

MISSION NOTES

DSE OPS IF VAN CMD TO GO

If DSE launch data not required:

1. VAN LOS: Tape Recorder FWD Sw to Center Momentarily, then Rewind.
2. CYI LOS: Checklist L 2-9, Step P: Up TLM - CMD RSET, then Tape Recorder FWD.

If DSE launch data req'd:

1. VAN LOS: Tape Recorder FWD Sw to Center
2. CYI LOS: " " " " to FWD

FLIGHT DIR MISSION LOG		DAY	REV	PG (1)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Block #1			
(1)	Picked up Count on Time @ 10:pm COT			
	T-9 hours - Gave an MCC-60 for IT -			
(2)	AT T-8:45, Passed IP data - Onwt			
	2 off at 26 for EOS plots, 15 fps			
	V _{it} - GO.			
(3)	Spacecraft Subjects -			
	A) H ₂ Tanks will be each about 1% above launch redline at L/O. Everybody working that one.			
	B) Chuck Lewis pointed out to me the h ₁ rates at Ascent pitchover. Will discuss with Caplan and Backup Crew.			
	Crews must have been seeing rates at CMS. Will check.			
(4)	Asked Network about precautions due to storm - We are on diesel power.			

FLIGHT DIR MISSION LOG		DAY	REV	PG (2)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
(5)	CCATS driven lites are blinking occasionally - Cmd panels of FCMO Switch - 			
	NOETO - Running with machine - will try to catch intermittent problem.			
	Check for final status AT T-2 hour.			
T-8:24 (6)	Ozzie Covington advised me of something he thought we might hear about. GSFC has all four data lines now thru Intelsat 2, the earlier satellite. There have been commitments made (South American TV) on the basis of Intelsat 3. Comsat tried to demonstrate to GSFC that they could provide all our and others at same time. Test was scrubbed, Ozzie says it would			

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FLIGHT DIR MISSION LOG		DAY	REV	PG (3)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	be recorded. So South American TV folks			
	may gripe up thru diplomatic channels			
	and This is background in case we			
	hear of any of that.			
<u>TF 8:14</u>	I've discussed The FC Mgmt writings -			
	OK - but I stumbled over the last sentence			
	until I started to ask about COI. This says			
	we have a systematic problem, and should			
	be HD GO for COI - Not sure about that -			
★	Comments from you - colleagues? -			
★	How about for TLI, Cliff? -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
T-7:52	Weather looks good all over -			
	Cape 15K ceiling / broken -			
	10 Vis.b.			
	LgT / vrb /			
	So that's all great - Abort areas clear.			
	6-4 there 2000 broken			
	Great -			
T-7:50 -	Awhile back, we gave a go for Wingo			
	loading -			
T-7:15	FT47 CMD CRS GO			
	ALL DONE -			
T-7:08	T- 9HR BALLOON -			
	EDS LAND IP - 370 21			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				6
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
T-6:04	1V KSC people have occasionally discussed the Aux pump (4B) hydraulic pressure oscillating (3607-3594 psi) 1PCM			
	it is 12psi and our people (Bill Harris) feel it is OK but Cope is watching. Does not sound like a real problem			
T-5:55	Rerun the Test w/ SIVS from MICA & it all worked OK - No ACOS interference - How about that?			
T-5:44	Network does not think he will have satisfactory explanation of this ACOS funny. He recommends going ahead nominally. We may use ACOS for the			

FLIGHT DIR MISSION LOG		DAY	REV	PG 7
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Launch phase. And nearly special			
	data (unique) unit is The SIC -			
	Once past first stage, you could lose ACS			
	and not notice since the is format			
	including The STT can be played from any			
	site.			
T-5:	Open Item on CM erasable			
★	Landing radar mounts -			
	GACC To call FSB -			
	Must be closed out before LOC use -			
	Position of ant relative to CM body -			
T-5:02	Holding LHR loading for OIS problem -			
	20-30 minutes impact on LHR loading -			
	Clock will continue to count while they			
	send somebody to prod to clear OIS			
	problem.			



T-4:45

Passed padgate - So getting closed to
picking up with CH2 Loading

T-4:44

Go for CH2 load -

T-4:30

Old AZ is correct -

T-4:30

3 NON-VERIFIES ON ETHERNET STATUS

T-4:13

BSE DATA PROBLEM. - They had the
some problem as they have had on previous
flights with special processing. However,
after a recycle of the MKS Imptv, it was OK -
So - You might have a problem if you
want to do a NAV or TARGET UPDATE

