<table>
<thead>
<tr>
<th>PART NO</th>
<th>S/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKB32100081-350</td>
<td>1002</td>
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</tbody>
</table>
FLIGHT PLAN

LIFTOFF 14 NOV 1969

SECO

INSERTION CK LIST
SYSTEMS MONITORING & CHECKING

PRE-TLI SYSTEM VERIFICATION
AND MONITORING

SETUP CAMERA EQUIPMENT

IMU REALIGN - P52
(OPTION 3 - REFWMAT)

REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU

NOTES
LIFTOFF CREW POSITIONS
LEFT COUCH - CDR
CENTER COUCH - CMP
RIGHT COUCH - LMP
AT SECO+20 SEC, SIV-B
MNVRS TO LH AND
INITIALIZES ORB RATE
(HEADS DOWN)

COOLANT CONTROL ATTEN-
UATION PANEL NOT
OPENED

P52 (PAD ORIENT)
N71: _______
N05: _______
N93:______
y: _______
y: _______
z: _______
GET: _______

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|-------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 00:00 - 01:00 | 1/1 | 3-1

MSC Form 20 (May 69)
FLIGHT PLANNING BRANCH
FLIGHT PLAN

01:00

SCS ATT REF COMPARISON CK
EXTEND DOCKING PROBE

01:30

SM RCS HOT FIRE
(MIN IMPULSE - ALL JETS)
GO/NO GO FOR PYRO ARM (CUE MSFN)
LOGIC-ON
BEGIN TLI PREP

02:00

EMS ΔV TEST

NOTES
AS A GENERAL RULE, MSFN WILL ALWAYS UPLINK THE STATE VECTOR TO THE CSM SLOT AND TRANSFER IT VIA V66 TO THE LM SLOT IN ORDER TO HAVE REDUNDANT STATE VECTORS ONBOARD
## FLIGHT PLAN

### TLI BURN TABLE

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC SHUTDOWN</td>
<td>+45° SHUTDOWN</td>
<td>BT + 6 SEC &amp; V₁ = PAD VALUE</td>
<td>NO TRIM</td>
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</tbody>
</table>

### TABLE 3-1

3-3
## FLIGHT PLAN

### GO/NO GO

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>02:00</td>
<td>PYRO ARM</td>
</tr>
<tr>
<td>02:15</td>
<td>GDC ALIGN TO IMU</td>
</tr>
<tr>
<td>02:30</td>
<td>SET ORDEAL</td>
</tr>
<tr>
<td>02:33</td>
<td>GO/NO GO FOR TLI</td>
</tr>
<tr>
<td>02:41</td>
<td>TB-6 (02:37:41.8)</td>
</tr>
<tr>
<td>02:45</td>
<td>P47 - THRUST MONITOR</td>
</tr>
<tr>
<td>02:52</td>
<td>POO - CMC IDLING</td>
</tr>
<tr>
<td></td>
<td>V66 - TRANS CSM SV TO LM SLOT</td>
</tr>
<tr>
<td></td>
<td>TLI BURN STATUS REPORT</td>
</tr>
<tr>
<td></td>
<td>CDR - TRANS TO CENTER COUCH, CMP - LEFT COUCH</td>
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<tr>
<td></td>
<td>LMP - RIGHT COUCH</td>
</tr>
</tbody>
</table>

### TIG

- **TIG**: 02:47:19.8
- **BT**: 5:45.0
- **ΔV**: 10,510 FPS

### NOTES

- AT SECO: SIVB INERTIAL
- AT SECO+20 SEC: SIVB TO LOCAL HORIZONTAL ORB RATE, HEADS DOWN
FLIGHT PLAN

WASTE STOWAGE VENT - CLOSED
DIRECT O₂ VLV-OPEN UNTIL CAB~ 5.7 PSI, THEN CLOSE
GDC ALIGN TO IMU
SIVB MNRS TO CSM/SIVB SEP ATT BY 03:11
S-BAND ANT - OMNI
S-BAND ANT OMNI - B
ACTIVATE AND LOAD DAP (11102, 01111)
LOAD DOCKING GIMBAL ANGLES
CSM SEP PREPARATION

T & D MNVR
+X 0.8 FPS, AFTER
15 SEC -X 0.3 FPS.
V49 AUTO MNVR TO DOCKING
ATT. NULL TRANSLATION
AND RATES, +X TO CLOSE
AT 0.25 TO 0.5 FPS.

BEGIN CSM/LM CABIN PRESSURE EQUALIZATION

CDR: CONFIGURE FOR LM EJECTION
TUNNEL PRESSURE INTEGRITY CHECK
WASTE STOWAGE VENT VALVE - VENT
REMOVE AND TEMPORARILY STOW TUNNEL HATCH
CHECK DOCKING LATCHES
VENT DOCKING PROBE
LM UMBILICAL CONNECTION
REINSTALL TUNNEL HATCH
LM TUNNEL VENT VLV - LM/CM :P
LEAVE TUNNEL EQUALIZATION VALVE CLOSED
CYCLE O₂ & H₂ FANS

NOTES

SWITCH TO OMNI C
DURING THE MNVR
TO THE DOCKING
ATTITUDE

C SiMA SETTINGS FOR
LM EJECTION:
CM 2/DAC/18/CEX - BRKT,
MIR (f8,250,7) 12 fps,
0.7 MAG (6MIN)
CM 4/EL/80/ CEX-
(£8,250,30)5
FLIGHT PLAN

GO/NO-GO PYRO ARM (CUE MSFN)
LOGIC ON
LOAD DAP (21101, 11111)
PYRO ARM
P47 - THRUST MONITOR
PHOTOGRAPH LM EJECTION

CSM/LM EJECTION
MNVR TO ACQUIRE S-IVB IN HATCH WINDOW BY 04:18

S-IVB APS EVASIVE MNVR
GET = 04:25
ΔV ≈ 9.6 FPS
BATTERY CHARGE, BATTERY B
CONTINUE TO MONITOR S-IVB THROUGH WINDOW UNTIL COMPLETION OF SLINGSHOT MANEUVER

S-IVB SLINGSHOT MNVR
GET = 04:46

SLINGSHOT ΔV ≈ 68.7 FPS

NOTE:
SPRING ACTUATOR
ΔV ≈ 0.8 FPS. 4 JET RCS -X TRANSLATION 0.4 FPS FOR A TOTAL ΔV ≈ 1.2 FPS.
5 SEC AFTER EJECTION THERE IS AN RCS -X TRANSLATION FOR 3 SEC.

MISSION | EDITION | DATE       | TIME     | DAY/REV | PAGE
---------|---------|------------|----------|---------|-------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 04:00 - 05:00 | 1/TLC | 3-6

MSC Form 29 (May 69)  FLIGHT PLANNING BRANCH  REVISION A
MCC-H

1522 CST

05:00

FLIGHT PLAN

05:15

DOFF & STOW PGA's

TRANSFER ITEMS OUT OF PGA POCKETS

05:30

P52 - IMU REALIGN
OPTION 1 - PREFERRED

REPORT GYRO TORQUING ANGLES

05:45

GDC ALIGN TO IMU

06:00

VHF A SIMPLEX - OFF

NOTES

P52 (PTC ORIENT)
N71: __ __ __ __
N05: __ __ __ __
N93:  
  X __ __ __ __
  Y __ __ __ __
  Z __ __ __ __
  GET __ __ __

P 37 PAD ASSUMES NO MCC-1

UPDATE TO CSM

P37 PAD (L/0+15)

UPLINK TO CSM

DESIRED ORIENTATION (PTC)
ZERO TRUNION BIAS

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 05:00 - 06:00 | 1/TLC | 3-7

FLIGHT PLANNING BRANCH
FLIGHT PLAN

MNVR TO OPTICS CALIBRATION ATT
P23 - CISLUNAR NAVIGATION
OPTICS CALIBRATION
STAR 1 5

P00
V49 - MNVR TO SIGHTING ATT
STAR/EARTH HORIZON
P23 - CISLUNAR NAVIGATION
LOAD W MATRIX \([R1 + 0 0 0 0 0](R2 + 0 0 0 0 0)\)
1. STAR 2 3 E N H (R3 = 0 0 1 1 0)

2. STAR 1 5 E F H (R3 = 0 0 1 2 0)

3. STAR 2 4 E N H (R3 = 0 0 1 1 0)

4. STAR 2 4 E N H (R3 = 0 0 1 1 0)

5. STAR 1 6 E F H (R3 = 0 0 1 2 0)

FOV 16°
GET 06:00

NOTES
3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR
FLIGHT PLAN

MNVR TO PTC ATTITUDE

ESTABLISH PTC

DEACTIVATE PRIMARY EVAPORATOR
- GLY EVAP \( H_2O \) FLOW - OFF
- GLY EVAP STM PRESS AUTO - MAN
- GLY EVAP STM PRESS INCR - INCR FOR 1 MIN

SELECT NORMAL LUNAR COMM EXCEPT:
- S-BD AUX TAPE - OFF
- TAPE RCDR FWD - OFF

M10H CANISTER CHANGE NO. 1
(3 INTO A, STOW 1 IN B5)

NOTES

MANEUVER TO PTC ATTITUDE-DISABLE TWO ADJACENT QUADS-NULL RATES IN \(+0.5^\circ/DB\) FOR 20 MINUTES-WIDEN DEAD BAND TO \(+30^\circ\), ENABLE ALL JETS AND ROLL VEHICLE AT \(0.3^\circ/SEC\), DISABLE JETS

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>07:00 - 09:00</td>
<td>1/TLC</td>
<td>3-9</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

UPLINK TO CSM
STATE VECTOR & V66
MCC-1 TGT LOAD

UPDATE TO CSM
MCC-1 MNVR PAD

EAT PERIOD

CONTINUE PTC IF MCC-1 IS NOT PERFORMED
P52 IMU REALIGN
OPTION 3 - REF SMSMAT
REPORT GYRO TORQUING ANGLES

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>09:00 - 11:00</td>
<td>1/TLC</td>
<td>3-10</td>
</tr>
</tbody>
</table>
## FLIGHT PLAN

### MCC-1

**BURN TABLE**

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 1 SEC</td>
<td>IF &lt; 2 FPS, TRIM X AXIS TO 0.2 FPS; IF &gt; 2 FPS, NO TRIM</td>
</tr>
</tbody>
</table>

**TABLE 3-2**

3-11
FLIGHT PLAN

P3O - EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK
BATTERY CHARGE, BATTERY A
O2 FUEL CELL PURGE
WASTE WATER DUMP
P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-1

V66 - TRANSFER CSM SV TO LM SLOT
MCC-1 BURN STATUS REPORT

TIG: 11:47:19.8
ΔV: NOMINALLY ZERO

* ITEMS TO BE REPORTED IN MSFN
MCC-1 WILL BE DELAYED TO MCC-2
IF PROPELLANT COST IS NOT PROHIBITIVE
TLI 9 HRS

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 11:00 - 12:00 | 1/TLC | 3-12

FLIGHT PLANNING BRANCH
FLIGHT PLAN

REPORT: LM/CM ΔP
WASTE STOWAGE VENT VLV - CLOSE
VENT BATTS UNTIL SYSTEM TEST METER (4A) = 0

MNVR TO PTC ATT P 90 Y 0

UPDATE TO CSM
P37 PADS (L/O + 25, 35, 45 & 60)

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 12:00 - 14:00 | 1/TL-13 |
FLIGHT PLAN

P52 IMU REALIGN
OPTION 3 REF SMMAT
(OPTIONAL)

PTC
P 90 Y 0

P52 (PTC ORIENT)
N71: __ __ __
N05: __ __ __ __
N93:
X __ __ __ __
Y __ __ __ __
Z __ __ __ __
GET __ __ __ __ __

MISSION | EDITION | DATE           | TIME       | DAY/REV | PAGE   
---------|---------|----------------|------------|---------|------- 
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 14:00 - 15:00 | 1/TLC | 3-14  

MSC Form 20 (Nov 69) | FLIGHT PLANNING BRANCH
FLIGHT PLAN

REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU

MNVR TO OPTICS CALIBRATION ATT R 204
   P 262
   Y 0

P23 - CISLUNAR NAVIGATION
OPTICS CALIBRATION
STAR 1 5
P00

V49 - MNVR TO SIGHTING ATT R 145
STAR/Earth Horizon P 293
P23 - CISLUNAR NAVIGATION Y 0
LOAD W MATRIX (R1 + 1 4 0 0 0)(R2 + 0 0 0 0 2)

1. STAR 2 4 ENH (R3 = 0 0 1 1 0)

2. STAR 1 6 EFH (R3 = 0 0 1 2 0)

3. STAR 2 6 ENH (R3 = 0 0 1 1 0)
FLIGHT PLAN

4. STAR 21 EF H (R3 = 00120)

5. STAR 23EN H (R3 = 00110)

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

MINVR TO PTC ATTITUDE P 90
START PTC Y 0

EAT PERIOD

PTC

P 90 Y 0

MCC-H
0222 CST
16:00

MISSON | EDITION | DATE         | TIME     | DAY/REV | PAGE
-------|----------|--------------|----------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 16:00 - 17:00 | 1/TLC | 3-16
FLIGHT PLAN

0322 CST

17:00

17:15

M
S
F
N

17:30
EAT PERIOD

17:45

18:00

L10H CANISTER CHANGE NO.2
(4 INTO B, STOW 2 IN B5)

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H2 FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OYBD DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMER CABIN PRESS VLV - BOTH
SURGE TK O2 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VENT - LM/CM AP
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF

NOTES

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

PTC
P 90 Y Q

MISSION |
| EDITION |
| DATE |
| TIME |
| DAY/REV |
| PAGE |

| APOLLO 12 |
| FINAL (NOV 14) |
| OCTOBER 15, 1969 |
| 17:00 - 18:00 |
| 1/TLC |
| 3-17 |
FLIGHT PLAN

0422 CST

18:00

19:00

REST PERIOD (10 HOURS)

M S F N

NOTES

DURING REST PERIOD TWO CREWMEN IN COUCHES AND ONE IN REST STATION

20:00

PTC P 90 Y 0

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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</thead>
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<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>18:00 - 20:00</td>
<td>1/TLC</td>
<td>3-18</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

MISSION | EDITION | DATE       | TIME      | DAY/REV | PAGE
--------|---------|------------|-----------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 22:00 - 24:00 | 1/TLC | 3-20

MCC Form 30 (Nov 88)
FLIGHT PLANNING BRANCH
FLIGHT PLAN

1222 CST

26:00

:30

M S F N

REST PERIOD
(10 HOURS)

27:00

:30

PTC

P 90 Y 0

28:00

NOTES

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>26:00 - 28:00</td>
<td>1/TLC</td>
<td>3-22</td>
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<tr>
<td>G.E.T.</td>
<td>REMARKS</td>
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<td>G.E.T.</td>
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</tbody>
</table>
FLIGHT PLAN

1522 CST
29:00

EAT PERIOD

REPORT LM/CM ΔP

P52 - IMU REALIGN
OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES

LIH CANISTER CHANGE NO 3
(5 INTO A, STOW 3 IN B5)

UPLINK TO CSM
STATE VECTOR & V66
MCC-2 TGT LOAD

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

NOTES

P52 (PTC ORIENT)
N71: __ __ __
N05: __ __ __
N93: __ __ __
X __ __ __
Y __ __ __
Z __ __ __
GET __ __ __

MISSION | EDITION | DATE       | TIME       | DAY/REV | PAGE
---------|----------|------------|------------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 29:00 - 30:00 | 2/TLC | 3-24
# FLIGHT PLAN

MCC-2  
BURN TABLE

<table>
<thead>
<tr>
<th>P or Y Rates</th>
<th>Att Deviation</th>
<th>ShUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
</table>
| 10°/SEC Takeover | +10° Takeover | 3T + 1 SEC | IF < 2 FPS, TRIM X AXIS TO 0.2 FPS  
IF > 2 FPS, NO TRIM |

TABLE 3-3  
3-25
FLIGHT PLAN

1622 CST

30:00

30:00

P30 EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK

30:25 TO 31:00

CM4/TV-IN (F5.6)

O₂ FUEL CELL PURGE

WASTE WATER DUMP

30:30

P40 - SPS THRUST

GDC ALIGN TO IMU

31:00

TLI + 28 HRS

BURN STATUS REPORT

ΔTIG

BT

ΔV *

V₂

ΔV C

FUEL*

OX *

UNBAL

TRIM

R

HGA

P

Y

* ITEMS TO BE REPORTED TO MSFN

ATTITUDE FOR MCC-2

BURN IS CONSTRAINED

IN ROLL FOR HGA

ACQUISITION FOR TV

AND BY SXT STAR CHECK

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 30:00 - 31:00 | 2/TLC | 3-26

MSC Form 29 (May 69) FLIGHT PLANNING BRANCH NASA - MSC
FLIGHT PLAN

1722 CST

MCC-M

UPDATE TO CSM QUADS TO DISABLE FOR PTC (LOWEST QUANTITY PRPLNT)

31:00

MANEUVER TO PTC ATTITUDE P 90
START PTC Y 0
S-BAND ANT - OMNI
SECURE HGA
HGA TRACK - MAN
HGA PITCH -52°
HGA YAW 270°
CHECK BAT VENT (TEST METER 4A)

:30

32:00

FOV 4°
GET 32:00

33:00

PTC P 90 Y 0

NOTES
2122 CST

FLIGHT PLAN

35:00

EAT PERIOD

36:00

REINITIATE CSM PURGE
(IF REQUIRED)

37:00

PTC
P 90 Y Q

THE LENGTH OF THE
SECOND CSM CABIN
PURGE WILL BE
DETERMINED REAL TIME
BASED ON THE LM LEAK
RATE INSURING LM O₂
PURITY REQUIREMENTS
ON THE LUNAR SURFACE

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>35:00 - 37:00</td>
<td>2/TLC</td>
<td>3-29</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

REPORT LM/CM ΔP

40:00
M S F N

H₂ PURGE LINE HTRS - ON

41:00

PTC
P 90 Y 0

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 39:00 - 41:00 | 2/TLC | 3-31
FLIGHT PLAN

WASTE WATER DUMP
H₂ & O₂ FUEL CELL PURGE
LI OH CANISTER CHANGE NO. 4
(6 INTO B, STOW 4 IN B5)

UPLINK TO CSM
STATE VECTOR & V66

0322 CST

41:00

0:30

EAT PERIOD

42:00

0:30

43:00

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H₂ FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OVBD DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMER CABIN PRESS VLV - BOTH
SURGE TK O2 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VENT - LM/CM ΔP
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF

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

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 41:00 - 43:00 | 2/TLC | 3-32

MSC Form 28 (May 80)
FLIGHT PLANNING BRANCH
FLIGHT PLAN

1322 CST

51:00

51:00 - 53:00

52:00

REST PERIOD
(10 HOURS)

53:00

PTC
P 90 Y 0

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 51:00 - 53:00 | 2/TLC | 3-37
FLIGHT PLAN

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & O2 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

