

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
56:50				
	MIT AND MPAD AGREE THAT			
	THE ANALYSIS OF THE P23			
	CISLUNAR NAVIGATION PERFORMED			
	ON DAY 1 AND DAY 2 SHOW			
	THAT M. COLLINS IS MARKING			
	ON AN HORIZON LOCATOR WHICH			
	IS HIGHER THAN THAT LOADED			
	IN THE GNC. WE RECOMMEND			
	CHANGING THAT VALUE TO			
	35 KM. THE QUANTITY IS			
	HORIZONTAL (1354, 1355) AND THE VALUE			
	TO BE LOADED IS			
	00001, 02134 (DOUBLE PREC)			
	P. FELLEMAN MIT R SAUELY MPAD			

CSM CONSUMABLES UPDATE PAD

CONSUMABLES UPDATE	
GET:	<u>46 + 00</u>
RCS TOT	<u>- 5.5%</u>
A	<u>- 6.5%</u>
B	<u>- 2.5%</u>
C	<u>- 7.5%</u>
D	<u>- 5.0%</u>
H ₂ TOT	<u>- 2 #</u>
O ₂ TOT	<u>+ 1 #</u>

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

TIME PREPARED ____:____:____
 INITIALS _____

FLIGHT DIR MISSION LOG	DAY	REV	PG 118
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
57+00	NEED TO GET BACK TO PTC By 58 hrs		
57+00	TV - Crew wants to terminate - but will continue if we desire - - PAO has enough		
57+02	A-11 told about PTC - by 58 hrs		
57+04	PTC Comm per Flt Plan		
57+04	Water dump terminated @ 0% A-10 Confirms		
	P-22 Sightings on both days were good enough to update the AH in the CMC - it will be updated to 35km, will generate load & xmit prior to start of PTC -		
57+24	P-52 in progress - Tweaking platform for PTC -		
	16 N 93 111 128 014 } Torque L₂		

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				119
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
57+30	Computer is h/a —			
	Star O ₂ & H ₂ TANK*			
	Cryo's started, will			
	leave all heaters in			
	Auto —			
57+44	Completed LM work,			
	putting probe &			
	drogue in —			
58+06	Starting PTC —			
	Picked up with			
	3 roll rate — OK.			
	Alt & contingency ch.			
<u>58+14</u>	PG F/2-22			
	Column 1	Line	New data	
		06	00001	
		07	02134	
	* Interrupted Sc. L.S. Oblique			
	& other data not stored			
	Pcd for redundant			
	compower			
58+37	Crew must have changed			
	the CO ₂ canister			
	the PCO ₂ came down —			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				120
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Advised crews that we wanted to update their ob'd data file			
71+20 110 FLT PLAN	1. Mon Sec Accum Qty			
	2. Sec Gly Rad vlv to Norm 30" then Bypass			
	If no decr in sec Accum Qty			
	Sec Gly/Rad vlv - Norm			
	3. Sec Cool ^{loop} pump AC-120			
	4. After 3 min verify Sec Gly Disch - Sec Press			
	verify 39 - 39 5 psia			
	Verify sec evap out T was chgd.			
	5. Sec Cool Loop Pump - OFF			
	6. Sec Gly Rad vlv to Bypass			
	Q+ We want to verify that we don't have a plugged radiator -			
59+21	Advising crew that we think their ob'lives were in wrong place			

MISSION NOTES

58 HR PLATFORM STATUS

A. IRIGS PRIOR TO UPDATE

$X - 2.24$, $Y \pm 0.87$, $Z - 0.11$ MERU
SINCE THE UPDATE

$X + 0.79$, $Y + 1.06$, $Z + 0.02$ MERU

THE LAST ALIGNMENT ~~W~~ OCCURRED
TO NEAR THE PREVIOUS ALIGNMENT
TO BE CONSIDERED COMPLETELY VALID.

B. DIPAS

UNCOMPENSATED DRIFTS ARE

$X 0.0004 \text{ \#}/\text{SEC}^2$, $Y 0.0003$, $Z 0.0$

PRIOR TO THE UPDATE THEY WERE

$X 0.0004$, $Y 0.0065$, $Z - 0.0042$

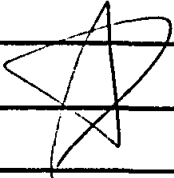
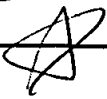
FLIGHT DIR MISSION LOG		DAY	REV	PG
		126		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Blanch #4			
	HORIZON NUMBER ✓ updated @ 57+30			
	MCC-4 - PTC - D.O.			
	SLEEP TIME -			
	PTC -			
	SPS PC SDRY TO CRGW??			
	Adnt Cnpt CKS -			
	ORBIT DETERMINATION - MCC-4 -			
	BREAKING UP OF PTC			
	SLEEP TIME 61 - COMM OFF -			
	SPS STAY ON PC - <u>US OR GREENIGS</u>			
	RNT CMTS CK -			
	LUNAR CHECKLISTS -			
	61:23 COR			
	61: 50 LMP			
	? CMP unplugged -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				127
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	TEAM BRIEF			
	F/ 65 nmi closest approach			
	62.9 previous To post incubation -			
	POST LOI 61.5 x 170			
	LOI 2 Targets 54 x 66 miles -			
	64:30 - New estimate on batch -			
	Good story in 1 hour -			
	R/ ELI PC+2 3400 fps 120665			
	within 700 fps of free return			
	@ 95 GET GET by flash @ 145			
	MPL -			
	15 MIN ASSURICAPAT UPDATE			
	LATTER PART OF SHIP -			
	COMMITTED TO GOING DOWN MODE			
	AOL 111 GET 77:50 6000 fps			
	QUICKEST RETURN POSSIBLE			
	G+ FOR DELETE MCL-4, PS2 TO OPTION 3			
	PICTURE FORMAT -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS		FLIGHT EVENTS/HISTORY/BRIEFING		
		GNC - NO OPEN ITEMS		
		OPEN ITEM - EXPLANATION OF PIR		
		UPSETTING		
		PC STORY - BY GREEN TEAM -		
		CUE CARDS GO FOR LOI -		
		99 TH DOWN FROM FLIGHT PLAN		
		<u>EECM</u> -		
		AT LEAST CRYO O ₂ STR, FC O ₂ FLOW		
		RATES DIPPED A LITTLE -		
		----- EXACTLY -		
		FC ^{#2} TEE STILL BEING AS		
		BEFORE - PERIODIC BURP -		
		ON ONE CELL ON ALL 7, 8, 9, 10.		
		O ₂ FLOW RATE - CREW PROC, MAX		
		PROC FOR BAD XDUCE -		
		DURING LAST LM PACTS, METER		
		PEGGED - THINK TAKE 5 TH /HR		
		TO PEG VICE 13 TH /HR NORMALLY		
		O ₂ RESONANCE AFTER WAKEUP -		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				129
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	RONT CHPT CK PRIOR TO LOI, ACTUALLY			
	FLOW SEL LOOP THRU RPD			
	VICE LEAK CK AS BEFORE.			
	INSTR READOUT NOT HOOKED UP SO			
	PRUSE TGM PIS OFF-SCALE LO.			
	PRUBE IS STOWED IN TUNNEL, NOT USABLE.			
	PTC UPSET - ELECTRICAL			
	<u>CONTROL</u> - NO TM DURING INGRESS			
	- LOG RPD SELFTEST 1-2-1 AS			
	PER CHECKLIST			
	- SPAN - FRACTURE MECHANICS			
	VENT DESCENT BEFORE DESCENT			
	(SECOND TIME)			
	OPEN -			
	- LOAD IN NOMINAL NUMBERS -			
	Δ numbers currently loaded			
	WITH WRONG SIGN -			
	99 GET UPLINK -			
	- ABS COMP NUMBERS HAVE WRONG			
	SIGN IN CHECKLIST			

FLIGHT DIR MISSION LOG		DAY	REV	PG 130
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>TELECOM</u> - CHECKLIST VERIFICATION -			
	- HOOPER 1700 -			
	- WATER TO DRINK, O ₂ FOR			
	AUTO RELEASE			
	- LEAK RATES < .1 #/HR			
	<u>CAROL</u> -			
	<u>SURGEON</u> - ~ 62 HOURS ASLEEP -			
	<u>OPD</u>			
	<u>APD</u> -			
	<u>FAO</u> - CAN STILL SLEEP UNTIL 716GT			
	(2 EXTRA HOURS)			
	<u>NETWORK</u> - GOOD SHAPE -			
	PARKES TEST ON SIGNAL STRENGTH -			
	WILL LEARN ABOUT SIGNAL STRENGTH			
	FOR TV & PLES -			
	TEST OVER AT GET 60 -			
	CONCLUSION AT 60 GET -			
	<u>GUID</u> - RTEC HAS WRING STARTING ADDRESS -			
	LOC PREPARED RETSMOTT -			
	PREPARED LOCATIONS -			
	FOR EVERY LM UPLINK OF RETSMOTT			
	WILL DO ALONGS WITH LIVE CORRECTION			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				131
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	UPSTARTING ADDRESS -			
	SPAN - NO COMMENT -			
64 -	GNC - KEEPUP PTL PLOTS -			
	ECCOM - JOHN BARNI HAS GONE OVER ALL CHANGES AS RESULT OF OLFUX X PULCH			
	SOME WILL REFERENCE TO CHECKLIST -			
CLIFF	SUGGEST REFER TO CL. PAGES & NUMBERS VICE NAME (BANK CONTAMINATION) - KEEP MARM DOWN, NOTHING ELSE WE CAN DO AT YWPM -			
64/06	GNC - RCS REPT 4 th BELOW A10 -			
	GREAT -			
64/11	E 72% HBR ON OMNI SWITCHING -			
	REST LBR			
64/17	CURIOSITY - WHY A10YOUNG THE MCL -			
	BANK A ALSO?			
	WOULD NOT WE HAVE LEARNED MORE			
	BY DOING EVAS BANK A, MCL BANK B?			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				132
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>64/21</u>	MEETING TOMORROW AT 10AM W GMLOW ON SECOND VENT OF DESCENT TANKS NO BIG DEAL, I THINK IT HAS TO DO WITH FR. MECH SOME TIME AFTER LIFTOFF LIKE DAYS - BUT WE'LL SEE -			
<u>64/33</u>	<u>FIDO</u>	SELECT PEOPLE DON'T WANT TO UPDATE WITH THIS BATCH - 2 MORE HOURS DATA IS NOW WANTED BEFORE ANY UPDATE IS ACCEPTED - <u>58:09</u> IS STOP TIME FOR PERTURBATION SO LOOKING AT DATA AFTER THAT TIME		
<u>64/36</u>	<u>GNC -</u>	SECOND CREWMAN PERFORMED A URINE PUMP DURING 20 MIN ATT HOLD PERIOD - NO CONCLUSION YET -		

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

CSM CONSUMABLES UPDATE PAD

CONSUMABLES UPDATE	
GET:	<u>68:00</u>
RCS TOT	<u>- 4.5%</u>
A	<u>- 6.0%</u>
B	<u>- 1.0%</u>
C	<u>- 7.0%</u>
D	<u>- 3.0%</u>
H ₂ TOT	<u>- 1.2#</u>
O ₂ TOT	<u>+ 10#</u>

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

TIME PREPARED ____:____:____
 INITIALS _____

FLIGHT DIR MISSION LOG		DAY	REV	PG
				33
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
67/09	62 hpc ± 2 Orentshape for LOI - 59.47 for Prod 3 59.6 $\therefore$ No MCC 4			
	7 $\frac{1}{2}$ dots after perturbation			
<u>67/10</u>	No MCC-4 official - .5 tps			
<u>67/31</u>	<u>N/</u> Prel analysis 1db worse than calculated That is adequate - Wing is 3db better than prime - Log on wings -			
<u>67/47</u>	PTC Tight $< 6^\circ$			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				135
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Dick Thron & Jack Knight			
	Activation			
	Descent			
	Surface			
	Rd 3.			
	Cont -			
	All renewal tonight by these men and			
	SSR and checklists are correct.			
	There are some minor items that our			
	men might do differently, but they			
	are to be are optional items.			
	Thron will start a summary of these			
	preference items and pass on to next shift.			
	We do not know of any items that the other			
	shifts have found incorrect - but we			
	will end up tonight with a list of preference			
	differences - and it is too late and			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				137
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>69/12</u>	"LMP might be timing a little bit"			
<u>69/14</u>	Het/ Reporting S/C is colling -			
	We are not hearing here -			
	GSFC voice heard there -			
	Handing over to HAD & checking lines -			
<u>69/19</u>	MCC Good Morning -			
	MCC			
	MCC-4 not Required - Let you sleep in till			
	GET 71 hours -			
	A1 - Roger - Collyer at 71 -			
	(That was Buzz - Was easy to arrive)			
<u>69/25</u>	Apparently, The S/C voice was coming			
	Thru - several positions heard it - although			
	very weak. The first exchange with the			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS		FLIGHT EVENTS/HISTORY/BRIEFING		
		Cap Com was also weak, but then		
		strengthened up - so we probably just		
		missed it - checking tapes -		
69/29		Sungun - looks like both are back to		
		sleep - did not even see CDR surge -		
		FIDS Another Update -		
		61-6 hpcr - outstanding -		
		Good for <u>new</u> MCC-4 -		
★		Hey - I just heard the White		
		Team ate all the cheese -		

