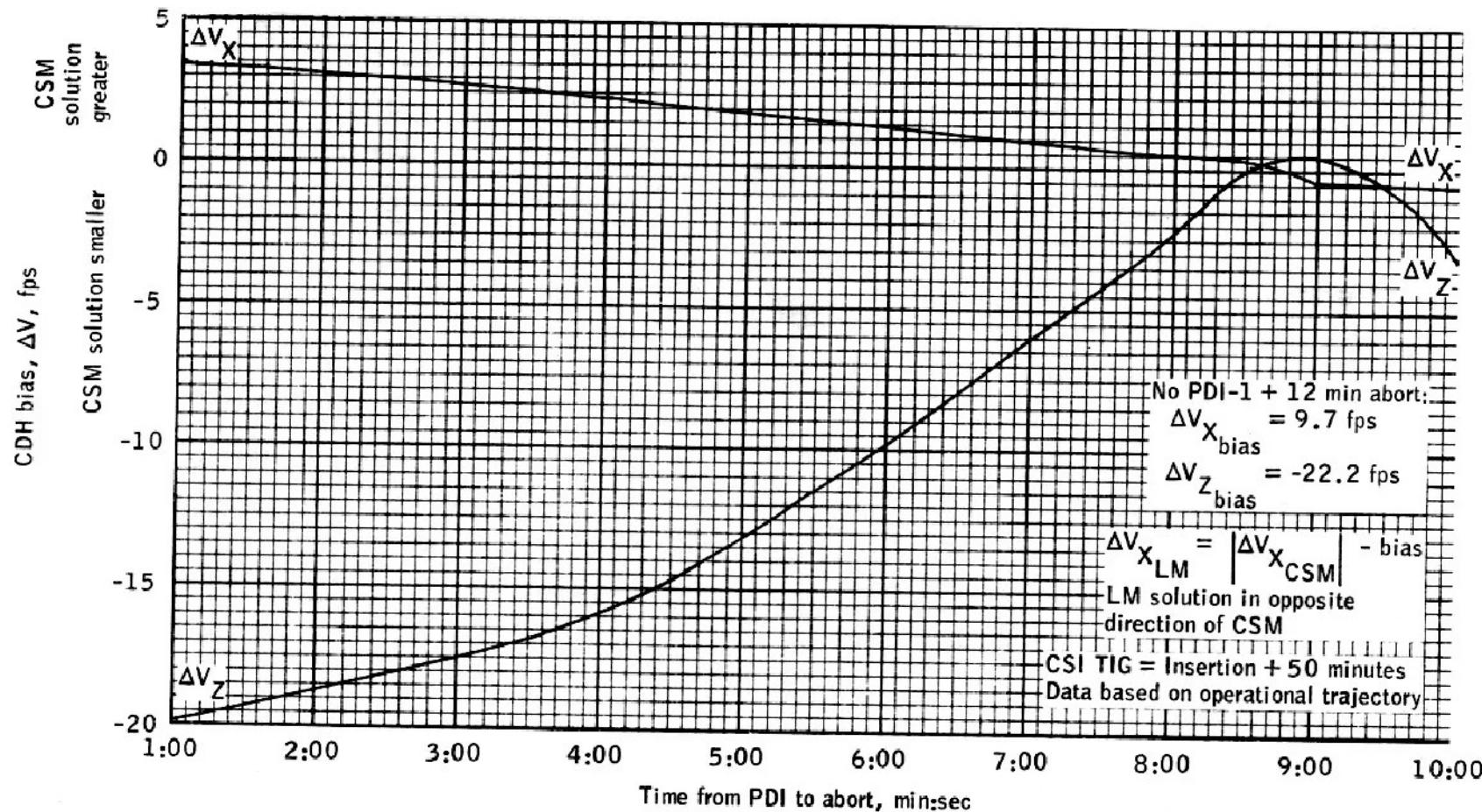


Bell/OMAB/MPAD

6/27/69



Comparison between the LM and CSM solutions for CDH maneuver as a function of abort time
in powered descent - first PDI opportunity (assuming CSM performs CSI).

CDH BIAS/PDI1
(LM-CSI)Bell/OMAB/MPAD
6/27/69

Comparison between the LM and CSM solutions for CDH maneuver as a function of abort time
in powered descent - first PDI opportunity.
(assuming LM performs CSI).