EAT PERIOD

L1OH CANISTER CHANGE
NO. 5 (7 INTO A, STOW
5 IN B6)
REPORT LM/CM ΔP

CSM CONSUMABLES UPDATE
GET: __ __ __ __ __
RCS TOTAL ________ %
QUAD A ___ % B ___ %
C ___ % D ___ %
H2 TOTAL ________ %
O2 TOTAL ________ %

CREW STATUS REPORT
CDR CMP LMP
SLEEP ____ ____ ____
PRD ____ ____ ____

MISSION | EDITION   | DATE       | TIME       | DAY/REV | PAGE
---------|------------|------------|------------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 53:00 - 55:00 | 3/TLC | 3-38
FLIGHT PLAN

PS2 IMU REALIGN
OPTION 3 REFSHMAT
(OPTIONAL)

REPORT GYRO TORQUING ANGLES

UPLINK TO CSM
ΔH (IF REQUIRED)

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

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 55:00 - 57:00 | 3/TLC | 3-39
FLIGHT PLAN

1922 CST

57:00

M S F N

58:00

P T C

P 90 Y 0

59:00

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 57:00 - 59:00 | 3/TLC | 3-40
FLIGHT PLAN

UPLINK TO CSM
STATE VECTOR & V66
MCC-3 TGT LOAD

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

2122 CST
59:00

:30

60:00

EAT PERIOD

H2 PURGE LINE HTRS - ON

CONTINUE PTC IF MCC-3 IS NOT PERFORMED

P52 - IMU REALIGN
OPTION 3 - REFSMAT

REPORT GYRO TORQUING ANGLES

NOTES

PTC
P 90 Y 0

P52 (PTC ORIENT)
N71: ___ ___
N05: ___ ___
N93: 
X ___ ___
Y ___ ___
Z ___ ___
GET ___ ___

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 59:00 - 61:00 | 3/TLC | 3-41

NRC Form 29 (May 69)
FLIGHT PLANNING BRANCH
FLIGHT PLAN

MCC-3
BURN TABLE

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 1 SEC</td>
<td>IF &lt;2FPS, TRIM X AXIS TO 0.2FPS IF &gt;2FPS, NO TRIM</td>
</tr>
</tbody>
</table>

TABLE 3-4
3-42
FLIGHT PLAN

P30 - EXTERNAL ΔV

V49 - MNVR TO BURN ATT

SXT STAR CHECK
02 FUEL CELL PURGE
WASTE WATER DUMP
P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-3

V66 - TRANSFER CSM SV TO LM SLOT
MCC-3 BURN STATUS REPORT

MNVR TO PTC ATTITUDE

START PTC

MCC-3 WILL BE DELAYED TO MCC-4 IF PROPELLANT COST IS NOT PROHIBITIVE

BURN STATUS REPORT

ΔTIG
BT
Vgx

ΔV: NOMINALLY ZERO

TRIM

R
P
Y
Vgy
Vgz
AVc
FUEL
OX
UNBAL

* ITEMS TO BE REPORTED TO MSFN

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 61:00 - 62:00 | 3/TLC | 3-43
FLIGHT PLAN

BATTERY CHARGE, BATTERY B

PRESSURIZE CSM TO 5.7 PSIA THEN:
PRESSURIZE LM

STOP PTC AT TV ATTITUDE
HGA: P R Y

TV(GDS) 63:30 to 64:20
CM4/TV - IN(f5.6)
FLIGHT PLAN

CSM

0222 CST

64:00

64:15

64:30

64:45

65:00

LM

CDR

LMP

OPEN LM HATCH
RECORD AND REPORT ROLL
CALL ANGLE
IVT TO LM

IVT TO LM

ASSIST CDR

LM

FAMILIARIZATION

LM

FAMILIARIZATION

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 64:00 - 65:00 | 3/TLC | 3-45

FLIGHT PLANNING BRANCH
FLIGHT PLAN

CMP: INSTALL PROBE AND DROGUE
INSTALL CM HATCH
LM TUNNEL VENT VALVE - LM/CM ΔP

LiOH CANISTER CHANGE
NO. 6 (8 INTO B, STOW
6 IN B6)

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H2 FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OVBD DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMERG CABIN PRESS VLV - BOTH
SURGE TK O2 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VENT - LM/CM ΔP
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF
FLIGHT PLAN

0622 CST

68:00

:30

M S F N

REST PERIOD
(8 HOURS)

69:00

:30

70:00

NOTES

DURING REST PERIOD
TWO CREWMEN IN
COUCHES AND ONE
IN REST STATION

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>68:00 - 70:00</td>
<td>3/TLC</td>
<td>3-48</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & 02 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B

BATTERY CHARGE,
BATTERY A

EAT PERIOD

CSM CONSUMABLES UPDATE
GET: __ __ __ __
RCS TOTAL _________ %
QUAD A __ __ __ %
B __ __ __ %
C __ __ __ %
D __ __ __ %

H2 TOTAL __________ %
O2 TOTAL __________ %

L10H CANISTER CHANGE
NO. 7 (9 INTO A, STOW
7 IN B6)

P52 IMU REALIGN
OPTION 1 - PREFERRED
REPORT GYRO TORQUING ANGLES

P30 - EXTERNAL ∆V

CREW STATUS REPORT
CDR CMP LMP
SLEEP __ __ __
PRD __ __ __

NOTES
IF MCC-4 IS NOT
PERFORMED SEE:
NO MCC-4 ALTERNATE
TIMELINE

PTC
P 90 Y 0

PERICYONTHION + 2
ABORT PAD
TARGETED FOR A
FAST RETURN TO MPL

P52 (LDG SITE ORIENT)
OPTION 1 - PREFERRED
N71: __ __ __
N05: __ __ __ __
N93:
X __ __ __
Y __ __ __
Z __ __ __
GET __ __ __ __ __

MISSION | EDITION | DATE             | TIME      | DAY/REV | PAGE
---------|---------|-----------------|-----------|---------|-----
APOLLO 12 | FINAL (NDV 14) | OCTOBER 15, 1969 | 76:00 - 78:00 | A/TLC  | 3-52

MSC Form 29 (May 69)

FLIGHT PLANNING BRANCH
## FLIGHT PLAN

### MCC-4
**BURN TABLE**

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 1 sec</td>
<td>TRIM X AXIS ONLY TO 1.0 FPS</td>
</tr>
</tbody>
</table>

### TABLE 3-5
3-53
FLIGHT PLAN

V49 - MNVR TO BURN ATT

SXT STAR CHECK
P40/P41 - SPS/RCS THRUST

GDC ALIGN TO IMU

MCC-4

V66 - TRANSFER CSM SV TO LM SLOT
MCC-4 BURN STATUS REPORT
REPORT LM/CM ΔP

MCC-4 WILL BE EXECUTED WITH THE SPS IF THE BURN TIME > 3 SEC

BURN STATUS REPORT

<table>
<thead>
<tr>
<th>X</th>
<th>X</th>
<th>X</th>
<th>ΔTIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td>BT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vgx</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>TRIM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vgy</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Vgz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ΔVc</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>FUEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OX</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>UNBAL</td>
</tr>
</tbody>
</table>

* ITEMS TO BE REPORTED TO MSFN

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>78:00 - 79:00</td>
<td>4/TLC</td>
<td>3-54</td>
</tr>
</tbody>
</table>
MCC-H

1722 CST

79:00

:15

79:30

M S F N

SEC EVAP TEMP OUT - DECREASE
(VERIFY FLOW)
SEC COOL LOOP PUMP - OFF (CTR)
SEC GLY TO RAD VLV - BYPASS
ECS IND SW - PRIMARY

FLIGHT PLAN

PRE LOI SEC LOOP CHECK
ECS IND SW - SEC
SEC GLY TO RAD VLV - NORM
SEC COOL LOOP PUMP - AC 1
GLY DISCHARGE SEC PRESS-39-51 PSIA
ACCUM SEC QTY IND-30-55%

NOTES

80:00

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>79:00 - 80:00</td>
<td>4/TLC</td>
<td>3-55</td>
</tr>
</tbody>
</table>

USAGE: FLIGHT PLANNING BRANCH

MSC Form 20 (May 69)
1722 CST

79:00

:15

79:30

M S F N

PRE LOI SEC LOOP CHECK

ECS IND SW - SEC
SEC GLY TO RAD VLV - NORM
SEC COOL LOOP PUMP - AC 1
GLY DISCHARGE SEC PRESS-39-51 PSIA
ACCUM SEC QTY IND-30-55%
SEC EVAP TEMP OUT - DECREASE
(VERIFY FLOW)
SEC COOL LOOP PUMP - OFF (CTR)
SEC GLY TO RAD VLV - BYPASS
ECS IND SW - PRIMARY

80:00
FLIGHT PLAN

PRESSURIZE CSM TO 5.4 PSIA THEN:
PRESSURIZE LM
(IN CASE OF LOI ABORT)

LM TUNNEL VENT VLV - CM/LM ΔP

MISSION | EDITION | DATE          | TIME     | DAY/REV | PAGE
---------|---------|---------------|----------|---------|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 80:00 - 81:00 | 4/TLC | 3-56

MCC-M
1822 CST
80:00
80:15
80:30
80:45
81:00

NOTES

HSC Form 29 (May 69)
FLIGHT PLANNING BRANCH
REVISION A
FLIGHT PLAN

MNVR TO MOON VIEW ATT BY 81:10
AND GO INERTIAL R 187 HGA
P 166 P 4
Y 20 Y 207

P52 - IMU REALIGN
OPTION 3 - REFRESH

REPORT GYRO TORQUING ANGLES

TV (GDS) 81:30 TO 81:50
CM4/TV-IN (f22)

MNVR TO BURN ATT BY 81:55
EXCEPT FOR ROLL R 124 HGA
P 261 P -18
Y 19 Y 251
NO MCC-4 ALTERNATE TIMELINE

The guidelines used for developing a "No MCC-4" alternate timeline are as follows:

- The crew rest period is extended two more hours making a total of ten hours for rest.

- A P52 IMU Realign to REFSMMAT to the PTC orientation is performed just after wake up for a drift check.

- A second P52 IMU Realign is performed to the landing site orientation and is used for the LOI burn.
FLIGHT PLAN

MCC-H

1422 CST

76:00

:30

77:00

:30

78:00

REST PERIOD
(10 HOURS)

M S F N

PTC

P 90. Y O

MISSON | EDITION | DATE       | TIME      | DAY/REV | PAGE
--------|---------|------------|-----------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 76:00 - 78:00 | 4/TLC | 6-6

MSC Form 29 (Rev 68)
FLIGHT PLANNING BRANCH
(NO MCC-4)

NASA — MSC
FLIGHT PLAN

POSTSLEEP CHECKLIST:
- CREW STATUS REPORT
- CONSUMABLES UPDATE
- CYCLE H2 & O2 FANS
- FLIGHT PLAN UPDATE
- NORMAL LUNAR COMM EXCEPT:
  - S-BD AUX TAPE - OFF
  - TAPE RCDR FWD - OFF
  - S-BD ANT - OMNI
  - S-BD ANT OMNI - B

CSM CONSUMABLES UPDATE
- GET: __ __ __
- RCS TOTAL __________%
- QUAD A __% B __%
- C __% D __%
- H2 TOTAL __________%
- O2 TOTAL __________%

CREW STATUS REPORT
- CDR __ CMP ___ LMP ___
- SLEEP ___ ___ ___
- PRD ___ ___ ___

NOTES
- P52 (PTC ORIENT)
  - OPTION 3 - REFSTMAT
- N71: __ __ __
- N05: __ __ __
- N93: __ __ __
- X: __ __ __
- Y: __ __ __
- Z: __ __ __
- GET: __ __ __

UPLINK TO CSM
- STATE VECTOR & V66
- CONSUMABLES UPDATE
- FLIGHT PLAN
- PERICYNHION +2
- ABORT PAD TARGETED FOR A FAST RETURN TO MPL

MISSION | EDITION | DATE       | TIME     | DAY/REV | PAGE
--------|---------|------------|----------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 78:00 - 80:00 | 4/TLC | 6-7

NO MCC-4
FLIGHT PLAN

1822 CST

80:00

LIOH CANISTER CHANGE NO.7 (9 INTO A,
STOW 7 INTO B6)

:15

PRESSURIZE CSM TO 5.4 PSIA THEN:
PRESSURIZE LM
(IN CASE OF LOI ABORT)

80:30

MSFN

PRE LOI SEC LOOP CHECK
ECS IND SW - SEC
SEC GLY TO RAD VLV - NORM
SEC COOL LOOP PUMP - AC 1
GLY DISCHARGE SEC PRESS-39-51 PSIA
ACCUM SEC QTY IND-30-55%
SEC EVAP TEMP OUT - DECREASE
(VERIFY FLOW)
SEC COOL LOOP PUMP - OFF (CTR)
SEC GLY TO RAD VLV - BYPASS
ECS IND SW - PRIMARY

:45

81:00

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|--------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 80:00 - 81:00 | 4/TLC | 6-8
**FLIGHT PLAN**

1922 CST

**NOTES**

P52 (LDG SITE ORIENT)
N71:
N05:
N93:
X
Y
Z
GET

**MISSION**

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>81:00 - 82:00</td>
<td>4/TLC</td>
<td>6-9</td>
</tr>
</tbody>
</table>

MSC Form 29 OT (Mar. 69)  
FLIGHT PLANNING BRANCH  
(NO MCC-4)  
REVISION A
FLIGHT PLAN

2022 CST

82:00

82:30

:15

MSFN

PRE LOI-1 SYSTEMS CHECKS:
C&W CHECK
CM RCS CHECK
SM RCS CHECK
SPS PERIODIC MONITOR
ECS PERIODIC MONITOR

P30 - EXTERNAL ΔV
P40 - SPS THRUST

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

NOTES

UPDATE TO CSM MAP UPDATE REV 1
LOI-1 MNVR PAD

UPLINK TO CSM
STATE VECTOR & V66
LOI-1 TGT LOAD

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|-------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 82:00 - 83:00 | 4/TLC | 3-58

HSC Form 29 (Nov 69)
FLIGHT PLANNING BRANCH
# FLIGHT PLAN

## LOI-1
### BURN TABLE
#### TABLE 3-6

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 10 SEC</td>
<td>DO NOT TRIM</td>
</tr>
</tbody>
</table>

## LOI-1 ABORT TABLE
#### TABLE 3-7

<table>
<thead>
<tr>
<th>MODE I (DPS ONLY)</th>
<th>MODE IIA (DPS+APS)</th>
<th>MODE II (DPS ONLY)</th>
<th>MODE III (DPS ONLY)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0-20 SEC. BT</strong></td>
<td>40SEC-1MIN 30SEC</td>
<td>2MIN 24SEC-2MIN 24SEC</td>
<td>2MIN 50SEC - END OF BURN</td>
</tr>
<tr>
<td>ΔVm 0-135 (Tight)</td>
<td>ΔVm 200-650 (Tight)</td>
<td>ΔVm 650-750 (Loose)</td>
<td>ΔVm 1250-1600 (Loose)</td>
</tr>
<tr>
<td>LOI + 2HR.</td>
<td>*APS @ LOI+ 2 1/2 HR. MCC-H TGT</td>
<td>DPS1 @ LOI + 2HR DPS2 @ LOI + 1REV MCC-H TGT</td>
<td>*APS ASAP AFTER DPS2 MCC-H TGT (CONT. OF DPS2)</td>
</tr>
<tr>
<td>MCC-H TGT.</td>
<td>CREW CHART TGT</td>
<td>MCC-H TGT.</td>
<td>MCC-H TGT</td>
</tr>
</tbody>
</table>

*SPS BACKUP*
FLIGHT PLAN

ROLL TO BURN ATT R 4 OMNI D
P 261
SXT STAR CHECK Y 19
VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU
LOI-1

V66 - TRANSFER CSM STATE VECTOR TO LM SLOT
MNVR TO COMM ATT AND
GO INERTIAL BY 83:40
R 180 HGA:
P 302 P -68
ACQUIRE MSFN Y 0 Y 339

LOI-1 BURN STATUS REPORT
LUNAR SURFACE OBSERVATION ATTITUDE
(HATCH WINDOW) - HEADS DOWN
GO ORB RATE BY 84:00

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 83:00 - 84:00 4/1 3-60

MCC M
2122 CST

UPDATE TO CSM
GO/NO-GO LOI-1

83:00

15

18

25

83:30

45

58

84:00

NOTES

BURN STATUS REPORT

ΔTIG **
BT **
V_gx

TRIM
R
P
Y

TIG: 83:25:18.2
BT: 5 MIN 55.4 SEC
ΔV_R: 2889.9 FPS
ULLAGE: NONE
ORBIT: 58.7 x 168.9 NM

V_gx***
V_y***
V_gz***
ΔV_c*

FUEL *
OX *
UNBAL

* ITEMS TO BE REPORTED TO MSFN
** REPORT IF OFF
*** REPORT IF >0.2 FPS
LOI-1 WILL BE STARTED WITH THE SPS PU VALVE IN INCREASE

REV 1

DUMP DSE

MSC Form 28 (May 69)
FLIGHT PLANNING BRANCH

REVISION A
FLIGHT PLAN

TV (GDS) 84:00 TO 84:30
CM 4/TV - IN(f22)

STOP ORB RATE PITCH AT 231 AND GO INERTIAL BY 84:27

R 180 HGA P 23T P -38 Y 0 Y 189

UPDATE TO CSM
MAP UPDATE REV 2

EAT PERIOD

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

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
-------- | -------- | ---- | ----- | ------- | ----
Apollo 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 84:00 - 85:00 | 4/1 | 3-61

MSC Form 29 OT (Mar. 69)
REV 2

MNVR TO LOI-2
BURN ATT
(0,NA/231,0)
IATTH

BEGIN IMU REALIGN
(180,NA/231,0)
IATTH

85:31:20
BEGIN REV 2
(180,NA/231,0)
IATTH

LEGEND:

- ■ MSFN ACS, LOS
- ○ ● S/C SUNRISE, SUNSET
- ⊗ SUBEARTH POINT

(R,LHP,INH,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

3-61A

REVISION B
FLIGHT PLAN

2322 CST
85:00

H₂ PURGE LINE HTRS - ON

VERIFY DSE MOTION AT LOS EAT PERIOD

85:30

H₂ AND O₂ FUEL CELL PURGE
WASTE WATER DUMP

86:00

REACQUIRE MSFN
HGA P -38 Y 189

MISSON  | EDITION  | DATE          | TIME           | DAY/REV | PAGE
--------|----------|---------------|----------------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 85:00 - 86:00 | 4/1     | 3-62

MSC Form 29 (May 69)
FLIGHT PLANNING BRANCH

REVISION A
FLIGHT PLAN

UPLINK TO CSM
CSM STATE VECTOR & V66
LOI-2 TARGET LOAD
UPDATE TO CSM
LOI-2 MNVR PAD
TEI 5 PAD
MAP UPDATE REV 3

86:00

:15

:40

:45

:53

87:00

CMP - PRE LOI -2 SYSTEMS CHECKS
C&W CHECK
CM RCS CHECK
SPS PERIODIC MONITOR CHECK
ECS PERIODIC MONITOR CHECK

P52 IMU REALIGN
OPTION 3 REFISHMAT

MAP UPDATE REV 3
LOS : __ : __ : __ : __
180° : __ : __ : __ : __
AOS : __ : __ : __ : __

P52 (LDG SITE ORIENT)
N71: __ : __ : __
N05: __ : __ : __
N93:
X : __ : __ : __
Y : __ : __ : __
Z : __ : __ : __
GET: __ : __ : __ : __

