APOLLO 13.	
CMP SOLO BOOK	
PART NO.	S/N
SKB32100082 – 353	1001

96:00
(20101) (11111)
(+0.000) (+10.00)

REST ATTITUDE
(94,289,0)
HGA (P=-4;Y=276)

TV-OFF
P52 (OPTION 3)
REPORT TORQ ANGLES TO MSFN FOR DRIFT CHECK

P52(IMU REALIGN)
N71: ___ ___ ___ ___
N05: ___ ___ ___ ___
N93:
X ___ ___ ___ ___ ___
Y ___ ___ ___ ___ ___
Z ___ ___ ___ ___ ___
GET ___ ___ ___ ___ ___ ___

96:10

P52 (OPTION 1)

REFSMMAT TIME

+	0	0				HRS
+	0	0	0			MIN
+	0					SEC

P00
CDR V49 MNVR TO
AGS CALIB ATTITUDE
(7.5,112.5,22.5)
(20111) (11111)
V48 (20111) (11111)

P52(IMU REALIGN)
N71: ___ ___ ___ ___
N05: ___ ___ ___ ___
N93:
X ___ ___ ___ ___ ___
Y ___ ___ ___ ___ ___
Z ___ ___ ___ ___ ___
GET ___ ___ ___ ___ ___ ___

96:20

DON PGA W/O HELMET AND GLOVES

MAP UPDATE REV 11
LOS : ___ ___ ___ ___ ___ ___
180°: ___ ___ ___ ___ ___ ___
AOS : ___ ___ ___ ___ ___ ___

LMP VERIFY DSE (LBR/RCD/FWD/CMD RESET)

96:30

96:30
(20111) (11111)

PRESSURIZE LM
CM/LM PRESS EQUALIZATION VALVE-CLOSE
OPEN AND STOW CM HATCH
REMOVE AND STOW PROBE AND DROGUE; CHECK LATCHES

— LMP IVT

96:40

CSM PWR TO LM OFF AT LMP REQUEST
give GET

96:50

REV 11

MARK TO LM FOR LM MISSION TIMER SYNC AT LMP REQUEST

97:00

OPEN HATCH

LMP TO LM

CDR TO LM

97:00 (20111)(11111)

CONFIGURE CAMERAS FOR UNDOCKING*

CM2/EL/80/CEX
(f8,250,FOCUS) 10
MAG(L)___,FR#___

CM2/DAC/18/CEX-BRKT,MIR
(f8,250,7)12 FPS(8 MIN)
MAG(B)___,MAG%___

97:10

SWITCH TO CDR COMM UMB

V64; ACQ MSFN (P=-76,Y=127)

REPORT DOCKING TUNNEL INDEX ANGLE TO MSFN

97:20

P00; MSFN UPLINK:
CSM S.V. AND V66

MSFN UPDATE:
P22 PAD COPY AT (99:35)
UNDOCK/SEP PAD COPY AT (99:05)

MAN ATT(3) RATE CMD
ATT DB-MIN
RATE-LOW
SC CONT-SCS
BMAG-ATT 1/RATE 2

LM COARSE ALIGN
V06N20E
VOICE ANGLES TO LM
ON CDR MARK ENTER
RECORD GIMBAL ANGLES
VOICE ANGLES TO LM

N20:
R ____.____
P ____.____
Y ____.____

97:30

EPS/GET/GLYCOL/CW ACTIVATE

ECS C/O

97:30 (20111)(11111)

VHF C/O AT LMP REQUEST

VHF AM B-SIMPLEX FOR VHF B CHECK
VHF AM A-SIMPLEX FOR VHF A CHECK

SC CONT-CMC
LM CLOCK SYNC:
V16N65E

DON HELMET AND
GLOVES

97:40

POSSIBLE TEPHEM V05N01 1706E

SUIT LOOP INTEGRITY CHECK (DECAL)

97:50

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

AFTER LM RCS CHECKOUT
CMC-AUTO

98:00

IMU COARSE ALIGN

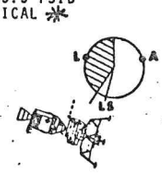
RCS PRESS

RCS C/O

5-27-70
~~H 16, 1970~~

98:00 (20111)(11111)

ROLL (8)-OFF UNTIL LM/CM ΔP>3.5 PSID
REMOVE AND STOW CSM/LM UMBILICAL *
INSTALL DROGUE AND PROBE
PRE-LOAD PROBE
COCK LATCHES (12)
INSTALL HATCH
VENT TUNNEL



(98:00)
(7.5,214.5/112.5,22.5)

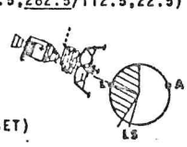
98:10

HATCH INTEGRITY CHECK (DECAL)
CYCLE CMC MODE-FREE/AUTO
ROLL(4)-ON

cb RNDZ XPNDR FLT BUS-CLOSE (VERIFY)
RNDZ XPNDR-HTR (VERIFY)
VHF ANT-LT (VERIFY)
VHF RCV ONLY-B DATA
VHF AM A-SIMPLEX VHF AM B -OFF

(98:21)
(7.5,282.5/112.5,22.5)

PANEL 10
MODE-VOX
VOX SENS tw-5
S BD-OFF
INTERCOM-OFF



98:20

VERIFY DSE (LBR/RCD/FWD/CMD RESET)
DOFF HELMET AND GLOVES

MAP UPDATE REV 12

LOS :
180°:
AOS :

LIOH CANISTER CHANGE:
10 INTO B, STOW B IN B6

98:30

DOCK/ALIGN

AGS ACTIVATE

CLOSE HATCH

ARS/PGA CHECK

98:30 (20111)(11111)

RR XPNDR ACTIVATION AND SELF TEST (DECAL)

SET DET COUNTING UP TO UNDOCK/SEP
UNDOCK CUE CARD

98:40

CYCLE CMC MODE-FREE/AUTO

V48 (20101)(11111)

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

N20:
R ____.____
P ____.____
Y ____.____

REV 12

V49 TRIM TO AGS CAL ATT(7.5,112.5,22.5)

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

98:50

LM AGS CALIB
RATE <.075°/SEC
CMC MODE-FREE
AFTER COMPLETION OF AGS CALIB
(APPROX. 6 MIN) CMC MODE-AUTO

99:00

DRIFT CHECK

RR ACT/TEST & AGS CALIB

MARCH 16, 1970

99:00 (20101)(11111)

P30; LOAD UNDOCK/SEP
WHEN LM RR SELF TEST COMPLETE
AUTO RCS SEL B3-ON
RNDZ XPNDR-PWR
P00; V49 MNVR TO (0,102,0)

LOAD ΔV IN EMS TO -100.0
CHECK NULL BIAS
GDC ALIGN
VERIFY ORDEAL
ALT SET=40 N.M.

(99:07)
(0,59/102,0)

(P41 .5DB) P41 (TRIM)(0,59/102,0)

V64; ACQ MSFN (P=-87,Y=3)
GO/NO GO FOR UNDOCK/SEP
AUTO TRIM (PRO)

CONFIGURE SWITCHES

ATT DB-MIN	CMC MODE-FREE
RATE-LOW	RHC PWR DIR-MNA/MNB
SC CONT-SCS	THC PWR-ON
BMAG-ATT 1/RATE 2	EMS MODE-NORMAL
UTIL PWR-ON(PNL 15)	AUTO RCS (16)-MNA/MNB

99:10

V48 (11101)(11111)

START DAC CM2/18/CEX-BRKT-MIR(f8,250,7)12 FPS, 8 MIN
PERFORM SOFT UNDOCKING CHECKLIST

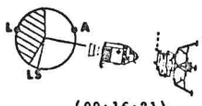
UNDOCK/SEPARATION (99:16:21)(+0.0,+0.0,+1.0)
: : . (0,90/102,0)

(THRUST AFT; BURN VGX TO +2.0)

SC CONT-CMC	RHC PWR DIR-OFF	VHF AM A-OFF
CMC MODE-AUTO	ROLL (4)-OFF	VHF AM B-DUPLEX
DV CG-CSM	THC PWR-OFF	VHF RANGING-RANGING
BMAG-RATE 2		VHF ANT-RT

99:20

VERIFY LM TRACKER LT-ON
DAC-OFF



GDC ALIGN at 0 yaw
VERIFY ORDEAL
ALT SET=40 N.M.
P00
V49 MNVR TO
(0,335,0)

(99:16:21)
(0,90/102,0)

MONITOR S-BAND

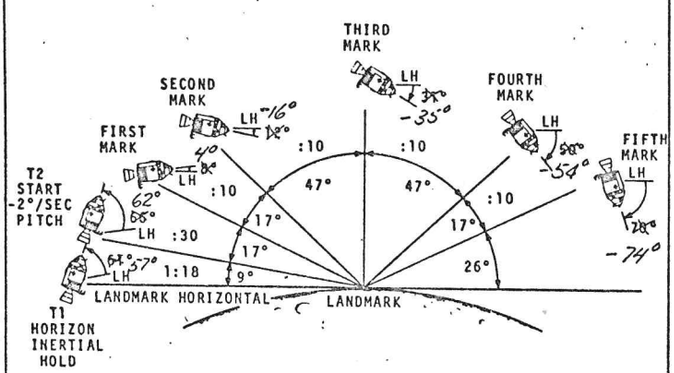
99:30

P30 MANEUVER

SET STARS	C R	S C	M S/G	S &	E	P N	PURPOSE PROP/GUID
	+						WT N47
R_{ALIGN} ___ ___ ___		0	0				P_{TRIM} N48
P_{ALIGN} ___ ___ ___		0	0				Y_{TRIM}
Y_{ALIGN} ___ ___ ___	+	0	0				HRS GETI
	+	0	0	0			MIN N33
	+	0					SEC
ULLAGE ___	+	0	0	0	0	0	ΔV_X N81
	+	0	0	0	0	0	ΔV_Y
	-	0	0	0	1	0	ΔV_Z
	X	X	X	0	0	0	R
	X	X	X				P
	X	X	X	0	0	0	Y

SOFT UNDOCKING CHECKLIST
cb DOCKING PROBE-CLOSED
PROBE EXT/REL-EXT/REL (Momentary)
VERIFY PROBE EXTENDED, LM ATTACHED
ALLOW MOTION TO DAMP (5 SEC)
PROBE EXT/REL-EXT/REL(HOLD)(<20 SEC)
AFTER 2 SEC XLATE (4 JET) AFT
FOR ≈4 SEC
AFTER PROBE/DROGUE DISENGAGED-
PROBE EXT/REL-OFF

3-27-70
~~3-16-1970~~



CSM P22 PROFILE (LOW ALTITUDE)

EVENT	ORDEAL/INERTIAL	TIME FROM TCA
T1	57 ~~61~~/335	-2:08
T2	62 ~~66~~/335	- :50
FIRST MARK	4 ~~8~~/275	- :20
SECOND MARK	344/~~348~~/255	- :10
THIRD MARK	325 ~~329~~/235	:00
FOURTH MARK	306 ~~310~~/215	+ :10
FIFTH MARK	286 ~~290~~/195	+ :20

	13-2	13-3	13-4	13-5
LAT	-03.606	-03.189	-03.707	-03.226
LONG/2	-07.658	-07.739	-07.006	-07.057
ALT	+000.00	-000.76	-000.73	-000.85

99:30 (11101)(11111)

CM/DAC/SEXT/CEX
(FIXED,60,FIXED)1FPS
MAG(C) ___
MAG % ___

SET CREW RCDR FOR P22

OPTICS ZERO-OFF
OPTICS TEL TRUN-
SLAVE TO SXT
OPTICS COUPLING-RSLV
OPTICS MODE-CMC
OPTICS SPEED-HI

ACQ MSFN-OMNI D
V21N01E 1341E E
P22
V79 (-2.0000)(+000.50)(+11111)

P22 LDMK TRACKING D 14
TGT: 13-1

T_1 ___ ___ ___ : ___ ___ : ___ ___
T_2 ___ ___ ___ : ___ ___ : ___ ___
TCA ___ ___ ___ : ___ ___ : ___ ___
R ___ ___ °P ___ ___ °Y ___ ___ °
N or S NM ___ ___ SA ___ ___ TA ___ ___

N89
LAT -04.013 ~~-03.606~~ ___ ___ ___ ___
LONG/2 -07.799 ~~-07.658~~ ___ ___ ___ ___
ALT -000.28 ~~+000.00~~ ___ ___ ___ ___

LMK	LAT	LONG/2	ALT
~~13-2~~	~~-03.503°~~	~~-07.658°~~	~~+000.00~~
~~13-3~~	~~-03.183°~~	~~-07.742°~~	~~+000.00~~
~~13-4~~	~~-03.707°~~	~~-07.006°~~	~~+000.00~~
~~13-5~~	~~-03.226°~~	~~-07.057°~~	~~+000.00~~

99:40

T_1 (HORIZON, TCA-2 MIN 8 SEC) START CREW RCDR; START DAC; VERIFY DSE 62°

T_2 (TCA-50 SEC) PRO-START PITCH RATE AT 60° ORDEAL; TAKE 5 MARKS (SUNSHAFTING); DAC-OFF; HOLD ON N89 DISPLAY

TCA

(TCA +1 MIN 2 SEC) STOP PITCH RATE AT BURN ATT SC S (0,206(111),0)

(-2.000)(+0.500)

(11101)(11111)

99:50

COMPARE RR AND VHF RANGE IF POSS
V21N01E 1341 E 5E
V64; ACQ MSFN (P=-83,Y=180); MSFN GO FOR P22 TERMINATION

(10111)(11111)

V48 (10111)(11111)

P52 (OPTION 3)

P00
MSFN UPLINK:
CSM S.V.
CIRC TARGET LOAD

MSFN UPDATE:
CIRC PAD
PADS A-D COPY AT (101:10)
P22 PAD COPY AT

P52(IMU REALIGN)
N71: ___ ___ ___ ___
N05: ___ ___ . ___ ___
N93:
X ___ ___ . ___ ___ ___
Y ___ ___ . ___ ___ ___
Z ___ ___ . ___ ___ ___
GET

DPS THROTTLE CHECK
RR C/O
P52

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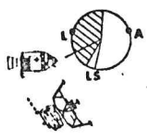
100:00
(10111)
(11111)
(P40
.5DB)

V49 TRIM TO CIRC BURN ATT ON PAD (0,111,0)

P30; VERIFY CIRC TIGN AND ΔV'S

P40 (TRIM)(0,258/111,0)

SXT STAR CHECK



(100:03)
(0,258/111,0)

100:10

GO/NO GO FOR CIRC

VHF AM B-OFF
VHF AM A-SIMPLEX
VHF RCV ONLY-B DATA

MAP UPDATE REV 13

LOS :
180°:
AOS :

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

GDC ALIGN
VERIFY ORDEAL
ALT SET=50 N.M.