FLIGHT DIR MISSION LOG		DAY	REV	PG 139
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	SHIFT SUMMARY			
	(1) NO MCC 4 - LAST UPDATE HAD CLOSEST APPROACH AT 61.6 nm - FID very happy -			
	(2) FLT PLAN UPDATE IN BOOK			
	(3) NO NECESSARY CHANGES IDENTIFIED IN C/L. THORSON WORKING TOWARDS A SUMMARY TONIGHT FROM ALL SHIFTS. SO FAR ALL I'VE HEARD ARE A COUPLE PREFERENCE ITEMS.			
	(4) CANNOT FIND ANY REASON FOR UPSETTING PTC. LAST RESORT IS JET DRIVER GIVING YAW RATE AT ROLL RATE INITIATION. HOWEVER, DATA AT GDS AND THEY ARE ASLEEP - GNC'S COORDINATING TO RECOVER IT TODAY WITH GDS.			
	(5) YOU CAN DISCUSS SPS PC WITH CREW. WE HAVE NOT HAD A/G WITH THEM EXCEPT FOR 15 WORDS.			
	(6) CHECKLIST CHANGES DUE TO O ₂ FLOW			

[illegible]

FLIGHT DIR MISSION LOG		DAY	REV	PG 141
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
70/03	SURGEON FIGURES COR MOVING AROUND -			
70+30	Green Team on Shift #4			
	F100 - onboard Charts & monitoring looks good on this traj.			
	Jud - standing by for vector for end loads & pad			
	B&C - 1) Data at GDS to evaluate last nite PTC problem.			
	2) RCS - total 53 [#] down 4 [#] below A-10			
	3) Additional P-52 to Verify replink numbers we put in			
	4) pc writeup - we & SPAN agree			
	ECom 1) monitor see loop check - crew has 5 min			

MSC FORM 1441 (APR 66)

FLIGHT DYNAMICS CHANGE OF SHIFT

SHEET 1 OF 1

MISSION _____

DATE _____

GET 71:00:00

PHASE _____

REV _____

GMT 12:30:00

CURRENT

h_a _____ nm

V_i 4087 ft/sec

h_p _____ nm

GET_{pc} 75:53:28

h_{pc} 61.64 nm

Orbit Period _____ min

h_{earth} 202143 nm

h_{moon} 112490 nm

MANEUVERS

☒ Predicted

☐ Actual

Mvr LOI1

GET 75:49:49

GMT _____

Rev _____ Over _____

ΔV 2917.3

Thruster SPS

Δt_B 6 M: 02.1 sec

PREBURN

POSTBURN

h_a _____

169.2 nm

h_p 61.64

61.0 nm

☒ Predicted

☐ Actual

Mvr LOI2

GET 80:10:40

GMT _____

Rev _____ Over _____

ΔV 161.1

Thruster SPS

Δt_B _____ M: 16.7 sec

PREBURN

POSTBURN

h_a 169.2

65.9 nm

h_p 61.0

53.8 nm

☐ Predicted

☐ Actual

Mvr _____

GET _____

GMT _____

Rev _____ Over _____

ΔV _____

Thruster _____

Δt_B _____ M: _____ sec

PREBURN

POSTBURN

h_a _____

_____ nm

h_p _____

_____ nm

NOTE:

NOTE:

NOTE:

Prepared by GREENE

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consummables
Update to Flight Director
for 70+00 GET

Cryos

Present Totals

H₂ 39.7 # (-1.3 #)

O₂ 470 # (+12.4 #)

Single Tank Lifetime (GET)

~~50~~ 50 amp 73 amp

O₂ 193

H₂ 169

Waste H₂O Tank 85% @ 92+00 GET

Next Dump @ TBD GET

Battery a-h remaining

Batt A 38.1 a-h

" B 38.8 a-h

" C 38.6 a-h

115.5 Total a-h

[Signature]

CSM CONSUMABLES UPDATE PAD

CONSUMABLES UPDATE	
GET:	<u>68,00</u>
RCS TOT	<u>-4.5%</u>
A	<u>-6.0%</u>
B	<u>-1.0%</u>
C	<u>-7.0%</u>
D	<u>-3.0%</u>
H ₂ TOT	<u>-1.2#</u>
O ₂ TOT	<u>+10#</u>

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

TIME PREPARED ____:____:____
 INITIALS _____

FLIGHT DIR MISSION LOG		DAY	REV	PG
		1 OF 1		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Pc RECOMMENDATION			
	1. EXPECTED ENGINE PERFORMANCE FOR LA			
	(INDEPENDENTLY ARRIVED AT BY			
	SPAN & FOD) IS 95 PSI Pc			
	SINGLE BORE AND 99 PSI DUAL			
	BORE.			
	2. THE CREW Pc METER SHOULD			
	READ 90 & 94 PSI RESPECTIVELY.			
	3. THE LOI CUTOFF CRITERION ON			
	Pc IS 80 PSI AS READ ON THE			
	GAUGE. THIS CORRESPONDS TO AN			
	ACTUAL Pc OF 83 PSI. THE 80			
	PSI NUMBER WAS CHOSEN NOT TO			
	REPRESENT A PLATEAU OF PERFORMANCE			
	BUT TO REPRESENT A SIGNIFICANT			
	DELTA FROM NOMINAL PERFORMANCE.			
	IF THIS ENGINE IS PERFORMING			
	WITHIN 80 → 85 PSI (ACTUAL Pc)			
	WE SHOULD NOT CONTINUE LOI.			
	THEREFORE THE CREW'S CUTOFF			
	NUMBER SHOULD NOT BE CHANGED.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				142
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
70+50	Ecom recommends storing Cyros gun to LOI to avoid master alarm.			
71+02	calling the crew to wake up. A-11 roger. Crew status CDK, CWP 7.5 LMP 6.5			
71+25	Assess pc site situation with crew - A-11 roger			
	* George Low and I agreed to the statements made.			
71+38	Ecom wants to start Cyro balancing.			
71+43	A-11 got quite a few pictures			
	h2 2 } Trs off O2 1 }			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				143
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
71+52	Earthshine Earthshine thru window is bright enough to read book A-11			
	Along ecliptic line can see light to 200 kilometers			
71+57	Ecom - rad out temps of 5 deg may get low enough to turn on rad Ltrs			
71+59	A-11 CDR can see stars occasionally in way - can see clearly now that that they are in darkness			
72+02	FIDO - CDR cannot see horizon at T.9-2 but CMP can this relates to couch positions			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				144
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	ECU missed antenna switch the and did not take			
	A-11 went to high gain			
	see loop check			
A-11	went to flow in rad			
	Qty from 40 to 36			
	to & stabilized			
	as expected - rad are cold			
	bring up DSC			
	LM doublet fun			
	MAD ??? <u>harmonic</u>			
	{ see rad flow check			
	{ complete & satisfactory			
	{ A-11 good deal			
	no more meeting			
	ECU concurs			
72+22	P-37 Block data correct			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				145
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
72+24	Cannot get cmds via s/c up TLM cmd reset? cycle reset to off back to normal A-11 roger that fixed it Scan limits go to Omni D we can get back in business he can select B D read			
	A-11 Selected B			
72+29	reading News to Crew. LOS 75+41+23			
72+56	LOI pad up - readback correct.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				146
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
73+02	Cycle fans in all tanks at 74+30			
EEem	{ pyro Batt & Batt c readouts from crew 37.1 V all three			
	Borman Peter Flaminga White House			
73+06	Starting P-52 option 3			
	Complete & good 1.5 mm in X & y none in Z			
	EEem wants to tweak up primary accumulator to between 30 & 40 %			
	A-11 View of moon is Spectacular - worth price of Trip			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				147
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
73+21	loads in & verified A-11 roger.			
73+22	Drift X 1.21 menu Y 1.19 menu Z -.03 menu Very good platform. No pipA bias update required. Accumulator now at 36 % Ecom satis fed. { AOS 76+15+29 with LOS 76+05+30 no burn 76+08+30 mode III based on MAD			
73+40	A-11 radio check high gain ? yes P 0 Y 335			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				148
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
73+42	Completed P-52 OPT 1			
73+57	73+57 block data - readback complete			
	74+30 auto in all 4 Tanks hts cycles fans in all low tank			
	Stratify causing MC & W A-11 Roger.			
	FNO - 0 Septant Star Check Disregard HTT			
74+34	P-40 in burn altitude gave him 5 band angles.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				149
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Standing by for			
	hi-fair.			
	Good - everything normal			
	in P-40			
	FAD recommends deleting			
	360 deg <u>pitch</u>			
4-11	Deleting Pitch now			
	he went wrong			
	way.			
74459	Bats are starting			
	gumbal test			
75403	gumbal test good			
78410	FIDO = 3 independent			
	verifications of Targeting			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				150
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
75+21	guid P-30 tgts good			
75+30	go for LOTS			
	enable B/D roll reminder			
	PC m low over the			
	hill A-11 roger			
75+49	recycling CP's			
	AOS CPM & MAD			
	burn status			
	all residuals .1			
	Systems ok			
	Doppler residuals good			
76+21	FBO on high gain.			
A-11	like perfect 60.9 x 169.9			
	5+57			
	-6.8 Avc			
	38.8 fuel +50 in balance			
	39.0 OX			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				151
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	C & O, BN-2 Tank B			
	dropped a little			
	more than expected			
	during burn - the			
	looking at this now.			
	dropped about 130 psi.			
	A-11 view of landing			
	approach - A-10			
	pictures & maps are			
	good			
	FIDO 61.6 x 169.5			
	12 minutes of data			
76+37	C & C 1946 psi now			
	which indicates holding			
	pressure while not			
	thrusting.			
76+38	A-11 over igniter port			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				152
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
76+41	till crew about			
	CPN ₂ Tank B			
	holding now			
	looks like we should			
	do LOT ₂ Single bank			
	onboard readout -			
	1960 B			
	2250 A			
76+48	compute at LOS			
	5 minutes to MED			
	for LOT ₂ computation.			
	evap out Temp			
	peaked at 55.5			
76+53	R P Y angles to			
A-11	stop orb rate			
	plus Time.			
	will stay in orb rate			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				153
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
7703				
	A-11 Crossing 45 W			
	77+04+10			
640	asked for C&C position			
7704	77+12 for 45 W			
	C&C recommends			
77+11	LOT ₂ on Bank A			
	orbit so precisely			
	Time setting of 15 sec			
	on planet - 1 good technique			
	for measuring altitude			
	Slight amount of			
	flouresce around Aristarchi			
	dull glow at that			
	area is what has			
	been observed.			
	Some area reflecting			
	earthshine / will			
	more illuminated than			
	other			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				154
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
77+20	Ecom happy with all systems. B & C has the 2 anomaly.			
77+23	Crew understands BANK A only Network is set up for TV TV next front side pass.			
77+34	Confusion TV up A-11 Affirmative Handover with Bull statement.			
77+40	LOS - MARoon Handover -			
77+50	61.4 x 170.3 - TRACKING Data 1 Rev .001° LAT @ LANDING N ₂ tank B - holding steady @ 2010 psi some heat soak back			

MSC FORM 1441 (APR 66)

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consumables
Update to Flight Director
for 6200 GET

Cryos
Present Totals
H₂ 40.5# (-1.9#)
O₂ 477# (+3.2#)