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 86:00 - 87:00 | 4/2 | 3-63
# FLIGHT PLAN

## LOI-2

**BURN TABLE**

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 1 SEC</td>
<td>TRIM X AXIS TO 1 FPS</td>
</tr>
</tbody>
</table>

**TABLE 3-8**

3-64
FLIGHT PLAN

DRIFT CHECK

REPORT GYRO TORQUING ANGLES
P30 EXTERNAL ΔV
LOAD DAP FOR 2 JET ULLAGE (20101) (11111)
V49 MNVR TO LOI-2 BURN ATT BY 87:15
SXT STAR CHECK R O
P40 - SPS THRUST P 231
VERIFY DSE MOTION AT LOS V 0

TIG: 87:44:10.0
BT: 17.6 SEC
ΔVR: 169.6 FPS
ULLAGE: 2 JET 19.0 SEC
RETOGRAFE
ORBIT: 64.9x53.0
TRIM X AXIS TO 1 FPS

GDC ALIGN TO IMU

LOI-2

V66 TRANSFER CSM STATE VECTOR TO LM SLOT

NOTES

P52 (LDG SITE ORIENT)
N71: __ __ __
N05: __ __ __
N93: __ __ __

GET __ __ __ __ __

Mission: Apollo 12
Edition: Final (Nov 14)
Date: October 15, 1969
Time: 87:00 - 88:00
Page: 3-65
FLIGHT PLAN

MNVR TO COMM ATTITUDE AND GO INERTIAL R 180 HGA BY 88:00 P 269 P -71 Y 0 Y 206

BATTERY CHARGE, BATTERY B
LOI -2 BURN STATUS REPORT
EQUALIZE CM/LM PRESSURE TUNNEL VENT VALVE - LM PRESS

LIOH CANISTER CHANGE NO. B 10 INTO B, STOW B IN B6

P52 IMU REALIGN OPTION 3 REFSMNNAT

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>88:00 - 89:00</td>
<td>4/3</td>
<td>3-66</td>
</tr>
</tbody>
</table>
THIS PAGE INTENTIONALLY LEFT BLANK
89:37:41
BEGIN REV 4
(180, NA/269, 0)
IATTH

ROLL 180 DEG TO
LOMK TRKNG ATT
(0, NA/269, 0)
IATTH

END PITCH RATE;
ROLL TO SLEEP ATT
(126, NA/291, 0)
IATTH

BEGIN -0.3 DEG/SEC
PITCH RATE
(0, 358/269, 0)

LEGEND:
☐ ☐ MSFN AOS, LOS
○ ● S/C SUNRISE, SUNSET
⊕ SUBEARTH POINT
(R, LHP/INP, Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

REV 4

3-66A

REVISION B
FLIGHT PLAN

CSM

CMP

0322 CST

89:00

REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU
PREPARE FOR LM INGRESS
VERIFY TUNNEL PRESSURE
REMOVE HATCH & STOW
INSPECT DOCKING LATCHES
REMOVE & STOW PROBE AND DROGUE
VERIFY DOCKING ANGLE
VERIFY DSE MOTION AT LOS

LM

CDR

LMP

OPEN LM HATCH
IVT TO LM

LM ENTRY STATUS CHECKS

IVT TO LM

PERFORM HOUSEKEEPING CHORES
1. STOW HELMET STOWAGE BAGS. UNSNAP BOTH HSBS.
2. UNSTOW 70MM & 16MM FILM BAGS
3. PUT UP SNAP STRAPS

AID LMP AS REQUIRED

REACQUIRE MSFN
HGA P 71 Y 206

90:00

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 89:00 - 90:00 4/3-4 3-67

FLIGHT PLANNING BRANCH

REVISION B
2 DEG PITCH DOWN FROM
LOCAL HORIZONTAL BEGIN
0.3 DEG/SEC PITCH DOWN
AT AOS.

T1  GET AT 0° ELEVATION
T2  GET AT 35° ELEVATION

DOCKED LANDMARK TRACKING PROFILE

P22 AUTO ACQ P dn 2° RO 0° Y0°

T1  ____________
T2  ____________
R ___________ P ___________ Y ___________

N or S NM __ SA __ TA __

CP  N89

LAT  -1.517°
LONG/2 -7.625°
ALT  -1.94 N MI

ΔT1 = 300 SEC
ΔT2 = 40 SEC
ΔT3 = 25 SEC
ΔT4 = 25 SEC

AOS to LOS = 3 MIN

CENTER OF MOON

FIGURE 3-1
3-68
FLIGHT PLAN

CSM  CMP

ROLL 180 DEG TO LDMK TRACK
ATTITUDE BY 90:06 R 0 P 289 Y 0

GO INERTIAL SELECT OMNI D

P22 ORBITAL NAV ESTABLISH 0.3°/SEC PITCH DOWN @ T2

LM  LMP

CDR

90:00

AID LMP AS REQUIRED

90:30

TRANSFER TO LMP POWER

COMM ACTIVATION

S-BAND/VHF SIMPLEX
VOICE & TM TEST

REPORT OPS SOURCE PRESSURE

91:00

MISSION  EDITION  DATE  TIME  DAY/REV  PAGE
APOLLO 12  FINAL (NOV 14)  OCTOBER 15, 1969  90:00 - 91:00  4/4  3-69

MSC Form 2189 (OT) (Nov 68) FLIGHT PLANNING BRANCH
FLIGHT PLAN

CSM
LOAD DAP R1(21110)R2(11111)
V21 NO1
3255E
1616E
CSM POWER TO LM-ON
(ATT LM REQUEST)
VERIFY DSE MOTION
AT LOS
INSTALL DROGUE & PROBE
INSTALL CM HATCH

CMP
0522 CST
09:00
91:00
:12
91:30
:36
92:00

LM
CDR
AID LMP AS REQUIRED
IVT TO CSM

LMP
COMM DEACTIVATION
TRANSFER TO CSM POWER
LMP IVT TO CSM
CLOSE LM HATCH

MCC-H
UPDATE TO CSM
TEF 11 PAD
MAP UPDATE REV 5
UPLINK TO CSM
STATE VECTOR & V66

MAP UPDATE REV 5
LOS:
180°:
AOS:

PRESLEEP CHECKLIST
E-MEMORY DUMP
CREW STATUS REPORT (medication)
ONBOARD READOUTS to MSFN
CYCLE H2, O2 FANS
CHLORINATE WATER
VERIFY
WASTE MNGT OVBD DRAIN vlv - OFF
WASTE STOW VENT vlv - CLOSED
EMER CABIN PRESS vlv - BOTH
SURGE TK O2 vlv - ON
REPRESS O2 vlv - OFF
LM TUNNEL VENT vlv - LM PRESS
NORMAL LUNAR COMM EXCEPT
S BD SQUELCH - ENABLE
HI GAIN ANTENNA TRACK - REACQ
HI GAIN ANTENNA BEAM - NARROW
S BD ANT - HI GAIN

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 91:00-92:00 4/4-5 3-70

MSC FOR 180 (OT) (Nov 6P) FLIGHT PL'ING BRANCH
LUNAR ORBIT REST PERIOD ATTITUDE

\[ \theta_s = 150^\circ \]
\[ \phi_s = 262^\circ \]
\[ DB \pm 10^\circ \]

\( \theta_s \) THE SMALLEST ANGLE BETWEEN THE SPACECRAFT X BODY AXIS AND THE SUN LINE OF SIGHT

\( \phi_s \) THE ANGLE WHICH IS MEASURED FROM THE MINUS Z SPACECRAFT BODY AXIS POSITIVELY ABOUT THE X BODY AXIS TO THE SUN LINE OF SIGHT VECTOR PROJECTION IN THE Y - Z AXIS PLANE
FLIGHT PLAN

MISSION | EDITION       | DATE          | TIME         | DAY/REV | PAGE  
---------|---------------|---------------|--------------|---------|-------
APOLLO 12| FINAL (NOV 14)| OCTOBER 15, 1969 | 95:00 - 97:00 | 4/6-7   | 3-74  

MCC-H

0922 CST
95:00

DUMP DSE

REST PERIOD
(8.5 HOURS)

96:00

97:00

REV 7:
:30
:33
:40
:54

MCC-N

FLIGHT PLANNING BRANCH
FLIGHT PLAN

MISSION | EDITION       | DATE            | TIME     | DAY/REV | PAGE
---------|---------------|-----------------|----------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 97:00 - 99:00 | 4/7-8 | 3-75

DUMP DSE

REST PERIOD (8.5 HOURS)

MSF

99:00

97:00

98:00

97:10

97:30

97:32

97:38

97:52

NOTES

30

32

38

52

REST ATT

REV 8

MCC-N
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FLIGHT PLAN

CSM

CMP

DON HELMET & GLOVES
PGA PRESSURE INTEGRITY CHECK

LM

CDR

LMP

DON PGA IN CSM

MCC-H

IVT TO LM
TRANSFER HELMET & GLOVES

CONNECT TO LM ECS & COMM

ASCENT BATTERY ACTIVATION AND C/O

RECORD ED BAT VOLTS

AGS ACT & SELF TEST

INHIBIT ROLL COMMANDS UNTIL LM/CM △P>3.5 PSI

INSTALL DROGUE & PROBE
PRELOAD PROBE
COCK LATCHES (12)
INSTALL HATCH
VENT TUNNEL
HATCH INTEGRITY CHECK
CONFIGURE PANEL 10 FOR CSM RELAY

REACQUIRE MSFN
HGA: P-35, Y 117

V06N20E
DOFF HELMET & GLOVES

106:00

105:00

105:30

105:15

105:45

106:00

VERIFICATION DROGUE & PROBE INSTALLATION
CLOSE AND SECURE HATCH

STEERABLE ANTENNA: P 68, Y 19

DEPLOY LANDING GEAR
POO & DATA FOR UPLINK
DOCKED IMU FINE ALIGN
V06 N20E ON MARK

V47-AGS INITIALIZATION

Mission Edition Date Time Day/Rev Page
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 105:00 - 106:00 5/11-12 3-81

MCC Form 2189 (OT) (Nov 69) FLIGHT PLANNING BRANCH
2 DEG PITCH DOWN FROM LOCAL HORIZONTAL BEGIN 0.3 DEG/SEC PITCH DOWN AT AOS.

T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

AOS to LOS = 3 MIN

\[ \Delta T_1 = 300 \text{ SEC} \]
\[ \Delta T_1^* = 40 \text{ SEC} \]
\[ \Delta T_2 = 25 \text{ SEC} \]
\[ \Delta T_4 = 25 \text{ SEC} \]

CENTER OF MOON

RADIUS OF MOON

LANDMARK

P22

\[ \Delta T_1 \]

193

T1

T2

R

LAT -3.437°
LONG/2 -11.614°
ALT -1.37 MI:

N or S NM
SA
TA

N89
**FLIGHT PLAN**

### CSM
- **CDR**
  - DAP SET - GIMBAL 
  - THROTTLE TEST
  - LOAD DAP - 32022
- **LM**
  - LOAD AGS PAD
- **LMP**
  - SELECT OMNI-FWD
  - RATE GYRO TEST
  - VO6N20 ON MARK

### MCC-H
- UPLINK TO LM
  - LS REF SMMAT
  - LM SV & V66
  - LGC/CME CLOCK SYNC
  - PIPA BIAS
  - LGC ABORT CONSTANT
  - E-MEMORY UPDATE (IF REQ'D)
  - UPDATE TO CSM
- SEP TIME & UNDOCK TIME
- UPDATE TO LM
  - AGS K FACTOR
  - AGS ABORT CONVENTS
  - STEERABLE ANT  $^*$S (IF REQ'D)
  - UPDATE TO CSM
  - MAP UPDATE REV 13

---

**MAP UPDATE REV 13**
- **LOS**:
- **180°**:
- **AOS**:

---

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 106:00 - 107:00 | 5/12 | 3-83

---

**FLIGHT PLANNING BRANCH**

---

**REVISION A**
CSM

CMP

RATE <0.1°/SEC
DISABLE THRUSTERS FOR
32 SEC (AT LMP'S REQUEST)
ENABLE THRUSTERS &
MAINTAIN RATE <0.1°/SEC
FOR 6 MIN
RE-ENABLE 83
VERIFY TUNNEL VENT
VALVE - OFF

CDR

RR ACT & SELF
TEST

LM

LMP

AGS ACCELEROMETER
& GYRO CALIBRATION

DON HELMET & GLOVES

DON HELMET & GLOVES

ARS/PGA PRESSURE INTEGRITY CHECK

CABIN REGULATOR
CHECK

CABIN REGULATOR
CHECK

V47-AGS UPDATE & ALIGN

DPS PRESS & C/O

STEERABLE ANT:
P 132, Y 24
REACQUIRE MSFN
PCM-HI

GO/NO-GO
PREPARE FOR
UNDocking
P47-THRUST MONITOR

DUMP DSE
GO/NO-GO FOR
UNDocking

SOFT UNDOCK

SOFT UNDOCK 107:54:22

S/C CONTROL - CMC

STATION KEEP @ 40'

RE-ENABLE 83 & C Jets

MISSION  EDITION  DATE  TIME  DAY/REV  PAGE
APOLLO 12  FINAL (NOV 14)  OCTOBER 15, 1969  107:00 - 108:00  5/12-13  3-84

FLIGHT PLANNING BRANCH  REVISION A
FLIGHT PLAN

CSM

CMP

POO (FOR UPLINK)

P63-AUTO MNVR TO PDI ATT

LR-ON

GO/NO-GO FOR PDI

FINAL TRIM

ULL: 2 JET, 7.5 SEC

LM

CDR

LMP

CONFIGURE EGRESS MODE

CHECK SYS CONFIGURATION

V47-INITIALIZE AGS

TARGET AGS FOR ABORT

PDI 110:20:00

RR-OFF

EVALUATE MANUAL CONTROL

PITCH OVER AT P64

P66

PERFORM LUNAR CONTACT CHECKLIST

DPS VENT

P68, P12

P57-IMU ALIGN

OPT 3 - REFSSMAT

A/T 1 - GRAVITY

TOUCHDOWN 110:31:19

CONFIRM STAY/NO-STAY

V44-SET LS FLAG

CONFIRM STAY/NO-STAY

STOP PITCH: R 0, P79, Y 0

HGA: P-51, V 13

VHF RANGING-OFF

P52-IMU REALIGN

OPT 3 - REFSSMAT

LDG SITE ORIENT

VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU

111:00

MCC-H

UPLINK TO LM

LM STATE VECTOR

RLS

UPDATE TO LM

ARLS

STAY/NO-STAY

STAY/NO-STAY

COPY AGS AZIMUTH

DOFF HELMETS & GLOVES

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|---------|------|------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 110:00 - 111:00 | 5/14 | 3-87

FLIGHT PLANNING BRANCH

REVISION A
CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING

AOS

MARK NO. 1

MARK NO. 2

MARK NO. 3

MARK NO. 4

MARK NO. 5

RADIUS OF MOON

CENTER OF MOON

FIGURE 3-3

3-8°

HORIZON

HORIZON

T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

P22 AUTO ACQ P dn22° R0° Y0°

T1

T2

R

N or S NM SA TA

CP

LAT - 3.437°

LONG/2 - 11.614°

ALT - 1.37 NM

ΔT1 = 300 SEC

ΔT2 = 40 SEC

ΔT3 = 25 SEC

ΔT4 = 25 SEC

ΔT5 = 25 SEC

ΔT6 = 340 SEC

AOS TO LOS - 146 SEC

AOS TO FINAL MARK - 140 SEC
**FLIGHT PLAN**

**CSM**
- MNVR TO TRACKING
- ATTITUDE BY 112:00
- R 0, P338/N/A, Y 0
- GO ORB RATE
- SELECT OMNI D
- P22 ORBITAL NAVIGATION
- VERIFY DSE MOTION

**LM**
- CDR
- LM
- LMP
- EAT PERIOD
- EAT PERIOD
- RR-ON
- P22 - LUNAR SURFACE NAVIGATION
- TERMINATE P22 - LUNAR SURFACE NAVIGATION
- DESIGNATE THEN PWR DWN RR
- E MEMORY DUMP
- POWER DOWN IMU
- LGC TO STANDBY
- CREW STATUS REPORT (DOSIMETER, MEDICATION)
- CABIN PREP FOR EVA
- STOW ALL LOOSE ITEMS NOT REQUIRED FOR EVA
- UNSTOW EVA 1 PREP & POST CARD
- REMOVE CB EVA CONFIG & ONE MAN EVA PAGE & INSTALL
- STOW LUNAR CHECKLIST

**MCC-H**
- UPDATE TO LM
- DAP LOAD
- LIFT OFF TIME FOR REV 16 THRU 19

---

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
**APOLLO 12** | **FINAL (NOV 14)** | **OCTOBER 15, 1969** | **112:00 - 113:00** | **5/15** | **3-90**

**MSC Form 1674 (OT)(June 69)**

**FLIGHT PLANNING BRANCH**
FLIGHT PLAN

CSM

0322 CST 113:00

EAT PERIOD

REV 16

REACQUIRE MSFN

HGA P -23, Y 189

MAP UPDATE REV 17

LOS : __ __ __ __ __ __

180°W : __ __ __ __ __ __

AOS : __ __ __ __ __ __

113:30

114:00

CDR

LM

LMP

CABIN PREP FOR EVA (CONT)

EQUIPMENT PREP

SET DET FOR CABIN DEPRESS

UNSTOW LMP'S PLSS FROM LM FLOOR

PREPARE SEQ CAMER

DEPLOY EVA ANTENNA

UNSTOW & DON LUNAR BOOTS (BOTH)

UNSTOW & CHECK BOTH OPS'S

1:20

1:10

1:00

PLSS DONNING

CONFIGURE LMP'S PLSS/OPS FOR DONNING

UNSTOW RCU'S

LMP DON PLSS/OPS

CONFIGURE CDR'S PLSS/OPS FOR DONNING

CDR DON PLSS/OPS

VERIFY RCU CONTROLS AND CONNECT TO PLSS/PGA

1:30

PLSS COMM CHECK

AUDIO SWITCHES CK, ACTIVATE PLSS COMM SYSTEMS & C/O

(TV CB - CLOSE THEN OPEN)

FINAL SYSTEMS PREP

MAP UPDATE REV 17

UPDMP USE

UPDATE TO CSM

P22 - TRACKING PAD

MISSION EDITION DATE TIME DAY/REV PAGE

APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 113:00 - 114:00 5/15-16 3-91

MSC Form 1674 (OT)(June 69) FLIGHT P INING BRANCH
FLIGHT PLAN

CSM

CMP
MNVR TO TRACKING
ATTITUDE BY 114:00
R 0, P 0 / N/A, Y 0
GO ORB RATE
SELECT OMNI D
P22 ORBITAL NAVIGATION
VERIFY DSE MOTION

