



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

(JULY 26 LAUNCH)

* APOLLO 15

LM 10

REVISION A

LM DATA CARD BOOK

INDEXING DATA

DATE

6/10/71

OPR

BSC

#

00

T

PGM

SUBJECT

R 10 *

SIGNATOR

Mitchell

LOC

080-13A

PREPARED BY

FLIGHT DATA SECTION

FLIGHT PLANNING BRANCH

CREW PROCEDURES DIVISION

MANNED SPACECRAFT CENTER

HOUSTON, TEXAS

JUNE 10, 1971



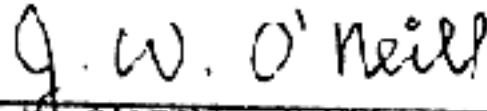
APOLLO 15
LM DATA CARD BOOK

JUNE 10, 1971

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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, CG5, Building 4, room 230, telephone 483-4271.

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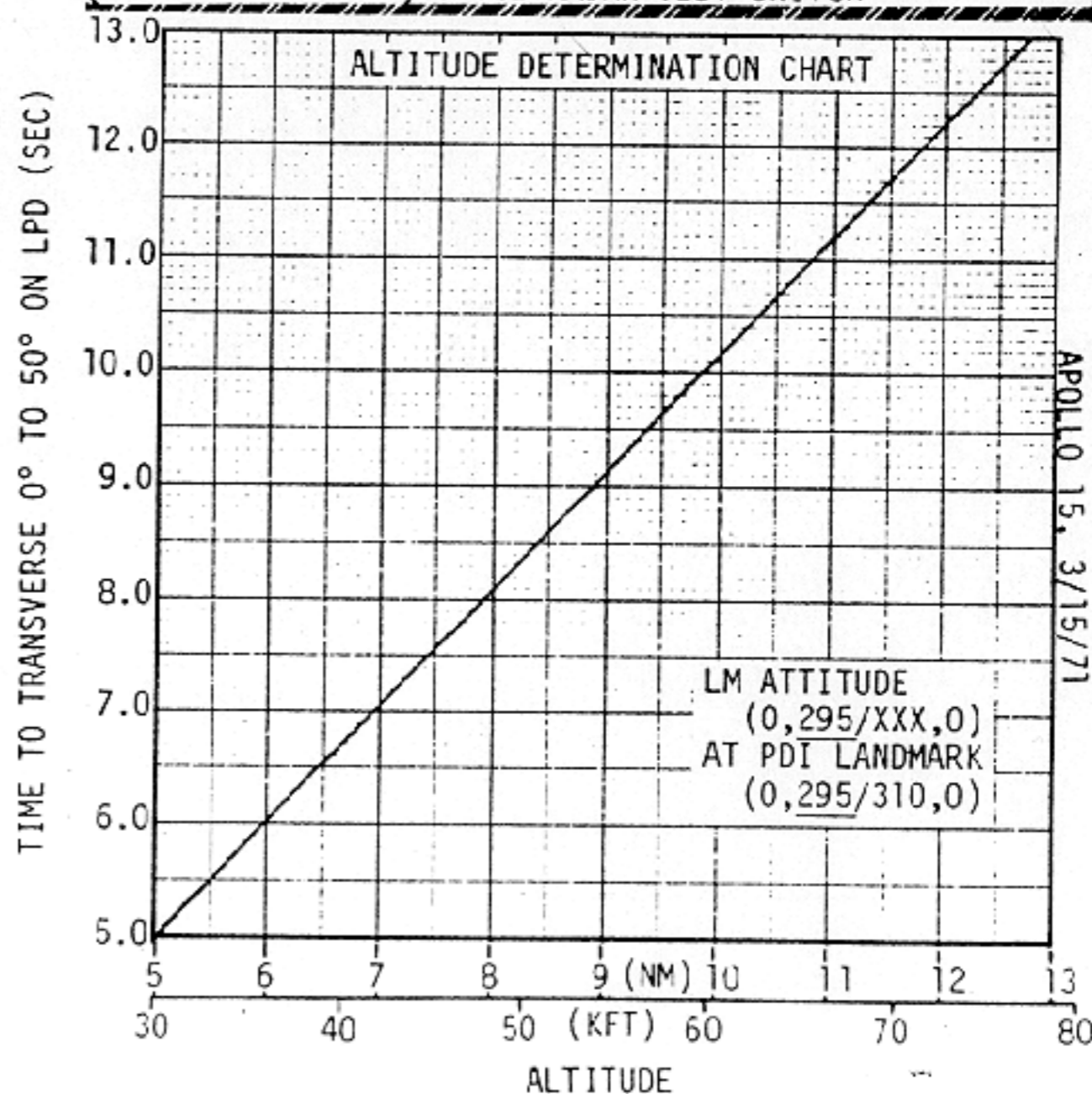
LPD CAL/CSM CIRC