Single Tank Lifetime (GET)

50 amp	23 amp
O ₂ <u> </u>	<u>186</u>
H ₂ <u> </u>	<u>164</u>

Waste H₂O Tank 85% @ 8600 GET
Next Dump @ GET

Battery a-h remaining

Batt A 38.4 a-h
" B 39.5 a-h
" C 38.6 a-h

Total a-h

[Signature]

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

FLIGHT DIR MISSION LOG		DAY	REV	PG
				122
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
59+59	Terminating the PTC we do not know why it diverged - possibility is that crew was dumping urine frequently - however there is also the possibility that there may have been some venting - sure picked a good attitude - now we have no comm in this attitude - if we get him, have him roll to ~ Mode 200 uplink - will try voice again - Crew receiving is Loud & clear x			
<u>60+15*</u>	CMD Rst - Ounki A we are stable - start PTC			
6+20	PTC Initiated - Looks Good			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				123
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	6000 miles from S/C			
	4329 nm @ 2022 GMT			
60+48	Crew Asked where the			
	S-IVB was we gave			
	them the above figure			
61+00	Crew turned the voice			
	off			
	EVA Flood Light,			
	Right Side of CSU			
	Hatch, cork covered,			
	deployed when BPC			
	is dettisoned 3+17 get			
	near			
	Res Qand B			
	FDO -			
	MCC 1 2 fpa - not recommended			
	POCA 62.92			
4 min	LOI ₁ - 75+50+02			
<u>early</u>	LOI ₂ - 80+12+00			
	with no MCC			
	54x6 53.9 x 65.6			
	Passing over biased			
	lgs site *			
	SUN $\angle$ at PDI 10.9°			
	at DOI $\rightarrow$ 56.4 x 63.3			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

KRAVZ (3)

7/18/69

54+30 → 62:30

125

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

Shift Summary

1. The TV Today, & The LM IVT seemed to go well, entered LM at 55+36 → closed out at 57+44

2. We have a spook:

(a) PTC went Ape at 58+06 & was terminated at 59+59. - it was offset $\approx 20^\circ$ & still not stable

(b) It looks like we had about 2 hrs of venting show up in TRAY - 56:41-58

(c) All H₂O dumps & venting dumps are accounted for - we don't think LM was venting.

(d) No Answer

3. Updated ~~the~~ CMC & Crew Checklists for AH based on P-23 data.

4. Cryo - Heaters - Auto (4)
FAWS - OFF

5. Updated most of orb'd data - (a) Sec Rad/Loop Test
(b) M.R. Card
(c) DRS/APS/RES Card

July 15, 1969

FC/Chadlow

SPS Solenoid Driver Anomaly:

As a result of recent discussions with regard to the SPS Solenoid Driver problem seen prelaunch, we have come to the following conclusions:

1. Normal Procedures: ΔV Thrust switches will be closed at ignition for rescue burns only.
2. All other burns will be initiated by normal procedures unless an anomaly is noted. (Normal procedure calls for arming at TIG - 2 min.)
3. Should we experience the anomaly in flight (both drivers, and loss of SPS ready) we will handle the various burns as follows:

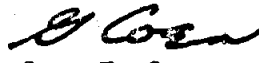
MCC's - TLC - arm the single appropriate ball valve between TIG = 5 and TIG = 1.

LOI's, P_c, TEI arm at TIG = 0

The contingency procedures, as outlined allow for isolation of the location of the ground during TLC, but not in Lunar Orbit. The single advantage of isolation of the ground location is that G&N controlled start/shutdown can be accomplished on the other bank.

If the engine fires at TIG - 2 min, the Crew has said they will probably do LOI. If it fires at arming prior to TEI, they will definitely do TEI at the planned time.

All the above has been discussed with and accepted by the Program Office. Mr. Low has discussed with Crew.


Gary E. Coen

FLIGHT FROM

MISSION NOTES

SPS AV CAPABILITY

AFTER LOI, GET 78 + 24

CSM ONLY AV = 5224 SPS

BT = 227

BLOWDOWN AV = 4250 ..

BT = 248

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consummables
Update to Flight Director
for 77:00 GET

Cryos
Present Totals
H₂ 37.5 (-2.1)
O₂ 451 (+7)

Single Tank Lifetime (GET)

50 amp	50 amp	73 amp
O ₂	<u>>200 hr</u>	<u>193 hr</u>
H ₂	<u>>200 hr</u>	<u>171 hr</u>

Waste H₂O Tank 85% @ 86:00 GET
Next Dump @ _____ GET

Battery a-h remaining

Batt A 33.3 a-h
" B 34.2 a-h
" C 38.6 a-h
106.1 Total a-h

FLIGHT DIR MISSION LOG		DAY	REV	PG
				155
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Change Batt A			
	LOI ₂ - R-000, P-196, 359			
78+22	LOI ₂ - TAT Load + SV @ Sites PAD READY			
	AOS -			
78+25	- Poo + accept up linking -			
	014° LAT NORTH @ PDT			
	- Dark Pit on Back side - Fresh Contrast			
	Good TV -			
	Difference in N ₂ tank 2350 - B 2270 - A			
	Steady on theta - then drifted			
78+31	Smyth's Sea, Etc			
	CM being pulled down toward earth - Register 3 crossing -			
	78+53 terminator -			

July 19, 1969

GET: 78:00

ELECTRONIC SYSTEMS

The communications subsystem adequately supported LOI₁. The CSM configured to LBR PCM and backup down voice before LOS. The PCM was changed to HBR for the LOI₁ burn and was recorded on the DSE. GYM reported AOS at approximately 76:15:25 as the CSM came from the back side of the moon. The omni antenna was used until about 76:25:00 when the HGA was selected. The FM transmitter was turned on and the burn data on the DSE was successfully dumped and received by Madrid.

Inverter performance is nominal with an inverter temperature increase of 6°F on all three inverters due to the ECS coolant loop warming up in lunar orbit.

CREW SYSTEMS

CSM ECS is operating as predicted in lunar orbit environment.

GUIDANCE AND CONTROL

All system indications are normal. LOI₁ residuals were:

X -0.1 ft/sec
Y -0.1 ft/sec
Z +0.1 ft/sec

The EMS velocity counter has been used to monitor all SPS maneuvers and has performed well within expectations.

THERMAL

All CSM temperatures are within acceptable operational limits. During the lunar umbra period a cooling trend was observed on the SM RCS helium tank measurements with quad B tank reaching 59°F. The SM SPS storage tank temperatures decreased approximately 10°F to 60-61°F as expected as a result of the LOI₁ burn.

COMMUNICATIONS

Communication system performance during the first lunar orbit was good except for the time period between AOS and 72:21:20. During this period, the CSM was on an omni antenna and voice communications were noisy due to low downlink signal strengths.

PROPULSION AND POWER

CSM RCS - All parameters are normal. The propellant status at LOS was as follows:

	A	B	C	D	Total
Actual Prop. Remaining	243	260	237	251	991
Predicted Prop. Remaining	260	260	259	260	1039
Actual Apollo 10 Prop. Remaining	256	255	253	258	1022
CSM Rescue Redline	--	--	--	--	750

7 lbs used since beginning of LOI₁ activities

SPS - SPS operation during LOI₁ appeared nominal in all respects except for an apparent leak in the bank B GN₂ actuation system. The attached plot indicates the pressures recorded during the burn. After shutdown the pressure remained constant. The pressure may fluctuate, due to heat soak back, for several hours.

Fuel Cells - Performance is normal. No change to report.

Cryo - All systems are normal. Quantities are:

Oxygen	Hydrogen
Tk 1 Tk 2	Tk 1 Tk 2
217 lbs 234 lbs	19.1 lbs 18.4 lbs
Total Oxygen 448 lbs	Total Hydrogen 37.5 lbs

Battery Status

CM Batteries	AH Out	AH Remaining
Batt A	6.901	33.099
Batt B	6.467	33.533
Batt C	1.473	38.527

105.159 total AH remaining

Comments

Entry battery performance (A and B) on TVC check, Gimbal check, and LOI₁ was nominal, following expected voltage/current characteristics.

Present indications are go for LOI₂. A verbal update will be presented at 79:30.

Joe W. Jackson
Baron Cohen

FLIGHT DIR MISSION LOG		DAY	REV	PG
				156
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
78+59	TV Completed - went all the way to terminator -			
	SPS - somewhat hot - - leak looks linear while open			
79+05	Confirm Up TLM / Norm			
79+06	Up TLM Norm now -			
	Commands going in Normally			
79+16	Rads - peaked out @ 60° - looks better than expected			
	NEED TO update TEI ₄ PAD due to large mid course			
79+20	P-52 - Completed - O.K.			
	Go FOR LOI ₂ -			
79+37	P-30 O.K. -			
	Los - Go -			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG 157
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	@ AOS - 5.4 psi in CSM - Direct LM pressure 3.7 mm			
80+34	AOS - GDS			
80+34	LOS - GDS			
80+35	AOS - GDS, HAW			
	- 0.1 LOI ₂ butn			
	- 0.0			
	- 0.1 ΔT_{ig} - 0			
	- 5.2 - BT 17 Sec			
	Fuel 36.2, O ₂ 36.4 +50			
	N-94 66.1 x 54.4			
	Told A-11 5.4 psi is fine CM/LM ΔP slightly above 1 psi			
80+41	Carrier Hand over to HAW - LOS			
	No Comm - probably O.K.			
80+47	- Voice + HBR - back -			
80+47	Pressurizing LM			
80+50	charging Batt A -			
80+50	DSE Pump in work			

FLIGHT DIR MISSION LOG	DAY	REV	PG 158
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
80+58	Wave appear to be higher than surrounding terrain		
	Miss distance 07° NORTH		
	Expected mil 59.9 x 59.4 @ CDH		
81+05	P-52 completed looked OK		
	-		
	Verify - audio Center		
	- mS band		
	by trying VHF		
	if S band		
	Go Normal Voice, LBR		
	See X-ciever		
	+2005 Docking Angle @ 56 hrs		
81+23	- Probe + Drogue stowed - almost ready to open LM hatch		
81+25	A-11 ^{crew} in LM - Docking under same		
81+28	Can't get Reprss from Close to Auto without big bang		

(Trim front page on solid crop marks; back page on dash crop marks.)

739

*Has not been
Read up -*

*RED ARE CHANGES Due
TO O₂ flow gage being
sick - no read up
required unless unusual
activity occurs*

F
10-9

11 CABIN PRESSURIZATION

- A NORMAL 30 min
CAB PRESS REL vlv (2) - NORMAL (latch on)
MONITOR SURGE TANK PRESS
REPRESS PKG vlv - FILL
REPRESS O₂ vlv - OPEN
AT 150 psia on SURGE TANK:
REPRESS PKG vlv - OFF
CABIN REPRESS vlv - Adjust to 150 psia on
SURGE TANK

AT ZERO psia on EMERG O₂ GAUGE:
REPRESS O₂ vlv - CLOSE
CAB REPRESS vlv - OPEN
WHEN CABIN PRESS = 4.7-5.3
O₂ PRESS ind - TANK 1
CAB REPRESS vlv - OFF

B ALTERNATE, 52 min
CAB PRESS REL vlv (2) - NORMAL (Safety latch on)
EMER CAB PRESS vlv - BOTH
CAB REPRESS vlv - OPEN
MONITOR SURGE TANK PRESS
At 150 psia on SURGE TANK:
EMER CAB PRESS vlv - OFF
CAB REPRESS vlv - Adj to 150 psia on SURGE TK
WHEN CAB PRESS ≥ 4.7
O₂ PRESS IND - TANK 1
CAB REPRESS vlv - OFF

Basic Date April 15, 1969
Changed June 27, 1969

Basic Date _____
Changed _____

12

(DELETED)

CSM 107 & SUBS

13

SUIT CNT INTEGRITY CHECK
DIRECT O₂ vlv - CLOSE
SUIT PRESS - 4.7-5.3 psia
O₂ FLOW - 0.2-0.4 lb/hr

CAN NOT PERFORM USE PGA INTEGRITY CHECK
PAGE F10-10
STEP 14

(None req'd)

CAUTION

SUIT TEST vlv should remain

Front

F
10-11

SUIT TEST vlv - PRESS
O2 FLOW - 1.0 lb/hr (pegged)
O2 FLOW HI lt - ON
M/A - ON, Reset
SUIT PRESS - 8.8-9.8 psia
PGA PRESS - 4.1-4.5 psig

WARNING

SUIT FLOW vlv(s) may remain in OFF position for no longer than one minute or asphyxiation may result. If all SUIT FLOW vlvs are closed simultaneously the suit compressors must be shut off to prevent compressor damage due to suit loop deadheading.