CDR
CONNECT O2 HOSES
DON HELMETS
CONNECT PLSS H2O HOSES
LCG PUMP CB-OPEN
DON GLOVES

LM
LMP

MCC-H

0422 CST
114:00

:15

:26

:33

114:30

:30

:20

:10

:00

START EVA

0:00

:10

:45

:50

:00

:20

:30


<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>114:00 - 115:00</td>
<td>5/16</td>
<td>3-93</td>
</tr>
</tbody>
</table>

MBC Form 1674 (Op)(June 69)  FLIGHT PLANNING BRANCH
FLIGHT PLAN

CDR
CLOSE SEQ BAY DOORS
CARRY HTC TO MESA
PICK UP TONGS
ALSEP TRAVERSE
CARRY SUBPALLET TO TV
ORIENT TV FOR ALSEP
CARRY SUBPALLET TO
DEPLOYMENT SITE
ALSEP SYSTEM INTERCONNECT
UNSTOW SIDE FROM SUBPALLET
CONNECT TO CENTRAL STATION
UNSTOW & POSITION PSE STOOL
DEPLOY SWE, ALIGNED PHOTOGRAPH
LSM OFFLOAD
UNSTOW LSM
SUNSHIELD DEPLOYMENT
RELEASE PERIMETER, ANT.,
CABLE, & INNER BOLTS, RAISE
SUNSHIELD, & CK. CURTAINS
ANTENNA INSTALLATION
INSTALL ANT MAST
INSTALL ANT ON MAST
SET AZIMUTH & ELEVATION
OFFSETS
LEVEL & ALIGN ANTENNA
ALSEP ACTIVATION
VERIFY EXPERIMENTS DEPLOYED
ACTIVATE ALSEP

LM
CONNECT PKG #2 TO CARRY
BAR
ALSEP TRAVERSE
CARRY ALSEP PKG'S TO
DEPLOYMENT SITE
REST ENROUTE
ALSEP SYSTEM INTERCONNECT
POSITION PKGS
UNSTOW RTG CABLE AND
CONNECT TO CENTRAL STATION
PSE DEPLOYMENT
UNSTOW PSE & PLACE ON PSE
STOOL, DEPLOY THERMAL SKIRT
LEVEL & PHOTOGRAPH PSE
LSM DEPLOYMENT
CARRY LSM TO DEPLOY SITE
DEPLOY LSM, & LEVEL &
ALIGN PHOTOGRAPH LSM
SIDE DEPLOYMENT
CARRY SIDE TO DEPLOY SITE
DEPLOY GROUND SCREEN
DEPLOY CCIG
LEVEL & ALIGN SIDE
PHOTOGRAPH SIDE
ALSEP SITE PHOTOGRAPHY
PHOTO DEPLOYMENT SITE

MCC-H
1:30
1:40
1:50
UPDATE TO CSM
MAP UPDATE REV 18
2:00
2:10
2:20
2:30

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>116:00 - 117:00</td>
<td>5/17</td>
<td>3-95</td>
</tr>
</tbody>
</table>

MBC Form 1674 (OT)(June 69)   FLIGHT PLANNING BRANCH    REVISION A
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FLIGHT PLAN

CSM

CMP

EAT PERIOD

0822 CST

118:00

HGA P 234, Y 45

PS2 - IMU REALIGN
OPTION 1 - PREFERRED
(PLANE CHANGE ORIENT)

GDC ALIGN TO IMU

VERIFY DSE MOTION @ LOS

LM

LMP

POST EVA SYSTEMS CONFIGURATION
CONFIGURE VALVES AND CIRCUIT BREAKERS
TV-OFF
DOFF HELMETS & GLOVES
DISCONNECT OPS O2 & PLSS H2O HOSES & CONNECT LM O2 & H2O HOSES, LCG PUMP CB-CLOSE
SWITCH TO LM COMM SYSTEM, BIO MED-LEFT

PLSS O2 RECHARGE
CONNECT LMP'S PLSS TO LM O2 SUPPLY & FILL (2 MIN))
CONNECT CDR'S PLSS TO LM O2 SUPPLY & FILL (2 MIN)

PLSS/OPS DOFFING
REMOVE RCU'S, DOFF PLSS/OPS
REPLACE CDR'S PLSS BATT & LIOH CARTRIDGE
REMOVE OPS & STOW ON ENG COVER
STOW PLSS (RECHARGE STATION)
REPLACE LMP'S PLSS BATT & LIOH CARTRIDGE
REMOVE OPS & STOW PLSS (FLOOR)
OPS CHECK (BOTH)
STOW LMP OPS ON FLOOR

POST EVA CABIN CONFIGURATION
STOW SRC IN LOWER & CDR OPS IN TOP OPS COMPARTMENT
CONFIGURE SEQ CAMERA
VERIFY CB CONFIGURATION

LCG PUMP CB - OPEN
UNSTOW LUNAR SURFACE CHECKLIST
STOW EVA1 PREP & POSTCARD

EAT PERIOD

119:00

3:30

UPDATE TO CSM
MNVR PAD (PLANE CHANGE)

PLANE CHANGE TGT LOAD
DESIRED ORIENT (PLANE CHANGE)

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 118:00 - 119:00 | 5/18 | 3-97

MSC Form 1674 (OT) (June 69) FLIGHT PLANNING BRANCH REVISION B
## FLIGHT PLAN

### CSM PLANE CHANGE #1

**BURN TABLE**

<table>
<thead>
<tr>
<th>P or Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>BT + 1 SEC</td>
<td>NO TRIM</td>
</tr>
</tbody>
</table>

**TABLE 3-9**

3-98

---

*Revision B*
FLIGHT PLAN

CSM

LM

CSP

CDR

LMP

MCC-H

REST PERIOD
9 1/2 HOURS
1822 CST
128:00

REST PERIOD
9 HOURS
129:00

REST PERIOD
9 HOURS

130:00

CONFIGURE HAMMOCKS FOR JETTISON, LCG PUMP CB-CLOSE

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>128:00 - 130:00</td>
<td>5/23-24</td>
<td>3-105</td>
</tr>
</tbody>
</table>

MBC Form 1674 (OT)(June 69)

FLIGHT PLANNING BRANCH

REVISION B
2022 CST
130:00

CDR

S-BD PWR AMPL - PRIM, VOICE - VOICE
CHANGE LM LIONH CARTRIDGE, LGC TO OPERATE TO
UPDATE LGC CLOCK THEN BACK TO STANDBY

LM

LMP

CM

REST PERIOD
9 1/2 HOURS

MCC-H

UNIT LM
LM CONSUMABLES
LIFT OFF TIME FOR
REV 25 THRU 28
STAY/NO STAY

STAY/NO STAY FOR EVA PREP
CREW STATUS REPORT (SLEEP, DOSIMETER)

EAT PERIOD

EAT PERIOD

131:00

MISSION | EDITION | DATE       | TIME       | DAY/REV | PAGE
---------|----------|------------|------------|---------|--------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 130:00 - 131:00 | 6/24 | 3-106

MSC Form 1674 (OT) (June 69) | FLIGHT PLANNING BRANCH | REVISION B
FLIGHT PLAN

CSM

CMP

REST PERIOD
9 1/2 HOURS

BATTERY CHARGE, BATTERY A
HGA P-24, Y254

2122 CST
131:00

REV 25

:08

:15

:23

131:30

LM

LM

CDR
EAT PERIOD

LMP
EAT PERIOD

EVA PLANNING PERIOD

CABIN PREP FOR EVA
STOW ALL LOOSE ITEMS NOT REQ'D FOR EVA
UNSTOW EVA 2 PREP & POST CARD
STOW LUNAR SURFACE CHECKLIST

EQUIPMENT PREP
SET DET FOR CABIN DEPRESS
PREPARE CAMERAS
COLLECT ITEMS FOR JETTISON
UNSTOW AND CHECK BOTH OPS

POSTSLEEP CHECKLIST
CREW STATUS REPORT
CONSUMABLES UPDATE
FLIGHT PLAN UPDATE
CYCLE H2, O2 FANS
NORMAL LUNAR COMM EXCEPT:
S BD ANT - HI GAIN
CREW MANAGES ANT OPS
VHF AM B - DUPLEX

132:00

DUMP DSE
CREW STATUS REPORT
CMP
SLEEP ---------
PRD ----------
UPDATE TO CSM
CONSUMABLES

CSM CONSUMABLES UPDATE
GET: ________
RCS TOTAL ________ %
QUAD A ________ %
C ________ %
H2 TOTAL ________ %
O2 TOTAL ________ %

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 131:00 - 132:00 | 6/24-25 | 3-107

MSC Form 1674 (C)(June 69)  FLIGHT PLANNING BRANCH
<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00-13:00</td>
<td>CSM/CMP EAT PERIOD</td>
</tr>
<tr>
<td>13:00-13:30</td>
<td>CSM/CMP VERIFY DSE MOTION @ LOS</td>
</tr>
<tr>
<td>13:30-14:00</td>
<td>MCC-H P52 (LIFT-OFF ORIENT)</td>
</tr>
<tr>
<td>14:00-14:15</td>
<td>LM LMP PLSS DONNING</td>
</tr>
<tr>
<td>14:15-14:21</td>
<td>lm LMP UNSTOW RCU'S</td>
</tr>
<tr>
<td>14:21-14:25</td>
<td>LM LMP UNSTOW CDRS PLSS/OPS FOR DONNING</td>
</tr>
<tr>
<td>14:25-14:30</td>
<td>LM LMP CDR DON PLSS/OPS</td>
</tr>
<tr>
<td>14:30-14:35</td>
<td>LM LMP VERIFY RCU CONTROLS AND CONNECT TO PLSS/PGA</td>
</tr>
<tr>
<td>14:35-14:45</td>
<td>LM LMP AUDIO SWITCHES CHECK, ACTIVATE PLSS COMM SYSTEMS</td>
</tr>
<tr>
<td>14:45-14:55</td>
<td>LM LMP S-BD PWR AMPL-PRIM (TV CB - CLOSE THEN OPEN)</td>
</tr>
<tr>
<td>14:55-15:00</td>
<td>P52 (LIFT-OFF ORIENT)</td>
</tr>
<tr>
<td>15:00-15:05</td>
<td>LM LMP FINAL SYSTEMS PREP</td>
</tr>
<tr>
<td>15:05-15:10</td>
<td>LM LMP CONNECT OPS O₂ HOSES</td>
</tr>
<tr>
<td>15:10-15:15</td>
<td>LM LMP DON HELMETS</td>
</tr>
<tr>
<td>15:15-15:20</td>
<td>LM LMP CONNECT PLSS H₂O HOSES</td>
</tr>
<tr>
<td>15:20-15:25</td>
<td>LM LMP LCG PUMP CB-OPEN</td>
</tr>
<tr>
<td>15:25-15:30</td>
<td>LM LMP DON GLOVES</td>
</tr>
<tr>
<td>15:30-15:35</td>
<td>LM LMP VERIFY ITEMS PREPARED FOR JETTISON</td>
</tr>
<tr>
<td>15:35-15:40</td>
<td>LM LMP VERIFY EVA CB CONFIGURATION</td>
</tr>
<tr>
<td>15:40-15:45</td>
<td>LM LMP PRESSURE INTEGRITY CHECK</td>
</tr>
<tr>
<td>15:45-15:50</td>
<td>LM LMP PLSS O₂ ON</td>
</tr>
<tr>
<td>15:50-15:55</td>
<td>LM LMP CABIN DEPRESS</td>
</tr>
<tr>
<td>15:55-16:00</td>
<td>LM LMP CONFIRM &quot;GO&quot; FOR EVA</td>
</tr>
<tr>
<td>16:00-16:05</td>
<td>LM LMP DEPRESS CABIN TO 3.5 PSIA</td>
</tr>
</tbody>
</table>

**Mission Information**

<table>
<thead>
<tr>
<th>MISSION</th>
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<td>Apollo 12</td>
<td>Final (Nov 14)</td>
<td>October 15, 1969</td>
<td>132:00 - 133:00</td>
<td>6/25</td>
<td>3-108</td>
</tr>
</tbody>
</table>

**Form Information**

MSC Form 1674 (OT) (June 69)

Flight Planning Branch

Revision A
THIS PAGE INTENTIONALLY LEFT BLANK
END ORBRATE, ROLL 180 DEG FOR COMM (180,338/232,0) IATTH

132:59:56
BEGIN REV 26
(121,NA/278,0)
IATTH

LEGEND:
☐ ■ MSFN AOS, LOS
○ ● S/C SUNRISE, SUNSET
⊕ SUBEARTH POINT
(R,LHP/INP,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

REVISION B
22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING

CSM LANDMARK TRACKING PROFILE

T1  GET AT 0° ELEVATION
T2  GET AT 35° ELEVATION

P22  AUTO ACQ P dn 22° R0° Y0° (60)
T1  LANSBERG A
T2  
R  op oy 
N or S NM SA TA CP N89
LAT + 0.150°
LONG/2 - 15.575°
ALT - 0.54 NM

ΔT1 = 300 SEC
ΔT2 = 40 SEC
ΔT3 = 25 SEC
ΔT4 = 25 SEC
ΔT5 = 25 SEC
ΔT6 = 25 SEC
ΔT7 = 340 SEC
AOS TO LOS - 146 SEC
AOS TO FINAL MARK - 140 SEC

CENTER OF MOON
RADIUS OF MOON

FIGURE 3-3
3-110
BLUE, GREEN, BLACK - (f5.6) _____, RED (f4.0) _____

T₁  START BLUE, GREEN & RED CAMERAS @ 135:19:00 (____:____:____)
START BLACK CAMERA @ T₁ + 5 MIN

T₂  STOP ALL CAMERAS @ 135:30:00 (____:____:____)

T₃  START BLUE, GREEN & RED CAMERAS @ 135:40:00 (____:____:____)
START BLACK CAMERA @ T₃ + 7 MIN

T₄  STOP ALL 4 CAMERAS @ 136:02:00 (____:____:____)
BLUE, GREEN, BLACK (f8.0) _____, RED (f5.6) _____

T1 START ALL CAMERAS @ 137:27:00 (__ __:__ __:__ __)
T2 STOP ALL CAMERAS @ 137:40:00 (__ __:__ __:__ __)

SELECTED TARGETS

NORTH WALL OF THEOPHILUS
R____, P____, Y_____  
BLUE, GREEN, BLACK (f5.6) _____, RED(f4.0) _____
T1 START ALL CAMERAS @ 137:47:00 (__ __:__ __:__ __)
T2 STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

DESCARTES
R____, P____, Y_____  
NO CHANGE IN f STOPS
T1 START ALL CAMERAS @ 137:51:00 (__ __:__ __:__ __)
T2 STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)

FRA MAURO
R____, P____, Y_____  
ALL CAMERAS (f2.8) _____
T1 START ALL CAMERAS @ 138:01:00 (__ __:__ __:__ __)
T2 STOP ALL CAMERAS AFTER 2 PHOTOS (20 SEC)
FLIGHT PLAN

CSM

CMP
VERIFY ORB RATE
R.O. P 213/N/A, Y 0
OMNI D

LM

CDR
STOW OPS ON ENGINE COVER
STOW BOTH PLSS ON FLOOR
VERIFY CB CONFIGURATION
RR OPR HTR - ON
DOFF LUNAR BOOTS

LMP
PREP FOR EQUIPMENT JETTISON
UNSTOW 70MM CAM FROM ETB
PHOTO LUNAR SURFACE
CONFIGURE 16MM SEQ CAMERA
STOW EQUIPMENT IN LHSCC
PLSS FEEDWATER COLLECTION (BOTH)
REPORT PLSS FEEDWATER QUANTITIES
POSITION LHSCC, JETT BAG, AND PLSS'S FOR JETTISON
DON EV GLOVES

MCC-H

UPDATE TO CSM
MAP UPDATE REV 29

BATTERY CHARGE, BATTERY B

START ALL CAMERAS
S-158 PHOTOGRAPHY

STOP ALL CAMERAS
STOP ORB RATE, V49-MNVR BY 137:45
R 90, P 228, Y 334
S-158 THEOPHILUS
V49-MNVR BY 137:50
R 90, P 217, Y 329
S-158 DESCARTES
V49-MNVR BY 138:00
R 86, P 181, Y 307

<table>
<thead>
<tr>
<th>MISSION</th>
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<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>137:00 - 138:00</td>
<td>6/28</td>
<td>3-116</td>
</tr>
</tbody>
</table>

MSC Form 167-4 (CT) (June 69)

FLIGHT PLANNING BRANCH

REVISION A
**CSM**

**CMP**

- S-158 FRA MAURO
- MNVR TO P52 ATT BY 138:06
- R180, P310, Y 0
- HGA P-74, Y 337
- GO INERTIAL RR TRANSPONDER ACTIVATION AND SELF TEST

**LM**

- 0422 CST
- 138:00
- CDR
- CABIN DEPRESS
- DUMP VALVES - AUTO, DEPRESS CABIN
- VERIFY MASTER ALARM & WARNING LIGHTS ON DOFF GLOVES, HELMETS, & VISORS
- POST EVA CLEAN UP
- SECURE OPS'S ON FLOOR
- STOW EQUIPMENT
- STOW SRC #2
- STOW SURVEYOR BAG
- STOW ALL EVA ON BOARD DATA IN FLT DATA FILE

- 138:30
- MSFN
- CREW STATUS REPORT (MEDICATION, DOSIMETER)

- 139:00
- EAT PERIOD
- EAT PERIOD

**MCC-H**

- DUMP DSE
- P52 (LIFT OFF-ORIENT)
- N71: __ __ __
- N05: __ __ __ __
- N93: __ __ __ __
- X __ __ __ __
- Y __ __ __ __
- Z __ __ __ __
- GET __ __ __ __

*UPDATE TO LM LIFTOFF TIME FOR REV 29 & 30 P22 ACQ TIME 28° EL LM CONSUMABLE PAD*

---

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 138:00 - 139:00 | 6/28-29 | 3-117

**MSC Form 1674 (OT)(June 69)**

**FLIGHT PLANNING BRANCH**

**REVISION A**
138:54:46
BEGIN REV 29
(180,NA/310,0)
IATTH

BEGIN IMU REALIGN
(180,NA/312,0)
IATTH

END ORBRATE,
MNVR TO IMU REALIGN ATT
(180,NA/312,0)
IATTH

ROLL 180 DEG TO LDMK
TRKNG ATT
(0,338/NA,0)
LATTH

LEGEND:

- MSFN AOS, LOS
- S/C SUNRISE, SUNSET
- SUBEARTH POINT
(R,LHP/INP,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

3-117A

REVISION B
CSM LANDMARK TRACKING PROFILE

22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING

AOS

MARK NO. 1

MARK NO. 2

MARK NO. 3

MARK NO. 4

MARK NO. 5

T1 GET AT 0° ELEVATION

T2 GET AT 35° ELEVATION

ΔT1 = 300 SEC
ΔT2 = 40 SEC
ΔT3 = 25 SEC
ΔT4 = 25 SEC
ΔT5 = 25 SEC
ΔT6 = 25 SEC
ΔT7 = 340 SEC

AOS TO LOS - 146 SEC
AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

RADIUS OF MOON

FIGURE 3-3

3-118a

P22
ACQ
P
dn
22°
RO°
YO°

T1
T2
R
N or S
NM
SA
TA

CP
NB9

LAT

LONG/2

ALT

-3.437
-11.615
-1.37
22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING

CSM LANDMARK TRACKING PROFILE

HORIZON

T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

RISING

P22 45° ACQ P on 22° RO° YO°
T1
T2
R
N or S NW ___ SA ___ TA ___
CP N89
LAT ___
LONG/2 ___
ALT ___

NOTE: Coordinates of LM to be updated
Real time

CENTER OF MOON
FIGURE 3-3
3-120

AOS TO LOS - 146 SEC
AOS TO FINAL MARK -
140 SEC

- RADIUS OF MOON

- MARK NO. 1
- MARK NO. 2
- MARK NO. 3
- MARK NO. 4
- MARK NO. 5

- 22°
- 35°
- 51°
FLIGHT PLAN

CSM

CMP

SET UP CAMERAS FOR DOCKING
CM2/DAC/18/CEX-BRKT, MIR(f8,250,7)
6 FPS, 1 MAG, 16 MIN
CM2/EL/80/CEX
(f8,250,FOCUS), 10
CM4/TV-IN BRKT (f22)
REACQUIRE MSFN
HGA: P -73, Y 338

V49-MNVR TO LM TRACK
ATT BY 141:21
R 0 P 312 Y 0
OMNI D

P22-ORBITAL NAVIGATION
GO ORB RATE @ 141:39
R 0 P 338/NA Y 0

LM

CDR

0722 CST
141:00

0722 CST
141:08

0722 CST
141:14

0722 CST
141:15

P57-LUNAR SURFACE ALIGN
OPTION 4-LANDING SITE
A/T-3-GRAVITY & ONE
CELESTIAL BODY
(LIFTOFF ORIENTATION)

DON HELMET & GLOVES
LOAD DAP M46-12002
PI2-POWERED ASCENT
GO/NO-GO FOR LIFTOFF
PRELAUNCH SWITCH CHECKS
VENT DPS & SHe

LM S.V. (INS + 18)
LM S.V. (INS + 18)

UPLINK TO CSM (IF REQ)
CSM S.V. (INS + 18)
RLS
GO/NO-GO FOR LIFTOFF
FOR REV 30

L/O - 6 MINUTES:
DISABLE MSFN RELAY

MCC-1

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

UPDATE TO CSM
LM TRACKING PAD
MAP UPDATE REV 31
UPLINK TO CSM (IF REQ)
LM S.V. (INS + 18)
CSM S.V. (INS + 18)

UPLINK TO LM (IF REQ)
CSM S.V. (INS + 18)
RLS
GO/NO-GO FOR LIFTOFF
FOR REV 30

VERIFY CB STATUS
CHECK APS BURN CARD
CHECK APS,RCS,EPS,ECs

SEQ CAMERA - ON

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 141:00 - 142:00 6/30 3-121

FLIGHT PLANNING BRANCH REVISION A
144:36:50
TPI BURN IGN
CSM(0,NA/4,0)
IATTH
LM(0,NA/273,0)
LOSM TO CSM

145:17:39
FIRST LM BRAKING
BURN
CSM(60,NA/9,0)
LOSM TO LM
LM(0,NA/238,0)
LOSM TO CSM

145:21:51
FINAL LM BRAKING
BURN
CSM(0,NA/334,0)
LOSM TO LM ALONG
X-AXIS
LM(0,NA/244,0)
LOSM TO CSM

CSM AND LM BEGIN
VHF RNG AND RR TRKNG,
RESPECTIVELY
CSM(0,NA/129,0)
LOSM TO LM
LM(0,NA/4,0)
LOSM TO CSM

CSM AND LM END
VHF RNG AND RR TRKNG,
RESPECTIVELY
CSM(0,NA/161,0)
IATTH
LM(0,NA/36,0)
IATTH

145:40:00
CSM/LM DKNG
CSM(180,NA/336,0)
IATTH
LM(180,NA/336,300)
IATTH

LEGEND:

■ ■ MSFN ACS, LOS
○ ○ S/C SUNRISE, SUNSET
 subsidieth point
(R,LHP/INP,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

3-124A

REVISION B
**CSM**

**CMP**
- Transfer bags, vacuum brush, and hose to LM
- LiOH cannister change
  - NO 11 - 13 into A,
  - STOW 11 IN A3
- Stow LM equipment
- Verify DSE motion @ LOS

**CDR**
- Configure suit loop for vacuuming
- Unstow SRC's, vacuum & bag, and pass to CSM
- Vacuum, bag, & transfer to the CSM:
  - CSRC
  - CSC Cassette
  - 70mm mags(2)
  - Gloves (4)
  - Helmets(2)
  - Lunar boots
  - Surveyor tools and hardware
- Vacuum PGA's
- Stow vacuum brush and hose
- Receive B5 & B6 from CMP and stow
- LM jettison attitude
- R 63 P 240 Y 290
- Steerable angles
  - P 201 Y 73

**LM**

**LMP**

**MCC-H**
- Update to CSM
- Map Update REV33
- Sep burn pad
- LM Jett att
- LM Jett time
- Uplink to CSM
- CSM S.V. (TIG-10)*
- LM S.V. (TIG-10)*
- Uplink to LM
- LM S.V. (TIG-10)*
- P30 target load
- Update to LM
- Deorbit burn pad
- *TIG of LM
- Deorbit burn

---

**Mission** | **Edition** | **Date**      | **Time**          | **Day/Rev** | **Page**
---          |            |              |                  |             |      
APOLLO 12   | FINAL (NOV 14) | OCTOBER 15, 1969 | 146:00 - 147:00 | 6/32-33    | 3-126  

**Flight Planning Branch**
**FLIGHT PLAN**

CSM SEP ATTITUDE
R180 P90/NA Y0
HGA P-36 Y352

SET ORDEAL

P2O-RENDEZVOUS NAVIGATION
AUTO MvVR TO LM TRACK ATT
SET UP CAMERA FOR LM IMPACT
CM/DAC/SXT/CEX
(FIXED, 250, FIXED) 1 FPS, 0.5MAg, 46 MIN
TRACK LM AND PHOTOGRAPH THROUGH SEXTANT
VERIFY DSE MOTION @ LOS

VACUUM, DOFF, BAG, AND STOW PGA'S

---

**PRESLEEP CHECKLIST**

- E-MEMORY DUMP
- CREW STATUS REPORT (medication)
- ONBOARD READOUTS to MSFN
- CYCLE H2, O2 FANS
- CHLORINATE WATER
- VERIFY
- WASTE MGT OVBD DRAIN v1v - OFF
- WASTE STOW VENT v1v - CLOSED
- EMER CABIN PRESS v1v - BOTH
- SURGE TK O2 v1v - ON
- REPRESS O2 v1v - OFF
- LM TUNNEL VENT v1v - OFF
- NORMAL LUNAR COMM EXCEPT
- S BD SQUELCH - ENABLE
- HI GAIN ANTENNA TRACK - REACQ
- HI GAIN ANTENNA BEAM - NARROW
- S BD ANT - HI GAIN
**FLIGHT PLAN**

- **1522 CST**
  - 149:00
  - 149:02
  - 149:08
  - 149:15
  - 149:30
  - 149:45
  - 150:00

**NOTES**

- LM IS TARGETED FOR APS IMPULSE BURN. THRUST IS RCS ULLAGE ONLY.
- TEI 39 PAD ASSUMES NO PLANE CHANGE 2

**ONBOARD READOUT**

| BAT C   | ___________ |
| PYRO BAT A | ___________ |
| PYRO BAT B | ___________ |
| RCS A | ___________ |
| B | ___________ |
| C | ___________ |
| D | ___________ |

| LM LUNAR IMPACT |
| GET: 149:52:50.5 |
| LAT: 3°17'S |
| LONG: 23°23'W |

**MISSION**

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>149:00 - 150:00</td>
<td>6/34</td>
<td>3-129</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

REST PERIOD
(7.5 HOURS)

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 154:00 - 156:00 | 6/36-37 | 3-132
FLIGHT PLAN

POSTSLEEP CHECKLIST

CREW STATUS REPORT
CONSUMABLES UPDATE
FLIGHT PLAN UPDATE
CYCLE H2, O2 FANS
POT H2O MTR ON
NORMAL LUNAR COMM EXCEPT:
S BD ANT - HI GAIN
CREW MANAGES ANT OPS

VERIFIED DRE MOTION AT LOS
P52 IMU REALIGN
OPTION 1 PREFERRED

P30 - EXTERNAL zV

V49 - MNVR TO BURN
ATT BY 158:35 R O HGA
P 0 P -10
Y 0 Y 274

SXT STAR CHECK
P 40 - SPRS THRUST
SETUP DAC IN LH RNDZ WINDOW
(ABOLIQUE PHOTOGRAPHY)
CM2/DAC/18/BW-BRKT, & MIR,
(F8,125,°), 6FPS (0.5 MAG, 8 MIN)
SETUP EL CAMERA IN RH RNDZ WINDOW
(HI RESOLUTION PHOTOGRAPHY)
CM4/EL/500/BW-BRKT, CONT,
(F8,125,°), 20-40
GDC TO IMU ALIGN

NOTES

MAP UPDATE REV 39
LOS : __________
180° : __________
AOS : __________

TEI 41 ASSUMES
PLANE CHANGE 2

P52 (PLANE CHANGE ORIENT)
N71: __________
N05: __________
N93: __________
X __________
Y __________
Z __________
GET __________

CSM CONSUMABLES UPDATE
GET: __________
RCS TOTAL __________%
QUAD A __________%
B __________%
C __________%
H2 TOTAL __________%
O2 TOTAL __________%

CREW STATUS REPORT
CDR CMP LMP
SLEEP __________
PRD __________

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|--------|-----|------|--------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 158:00 - 159:00 | 7/38-39 | 3-134
MNR TO PC2
BURN ATT
(0,NA/0,0)
IATTH

156:38:58
BEGIN REV 38
(123,NA/278,0)
IATTH

AFTER IMU REALIGN
(57,NA/326,24)
IATTH
LOPC #2 ORIENT

END REST ATT,
MNR FOR IMU
REALIGN
(180,NA/278,45)
IATTH

LEGEND:
□ MSFN AOS, LOS
● S/C SUNRISE, SUNSET
⊕ SUBEARTH POINT
(R,LHP/INP,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD
## CSM Plane Change #2

**Burn Table**

<table>
<thead>
<tr>
<th>P or Y Rates</th>
<th>Att Deviation</th>
<th>Shutdown Time</th>
<th>Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/Sec Takeover</td>
<td>+10° Takeover</td>
<td>BT + 1 Sec</td>
<td>No Trim</td>
</tr>
</tbody>
</table>

---

**Table 3-10**

3-136
REV 39

BEGIN IMU REALIGN (180, NA/263,0) IATTH

158:37:11
BEGIN REV 39
(0, NA/0,0) IATTH

159:01:46
PC2 BURN IGN
(0, NA/0,0) IATTH

MNVR FOR IMU REALIGN
(0, NA/273,0) IATTH

AFTER IMU REALIGN
(89, NA/307,0) IATTH
PHOTOGRAPHY ORIENT

MNVR FOR IMU REALIGN
(180, NA/263,0) IATTH

END HR PHOTO
(0, NA/140,0) IATTH

BEGIN HR PHOTO
OF LALANDE
(0, NA/257,0) LOSM TO LDMK

MNVR TO HR PHOTO ATT
(0, NA/257,0) IATTH

LEGEND:

- □ HSF/H AOS, LOS
- ○ ● S/C SUNRISE, SUNSET
- ⊕ SUBEARTH POINT
(R, LHP/INP, Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

3-136A

REVISION B
**FLIGHT PLAN**

CSM PLANE CHANGE #2

MNVR TO P52 ATT BY 159:07

P52 IMU REALIGN

OPTION 1 PREFERRED

GYRO TORQUE

BURN STATUS REPORT

REPORT GYRO TORQUING ANGLES (PS2 & 158:15)

V66 TRANSFER CSM TO LM SLOT

SET COAS FOR (+) 10 DEG LOS

LIOH CANISTER CHANGE NO 12

14 INTO B, STOW 12 IN A3

START EAT PERIOD

MNVR TO ATT FOR LALANDE PHOTOGRAPHY

BY 159:26 (FOR T1) R 0 OMNI D

P257 Y 0

MNVR TO P52 ATT BY 159:51

R180 HGA

P263 P - 56

Y 0 Y 186

T1 IS 3 MINUTES PRIOR TO TCA

T2 IS 1 MINUTE AFTER TCA

EL CAM TO BE MANUALLY ACTUATED AT APPROX. 20 SECOND INTERVALS

**NOTES**

HI RESOLUTION PHOTO

LALANDE

T1 ------- ------- ------- -------

T2 ------- ------- ------- -------

R ------- P ------- Y -------

BURN STATUS REPORT

\( \Delta T \)

\( \Delta V_x \)

\( \Delta V_y \)

\( \Delta V_z \)

\( V_x \)

\( V_y \)

\( V_z \)

FUEL

OX

UNBAL

---

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
APOLLO 12 | FINAL (REV 14) | OCTOBER 15, 1969 | 159:00 - 160:00 | 7/39 | 3-137

---

MSC Form 29 (May 69)
FLIGHT PLAN

UPDATE TO CSM
STEREO PHOTO TIME
MAP UPDATE REV 40

160:00
0222 CST

SETUP EL CAMERA FOR STEREOSCOPIC STRIP
PHOTOGRAPHY (RH RNDZ WINDOW)
CM4/EL/80/BW-BRKT, INTR,(f4,250,=),180
VERIFY DSE AT LOS

SET UP DAC FOR SXT/DAC PHOTOGRAPHY
CM/DAC/SXT/CX,(FIXED,60,FIXED),1FPS(1MAG=93MIN)

P52 IMU REALIGN
OPTION 3 REFSMAT

GDC ALIGN TO IMU

ZERO OPTICS & MANUALLY SET SA=0°, TR=45°

V83E ALIGN FDAI #1
ORDEAL R O, P270/ NA, Y O
V79E R1 = -0.0507
R2 = +000.50
R3 = +11111
SELECT OMNI D
V60N65 AT GROUND TERMINATOR
BEGIN PHOTOGRAPHY AT GROUND TERMINATOR (+) MIN(T1)
RECORD START TIME GET
V16N91 AT GROUND TERMINATOR (+) 2 MINUTES
FLIGHT PLAN

REPORT GYRO TORQUING ANGLES

VERIFY DSE MOTION AT LOS

SETUP DAC IN LH RNDZ WINDOW (OBLIQUE PHOTOGRAPHY)
CM2/DAC/18/BW-BRKT,MIR,(f8, 125,\(\infty\)),6FPS
(1.5 MAG-24 MIN.)

SETUP COAS (LH RNDZ WINDOW) FOR (\(+\)) 10 DEGREES

SETUP EL CAMERA IN RH RNDZ WINDOW
(HIGH RESOLUTION PHOTOGRAPHY)
CM4/EL/500/BW-BRKT,CONT,(f8,125,\(\infty\)),150-120

REACQUIRE MSFN
HGA P -64, Y 173

MINISSION | EDITION | DATE         | TIME         | DAY/REV | PAGE
-----------|----------|--------------|--------------|---------|--------
APOLLO 12  | FINAL (NOV 14) | OCTOBER 15, 1969 | 162:00 - 163:00 | 7/40-41 | 3-141

NOTES

HI RESOLUTION PHOTO
DESCARTES
T1___:___
T2___:___
R___, P___, Y___

HI RESOLUTION PHOTO
FRA MAURO
T1___:___
T2___:___
R___, P___, Y___

T1 IS 3 MINUTES BEFORE TCA
T2 IS 1 MINUTE AFTER TCA
HIGH RESOLUTION PHOTOGRAPHY
REV 41

FIGURE 3-4
3-142
THIS PAGE INTENTIONALLY LEFT BLANK
FLIGHT PLAN

Mvr-to att for Descartes photography by 163:16

Omni D
P 283
Y 0

Track Descartes thru COAS and start camera at T1, stop cameras at T2
Mvr to attitude for Fra Mauro photo by 163:33

R 0, P 250, Y 0

Track Fra Mauro thru COAS and start camera at T1, stop camera at T2

V64 acquire MSFN @ pitch = 135°
Mvr to P52 att by 163:45

R 0
P 56
Y 0

Notes
Map update rev 42
Los
180°
Aos
22 DEG PITCH DOWN FROM LOCAL HORIZONTAL ORBITAL RATE THROUGHOUT TRACKING

22°
MARK NO. 1
AOS
35°
ΔT1
ΔT2
51°
MARK NO. 5
MARK NO. 4
MARK NO. 3
MARK NO. 2
ΔT3
ΔT4
ΔT5
ΔT6
ΔT7

HORIZON
HORIZON

T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

ΔT1 = 300 SEC
ΔT2 = 40 SEC
ΔT3 = 25 SEC
ΔT4 = 25 SEC
ΔT5 = 25 SEC
ΔT6 = 25 SEC
ΔT7 = 340 SEC

AOS TO LOS - 146 SEC
AOS TO FINAL MARK - 140 SEC

CENTER OF MOON
RADIUS OF MOON

FIGURE 3-3
3-144
FLIGHT PLAN

P52 IMU REALIGN
OPTION 3 REFSIMMAT
VERIFY DSE MOTION AT LOS

GDC ALIGN TO IMU
02 FUEL CELL PURGE
WASTE WATER DUMP
SET UP DAC FOR LDMK TRACKING PHOTOS THRU SXT CM/DAC/SXT/CXE,(SEE LDMK TRACK PAD) 1 FPS(1MAG-88MIN)

SELECT OMNI D
MNVR TO LDMK TRACK ATT BY 164:46
GO ORB RATE-
START DAC @ T2 (-) 1:41

TRACK LDMK CP-1
DO NOT PRO ON FINAL
N39
25 SECONDS BETWEEN MARKS
5 MARKS

LDMK IS AT ~14.5°
SUN ANGLE
STOP DAC AFTER MARK 5

P52 (PHOTOGRAPHY ORIENT)
N71:
N05:
N93:
X
Y
Z
GET

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 164:00 - 165:00 | 7/41-42 | 3-146
FLIGHT PLAN

TRACK LDMK CP-2
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN
CP-2 LDMK IS
AT ~66° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK DE-1
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN
DESCARTES LDMK IS
AT ~71.5° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK FM-1
DO NOT PRO ON FINAL
N89,
25 SEC BETWEEN MARKS
5 MARKS

START DAC @ T2(-)1 MIN
FRA MAURO LDMK
IS AT ~39.5 SUN ANGLE
STOP DAC AFTER MARK 5

STOP PITCH
MNVR TO P52 ATT BY 165:42
R 180 HGA
P 238 P -27
Y 0 Y 183

MAP UPDATE REV 43
LOS : __ __ __ __ __ __ __ __
180° : __ __ __ __ __ __ __ __
AOS : __ __ __ __ __ __ __ __

Mission: Apollo 12
Edition: Final (Nov 14)
Date: October 15, 1969
Time: 165:00 - 166:00
Day/Rev: 7/42
Page: 3-147
22 DEG PITCH DOWN FROM
LOCAL HORIZONTAL ORBITAL
RATE THROUGHOUT TRACKING