SET DET COUNTING DOWN
TO CIRC

100:20

SPS CHECKLIST

100:30

P52

LPD CALIB

AGS CAL

P30 MANEUVER

SET STARS	C S	I P	R S/G	C &		N	PURPOSE PROP/GUID
	+						WT N47
R_{ALIGN}		0	0		◊		P_{TRIM} N48
P_{ALIGN}		0	0		◊		Y_{TRIM}
Y_{ALIGN}	+	0	0				HRS GETI
	+	0	0	0			MIN N33
	+	0			◊		SEC
					◊		ΔV_X N81
ULLAGE					◊		ΔV_Y
					◊		ΔV_Z
	X	X	X				R
	X	X	X				P
	X	X	X				Y
	+				◊		H_A N44
					◊		H_P
	+				◊		ΔVT
HORIZON/WINDOW	X	X	X		◊		BT
	X				◊		ΔVC
	X	X	X	X			SXTS
	+				◊	0	SFT
	+			◊	0	0	TRN
	X	X	X				BSS
	X	X			◊		SPA
	X	X	X		◊		SXP
		0					LAT N61
OTHER							LONG
	+						RTGO EMS
	+						V10
			◊	◊	◊		GET 0.05G

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BURN STATUS REPORT

X X	ΔTIG
X X	BT
	V_{gx}
TRIM	
X X X	R
X X X	P
X X X	Y
	V_{gx}
	V_{gy}
	V_{gz}
	ΔV_C
X	FUEL
X	OX
X	UNBAL

100:30
(P40
.5DB)

TRIM VGX TO ±1.0 FPS
TRIM VGY TO ± .2 FPS
DO NOT TRIM VGZ

(10111)
(11111)

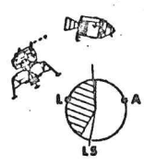
CSM CIRCULARIZATION (100:35:05)(+69.0,+0.0,+14.0)
: : . (0,351/111,0)

P00; VOICE P76 BURN DATA TO LM
V82; SET ORDEAL
P20 (143°)(0,217/328,0)

REV 13

100:40

CHECK LM VISIBILITY



(100:35:05)
(0,351/111,0)

100:50

P00
V49 MNVR TO COMM ATT(60,281,0)

101:00

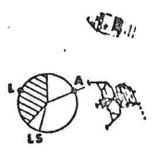
OBSERVE CIRC

P76

101:00
(10111)
11111

V64; ACQ MSFN (P=30,Y=266)
BURN STATUS REPORT TO MSFN

BATTERY CHARGE-
BATTERY B



(101:03)
(60,246/281,0)

101:10

MSFN UPDATE:
TOPO PAD COPY AT 103:05
(LM LANDING)
P00
MSFN UPLINK:
CSM S.V. (PDI-10)
LM S.V.
PIPA BIAS
CYCLE CMC MODE-FREE/AUTO

(10101)
11111

V48 (10101 / 11111)

V49 MNVR TO
(0,281,0)

MSFN UPDATE TO LM
WITH CSM COPY:
PADS E-N

101:20

CONFIGURE CAMERA FOR P22

CM/DAC/SEXT/CEX
(FIXED,60,FIXED)1FPS
MAG (C) _____,MAG % _____

101:30

DPS PRESS & C/O

LANDING RADAR C/O

	PURPOSE		PDI$_0$ ABORT PAD					
A	GETI N33	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
B	N84 LOCAL VERT	ΔVX						
		ΔVY						
		ΔVZ						
C	GETI CSI N11	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
D	GETI TPI N37	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

	PURPOSE		PDI PAD					
I	GETI PDI	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

	PURPOSE		PDI ABORT EARLY<5:42					
J	GETI TPI N37	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

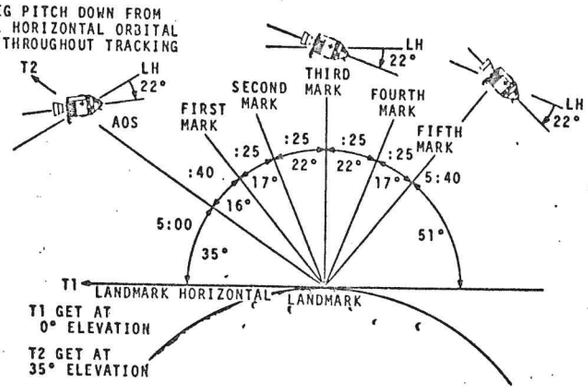
	PURPOSE		PDI ABORT LATE>5:42					
K	GETI TPI N37	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

	PURPOSE		NO PDI$_1$+12 ABORT					
E	GETI N33	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
F	N84 LOCAL VERT	ΔVX						
		ΔVY						
		ΔVZ						
G	GETI CSI N11	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
H	GETI TPI N37	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

	PURPOSE		T2-1 PAD					
L	GETI T2	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
M	GETI TPI N37	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				
N	GETI T3	HRS	+	0	0			
		MIN	+	0	0	0		
		SEC	+	0				

~~27-70-~~
~~H 16, 1970~~

22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING



CSM P22 PROFILE (POST CIRCULARIZATION)

EVENT	ORDEAL/INERTIAL	TIME FROM TCA
T1	338/269	-6:30
T2	338/254	-1:30
FIRST MARK	338/252	- :50
SECOND MARK	338/250	- :25
THIRD MARK	338/249	:00
FOURTH MARK	338/248	+ :25
FIFTH MARK	338/246	+ :50

101:30
(10101)
11111

ACQ MSFN-OMNI D
P22
V79 (-0.0507 / +000.50 / +11111)
PRO-TO START PITCH
RATE AT 338° ORDEAL
SET CREW RCDR FOR P22
HI

(-.0507)
(+0.500)

OPTICS ZERO-OFF
OPTICS TEL TRUN-
SLAVE TO SXT
OPTICS COUPLING-RSLV
OPTICS MODE-CMC
OPTICS SPEED-MED

T$_1$ (HORIZON) START
CREW RCDR

P22 LDMK TRACKING
TGT: 13-1
D 14

T$_1$ — — — — — —
T$_2$ — — — — — —
R _____ °P _____ °Y _____ °
N or S NM ____ SA ____ TA ____
LAT -04.023 ~~-04.023~~ _____
LONG/2 -07.799 ~~-07.803~~ _____
ALT -000.28 ~~+000.00~~ _____

LMK	LAT	LONG/2	ALT
~~13-2~~	~~-03.583°~~	~~-07.650°~~	~~+000.00~~
~~13-3~~	~~-03.183°~~	~~-07.742°~~	~~+000.00~~

101:40

START DAC(T2-1 MIN)

T$_2$ (TCA-1 MIN 30 SEC, ACQ LANDING SITE); VERIFY DSE

(TCA-50 SEC) TAKE 5 MARKS 25 SEC APART ; DAC-OFF
HOLD ON N89 DISPLAY

TCA

(10101)
11111

STOP PITCH RATE; MNVR TO P52 AND COAS CALIB ATT
(0,258,0)

(10111)
11111

V48 (10111 / 11111)

	13-2	13-3
LAT	-03.606	-03.189
LONG/2	-07.658	-07.739
ALT	+000.00	-000.76

101:50

102:00

LPD ALT CHECK

OBSERVE LANDING SITE

AGS INITIALIZE

MARCH 16, 1970

102:00 (10111) (11111)

P52 (OPTION 3)

P52(IMU REALIGN)

N71: ___ ___ ___

NO5: ___ ___ . ___ ___

N93:

X ___ ___ . ___ ___ ___

Y ___ ___ . ___ ___ ___

Z ___ ___ . ___ ___ ___

GET ___ ___ . ___ ___ . ___ ___

102:10

P52 (COAS CALIB)
USE SPICA #26

COAS CALIB

N92: _____ _____
SHFT TRUN

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

GDC ALIGN
VERIFY ORDEAL
ALT SET=60 N.M.

CYCLE CMC MODE-FREE/AUTO

(10101) (11111)
V48

(102:00)
(0,36/258,0)

102:20

P20 (70°)(0,27/188,0)

(10111) (11111)
V48

CONFIGURE CAMERA FOR TOPO PHOTOS

CM3/LTC/BW
(FIXED,50,FIXED)
RANGE (91.7), INTERVAL (8.7)
MAG(U) _____,FR# _____

MAP UPDATE REV 14

LOS : ___ ___ . ___ ___ . ___ ___

180°: ___ ___ . ___ ___ . ___ ___

AOS : ___ ___ . ___ ___ . ___ ___

102:30

P52

102:30 (10111) (11111)

REV 14

102:40

CHECK LM VISIBILITY

102:50

VHF AM A-OFF
VHF AM B-DUPLEX
VHF RANGING-RANGING

SUN/LM LOS ANGLE >30 DEG

V67(+10000,+00100,+00001)
V57; V87
(FOR NO UPDATE MODE SET NEGATIVE N49 THRESHOLD:
KEY V21 NO1E 2002E 77776E
N15E 77776E
DO NOT INCORPORATE MARKS)

103:00

AGS ALIGN

MNVR TO PDI ATTITUDE

5-27-70
H 16, 1970

103:00 (10111) (11111)

ACQ MSFN OMNI B

when relay confirmed
pol & VHF T/R-off

TOPO PHOTO PAD
(0,153,0)
R _____ P _____ Y _____

T START: ___ ___ . ___ ___ . ___ ___

T STOP : ___ ___ . ___ ___ . ___ ___

RNG _____ NM

(103:01)
~~(0,153,0)~~
(0,22/58,0)

103:10

SET DET COUNTING UP TO PDI

V88
(TO END NO UPDATE MODE:
KEY V21NO1E 2002E 23E
N15E 1E
FOR 2000 FT, 2.5 FPS LIMITS)
V56 (TERMINATE P20)
P00

(10101) (11111)
V48

V49 MNVR TO TOPO PHOTO ATT

103:20

V64; ACQ MSFN (P=-43,Y=180)

+56

GO/NO GO PDI

IF CSM RELAY REQ'D
S BD MODE-RELAY

103:30

SYS CHECKS

INITIALIZE AGS

LR ON

GO/NO GO PDI

103:30 (10101) (11111)

LM PDI (103:31:00)
: : .

103:40

PCM BIT RATE-HIGH (VERIFY)
LTC PWR-ON (T START-1 MIN)
LTC-AUTO (T START)
TOPO PHOTOS OF LM LANDING

+11

LM TOUCHDOWN (103:42:02)
: : .

(103:42:02)
(0,242/153,0)

LTC-OFF (T STOP)
P00; V49 MNVR TO (0,100,0)

(10111) (11111)
V48

V64; ACQ MSFN (P=-83,Y=2)
CONFIRM STAY/NO STAY FOR T_1
V44 (SET LUNAR SURFACE FLAG)
VHF RANGING-OFF

S BAND MODE-VOICE (VERIFY)

103:50

CONFIRM STAY/NO
STAY FOR T_2

P52 (OPTION 3)

Show LTC

GDC ALIGN
VERIFY ORDEAL
ALT SET=60 N.M.