FLIGHT DIR MISSION LOG		DAY	REV	PG
				9
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
- 4:10	T-6 hour balloon			
	No Land IPS w EDS aborts -			
	Great -			
	VAN			
<u>T-4:07</u>	CMD PROBLEM WITH VAN VIA SATELLITE -			
	CHECKING HF -			
	ONCE KNOW HF IS GOOD, WILL TRY TO GO			
	BACK TO SATELLITE.			
<u>T-4:04</u>	<u>GUID</u> EMERGENCY ALL GO ON CMC -			
T-3:42	BSE estimates			
	3 minutes behind in loading - can pick			
	up in BTHD			
T-3:30	HOLDING -			
	<u>NETWORK 1</u> - NO JOY ON HF VAN CMD I/F			
	MAY NOT GET ANY AT ALL - NO VAN			
	CMD - BSE, GUID, ECOM ADVISED			
	GO FOR CREW TO LEAVE MSOB -			

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FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(10)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	IFCMN TIF WITH VAN DOES NOT			
	IMPROVE, YOU PROBABLY OUGHTO LIFT OFF			
	IN MODE 1 FOR LV CMPS,			
	Some Tape recorder changes			
	for no VAN Cmd I/F. EECOM writing up			
8:58Z	LH2 LOAD COMPLETE -			
	LH2 RELIEF SETTING TEST -			
	SPECIAL TEST TO GET NUMBERS -			
9:00Z	GO on VAN HT-CMD I/F -			
9:22Z	MADDP TM CMDR FAULTING			
9:23Z	CLATS LITES BUNKING			
	FCLTO ,ASORT ASASCE LITES -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(11)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>9/478</u>	<u>XLET</u> - Giving bad chapter to machine -			
	Trying to get configured with 2 good			
	CP's - 15 minutes ETO -			
<u>9/522</u>	VAN IF NOW ON SATELLITE			
<u>9/562</u>	Can not use (symbols			
	To work on			
	<u>XLET</u> - Now - 1 hour estimate <u>was</u> 1			
★	Standby (bad chapter to see if can			
	fix -			
<u>10/022</u>	Count picked up on Time at T-3:30			
★	6H leak in some valve @ 200' level -			
	Appears to be getting worse -			
	Same valve as on CPPT -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				12
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
T-3:16	Lost all satellite connectivity TO VAN - Restraining on HF			
	1-2-4 Net3 up on HF BVAN -			
<u>T-3:13</u>	BSC Xfer LHz line but GHz purge to valve is leaking - Someone wet CPT - Boeing Crew To pad -			
-3:12	VAN back on satellite			
-3:05	Crew has departed M50B -			
<u>-3:02</u>	Modred Cnstr GO ✓			
-2:58	Timing problem w PCM - 10 minutes to work out -			
	Report to COM - got GML - No Launch Tg -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				13
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Green S-1A #1			
2:15	Voice Checks - 60			
2:12	Cnd checks -			
T-2+00	Green team on			
-1+57	R50 voice checks &			
	Eng lite - lite			
	#3 only for today.			
1+45	O2 unbalance of			
	4% warned to 5%			
	ECOM.			
1+35	go for final penisphere			
1+30	fuel motion ok			
1+16	BSE Cnds okay.			
1+15	3+15 no IP's			
	- EDS			
	LOM Roger			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				14
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
-1400	asm decoder on.			
T-53	had to send Cmd.			
T-50	Launch site forces in Area - recovery			
T-39	all go for Terminal Count.			
T-30	go to CUTS			
T-25	final wind data IP's in water			
T-15	CTE verified - ok			
T-9	Comm checks good			
	then fin'g Azimuth			
	72 03 34			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				15
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Launch			
	175 Verified			
	prepress DIVB SIC cooling			
	511 BTs. ✓			
	SIC			
	int pure			
	BRR			
	roll ok thrust			
	IP			
	RSO			
	pitch program			
	1B			
	RSO in water			
1+00	good			
	1c 1+55			
	stg go			
	2+16 1B0			
	0B0 2+43			
	1Cn pu thrust			
	62nd plane			
	Turn left			
	10m			
	Manual go.			
	Steering engaged			

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FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				16
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Cabin 5.9			
4+00	all go A-11 Roger			
	Trj & guid go let step pass			
5+00	go A-11 SIVB to COI 5+25			
6+00	go A-11 gr bal			
	8+17 level sense 9+11 SII C.O.			
7+00	go A-11 7+41 IBO			
8+00	go PV level sense			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				17
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Thrust 90			
8+51	90 for ST9 mobile 1V 9+00			
	9+11 C.O.			
	192 Thrust Traj.			
	16m			
10+00	90 A-11			
	pred C.O. 11+42			
11+00	90 A-11			
	11+42 SECO			
	101.4 X 103.6			
	12+06 Confirm 90			
	RSO Sefed			
	pays & logic Sefed			
	grinals off			
	Configured for coast			
	orbit state			