SOURCE
DATEREV "D" JULY 10, 1969
RE

CMP SOLO BOOK

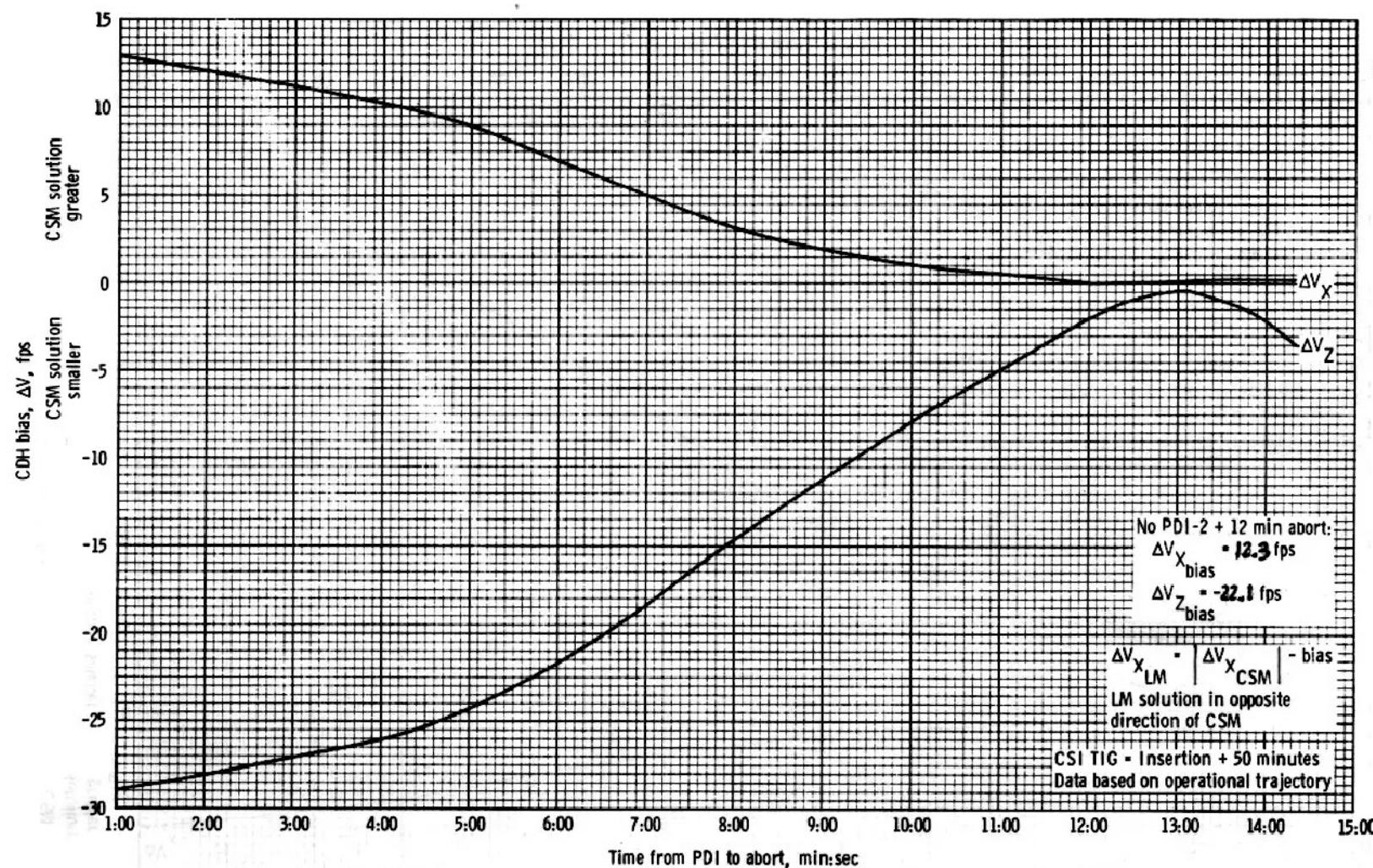
SOURCE
DATE

REV "D" JULY 10, 1969

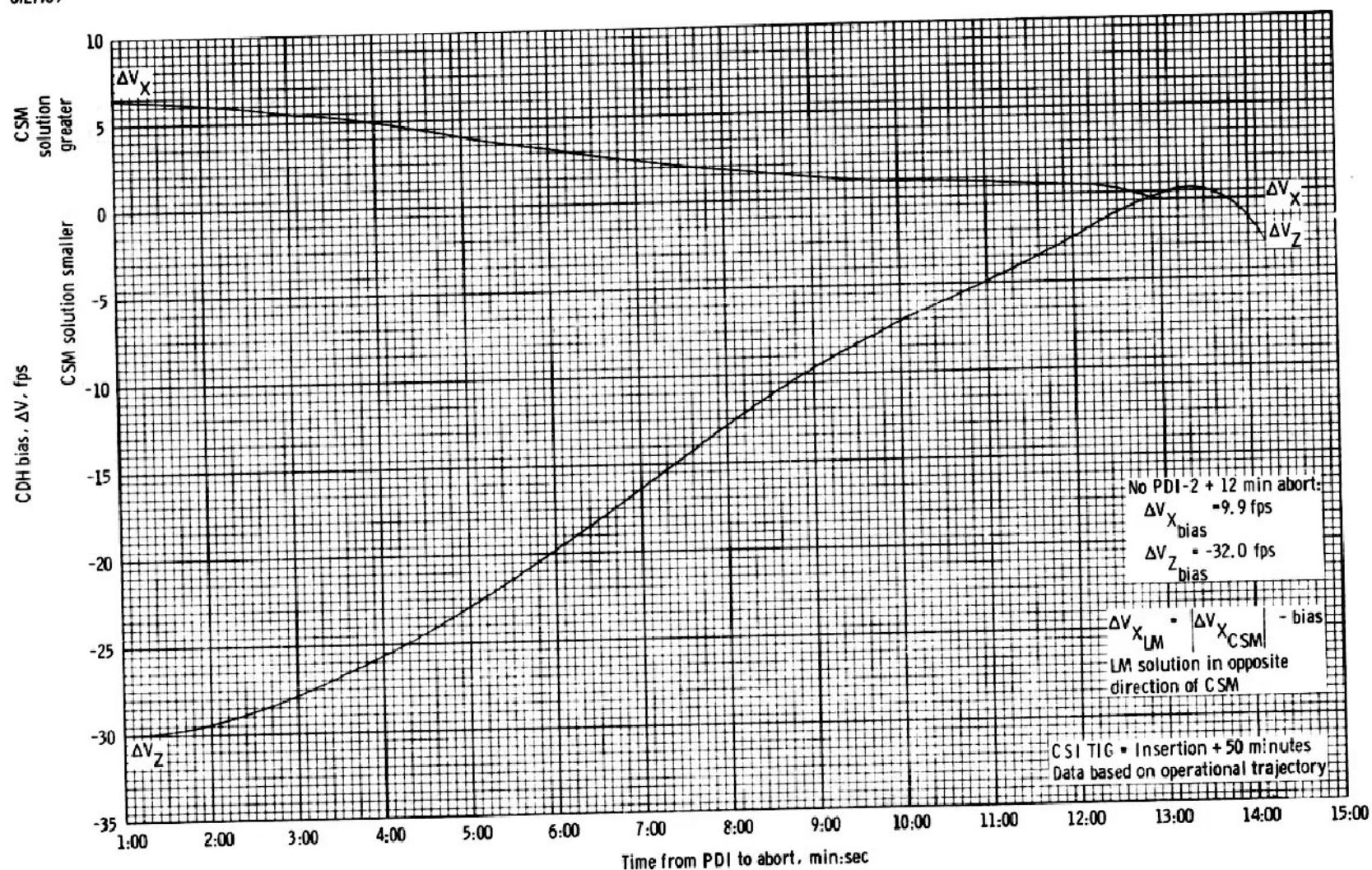
REV "E" JULY 11, 1969

CMP SOLO BOOK

Bell/OMAB/MPAD
7/1/69



Comparison between the LM and CSM solutions for CDH maneuver as a function of abort time in powered descent - second PDI opportunity (assuming CSM performs CSI).

Bell/OMAB/MPAD
6/27/69

Comparison between the LM and CSM solutions for CDH maneuver as a function of abort time
in powered descent - second PDI opportunity.
(assuming LM performs CSI).

SOURCE
DATE

REV "D"

JULY 10, 1969

CMP SOLO BOOK

CONTINGENCY EVA

CM PREP FOR CONTINGENCY EVA

- 1 C and R SUIT FLOW - OFF
- 2 L SUIT FLOW - CAB FLOW
- 3 C and R O2 hoses interconnected with A-1 interconnects
- 4 C hoses routed through handhold under Panel 10 for EVT
- 5 R hoses secured around RH Couch headrest for EVT
- 6 TSB's installed on R&L girth ring & LEB
- 7 Seat, leg, and foot pans folded against back pan with seat pan locked
- 8 PGA bag disconnected from center couch
- 9 Couch straps unstowed
- 10 Center couch removed and stowed under LH couch
- 11 L and R couch - 270°
- 12 Marmon clamps closed and locked
- 13 PGA bag secured to aft bulkhead
- 14 Jack screws (A1) fully opened and taped near hatch
- 15 Tools B&F (A1) taped near hatch
- 16 Hatch counterbalance piston chamber vented
- 17 Counter balance disengaged (Pull pip pin, stow in R-10)
- 18 MDC INGRESS BAR STOWED
- 19 CABIN FAN (Both) - OFF
- 20 REPRESS PKG vlv - FILL