P52(IMU REALIGN)

N71: ___ ___ ___

NO5: ___ ___ . ___ ___

N93:

X ___ ___ . ___ ___ ___

Y ___ ___ . ___ ___ ___

Z ___ ___ . ___ ___ ___

GET ___ ___ . ___ ___ . ___ ___

104:00

PDI

TOUCHDOWN

3-27-70
~~MARCH 16, 1970~~

104:00 (10111 / 11111)

V49 MNVR TO CONTAM PHOTO ATT (320,133,348)

CONFIGURE CAMERA (S/C CONTAMINATION)* E TAPE
CM4/EL/80/VHBW
BRKT. LTWS. CONT (f2.8,4,∞)
REMOVE DARKSLIDE, COVER LENS & CYCLE EL 5 FRAMES
REPLACE DARKSLIDE

FR REQ (16)
MAG-(T) , FR #

MSFN UPDATE:
CONTAMINATION PHOTO PAD

MAP UPDATE REV 15
LOS :
180°:
AOS :

104:10

VERIFY DSE (LBR/RCD/FWD/CMD RESET)
MSFN DISABLES MSFN S-BD RELAY

EAT PERIOD

INSTALL WINDOW SHADES

104:20

CONTAMINATION PHOTO PAD
T-START:
START RECORDER AT
SUNRISE (-) 10 MIN

S/C CONTAMINATION FIELD PHOTOS (BETELGEUSE)

FLOOD LIGHTS-OFF
INHIBIT-A3, C4, B3, D4 THRUSTERS
104:28:23 RECORDER-ON (SR-10 MIN)
DIM INTERIOR LIGHTING

104:30

MSFN

POST TOUCHDOWN ACTIVITIES

104:30 (10111 / 11111)

104:33:23 1 FRAME, EXP TIME 1/4 SEC (SR-5 MIN)
CHANGE EXP TIME TO 1 SEC (2 clicks V)
1 FRAME, EXP TIME 1 SEC
CHANGE EXP TIME TO BULB (1 click V)
1 FRAME, EXP TIME 4 SEC

REV 15

104:40

104:41:23 1 FRAME, EXP TIME 4 SEC (SR +3 MIN)
CHANGE EXP TO 1 SEC (1 click)
1 FRAME, EXP TIME 1 SEC
CHANGE EXP TO 1/4 SEC (2 clicks)
1 FRAME, EXP TIME 1/4 SEC

RECORDER-OFF, LIGHTS UP
ENABLE-A3, C4, B3, D4 THRUSTERS
REMOVE EL FROM WINDOW & COVER LENS, &
CYCLE 5 FRAMES, REPLACE DARKSLIDE

(10102 / 11111)

V48 (10102 / 11111)

FR #

V49 MNVR TO ORB SCIENCE ATT (0,279,0)
~~REMOVE WINDOW SHADES~~
CONFIGURE CAMERA (ORBITAL SCIENCE)*
CM-EL/250/CEX-(f8,250,∞) IVL

FR Req (14)
MAG-(L) , FR #

104:50

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +005.00 / + 11111)

PRO-TO START PITCH RATE (0,230/279,0)

(104:55)
(0,230/279,0)

(-.0507 / +05.00)

D6

PHOTO TGT 14, SOUTH (f8, 250, ∞) 14 @ 20 SEC (250mm)
(180° + :23)

ACQ MSFN OMNI D
~~ORBITAL SCIENCE~~

105:00

POST TOUCHDOWN ACTIVITIES

3-30-70
~~3-27-70~~
~~MARCH 16, 1970~~

Swigert - ON

105:00 (-.0507 / +05.00) (10111 / 11111)

~~PHOTO TGT 14, South (f8,250,∞) 14 @ 20 sec (250mm) (180° + .23)~~

(10101 / 11111)

V48 (10101 / 11111)

V49 MNVR TO TRK ATT (0,306,0)

MSFN UPDATE:
P22 - TRACKING PAD (Theon SR B,L/S LDMK 13-1)
CONTAMINATION PHOTO PAD (106:20)

105:10

CONFIGURE CAMERA (LDMK TRACKING)
CM-/DAC/CEX-SXT (EXP ~~1/60~~ 1/125 1fps

MAG % REQ(3.7)
MAG-(C)
MAG %

P22 LDMK TRACKING 1/125 D12
TGT: THEON SR B (~~1/60~~)
T_1
T_2
R °P °Y
N or S NM SA TA
N89
LAT +00.171
LONG/2 +07.028
ALT +000.00

P00; MSFN UPLINK:
CSM S.V.

P22 (THEON SR B)
SC CONT-CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111)

105:20 (-.0507 / +00.50)

PRO-TO START PITCH RATE (0,338/306,0)

T1 (HORIZON)

DAC ON @ T2 (-) 1 MIN

T2 (TCA-90 SEC - SIGHT LANDMARK)
(TCA-50 SEC) TAKE 5 MARKS 25 SEC APART

105:30

MSFN

EAT PERIOD

105:30 (-.0507 / +00.50)

TCA
DAC OFF AFTER MARK 5

P22 (LDMK 13-1) D 14

T1 (HORIZON) DAC not req'd

T2 (TCA-90 SEC - SIGHT LANDMARK)
(TCA- 50 SEC) TAKE 5 MARKS 25 SEC APART

105:40

TCA
RNDZ XPNDR - OFF
INSTALL WINDOW SHADES

FR REQ (16)
MAG-(T) , FR #

CONFIGURE CAMERA (S/C CONTAMINATION)* E TAPE
CM4/EL/80/VHBW
BRKT, LTWS, CONT (f2.8,4,∞)
REMOVE DARKSLIDE, COVER LENS, & CYCLE EL 5 FRAMES,
REPLACE DARKSLIDE

SC CONT-CMC/AUTO (VERIFY)
V79 (-0.0507 / +005.00 / + 11111)

DOFF PGA

P22 LDMK TRACKING D 14
TGT:13.1 (~~1/60~~)
T_1
T_2
R °P °Y
N or S NM SA TA
N89
LAT -04.043
LONG/2 -07.799
ALT -+000.28

	13-2	13-3
LAT	-03.606	-03.109
LONG/2	-07.658	-07.739
ALT	+000.00	-+000.76

105:50

(-.0507 / +05.00)

MSFN

TRK CSM

EAT PERIOD

STOP ORB RATE AT CONTAM FIELD ATT (0,192,0)

106:00

VHF: ACQMSFN(R-6 V181)

3-27-70
~~MARCH 16, 1970~~

106:00 (10101 / 11111)

M S F N

106:10 — VERIFY DSE (LBR/RCD/FWD/CMD RESET)

MAP UPDATE REV 16

LOS :

180°:

AOS :

(10112 / 11111) V48 (10112 / 11111)

106:20

CONTAMINATION PHOTO PAD

T-START:

START RECORDER AT SUNRISE (-) 10 MIN

S/C CONTAMINATION FIELD PHOTOS (REGULUS®)

FLOOD LIGHTS-OFF

INHIBIT-A3, C4, B3, D4 THRUSTERS

106:26:42 START RECORDER (SR-10 MIN)
DIM INTERIOR LIGHTING

106:30

C A B I N P R E P F O R E V A

106:30 (10112 / 11111)

REV 16

106:31:42 1 FRAME, EXP TIME 1/4 SEC (SR-5 MIN)
CHANGE EXP TIME TO 1 SEC (2 clicks V)
1 FRAME, EXP TIME 1 SEC
CHANGE EXP TIME TO BULB (1 click V)
1 FRAME, EXP TIME 4 SEC

106:39:42 1 FRAME, EXP TIME 4 SEC (SR +3 MIN)
CHANGE EXP TO 1 SEC (1 click)
1 FRAME, EXP TIME 1 SEC
CHANGE EXP TIME TO 1/4 SEC (2 clicks)
1 FRAME, EXP TIME 1/4 SEC

106:40

RECORDER-OFF, LIGHTS UP
ENABLE-A3, C4, B3, D4 THRUSTERS
REMOVE EL FROM WINDOW, COVER LENS, &
CYCLE 5 FRAMES, REPLACE DARKSLIDE

V49 MNVR TO ORB SCIENCE ATT (0,286,0)
REMOVE WINDOW SHADES

FR #

CONFIGURE CAMERA (ORBITAL SCIENCE)*
CM-/EL/250/CEX (f8 ,250,∞) INTVL

FR REQ (11)

MAG-(M) ____, FR # ____

(-.0507 / +05.00) SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +005.00 / + 11111)

106:50

PRO-TO START PITCH RATE (0,230/286,0)

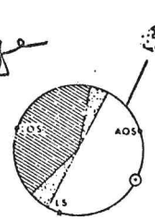
ORBITAL SCIENCE

~~VERIFY DSE ON~~

VISUAL TGT 3, ON TRACK (180° + :19)

D5

ACQ MSFN OMNI D



(106:51)
(0,230/286,0)

107:00

M S F N

E Q U I P M E N T P R E P

P L S S D O N N I N G

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~~MARCH 16, 1970~~

107:00 (-.0507 / +05.00)

VISUAL TGT 5, ON TRACK (180° + :29)

D7

107:10

PHOTO TGT 23, NORTH (f8,250,∞) ~~16~~ 11 @ 20 sec (250mm) (180° + :38)

D8/9

MSFN UPDATE:
TOPO PHOTO PAD (LM)
SOLAR CORONA PHOTO PAD (107:45)
~~LM BRIGHTENING PHOTO PAD (108:05)~~

(10101 / 11111) V48 (10101 / 11111)

V49 MNVR TO TOPO ATT & ACQ MSFN (P -75, Y 188)
INSTALL TOPO CAMERA IN HATCH WINDOW
SET:

107:20

SHUTTER 1/50 SEC
RANGE 91.7
INTERVAL 8.7

FR REQ (8)

MAG-(U) ____, FR # ____

OPTIONAL

CONFIGURE CAMERAS & TAPE
CM4/EL/80/VHBW (SOLAR CORONA)*
BRKT, CONT (f2.8,125,∞)
REMOVE DARKSLIDE, COVER LENS & CYCLE EL 5 FRAMES,
REPLACE DARKSLIDE

FR REQ (28) 10

MAG-(T) ____, FR # ____

(10102 / 11111) V48 (10102 / 11111)

107:30

P L S S D O N N I N G

P L S S C O M M C H E C K

TOPO PHOTO PAD LM (002,123,001)
358 359

R ____ P ____ Y ____

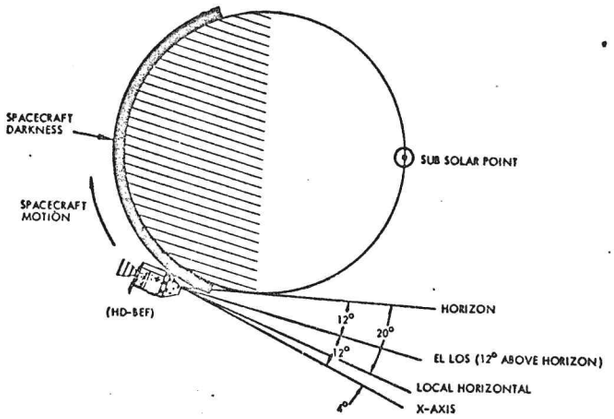
T START:

T STOP :

RNG ____ NM

3-27-70

SOLAR CORONA PHOTOGRAPHY



SOLAR CORONA PHOTO PAD(SS)

T-START: ____ ____ ____ ____ ____

START RECORDER at SUNSET (-) 5 MIN

107:30 (10102 / 11111)

MSFN UPDATE:
P22 TRK PADS (TARUNTIUS O, LDMK 130, LM) (109:05)
MAP COORDINATES OF LM

VERIFY ORDEAL

TOPO PHOTOS (LM)

VERIFY LTC (MODE-STBY/PWR-ON) (T-START(-)1 MIN)
VERIFY PCM-HBR
107:38:02 TOPO TGT LM (SHUT-1/50,RNG-91.7, INT-8.7) 8 FRAMES

V49 MNVR TO SOLAR CORONA ATT (0,074,0) (HD,BEF)
ACQ MSFN (P -55, Y 1)
FLOOD LIGHTS-OFF
SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +005.00 / + 11111)

107:40 (.0507 / +05.00)

PRO TO START PITCH RATE (0,176/074,0)
INHIBIT-A3, C4, B3, D4 THRUSTERS
107:43:31 START RECORDER (SS-5 MIN)
DIM INTERIOR LIGHTING

optional

SOLAR CORONA PHOTOS

107:48:41 1 FRAME EL, EXP 1/125 SEC (SS +10 SEC)
CHANGE EL SHUTTER TO 1/15 (3 clicks) V)
107:48:51 1 FRAME EL, EXP 1/15 SEC (SS +20 SEC)
CHANGE EL SHUTTER TO 1/8 (1 click) V)
107:50:11 1 FRAME EL, EXP 1/8 SEC (SS +1:40)
CHANGE EL SHUTTER TO 1/4 (1 click) V)
1 FRAME EL, EXP 1/4 SEC
CHANGE EL SHUTTER TO 1 SEC (2 clicks) V)
1 FRAME EL, EXP 1 SEC

107:50

RECORDER-OFF, LIGHTS UP
ENABLE - A3, C4, B3, D4 THRUSTERS
~~REMOVE EL FROM WINDOW, COVER LENS, & CYCLE 5 FRAMES~~
REPLACE DARKSLIDE
MSFN UPLINK:
CSM S.V.
MSFN UPDATE:
EARTH SHINE PHOTO PAD (109:50)

FR # ____

108:00

ACQ MSFN OMNI D

FINAL SYSTEMS PREP / INTEGRITY CK / DEPRESS

3-30-70
~~3-27-70~~
~~MARCH 16, 1970~~

108:00 (-.0507 / +05.00) (10101 / 11111)

~~STOP ORB RATE AT ORB SCIENCE ATT (0,018,0)~~

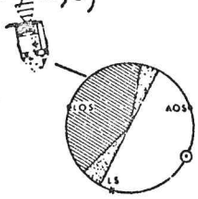
V48 (10101 / 11111)

STOW TOPO CAMERA

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

stop orb rate at track att (0,353,0)

108:10 (10101 / 11111)



~~SC CONT - CMC/AUTO (VERIFY)~~
~~V79 (-0.0507 / +005.00 / + 11111)~~

(-.0507 / +05.00)

~~(108:19)~~
~~(0,230/018,0)~~

~~PRO TO START PITCH RATE (0,230/018,0)~~

108:20

CONFIGURE CAMERA (LDMK TRACKING)*
CM-/DAC/CEX-SXT (EXP 1/250) 1 fps

MAG % REQ (7.4)

MAG-(C) ____, FR # ____

MAP UPDATE REV 17

LOS : ____ ____ ____ ____ ____

180°: ____ ____ ____ ____ ____

AOS : ____ ____ ____ ____ ____

WASTE WATER DUMP
02 FUEL CELL PURGE

108:30

EVA 1 / MSFN / S-BAND ANT CT

108:30

REV 17

(-.0507 / +05.00)