SUIT FLOW vlv - OFF
Monitor for <0.5 psi/min decay
SUIT FLOW vlv - SUIT FULL FLOW
SUIT TEST vlv - DEPRESS
O2 FLOW HI lt - out
O2 FLOW - 0.2-0.4 lb/hr
SUIT PRESS - slightly > CAB PRESS
SUIT TEST vlv - OFF

15

CM PRESSURE DUMP

EMER CABIN PRESS vlv - OFF (verify)
CAB REPRESS vlv - OFF (verify)
SUIT RTN AIR vlv - CLOSED (verify)
CABIN FANS (2) - OFF
DIR O2 vlv - CLOSE
CAB PRESS REL vlv (RH) - DUMP (latch off)
CABIN PRESS - 3.0-3.25 psia
CAB PRESS REL vlv (RH) - BOOST ENTRY
O2 FLOW - ~~0.2-1.0 lb/hr~~ (PEGGED LOW 0.2 LB/HR)
SUIT PRESS - 3.5-4.0 psia

(EVA ~~HT~~ TRANSFER
EVT
ONLY -)

CSM 107 & SUBS

Basic Date April 15, 1969
Changed June 27, 1969

Back

739-149

F
11-6

Verify gearbox disconnect socket - L

- *If latches cannot be closed: *
- *GEARBOX DISCONNECT - 180° CCW (tool B)*
- *AUX LATCH DRIVE - LATCH (113° CW) *
- *Verify hatch latched, remove tool B *
- *(Cannot remove hatch from LM side) *

ACTR HNDL SEL - stow.

- push to stow

PRESS EQUAL vlv - CLOSED (CW)

(C)

12 HATCH INTEGRITY CHECK (Decal)

Verify LM Hatch Closed, DUMP vlv - AUTO (CDR)

Verify CABIN PRESS ind - 4.7-5.3 psi

TUNL VENT vlv - TUNL VENT for 30 sec

- LM/CM AP, check AP

- Recycle to TUNL VENT until AP > 3.5
(x 8 1/2 min)

*Cannot vent tunnel: *

- * If O2 FLOW ind. increases, open hatch, *
- * wipe seal surfaces, close hatch *
- * If O2 FLOW ind does not increase, dump *
- * tunnel through LM during reg check *
- * Monitor LM/CM AP & flow to check in- *
- * tegrity *

Verify LM/CM AP ind constant (+.2) at last value
for 2 min

IF NOT CONSTANT AP

~~Verify O2 FLOW ind. no increase~~

MSFN WILL DETERMINE LM LEAK RATE

Before undocking only:

TUNL VENT vlv - LM TUNL VENT

for 10 min, then LM/CM AP

Verify LM/CM AP > 4.0 (pegged)

TUNL VENT vlv - OFF

TUNNEL LIGHTS - OFF

Before Jettison only:

TUNL VENT vlv - TUNL VENT (at least 10 min)

TUNNEL LIGHTS - OFF

MALEFUNCTION LIST

DOCKING

A. Positive Indication of No Capture

THC -X withdraw to formation
flight distance

Basic Date April 15, 1969
Changed June 27, 1969

problem
only if CSM/LM
ΔP changes -

Front

P-261

should tell crew to Crack
11-11 Direct O₂ valve & press on -

Verify CRYO O₂ PRESS ind - 865-935 psia
REPRESS PKG vlv - OFF
DIRECT O₂ vlv - OPEN until CAB PRESS 5.5 psia
then CLOSE until O₂ FLOW $\rightarrow$

SLIGHTLY > 0.2 LB/HR THEN $\rightarrow$ 15/HR.

~~SLIGHTLY > 0.2 LB/HR THEN~~
CLOSE 5°

NOTE: LM RELIEF
VALVES MAY OPEN
DURING TRANSFER

TUNL VENT vlv - LM/CM AP
LM/CM AP ind - +4 psid (pegged)
PRESS EQUAL vlv - OPEN until LM/CM AP ind -
~3 psid then CLOSE
Monitor LM/CM AP ind for 3 min and verify
AP stable
PRESS EQUAL vlv - OPEN
Remove hatch and stow (DECAL) (3)
Verify docking latches (at least 3)
Transfer the following to CDR:
Helmet Stowage bag (2)
SRC bags (2)
CSC bag (1)
Hasselblad magazine bag (1)
Closeup camera cassette bag (1)
- Vacuum brush (1) with 3 ft hose
Glove bags (2)

Receive from LM & stow

Item	CM Stowage Location
Helmets (2)	Food containers (upper Equip B)
SRC's (2)	B5, B6
CSC (1)	A5
Hasselblad magazines (3)	R13
Closeup camera cassette (1)	A5

Transfer B5 & B6 containers to LM

CDR to CM with ISA
Remove & stow ISA contents
Return ISA with CM Jettison
articles to LM

LMP Close LM hatch
Transfer to CSM
CMP DIRECT O₂ vlv - close (CM) (DECAL)
Install forward hatch (11)
Perform hatch integrity check (12) (Decal)

Basic Date April 15, 1969
Changed June 27, 1969

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F
12-3 C-71

Verify PGA comm lead inside PGA and
clear of suit neck ring
Place helmet attaching neck ring in
the "ENGAGE" position
Position mike, don helmet (with shield) and lock
Secure helmet stowage bag
Place suit wrist disconnects to "ENGAGE" position
Don gloves and lock
SUIT RET vlv - close (push)
EMERG CAB PRESS sel - off
Check all PGA connections and
verify locked.
Ingress LH couch

PRESSURE INTEGRITY CHECK

DIRECT O2 - closed (CW)

Verify suit press - 4.7-5.3 psia

Verify O2 flow ind - 0.2-0.4 lb/hr

USE PGA INTEGRITY CHECK
PAGE F10-10
STEP 14

No + Reg'd

CAUTION

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

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

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

SUIT TEST vlv - press

O2 FLOW ind - 1.0 lb/hr (pegged)

Verify O2 FLOW HT it - on

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

Basic Date April 13, 1969
Changed June 6, 1969

CSM 107 & 108

Basic Date
Changed

(Trim front page on solid crop marks; back page on dash crop marks.)

F
12-16

C-3/3.

PRESSURE INTEGRITY CHECK

DIRECT O2 - closed (CW)

Verify suit press - 4.7-5.3 psia

Verify O2 flow ind - 0.2-0.4 lb/hr

USE PGA INTEGRITY CHECK
PAGE F10-10
STEP 14

Not Rec'd

CAUTION

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

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

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

Basic Date
Changed

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

~~Suit test vlv - open and closed at suit pressure of 1.5 to 2.0 psig~~

SUIT PRESS ind - 8.8-9.8 psia
PGA PRESS gage - 4.1-4.5 psig
Verify O2 FLOW HI lt - out
Allow → O2 flow to stabilize 15 sec
O2 flow will remain below 0.8 lbs/hr for 30 sec after stabilization
SUIT TEST vlv - depress
O2 FLOW ind - 0.2-0.4 lb/hr
SUIT PRESS ind - slightly > CAB PRESS
SUIT TEST vlv - OFF
Verify DEMAND REG SEL - BOTH

Basic Date April 15, 1969
Changed June 6, 1969 July 12, 1969

CSM 107 & SUIS

Institute for Space Research, Bachmann
Germany

Reported observing brightness in Aristarchus
at 18:46 GMT for 5-7 seconds. Report
stated the brightness was about 1 magnitude
brighter than surrounding area.

Crew obs was at 18:45 GMT

FP-2

FLIGHT DIR MISSION LOG	DAY	REV	PG 159
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
81+30	Water in CSM for first time - how do we suggest they get rid of it. On aft bulkhead		
	Water - F-10 -14 suck up in waste/ dump system if too much to mop up		
	53.9 x 65.4 - confirmation of MNVR		
	Tracking Data - confirms - previous data -		
82+29	Clock update - send it up now - think we can get zero @ DOI - will send up with State Vector		
82+32	AOS - Data + Voice		
82+41	MOC down - going to DSC Change over O.K.		
82+47	- P-22 looks Very good -		
82+51	DSE DSC DSC coming on line up + running		
82+53	A-11 - DAP Thruster activity - Pitch Accel, Roll + yaw in Rate Cmd -		

FLIGHT DIR MISSION LOG	DAY	REV	PG 160
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
82+57	Can see entire landing Area		
	EECOM has procedures for O ₂ flow meter failure - decided not to read them up unless needed - the only normal one is flow to prevent back contamination and a simple "crack Direct O ₂ valve" should suffice -		
83+02	On TM power -		
83+03	Dump Water to 25% on backside		
	Descent T/B B/P vice grey		
	c/b out - (Descent ECA)		
	OK now -		
83+05	GDS feeding Data Voice thru wrong buffer ? OK now		
83+06	LM Data Control, Telcom - D.K.		
83+10	Eagle Call - 4x4 - but not in attitude yet		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				161
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	- Control data - 6.4 #/hr She			
	Columbia in sleep attitude			
	LBR-			
	Reading LM 5x5			
83+15	HBR Data - Down Voice B/U - 5x5			
83+18	{ S Band Voice to Normal { HBR Data - Voice loud + clear both ways Uplinking CMC -			
83+20	both 70 mm & both 16 mm cameras check out			
	Eagle 5x5 on 85' HBR HBR data in & out -			
83+23	Solid LBR - Voice 5x5			
	Guidance Has Computer uplink problem			
83+26	uplink completed			
	27.0 volts on low taps - Securing			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				162
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
83+33	- LM Data off -			
83+38	LM on CSM power			
83+39	OPS pressure - 5750 psi			
	① APS oxidizer will give MC+U She - 6.4 #/hr ② - Thruster firings in P-22 - CMC was trying to hold 5° deadband, Pitch got cross coupled into Roll + Yaw Recommend CMC free on SCS in all 3 axis in main impulse ③ Consumables OK ④ balance Cryo tanks H₂ tank 2 2 Hel O₂ tank 1 1 OFF terminate Battery charge ⑤ P-22 results very good ⑥ Avoid using tunnel preload Mal procedure - F11-9			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				163
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
84+30	AOS - passed data to crew			
84+40	CDR 11012 CMP 10013 CMP 09015 No Medication			
	54.4 x 65.2 - 2 Rev tracking			
84+42	Crew plans to take Monocular into LM - do we care? 0.7# - Do - but we didn't tell Crew			
84+46	Landing Radar Antenna failures provided by Guido - in front of this log book			
84+48	- Host Lock - 			
84+53	- Voice back - 15° Pitch 270°			
	AOS - was auto mat'ic coming around corner			
	Auto RCS - C-3 - disabled why not all?			
85+06	- Quad C - all now disabled			