LPD ΔBIAS		NEW BIAS = ORIG BIAS(P64)+ΔBIAS(P52)							
LPD RDG (P52)		$\Delta\text{BIAS}(\text{AZ}) = (\text{LPD RDG}) \times 1.3$ $\Delta\text{BIAS}(\text{EL}) = (\text{LPD RDG}) \times 1.0$							
(+)	(-ΔAZ)	+	3	5	9	5	4	ORIG BIAS	AZ
(-)	(-ΔEL)							+ΔBIAS(AZ)	
+ + 40								AZ BIAS 3373	
(+)	(-)	+	0	0	0	1	B	ORIG BIAS	EL
(+)	(+)							+ΔBIAS(EL)	
								EL BIAS 1353	
LOAD NEW BIAS (P64)				VERIFY BIAS					
V21 N03E, 3373E LOAD AZ BIAS (.01°) E, 1353E LOAD EL BIAS (.01°)				V06 N03E, 3373E VERIFY AZ BIAS E, 1353E VERIFY EL BIAS					

PDI RULES/ALTITUDE CHECK

- PDI RULES**
- NO AUTO ULLAGE - BACKUP VIA +X OVERRIDE (+NO AUTO IGNITION - PDI NO-GO)
 - NO IGN (WITH AUTO ULL) DELAY 2 SEC, THEN START PB-PUSH; THEN DES OVRD - ON AT 5 SEC
 - T/W > 1.6 AND DSKY CHANGES > 18 fps/2 SEC
 - ATT/RATE < 5°/SEC
 - ΔH IN LIMITS > 10 SEC, NOT OUT OF LIMITS > 60 SEC
 - DATA GOOD AT > 6,000 ft
 - IF NO THROTTLE DOWN BY P64 + 15 SEC - ABORT
 - BINGO FUEL 1 MIN 31 SEC AFTER LOW LEVEL OR WHEN FUEL QTY < 2% UNLESS LANDING IMMINENT
- NOTE: FOR FLASHING LR ALT OR VEL LIGHTS PRECEDED BY STEADY LR LT, CYCLE RADAR TEST SWITCH

CSM CIRC BURN											
P76											
+	0	0				+	0	0		HRS (101)	N33
+	0	0	0			+	0	0	0	MIN (34)	TIG
+	0					+	0			SEC (55.10)	
						+				ΔVX (+70.8)	N84
						+				ΔVY (+0.0)	
						+				ΔVZ (+0.6)	
CSM HA/HP											
CMC			LGC			V82					
/			/			OPT 2					



PDI O/NO PDI + 12 CARD

PDI O ABORT PAD													
+	0	0				+	0	0				HRS (102)	N33
+	0	0	0			+	0	0	0			MIN (34)	TIG
+	0					+	0					SEC (59.20)	A
												$\Delta VX (+102.8)$	N81
												$\Delta VY (+0.0)$	LV
												$\Delta VZ (+2.8)$	B
+						+						HA (+138.9)	N42
												HP (+8.2)	
+						+						$\Delta VR (+102.8)$	
X	X	X				X	X	X				BT (0:38)	
X	X	X				X	X	X				R (000)	FDAI
X	X	X				X	X	X				P (285)	INER
+						+						TIG (155.0)	373
												$\Delta VX (+102.8)$	N86
												$\Delta VY (+0.0)$	AGS
												$\Delta VZ (+3.6)$	
+	0	0				+	0	0				HRS (103)	N11
+	0	0	0			+	0	0	0			MIN (35)	CSI
+	0					+	0					SEC (37.90)	C
+	0	0				+	0	0				HRS (105)	N37
+	0	0	0			+	0	0	0			MIN (21)	TPI
+	0					+	0					SEC (46.50)	D
RESIDUALS													
PGNS						AGS							
						ΔVX	N85					ΔVX	500
						ΔVY						ΔVY	501
						ΔVZ						ΔVZ	502