CREW STATUS

UCTA Donned and empty
Helmet stowed in helmet bag
Comm carrier donned
Gloves stowed
L O2 PGA LOCK - LOCK
L elec umb connected to PGA
SUIT FLOW vlv - CAB FLOW
SUIT RET vlv - open (pull)
EMER CAB PRESS sel - BOTH
Chronometer on left PGA sleeve
Verify PGA zipper lock - lock

SYSTEM PREPARATION FOR DEPRESS

- Verify REPRESS O2 press 865-935 psi
EMERG O2 vlv - closed
Verify REPRESS O2 vlv - closed
Verify surge tank vlv - on
O2 PRESS IND sw - SURGE TK
Verify surge tank pressure 865-935 psi
Select attitude control mode and maneuver spacecraft
to EVT attitude (TBD)
AUTO RCS SELECT - undocked transfer
 A/C ROLL - A1,A2 - OFF
 PITCH - A3 - OFF
 YAW - B3 - OFF
AUTO RCS SELECT - Docked transfer
 All - OFF
Check status of LM prep for egress

Stow loose items
 NOTE: Perform PLSS Comm check if required
 On request by LM,
 VHF A - Duplex
 VHF B - OFF (verify)
 VHF RANGING - OFF (verify)
 Verify Comm with,
 2 PLSS - CDR (EVCS #1) and then
 LMP (EVCS #2)
 or
 1 PLSS - EVCS #1 or #2

FINAL SYSTEMS PREP FOR DEPRESS

- Verify surge tank pressure 865-935 psi
EXT LTS - RUN/EVA - on (up) (IF REQ'D)
EXT LTS - RNDZ/SPOT - off (ctr)

PREP FOR CABIN DEPRESS

- Verify L O2 hoses connected Red/Red, Blue/Blue
Verify PGA flow diverter valve horizontal
Unstow helmet
Verify feed port cover installed and locked, wipe
helmet with anti-fog

Verify PGA comm lead inside PGA and
clear of suit neck ring

Place helmet attaching neck ring in
the "ENGAGE" position

Position mike, don helmet (with shield) and lock

Secure helmet stowage bag

Place suit wrist disconnects to "ENGAGE" position

Don gloves and lock

SUIT RET vlv - close (push)

EMERG CAB PRESS sel - off

Check all PGA connections and
verify locked.

Ingress LH couch

PRESSURE INTEGRITY CHECK

DIRECT O2 - closed (CW)

Verify suit press - 4.7-5.3 psia

Verify O2 flow ind - 0.2-0.4 lb/hr

CAUTION

Suit test vlv should remain in
press position until suit cir-
cuit pressure is stabilized to
preclude seal scarring.

If repositioning of suit test
vlv from press is required prior
to suit pressure & O2 stabiliza-
tion, perform the following:

- a Demand reg sel - off
- b Allow 15 sec (min) stabilization time
- c Reposition suit test vlv -
depress or off as applicable
- d When suit pressure stabilized,
demand reg sel - both

SUIT TEST vlv - press

O2 FLOW ind - 1.0 lb/hr (pegged)

Verify O2 FLOW HI lt - on

Verify MA pb/lt(3) and tone - on,
push, verify tone and lts off
after push

SUIT PRESS ind - 8.8-9.8 psia

PGA PRESS gage - 4.1-4.5 psig

Verify O2 FLOW HI lt - out

Allow O2 flow to stabilize 15 sec

O2 flow will remain below 0.8 lbs/hr
for 30 sec after stabilization

SUIT TEST vlv - depress

O2 FLOW ind - 0.2-0.4 lb/hr

SUIT PRESS ind - slightly > CAB PRESS

SUIT TEST vlv - OFF

Verify DEMAND REG SEL - BOTH

CABIN DEPRESS

Confirm GO for cabin depress with MSFN and CDR

Verify CABIN FAN (Both) - OFF

Verify REPRESS PKG vlv - FILL

Verify CAB PRESS REL vlv (2) -
NORMAL (safety latch on)

Egress LH couch and transfer to hatch

Adjust RH strut mirror to read cabin pressure

SIDE HATCH DUMP vlv - open (CCW)