~~ORBITAL SCIENCE~~

108:40

~~VISUAL TGT 1, SOUTH OF TRK (TR)~~
~~DELETED~~

(10101 / 11111)

~~V49 MNVR TO TRK ATT (0,353,0) (NU,SEF)~~

108:50

CONFIGURE CAMERA (EARTHSHINE PHOTOS)*
CM4/EL/80/VHBW 1/8
BRKT, IVL (f2.8,125,∞)
~~REMOVE DARKSLIDE, COVER LENS & CYCLE EL 5 FRAMES,~~
REPLACE DARKSLIDE

optional

FR REQ 126T 15

MAG-(T) ____, FR # ____

ACQ MSFN OMNI D

109:00

EVA 1 / MSFN

MARCH 16, 1970

109:00 (10101 / 11111) (-.0507 / +00.50)

P22 (TARUNTIUS O)
SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111)

—PRO - TO START PITCH RATE (0,338/353,0)

—T1 (HORIZON)

109:10

—DAC ON @ T2 (-) 1 MIN
—T2 (TCA - 90 SEC - SIGHT LANDMARKS)
—(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART
—TCA
DAC OFF AFTER MARK 5

(10102 / 11111)

P22 (LDMK 130)
V48 (10102 / 11111)

—T1 (HORIZON) DAC spd

109:20

—DAC ON @ T2 (-) 1 MIN
—T2 (TCA - 90 SEC - SIGHT LANDMARKS)
—(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART
—TCA
DAC OFF AFTER MARK 5
V49 MNVR TO LM TRK ATT (0,296,0) MAP Coord
REMOVE DAC FROM SXT & INSTALL OPTICS

—P22 (LM)
SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111) (-.0507 / +00.50)

—PRO - TO START PITCH RATE (0, 0 /296,0)

109:30

MSFN

EVA 1

P22 LDMK TRACKING D 9
TGT: TARUNTIUS O (1/250)

T1 — — — — — —
T2 — — — — — —
R _____ °P _____ °Y _____ °
N or S NM ___ SA ___ TA ___
N89
LAT +02.333 __ __ . __ __ __
LONG/2 +27.158 __ __ . __ __ __
ALT +000.00 __ __ __ . __ __

P22 LDMK TRACKING D 11
TGT: 130 (1/125)

T1 — — — — — —
T2 — — — — — —
R _____ °P _____ °Y _____ °
N or S NM ___ SA ___ TA ___
N89
LAT +01.266 __ __ . __ __ __
LONG/2 +11.839 __ __ . __ __ __
ALT +000.00 __ __ __ . __ __

P22 LDMK TRACKING D 14
TGT: LM

T1 — — — — — —
T2 — — — — — —
R _____ °P _____ °Y _____ °
N or S NM ___ SA ___ TA ___
N89
LAT __ __ . __ __ __
LONG/2 __ __ . __ __ __
ALT __ __ __ . __ __

3-27-70
~~MARCH 16, 1970~~

MAG % REQ (10)

MAG-(G) _____, MAG % _____

FLAMSTEED (180° + 1:14)

EARTHSHINE PHOTO PAD

T-START: __ __ __ . __ __ . __ __

START RECORDER at SUNSET

DAMOISEAU (180° + 1:19)

FR # _____

MAG % _____

109:30 (-.0507 / +00.50)

—T1 (HORIZON)

Time ?

—T2 (TCA - 90 SEC - SIGHT LM)
—(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART
—TCA

—V49 MNVR TO EARTHSHINE ATT (0,157,0) (HF,BEF)

(10102 / 11111)

CONFIGURE CAMERA & TAPE (EARTHSHINE PHOTOS)*
CM4/DAC/18/VHBW 1/40 24
BRKT, MIR (f0.9,125,∞) 8 fps
NOTE: COVER CAMERA OPERATING LIGHT WITH TAPE
FLOOD LIGHTS-OFF

109:40

—V64; ACQUIRE MSFN (P -43, Y 180)
SC CONT - CMC/AUTO VERIFY
V79 (-0.0507 / +005.00 / + 11111) (-.0507 / +05.00)

MSFN

—PRO - TO START PITCH RATE (0,270/157,0) (109:45) (0,270/157,0)

look for Flamstead

EARTHSHINE PHOTOGRAPHY
INHIBIT-A3, C4, B3, D4 THRUSTERS
109:46:50 RECORDER-ON (SS)
DIM INTERIOR LIGHTING
DAC-ON @ 24 fps FOR 2 SEC (~50 FR) (COVER LENS)
CHANGE FRAME RATE TO 1 FPS
—109:48:50 DAC & EL - ON (SS +2 MIN)

109:50

—VISUAL TGT 17, NORTH OF TAK (180° + 1:19) optional
D17 delete

—109:52:50 - DAC-OFF (SS +6 MIN)

—109:53:50 - EL - OFF (SS +7 MIN)
DAC-ON @ 24 fps FOR 2 SEC (~50 FR) (COVER LENS)
RECORDER - OFF, LIGHTS UP
ENABLE-A3, C4, B3, D4 THRUSTERS
~~REMOVE EL FROM WINDOW, COVER LENS, & CYCLE 5 FRAMES~~, REPLACE DARKSLIDE

MSFN UPLINK:
CSM S.V.

110:00

ALSEP DEPLOY

110:00 (-.0507 / +05.00)

CONFIGURE CAMERA (LDMK TRACKING)*
CM-/DAC/CEX-SXT (EXP 1/250) 1 fps

MAG % REQ (7.4)

MAG-(C) ____, MAG % ____

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

MAP UPDATE REV 18

LOS : ___ ___ ___ ___ ___

180°: ___ ___ ___ ___ ___

AOS : ___ ___ ___ ___ ___

110:10

EAT PERIOD

110:20

V48 (10101 / 11111)

V49 MNVR TO TRK ATT (0,027,0)

(10101 / 11111)

REV 18

110:30

MSFN

ALSEP DEPLOY

110:30 (10101 / 11111)

110:40

EAT PERIOD

(-.0507 / +00.50)

SC CONT-CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111)

110:50

PRO-TO START PITCH RATE (0,330/027,0)

ACQ MSFN OMNI D

MSFN

MSFN UPDATE:
P22 TRACKING PADS
(SECCHI B - 111:05)
(MOSTING A- 111:20)

111:00

ALSEP DEPLOY

CORE SAMPLE

111:00 (-.0507 / +00.50)

P22 (SECCHI B)

P22 LDMK TRACKING
TGT: SECCHI B (1/250) D10

T_1 ___ ___ ___ ___ ___

T_2 ___ ___ ___ ___ ___

R ____ °P ____ °Y ____ °

N or S NM ___ SA ___ TA ___

N89

LAT +03.833 ___ ___ ___ ___ ___

LONG/2 +20.742 ___ ___ ___ ___ ___

RNG +000.00 ___ ___ ___ ___ ___

T1 (HORIZON)

111:10

DAC ON @ T2 (-) 1 MIN

T2 (TCA - 90 SEC - SIGHT LANDMARKS)

(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART

TCA

DAC OFF AFTER MARK 5

P22 (MOSTING A)

P22 LDMK TRACKING
TGT: MOSTING A (1/60) D13

T_1 ___ ___ ___ ___ ___

T_2 ___ ___ ___ ___ ___

R ____ °P ____ °Y ____ °

N or S NM ___ SA ___ TA ___

N89

LAT -03.250 ___ ___ ___ ___ ___

LONG/2 -02.642 ___ ___ ___ ___ ___

ALT +000.00 ___ ___ ___ ___ ___

111:20

T1 (HORIZON) DAC spd

DAC ON @ T2 (-) 1 MIN

T2 (TCA - 90 SEC - SIGHT LANDMARKS)

(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART

111:30

MSFN

CORE SAMPLES

RETURN TRAVERSE

SRC PACKING

111:30 (-.0507 / +00.50)

TCA

DAC OFF AFTER MARKS 5

V48 (10102 / 11111)

2

(10107 / 11111)

V49 MNVR TO P52 ATT (0,115,045)

REMOVE DAC FROM SXT & INSTALL OPTICS
STOW DAC

MSFN UPDATE:
MNVR PAD (PLANE CHANGE)

111:40

V64; ACQ MSFN (P -86, Y 130)
P00; MSFN UPLINK:
CSM S.V.
PLANE CHANGE TGT LOAD
DESIRED ORIENT (PLANE CHANGE)

P52 (OPTION 1) GYRO TORQUE

STARS ___ ___ ___

SFT ___ ___ ___ ___ ___

TRN ___ ___ ___ ___ ___

111:50

P52(IMU REALIGN)

N71: ___ ___ ___

N05: ___ ___ ___

N93:

X ___ ___ ___

Y ___ ___ ___

Z ___ ___ ___

GET ___ ___ ___

GDC ALIGN

112:00

MSFN

SRC PACKING

112:00 (10108 / 11111)

MSFN

P30
V49 MNVR TO BURN ATT (0,0,0)

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

SEXTANT STAR CHECK

MAP UPDATE REV 19

LOS : _ _ _ _ _ _ _ _

180°: _ _ _ _ _ _ _ _

AOS : _ _ _ _ _ _ _ _

112:10 (10111 / 11111)

V48 (10111 / 11111)

SECURE EQUIPMENT FOR PC 1

112:20

REV 19

112:30

POST EVA SYSTEMS CONFIG PLSS O2 RECH

PLSS/OPS DOFFING

P30 MANEUVER

SET STARS	C S	M S	P G	C &	T N	PURPOSE / PROP/GUID
	+					WT N47
R_{ALIGN} _ _ _	O	O				P_{TRIM} N48
P_{ALIGN} _ _ _	O	O				Y_{TRIM}
Y_{ALIGN} _ _ _	+ O	O				HRS GETI
	+ O	O	O			MIN N33
	+ O					SEC
ULLAGE _ _ _ _						ΔV_X N81
						ΔV_Y
						ΔV_Z
	X	X	X			R
	X	X	X			P
	X	X	X			Y
	+					H_A N44
						H_P
	+					ΔVT
HORIZON/WINDOW _ _ _	X	X	X			BT
	X					ΔVC
	X	X	X	X		SXTS
	+				O	SFT
	+			O	O	TRN
	X	X	X			BSS
	X	X				SPA
	X	X	X			SXP
OTHER _ _ _ _		O				LAT N61
						LONG
	+					RTGO EMS
	+					V10
						GET 0.05G

112:30 (10111 / 11111)

112:40

L10H CANISTER CHANGE
11 INTO A, STOW 9 IN A3

112:50

V64; ACQ MSFN (P -44, Y 270)

MSFN

113:00

PLSS/OPS DOFFING

POST EVA CA

5-30-70 5-27-70
~~MARCH 16, 1970~~

113:00 (10111 / 11111)

GO/NO GO FOR PLANE CHANGE 1

MSFN UPDATE:
SOLAR CORONA PAD (114:15)

113:10

-30:00 — SET DET COUNTING DOWN TO PLANE CHANGE

113:20

-20:00 — P40 (TRIM) (0,0,0)

(P40 / 0.5° DB)

113:30

MSFN

BIN CONFIGURATION

EAT PERIOD

113:30 (P40 / 0.5° DB)

113:40

CSM PLANE CHANGE (113:42:03) (0,0,0)
(: :)

P00

(10111 / 11111)

MSFN UPLINK:
DESIRED ORIENT (LIFT OFF)
RLS UPDATE (IF REQ)

V48 (10112 / 11111)

V49 MNVR TO P52 ATT (000,045,000)
ACQ MSFN ~~OMNI D~~
HGA (P-44, Y225)

113:50 (10112 / 11111)

MSFN UPDATE:
REFSMMAT 00 TIME

P52 (OPTION 1) GYRO TORQUE
STAR ___ ___, SFT ___ ___ ___ . ___ ___, TRN ___ ___ . ___ ___ ___
STAR ___ ___, SFT ___ ___ ___ . ___ ___, TRN ___ ___ . ___ ___ ___

114:00

MSFN

EAT PERIOD

CSM PLANE CHANGE # 1
BURN TABLE

P OR Y RATES	ATT DEVIATION	SHUTDOWN TIME	RESIDUALS
10°/SEC TAKEOVER	+10° TAKEOVER	BT + .1 SEC	NO TRIM

BURN STATUS REPORT

	ΔTIG
	BT
	V_{gx}
TRIM	
	R
	P
	Y
	V_{gx}
	V_{gy}
	V_{gz}
	ΔV_c *
	FUEL *
	OX *
	UNBAL

*ITEMS TO BE REPORTED TO MSFN

EAT PERIOD

Swigert - off

3-30-70
3-27-70
~~MARCH 16, 1970~~

114:00 (10112 / 11111)

P52 (IMU REALIGN)

N71: ___ ___ ___ ___

N05: ___ ___ ___ . ___ ___

N93:

X ___ ___ . ___ ___ ___

Y ___ ___ . ___ ___ ___

Z ___ ___ . ___ ___ ___

GET ___ ___ ___ . ___ ___ ___

GDC ALIGN
VERIFY ORDEAL
ALT SET = 60 NM

114:10

V49 MNVR TO SOLAR CORONA & LIMB BRIGHTING ATT (0,092,0)
VERIFY DSE (LBR/RCD/FWD/CMD-RESET)

SOLAR CORONA PHOTO PAD(SR)