NO PDI + 12 ABORT PAD													
+	0	0				+	0	0				HRS (104)	N33
+	0	0	0			+	0	0	0			MIN (40)	TIG
+	0					+	0					SEC (24.70)	E
												$\Delta VX (+113.9)$	N81
												$\Delta VY (+0.0)$	LV
												$\Delta VZ (-46.8)$	F
+						+						HA (+146.6)	N42
												HP (+8.8)	
+						+						$\Delta VR (+123.1)$	
X	X	X				X	X	X				BT (0:40)	
X	X	X				X	X	X				R (000)	FDAI
X	X	X				X	X	X				P (271)	INER
+						+						TIG (280.4)	373
												$\Delta VX (+114.3)$	N86
												$\Delta VY (+0.0)$	AGS
												$\Delta VZ (-45.9)$	
+	0	0				+	0	0				HRS (107)	N11
+	0	0	0			+	0	0	0			MIN (35)	CSI
+	0					+	0					SEC (38.90)	G
+	0	0				+	0	0				HRS (109)	N37
+	0	0	0			+	0	0	0			MIN (18)	TPI
+	0					+	0					SEC (38.30)	H
RESIDUALS													
PGNS						AGS							
						ΔVX	N85					ΔVX	500
						ΔVY						ΔVY	501
						ΔVZ						ΔVZ	502

PDI0/NO PDI +12
PDI1/PDI1 ABORT

PDI 1 ABORT CARD

PDI 1 PAD													
+	0	0				+	0	0				HRS(104)	N33
+	0	0	0			+	0	0	0			MIN(28)	PDI
+	0					+	0					SEC(54.82)	I
X	X					X	X					TGO(11:04)	N61
												X RANGE(+0.0)	
X	X	X				X	X	X				R (000)	FDAI
X	X	X				X	X	X				P (111)	AT TIG
X	X	X				X	X	X				Y (310)	
												DEDA 231 IF ROD	

(0 < PDI 1 < 6:10) ABORT PAD EARLY

LOG INSERTION GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
BOOST GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
HAM GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
CSI GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____

+	0	0				+	0	0				HRS(109)	N37
+	0	0	0			+	0	0	0			MIN(18)	TPI
+	0					+	0					SEC(38.30)	J

T1-1(6:10 ≤ PDI 1 ≤ 15) ABORT PAD LATE

OG INSERTION GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
CSI GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____

+	0	0				+	0	0				HRS(107)	N37
+	0	0	0			+	0	0	0			MIN(20)	TPI
+	0					+	0					SEC(12.50)	K

T2-1(PDI 1 + 21 : 26 :) ABORT PAD

LOG INSERTION GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
BOOST GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
HAM GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____
+									
CSI GET=	_____	_____	_____	_____	_____	_____	_____	_____	_____

+	0	0				+	0	0				HRS(104)	N33
+	0	0	0			+	0	0	0			MIN(50)	TIG
+	0					+	0					SEC(20.80)	L
+	0	0				+	0	0				HRS(109)	N37
+	0	0	0			+	0	0	0			MIN(18)	TPI
+	0					+	0					SEC(38.30)	M