NOTE - O2 FLOW HI warning light
may come on prior to cabin
press reg lock-up

Monitor cabin pressure to 3.25 psia

At 3.25 psia, SIDE HATCH DUMP vlv - CLOSE

Verify O2 FLOW ind - <0.5 lb/hr

Verify cabin pressure at 3.25 psia

and CM suit circuit pressure stable at 3.5-4.0 psia

SIDE HATCH DUMP vlv - open

Cabin Press ind - 0.0 psia

SOURCE

DATE JULY 2, 1969 REV A

CMP SOLO BOOK

HATCH OPENING

Verify hatch counterbalance vented
 Lock pin release knob - unlock (Down)
 Verify lock pin indicator released
 Gear box sel - unlatch
 BPC JETT - 180° from BPC JETT (verify)
 ACTR handle sel - U
 Unstow ACTR handle
 Unlock hatch
 Verify hatch unlocked
 ACTR handle sel - L
 Stow ACTR handle
 Gear box sel - latch
 Open hatch to the full open position

EVT (DOCKED)

Give GO for TRANSFER TO OPS & EVT
 RECORD OPS start time

EVT (UNDOCKED, STABLE)

Maneuver CSM APEX to LM forward hatch
 Give GO for transfer to OPS & EVT
 Record OPS start time

EVT (UNDOCKED, UNSTABLE)

Maneuver CSM to LM
 Give GO for transfer to OPS & EVT
 Record OPS start time
 After CDR & LMP push away from LM, maneuver
 APEX to CDR and LMP

INGRESS (2 OPS)

CDR Ingress CM, head first, face to MDC,
 and move to LEB
 Retrieve C O2 hoses and ELEC UMB
 CMP Connect C electrical umbilical to CDR
 CDR Audio panel sws - as desired
 Secure position in LEB and manage
 lifeline for LMP
 LMP Ingress CM, feet first, face down,
 and assume position for closing side hatch

INGRESS (CDR - OPS, LMP - PLSS or 2 PLSS/OPS), pg E6

VAC TRANSFER TO CM ECS

(If 25 minutes elapsed from
 OPS start time, perform the following)

CDR Verify C and R SUIT FLOW vlv - OFF
 Remove interconnect and hand C O2
 hoses to CMP
 CMP Connect C O2 hoses to CDR PGA (RED/RED, BLUE/BBLUE)
 CDR Close purge valve
 C SUIT FLOW vlv - adjust for comfort
 OPS O2 shutoff vlv - close
 LMP Verify R SUIT FLOW vlv - OFF
 Remove interconnect and hand R O2 hoses to CDR
 CDR Connect R O2 hoses to LMP PGA (RED/RED, BLUE/BBLUE)
 Close purge valve
 SUIT FLOW vlv (3) - FULL FLOW
 Verify flow and close OPS O2 shutoff valve
 Connect R electrical umbilical
 Audio panel sws - as desired

HATCH CLOSING

(K, pg F/11-9)

LMP Verify hatch seals are clear
 Pull hatch to the ajar position
 Verify ACTR handle sel - L
 Verify gear box sel - latch
 Verify latch strikers inboard of hatch sill
 Unstow ACTR handle
 Lock hatch
 Verify lock pin has automatically
 engaged and that lock pin indicator is not extended
 Stow ACTR handle
 ACTR handle sel - N
 Verify gear box sel - LATCH
 CDR Stow lifeline in temporary stowage bag
 Secure transfer TSB

POST EVA CABIN CONFIGURATION

Remove CSC from PGA pocket and stow in A-5

EXT LTS - RUN/EVA - OFF (down)

Perform as desired

- (a) change crew stations
- (b) Restow tool B & jack screws
- (c) Unstow & install PGA bag
- (d) Reinstall center couch
- (e) Connect counterbalance (Pip pin in R-10)

EVT EQUIPMENT STOWAGE FOR ENTRY

I. CM reentry without suits:

<u>ITEM</u>	<u>STOWAGE LOCATION FOR REENTRY</u>
a. OPS (2)	In PGA
b. Purge Valve (2)	In PGA
c. Life Line	In PGA Bag
d. EV Gloves	On PGA
e. EV Visor (2)	2 on Helmet attached to Suits, in RH & LH sleep restraints
f. Waist tether (2)	In PGA Bag
g. CSC	Vol A5
h. HSB/Samples	In PGA bag toward LEB
i. Suits	1 Suit with OPS's in PGA Bag w/tie down rope.
	2 Suits in Sleep Restraint under LH & RH Couch w/tie down rope.
j. Helmets	2 On suits with EV visor 1 in Bl

II. CM reentry with suits:

<u>ITEM</u>	<u>STOWAGE LOCATION FOR REENTRY</u>
a. OPS (2)	LH & RH Sleep Restraint in PGA Bag w/tie down rope.
b. HSB/Samples	In sleep restraint with OPS's
c. Purge Valve (2)	LH & RH Sleep Restraint in PGA Bag w/tie down rope.
d. Life Line	In PGA Bag
e. EV Gloves	On PGA
f. EV Visor (2)	1 in Vol Bl, 1 in Vol L3.
g. Waist Tether (2)	In PGA Bag
h. CSC	Vol A5