CSM LANDMARK TRACKING PROFILE

AOS NO. 1  MARK NO. 2  MARK NO. 3  MARK NO. 4  MARK NO. 5

T1 GET AT 0° ELEVATION
T2 GET AT 35° ELEVATION

ΔT1 = 300 SEC
ΔT2 = 40 SEC
ΔT3 = 25 SEC
ΔT4 = 25 SEC
ΔT5 = 25 SEC
ΔT6 = 25 SEC
ΔT7 = 340 SEC

AOS TO LOS - 146 SEC
AOS TO FINAL MARK - 140 SEC

CENTER OF MOON

FIGURE 3-3
3-148
FLIGHT PLAN

VERIFY DSE MOTION AT LOS

P52 IMU REALIGN OPTION 3 REFMMAT

GDC ALIGN TO IMU

SEXT UP DAC FOR LDMK TRACKING PHOTO'S THRU SXT CM/DAC/SXT/CEX (SEE LDMK TRACK PAD) TFPS

MNVR TO LDMK TRACK ATT BY 166:45
GO ORB RATE
TRACK LDMK CP-1
DO NOT PRO ON FINAL
N89, 25 SEC BETWEEN MARKS
5 MARKS
START DAC @ T2 (-) 1 MIN
CP1 LDMK IS
AT ~ 15.5° SUN ANGLE
STOP DAC AFTER MARK 5

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 166:00 - 167:00 | 7/42-43 | 3-150
FLIGHT PLAN

REPORT GYRO TORQUING ANGLES

TRACK LDMK CP-2
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS 5 MARKS

START DAC @ T2(-)1 MIN
CP 2 LDMK IS AT ~67° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK DE-1
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS 5 MARKS

START DAC @ T2(-)1 MIN
DESCARTES LDMK AT ~72.5° SUN ANGLE
STOP DAC AFTER MARK 5

TRACK LDMK FM-1
DO NOT PRO ON FINAL N89
25 SEC BETWEEN MARKS 5 MARKS

START DAC @ T2(-)1 MIN
FR. MAURO LDMK AT ~40.5° SUN ANGLE
STOP DAC AFTER MARK 5

STOP PITCH AND MNVR TO ACQUIRE MSFN BY 167:40
R 180
P 239
Y 0
HGA:
P -29
Y 184

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 167:00 - 168:00 | 7/43 | 3-151

FLIGHT PLANNING BRANCH
168:27:49
BEGIN REV 44
(180,NA/239,0)
IATTH

MNVR TO STRIP PHOTO ATT
(0,258/NA,0)
LATTH

AFTER IMU REALIGN
(183,NA/145,4)
IATTH
TEI ORIENT

END STRIP PHOTO,
MNVR FOR IMU
REALIGN
(180,UA/268,0)
IATTH

LEGEND:

□ ■ HSFN AOS, LOS
○ ● S/C SUNRISE, SUNSET
⊕ SUBEARTH POINT
(R,LHP/INP,Y)
IATTH - INERTIAL ATTITUDE HOLD
LATTH - LOCAL ATTITUDE HOLD

3-151A

REV 44
FLIGHT PLAN

VERIFY DSE MOTION AT LOS

SETUP EL CAMERA FOR STEREO STRIP PHOTOGRAPHY (RH RNDZ WINDOW)
CM4/EL/80/BW-BRKT, INTR(f4, 250, =), 180

MNVR TO PHOTOGRAPHIC ATTITUDE BY 168:36
R 0
P 258/NA
Y 0

V83E
ALIGN FDAI #1
ESTABLISH ORB RATE
V79E R1 = -0.0507
R2 = +000.50
R3 = +11111
SELECT OMNI D

V06N65 AT GROUND TERMINATOR
BEGIN PHOTOGRAPHY AT GROUND TERMINATOR (+) 1 MIN T1
RECORD START TIME __________:________:_______ GET

NOTES
STEREO PHOTO
T1: __________ GET
T2: __________ GET

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
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APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 168:00 - 169:00 | 7/43-44 | 3-153
FLIGHT PLAN

UPDATE TO CSM
MAP UPDATE REV 45
TEI 45 PAD
(PRELIMINARY)

1122 CST
169:00

169:30

169:30

170:00

MCC-H

NOTES

MAP UPDATE REV 45
LOS : ___________
180° : ___________
AOS : ___________

STEREO STRIP PHOTOGRAPHY

15:

N65 AT GROUND TERMINATOR (-)90 SEC
END STEREO STRIP PHOTOGRAPHY AT GROUND TERMINATOR
(-)1 MINUTE-T2
RECORD STOP TIME __________:__________ GET
STOP PITCH
MNR TO P52 AT BY 169:47
R 180 HGA
P 268 P -55
Y 0 Y 186

DUMP DSE

:45

:46

CSM

UPLINK TO

TEI DESIRED
ORIENT

:52

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 169:00 - 170:00 | 7/44 | 3-154

MSC Form 29 (May 80)

FLIGHT PLANNING BRANCH

NASA — MSC
FLIGHT PLAN

170:00
VERIFY DSE MOTION AT LOS
PS2 IMU REALIGN
OPTION 1 PREFERRED

170:15
GDC ALIGN TO IMU

170:30

170:45
REACQUIRE MSFN
HGA: P -55 Y 186
REPORT GYRO TORQUING ANGLES

171:00

NOTES

P52 (TEI ORIENT)
N71: __ __ __
N05: __ __ __ __
N93:
  X __ __ __
  Y __ __ __
  Z __ __ __
GET __ __ __ __ __
FLIGHT PLAN

UPDATE TO CSM
MAP UPDATE REV 46
TEI 45 MNVR PAD
(NOMINAL)
TEI 46 MNVR PAD

UPLINK TO CSM
STATE VECTOR & V66
TEI 45 TARGET LOAD

1322 CST
171:00

PRE TEI SYSTEMS CHECKS
C & W CHECK
CM RCS MONITOR CHECK
SM RCS MONITOR CHECK
ECS MONITOR CHECK

P30-EXTERNAL ΔV

V49-MNVR TO BURN ATT BY 171:51

R 180
P 0
Y 0

SXT STAR CHECK
P40-SPS THRUST
VERIFY DSE MOTION AT LOS

NOTES

MAP UPDATE REV 46

LOSS
180°
AOS WITH TEI
AOS WITHOUT TEI

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 171:00 - 172:00 | 7/45 | 3-156

MSC Form 29 (May 69)
FLIGHT PLANNING BRANCH
NASA — MSC
## FLIGHT PLAN

**TEI BURN TABLE**

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>FOR G&amp;N C/O &gt;3 SEC EARLY &amp; ΔVC &gt;=+50 FPS SWITCH TO SCS AUTO &amp; RESTART SPS</td>
<td>BT + 2 SEC &amp; ΔVC = -40 FPS</td>
</tr>
</tbody>
</table>

TABLE 3-11
3-157

REVISION B
FLIGHT PLAN

GDC ALIGN TO IMU

BT: 02:08.9 SEC
$\Delta V_R$: 3035.9 FPS
ULLAGE: 4 JETS, 12 SEC

V66 TRANSFER CSM SV TO LM SLOT

MNVR TO TV ATT BY 172:46
TV (MAD) 172:55 TO 173:15
CM4/TV-IN (f22)
(RH RNDZ WINDOW, HEADS DOWN)
TEI BURN STATUS REPORT
LIOH CANISTER CHANGE NO. 13
(15 INTO A, STOW 13 IN A4)

** ITEMS TO BE REPORTED TO MSFN
** REPORT IF OFF MORE THAN ONE SECOND
*** REPORT IF $>0.2$ FPS

MISSON | EDITION | DATE       | TIME     | DAY/REV | PAGE
-------|---------|------------|----------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 172:00 - 173:00 | 7/45-TEC | 3-158
FLIGHT PLAN

WIPE EXCESSIVE MOISTURE FROM TUNNEL HATCH AREA CONTAMINATION CONTROL

DUMP DSE

UPDATE TO CSM QUADS TO DISABLE FOR PTC (LOWEST QUANTITY PRPLNT)

173:00

:15

173:30

:45

174:00

EAT PERIOD

P52 - IMU REALIGN GYRO TORQUE

REPORT GYRO TORQUING ANGLES

MNVR TO PTC ATTITUDE P270 Y 0

START PTC

P 270 Y 0

NOTES

P52 (PTC ORIENT)
N71: __ __ __
N05: __ __ __ __
N93:
X __ __ __ __
Y __ __ __ __
Z __ __ __ __
GET __ __ __ __

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 173:00 - 174:00 7/TEC 3-159
FLIGHT PLAN

REST PERIOD (10 HOURS)

MCC-H

1822 CST

176:00

177:00

178:00

3:30

PTC

P 270 Y 0

MISSION  EDITION  DATE  TIME  DAY/REV  PAGE
APOLLO 12  FINAL (NOV 14)  OCTOBER 15, 1969  176:00 - 178:00  7/TEC  3-161
<table>
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<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>178:00 - 180:00</td>
<td>7/TEC</td>
<td>3-162</td>
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<td>EDITION</td>
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<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>180:00 - 182:00</td>
<td>7/TEC</td>
<td>3-163</td>
</tr>
</tbody>
</table>

**FLIGHT PLAN**

**MCC-H**

2222 CST

- 180:00
- 181:00
- 182:00

**NOTES**

REST PERIOD (10 HOURS)

PTC

P 270, Y 0

**FLIGHT PLANNING BRANCH**
0022 CST

FLIGHT PLAN

REST PERIOD
(10 HOURS)

PTC
P 270, Y 0

MISSION | EDITION   | DATE            | TIME       | DAY/REV | PAGE
-------- |----------- |-----------------|------------|---------|--------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 182:00 - 184:00 | 7/TEC | 3-164

MCC-H

NOTES
FLIGHT PLAN

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & O2 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
OMNI OPS
S-BD ANT - OMNI
S-BD ANT OMNI - B
HGA OPS
S-BD ANT-HI GAIN
CREW MANAGES ANT
OPS

WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA

LiOH CANISTER CHANGE NO. 14
(16 INTO B, STOW 14 IN A4)

(CONTINUE PTC IF MCC-5 IS NOT PERFORMED)
P52 - IMU REALIGN
OPTION 3 - REFMMAT
REPORT GYRO TORQUING ANGLES

NOTES

CREW STATUS REPORT
CDR CMP LMP
SLEEP _____ _____ _____
PRD _____ _____ _____

CSM CONSUMABLES UPDATE
GET: ___ ___ ___
RCS TOTAL ________ %
QUAD A ___%B ___%
C ___%D ___%
H2 TOTAL ________%
O2 TOTAL ________%

P52 (PTC ORIENT)
N71: ___ ___ ___
N05: ___ ___ ___
N93:
X ___ ___ ___
Y ___ ___ ___
Z ___ ___ ___
GET ___ ___ ___

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 184:00 - 186:00 8/TEC 3-165

FLIGHT PLANNING BRANCH
Flight would not like this.
# Flight Plan

**MCC-5**

**Burn Table**

<table>
<thead>
<tr>
<th>Pushover Rates</th>
<th>ATT Deviation</th>
<th>Shutdown Time</th>
<th>Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 deg/sec Takeover</td>
<td>+10 deg Takeover</td>
<td>BI + 1 sec</td>
<td>TRIM X AXIS ONLY TO 0.2 FPS</td>
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</tbody>
</table>

Table 3.12

3-103
**FLIGHT PLAN**

BATTERY CHARGE, BATTERY B

0422 CST

186:00

186:30

187:00

MCC-5

H₂ PURGE LINE HTRs - ON
P30 - EXTERNAL ΔV
V49 - MNVR TO BURN ATT
SXT STAR CHECK
H₂ & O₂ FUEL CELL PURGE
WASTE WATER DUMP
P40/41 - SPS/RCS THRUST
GDC ALIGN TO IMU

V66 TRANSFER CSM SV TO LM SLOT
MCC-5 BURN STATUS REPORT

188:00

**NOTES**

BURN STATUS REPORT

ΔTIG
BT
Vₓ

TRIM
R
P
Y
Vₓ
Vᵧ
Vₗz
ΔVₓ*
ΔVᵧ*
ΔVₗz*
FUEL*
OX*
UNBAL

* ITEMS TO BE REPORTED TO MSFN

PTC
P 270, Y 0

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>186:00 - 188:00</td>
<td>8/TEC</td>
<td>3-167</td>
</tr>
</tbody>
</table>

**FLIGHT PLANNING BRANCH**

**REVISION A**

**NASA — MSC**
FLIGHT PLAN

STOP PTC AT ROLL 235°

FOV 3°
GET 189:00

PTC P 270, Y 0

MCC-11
0622 CST

<table>
<thead>
<tr>
<th>MISSION</th>
<th>EDITION</th>
<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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<tbody>
<tr>
<td>APOLLO 12</td>
<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>188:00 - 189:00</td>
<td>8/TEC</td>
<td>3-168</td>
</tr>
</tbody>
</table>
FLIGHT PLAN

MNVR TO OPTICS CALIBRATION ATT  R 235
P23 - CISLUNAR NAVIGATION  P 272
OPTICS CALIBRATION  Y 0
STAR 1 2

POO
V49 - MNVR TO SIGHTING ATT  R 90
STAR/EARTH HORIZON  P 332 341
P23 - CISLUNAR NAVIGATION  Y 332 333
LOAD W MATRIX (R1 +4 5 0 0 0)(R2 +0 0 0 0 6)
1. STAR 2 3 2 EFH (R3 = 0 0 1 2 0)
   N88: (R1 = -6 3 5 0 5)(R2 = -0 1 8 8 3)(R3 = -7 7 2 2 4)

2. STAR 1 7 4 ENH (R3 = 0 0 1 1 0)
   N88: (R1 = -5 5 9 9 2)(R2 = -6 2 0 7 3)(R3 = 1 1 3 5 3)

3. STAR 1 7 2 ENH (R3 = 0 0 1 1 0)
   N88: (R1 = -6 4 9 4 7)(R2 = -7 4 3 1 2)(R3 = -7 6 1 1 4)

4. STAR 2 4 EFH (R3 = 0 0 1 2 0)

5. STAR 2 6 EFH (R3 = 0 0 1 2 0)

3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION        EDITION       DATE               TIME       DAY/REV       PAGE
APOLLQ 12      FINAL (NOV 14) OCTOBER 15, 1969 189:00 - 190:00 8/TEC  3-169

MCC-H 0722 CST 189:00

MSC Form 29 (May 89) FLIGHT PLANNING BRANCH
NASA - MSC
FLIGHT PLAN

195:00

MNVR TO OPTICS CALIBRATION ATT R 235
P23 - CILSUNAR NAVIGATION P 272
OPTICS CALIBRATION Y 0

POO
V49 - MNVR TO SIGHTING ATT R 90
STAR/EARTH HORIZON P 329
P23 - CILSUNAR NAVIGATION Y 332

1. VENUS ENH (R3 = 0 0 1 1 0)
N88: (R1 = 7 0 4 9 6)(R2 = -6 5 8 7 4)(R3 = -2 6 2 9 2)
DO NOT PROCEED ON F 06 49

2. STAR 2 6 EFH (R3 = 0 0 1 2 0)

3. STAR 1 6 0 EFH (R3 = 0 0 1 2 0)
N88: (R1 = 4 7 0 3)(R2 = 5 8 7 4)(R3 = 9 2 8 6)

4. STAR 1 7 1 ENH (R3 = 0 0 1 1 0)
N88: (R1 = 5 2 4 7 3)(R2 = 5 0 9 2 0)(R3 = -6 8 2 1 9)

5. STAR 1 6 3 EFH (R3 = 0 0 1 2 0)
N88: (R1 = -8 3 4 6 4)(R2 = -4 9 6 6)(R3 = +3 1 8 0 9)

6. STAR 2 0 4 ENH (R3 = 0 0 1 1 0)
N88: (R1 = 7 0 8 9)(R2 = -9 3 8 6 8)(R3 = -2 7 0 4 2)

MCC-H

1322 CST

NOTES

3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 195:00 - 196:00 | B/TEC | 3-173

FLIGHT PLANNING BRANCH

REVISION B
FLIGHT PLAN

UPDATE TO CSM
QUADS TO DISABLE
FOR PTC (LOWEST
QUANTITY PRPLNT)

MCC-11

1422 CST

196:00

START PTC
WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL
L10H CANISTER CHANGE NO. 15
(17 INTO A, STOW 15 IN A4)

:30

197:00

:30

198:00

EAT PERIOD

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H2 FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OVBD DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMERG CABIN PRESS VLV - BOTH
SURGE TK 02 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VLV - OFF
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF

PTC
P 270, Y 0

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

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 196:00 - 198:00 | 8/TEC | 3-174

HSC Form 20 (Rev 66)
FLIGHT PLANNING BRANCH
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<td>APOLLO 12</td>
<td>FINAL</td>
<td>OCTOBER 15, 1969</td>
<td>202:00 - 204:00</td>
<td>8/TEC</td>
<td>3-177</td>
</tr>
</tbody>
</table>

FLIGHT PLAN

MCC-H

202:00

202:30

203:00

203:30

204:00

REST PERIOD (10 HOURS)

PTC P 270, Y 0

NOTES
## FLIGHT PLAN

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**  
---|---|---|---|---|---  
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 204:00 - 206:00 | 8/TEC | 3-178
FLIGHT PLAN

206:00

REST PERIOD
(10 HOURS)

207:00

208:00

NOTES

PTC
P 270, Y 0

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 206:00 - 208:00 | 8/TEC | 3-179

MCC-N

0022 CST

M.S.F.N.
FLIGHT PLAN

02:22 CST

208:00

UPDATE TO CSM
CONSUMABLES
FLIGHT PLAN

:30

UPLINK TO CSM
STATE VECTOR & V66

209:00

MSFN

:30

EMS ENTRY CHECK

210:00

O2 FUEL CELL PURGE
WASTE WATER DUMP
LIQH CANISTER CHANGE NO 16
(18 INTO B, STOW 16 IN A4)

EAT PERIOD

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & O2 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
OMNI OPS
S-BD ANT - OMNI
S-BD ANT OMNI - B
HGA OPS
S-BD ANT - HI GAIN
CREW MANAGES ANT
OPS

NOTES

CREW STATUS REPORT
CDR CMP LMP
SLEEP _________
PRD _________

PTC P 270, Y 0

CSM CONSUMABLES UPDATE
GET: ___ ___: ___
RCS TOTAL ________%
QUAD A ___% B ___% C ___% D ___%
H2 TOTAL ________%
O2 TOTAL ________%
## Log Sheet for Light Flashes & Radio Signals Behind Moon

<table>
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<th>G.E.T.</th>
<th>Remarks</th>
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<td>G.E.T.</td>
<td>REMARKS</td>
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</tbody>
</table>
FLIGHT PLAN