N69 TARGET UPDATE

						ΔDN RNG	
						ΔX RNG	V25
						ΔRLS	
						ΔDN RNG	V21
						ΔDN RNG	V24
						ΔX RNG	
						ΔRLS	V23

THROTTLE DOWN _____

T3-1 (1 REV) ABORT TIME

+	0	0				+	0	0				HRS(106)	N33
+	0	0	0			+	0	0	0			MIN(40)	TIG
+	0					+	0					SEC(58.40)	N

PDI 2 ABORT CARD

PDI 2 PAD													
+	0	0				+	0	0				HRS (106)	N33
+	0	0	0			+	0	0	0			MIN (22)	PDI
+	0					+	0					SEC (34.00)	I
X	X					X	X					TGD (11:04)	N61
												X RANGE (+0.0)	
X	X	X				X	X	X				R (000)	FDAI
X	X	X				X	X	X				P (111)	AT TIG
X	X	X				X	X	X				Y (310)	
												DEDA 231 IF ROD	

(0 < PDI 2 < 9:16) ABORT PAD EARLY

LOG INSERTION GET=													
				1	0	0	0	0	0	0	0	0	0
+													
BOOST GET=													
				1	0	0	0	0	0	0	0	0	0
+													
HAM GET=													
				1	0	0	0	0	0	0	0	0	0
+													
CSI GET=													

+	0	0				+	0	0				HRS (111)	N37
+	0	0	0			+	0	0	0			MIN (17)	TPI
+	0					+	0	0				SEC (04.20)	J

T1-2 (9:16 ≤ PDI 2 ≤ 15) ABORT PAD LATE

LOG INSERTION GET=													
				5	5	0	0	0	0	0	0	0	0
+													
CSI TIG													

+	0	0				+	0	0				HRS (109)	N37
+	0	0	0			+	0	0	0			MIN (18)	TPI
+	0					+	0					SEC (38.30)	K

T2-2 (PDI 2 + 19:40 :) ABORT PAD													
LOG INSERTION GET= _____ : _____ : _____													
+ _____ : _____ : _____													
CSI GET= _____ : _____ : _____													
+	0	0				+	0	0				HRS (106)	N33
+	0	0	0			+	0	0	0			MIN (42)	TIG
+	0					+	0					SEC (14.10)	L
+	0	0				+	0	0				HRS (109)	N37
+	0	0	0			+	0	0	0			MIN (18)	TPI
+	0					+	0					SEC (38.30)	M
N69 TARGET UPDATE													
												ΔDN RNG	
												ΔX RNG	V25
												ΔRLS	
												ΔDN RNG	V21
												ΔDN RNG	
												ΔX RNG	V24
												ΔRLS	V23
THROTTLE DOWN _____ : _____													
T3-2 (1 REV) ABORT TIME													
+	0	0				+	0	0				HRS (108)	N33
+	0	0	0			+	0	0	0			MIN (34)	TIG
+	0					+	0					SEC (37.58)	N

PD12/PD12 ABORT
LUNAR SURFACE

FIRST REV ACTIVITY

LUNAR SURFACE CARD

LAUNCH PREP

I20
OG IG MG
P57, A/T 1, REFSMMAT
N04 NAV ERR
N05
N93 X Y Z

P57, A/T 2, REFSMMAT
STAR1 (N71)
STAR2 (N71)
N05 ANGLE DIFF
N93 X
Y
Z
N89 LAT
LONG/2
ALT

P57, A/T 2, REFSMMAT
STAR1 (N71)
STAR2 (N71)
N05 ANGLE DIFF
N93 X
Y
Z
N89 LAT
LONG/2
ALT

N43
LAT(+N) _____
LONG(+E) _____
ALT _____

047 _____ 053 _____
544 _____ +5:02 _____
545 _____
546 _____

047 _____ 053 _____

P57, A/T 3, LANDING SITE
N04 GRAV ERR
STAR (N71)
N05 ANGLE DIFF
N93 X
Y
Z

P57, A/T 3, LANDING SITE
N04 GRAV ERR
STAR (N71)
N05 ANGLE DIFF
N93 X
Y
Z

P22 ACQ _____:_____:_____
REV 48 TIG (171:37:24)

544 _____ +5:02 _____
545 _____
546 _____
377 _____

K FACTOR (170:00:00)

047 _____
053 _____

LIFT-OFF TABLE

NOMINAL = (M=2)