III. The following equipment may be transferred in
PGA pockets during the EV transfer:

<u>ITEM</u>	<u>STOWAGE LOCATION</u>
a. Film Magazines	Vol R13
b. Log Books	Vol R1, R2 and R3
c. Flag Kit	Food Box - L3

INGRESS (CDR-OPS, LMP-PLSS or 2 PLSS/OPS)

CDR Ingress CM, head first, face to MDC,
and move to LEB

Retrieve C O2 Hoses and Elec Umb

CMP Connect C electrical umbilical to CDR (WITH PLSS/OPS
DISCONNECT PLSS COMM IF REQ'D-PLSS MODE SEL-POS 0)

CDR Audio panel sws - as desired

Secure Position in LEB and Manage Lifeline for LMP

LMP Ingress CM, feet first, face down,
and assume position for closing side hatch

VAC TRANSFER TO CM ECS

(If 25 Minutes Elapsed from OPS Start Time,
Perform the following)

CDR Verify C and R SUIT FLOW vlv - OFF

Remove interconnect and hand C O2
hoses to CMP

CMP Connect C O2 hoses to CDR PGA (red to red, blue to
blue) (WITH PLSS/OPS-REMOVE OPS PURGE VLV AND O2 HOSE)

CDR Close purge valve

C SUIT FLOW vlv - adjust for comfort

OPS O2 shutoff vlv - close (WITH PLSS/OPS-PLSS O2 vlv-
CLOSE - PLSS FAN - OFF)

LMP Verify R SUIT FLOW vlv - OFF

Remove interconnect and hand R O2 hoses to CDR

CDR Remove LMPS OPS purge vlv and O2 hose if connected

CDR Connect R O2 hoses to LMP PGA (red to red, blue to
blue)

LMP Close purge valve

CDR SUIT FLOW vlv (3) - FULL FLOW

LMP Verify flow

PLSS O2 vlv - CLOSE

PLSS FAN - OFF

Connect R electrical umbilical (WITH PLSS/OPS-
DISCONNECT PLSS COMM IF REQ'D - PLSS MODE
SEL - POS 0)

Audio panel sws - as desired

HATCH CLOSING

PLSS FEEDWATER VLV - CLOSE

LMP Verify hatch seals are clear

Pull hatch to the ajar position

Verify ACTR handle sel - L

Verify gear box sel - latch

Verify latch strikers inboard of hatch sill

Unstow ACTR handle

Lock hatch

Verify lock pin has automatically
engaged and that lock pin indicator is
not extended

Stow ACTR handle

ACTR handle sel - N

Verify Gear box sel - Latch

CDR Stow lifeline in temporary stowage bag

Secure transfer TSB

CABIN REPRESS

LMP SIDE HATCH DUMP vlv - close

CMP Verify CAB PRESS REL vlv (2) -
NORMAL (safety latch on)

Verify O2 PRESS IND sw - SURGE TK

Verify Repress PKG vlv - FILL

LMP REPRESS O2 vlv - open/10 SEC/close

Cabin PRESS APPROX 1.0 PSIA

Adjust RH strut mirror

CABIN PRESS IND-monitor for gross leakage (30sec)

REPRESS O2 vlv - open

CYRO O2 PRESS 1 ind - maintain 150 psi min

CMP REPRESS PKG vlv - OFF

LMP CAB PRESS ind ~ 3.0 psia

REPRESS O2 PRESS ind - 0.0 psig

REPRESS O2 vlv - CLOSE

CDR CAB REPRESS vlv - OPEN (CW)(CMP PERFORM IF REQ'D)

CRYO O2 PRESS 1 IND - maintain 150 psi min

Verify cabin pressure above 3.0 psia

Verify C and R SUIT FLOW vlv - OFF

OPS O2 shutoff vlv - close(WITH PLSS/OPS-PLSS
O2 VLV - CLOSE)

(OPEN PURGE VLV IF ATTACH TO EQUALIZE PRESS)

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As PGA press equalizes with cabin, remove interconnect from C O2 hoses and connect hoses to PGA (red to red, blue to blue)
(WITH PLSS/OPS - REMOVE OPS O2 AND PURGE VLV)

C SUIT FLOW vlv - adjust for comfort

L SUIT FLOW vlv - increase for comfort

Close purge valve (WITH PLSS/OPS - PLSS FAN-OFF)