T-START: ___ ___ ___ . ___ ___ ___
START RECORDER at SUNRISE (-)7 MIN

CONFIGURE CAMERA & TAPE
CM4/EL/80/VHBW (SOLAR CORONA)*
BRKT, CONT (f2.8, 1 SEC, ∞)
~~REMOVE DARKSLIDE, COVER LENS, CYCLE EL 5 FRAMES,~~
~~REPLACE DARKSLIDE~~
~~CM4/DAG/10/VHBW (LIMB BRIGHTENING)~~ e
~~BRKT, MIR (f2,125,∞) 12 fps (40 sec)~~ e

SC CONT - CMC/AUTO (VERIFY)

(-.0507 / +05.00)

V79 (-0.0507 / +005.00 / + 11111)

114:20

PRO - TO START PITCH RATE (0,340/092,0)

~~SOLAR CORONA & LIMB BRIGHTENING PHOTOS~~ — optional

INHIBIT-A3, C4, B3, D4 THRUSTERS

114:22:56 START RECORDER (SR-7 MIN)
DIM INTERIOR LIGHTING
~~DAC ON FOR 4 SEC (~50 FR) (COVER LENS)~~

:27:56 2:00

REV 20

114:28:16 1 FRAME EL, EXP 1 SEC (SR - ~~1:40~~)
CHANGE EL SHUTTER TO 1/4 (2 clicks)
1 FRAME EL, EXP 1/4 SEC
CHANGE EL SHUTTER TO 1/8 (1 click)
1 FRAME EL, EXP 1/8 SEC
CHANGE EL SHUTTER TO 1/15 (1 click)
~~114:29:16 DAC ON (SR-40 SEC)~~
114:29:36 1 FRAME EL, EXP 1/15 SEC (SR-20 SEC)
CHANGE EL SHUTTER TO 1/125 (3 clicks)

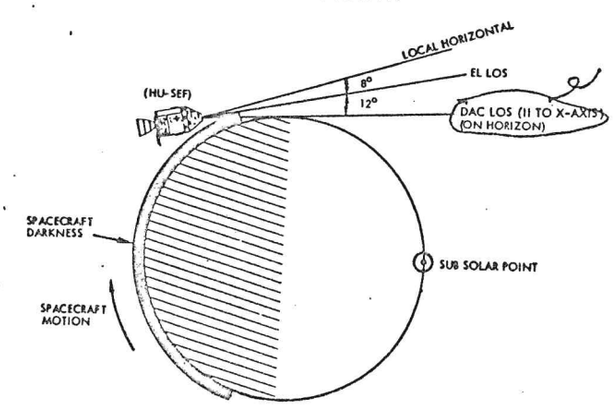
114:29:46 1 FRAME EL, EXP 1/125 SEC (SR-10 SEC)
~~114:29:56 DAC OFF (SR)~~

114:30

EAT PERIOD

PLSS RECHARGE

SOLAR CORONA AND ~~LIMB BRIGHTENING~~ PHOTOGRAPHY



EL FR REQ 125 10

MAG-(T) ____, FR # ____

DAC MAG & REQ (12)

MAG-(T) ____, MAG % ____

3-27-70
MARCH 27, 1970

114:30
(-.0507
+05.00)
(10111
11111)
114:40
114:50
(-.0000
+10.00)
115:00

MSFN

~~DAC ON FOR 4 SEC (+30 FR) (COVER LENS)~~
RECORDER - OFF, LIGHTS UP
ENABLE-A3, C4, B3, D4 THRUSTERS
REMOVE EL FROM WINDOW, COVER LENS, & CYCLE 5 FRAMES,
REPLACE DARKSLIDE

V48 (10111
11111)

V49 MNVR TO REST ATT (098,272,0)
PERFORM PRESLEEP CHECKLIST

MAG %
FR #

MAP UPDATE REV 20
LOS :
180°:
AOS :

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

V64; ACQ MSFN (P -6, Y 268)

AUTO
SC CONT - CMC/~~FREE~~ (VERIFY)
V79 (-0.0000
+010.00
+ 11111)
~~SC CONT - CMC/AUTO~~

REST PERIOD (10 HRS)
115:00 to 125:00

EVA DEBRIEFING

REST PERIOD

3-27-70
MARCH 16, 1970

125:00
(-.0000
+10.00)
125:10
125:20
125:30

MSFN

X

WAKE UP
PERFORM POST SLEEP CHECKLIST

EAT PERIOD

CSM CONSUMABLES PAD
GET:
RCS TOTAL
QUAD A B
C D
H_2 TOTAL
O_2 TOTAL
~~H_2 TOTAL~~

MSFN UPDATE:
CONSUMABLES
VERTICAL STEREO PAD (126:15)

MSFN UPLINK:
CSM S.V.

EAT PERIOD

125:30
(-.0000
+10.00)
125:40
125:50
(10111
11111)
126:00

MSFN

EAT PERIOD

MAP UPDATE REV 26
LOS :
180°:
AOS :

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

P52 (OPTION 3)

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

EVA PLANNING

CABIN PREP FOR EVA

Accel cmd

3-30-70 ~~MARCH 16, 1970~~

(Swigert - ONSE)

126:00 (10111 / 11111) (10101 / 11111)

GDC ALIGN
VERIFY ORDEAL
ALT SET = 60 NM

V48 (10101 / 11111)

V49 MNVR TO VERTICAL STRIP ATT (0,348,0)

CONFIGURE CAMERAS
CM4/DC/80/BW (VERTICAL STRIP)*
BRKT,IVL (f2.8,250,∞)
CM-/EL/250/CEX (ORBITAL SCIENCE)*
(f5.6,250,∞)
CM-DAC/SXT/CEX (EXP 1/60) 1 fps (VERTICAL STRIP)

DC-FR REQ (~~100~~) 172

MAG-(R) ____, FR # ____

EL-FR REQ (24)

MAG-(M) ____, FR # ____

DAC-MAG % REQ (61.3)

MAG-(H) ____, MAG % ____

CABIN PREP FOR EVA

126:10

REV 26

(-.0507 / +00.50)

126:20

SC CONT - CMC/AUTO (VERIFY)

V79 (-0.0507 / +000.50 / + 11111)

PRO - TO START PITCH RATE (0,270/348,0)

EQUIPMENT PREP

ORBITAL SCIENCE & VERTICAL STRIP
ZERO OPTICS & MANUALLY SET OPTICS:
TRN = 45°, SFT = 0°
V06N65 (DO NOT ENTER)
PCM BIT RATE-HI

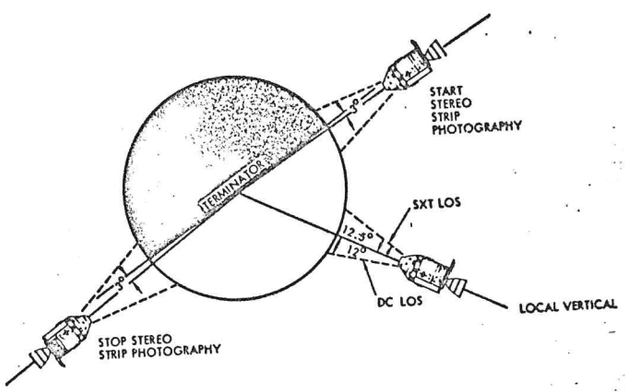
126:27:08 - ENTER, DAC - ON (TR + 1 MIN)
DC-ON

PHOTO TGT 5, NORTH (f5.6,250,∞) 4 @ 20 sec (250mm) (180° + :14)
E-10a

VERTICAL STRIP

126:30

STEREO STRIP PHOTOGRAPHY (RESEAU & DAC)



VERTICAL STEREO PHOTO
T-START: ___ ___ : ___ ___ : ___ ___
T-STOP: ___ ___ : ___ ___ : ___ ___

126:30 (-.0507 / +00.50)

RECORD TIME FROM V06N65 ___ ___ : ___ ___ : ___ . ___
V16N91E, PCM BIT RATE-LO

SWITCH TO OMNI D

DC (f4), DAC (1/125)

PHOTO TGT 13, NORTH (f5.6,250,∞) 9 @ 20 sec (250mm) (180° + :21)
E5/6

ACQ MSFN OMNI D

DC (f5.6), DAC (1/250)

126:40

MSFN UPDATE
FRA MAURO ZERO PHASE PAD (127:05)

MSFN

126:50

PHOTO TGT 25, NORTH (f5.6,250,∞) 11 @ 20 sec (250mm) (180° + :40)
E9/10

127:00

PREP

PLSS DONNING

VERTICAL STRIP

3-30-70 ~~3-27-70~~ ~~MARCH 16, 1970~~

127:00
(-.0507
+00.50)

VISUAL TGT 9, ON TRK (180° + :47)
E 11

FR REQ (10)
MAG-(Q) ____, FR # ____

CONFIGURE CAMERA (FRA MAURO-ZERO PHASE)*
CM3/EL/80/BW-
(f 5.6,250,∞)

DAC (1/125)

FRA MAURO ZERO PHASE PAD (TGT 46A)
T-START: ___ ___ ___ . ___ . ___
START RECORDER @ FRA MAURO
SUN ELEV. ± (-) 3 1/2 MINUTES

127:10
DC (f4)

~~VERIFY DSE-ON~~ delete manually.
OMNI A

127:12:20 - RECORDER-ON (ZERO PHASE - 3 1/2 MIN)
DC (f2.8), DAC (1/60)

127:14:20 - START VISUAL OBSERVATIONS OF FRA MAURO

E 13/14
127:15:40 - PHOTO-TGT 46A (FRA MAURO - ZERO PHASE) - ON TRK
5.6 (f8,250,∞) 5 @ 5 SEC

~~CONTINUE VISUAL OBSERVATIONS~~
STOP OBSERVATIONS, RECORDER-OFF
~~DC (f2.8), DAC (1/60)~~

V64; ACQMSFN (P-17, Y178)

127:20
PHOTO TGT 56, ON TRK (f8,250,∞) 5 @ 20 SEC (80mm) (180° + 1:06)
E 15 c 5.6

V06N65 (DO NOT ENTER)

127:24:20 - ENTER, DAC - OFF (TS-1 MIN)
DC-OFF
RECORD TIME FROM V06N65 ___ ___ : ___ : ___ . ___

MSFN UPDATE:
TOPO PHOTO PADS (TGTS: 6,9, CENSORINUS,29,34,42,46/54)
(128:15 - 129:30)

127:30

MSFN

PLSS COMM CHECK

VERTICAL STRIP

FINAL SYSTEMS PREP

127:30
(-.0507
+00.50)

CHARGE BATTERY A

RECORD OBSERVATIONS ON ZERO PHASE
CRATERS: CLUSTER, SHALLOW, DUMBELL, MEDIUM
VISIBILITY: ZERO, QUESTION, CRUTCH, OBVIOUS

127:40

MAP UPDATE REV 27
LOS : ___ ___ ___ . ___ . ___ ___
180°: ___ ___ ___ . ___ . ___ ___
AOS : ___ ___ ___ . ___ . ___ ___

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

127:50

FR REQ ~~(09)~~ 109
MAG-(U) , FR #

INSTALL TOPO CAMERA IN HATCH WINDOW
SET: SHUTTER 1/50 SEC
RANGE 92.0
INTERVAL 8.3

128:00

MSFN

INTEGRITY CK & DEPRESS

EVA 2

3-27-70
~~MARCH 16, 1970~~

128:00
(10101
11111)

V49 MNVR TO TOPO TGT 6

128:10
REV 27

TOPO PHOTO PAD TGT 6 (349,269,353)
R ____ P ____ Y ____
T START: ___ ___ ___ . ___ . ___ ___
T STOP : ___ ___ ___ . ___ . ___ ___
RNG ____ NM

128:20
(10102
11111)

V48 (10102
11111)

ORBITAL SCIENCE (TOPO TGTS)
VERIFY DSE (HBR/RCD/FWD)
VERIFY LTC (MODE-STBY/PWR-ON) (T-START(-) 1 MIN)

TOPO TGT 6 (SHUT-1/50, RNG-92.0, INT-8.3) 14 FRAMES
E 4

V49 MNVR TO TOPO TGT 9

128:30

EVA 2

FIELD GEOLOGY

128:30
(10102
11111)
(10101
11111)

TOPO TGT 9 (SHUT-1/100, RNG-92.5, INT-7.8) 12 FRAMES
E 5

V48 (10101
11111)
V49 MNVR TO TOPO TGT CENSORINUS
VERIFY DSE (LBR/RCD/FWD)

ACQ MSFN ONMI B C

TOPO PHOTO PAD TGT 9 (020,255,013)
E 5
R ____ P ____ Y ____
T START: ___ ___ ___ . ___ . ___ ___
T STOP : ___ ___ ___ . ___ . ___ ___
RNG ____ NM

128:40

V64 ACQ MSFN
(P -21, Y 177)

TOPO PHOTO PAD CENSORINUS (0,170,0)
E 11
R ____ P ____ Y ____
T START: ___ ___ ___ . ___ . ___ ___
T STOP : ___ ___ ___ . ___ . ___ ___
RNG ____ NM

128:50

(10102
11111)

V48 (10102
11111)
VERIFY PCM - HBR

TOPO STRIP, CENSORINUS (SHUT-1/200, RNG-92.2, INT-8.2) 26 FRAMES
E 11/12

129:00

MSFN

FIELD GEOLOGY

129:00 (10102 / 11111)