(M=1) ~ (M=2) -2:30

REV	NEW TIG	NOM TIG	REV	NEW TIG	NOM TIG
16		108:39:10	32		140:09:26
17		110:37:19	33		142:07:34
18		112:35:28	34		144:05:43
19		114:33:36	35		146:03:51
20		116:31:45	36		148:01:59
21		118:29:53	37		150:00:07
22		120:28:02	38		151:58:15
23		122:26:10	39		153:56:23
24		124:24:19	40		155:54:31
25		126:22:27	41		157:52:39
26		128:20:36	42		159:50:46
27		130:18:44	43		161:48:54
28		132:16:53	44		163:47:02
29		134:15:01	45		165:45:23
30		136:13:09	46		167:43:32
31		138:11:18	47		169:41:40

DIRECT TPI CARD

BURN RULES

IF TWO OF THREE SOLUTIONS AGREE,
BURN PRIORITY SOLUTION.

PRIORITY OF SOLUTION: PGNS, AGS, CMC,
CHARTS.

GUIDE VALUES: $\dot{X}=3$ fps, $\dot{Y}=7$ fps, $\dot{Z}=9$ fps

RR AGREES WITH VHF.WHERE

$\Delta R=0.01R + 0.5$ NM, ΔR IS ALWAYS ≥ 1 NM

RR DOES NOT AGREE WITH VHF,
MSFN ISOLATES FAILED SYSTEM.

APS ENGINE FOR $\Delta V > 40$ fps

TPI SOLUTIONS

	PGNS	AGS	CMC	CHARTS
TIG	N37	373	N37	
θ LOS (+26.6)	N55	303	N55	
HP (+43.9)	N58	402	N58	
ΔV TPI (+73.6)		370		
ΔV TPF (+31.7)		371		
ΔV_X	N81	450	N81*	ΔV_X
ΔV_Y		451	*	
ΔV_Z		452	*	ΔV_Z

*CHANGE SIGN
BIAS; $\Delta V_X = -1.0$
 $\Delta V_Z = +2.0$

TPI PAD

+ 0 0	+ 0 0	HRS(172) N37
+ 0 0 0	+ 0 0 0	MIN(29) TPI
+ 0	+ 0	SEC(39.10)
R1(+00000), R2(+000.00), R3(+130.00)		N55
0	0	$\Delta V_X(+70.6)$ N81
0	0	$\Delta V_Y(-0.5)$ LV
0	0	$\Delta V_Z(+21.0)$
+ 0	+ 0	R(+37.35) N54
- 0	- 0	$\dot{R}(-113.0)$ TPI
X X	X X	BT(00:03)

TIG	N37	373	N37
θ LOS	N55	303	N55
HP	N58	402	N58
ΔV TPI		370	
ΔV TPF		371	
ΔV_X	N81	450	N81* ΔV_X
ΔV_Y		451	*
ΔV_Z		452	* ΔV_Z

RESIDUALS

PGNS		AGS	
ΔV_X	N85	ΔV_X	500
ΔV_Y		ΔV_Y	501
ΔV_Z		ΔV_Z	502

IF TWO OF THREE SOLUTIONS AGREE, BURN PRIORITY SOLUTION.

PRIORITY OF SOLUTION: PGNS, AGS, CMC, CHARTS.

GUIDE VALUES: $\dot{X}=3$ fps, $\dot{Z}=9$ fps

RR AGREES WITH VHF WHERE $R=0.01 + 0.5$ NM,

ΔR IS ALWAYS ≥ 1 NM

RR DOES NOT AGREE WITH VHF, MSFN ISOLATES FAILED SYSTEM.

V90 < 5 fps - NO BURN

CDH/PLANE CHANGE CARD

CDH SOLUTIONS

+	0	0				+	0	0				HRS(173) N13
+	0	0	0			+	0	0	0			MIN(35) CDH
+	0					+	0					SEC(08.50)
	0						0					$\Delta VX(+0.0)$ N81
	0						0					$\Delta VY(+0.0)$ LV
	0						0					$\Delta VZ(+0.0)$
X	X	X				X	X	X				PLM FDAI
+						+						373(215.1)
	0						0					$\Delta VX(+0.0)$ N85
	0						0					$\Delta VY(+0.0)$ AGS
	0						0					$\Delta VZ(+0.0)$

PLANE CHANGE P30

TIG CDH	---	---	---	---	---	---	---	---	---	---	---	---
TIG PC	---	---	---	---	---	---	---	---	---	---	---	---

YDOT AND Y

CSM(N90)		PGNS(N90)		AGS(270)	
YDOT	Y	YDOT	Y	YDOT	
(-)	.	(-)	.	()	.
(-)	.	(-)	.	()	.