FLIGHT DIR MISSION LOG	DAY	REV	PG 164
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
85+11	Trying to drop lock to see if auto Reag will back - told A-11 to give us a hand in 3 min		
85+12+30	- Carrier off - Carrier on		
85+14	- Reag. 0.3 sec moved forward 40°P 240° yaw 275° y, +15° Pitch on wheel settings		
85+16	- Repeating test with longer down time		
85+17+30	Down		
85+18	Carrier back up -		
85+19	Zero the optics - 255 45° - angles stayed there		
85+30	Crew still eating - will chlorinate and change CO ₂ sensor		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				165
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
86+05	- Comm problem last Rev was on the ground - bad power supply @ GDS			
	CLIFFS CRYO PLAN FOR NITE-TURN O₂ TANK #1 & H₂ TANK #2 HEATERS OFF TO BALANCE TANKS			
86+10	- PL PLANE CHANGE NOW 10.2 FPS - will not need to do unless > 20 FPS			
86+30	AOS - 2 min late ?? Auto ReAcq - OK.			
	N ₂ Ball Valve Story - SPAN + GNC			
	1) Linear leak - Can outlast SPS fuel ga			
	2) CSM Rescue - Single bank unless A			
	3) TEI - dual bank fails -			
	P-22 Control mode - should use all cnc or all SCS stick mixed - = should increase deadband to 50 (all min, rate high) att deadband max, rate low this is for case of LM attached because of pilot training			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				167
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	MAROON TO BLACK CHANGE OF SHIFT NOTES			
	(1) Comm lost @ 84+48, in middle of pass after auto ReAcq at AOS - Ground problem - did 3 more auto Reacquisition with no problem - crew told OK to sleep.			
	(2) GN₂ - SPAN + GNC think to stick with Single bank until TEI, use bank B for CSM Rescue if A fails, do not trouble shoot			
	(3) LM Comm great all modes 210' dish, OK^{85'} except HBR. noisy with Normal Voice			
	(4) all LM Systems go - She 6A#16R APS Oxidizer will trigger MC+W due to He absorption			
	(5) FIDO looking at Plane change - not now required (1002 fps)			
	(6) Crew wants to take Monocular into LM for DOI - no sweat, but we didn't tell them			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				169
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	(7) P-22 data great - stick with present control configuration due to crew training only costs 15# RCS extra			
	(8) Crew Says will not enter CM early tomorrow			
	(9) Landing Radar Failure cases in front by log book -			
	(10) Cryos turned off - O ₂ tank #1 H ₂ tank #2 to balance quantity			
	(11) updated CMC clock to get right for DOI			
	(12) Changes to flow meter procedures in book - don't need to read up unless problem arises -			
	(13) Tunnel Malfunction procedure on page F-11-9 no good - crew knows SPAN still working			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(170)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	RETR - TEI-11 onboard			
	- TEI-30			
	<u>FIDO</u> - ① Tracking data for Rev 14			
	Checking start constants,			
	Biases T ₂			
	② Out of plane - higher in latitude			
	running a little north -			
	0.1°, 10K feet.			
	locally -			
	No possibility of plane change			
	if it keeps up the way it			
	has been			
	(Rev 11)			
	③ 15 minutes of data -			
	radial 100'			
	dist rad 100'			
	out of plane 6000'			
	CGR c/o vs keel to speed -			
	Velocities 1/2 fps			
	All very happy -			
	Some stations ad Dec.			
	GDS - MAP - ASC -			
	★ ④ Plane Behavior			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>GOV. P</u>) - No problems - Unit Vectors for T3 - Scaling of abort constants - -			
<u>Gene</u> →	9966T - LM unsuitable for solar to body sps			
	<u>Control</u> - LM looked good - - All props, she, ASC OX (111 psi) - ASC press lite - - Crew informed - - will get it when HCFW up - - No significant changes - - except second Descent tank - vent - - No charges except for ↑			
	<u>TBCOM</u> - all looked good - - Voice TM compatibility - Normal, Voice HSR acceptable 210 " " not good as 85' - Glycol pump on, no water 1° rise in 30 min -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				171
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>EECOM</u>			
	ECS - Pri. Rad heater at -15° within			
	.15 of pred current -			
	Rbysom first in man umbra.			
	- Accum QTY dropped - filled			
	unb'd well			
→	- Pri Rad out Temp 66°			
	Compare with 10 -			
	- O ₂ flow in Accum Cycles -			
	- All procedures unb'd and			
	agreed To - Minimal - Final			
	IVT - Crash Preit O ₂ valve -			
	- lower than normal pre expant			
	Temp. - Exp is off -			
	Crgs - Balancing			
	O ₂ Tank #1, H ₂ Tank 2 off -			
	EPS - FC #2 RE no change			
	- BATO charge - most back in			
	Comm - Recycled switch on UPL -			
	- On HGA Reaq - unb'd last			
	AOS -			
	<u>CHACOM</u> - Monocular TOLM - yes To crew -			
	<u>Surgeon</u>			
	<u>AFR</u> -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>FAD</u> - altitude of A ₁ setting 500'			
	above landing site -			
	altitude of check during Resc-			
	<u>Net</u> - Couple items -			
	- Cool pump HSK - effect?			
	- GPS Wing Power Up for System #3			
	effect ??			
	<u>GNC</u> - A10			
	- 25 th SMRSS below A10			
	- PTC gear - Thrust closed out -			
	fired small next to will jet -			
	- Single bank rescue			
	Dual TGI -			
	<u>SPALL</u> - No Comment -			
	see tagged up -			

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consumables
Update to Flight Director
for 88+00 GET

Cryos
Present Totals
H₂ 35.34 (-2.26)
O₂ 431.2 (+7.7)

Single Tank Lifetime (GET)
~~H₂~~ 50 amp 73 amp
O₂ 192
H₂ 176

Waste H₂O Tank 85% @ 104 GET
Next Dump @ — GET

Battery a-h remaining

Batt A 38.3 a-h
" B 32.2 a-h
" C 38.6 a-h
109.1 Total a-h

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(172)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>88/26</u>	Rev 7 -			
	STG by fr A05 - Right on time -			
	HBR - looking good -			
	10° PB - Single jet Quad A -			
	Quad A on -			
	Quad D yaw on -			
	10° PB -			
	<u>GNC</u> 229 p, 0 y, 82 r.			
	<u>Surgeon</u> - all looks sleep -			
	- Quiet in ready to sleep 87:20 -			
	~ 6 hour sleep time -			
<u>89/10</u>	<u>GNC</u> 76 th below flight plan 25 th below A10			
<u>89/18</u>	88:30 was last O ₂ rate indication			
	of serum cycle -			
	However, have seen the O ₂ MHD press			
	dip on the 10 min CTE.			
	∴ figure the serum is OK -			
<u>89/20</u>	O ₂ flow rate back to .23 at last cycle			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				173
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
89/27	F100, Onboard solutions, RW 2-73			
	The data are consistent with the A10			
	results.			
	They are in the right direction for			
	However,			
	Trends; it is still early to be sure			
	of the absolute magnitude of the out			
	of plane displacement for POI.			
	So encouraging, continue Bunch			
89/40	LOS - All normal -			
	Checklist Review during pass LOS -			
90/26	POS - New 8 -			
	all normal -			

CSM CONSUMABLES UPDATE PAD

CONSUMABLES UPDATE	
GET:	<u>91+30</u>
RCS TOT	<u>-770</u>
A	<u>-890</u>
B	<u>-2.5%</u>
C	<u>-10%</u>
D	<u>-6.5%</u>
H ₂ TOT	<u>-2#</u>
O ₂ TOT	<u>+9#</u>

-83#

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

CONSUMABLES UPDATE	
GET:	_____
RCS TOT	_____
A	_____
B	_____
C	_____
D	_____
H ₂ TOT	_____
O ₂ TOT	_____

TIME PREPARED ____:____:____
INITIALS _____

7

[illegible]

MSC Form 1190 (Apr 65)

FLIGHT DIR MISSION LOG		DAY	REV	PG
		174		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Rev 8 -			
90/50	E1 - RADOUT PEAK 66° - same as last rev -			
90/51	Surgen LMP unplugged - Taking a dump - CSM all same - as normal			
91/07	LMP plugged in back asleep -			
91/37	LOS Review POSTBACK, MTR, OP Down Manual Ascent -			
92/23	AOS Very weak signal - not enough to lockup on -			
92/30	AOS now - good signal - about 7 minutes late -			
	S/C - 60			
92/43	RADOUT peak Temp 65° (earlier) STpkle rev to rev -			

175

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

This latitude business does not seem to be as well behaved as the Firms could like. The net effect will be two fold -

- ① yaw steering during R.P.

- (2) CSM plane change
(For last miss of -15° , pc
would be ~ 36 fps.)

FIDO has a plot of the Latitude vs. Revno. It is still not very conclusive, but looks to be following the 13 order model, although .1 or .15 higher than it. FIDO Bostick does not think it is a big thing but worth noting.

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(176)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
93/24	GNC There is a 500 [±] difference			
★	between the O.T. and our current weight			
	estimate. It is not understood at this			
	Time - I found out accidentally.			
93/33	Wakeup call			
93/35	LOS			
	The GNC discrepancy is turning out			
	to be due to computation of flow for LOS-1 -			
	Crew readings were used & come up out			
	400-500 [±] lower, i.e. conservative. TM			
	on PUGS shows 400-500 [±] more SPS fuel.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(177)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
FIDO				
Note	Even though we are three minutes early,			
	for PDI, Underhug & Sep MVR will be			
	done at FLT plan time - That's what			
	FPO people wanted to do - FIDO planning			
	on that basis,			
	earlier			
	PDI 2:08 / then flight plan			
	More on this latitude business. British			
	has run out the cost during PD & it's <u>1.2</u>			
	fps - So it's all permits -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				178
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
★	Note our WT discrepancy still exists			
	Currently we are 500 [±] lighter than			
★	unmixed or crew read out for LOI 1 burn			
	calcs. If we used PUGS TM, we would			
	be 650 [±] lighter -			
	No explanation.			
<u>94/4</u>	AOS - data -			
	MCI - SR by -			
	GNC - Good Quesds - stable -			
	EEcom - looking good -			
	All Hwiis EKG data in LCG -			
	MCC Gnd data on LMP -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				179
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	SUMMARY —			
	① CSM is ~500# lighter than nominal — no explanation —			
	② Fido story on lat. tide — Interesting but no effect.			
	③ Radout Temps peak 66-65°, stable each rev.			
	④ SM RCS — 83° below flight plan			
	⑤ Very Quiet Hight. Auto Reacg was good every time except previous rev ~ 92:23. AO 5 was 7 minutes late at all sites, no explanation.			
	Probably some HGA lock problem.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				180
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	(6) Undocking & Separate Fltplan Times			
	DOI-POI are F100 Times ~ 2min			
	earlier than flight plan -			
	(7) O ₂ flow during Accur cycles -			
	<u>Xducer still same for use - but</u>			
	for accur cycles - sometimes you see			
	the flow & sometimes not. EECOM thinks			
	he can correlate it with sun-shadow			
	cycle -			
	(8) STORON CM Cam results in			
	Maroon Notes - (210 good for HSR)			

CSM SYSTEMS

RES Consumables Report as of 9/1/30

	TOTAL	A	B	C	D
TOTAL REMAINING	914	227	236	224	227
Δ from 11 Jlt Plan	-83	-25	-8	-30	-20
Δ from 10 Jlt Plan	-30	+1	-2	-8	-21

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	EECOM Consummables			
	Update to Flight Director			
	for <u>95+00</u> GET			
	<u>Cryos</u>			
	<u>Present Totals</u>			
	H ₂ <u>34.4# (-1.7#)</u>			
	O ₂ <u>419# (+10#)</u>			
	<u>Single Tank Lifetime (GET)</u>			
	50 amp	73 amp		
	O ₂ 20.3	20.3		
	H ₂ 182	182		
	Waste H ₂ O Tank 85% @ <u>108</u> GET			
	Next Dump @ <u>TBD</u> GET			
	<u>Battery a-h remaining</u>			
	Batt A <u>37.9</u> a-h			
	" B <u>31.8</u> a-h			
	" C <u>38.6</u> a-h			
	<u>108.3</u> Total a-h			

NDOCKING 100:15:00

SEP 100:39:50 csm 2.5 fps radially down

DOI 101:36:14 75.6 fps

DI 102:33:05 6784 fps

LANDING 102:44:35

2nd OPP PDI 104:26:35

LANDING 104:38:05

MISSION NOTES

VEH

SPS

40 Rud 96759

40800

40 MCC 96783

40800

15230

* Corrected for

94+ / Present Rud 71254

~~14058~~ +Actual use during
TCC and Tanked

30 / Present MCC 70418

14750

values

FLIGHT DIR MISSION LOG		DAY	REV	PG
				181
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
94/48	GNC - SPS perf as noted in flight plan,			
	66.74 [#] /sec flow rate -			
	67.44 [#] /sec flow rate computed from			
	I/F pressures, etc. Since engine is flowing			
	<u>more.</u>			
	40,800 pred SPS weight at 40 years.			
	40,600 40 SPS weight.			
	↑			
	So we stated out 200 [#] lower than flight			
	plan. LOI-1 difference would be .7 [#] /sec			
	x 360 sec = 250 [#] lower. For total of			
	450 [#] lower - Man are confident the current			
	opnd numbers are correct.			
94/54	MCC - TEI 30 Bld data -			
	R Bach -			
94/56	MCC - Consumable Update -			
	R Bach			
	MCC - AI 500' above Idg site -			