V49 MNVR TO TOPO TGT 29

TOPO TGT 29 (SHUT-1/200,RNG-92.5,INT-7.8) 6 FRAMES
E11

V49, MNVR TO TOPO TGT 34

TOPO TGT 34 (SHUT-1/200,RNG-92.3,INT-8.1) 14 FRAMES
E12

V49 MNVR TO TOPO TGT 42

129:10

TOPO TGT 42 (SHUT-1/100,RNG-92.1,INT-8.2) 12 FRAMES
E13

V49 MNVR TO TOPO TGT 46/54

TOPO TGT 46/54 (SHUT-1/50,RNG-92.3,INT-8.1) 25 FRAMES
E14

MSFN-X

TOPO PHOTO PAD TGT 29 (020,157,013)

R ____ P ____ Y ____

T START: ___ ___ ___

T STOP : ___ ___ ___

RNG ____ NM

129:20 (10111 / 11111)

V48 (10111 / 11111)

TOPO PHOTO PAD TGT 34 (014,143,009)

R ____ P ____ Y ____

T START: ___ ___ ___

T STOP : ___ ___ ___

RNG ____ NM

EAT PERIOD

129:30

FIELD GEOLOGY

129:30 (10111 / 11111)

MSFN INITIALIZE

MSFN UPDATE:
TOPO PHOTO PAD, CENSORINUS (130:45), TGT 54A (131:15)

129:40

MAP UPDATE REV 28

LOS : ___ ___ ___

180°: ___ ___ ___

AOS : ___ ___ ___

EAT PERIOD

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

TOPO PHOTO PAD TGT 42 (010,127,007)

R ____ P ____ Y ____

T START: ___ ___ ___

T STOP : ___ ___ ___

RNG ____ NM

129:50

TOPO PHOTO PAD TGT 46/54 (002,117,001)

R ____ P ____ Y ____

T START: ___ ___ ___

T STOP : ___ ___ ___

RNG ____ NM

130:00

FIELD GEOLOGY

130:00 (10111 / 11111)

REV 28

130:10

(10101 / 11111)

V48 (10101 / 11111)

V49 MNVR TO OBLIQUE STEREO ATT (0 ,227, 0)

EAT PERIOD

FR REQ (48) 25

MAG-(H) ____, FR ____

130:20

CONFIGURE CAMERA (ORBITAL SCIENCE)
CM-/EL/250/CEX-(f8,250,∞) HOLD VL

CAM LOS

LOS

AOS

LS

(130:29)
(0,183/227,0)

(-.0507 / +00.50)

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111)

PRO - TO START PITCH RATE (0,183/227,0)

130:30

FIELD GEOLOGY

130:30 (-.0507 / +00.50)

ACQ MSFN OMNI D

ORBITAL SCIENCE & OBLIQUE STEREO

PHOTO TGT 18, NORTH (f8,250,∞) 8 @ 20 SEC (250mm) (180° + :29)
E7

130:40

OMNI A

CONFIGURE CAMERA
SET TOPO:
SHUTTER 1/200 SEC
RANGE 94.4
INTERVAL 5.8

FR REQ (49)

MAG-(U) ____, FR ____

V64; ACQ MSFN (P-17, Y178)

TOPO PHOTO PAD CENSORINUS (ORB RATE)

R ____ P ____ Y ____

T START: ___ ___ ___

T STOP : ___ ___ ___

RNG ____ NM

130:50

VERIFY LTC (MODE-STBY/PWR-ON)(T-START(-) 1 MIN)

VERIFY PCM-HBR
OBLIQUE TOPO STRIP, CENSORINUS
(SHUT-1/200,RNG-94.4,INT-5.8) 26 FRAMES

131:00

FIELD GEOLOGY

3-27-70
~~MARCH 16, 1970~~

131:00 (-.0507 +00.50)

V48 (10102 11111)

PHOTO TGT 33, NORTH (f5.6,250,∞) ~~28~~ 17 @ 20 SEC (250MM) (180° ± 55)
E 12/13

131:10 (10102 11111)

V49 MNVR TO TOPO TGT 54A

TOPO TGT 54A (SHUT-1/50,RNG-92.1,INT-8.2) 23 FRAMES
E 14

optional

(10111 11111)

V48 (10111 11111)

V49 MNVR TO ZODIACAL LT ATT (0,183,0)

131:20

CONFIGURE CAMERA & TAPE
CM4/DAC/18/VHBW (ZODIACAL LIGHT)*
BRKT, MIR (f0.9,60,∞) ~~TIME~~ 24 FPS
CONT,
CM-/EL/250/CEX (ORBITAL SCIENCE)
(f5.6,250,∞) / VL

DAC-MAG % REQ (3.1)

MAG-(G) ____, MAG % ____

EL-FR REQ (39)

MAG-(M) ____, FR # ____

MSFN UPDATE:
ZODIACAL PHOTO PAD
P22 TRK PADS
REAUMUR X (132:35)
EUCLIDES F (133:10)

STOW TOPO CAMERA
ACQ MSFN OMNI E A

131:30

MSFN

DOCUMENTED SAMPLE OFFLOAD

(012,117,008)

TOPO PHOTO PAD TGT 54A (, ,)

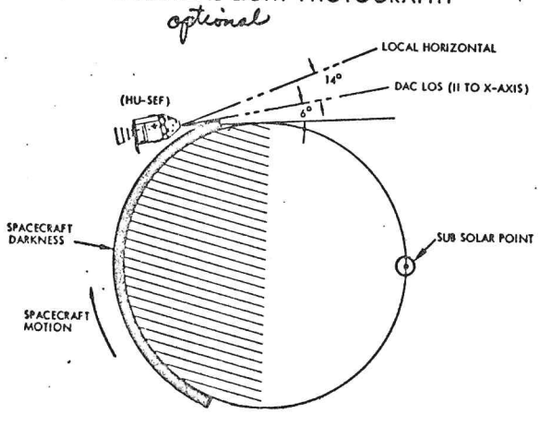
R _____ P _____ Y _____

T START: ___ ___ ___ ___ ___ ___

T STOP : ___ ___ ___ ___ ___ ___

RNG _____ NM

ZODIACAL LIGHT PHOTOGRAPHY
optional



~~3-27-70~~
~~MARCH 16, 1970~~

131:30 (0 11111 11111)

P00; MSFN UPLINK:
CSM S.V. (L/S LDMK
T1-10 MIN)

MAP UPDATE REV 29

LOS : ___ ___ ___ ___ ___ ___

180°: ___ ___ ___ ___ ___ ___

AOS : ___ ___ ___ ___ ___ ___

(-.0507 +05.00)

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 +005.00 + 11111)
PRO - TO START PITCH RATE (0,346/183,0)

131:40

ZODIACAL LIGHT PHOTO PAD(SR)

T-START: ___ ___ ___ ___ ___ ___

START RECORDER at SUNRISE (-)30 MIN

optional

ZODIACAL LIGHT PHOTOS

INHIBIT-A3,C4,B3,D4 THRUSTERS
131:44:45 - RECORDER - ON (SR-30 MIN)
VERIFY DSE (LBR/RCD/FWD/CMD RESET)
DIM INTERIOR LIGHTING
DAC-ON @ 24 fps FOR 2 SEC (~50 FR) (COVER LENS)
CHANGE FRAME RATE TO TIME

131:50

131:49:45 - 3 FRAMES, 18 SEC EXP TIME (SR - 25 MIN)

131:53:05 - 3 FRAMES, 16 SEC EXP TIME (SR-21:40)

131:56:25 - 3 FRAMES, 12 SEC EXP TIME (SR-18:20)

132:00

131:59:45 - 3 FRAMES, 9 SEC EXP TIME (SR - 15 MIN)

DOCUMENTED SAMPLE OFFLOAD

POST EVA SYS CONFIG

132:00 (-.0507 +05.00)

132:03:05 - 3 FRAMES, 7 SEC EXP TIME (SR-11:40)

REV 29

132:06:25 - 3 FRAMES, 5 SEC EXP TIME (SR-8:20)

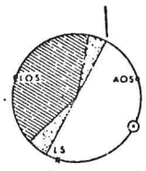
132:10

132:09:45 - 3 FRAMES, 2 SEC EXP TIME (SR - 5 MIN)
SET FRAME RATE TO 1 FRAME / SEC

132:13:45 - DAC ON FOR 4 SEC (SR-1 MIN)
DAC-ON @ 24 fps FOR 2 SEC (~50 FR) (COVER LENS)
ENABLE-A3,C4,B3,D4 THRUSTERS
V48 (10102 / 11111)

(10102 / 11111)

V49 MNVR TO ORB SCIENCE ATT (0,287,0)



(132:23)
(0,230/287,0)

MAG %

132:20

(-.0507 +05.00)

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 +005.00 + 11111)

PRO - TO START PITCH RATE (0,230/287,0)

ORBITAL SCIENCE

PHOTO TGT 10, ON TRK (f5.6,250,∞) 12 @ 10 SEC (250MM) (180° + :18)
E 5

PHOTO TGT 12, ON TRK (f5.6,250,∞) 6 @ 10 SEC (250MM) (180° + :21)
E 5

132:30

PLSS/OPS DOFFING

PREP FOR EQUIP

132:30 (-.0507 +05.00)

ACQ MSFN OMNI D

PHOTO TGT 15, NORTH (f8,250,∞) 6 @ 20 SEC (250MM) (180° + :24)
B 6

P22 LDMK TRACKING
TGT: REAUMUR X (1/125)
E 13

T1 ——— ——— ———
T2 ——— ——— ———
R _____ °P _____ °Y _____ °
N or S NM ___ SA ___ TA ___
N89
LAT -02.917 ___ ___ ___
LONG/2 -00.366 ___ ___ ___
ALT +000.00 ___ ___ ___

132:40

PHOTO TGT 21, NORTH (f8,250,∞) 15 @ 20 (250MM) (180° + :35)
E B/9

MSFN

(10102 / 11111)

V49 MNVR TO TRK ATT (0,291,0)

132:50

CONFIGURE CAMERA (LDMK TRACKING)*
CM-/DAC/SXT/CEX-(EXP 1/125) 1 fps

MAG % REQ (7.4)
MAG-(C) ____, MAG % ____

(-.0507 +00.50)

P22 (REAUMUR X)
SC CONT-CMC/AUTO (VERIFY)
V79 (-0.0507 +000.50 + 11111)

PRO - TO START PITCH RATE (0,338/291,0)

133:00

T1 (HORIZON)

JETT

EQUIP JETT

133:00 (-.0507 +00.50)

DAC-ON @ T2 (-) 1 MIN

T2 (TCA-90 SEC - SIGHT LANDMARK)
(TCA -50 SEC) TAKE 5 MARKS 25 SEC APART

TCA
DAC-OFF AFTER MARK 5

P22 (EUCLIDES F)

P22 LDMK TRACKING
TGT: EUCLIDES F (1/60)
E 15

T1 ——— ——— ———
T2 ——— ——— ———
R _____ °P _____ °Y _____ °
N or S NM ___ SA ___ TA ___
N89
LAT -06.377 ___ ___ ___
LONG/2 -16.853 ___ ___ ___
ALT +000.00 ___ ___ ___

133:10

T1 (HORIZON) DAC fpd

DAC-ON @ T2 (-) 1 MIN

T2 (TCA-90 SEC - SIGHT LANDMARK)
(TCA-50 SEC) TAKE 5 MARKS 25 SEC APART

TCA
DAC-OFF AFTER MARK 5

MAG % REQ (2.7)
MAG-(G) ____, MAG % ____

133:20 (10101 / 11111)

V48 (10101 / 11111)

V49 MNVR TO P52/ANTI-SOLAR PT ATT (180,238,000)
ACQ MSFN (P -43, Y 184)
*TAPE

CONFIGURE CAMERA (GEGENSCHEIN)*
CM4/DAC/18/VHBM
BRKT, MIR (f0.9,60,∞) TIME 24 FRS

MSFN UPDATE:
P22 TRK PADS
MOLTKE (134:40)
L/S LDMK 13-1 (134:50)

MAP UPDATE REV 30
LOS : ——— ——— ———
180°: ——— ——— ———
AOS : ——— ——— ———

133:30

MSFN

POST EVA CLEAN UP

DEBRIEF

EAT PERIOD

27:20
~~MCH 16, 1970~~

133:30 (10101 / 11111)

P52 (OPTION 3)

P52(IMU REALIGN)
N71: ——— ——— ———
N05: ——— ——— ———
N93:
X ——— ——— ———
Y ——— ——— ———
Z ——— ——— ———
GET ——— ——— ———

GDC ALIGN
VERIFY ORDEAL
ALT SET = 60 NM

133:40

133:42:00 RECORDER-ON
VERIFY DSE (LBR/RCD/FWD/CMD RESET)

GEGENSCHEIN PHOTOS

133:45:00 INHIBIT - A3, C4, B3, D4 THRUSTERS
DIM INTERIOR LIGHTING
DAC-ON @ 24 fps FOR 2 SEC (~50 FR) (COVER LENS)
CHANGE FRAME RATE TO 1 FPS
2 FRAMES, EXP TIME 20 SEC (ANTI SOLAR PT)
1 FRAME, EXP TIME 5 SEC
LIGHTS UP
ENABLE - A3, C4, B3, D4 THRUSTERS
V49 MNVR TO MIDWAY PT ATT (180,247,000)

133:50

133:50:00 INHIBIT - A3, C4, B3 D4 THRUSTERS
DIM INTERIOR LIGHTING
2 FRAMES, EXP TIME 20 SEC (MIDWAY PT)
1 FRAME, EXP TIME 5 SEC
LIGHTS UP
ENABLE - A3, C4, B3, D4 THRUSTERS
V49 MNVR TO MOULTON PT ATT (179,259,001)