PGNS	AGS	CMC	CHARTS
------	-----	-----	--------

ΔH	(+14.9) N75	402		
CDH/TPI	(53:54)			
ΔT SLIP	(00:00)			
ΔVX	N81	450	N81*	ΔVX
ΔVY		263	*	
ΔVZ		452	*	ΔVY

*CHANGE SIGN NO BIAS

ΔH	N75	402		
CDH/TPI				
ΔT SLIP				
ΔVX	N81	450	N81*	ΔVX
ΔVY		263	*	
ΔVZ		452	*	ΔVY

RESIDUALS

PGNS		AGS	
	ΔVX N85		ΔVX 500
	ΔVY		ΔVY 501
	ΔVZ		ΔVZ 502

CSI CARD

BURN RULES

IF TWO OF THREE SOLUTIONS AGREE
BURN PRIORITY SOLUTION.

PRIORITY OF SOLUTIONS: PGNS, AGS, CMC, CHARTS.

GUIDE VALUE: $\dot{x} = 3$ fps.

RR AGREES WITH VHF WHERE
 $\Delta R = 0.01R + 0.5$ NM, ΔR IS ALWAYS ≥ 1 NM
RR DOES NOT AGREE WITH VHF,
MSFN ISOLATES FAILED SYSTEM.

V90 < 5 fps - NO BURN

APS ENGINE FOR $\Delta V > 40$ fps

CSI SOLUTIONS				
	PGNS	AGS	CMC	CHARTS
ΔH (+15.0) N75	402			
CSI/CDH(58:18)	372			
CDH/TPI(53:54)				
ΔVX (ΔVG) N81	370		N81*	ΔV
ΔVY	263		*	
CDH $\Delta VX(0.0)$ N82			*CHANGE SIGN BIAS; $\Delta VX = -1.0$	
CDH $\Delta VZ(0.0)$				

CSI PAD										
+	0	0			+	0	0			HRS(172) N11
+	0	0	0		+	0	0	0		MIN(36) CSI
+	0			.	+	0			.	SEC(50.50)
R1(+00001), R2(+026.60), R3(+130.00)										N55
+	0	0			+	0	0			HRS(174) N37
+	0	0	0		+	0	0	0		MIN(29) TPI
+	0			.	+	0			.	SEC(02.88)
	0			.		0			.	$\Delta VX(+50.4)$ N81
	0			.		0			.	$\Delta VY(+0.0)$ LV
410+1, 605+00777, 416+1, 623+0										
+				.	+				.	373(156.9)
+				.	+				.	275(269.0)
	0			.		0			.	$\Delta VX(+50.4)$ N86
	0			.		0			.	$\Delta VY(+0.0)$ AGS
	0			.		0			.	$\Delta VZ(+1.1)$

ΔH	N75	402		
CSI/CDH		372		
CDH/TPI				
ΔVX (ΔVG)	N81	370	N81*	ΔV
ΔVY		263	*	
CDH ΔVX	N82			
CDH ΔVZ				

RESIDUALS					
PGNS			AGS		
.
	ΔVX	N85		ΔVX	500
	ΔVY			ΔVY	501
	ΔVZ			ΔVZ	502

CSI
CDH/PLANE CHANGE

COELLIPTIC TPI CARD

DATE 07/07/71

BURN RULES

IF TWO OF THREE SOLUTIONS AGREE,
BURN PRIORITY SOLUTION.

PRIORITY OF SOLUTIONS: PGNS, AGS, CMC,
CHARTS.

GUIDE VALUES: $\dot{X}=3$ fps, $\dot{Y}=7$ fps, $\dot{Z}=9$ fps

RR AGREES WITH VHF WHERE
 $\Delta R = 0.01R + 0.5$ NM, ΔR IS ALWAYS ≥ 1 NM
 RR DOES NOT AGREE WITH VHF,
 MSFN ISOLATES FAILED SYSTEM.