P52-IMU REALIGN
OPTION 3 REFRESH MAT
(OPTIONAL)
REPORT GYRO TORQUING ANGLES

NOTES

P52 (PTC ORIENT)
N71: __ __ __
N05: __ __ __ __
N93:

X __ __ __ __
Y __ __ __ __
Z __ __ __ __
GET __ __ __ __

PTC
P 270, Y 0
FLIGHT PLAN

FOV 3°
GET 213:00

STOP PTC AT ROLL 235°

PTC
P 270, Y 0

MCC-H 0622 CST
212:00

:15

212:30

:45

213:00

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
-------|---------|------|------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 212:00 - 213:00 | 9/TEC | 3-182
FLIGHT PLAN

MNVR TO OPTICS CALIBRATION ATT
P23 - CISLUNAR NAVIGATION
OPTICS CALIBRATION

POO
V49 - MNVR TO SIGHTING ATT
STAR/EARTH HORIZON
P23 - CISLUNAR NAVIGATION

LOAD W MATRIX (R1 = R2 = R3 = )
1. VENUS ENH (R3 = )
N88: (R1 = (R2 = (R3 = )

DO NOT PROCEED ON F 06 49
2. STAR 2 0 4 ENH (R3 = )
N88: (R1 = (R2 = (R3 = )

3. STAR 2 6 EFH (R3 = )

4. STAR 1 6 0 EFH (R3 = )
N88: (R1 = (R2 = (R3 = )

5. STAR 1 6 5 ENH (R3 = )
N88: (R1 = (R2 = (R3 = )

6. STAR 3 1 EFH (R3 = )

NOTES

3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION | EDITION | DATE | TIME       | DAY/REV | PAGE
---------|---------|------|------------|---------|-----
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 213:00 - 214:00 | 8/TEC | 3-183
FLIGHT PLAN

UPDATE TO CSM QUADS TO DISABLE FOR PTC (LOWEST QUANTITY PRPLNT)

START PTC

EAT PERIOD

PTC

P 270, Y 0

MISSION | EDITION     | DATE          | TIME           | DAY/REV | PAGE
--------|--------------|---------------|----------------|---------|-----
APOLLO 12 | FINAL (REV 14) | OCTOBER 15, 1969 | 214:00 - 216:00 | 9/TEC   | 3-184
FOV 4°
GET 217:00

STOP PTC AT ROLL 235°
FLIGHT PLAN

MNVR TO OPTICS CALIBRATION ATT R 235
P23 - CISLUNAR NAVIGATION P 272
OPTICS CALIBRATION Y 0
STAR 1 \_2

P00
V49 - MNVR TO SIGHTING ATT R 90
STAR/EARTH HORIZON P 180
P23 - CISLUNAR NAVIGATION Y 328

1. STAR 1 7 2 ENH (R3 = 0 0 1 1 0)
N88: (R1 = \(-6 4 9 4 7\))(R2 = \(-7 4 3 1 2\))(R3 = \(-1 6 1 1 5\))

2. STAR 2 4 EFH (R3 = 0 0 1 2 0)

3. STAR 2 0 4 ENH (R3 = 0 0 1 1 0)
N88: (R1 = \(-2 1 3 8 9\))(R2 = \(-9 3 8 6 8\))(R3 = \(-2 7 0 4 2\))

4. JUPITER EFH (R3 = 0 0 1 2 0)
N88: (R1 = \(-8 9 9 7 6\))(R2 = \(-4 0 7 8 2\))(R3 = \(-1 5 5 3 8\))
DO NOT PROCEED ON F 06 49

5. STAR 3 1 EFH (R3 = 0 0 1 2 0)

6. STAR 1 6 6 ENH (R3 = 0 0 1 1 0)
N88: (R1 = \(-5 2 0 0 3\))(R2 = \(-4 3 6 0 7\))(R3 = \(-7 3 4 4 5\))

NOTES
3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR
FLIGHT PLAN

FOV 4°
GET 220:00

MISSION | EDITION | DATE         | TIME          | DAY/REV | PAGE      
---------|---------|--------------|---------------|---------|----------- 
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 219:00 - 220:00 | 9/TEC   | 3-187     

FLIGHT PLANNING BRANCH
FLIGHT PLAN

MNVR TO OPTICS CALIBRATION ATT
P23 - CISLUNAR NAVIGATION
OPTICS CALIBRATION
STAR 1 2

POO
V49 - MNVR TO SIGHTING ATT
STAR/EARTH HORIZON
P23 - CISLUNAR NAVIGATION

1. STAR 1 6 1 EFH (R3 = 0 0 1 2 0)
   N88: (R1 = -7 6 6 1 5)(R2 = -2 7 1 1 3)(R3 = -5 9 5 5 9)

2. STAR 1 7 4 ENH (R3 = 0 0 1 1 0)
   N88: (R1 = -5 5 9 9 2)(R2 = -8 2 0 7 3)(R3 =+1 1 3 5 3)

3. STAR 2 6 EFH (R3 = 0 0 1 2 0)

4. STAR 1 5 6 EFH (R3 = 0 0 1 2 0)
   N88: (R1 = -9 8 4 4 6)(R2 = -1 7 4 2 0)(R3 = -0 2 2 4 3)

5. JUPITER EFH (R3 = 0 0 1 2 0)
   N88: (R1 = -8 9 9 7 6)(R2 = -4 0 7 8 2)(R3 = -1 5 5 3 8)
   DO NOT PROCEED ON F 06 49

6. STAR 1 2 5 ENH (R3 = 0 0 1 1 0)
   N88: (R1 = -2 5 4 7 2)(R2 = -7 8 6 4 7)(R3 = -5 6 2 6 6)

NOTES

3 MARKS ON EACH STAR
INCORPORATE P23
MARK DATA AND
UPDATE ONBOARD
STATE VECTOR

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 220:00 - 221:00 | 9/TEC | 3-188
FLIGHT PLAN

221:00
L10H CANISTER CHANGE NO. 17
(19 INTO A, STOW 17 IN A6)

WIPE EXCESSIVE MOISTURE FROM
TUNNEL HATCH AREA
CONTAMINATION CONTROL

221:15
UPLINK TO CSM
STATE VECTOR & V66
MCC-6 TGT LOAD

221:30
P52 - IMU REALIGN
OPTION 3 - REFSHMAT

REPORT GYRO TORQUING ANGLES

221:45
P30 EXTERNAL ΔV
H₂ PURGE LINE HTRS - ON

222:00

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 221:00 - 222:00 | 9/TEC | 3-189
FLIGHT PLAN

MCC-6
BURN TABLE

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>6T + 1 SEC</td>
<td>TRIM X AXIS ONLY TO 0.2</td>
</tr>
</tbody>
</table>

TABLE 3-13
3-190
**FLIGHT PLAN**

**MC6-01**

1622 CST

222:00

- V49 - MNVR TO BURN ATT
- SXT STAR CHECK
- H2 & O2 FUEL CELL PURGE
- WASTE WATER DUMP
- P40/41 - SPS/RCS THRUST
- G&C ALIGN TO IMU

**MCC-6**

223:00

- V66 - TRANSFER CSM SV TO LM SLOT
- MCC-6 BURN STATUS REPORT
- MNVR TO TV ATTITUDE BY 223:15

- TIG: 222:21:47.5
- ΔV: NOMINALLY ZERO

224:00

- MNVR TO PTC ATTITUDE
- WIPE EXCESSIVE MOISTURE FROM TUNNEL HATCH AREA

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 222:00 - 224:00 | 9/TEC | 3-191

**NOTES**

**BURN STATUS REPORT**

- TIG: 222:21:47.5
- ΔV: NOMINALLY ZERO

- TRIM

- R
- P
- Y

- ΔV_c

- FUEL
- OX

- UNBAL

- *ITEMS TO BE REPORTED TO MSFN

**UPDATE TO CSM QUADS TO DISABLE FOR PTC (LOWEST QUANTITY PRPLHT)**

**EAT PERIOD**

**MSFN**

223:15-223:45

CM 4/TV-IN (f5.6/f22)
FLIGHT PLAN

1822 CST

START PTC
REPORT CM RCS INJECTOR VALVE TEMPS (SYS TEST METER 5C,D,6A,B,C,D)

PRESLEEP CHECKLIST:
CREW STATUS REPORT (MED)
ONBOARD READOUTS
CYCLE O2 & H2 FANS
CHLORINATE POTABLE WATER
VERIFY:
WASTE MNGT OVB DRAIN - OFF
WASTE STOW VENT VLV - CLOSED
EMER CABIN PRESS VLV - BOTH ON
SURGE TK O2 VLV - ON
REPRESS O2 VLV - OFF
LM TUNNEL VENT - OFF
"E" MEMORY DUMP
NORMAL LUNAR COMM EXCEPT:
S-BD NORMAL MODE VOICE - OFF
S-BD SQUELCH - ENABLE
S-BD AUX TAPE - OFF
S-BD ANT - OMNI
S-BD ANT OMNI - B
TAPE RCDR FWD - OFF

NOTES

CH RCS INJECTOR TEMP
5C ___ 5D ___
6A ___ 6B ___
6C ___ 6D ___

ONBOARD READOUT
BAT C
PYRO BAT A
PYRO BAT B
RCS A
B
C
D

DC IND SEL - MNA OR B

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 224:00 - 226:00 | 9/TEC | 3-192
FLIGHT PLAN

2022 CST

226:00

:30

MSFN

REST PERIOD
(10 HOURS)

227:00

228:00

:30

PTC

P 270 Y 0

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 226:00 - 228:00 | 9/TEC | 3-193

NASA Form 25 (May 69)

FLIGHT PLANNING BRANCH
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<th>TIME</th>
<th>DAY/REV</th>
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<td>FINAL (NOV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>228:00 - 230:00</td>
<td>9/TEC</td>
<td>3-194</td>
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<td>EDITION</td>
<td>DATE</td>
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<td>APOLLO 12</td>
<td>FINAL (NGV 14)</td>
<td>OCTOBER 15, 1969</td>
<td>230:00 - 232:00</td>
<td>9/TEC</td>
<td>3-195</td>
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</table>
FLIGHT PLAN

POSTSLEEP CHECKLIST:
CREW STATUS REPORT
CONSUMABLES UPDATE
CYCLE H2 & 02 FANS
FLIGHT PLAN UPDATE
NORMAL LUNAR COMM EXCEPT:
S-BD AUX TAPE - OFF
TAPE RCDR FWD - OFF
OMNI OPS
S-BD ANT - OMNI
S-BD ANT OMNI - B
HGA OPS
S-BD ANT - HI GAIN
CREW MANAGES ANT
OPS

L10H CANISTER CHANGE NO. 18
(20 INTO B, STOW 18 IN A6)

STOP PTC AT ROLL 235°

NOTES

CSM CONSUMABLES UPDATE
GET: __ __ __ __
RCS TOTAL ___ ___
QUAD A ___B ___
C ___D ___
H2 TOTAL ___ ___
O2 TOTAL ___ ___

FOV 8°
GET 236:00
FLIGHT PLAN

236:00

MNVR TO OPTICS CALIBRATION ATT R 235
P23 - CISLUNAR NAVIGATION P 272
OPTICS CALIBRATION Y 0
STAR 1, 2
POD
V49 - MNVR TO SIGHTING ATT R 90
STAR/EARTH HORIZON P 153, 168
P23 - CISLUNAR NAVIGATION Y 341
LOAD W MATRIX (R1 +4 5 0 0 0) (R2 +0 0 0 0 6)
1. STAR 2 6 EFH (R3 = 0 0 1 2 0)
2. JUPITER EFH (R3 = 0 0 1 2 0)
N88: (R1 = -8 9 8 5 4) (R2 = -4 1 0 1 4) (R3 = -1 5 6 3 6)
DO NOT PROCEED ON F 06 49
3. STAR 7 5 ENH (R3 = 0 0 1 2 0)
N88: (R1 = -9 8 7 1) (R2 = -7 9 1 6 3) (R3 = -5 0 2 9 8)
4. STAR 1 6 3 EFH (R3 = 0 0 1 2 0)
N88: (R1 = -8 3 4 6 4) (R2 = -4 4 9 6 6) (R3 = +3 1 8 0 9)
5. STAR 2 0 5 ENH (R3 = 0 0 1 2 0)
N88: (R1 = -9 1 5 3) (R2 = -5 5 8 9 1) (R3 = -8 2 4 1 6)
6. STAR 3 1 EFH (R3 = 0 0 1 2 0)

236:30

237:00

3 MARKS ON EACH STAR
INTEGRATE P23
MARK DATA AND UPDATE ONBOARD STATE VECTOR

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 FINAL (NOV 14) | OCTOBER 15, 1969 | 236:00 - 237:00 | 10/TEC | 3-198

HSC Form 28 (Rev 08) FLIGHT PLANNING BRANCH
FLIGHT PLAN

MISSION | EDITION   | DATE      | TIME       | DAY/REV | PAGE
---------|-----------|-----------|------------|---------|-------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 237:00 - 238:00 | 10/TEC  | 3-199

UPDATE TO CSM QUADS TO DISABLE FOR PTC (LOWEST QUANTITY PRPLNT)

0722 CST

START PTC

PTC
P 270, Y 0

MCC-01

237:00

:15

237:30

M SF N

:45

238:00

NOTES
FLIGHT PLAN

0822 CST

238:00

(EI-6 HRS)

GO/NO-GO FOR MCC-7

REPORT CM RCS INJECTOR
VALVE TEMPS (SYS TEST METER 5C, D, 6A, B, C, D)

239:00

M S F N

(EI-5 HRS)

UPDATE TO CSM
MCC-7 MNVR PAD
ENTRY PAD

VHF SIMPLEX A-ON
(COMM CHECK)

240:00

STOP PTC

DON MAMA WEST & FOOT RESTRAINTS

CM RCS INJECTOR TEMP
5C 5D
6A 6B
6C 6D

PTC

P 270° Y 0

MISSION EDITION DATE TIME DAY/REV PAGE
APOLLO 12 FINAL (NOV 14) OCTOBER 15, 1969 238:00 - 240:00 10/TEC 3-200

FLIGHT PLANNING BRANCH

MSC Form 29 (Rev 89)
**FLIGHT PLAN**

### MCC-7
**BURN TABLE**

<table>
<thead>
<tr>
<th>P OR Y RATES</th>
<th>ATT DEVIATION</th>
<th>SHUTDOWN TIME</th>
<th>RESIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10°/SEC TAKEOVER</td>
<td>+10° TAKEOVER</td>
<td>8T + 1 SEC</td>
<td>TRIM X AXIS ONLY TO 0.2 FPS</td>
</tr>
</tbody>
</table>

**TABLE 3-14**

3-201
**Flight Plan**

**1022 CST**

**240:00**

**Report Gyro Torquing Angles**
- ECS & EPS CK
- SPS Check
- CM RCS Mon CK
- SM RCS Mon CK
- C & W SYS CK
- CMC Self Test
- DSKY Cond LT Test

**241:00**

**V49 - MNVR to Burn Att by 240:50:00**

**241:04**

**SXT Star Check**
**P40/P41-SPS/RCS Thrust**

**242:00**

**1022 CST**

**Burn Status Report**
- V66 - Trans CSM SV to LM Slot

**Notes**
- P52 (Reentry Orient)
- N71: __ __ __ __
- N05: __ __ __ __
- N93: __ __ __ __
- X: __ __ __ __
- Y: __ __ __ __
- Z: __ __ __ __

**Burn Status Report**
- TIG: 241:21:48
- AV: Nominal zero

*Items to be reported to MSFN*
**FLIGHT PLAN**

- **242:00**: Logic Sequence Check
  - Go/No Go for Pyro Arm (CUE MSFN)
  - Logic-On

- **242:30**: MNVR To Entry Attitude
  - R __
  - P __
  - Y __

- **243:00**: SXT and Boresight Star Check

---

**MISSION** | **EDITION** | **DATE** | **TIME** | **DAY/REV** | **PAGE**
---|---|---|---|---|---
**APOLLO 12** | **FINAL (NOV 14)** | **OCTOBER 15, 1969** | **242:00 - 243:00** | **10/TEC** | **3-203**

*MSC Form 29 (Rev 00)*

**FLIGHT PLANNING BRANCH**
FLIGHT PLAN

243:00

P52 - IMU REALIGN
OPTION 3 - REFSSMAT

REPORT GYRO TORQUING ANGLES
GDC ALIGN TO IMU
EMS ENTRY CHECK

PRIM & SEC WATER EVAP ACTIVATION
CM RCS PRE-HEAT (IF REQ'D)
FINAL STORANGE

CONFIGURE CAMERA EQUIP FOR FIREBALL AND CHUTES PHOTOS
CM/DAC/18/6IN-(F11,250,7) 12 FPS, .5MAG (4 MIN) FIREBALL
HCEX-(F11,125,7) 12 FPS, .5MAG (4 MIN) CHUTES

TERMITE CM RCS PREHEAT
SYS TEST PANEL CONFIGURATION
PYRO BATT CHECK
FINAL GDC DRIFT CK
CM RCS ACTIVATION
GO/NO GO FOR PYRO ARM (CUE MSFN)
LOGIC-ON
SET DET (UP, TO EI)
EMS INITIALIZATION
RSI ALIGN TO GDC

CM RCS CK
SEPARATION CHECKLIST

Notes:

P52 (REENTRY ORIENT)
N71:
N05:
N93:
X
Y
Z
GET

(EI - 1 HR)

243:15

UPDATE TO CSM
ENTRY PAD
RECOVERY PAD
GO/NO GO FOR PYRO ARM

243:30

MSFN

244:00

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--- | --- | --- | --- | --- | ---
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 243:00 - 244:00 | 10/TEC | 3-204
FLIGHT PLAN

PYRO ARM
P61 - ENTRY PREP
P62 - CM/SM SEP ATT

CM/SM SEP
MNVR TO ENTRY ATT
P63 - ENTRY INIT

EI - GET = 244:21:48
P64 - ENTRY POST 0.05G

TRAJECTORY EVENTS
TIME FROM EI
MIN : SEC

400,000 FEET (GET 244:21:48
ENTER S BAND BLACKOUT
0.05G
KA - INITIATE CONSTANT DRAG
RDOT = -700 FPS
PEAK G
SUBCIRCULAR VELOCITY
P64 TO P67
EXIT S BAND BLACKOUT
GUIDANCE TERMINATION
DROGUE DEPLOYMENT
MAIN DEPLOYMENT
SPLASHDOWN

Y = -6.5
L/D = 0.309
V = 36116
R = 1250

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
--------|---------|------|------|---------|------
APOLLO 12 | FINAL (NOV 14) | OCTOBER 15, 1969 | 244:00 - 245:00 | 10/TEC | 3-205

FLIGHT PLANNING BRANCH
REVISION A
NASA — MBS
Abbreviated Timeline

Liftoff 00:00
Insertion Checklist
P52 - IMU Realign, Opt 3

BEGIN TLI PREP
Go/No-Go For TLI
TLI 02:47
C/S/W/IVB SEP 03:12
Dock 03:22
Configure For Ejection
C/S/W/LM Ejection 04:07
S-IVB Evasive Maneuver 04:24
S-IVB Slingshot Maneuver 04:57

doff & Stow PGA's
P52 - IMU Realign, Opt 1
P23 - Cislunar Navigation (5 Sets)