LMP PLSS O2 vlv-CLOSE
(OPEN PURGE VLV IF ATTACH TO EQUALIZE PRESS)

As PGA press equalizes with cabin, remove interconnect from R O2 hoses and connect hoses to PGA connectors (WITH PLSS/OPS-REMOVE OPS O2 HOSE AND PURGE VLV)
(red to red, blue to blue)

CDR SUIT FLOW vlv (3) - FULL FLOW

LMP Close purge valve if attach
PLSS FAN - OFF
Verify SUIT PWR - OFF
Verify PWR sw - OFF
Verify AUDIO CONT - NORM
Connect R electrical umbilical to PGA
(WITH PLSS/OPS-DISCONNECT PLSS COMM-
PLSS MODE SEL - POS 0)

AUDIO PANEL sws - as desired
NOTE - If CDR and LMP desire to doff PLSS/OPS at this point, refer to doffing procedures. CMP continue monitoring cabin repress

POST EVA SYSTEMS CONFIGURATION

CMP CAB PRESS ind - 4.7-5.3 psia
O2 PRESS IND sw - TK 1

CDR CAB REPRESS vlv - OFF (CCW)

Doff gloves, helmets, and EVVA's, if req'd
If helmets and gloves doffed - EMERG CAB PRESS
SEL - BOTH
SUIT RET VLV - OPEN (PULL)

OPS DOFFING

Remove waist tethers and stow in TSB
Remove purge valves and stow in TSB
Verify PLSS antenna stowed
Verify OPS O2 shutoff vlv - close
Verify OPS O2 actuator stowed
Disconnect OPS O2 hose and stow
Secure thermal cover
Doff OPS and PLSS straps
Secure OPS with PLSS straps
Stow interconnects in A-1

PLSS/OPS DOFFING

Remove waist tethers and stow in TSB
All RCU ELEC CNTLS-OFF
Disconnect RCU stow in TSB
Disconnect PLSS O2 and H2O Hoses
Disconnect Lower then Upper PLSS straps-DOFF-PLSS
Stow PLSS-02,H2O, and COMM Umbilicals
Stow OPS-02 Actuator and O2 hose
Temp stow PLSS/OPS

FINAL SYSTEM CONFIGURATION

O2 PRESS IND sw - SURGE TK
CRYO O2 PRESS 1 ind - 500 psia
Verify CAB REPRESS vlv - OFF (CCW)
Verify REPRESS O2 - CLOSE
REPRESS PKG VLV - FILL
Verify repress O2 press increasing
CRYO O2 PRESS 1 ind - 865-935 psia
O2 PRESS IND sw - TK 1
REPRESS PKG vlv - OFF

CM EQUIPMENT JETTISON

CREW STATUS

At crew stations
UCTA donned and empty
Helmets stowed in helmet stowage bag
Gloves stowed
Comm carrier donned
O2 hoses connect red/red, blue/blue

SUIT FLOW vlv - SUIT FULL FLOW
 SUIT RETURN vlv - OPEN (PULL)
 EMER CAB PRESS sel - BOTH
 Chronometers on left PGA sleeve
 Inspect PGA zipper-verify lock-lock

SYSTEMS PREPARATION FOR DEPRESS

Verify repress O2 pressure

865-935 psi

EMERGENCY O2 valve - CLOSED

REPRESS O2 valve - CLOSE

Verify surge tank vlv - ON

O2 Press ind sw - SURGE TANK

Verify surge tank pressure

865-935 PSIA

EQUIPMENT PREPARATION FOR DEPRESS

Stow loose items

Prepare all equipment to be jettisoned and secure

PLSS (1-2)

RCU (1-2)

OPS (1-2)

PURGE VALVE (1-2)

LIFELINE (1)

EV VISORS (2)

WAIST TETHERS (2)

PREP FOR CABIN DEPRESS

Verify PGA diverter valves - horizontal

Unstow helmet

Verify feed port cover installed and locked, wipe helmet with anti-fog

Position mikes, don helmet and "lock"

Secure helmet stowage bags

Don gloves and lock

SUIT RETURN vlv - CLOSE (PUSH)

EMER CAB PRESS sel - OFF

Check all PGA connections and verify lock-lock

PRESSURE INTEGRITY CHECK
 DIRECT O2 - closed (CW)
 Verify suit press - 4.7-5.3 psia
 Verify O2 flow ind - 0.2-0.4 lb/hr

CAUTION

Suit test vlv should remain in press position until suit circuit pressure is stabilized to preclude seal carring.