IF TIG TPI > 8 min EARLY - RECYCLE P34
 WITH TIG EQUAL TO NOMINAL TIG-8 min

APS ENGINE FOR $\Delta V > 40$ fps

TPI SOLUTIONS				
	PGNS	AGS	CMC	CHARTS
TIG	N37	373	N37	
θ LOS	(+26.6) N55	303	N55	
HP	(+44.1) N58	402	N58	
ΔV TPI	(+24.7)	370		
ΔV TPF	(+31.6)	371		
ΔV_X	N81	450	N81*	ΔV_X
ΔV_Y		451	*	
ΔV_Z		452	*	ΔV_Z

*CHANGE SIGN
BIAS; $\Delta V_X = -1.0$
 $\Delta V_Z = +2.0$

TPI PAD												
+	0	0				+	0	0				HRS(174) N37
+	0	0	0			+	0	0	0			MIN(29) TPI
+	0					+	0					SEC(02.88)
R1(+00000), R2(+025.60), R3(+130.00)												N55
0						0						$\Delta V_X(+21.9)$ N81
0						0						$\Delta V_Y(-1.0)$ LV
0						0						$\Delta V_Z(-11.0)$
+	0					+	0					R(+37.68) N54
-	0					-	0					$\dot{R}(-111.7)$ TIG-5
X	X					X	X					BT(00:23)

TIG	N37	373	N37	
θ LOS	N55	303	N55	
HP	N58	402	N58	
ΔV TPI		370		
ΔV TPF		371		
ΔV_X	N81	450	N81*	ΔV_X
ΔV_Y		451	*	
ΔV_Z		452	*	ΔV_Z

RESIDUALS			
PGNS		AGS	
•	ΔV_X	N85	ΔV_X 500
•	ΔV_Y		ΔV_Y 501
•	ΔV_Z		ΔV_Z 502

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P76/77/P27 PADS

P76/77 PAD												
										PURPOSE		
+	0	0				+	0	0			HRS	N33
+	0	0	0			+	0	0	0		MIN	TIG
+	0			.		+	0			.	SEC	
				.						.	ΔVX	N84/N81
				.						.	ΔVY	
				.						.	ΔVZ	
										PURPOSE		
+	0	0				+	0	0			HRS	N33
+	0	0	0			+	0	0	0		MIN	TIG
+	0			.		+	0			.	SEC	
				.						.	ΔVX	N84/N81
				.						.	ΔVY	
				.						.	ΔVZ	
										PURPOSE		
+	0	0				+	0	0			HRS	N33
+	0	0	0			+	0	0	0		MIN	TIG
+	0			.		+	0			.	SEC	
				.						.	ΔVX	N84/N81
				.						.	ΔVY	
				.						.	ΔVZ	
										PURPOSE		
+	0	0				+	0	0			HRS	N33
+	0	0	0			+	0	0	0		MIN	TIG
+	0			.		+	0			.	SEC	
				.						.	ΔVX	N84/N81
				.						.	ΔVY	
				.						.	ΔVZ	

P27 PAD												
V			V			V			PURP			
:	:		:	:		:	:					
INDEX			INDEX			INDEX			01	1173		
									02			
									03			
									04			
									05			
									06			
									07			
									10			
									11			
									12			
									13			
									14			
									15			
									16			
									17			
									20			
									21	1213		
									22			
									23			
									24	1216		
X	X	X				X	X	X			HRS	
X	X	X	X			X	X	X	X		MIN	
X	X			.		X	X			.	SEC	NAV CHECK
	0			.			0			.	LAT	N43
				.						.	LONG	
+	0			.		+	0			.	ALT	