133:55:00 INHIBIT - A3, C4, B3, D4 THRUSTERS
DIM INTERIOR LIGHTING
2 FRAMES EXP TIME 20 SEC (MOULTON PT)
1 FRAME, EXP TIME 5 SEC
DAC-ON @ 24 fps FOR 2 SEC (~50 SEC) (COVER LENS)
LIGHTS UP
ENABLE - A3, C4, B3, D4 THRUSTERS

134:00

V49 MNVR TO ORB SCIENCE ATT (0,306,0)

MAG %

EAT PERIOD

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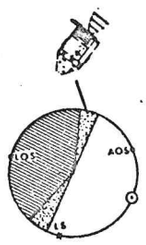
134:00 (10101 / 11111)

CONFIGURE SWITCHES FOR RNDZ XPNDR ACTIVATION AND SELF TEST (DECAL)

REV 30

134:10

SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +005.00 / + 11111)
(-.0507 / +05.00)
PRO - TO START PITCH RATE (0,230/306,0)



(134:15)
(0,230/306,0)

CONFIGURE CAMERAS
CM-/EL/250/CEX (ORBITAL SCIENCE)
(f5.6,250,∞) IVL
CM-/DAC/SXT/CEX-(EXP 1/250) 1 fps (LDMK TRACKING)*

134:20

EL-FR REQ (15)
MAG-(M) ____, FR # ____

DAC-MAG % REQ (3.7)
MAG-(C) ____, MAG %

ORBITAL SCIENCE

PHOTO TGT 11, NORTH (f5.6,250,∞) 6 @ 20 SEC (250MM) (180° + :21)
E5

ACQ MSFN OMNI D

134:30

EAT PERIOD

LIFTOFF PREP

27-70
MARCH 16, 1970

P22 LDMK TRACKING
TGT: MOLTKE (1/250)
E11

T1 ___ ___ ___ : ___ ___ : ___ ___
T2 ___ ___ ___ : ___ ___ : ___ ___
R ____ °P ____ °Y ____ °
N or S NM ___ SA ___ TA ___
N89
LAT -00.586 ___ ___ . ___ ___ ___
LONG/2 +12.064 ___ ___ . ___ ___ ___
ALT +000.00 ___ ___ ___ . ___ ___

P22 LDMK TRACKING
TGT: 13-1
E14

T1 ___ ___ ___ : ___ ___ : ___ ___
T2 ___ ___ ___ : ___ ___ : ___ ___
R ____ °P ____ °Y ____ °
N or S NM ___ SA ___ TA ___
N89
LAT -04.043 ___ ___ . ___ ___ ___
LONG/2 -07.799 ___ ___ . ___ ___ ___
ALT -000.28 ___ ___ ___ . ___ ___

	13-2	13-3
LAT	-03.606	-03.189
LONG/2	-07.658	-07.739
ALT	+000.00	-000.76

134:30 (-.0507 / +05.00)

PHOTO TGT 16, NORTH (f5.6,250,∞) 9 @ 20 SEC (250MM) (180° + :28)
E7

(10101 / 11111)
V49 MNVR TO TRK ATT (0 ,314, 0)

134:40
RNDZ XPNDR - PWR

MSFN

P22 (MOLTKE)
SC CONT - CMC/AUTO (VERIFY)
V79 (-0.0507 / +000.50 / + 11111)
(-.0507 / +00.50)
PRO - TO START PITCH RATE (0,338/314,0)

134:50
T1 (HORIZON)

DAC-ON @ T2 (-) 1 MIN
T2 (TCA - 90 SEC - SIGHT LANDMARK)
(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART
TCA

DAC - OFF AFTER MARK 5
REMOVE DAC FROM SXT & INSTALL OPTICS

135:00
P22 (L/S LDMK 13-1)

LIFTOFF PREP

Swigert - off

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135:00 (-.0507 +00.50)

T1 (HORIZON)

T2 (TCA - 90 SEC - SIGHT LANDMARK)
(TCA - 50 SEC) TAKE 5 MARKS 25 SEC APART

135:10 X TCA

(10111 11111)

V48 (10111 11111)
V49 MNVR TO P52 ATT (180,240,358)
ACQ MSFN (P -45, Y 181)

MSFN UPDATE:
CSM CONSUMABLES PAD (IF REQ)

CSM CONSUMABLES PAD
GET: ___ ___ ___
RCS TOTAL ___
QUAD A ___ B ___
C ___ D ___
H_2 TOTAL ___
O_2 TOTAL ___
~~H_2 TOTAL~~ ___

135:20

MSFN UPLINK:
LM S.V. (INS + 18)
CSM S.V. (L/O)
RESET SURFACE FLAG

MSFN UPDATE
COPY LM ASCENT PAD DATA (136:30)

H_2 PURGE LINE HTRS - ON

135:30

MSFN

LIFTOFF PREP

135:30 (10111 11111)

P52 (OPTION 3)

P52 (COAS CALIB)
USE STAR SPICA

P52(IMU REALIGN)
N71: ___ ___ ___
N05: ___ ___ ___
N93:
X ___ ___ ___
Y ___ ___ ___
Z ___ ___ ___
GET ___ ___ ___

135:40

VERIFY DSE (LBR/RCD/FWD/CMD RESET)
MSFN ENABLES MSFN S-BD RELAY

V49 (0, 240, 358)

COAS CALIB - N92
SHAFT: ___ ___ ___
TRUN: ___ ___ ___

CONFIGURE CAMERAS*
CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps,
CM-/EL/80/CEX-(f8,250,focus)
CM4/TV: IN BRKT (f22) 30 MIN

MAG % REQ - (1 MAG)
MAG-(E) , MAG %

135:50

EAT PERIOD

FR REQ - (10)
MAG-(O) , FR #

WASTE WATER DUMP
O_2 & H_2 FUEL CELL PURGE

MAP UPDATE REV 31
LOS : ___ ___ ___
180°: ___ ___ ___
AOS : ___ ___ ___

V49 (0, 79, 0)

136:00

MSFN

LIFTOFF PREP

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136:00 (10111 11111)

REV 31

H_2 PURGE HEATERS - OFF

136:10

EAT PERIOD

136:20

Set up TV + chk out
-62 7
V64, ACQ MSFN (P 45, Y 181)

DON PGA W/O HELMET & GLOVES
PACK JETTISON ITEMS
INSTALL CABIN FAN LUNAR DUST FILTER

136:30

MSFN

LIFTOFF PREP

3-27-70
~~MARCH 16, 1970~~

136:30 (10111 / 11111)

MSFN

V49 MNVR TO LIFTOFF ATT (0,79,0)

136:40

V64; ACQ MSFN (P=-62,Y=7)

136:50

VHF AM B-DUPLEX
VHF AM A-OFF
VHF RANGING-RANGING
VHF ANT-LT
VHF AM-OFF PNL 9
RNDZ XPNDR-PWR (VERIFY)
SC CONT-CMC/AUTO (VERIFY)

GDC ALIGN; VERIFY ORDEAL

SET DET COUNTDOWN TO LIFTOFF

137:00

PURPOSE		RENDEZVOUS PAD					
GETI LIFT-OFF	HRS	+	0	0			
	MIN	+	0	0	0		
	SEC	+	0				
GETI INSERTION	HRS	+	0	0			
	MIN	+	0	0	0		
	SEC	+	0				
GETI CSI N11	HRS	+	0	0			
	MIN	+	0	0	0		
	SEC	+	0				
GETI TPI N37	HRS	+	0	0			
	MIN	+	0	0	0		
	SEC	+	0				

~~MARCH~~ 16, 1970

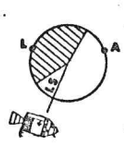
137:00 (10111 / 11111)

MSFN

X TCA

0 137:10

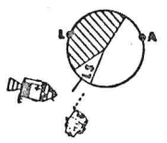
LIFT-OFF (137:09:16)
: : .



LIFT-OFF

+7

LM INSERTION (137:16:23)
: : .



LM INSERTION

EXT RNDZ LT-ON VHF-ANT-RT
EXT RUN/EVA LT-ON
VHF RANGING-RESET

(COMPUTE VHF R DOT FOR LM IF REQUESTED)

137:20
R=251.62
Ṙ=-431.8

137:20

P52 (OPT 3)
VHF VOICE CHECK

-42

P00; V45 (RESET SURFLG)
MSFN UPLINK:
LM S.V.

GDC ALIGN; VERIFY ORDEAL

(10102 / 11111)

V67 (+10000,+00100,+00001); V48 (10102 / 11111)
VERIFY:
VHF RESET
LM TRACKER LT ON
P20 (TRIM)(0,232/79,0)
P32; OBTAIN AND LOAD LM CSI AND TPI TIGNS

137:30

137:30
R=212.53
Ṙ=-353.0

BACKUP RR CHECK

FOR RR XPNDR COVERAGE (0,118,0)

R_1 = _____.

R_2 = _____.

ΔR = _____.

_____.

$\dot{R} = \frac{100 \times \Delta R}{MIN}$

P52(IMU REALIGN)

N71: _ _ _ _

N05: _ _ _._ _ _

N93:

X _ _ _._ _ _ _

Y _ _ _._ _ _ _

Z _ _ _._ _ _ _.

GET _ _ _ _._ _ _._ _ _

P32 INPUT

11	CSI TIGN _____ : _____ : _____ .		
55	+00001 N(180°)	+208.30 ELEVATION ◁	+130.00 OPTION CODE
37	TPI TIGN _____ : _____ : _____ .		

137:30
-35
(10102)
(11111)

V57
V87

137:30
R=212.53
Ṙ=-353.0

BEFORE STEADY STATE
PRE-CSI: N49>(+00020,+00120) REJECT/REPEAT
POST-CSI:N49>(+00008,+00050) REJECT/REPEAT
AFTER STEADY STATE
ANYTIME: N49>(+00003,+00020) REJECT/REPEAT

(10112)
(11111)

V48 (10112)
(11111)

VERIFY DSE MOTION AT LOS (LBR/RCD/FWD/CMD RESET)
MSFN DISABLE, MSFN S-BAND RELAY;
GO VHF COMM

137:40
-25

-22

V90 (R2=2)
V90 (R2=1)
V32 RECYCLE
V57

137:45
R=171.96
Ṙ=-193.5

-20

VOICE CSI COMPARISON TO LM

137:50
-15

-12

P32 FINAL COMP
OVERWRITE VGY WITH (-) CSM YDOT

COPY LM CSI P76 PAD
CMC-FREE/AUTO

-8
(P40
.5DB)

P40 (71°)(0,162/273,0)
VHF ANT-LEFT

138:00
R=152.74
Ṙ=-82.4

138:00

GROUND CSI SOLUTION

VGX _____ .

V90

LM	Y	Y DOT
CSM	Y	Y DOT

V32 RECYCLE

75	ΔH	ΔT,CDH-CSI	ΔT,TPI-CDH
81	ΔV,LV		
82	ΔV AT CDH,LV		

P32 FINAL COMP

75	ΔH	ΔT,CDH-CSI	ΔT,TPI-CDH
81	ΔV,LV		
82	ΔV AT CDH,LV		

138:00
REV 32
(P40
.5DB)

SPS CHECKLIST

138:00
R=152.74
Ṙ=-82.4

CSI COMPARISON LIMIT=±3FPS
~~LGC~~ IF ~~LGC~~=CMC
~~LGC~~ IF ~~LGC~~=AGS AND RR=VHF
~~CMC IN AGS~~ IF AGS=CMC

PRIORITIES ARE LGC, AGS, CMC
RR/VHF COMPARISON LIMIT IS
ΔR = R/100 + 0.5nm, ΔR IS ALWAYS ≥ 1nm
V90 < 5 FPS – NO BURN

(10112)
(11111)

(138:06:01)
LM CSI (+49.6,+0.0,+0.0)
CSM CSI (-50.2,+0.0,+0.0)
: : . (0,180/273,0)

P76 (ADD 22 SEC); V58

P20 (39°)(0,229/307,0)

VHF ANT-RT

138:10
-54

V67 (+02000,+00020,+00001)
V57
V87

P33; LOAD LM CDH TIGN
V32 RECYCLE
V57
V87

138:15
R=137.78
Ṙ=-118.1

138:20
-42

ACQ MSFN OMNI D

OMNI D

V90 (R2=2)
V90 (R2=1)

VOICE V90
SOLUTION
TO LM

-37

138:30
R=120.38
Ṙ=-117.2

138:30

CSI P76

33	TIME OF IGNITION	+ 22.
84	ΔV,LM	

(CSM) 13	CDH TIGN	
(LM) 13	CDH TIGN	

V32 RECYCLE

75	ΔH	ΔT,TPI-CDH	ΔT,TPI-TPI(P32)
81	ΔV,LV		

LM PC TIGN

_____ : _____ : _____ .

V90

LM	Y	Y DOT
CSM	Y	Y DOT

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138:30
(10112
11111)

COPY LM PC P76 PAD
CSM PLANE CHANGE ALIGN- G7-1

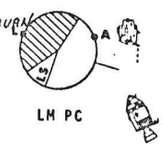
138:30
R=120.38
R=-117.2

V88

LM PC (138:34:14) | ~~BURN PC> 2 FPS~~
: : . | (0,225/233,0)

V90<5FPS-NO BURN

P76; V58
P33



-30

-26

MSFN

V93
V57
V87

138:40

-23

V32 RECYCLE
V57

-20

VOICE CDH SOLUTION TO LM

138:45
R=102.94
R=-118.5

138:50

-12

V64; ACQ MSFN (P=-32,Y=177)
V90 (R2=2)
V90 (R2=1)

-10

P33 FINAL COMP
OVERWRITE VGY WITH (-) CSM YDOT

COPY LM CDH P76 PAD
CMC-FREE/AUTO

-6

(P41
.5DB)

P41

139:00

139:00
R=85.23
R=-120.8

LM PC P76

33 TIME OF IGNITION : :
84 ΔV,LM . . .

V32 RECYCLE

75 ΔH . ΔT,TPI-CDH : ΔT,TPI-TPI(P32) :
81 ΔV,LV . . .