FLIGHT DIR MISSION LOG	DAY	REV	PG
KRANZ	7/20/69	L-11	184
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
95+41	White Team - Descent Crew in LM Pressurization prep - All looks good		
96+07	AGS Abort Constants will be voiced up, the LGC Constants will not require update		
96+17	CSM DAP Load CSM wt 36,651 LM wt 33,627 Prim - 72 Yrim + 51		
96+20	CSM AOS - LBR LM LBR - Near Attitude, 37° out in roll - Voice 3X3 much Basic ground noise -		
96+23	Powering up the IMU - B/U Voice is poor - turn 2 voice to voice NORM voice is better Eagle is 4x4		

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
96+27	Doo & Accept - P-27			
	Cam 2.V.			
	L.S. Refsumat //			
	P-22 Pad			
	98+37+35			
	98+42+44			
	(04N)			
	DAP update (see prev page)			
96+31	Dock <u>< + 2005</u>			
96+32	LGC updates complete			
***	{ Think crew threw end rest sw on back side of moon — Recommend all DAP 1's in R2 - B3 & C4 off WAS performing Roll CT with A only CMC - Optics zero Cycle Optics zero off then/on.			
(11001)				

FLIGHT DIR MISSION LOG		DAY	REV	PG 185
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
96+31	PRI EVAP Flow LQC Self Test			
	Sec T/R - P/A Good Voice & DATA			
96+36	Act 29 - # ON Steerable Antenna - HBR/ Nice Lock ON - Biomed RIGHT & PCM HI -			
96+38	Well Ahead of Flight PLAN -			
97+05	Glycol Pump - #2 Did not copy Soft Fail H2O Sep Check -			
*	We have data on CDR Biomed.			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				186
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
96+49	E memory Dump			
96+50	Dump complete —			
	Captured E mod —			
	Starting Playback			
	Still on Pump 2, ~10			
	mins —			
	About 30 minutes ahead			
	of the flight plan —			
<u>96+57</u>	Activation - 18			
	Verify back on Pump #1			
	LM Pwr-95+54+00			
	Booze back in the			
	CSM —			
97+01	Simplex B Check-Go			
	Simplex A Check-Go			
	Both S/C			
	LGC/CMC Clock Sync			
	V06 N05E —			
	Clocks sync within 0.3 sec			
	TEPherm update —			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				187
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
97+08	Crew starting into Rocked Coarse Align- Coarse Align Looks Good —			
	LM GYRO TORQUE / 2			
	X — 00.060 Yaw (OG)			
	Y + 00.620 Pitch (IG)			
	Z + 01.080			
97+24	V42 — Fine Align Reading LMP — Y 00.060			
	01.080			
	DN Voice B/O } Blowed OFF } Fwd Onw } *			
	Crew Performing Asc Battery Check —			
97+27	Ascend Batts Look Good —			
	EDA 37.0			
	36.9			

[illegible]

MISSION NOTES

RCS STATUS @ 97+30					
FCT PLAN	252	243	251	240	TOTAL
ACTUAL	219	238	222	213	
Δ	-33	-5	-29	-27	-94
R/L	162	183	175	175	
ACTUAL	219	238	222	213	
Δ	+56	+55	+47	+38	+196
				+32	+195

FLIGHT DIR MISSION LOG		DAY	REV	PG 188
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
97+29	E Mod 12 GO —			
98+50	DMMO Switch 30-45"			
	Loss of Data —			
	DIDA's conflict with			
	people (MIT) in bldg			
	45 —			
	Bldg 45 computes a			
	smaller bias than			
	we did —			
	Over # Y +.040			
	Z +.029			
	PIPA bias terms			
98+13	SEP PAD			
	100+39+50			
	P 007			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				189
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
98+13	LM NOS —			
	NO Voice — LIBR TIM			
	AG2 Abort Const — <u>PAD</u>			
	SS —			
	Eagle Tried 2 BAND			
	HGA — will not get			
	LOCK in P-22 Attitude			
	LM 33,627			
	36,651			
	P 00/470			
	R 00/589 }			
Gbl Trim	*** }			
	Eagle normal voice —			
***	MARKING site 130 <u>prime</u>			
	for P-22			
	← Confusion — re the			
	Ldmc 130 Lat/Long/2			
	& Altitude —			
	Note Ldmc 130' is now 130			
98+34	starting <u>DAP</u> data			
	Load & <u>Throttle Test</u>			
98+39	In dap set — GDA			
	Throttle Test —			
	Crew got RCS Flares			
	due to fact that			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Auto Optics pointed a little north of <u>130</u>			
98+43	P-22 MARKING			
98+46	MARK Completed -			
	Going to Acc Cnd			
	All 3 Axes - some			
	thrustor firing -			
W 49	DATA 110 -			
98+50	✓ Reacq on HGA shod provide HBK data			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				190
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	The POWCS Auto is selected with w/ORE			
98+41	Starting Throttle Test — Act 47			
	Soft Stop — OK			
	FTR — OK			
	Throttle Test — <u>OK</u>			
98+44	RC2 Press —			
	Gear deployed			
98+47	— Starting RC2 Press —			
98+48	— CC → AGS Abort Const			
	AFT Onw 1			
98+51	LM HBR Steerable			
	Gear deployed —			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
				191
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	V96 → to terminate Integration			
	Readout 404, 5, 6			
	expected $\approx$ \$6 expected			
	to be zero			
	-13493 404,			
	405 & 406 —			
	<u><u><u> </u></u></u> ○			
	After undocking			
	will also load			
	All zips —			
99+01	— Clarified the			
	405, 6 All zips			
	prior to & after			
	undocking			
99+03	Starting drift check			
	CSM		LM	
	358.64		303.74	
	02073		20078	
	35954		00053	
99+06	AGS K Factor —			
	Drift check is			
	GO —			
99+14	AGS — Align & IN			
	GO			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
99+27	— Going to AG's CAL Attitude —			
99+30	AG's CAL Attitude in deadband LOS —			

MISSION NOTES

RCS 99+30

FLT PLAN 249 240 247 241

 Δ -52 -8 -28 -41

0% -17 -3 -9 -13

R/L 161 181 173 177

 Δ +38 +51 +47 +24

0% +24 +28 +27 +13

TOTAL USAGE 97+30 to 99+30

20 5 2 12

FLIGHT DIR MISSION LOG		DAY	REV	PG
				1978
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Lat 0.780 N			
P-22	2.37022 E			
DATA	Rad 937089			
	update RLS —			
	+ A02-10 All Go +			
	MPT DOI 101:36:14			
	PDI 102:33:04 J*			
	- DOI Pad			
	101+36+14			
	Avx - 45.8			
	Vx - 000			
	Vz + 9.8			
	ATB 30sec			
100+16	LM LBR			
	DPS Press - OK			
	Eagle undocked —			
	Looks Good —			
100+18	POO & DATA —			
	Starting yaw move			
100+19	Don't lose like we			
	will hit steerable link			
	updated			
	Pads - DOI			
	PDI			
	PDI Abort			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	CSM is about 180°			
	out in Roll —			
100+28	CME in P-41 Looking			
	good* was about			
	90° out in the Roll — starting			
	into attitude			
	YO, P-20 HGA			
	After end of Roll			
	MNR —			
100+32	CSM AOS —			
	Voice & Data — <u>Go</u>			
	Five Looking Flying			
	Machine			
100+39+50	— Separation			
	— X 2.5 RO, YO, P7			
	Disk 4.9 =			
	EUA 105.4 //			
	TERMINATE AVE <u>G</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				194
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
100+24	YAW Complete			
	LGC P-27 update			
	LM SV			
	DOI			
	PDI			
	NO PIPA bias			
<u>N85</u>	R/R in LM probably due to fact that CSM SV was old— v			
100+32	Go for Sep—			
100+42	Started L.R Activation & Self Test —			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>100+47</u>	VHF RANGING			
	<u>Solid Lock - 270W</u>			
	<u>Pad CSM - Rescue</u>			
<u>100+52</u>	CSM in P-20 for			
	Rdz NAV/Sxt & VHF RANG			
	POO & ACCEPT -			
<u>100+53</u>	Some unexpected			
	Thruster activity -			
	Mike sez he may			
	have bumped ACA -			
	Dumped 3.16 min of			
	LM Data -			
	<u>TIG & N 81 & AT</u>			
	<u>DOI</u>			
	PDI			
*	(Rot Make chl power + dir 2 -)			
	<u>off</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
74				
<u>101+06</u>	C2M P-52 started			
	Advised on P-76 to add HALF brew time to TIG—			
101+14	Advised C2M— to PASS to Eagle to select AFT Omega			
101+15	C2M P-52 is GO			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				196
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
101+03	Completed P-30 Targeting for <u>DOI</u>			
<u>101+05</u>	Eagle - attempting to drive RR w/o designating — <u>was</u> <u>we did</u>			
101+07	Started <u>P-52</u> About 10 min behind in preps with <u>P-52</u>			
	101+36+14 DOI →			
	Lost Data — if we cannot recover — use AFT OMNI —			
	<u>P172</u> <u>Y-14</u>			
	V5 N9 00107 Alarm — 5 MARK PAIRS — <u>00003</u>			
101+20	Torqueing LS —			

[illegible]

FLIGHT DIR MISSION LOG		DAY	REV	PG
				197
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
101+21	PLACE Blamed to CDR for Descent - * we got it -			
<u>101+24</u>	Telcom - GO <u>LBR</u>			
102+28+17	LM LOS - prior to DOI Displays - <u>22 channels</u>			
<u>102+12</u>	Battle Short			
102+16	LM AOS - LBR			
-16:00	LBR in Attitude			
-15:30	SHE - GO			
	Burn Attitude -			
	on time Burn Report			
	-0.1	X & Z rolled		
	-0.4			
	-0.1			
-14:50	LOS MAD LM ZERO			
	thought crew going screen bc			

FLIGHT DIR MISSION LOG	DAY	REV	PG
			198
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
	P-63 TIG GO — } Vectors — GO — }		
-14+06	AO2 LM — — In Attitude — Thought AG2 Residuals sidelobe		
	-0.1 -0.2 -0.7		
	N 86 ΔVz 9.5 vs Pd 9.1 ==		
	ha 57.2 hp 9.1		
-12:40	SON Check +.19 GO +.16		
-12	GDS 210 Risk data +.11		
-10:30	GDS DATA-GO		
102:21	Losing Data — GDS & MAD Weak SA.		
-10:30	Lost Eagle — have him Reacquire —		
-9	Telcom — TRY OM 01 — not yet — Side Lobe Lock —		
-8	MAX BESKIN Reflections need data group — acceptable 0.2 to 0.4 W		
7:26 - 8:26	AG2 Init GO — still 210 data		
-0:30	RADAR & VISUAL CHECKS 50K Perilous / Radar 53K		
	500 ALARM — Det #1 back → back to Auto & Proceeded		

FLIGHT DIR MISSION LOG	DAY	REV	PG
Loss of 1 W Downlink 199 VIA CSM LIGHT EVENTS/HISTORY/BRIEFING			
SITE/ACQ/LOS			
-5:00	GO Power Descent —		
	AFT OMNI for		
	Descent —		
	Fwd OMNI for YAW		
	OVER		
-	4:40 Lost data		
	4:00 Data BACK		
-3:30	LEAR is GO — AGS ATGO GO		
-3:00	All GO —		
-2:30	DATA is RATHY		
	MSFN sez may be		
	A little Low — OMNI's		
-	P-212 Y 37		
	GO — A little low —		
	2 BAND SS — Low —		
102+33+04	- ARM		
	- VILAGE		
	- 10% —		
+10"	Lost data —		
+35"	AFT OMNI		
Delayed on CSM	Post Thrust		
+50"	Lost MSFN —		
1+00	20 FPS — RESIDUAL		
	DOWN TRK ERROR IN		
	RADIAL		
1+10	GTO — GO — FTROK		
1+40	NEGATIVE MSFN		
	1+50		
	DOPPLER GO		
	Restat MSFN		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				200
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
+2	THRUST 9820			
2+15	HANGING out 20fps			
2+25	Reult + LEAR - HAVE			
	Alt diff -			
2+45	GTC - Downward			
	Crew + ^{ACVOLT} thinks ^{OK} OK ^{drop meter}			
3+40	Log LM downholic -			
4+10	4+00 ^{DATA TRACK} GO - crew thinks a bit long			
4+20	ED Batts ARE GO -			
4+40	Need L.R. by 181K			
	with down track -			
5+04	L.R. AH - 2000 5+20 ^{Accept}			
5+40	- 1202 ALARM - 0800 2000			
5+50	GO ON ALARM			
5+55	6+25			
6+20	Converge ON AH			
6+34	Have Velocity +4 - Throttle down -			
	N 68 MAY BE PROH			
7+18	steerable - Auto			
7+40	Des 2 Fuel - NOW			
1202 ALARM 6+30 N 68				