If repositioning of suit test vlv from press is required prior to suit pressure & O2 stabilization, perform the following:

- a Demand reg sel - off
- b Allow 15 sec (min) stabilization time
- c Reposition suit test vlv - depress or off as applicable
- d When suit pressure stabilized, demand reg sel - both

SUIT TEST vlv - press
 O2 FLOW ind - 1.0 lb/hr (pegged)
 Verify O2 FLOW HI lt - on
 Verify MA pb/lt (3) and tone - on, push, verify tone and lts off after push

SUIT PRESS ind - 8.8-9.8 psia
 PGA PRESS gage - 4.1-4.5 psig
 Verify O2 FLOW HI lt - out
 Allow O2 flow to stabilize 15 sec
 O2 flow will remain below 0.8 lbs/hr for 30 sec after stabilization

SUIT TEST vlv - depress
 O2 FLOW ind - 0.2-0.4 lb/hr
 SUIT PRESS ind - slightly > CAB PRESS
 SUIT TEST vlv - OFF
 Verify DEMAND REG SEL - BOTH

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CABIN DEPRESS

Confirm GO for cabin depress
with MSFN

CABIN FAN (BOTH) - OFF

REPRESS PKG vlv - OFF

Verify CABIN PRESS REL vlv (BOTH)-
NORMAL (safety latch - ON)

SIDE HATCH DUMP vlv - OPEN (CCW)

NOTE - O2 FLOW HI WARNING LIGHT MAY
COME ON PRIOR TO CABIN PRESS
REG LOCK-UP

Monitor cabin pressure to 3.25 psia
At 3.25 psia, SIDE HATCH DUMP vlv - CLOSE
Verify O2 FLOW ind - Less Than 0.5 lb/hr
Verify cabin pressure at 3.25 psia
and CM suit circuit pressure stable
at 3.5-4.0 psia
SIDE HATCH DUMP vlv - OPEN
CABIN PRESS ind - 0.0 PSIA

HATCH OPENING

Verify hatch counterbalance - VENTED

Lock pin release knob - UNLOCK (DOWN)

Verify lock pin indicator released

Gear box sel - UNLATCH

BPC JETT -180° from BPC JETT (VERIFY)

ACTR handle sel - U

Unstow ACTR handle

Unlock hatch

Verify hatch unlocked

ACTR handle sel - L

Stow ACTR handle

Gear box sel - LATCH

Open hatch to full open

EQUIPMENT JETTISON

JETTISON EQUIPMENT -

PLSS (1-2)
RCU (1-2)
OPS (1-2)
PURGE VALVE (1-2)
LIFELINE (1)
EV VISORS (2)
WAIST TETHERS (2)

HATCH CLOSING

Verify hatch seals are clear
Pull hatch to the ajar position
Verify ACTR handle sel - L
Verify gear box sel - LATCH
Verify latch strikers inboard of
hatch sill
Unstow ACTR handle
Lock hatch
Verify lock pin had automatically
engaged and that lock pin indicator
is not extended
Stow ACTR handle
ACTR handle sel - N
Verify gear box sel - LATCH

CABIN REPRESS

SIDE HATCH DUMP vlv - CLOSE
Verify CABIN PRESS REL vlv (BOTH) -
NORMAL (safety latch on)
Verify O2 PRESS IND sw - SURGE TANK
REPRESS PKG vlv - FILL
REPRESS O2 vlv - OPEN/10sec/CLOSE
Cabin press approx 1.0 psia
CABIN PRESS ind - monitor for gross
leakage (30 sec)
REPRESS O2 vlv - OPEN
CRYO O2 PRESS 1 IND - maintain 150
psi min
REPRESS PKG VLV - OFF
CABIN PRESS ind 3.0 PSIA

REPRESS 02 PRESS ind - 0.0 PSIG
REPRESS 02 vlv - CLOSE
CABIN REPRESS vlv - OPEN (CW)
CRYO 02 PRESS 1 ind - maintain 150
psi min

SYSTEM CONFIGURATION

CAB PRESS ind - 4.7 - 5.3 PSIA

O2 PRESS IND sw - TANK 1

CAB REPRESS vlv - OFF (CCW)

DOFF GLOVES AND HELMETS, IF REQ'D

If helmets and gloves doffed - EMERG CAB PRESS sel - BOTH
SUIT RET vlv - OPEN (PULL)

POST EVA CABIN CONFIGURATION

Remove CSC from PGA pocket and stow in A-5

EXT LTS - RUN/EVA - OFF (down)

Perform as desired

- (a) Recharge Repress PKG
- (b) Change crew stations
- (c) Restow tool B & jack screws
- (d) Unstow & install PGA bag
- (e) Reinstall center couch
- (f) Connect counterbalance (Pip pin in R-10)

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