P30 PAD

P30													
+	0	0				+	0	0				HRS	N33
+	0	0	0			+	0	0	0			MIN	TIG
+	0					+	0					SEC	
												Δ VX	N81
												Δ VY	LV
												Δ VZ	
+						+						HA	N42
												HP	
+						+						Δ VR	
X	X	X				X	X	X				BT	
X	X	X				X	X	X				R	FDAI
X	X	X				X	X	X				P	INER
+						+						TIG	373
												Δ VX	N86
												Δ VY	AGS
												Δ VZ	
X	X	X				X	X	X				BSS	
X	X					X	X					SPA	
X	X	X				X	X	X				SXP	
RESIDUALS													
PGNS						AGS							
						Δ VX	N85					Δ VX	500
						Δ VY						Δ VY	501
						Δ VZ						Δ VZ	502

P30													
+	0	0				+	0	0				HRS	N33
+	0	0	0			+	0	0	0			MIN	TIG
+	0					+	0					SEC	
												Δ VX	N81
												Δ VY	LV
												Δ VZ	
+						+						HA	N42
												HP	
+						+						Δ VR	
X	X	X				X	X	X				BT	
X	X	X				X	X	X				R	FDAI
X	X	X				X	X	X				P	INER
+						+						TIG	373
												Δ VX	N86
												Δ VY	AGS
												Δ VZ	
X	X	X				X	X	X				BSS	
X	X					X	X					SPA	
X	X	X				X	X	X				SXP	
RESIDUALS													
PGNS						AGS							
						Δ VX	N85					Δ VX	500
						Δ VY						Δ VY	501
						Δ VZ						Δ VZ	502

-AGS STATE VECTOR PAD										PURP	LOAD
										240	
										241	
										242	
										260	
										261	
										262	
										254	
										414+2	
										244	
										245	
										246	
										264	
										265	
										266	
										272	
										414+3	
AGS STATE VECTOR PAD										PURP	LOAD
										240	
										241	
										242	
										260	
										261	
										262	
										254	
										414+2	
										244	
										245	
										246	
										264	
										265	
										266	
										272	
										414+3	

AGS SV/IMPACT PAD

IMPACT CARD												
+	0	0				+	0	0				HRS (179) N33
+	0	0	0			+	0	0	0			MIN (06) TIG
+	0					+	0					SEC (22.70)
												ΔV_X (-161.1) N81
												ΔV_Y (+57.3) LV
												ΔV_Z (+94.6)
+						+						H_A (+62.0) N42
												H_P (-52.8)
+						+						ΔV_R (+195.4)
X	X	X				X	X	X				BT (1:22)
X	X	X				X	X	X				R (037) FDAI
X	X	X				X	X	X				P (016) INER
+						+						TIG (546.4) 373
												ΔV_X (-164.3) N86
												ΔV_Y (+57.3) AGS
												ΔV_Z (+90.0)

ASCENT/CSI PADS

LM ASCENT PAD												CSI PAD																																							
+	0	0				+	0	0				+	0	0				+	0	0				+	0	0				+	0	0				HRS	N33	+	0	0				+	0	0				HRS	N11
+	0	0	0			+	0	0	0			+	0	0	0			+	0	0	0			+	0	0				+	0	0				MIN	TIG	+	0	0	0			+	0	0	0			MIN	CSI
+	0					+	0					+	0					+	0					+	0					+	0					SEC		+	0					+	0					SEC	
+						+						+						+						+						V (HOR)		$R_1(+00001), R_2(+026.60), R_3(+130.00)$						N55													
+						+						+						+						+						V (VERT)N76		+	0	0				+	0	0				HRS	N37						
0						0						0						0						*CROSSRANGE		+	0	0	0			+	0	0	0			MIN	TPI												
												+												047		+	0					+	0					SEC													
												+												053		0						0						ΔV_X	N81												
												+												224/226		0						0						ΔV_Y	LV												
												+												231		410+1, 605+00777, 416+1, 623+0																									
												+												465		+						+						373													
												+												373		+						+						275													
+	0	0				+	0	0				+	0	0				+	0	0				HRS	N37	0						0						ΔV_X													
+	0	0	0			+	0	0	0			+	0	0	0			+	0	0	0			MIN	TPI	0						0						ΔV_Y	AGS												
+	0					+	0					+	0					+	0					SEC		0						0						ΔV_Z													
+						+						+						+						LM WT																											

*NOTE: LOAD 8 NM CROSSRANGE IF GREATER THAN 8 NM