FLIGHT DIR MISSION LOG		DAY	REV	PG
			730	201
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
8+32	P-64 TGO GO ^{LR Pos 2} TGO-OIC			
9+04	GO for log ^{log} — HAVE LR _{Completed}			
	3K			
9+40	1201 ALARM — GC			
9+36	— GO —			
9+50	AGS Alt update			
10+00	— Here we go ^{1202 — we copy}			
10+20	340' 15" ^{1100' alt 31"}			
10+25	Att Hold — only			
10+40	P-66 ————— Calloots			
10+48	300' 47 → 13.5			
	200' 5.5" ^h			
11+28	→ Low Level — 120' ^{120'}			
11+55	→ 60"			
	Picking up dust			
12+27	→ 30" ^{h 2.5 30'}			
	① 16" — + Contact Lt +			
13+00	Landed — Very smooth			
	Touch down			
	14+2 — GO —			
	Ti stay			
	Venting OX —			
14+15	Pyro's gated			

FLIGHT DIR MISSION LOG	DAY	REV	PG
			202
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
	P-68 we have 068 venting Ox —		
<u>-16:44</u>	PGNS & AGS both GO		
	VH 5515.2 — <u>P-12</u>		
	P-12 is GO —		
<u>-18:13</u>	AGS / PGNS		
<u>-18:43</u>	STAY T2 —		
	AGS ALIGN —		
	TRANQUILITY BASE —		
102+54	Recommended exit P-12 Auto targeting was taking them down into a football sized crater with big boulders		
	Pitched up about 4 1/2 & Yawed About 130°		
102+58	M3FN Relay —		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				203
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	RCS Status —			
	A 77 B 72 } 8.5°/Low			
	171# Des H ₂ O } 43.8# O ₂ }			
	Ascent OK			
	Consummed 329 AH			
103+01	Asc Batts <u>OFFLINE</u>			
	The guys that said where we would land were RIGHT we were about 65" past Low Level — About 20" to the Abort/Land point — 3% F01, 1% F02 — 42%			
103+02	Started P-57 Ref mat Gravity AT-1 * we want AN EMOD dump — NO4 indicates 4.5°			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				204
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	MET 90203447			
	has apparently gone static →			
	Computer apparently cycled thru to N65			
	MET Row 2 P-11			
	Recall P-57 & Row thru Gravity Align			
	{ 9020440 }			
*	{ 9020449 }			
	{ 9999449 cycled C/B }			
Align#	P-57 — went well			
<u>103+14</u>	* Vent Fu & Ox to 40 or below —			
	Both simultaneously.			
103+15	Vent Fuel — it is increasing rapidly			
	<u>30 Fu & Ox</u> Ombd read			
	Fuel Vent swg Holding open — crew is			
	20 & 22 Inlets <u>ombd</u>			

FLIGHT DIR MISSION LOG	DAY	REV	PG 206
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
103+22	Fuel He Heat Exchanger to Ball Valve frozen may have occurred - Close Fuel & Ox vents Burst pressure in that line is ≈ 2000 psi - Hydraulic press, expect that may spring a leak in Fu/He Heat exchanger - SPAN working the problem -		
103+26	Get list of all components near the Hx -		
103+28	Now in P-57 that has 2 stars -		
103+39	Hacking E.T. to Count up to 60 @ T ₃ T ₁₀		
	Control - satisfied that Fuel Inlet Press will not be a problem will remove it after		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				206
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	T3 - Telecom advises that there is no equip there that will be a problem.			
	All FDO DATA			
	.799 LAT N			
	23.461 LONG E			
	About 4 miles Long			
103+42	AGS & PONS Gravity Agrees to .01 deg.			
	P-57 2 AOT hooks Complete -			
	Star < difference			
	is 00009 - Gravity			
	Align with Rigel			
	Should be Good.			
*	N 89 - Poll CB Poll			
	for MET - Try &			
	Fix Later -			
	Reject RLS data			
	from P57 -			

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the 1990s, the number of people in the world who are illiterate has increased from 1.2 billion to 1.5 billion. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015.

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	EECOM Consummables			
	Update to Flight Director			
	for <u>104</u> GET			
	<u>Cryos</u>			
	<u>Present Totals</u>			
	H ₂ <u>32.7 (-1.8)</u>			
	O ₂ <u>400 (+7.0)</u>			
	<u>Single Tank Lifetime (GET)</u>			
	H₂	<u>50 amp</u>	<u>73 amp</u>	
	O ₂		<u>206</u>	
	H ₂		<u>185+09</u>	
	Waste H ₂ O Tank 85% @ <u>108</u> GE			
	Next Dump @ <u>105</u> GET			
	<u>Battery a-h remaining</u>			
	Batt A	<u>37.5</u>	a-h	
	" B	<u>31.2</u>	a-h	
	" C	<u>38.6</u>	a-h	
	<u>107.4 Total a-h</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				207
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
103+54	PROGRAM ALARM 1106 Crew placed up data switch — during EMOD & it may have caused 1106 —			
Note	About 103+50 The Fuel Inlet Pressure started to decay rapidly — freeze — either: Hx ¹ broke Loose, or line broke — Pressure decayed rapidly from > 900 (OSM) to ~ 50 psi then tapered off * updated — CSI — — T ₃ Pads —			
103+57	POO & DATA — P-57 CSU SV RLS update			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				208
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	LM DAP			
	LMWT 10906			
	CSM 36651			
104406	P-37 Gravity < was Great			
Touch down	102+45+45 GET			
	55104 12+41			
104+51	P-37 STAR < diff 12 GO-			
	AOT Gravity & Final TORQUING-			
104+21	STAY FOR 13- SURFACE block data			
	RTCC → down to 2 machines			
	6 33.5			
	5 36.5 *			
	difference on ASD			
	Batts —			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	7/20/69			
	TO: GUIDO			
	GET 105:50			
	FROM: AGC			
	SUBJ: LGC			
	1. IT IS OUR'S AND MIT'S RECOMMENDATION			
	THAT THE RR <u>NOT</u> BE IN LGC			
	MODE DURING ASCENT. THIS			
	SIGNIFICANTLY REDUCES LGC			
	DUTY CYCLE, WHICH WAS THE			
	PROBLEM (REASON UNKNOWN) DURING			
	DESCENT.			
	2. IF ALARMS 1201 or 1202 STILL			
	OCCUR, FURTHER REDUCTION CAN			
	BE OBTAINED BY TAKING THE			
	TAPE METERS OUT OF LGC MODE.*			
	3. STILL FURTHER SIZEABLE REDUCTION			
	CAN BE OBTAINED BY GOING TO			
	AGS CONTROL (AND FOLLOWING PGNS			
	ERROR NEEDLES IN AGS/ATT. HOLD perhaps)			
	* PANEL 1, 959, <u>NOT</u> IN PGNS POSITION			
	(MODE SELECT SWITCH) (over)			

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

4. Companions are:

a. R29 (RR in LGC mode)

1) designate $\approx 15\%$

2) reading $\approx 2\%$

b. TAPE METERS $\approx 3\%$

c. DAP $\approx 23\%$

5. NOTE THAT R29 DESIGNATES ONLY

FOR LOSS OF LOCK, BUT CONTINUOUSLY
AS LONG AS NO LOCK, AND

IT WILL ALWAYS INITIALLY DESIGNATE
AFTER PITCHOVER; AND THAT ASCENT
HAS A HIGHER DUTY CYCLE THAN DESCENT.

6. MIT CONCURS WITH THE MEMO.

J.R. GARMAN - AGC

R LARSON - MIT

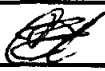
FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
104+47	Stay with present Refsmatt			
	2.2 NM Circle - for Sextant FOV			
104+50	Waste Water dump to 10% on back side - No Refsmatt change, keep looking for CM			
	all cryo heaters to Auto position			
	Get jets selected - DAP-			
	Start Start Batt B charge - good for 7 hours			
105+01	Need to update CMS State Vector - Will be ready shortly			
105+07	Need AGA rearg			
105+08	HGA - OK			
105+10	-Poo + accept - uplinking			
105+11	Batt A - on Batt Relay Bus			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				210
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	EVA preps Starting @ 104+45 about 106			
104+54	Need 2 LM PRD'S with 45 min Separation			
	EMOD is go			
105+01	EMOD IS GO			
105+07	CDR - 11014 , LMP 09017 PRD'S →			
	Need to Verify - LMP 09017 per de briefs			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				212
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Green Team on #5			
105741	open problem CGM wrap out Temp low - mixing valve problem - may be in auto control part of mixing valve.			
105747	when do they plan to start EVA prep A-11 Start prep in 1/2 hr.			
	B & C prep usage due to locked p-22			
	start of 106 + 15 est. 1 prep for EVA			
	ECOM thinks we may con- sider a point (Temp) with manual control & get around modulating the valve.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				2138
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Quest for AOS pos	1) did he go to manual medly. PRD			
	need second PRD reading pre eva prep			
	Juid has T4 pab & leaks standing by.			
AOS	50 deg evap out			
106+11	<u>Strang</u> <u>beginning</u> <u>EVA</u> <u>prep</u>			
	waste water drops to 10 To			
	Do we want another P-22? Affirmative			
	ECS System problem went away - Auto Control Cycled out of auto to manual to auto			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				214
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
106t16	Slew position of S band antenna - Track mode switch in Slew - Capcom says they reported it			
106t22	Second set of PRD reading CDR = 11014 LMP = 09017.75			
	Surgeon - all on site			
	Columbia Lug at 11 O'clock big old crater told him to look west of irregular shaped crater			
106t39	{ Eyes glued to surface } { Could not see } No joy			
106t40	No change prior to 113 hrs - no problem with not getting			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				215
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	must get back with crew in this - TELCOM			
106+43	MIKE 6.7			
	7.2 MIKE to			
106+46	lost him - on omni D Should have been on best			
106+48	Sues Checklist? p-27 Top			
				