EAT

P52 - IMU Realign, Opt 3
PTC (If MCC-1 Not Performed)

MCC-1 11:47 (Nom Zero)

Mission  Edition  Date        Time     Day/Rev  Page
APOLLO  12   ABBREVIATED TIMELINE (NOV 14) OCTOBER 15, 1969 00:00 - 24:00 1/TLC 5-1

Flight Planning Branch
Abbreviated Timeline

- 1022 CST
- NOV 21
- 168:00

Revision 44

- MSFN
- 170:00

Crew Service Module (CSM)

- Stereo Strip Photos
- P52-IMU Realign, Option 1

Prep for TEI

- TEI 172:21

- P52-IMU Realign, Gyro Torque
- EAT

Place To Clear (PTC)

- Rest Period (10 HR)

- MCC-5 187:21 (Nom Zero)

- P23 - Cislunar Navigation (5 Sets)

- EAT

Mission: Apollo 12
Edition: Abbreviated Timeline (Nov 14)
Date: October 15, 1969
Time: 168:00 - 192:00
Day/Rev: 7-8/43-TEC
Page: 5-8

Flight/Planning Branch
<table>
<thead>
<tr>
<th>MISSION</th>
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<th>DATE</th>
<th>TIME</th>
<th>DAY/REV</th>
<th>PAGE</th>
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</thead>
<tbody>
<tr>
<td>APOLLO 12</td>
<td>ABBREVIATED TIMELINE</td>
<td>OCTOBER 15, 1969</td>
<td>192:00 - 216:00</td>
<td>8-9/TEC</td>
<td>5-9</td>
</tr>
<tr>
<td></td>
<td>(NOV 14)</td>
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</tr>
</tbody>
</table>
ABBREVIATED TIMELINE

CSM
P52 - IMU REALIGN, OPTION 1

[MCC-7] 241:22 (NOM ZERO)
BEGIN ENTRY PREP

P52 - IMU REALIGN, OPTION 3
INITIALIZE EMS
SEPARATION CHECKLIST
CM/SM SEP
ENTRY INTERFACE 244:22
SPLASHDOWN 244:35

MISSION | EDITION | DATE | TIME | DAY/REV | PAGE
---|---|---|---|---|---
APOLLO 12 | ABBREVIATED TIMELINE (NOV 14) | OCTOBER 15, 1969 | 240:00 - 246:00 | 10/TEC | 5-11

NASA Form 1827 GT (Mar 69) FLIGHT PLANNING BRANCH
### Photo Plan

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY or TARGET</th>
<th>CAMERA CONFIGURATION CODE</th>
<th>MAGAZINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:20</td>
<td>Transposition/Docking</td>
<td>CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps, .3 mag (5 MIN)</td>
<td>A Q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CM2/EL/80/CEX= (f8,250,30) 10</td>
<td></td>
</tr>
<tr>
<td>4:15</td>
<td>LM Ejection</td>
<td>CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 12 fps, .7 mag (6 MIN)</td>
<td>A Q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CM4/TV - IN, BRKT (f22) 1 HR 05 MIN</td>
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<tr>
<td>TLC</td>
<td>Earth Photography</td>
<td>CM/EL/80 or 250/CEX-RING (f11,250,0) 30</td>
<td>0 Q</td>
</tr>
<tr>
<td></td>
<td>Distant Moon</td>
<td>C1/EL/250 or 80/CEX or BW-RING (f5.6,250,0) 5</td>
<td>5/5</td>
</tr>
<tr>
<td>30:25</td>
<td>Hybrid Burn (MCC2) Crew Activities</td>
<td>CM/TV - IN (f5.6) 35 MIN</td>
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<tr>
<td>63:30</td>
<td>ITV Transfer</td>
<td>CM/TV - IN (f5.6) 50 MIN</td>
<td></td>
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<tr>
<td>81:30</td>
<td>Pre-LOI Lunar Surface</td>
<td>CM/TV - IN (f22) 20 MIN</td>
<td></td>
</tr>
<tr>
<td>84:00</td>
<td>Lunar Surface</td>
<td>CM/TV - IN (f22) 30 MIN</td>
<td></td>
</tr>
<tr>
<td>107:55</td>
<td>Undocking</td>
<td>CM2/DAC/18/CEX-BRKT,MIR (f8,250,7) 6 fps, 1 mag (16 MIN)</td>
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<tr>
<td></td>
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<td>CM2/EL/80/CEX- (f8,250,50) 10</td>
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<tr>
<td></td>
<td></td>
<td>LM1/DC/60/HCEX-(f11,250,50) 10</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>LM2/DAC/10/CEX-(f11,250,7) 6 fps .25 mag (4 MIN)</td>
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<tr>
<td></td>
<td></td>
<td>CM4/TV - IN BRKT (f22) 20 MIN</td>
<td></td>
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<tr>
<td>110:26</td>
<td>Targets of Opportunity</td>
<td>CM/EL/80 or 250/CEX- (CC,250,0) 175</td>
<td>Q S R</td>
</tr>
<tr>
<td></td>
<td>Fra Mauro</td>
<td>CM/EL/b0/BW- (f2.8,250,0) 10</td>
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</tr>
<tr>
<td>114:40</td>
<td>PDI + 6 MIN/Descent</td>
<td>LM3/DAC/10/CEX- (f2.8,500,30) 12 fps, .75 mag (6 MIN)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See Surface Photo and TV Timelines</td>
<td></td>
</tr>
<tr>
<td>133:17</td>
<td>EVA 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>133:17</td>
<td>EVA 2</td>
<td></td>
<td></td>
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<tr>
<td>134:10</td>
<td>Sextant Photography - Lansberg Rev 26</td>
<td>CM/DAC/SEXT/CEX- (fixed,60, fixed) 1 fps (5 MIN)</td>
<td></td>
</tr>
<tr>
<td>135:19</td>
<td>Lunar Multispectral</td>
<td>Blu-CM3/LMC/80/MBW-IVL,478 FIL (-,fixed) 150</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Red-CM3/LMC/80/MBW-IVL,29+ FIL (-,fixed) 150</td>
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<tr>
<td>137:25</td>
<td>North Wall of Theophilus</td>
<td>Grn-CM3/LMC/80/BW-IVL,58 FIL (-,fixed) 150</td>
<td></td>
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<tr>
<td>137:47</td>
<td>Descartes</td>
<td>Blk-CM3/LMC/80/IBW-IVL,87C FIL (-,fixed) 120</td>
<td></td>
</tr>
<tr>
<td>138:01</td>
<td>Fra Mauro</td>
<td></td>
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</tr>
</tbody>
</table>
142:00 LM Ascent
LM3/DAC/10/CEX- (f2.8, 500, 20) 12 fps, 1 mag (8 MIN)

145:30 Rendezvous/Docking
CM2/DAC/18/CEX-BRKT, MIR (f8, 250, 20) 6 fps, 1 mag (16 MIN)
CM2/EL/80/CEX- (f8, 250, 20) 10
LM/DC/60/HEX- (f11, 250, FOCUS) 5
CM4/TV-IN BRKT (f22) 30 MIN

148:00 LM Jettison
CM2/DAC/18/CEX-BRKT, MIR (f8, 250, 20) 12 fps, .5 mag (4 MIN)
CM/DAC/SEXT/CEX- (fixed, 250, fixed) 1 fps .5 mag (46 MIN)

159:40 High Resolution/Oblique Photography - LaLande
CM4/EL/500/BW-BRKT, Cont (f8, 125, < 10) 20
CM2/DAC/18/BW - BRKT, MIR (f8, 125, < 10) 6 fps .5 mag (8 MIN)

160:54 Vertical Stereo Strip
CM4/EL/80/BW - BRKT, IVL (f4, 250, < 10) 180
CM/DAC/SEXT/CEX - (fixed, CC, fixed) 1 fps, 1 mag (93 MIN)

163:20 High Resolution/Oblique Photography - Descartes Fra Mauro
CM4/EL/500/BW-BRKT, CONT (f8, 125, < 10) 150
CM2/DAC/18/BW-BRKT, MIR (f8, 125, < 10) 6 fps, 1.5 mag (24 MIN)
CM/DAC/SEXT/CEX - (fixed, CC, fixed) 1 fps, ~1 mag (88 MIN)

164:50 Landmark Tracking Sextant Photography
CM/DAC/SEXT/CEX- (fixed, CC, fixed) 1 fps, ~1 mag (88 MIN)

168:51 Vertical Stereo Strip
CM4/EL/80/BW-BRKT, IVL (f4, 250, < 10) 180
CM/TV - IN (f22) 20 MIN

172:55 Lunar Surface
CM/TV - IN (f22) 20 MIN

TEC Distant Moon
CM/EL/80 or 250/BW or CEX-RING (f5.6, 250, < 10) 5/5
CM/EL/80 or 250/CEX-RING (f11, 250, < 10) 10

223:15 Earth, Interior
CM/TV - IN (f5.6/f22) 30 MIN

244:30 Reentry
CM/DAC/18/CM- (f11, 250, 7) 12 fps, .5 mag (4 MIN) Fireball
-(f11, 250, 7) 12 fps, .5 mag (4 MIN) Chutes
CM/DAC/5/CIN- (f2.8, 60, < 10) SPOT 6 fps, 1 mag (16 MIN)

Crew Crew/Spacecraft Option Compatibility
Stowing/Unstowing Equipment (Aft bulkhead)
LM to CSM Crew Transfer
Donning/Doffing Spacesuit

Crew Option Crew Observations
CM/EL/80 or 250/CEX - (Decal)
### Film Magazine Identification and Storage

#### Magazines

<table>
<thead>
<tr>
<th>16mm</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
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</tbody>
</table>

#### Storage

- **Camera**: 
- **B8**
- **B2**
- **A8**
- **A10**
- **R13 (Mag bag)**

#### 70mm

<table>
<thead>
<tr>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>U</th>
<th>V</th>
<th>W</th>
<th>X</th>
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<tbody>
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</table>

TR - Transfer and return
SECTION 6 - ALTERNATE MISSIONS
DISREGARD PREVIOUS

2 IMAGES
<table>
<thead>
<tr>
<th>MEAL</th>
<th>Day 1*, 5**, 9</th>
<th>Day 2, 6, 10</th>
<th>Day 3, 7, 11</th>
<th>Day 4, 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Peaches</td>
<td>Corn Flakes</td>
<td>Apricots</td>
<td>Pears</td>
<td>Canadian Bacon &amp; Applesauce</td>
</tr>
<tr>
<td>Bacon Squares (8)</td>
<td>Scrambled Eggs</td>
<td>Sausage Patties</td>
<td>Corn Flakes</td>
<td>Scrambled Eggs</td>
</tr>
<tr>
<td>Orange Drink</td>
<td>Grapefruit Drink</td>
<td>Coffee w/Sugar</td>
<td>Bacon Squares (8)</td>
<td>Cinnamon Bread (4)</td>
</tr>
<tr>
<td>Coffee w/Sugar</td>
<td></td>
<td></td>
<td>Grape Drink</td>
<td>Orange-G.F. Drink</td>
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<tr>
<td>B Tuna Salad</td>
<td>Turkey &amp; Gravy WP</td>
<td>Cheese Crackers (4)</td>
<td>Frankfurters WP</td>
<td>Shrimp Cocktail</td>
</tr>
<tr>
<td>Beef &amp; Gravy WP</td>
<td>Chocolate Pudding</td>
<td>Applesauce</td>
<td>Ham &amp; Potatoes WP</td>
<td>Apricots</td>
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<tr>
<td>Jellied Candy</td>
<td>Orange-G.F. Drink</td>
<td>Chocolate Bar</td>
<td>P.A.-G.F. Drink</td>
<td>Chocolate Pudding</td>
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<tr>
<td>Grape Punch</td>
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<td></td>
<td>Orange Drink</td>
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<tr>
<td>C Cream of Chicken Soup</td>
<td>Pork &amp; Scalloped Potatoes</td>
<td>Salmon Salad</td>
<td>Spaghetti w/Meat</td>
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<tr>
<td>Chicken &amp; Rice</td>
<td>Bread Slice Sandwich w/Spread WP</td>
<td>Chicken Stew</td>
<td>Beef Stew</td>
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<tr>
<td>Sugar Cookies (4)</td>
<td>Jellied Candy</td>
<td>Butterscotch Pudding</td>
<td>Banana Pudding</td>
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<tr>
<td>Butterscotch Pudding</td>
<td>Cocoa</td>
<td>Peaches</td>
<td>Coco</td>
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<tr>
<td>P.A.-G.F. Drink</td>
<td>Orange Drink</td>
<td>Grapefruit Drink</td>
<td>Grape Drink</td>
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</table>

* Day 1 consists of Meal B and C only  **Day 5 consists of Meal A only  WP = Wet Pack
<table>
<thead>
<tr>
<th>MEAL</th>
<th>Day 1*, 5, 9</th>
<th>Day 2, 6, 10</th>
<th>Day 3, 7, 11</th>
<th>Day 4, 8</th>
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<tbody>
<tr>
<td>A Peaches</td>
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<tr>
<td>Corn Flakes</td>
<td>Apricots</td>
<td>Pears</td>
<td>Canadian Bacon &amp; Applesauce</td>
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<tr>
<td>Bacon Squares (8)</td>
<td>Scrambled Eggs</td>
<td>Corn Flakes</td>
<td>Strawberry Cubes (4)</td>
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<td>Orange Drink</td>
<td>Sausage Patties</td>
<td>Bacon Squares (8)</td>
<td>Scrambled Eggs</td>
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<tr>
<td>Coffee (black)</td>
<td>Grapefruit Drink</td>
<td>Grape Drink</td>
<td>Orange-G.F. Drink</td>
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<tr>
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<td>Coffee (black)</td>
<td>Coffee (black)</td>
<td>Coffee (black)</td>
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<tr>
<td>B Tuna Salad</td>
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<td>Beef &amp; Gravy WP</td>
<td>Turkey &amp; Gravy WP</td>
<td>Frankfurters WP</td>
<td>Shrimp Cocktail</td>
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<tr>
<td>Jellied Candy</td>
<td>Cheese Crackers (4)</td>
<td>Applesauce</td>
<td>Ham &amp; Potatoes</td>
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<tr>
<td>Grape Punch</td>
<td>Chocolate Pudding</td>
<td>Chocolate Bar</td>
<td>Apricots</td>
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<td>Orange-G.F. Drink</td>
<td>P.A.-G.F. Drink</td>
<td>Chocolate Pudding</td>
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<td>Orange Drink</td>
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<td>(Day 5)</td>
<td>Beef &amp; Potatoes WP</td>
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<tr>
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<td>Chicken &amp; Rice</td>
<td>Pork &amp; Scalloped Potatoes</td>
<td>Salmon Salad</td>
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<tr>
<td>Sugar Cookies (4)</td>
<td>Bread Slice</td>
<td>Beef &amp; Gravy</td>
<td>Beef Stew</td>
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<td>Sandwich Spread WP</td>
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<td>P.A.-G.F. Drink</td>
<td>Date Fruitcake (4)</td>
<td>Peaches</td>
<td>Banana Pudding</td>
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</tr>
<tr>
<td></td>
<td>Cocoa</td>
<td>Grapefruit Drink</td>
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<td>Orange Drink</td>
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<td>Grape Drink</td>
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</tbody>
</table>

*Day 1 consists of Meal B and C only

WP = Wet Pack
## APOLLO XII (BEAN – BLUE VELCRO)

Check items eaten

<table>
<thead>
<tr>
<th>MEAL</th>
<th>Day 1*, 5**, 9</th>
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<tr>
<td><strong>A Peaches</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Corn Flakes</td>
<td>Fruit Cocktail</td>
<td>Peaches</td>
<td>Fruit Cocktail</td>
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<tr>
<td>Canadian Bacon</td>
<td>Corn Flakes</td>
<td>Corn Flakes</td>
<td>Corn Flakes</td>
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<tr>
<td>6 Applesauce</td>
<td>Jellied Candy</td>
<td>Canadian Bacon</td>
<td>Jellied Candy</td>
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<tr>
<td>Cocoa</td>
<td>Grapefruit Drink</td>
<td>Cocoa</td>
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<tr>
<td>Orange Drink</td>
<td>P.A.-G.F. Drink</td>
<td>Orange Drink</td>
<td>Orange-G.F. Drink</td>
<td></td>
</tr>
</tbody>
</table>

| **B Beef & Gravy WP** |               |              |              |         |
| Fruit Cocktail        |               |              |              |         |
| Jellied Candy         |               |              |              |         |
| Grapefruit Drink      |               |              |              |         |
|                       | Cream of Chicken| Potato Soup | Cream of Chicken|         |
|                       | Soup           | Beef and Gravy| Soup         |         |
|                       | Turkey & Gravy WP| Jellied Candy| Chicken Stew |         |
|                       | Peaches        | P.A.-G.F. Drink| Peaches      |         |
|                       | Orange-G.F. Drink|             | Chocolate Pudding| Orange Drink|         |

| **C Potato Soup** |               |              |              |         |
| Chicken & Rice    |               |              |              |         |
| Spaghetti w/Meat  |               |              |              |         |
| Butterscotch Pudding|             |              |              |         |
| Orange-G.F. Drink |               |              |              |         |
|                       | Pork & Scalloped| Chicken & Rice|             |         |
|                       | Potatoes       | Fruit Cocktail|             |         |
|                       | Bread Slice    | Cinnamon Bread (4)|             |         |
|                       | Sandwich Spread| Butterscotch Pudding|              |         |
|                       | Chocolate Pudding| Grapefruit Drink|             |         |
|                       | Cocoa          |                |              |         |
|                       | Orange Drink   |                |              |         |

* Day 1 consists of Meal B and C only

**Day 5 consists of Meal A only

WP = Wet Pack

NASA — MSC
APOLLO XII/LM-6 MENU

CDR - Red Velcro
Check Items Eaten
Day 1 Meal C
Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Apricots
Grapefruit Drink
Pineapple-Grapefruit Drink

Day 2 Meal A
Peaches
Scrambled Eggs
Bacon Squares (8)
Cocoa
Orange Drink

Day 2 Meal B
Beef and Gravy WP
Pears
Butterscotch Pudding
Pineapple-Grapefruit Drink
Grape Drink

Day 2 Meal C
Turkey and Gravy
Chicken Stew
Apricots
Jellied Candy
Orange-Grapefruit Drink
2 Spoons
WP = Wet Pack

LMP - Blue Velcro
Day 1 Meal C
Cream of Chicken Soup
Ham Salad - Bread WP
Jellied Candy
Chocolate Pudding
Grapefruit Drink
Pineapple-Grapefruit Drink

Day 2 Meal A
Peaches
Corn Flakes
Canadian Bacon & Applesauce
Cocoa
Orange Drink

Day 2 Meal B
Beef and Gravy WP
Butterscotch Pudding
Pineapple-Grapefruit Drink
Grapefruit Drink

Day 2 Meal C
Turkey and Gravy WP
Chicken Stew
Fruit Cocktail
Jellied Candy
Orange-Grapefruit Drink