V90

LM Y . Y DOT .
CSM Y . Y DOT .

P33 FINAL COMP

75 ΔH . ΔT,TPI-CDH : ΔT,TPI-TPI(P32) :
81 ΔV,LV . . .

3-27-70
~~MARCH 16, 1970~~

139:00
(P41
.5DB)

RCS CHECKLIST

CDH COMPARISON LIMIT=VGX±2 AND VGZ±6
~~LGC~~ ~~IF LGC=CMC~~
~~LGC~~ IF LGC=AGS AND RR=VHF
~~CMC IN AGS IF AGS=CMC~~

PRIORITIES ARE LGC, AGS, CMC
RR/VHF COMPARISON LIMIT IS
ΔR = R/100 + 0.5nm, ΔR IS ALWAYS ≥ 1nm
V90 < 5 FPS - NO BURN

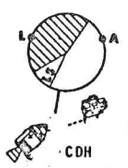
0

(139:04:14)
LM CDH (+0.0,+0.0,+0.0)
CSM CDH (+0.0,+0.0,+0.0)
: : . | (0,246/163,0)

139:00
R=85.23
R=-120.8

P76; V58

P34 (27°)(0,232/136,0)



-37

139:10

V93
V57
V87

SUNSHAFTING MAY PRECLUDE SXT MARKS UNTIL SUNSET

-31

V32 RECYCLE; V57
(OPTIONAL)

139:15
R=67.34
R=-120.2

139:20

-24

-21

V32 RECYCLE
COMPARE TPI ΔV SOLUTIONS
COPY LM TPI TIGN
V57

139:30
R=49.71
R=-117.5

LM TPI TIGN

37 TPI TIGN : :

139:30

CDH P76

33 TIME OF IGNITION : :
84 ΔV,LM . . .

P34 INPUT

37 TPI TIGN : :
55 +00000 INTEG OPTION +208.30 ELEVATION ◁ +130.00 TRANSFER ◁

V32 RECYCLE (OPTIONAL)

37 TPI TIGN : :
58 PERILUNE ALT TPI ΔV TPF ΔV
59 ΔV,LOS . . .

V32 RECYCLE

37 TPI TIGN : :
58 PERILUNE ALT TPI ΔV TPF ΔV
59 ΔV,LOS . . .

4-1-70
3-22-70
MARCH 16, 1970

139:30
-15
(10112)
(11111)
-12
(P40 .5DB)
-8
139:40
0
(11102)
(X1111)
139:50
+4
+12
REV 33
140:00

139:30
R=49.71
Ṙ=-117.5

P34 FINAL COMP; TPI ΔV COMPARISON

P34 RECALL (TIGN OPTION AND LM TPI TIGN)

COPY LM TPI P76 PAD
VERIFY DSE MOTION AT LOS (LBR/RCD/FWD/CMD RESET)
CMC-FREE/AUTO

P40 (50°)(0,184/2,0)

SPS CHECKLIST

TPI COMPARISON LIMIT=VGX±2, VGY±5, VGZ±6
~~LGC IF LGC=CMC (ELEV OPTION)~~
~~LGC IF LGC=AGS AND RR=VHF~~
~~CMC IN AGS IF AGS=CMC (ELEV OPTION)~~

(139:45:41)
LM TPI (+21.9,+0.1,-11.0)
CSM TPI (-22.4,+0.0,+12.1)
: : . (0,208/2,0)

139:45
R=32.77
Ṙ=-134.4

P76 (ADD 11 SEC); V58
V48 (11102) (X1111)
P35 (28°)(0,249/30,0)
AUTO RCS SEL (16)-MNA/MNB

(IF SXT OR VHF ONLY, NO V93)
V93
V57
V87

TPI

V88
P35 FINAL COMP
COPY LM MCC1 P76 PAD
P41

140:00
R=15.07
Ṙ=-98.1

PRIORITIES ARE LGC, AGS, CMC
RR/VHF COMPARISON LIMIT IS
ΔR = R/100 + 0.5nm, ΔR IS ALWAYS ≥ 1NM

P34 FINAL COMP

37	TPI TIGN	: : .	
58	PERILUNE ALT	TPI ΔV	TPF ΔV
81	ΔV,LV		
59	ΔV,LOS		

P34 RECALL

37	TPI TIGN	: : .	+00000
55	+00000 INTEG OPTION	ELEVATION ◁	+130.00 TRANSFER ◁
58	PERILUNE ALT	TPI ΔV	TPF ΔV
81	ΔV,LV		
59	ΔV,LOS		

TPI P76 +11.

33	: : .	
84	TIME OF IGNITION	
	ΔV,LM	

P35 FINAL COMP

81	ΔV,LV		
59	ΔV,LOS		

140:00
+15
(11102)
(X1111)
+18
140:10
+27
+30
140:20
140:30

P41
MCC1 (140:00:41)
P76; V58 (0,265/9,0)

140:00
R=15.07
Ṙ=-98.1

P35 (TRIM)

(IF SXT OR VHF ONLY, V93 AFTER 3 MARKS)
V93
V57
V87

MCC1

V88
P35 FINAL COMP
COPY LM MCC2 P76 PAD
P41
MCC2 (140:15:41)
P76; V58 (0,302/1,0)
V77; P20 (34°)(0,275/327,0)
V87
V83/VHF/LM RR COMPARISONS
PERFORM PREDOCK CHECKLIST

140:15
R=4.54
Ṙ=-46.3

ROLL TO 180°
TV-ON
V56
V64; ACQ MSFN (P=-45,Y=356)
IF CSM ACTIVE
P47 AT R=1.25 N.M.
SEC PRPLNT FUEL PRESS(4)-OPEN
V83E
N83E
KEY REL
DAC-ON
LM PHOTO WITH DAC/TV
TPF (140:27:56)
: : .
EXT RNDZ LT-OFF
LM STATION KEEP

MCC2

MCC1 P76

33	: : .		
84	TIME OF IGNITION		
	ΔV,LM		

P35 FINAL COMP

81	ΔV,LV		
59	ΔV,LOS		

MCC2 P76

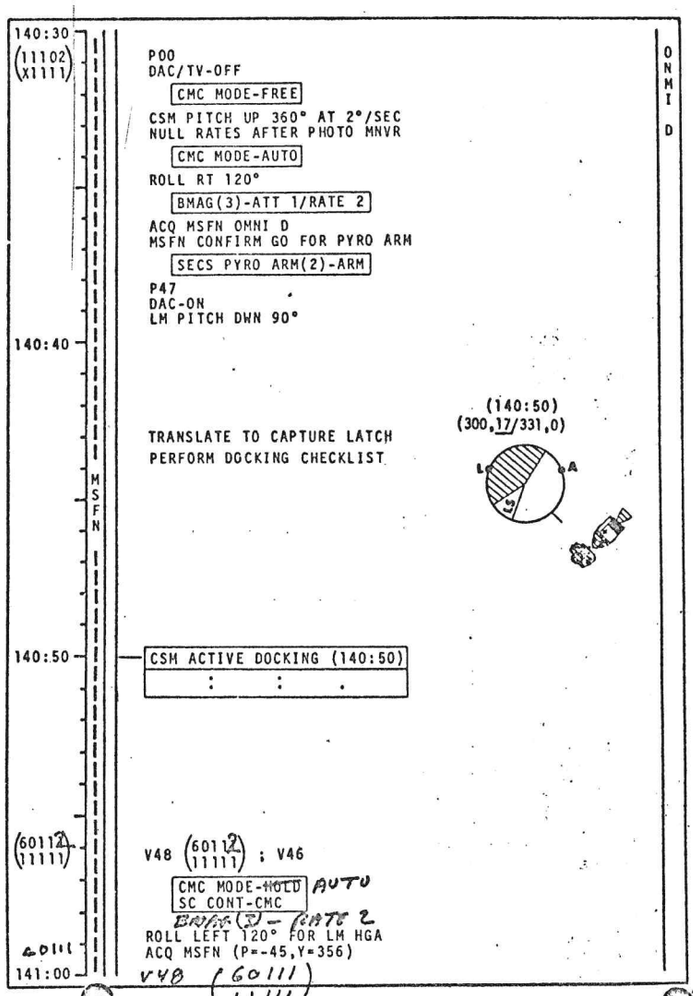
33	: : .		
84	TIME OF IGNITION		
	ΔV,LM		

PRE-DOCK CHECKLIST

MAN ATT(3)-RATE CMD
LIM CYCLE-OFF
ATT DB-MIN
RATE-LO
TRANS CONTR PWR-ON(UP)
ROT CONTR PWR DIR(BOTH) -MNA/MNB
SC CONT-CMC
CMC MODE-AUTO
AUTO RCS SELECT(16) -MNA OR MNB
CB DOCK PROBE(2)-CLOSE
PROBE RETR(2)-OFF (VERIFY)
PROBE EXTD/REL-RETR
PROBE EXTD/REL TB(2)-GRAY (VERIFY)(F,PG 5/2-8)
CB SECS LOGIC(2)-CLOSED (VERIFY)
CB SECS ARM(2)-CLOSE
SECS LOGIC(BOTH)-ON(UP)
EXT RUN/EVA LT-ON(UP) VERIFY
COAS PWR-ON(UP)

BRAKING GATE

Ṙ(FPS)	R(FT)	R(NM)	RETICLE ANGLE (DEG)
45	9000	1.5	.08
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



DOCKING CHECKLIST

AT CAPTURE
- PROBE EXTD/REL TB-BP(A,PG S/2-7)
- REPORT CAPTURE TO LM
- SC CONT-CMC/FREE
- ALLOW PROBE TO DAMP SC MOTION (10 SEC)
- WHEN WITHIN +2° OF DOCKING ATTITUDE
- PROBE RETRACT SEC-1 (PRIM-2 IF REQD)

AT DOCK LATCH
- PROBE EXTD/REL TB-GRAYS (5 SEC)

AFTER HARD DOCK

SECS PYRO ARM (2)-SAFE	EXT RNDZ LIGHT-OFF
SECS LOGIC (2)-OFF	COAS PWR-OFF
CB SECS ARM (2)-OPEN	RNDZ XPNDR-OFF
CB DOCK PROBE (2)-OPEN	LIMIT CYCLE-ON
BMAG MODE (3)-RATE 2	ATT DB-MAX
PROBE RETRACT (2)-OFF	SC CONT-SCS
EXT RUN/EVA LT-OFF	BMAG MODE (3)-ATT 1/RATE 2

RCS Roll (4) - OFF

NASA—MSC

CSM | LM | MCC

0913 CST

CMP

MCC-1 BACKUP
CONFIRM LM MCC-1
P35-TARGET MCC-2
SXT & VHF TRACKING

FINAL MCC-2 COMP
P41-RCS THRUSTING
MCC-2 BACKUP
CONFIRM LM MCC-2
PREDOCK CHECKLIST
P47-THRUST MONITOR
ROLL 180° FOR HI GAIN
HGA P -47, Y 358
TV (MAD) 140:23-140:35
START DAC

PITCH 360° FOR LM PHOTOS

GO/NO-GO FOR PYRO ARM
(CUE MSFN), LOGIC-ON
ROLL RT 120° TO DOCK ATT:
R 300, P 332, Y 0
OMNI D
PYRO ARM V48 (60112, 11111)
CSM ACTIVE DOCKING
ROLL LEFT 120° TO R 180
HGA: P -45, Y 356
SC CONT-SCS
N46 (60112, 11111)
FLIGHT PLAN

TV | MSFN

140:00
:10
:20
140:30
:40
11102
60112
:50
60111
141:00

MSFN

CDR

RCS MCC-1

NULL RESIDUALS
P35-TARGET MCC-2
RNDZ RADAR TRACKING

FINAL MCC-2 COMPUTATION
P41-RCS THRUSTING

RCS MCC-2

NULL RESIDUALS
V48-LOAD DAP, N46-11002
P47-THRUST MONITOR
V63-RR SELF TEST

BRAKING PHASE

RR-OFF

PITCH 90° TO DOCK ATT
R 0, P 152, Y 0

DOCKING

MODE CONTROL-OFF
N46-12021

CONFIGURE ECS FOR
DECONTAMINATION

LMP

TIG: 140:00:41
ΔV_R: NOMINALLY ZERO

LOAD AGS MCC-2 EXT ΔV

TIG: 140:15:41
ΔV_R NOMINALLY ZERO

OMNI-AFT
BIOMED-RIGHT

SET UP CAMERAS FOR CSM
PHOTOS & DOCKING
LM3/DC
LM3/DAC
EXTERIOR LTG-OFF
PHOTOGRAPH CSM

OMNI-FWD

140:50

STEERABLE
P 190, Y 66

LMP ASSIST CDR WITH
DECONTAMINATION AND
TRANSFER:

MCC

GO/NO-GO FOR PYRO ARM

DUMP DSE
UPLINK TO LM
LM S.V. (TIG*-10)
P30 TARGET LOAD
*TIG OF LM
DEORBIT BURN

MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 13	FINAL (APRIL)	MARCH 27, 1970	140:00 - 141:00	6/33	3-110

FLIGHT PLANNING BRANCH

REVISION A