106+50	and reset no gain on high gain on omni D Giving coord of east LM position.			
	unable to bad relay so he can hear what's going on			
106+57	yaw 180 pitch 0			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				216
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Colombia - Close to			
	Cats paw			
	Clear - mix valve appears			
	to be working okay.			
107+08	Sent Columb Coast Track			
	information			
107+11	updating refsmatb			
107+17	brief on comm.			
	Half a delay made			
107+31	Trajectory middle of			
	Surface 028.			
	Looks like we are			
	40 to 50 minutes behind.			
107+54	Event Timer			
107+55	good data from CPR			
	on PLSS - Surgeon.			
	Bad report - think			
	he was looking at CH			
	data			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				217
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
108+01	elect Checkout Fm			
108+02	BDS Lm Fm data			
	high hit rate - TELcom			
	good data			
	Click on Boss Conf.			
	TV sync looks good			
	- network.			
	has			
108+07	Fm 1. data, Sugem			
	has data			
108+10	P-52 opt #3			
	Star 43 & 44 00001			
	to 00057			
	+			
108+13	Neil com check ok			
	Buzz " " "			
	Neil			
108+14	ladder dark shadow			
108+17	Columbia reading range			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
				218
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
108+19	open TV circuit breaker Roger.			
108+20	Need Transmission breaking up Buzz loud & clear need " " "			
108+22	Go for Port Cabin Repairs			
108+31	Buzz helmet on - comm good.			
	Both fans normal - on			
108+40	Buzz cleared up			
	Both pumps running - EMD			
Columbia	high P O fan. Y 200 -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				219
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
108+50	press inteq ok - legs good - EMU			
108+52	Neil L & C Bugg L & C			
	Bugg watch at 108 + 56			
109+02	Mapping valves working ok w/ CSM			
	Takes a long time to open hatch =			
109+06	Suit Temp of 20 deg Need to get a Sublimator			
109+09	Suits on 3.5 min to start			
	Acct etc & others okay			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				220
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
109+19+18	CPR in pouch			
	2 + 02 55 14 first step			
21+	02+56+20 first step 67/ LM			
	fine & powdery adheres in fine bag powdered Charcoal - 1/8"			
	Can see foot prints			
109+34	Contingency Sample			
109+37	Contingency Sample in pocket			
	SRE Transfer Okay in evaluation.			
	Buz 21-03+15+40			
109+43	both PLSS OK			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				221
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
109+51	Changing lenses on TV			
	Camera Temp cold			
	Buzz on Int.			
	FLAG planted			
	43 + 14			
	21 + 03 + 41 + 54			
	Tumble planting			
	GMT			
	21 03 48 35			
	President Speaks			
	GMT			
	21 + 03 + 49 + 57			
	Neil Speaks			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
				222
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
110+36	SRC being sealed			
110+37	no marks in LM Coord E .3 7.6			
110+42	removed buzz of closeup camera. 1 Roger tanks.			
110+55	PSE deployed manual.			
2+15	gone Buzz his warning			
	2+29+12 Buzz up ladder			
111+39	Terminated EVA - Neil in hatch			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				2238
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
112+05	uplink to CSM			
	has not realigned platform.			
112+20	LM status.			
	using film			
112+34	Can't see him from CSM			
112+45	Sending up T 8, 9, 10, 11, 12			
	reel up			
	Columbia Crew Status			
	100.1 no medication			
	WT of RCV 12 oz			
	w/o bag @ DR 12.5 oz			
112+51	Control Config problem			
	SUR			
	1 circuit breaker stab/			
	circuit ACTA panel			
	Now 2 - open			
	Signal from LM			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				224
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Buzz Eng arm circuit breaker and seems to be broke off in open position leave open Panel			
	CDR			
	11014 PRD			
	LMP 09018			
113+08	CSM - 121% } Wake up - LM - 122 } Back on Nominal			
113+09	Network + MPAD - Ranging test during eat period -			
	HGA P +10 Yaw 250			
	Reacq - mode			
113+17	Sleep data to CSM - Nominal on wake up - go to Sleep Comm - LIOH Change, RCS quad config - Oz purge @ 113:30, Cryos all Auto - same as now -			

T8-

FLIGHT DIR MISSION LOG	DAY	REV	PG
			225
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
113+18	Trang base - finishing up eat period getting ready to depress -		
	Surface 45 - put C+W enable to Ranging		
113+27	Changing LM L.OH Canister - Get CSM SV into LM before sleep Load @ Sig Site now		
113+33	Have completed LM L.OH Change LM Consumables - usage rates same as before - re press O ₂ slightly lower than expected RLS - best we know - $2799^{\circ} 23.461^{\circ}$		
113+48	- uplinking CSM SV to LM T ₁₃ 124+22+02 to LM		
113+48	Est 15 min to Depress -		
113+50	Uplink Complete - back to block		

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consumables
Update to Flight Director
for 113 40° GET

Cryos
Present Totals
H₂ 31.0 (-1.6)
O₂ 390 (+15)

Single Tank Lifetime (GET)

50 50 amp	73 amp
O ₂ <u>> 200</u>	<u>214</u>
H ₂ <u>> 200</u>	<u>185</u>

Waste H₂O Tank 85% @ 133 GET
Next Dump @ GET

Battery a-h remaining

Batt A 37.1 a-h
" B 38.4 a-h
" C 38.6 a-h
114.1 Total a-h

FLIGHT DIR MISSION LOG	DAY	REV	PG 226
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
114+04	CSM AOS - Auto Re acq - OK		
114+05	LM pressurizing sent OK -		
114+07	Columbia Cleared for Sleep -		
114+07	PGA check OK - LM		
114+11	FWD to 2 psi overhead + forward then - coming down nicely		
	CSM Voice uplink OFF		
	CSM Deadband 50/1000 10° - OK		
114+13+	- object out of LM?		
114+14+00	- PLSS #1		
114+14+35	" #2		
114+17	Cabin repressing - - OK -		
114+18	- Repress Complete -		
114+21+30	- told EECOM to reenable CSM uplink		
114+22+08	- Uplink OK		
114+25	Mission timer procedure available		

FLIGHT DIR MISSION LOG	DAY	REV	PG 227
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
114+25	TV turned off-		
114+27	CSM told about DSKY & D/B		
114+28	Take down uplink to CSM - uplink down -		
114+30	LM Mission timer now OK - Time back up @ 114+31		
	Yawed left - according to shadow - - both balls say this also -		
	Have solar wind experiment & cone sampling		
	1/2 NM west of football size crater		
114+54	CSM pilot asleep - DSKY still flashing - will leave alone		
114+55	- Signed OFF with LM - Flight plan items left on lunar surface and also the "good News medal"		
	LM Temps - RR - has been from 8° to 40° - OK		

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FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				228
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
117+49	CSM & LM OPS NORMAL - - NEIL SEEMS TO BE ASLEEP - BUT HAS BEEN RESTLESS PRI FLOW CONTROL OPS NORMAL LM CONSUMABLES ABOVE NOMINAL			
118+08	CSM OPS Normal Handover required - may drop lock, activating C+W system - Handed over without losing lock -			
118+58	- Mixing Valve working OK			
119+00	FIDO & DATA SELECTS WANT TO TRACK CSM WITH RR @ 122+10 - about 10 min before RR Self test - looks like it can be done but they are working out a story -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				229
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Block #6			
	FIDO			
	Phone Change - Rnd 3 Radar - test -			
	122:30.			
	Guid officer -			
	Not rnds solution -			
	+ printers not diving -			
	Control Surf. 6.1 - Delete rnd 3 radar -			
	(1) Drive RND 5 in Tape meter for			
	Ascent.			
	(2) Surf 59, 60. (Vent)			
	(3) P22 what P22 (122:30 -			
	ASC eng Run - Auto Circuitry - Stop -			
	if go manual, hit stop at $V_{gx} = 0$ -			
	Rcom - Update Voice Surf 6.1			
	VAF T16-17			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				230
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	EEcom -			
	Radon peak 72° -			
	All mapping			
	HGA resq			
	Geology - Geology questions -			
	Looking up CSM before end of rev -			
	P22 130' - state vents -			
	LM plots 122			
	P22 radon peak - out of plane			
	Surf 59,60 - Vent			
	Surf 61 - Delete Kds border			
	Not Touse paper meter			
	Asc. log			
	Update Voice Backup -			
	Geology questions -			
	EEcom			
	On story -			

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FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				232
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	GNC -			
	50 th below A-10 @ comparable			
	functional point -			
120/59	CSM - Wakeup -			
	MCC / R00 / Accept			
	State Vectors -			
	Keep you a little busy - do P5 opt.			
	3.			
	Will give you 130' data -			
	Will have Lm do P22 on you -			
	Guid - State Vectors in -			
	FAD - may take a few minutes for grid			
	squares for 130'.			
	T ₁ - T ₂ Times for P22			
	130 prime is same as for POE -			
	for CSM plane data -			
	will run P22 against CSM -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
		237a		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	A 81% , 75% B			
	Best estimate (Current) PNGS ,			
	0.799° N			
	23.4602E			
	Confirmed by MSPN (reports), geological			
	AGS-			
12/40/30	- Ubeup call -			
	Sound like they were up a little			
	bit.			
	P22 -			
	checklist changes -			
	800-1220 -			
	P57 option 3 -			
	122+15 P22			
	Surf 59 - One last PPS vent -			
	Lordsin - CS17 Vector -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				233
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	All necessary updates have been made -			
	GUID, control, Relcom, FAO -			
	CUT1 - Indications are normal for CS -			
121/07	AOS CSM			
	① CR40 O ₂ H ₂ for 1min/per tank -			
	② P52 Dyeing angles -			
	MCC Cyo pass -			
	A/Reger -			
122/00	MCC P52 angles -			
	A1 - 25.42 0000			
	CSM +.165 , + .186 -.039			
124/01	Error Reset - LGC self Test 60			
	→ 121+15 GET Dyeing -			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
		234		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Cups Steir in progress			
122/03/40-	<u>P57-</u>			
	Recycle on <u>06/04</u> .			
	Gravity even good -			
122/12	<u>CS1</u> X position			
122/13	Turn End 3 radar on -			
122/16	warmup on radar -			
	Cntrl on -			
122/16	<u>G</u> - through 6 marks -			
	A - N93 .7 all spec -			
	122+22+57			
	122+29+35 -			
122/17/40	P22			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				235
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Haslerhen -			
	Alfheim/Boreed -			
	Negative mV83 -			
122/26	Terminator P22 both ships -			
122/28	- PRN ranging -			
	- POS Kfactor -			
122/30	1757 need to do 852 unless you want to -			
	R - Kfactor in properly -			
	M1 - 37V on C		37	BATBUC A
	37 A pgev		36	E
	37V B "			
	10 second channel - 70 channel -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				236
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Shower good sleeper CML -			
122/36	4 Thruster pair red - CR's out - V77E on surf 52 -			
	Proceed - reset - press on with			
	hot fire -			
	Reset -			
122/39	Fetchious activity - earlier			
	caused red indications on thruster pairs -			
	CSM 5 Vectors going up -			
	Part 1 -			
	Rete and in PMS - GO -			
	Part 2 See RCS coils -			
	At Capella almost sighting -			
	Alkex 8th 1 -			
	Same Time - Press on with Capella -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				237
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
122/43	MCC - RCS check looked good			
	IR16 HSD - drifts - OK			
	Drifts good on MERU's - ITN good -			
	Detent 4 not usable anyway w/ yaw			
	F100)			
	Reide by LOS + 20 min on plane			
★	P22 screw up on time tag -			
	Not good data -			
		2	4	X
	DES Cal	.03	.05	.07
		DES go -		
122/54	ASERT POD			
	CSL POD -			
122/55	Control DES PXS align good			

MISSION NOTES

LM CONSUMABLES UPDATE

GET: 123:00:00

RCS A 78% PAMD B 76% PAMD

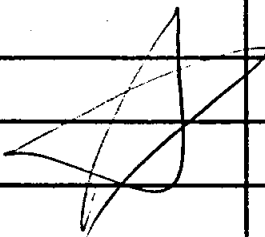
DESC 02 62%

DESC A-H 590 RMG

ASC A-H 574 RMG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				239
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	this speed is down -			
123/20	Circumter fine on ASC Eng then CS -			
	Detent 6 Venus right at fringe -			
123/22	Control - Rhant during ASC -			
	ChList iten Surf 57			
	Shf 7 335 vee, 270			
	for Ascent			
	Kips go -			
123/26	1400 CH Surf 57 soft 335 -			
	Steady for for 30-60			
	Vap/Vanni from then on -			

FLIGHT DIR MISSION LOG		DAY	REV	PG. 241
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
123/30	Moving into T-45 main c/d.			
123/47	Torquing Hinges - Searchlight N95 .089 .067 .041			
123/56	Because of lower loads - BATS, 6m			
T-16-25	173 off -			
	BATS - 546 look good -			
	Hose line align -			
123/59	Columbin lift off att. rule -			
	Used B & Roll -			
	Hose align good w BATS -			
	Preyde -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				242
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	TIG - 19min -			
	Rudy Radar mode switch to CGC			
	reminder - it's that way in the C/C -			
	Clear for Takeoff ✓			
	Bank #2 way as have fired -			
	3042 2994			
	3070 3054 now			
	Go on DBS initial ze -			
✓	Vented DPS -			
	DSC feed in -			
	Good at TIG - 10min -			
	Auto Track Mode -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				2438
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Air TOR in VHF -			
	Ascent BATS - 15 successes good -			
124/13	Single good 10 sec			
	PNACS - Good at 1 min -			
	Manual start/stop -			
	Good			
	Tank 2 good			
	Good at 2 min -			
	Good 3			
	Good 4			
	5			
	6			
	GO -			
	Trim Residuals -			
124/30	Trim good -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				244
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	124/30/46 - 47.2 9.5			
	Reset -			
	Proceed to P52 as per nominal -			
	Left Frangibility Base -			
	Left Apollo 11 olive branch -			
	45.7x9 Trach -			
	P65			
	A65 -			
	CSM Pmi nominal -			
	77% A 71% B -			
	EELM - Bocheng du Vire -			
	CSM maybe weak -			
	TECOM - Upstart high switch off -			
12439	P52 CM	P52 Columbia -		
	57.3			