FLIGHT DIR MISSION LOG		DAY	REV	PG 18
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
in Section	99.7 x 102.5			
plus	based on IV			
<u>CYI</u>				
	Z Torque <u>+0.22</u>			
	recommended alignment.			
	in Section Checklist complete			
	H-11 Roger on P-52			
	has call reminder of			
	Simplex A			
	All Systems go			
	Retro - block data good			
27+00	103 x 103 from CYI			
	FIDO			
	Guid - both go			
34+00	everybody go			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				19
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Los				
rev 1	A-11 reading simply			
37+04	gone him orbit			
	Coming into Terminator			
	Los call A-11 rogers			
43+45	2 8 to 9 fps in			
	launch - no update			
	to PIPA - Guidance			
CRO				
rev 1	SLV - nominal			
52+14	S/C - good			
	A-11 land & clear			
	Alignment			
	N 71 30 & 37			
	0001			
	P3 00016			
	+ 00033 48+15			
	+ 00052			
	Ok, star			
	Guidance go on these			
	Tell Elmer Parker he			
	lucked out			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				20
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Bro	Turn up S-band			
Continued				
HSK	1+00+54 AOS			
	103.8 X 106.5 CPO			
	Data			
	radio check S band			
	beautiful			
	Ecom not seeing expected			
	ST across radiator			
	gone in CDS AOS/LOS			
	A-11 will transmit			
	TV			
	Secondary loop check over HSK			
	was go - Ecom			
1724	Jaid DRV Checks on			
	10 are go			
	Out of plane on CSM			
	with in limits - good			
	as backup			
	PAD in work			

FLIGHT DIR MISSION LOG	DAY	REV	PG 21
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
1+25	retro - pad soon		
1+28+22 BYM CONUS rev 1	SLV go thru BYM A-11 load & clear rads look good TV did not work apparently did not get modulation on FM downlink.		
★	reading up pads		
####	CDS got 1 min of modulated data - nothing useful		
	TLI +70 pad } good TLI +5 P-37 }		
A-11	docking probe probe SM Hot fire		
	C&C 1 pack Temp low 102 mi 110		

FLIGHT DIR MISSION LOG		DAY	REV	PG
				22
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	HOSC/90 99% probably			
A-11	unable to hear transmitter roll in Strip Charts We saw all of them			
early A	{ Logic arm & go for { power arm. Ecom { A-11 roger { pos & accept			
	TLI pad readback Correct			
	loads in guidance his computer			
A	A-11 probe extended			
	Verify sm RCS Htus			
	B in primary reading 101 deg now			
OSC OYI rev 2	A-11 Htus off - now in primary coming up			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				23
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Guidance - larger out of plane CSU than we like - <u>unqualified</u> <u>go</u>			
	Torque Angle look <u>good</u>			
	Guid - HOSC confirms our data			
TAN				
2+09+18	Houston Standing by - 700			
rev 2	Joy to TAN - <u>good old</u> TAN			
	A-11 roger - <u>got him</u>			
2+12	A-11 pyro's armed			
	LOS call A-11 roger			
OKD				
rev 2	Status for TLI SLV - 90			
2+25+30	Guid - 90			
	A-11 land & clear C&C - 90			
	Elev - 90			
	Surgeon - 90			
	FIDO - 90			
	Retro - 90			
	Network - 90			
	A-11 roger on 90			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Verb 66 verified by Guidance			
	TLI burn & told him about			
	ARIA coverage			
	ARIA #3 good voice			
	TLI - T.b 6 on time			
	express complete			
	Chilldown			
	P-47			
	Max and computer down			
	leave on TLM			
	burner shutdown nominal			
	all go ullage on			
	19m in thrust go			
	16m converged			
	T+100 Traj & good good			
	Stage good			
	PV Shift Thrust good			
	Red. C.O. Nominal			
	T+345 A-11 go			
	lost CDP at Maxway			
	T+500 A-11 go			
	2+50 + 06 C.O. log			
	but delay			

FLIGHT DIR MISSION LOG		DAY	REV	PG 24
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	35579			
	4° 4'			
	LMS + 3.3			
	FIDO radar data now			
2452	BSE			
	3+05+03 now start			
	3+09+20 now complete			
	3+15+03 Sep			
2455	Saturn gone magnificent			
	like A-11 CDR			
	no complaints with any			
	of these stages			
	all BLV functions normal			
3+03	all SLV functions normal			
	FIDO - preliminary indicators			
	of good out off			
	SLV started now			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				25
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Pyro A armed no B yet A-11 Confirmed			
3+09	mde complete on SLV			
	Problem thru BDS now on MICA			
	intend to sep on A only			
	Pyro B armed on reconnaissance - ????????			
3+14+40	Go for Sep			
3+17+10	SLA Sep + X Confirmed			
	pri & See Quad B went barber pole at Sep Shades of A-9			
	Comm Problem Transmt in blind for Omni B			



FLIGHT DIR MISSION LOG		DAY	REV	PG
				26
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
3+24	data still bad			
	B & C he sure he			
	cycled see off			
	primary in all Quad			
	B ???			
	P-46			
	✓ 307			
3+29	locked acq with			
	high gain Auto Track			
	Comm restored			
	Guest ??? what did			
	he do with Quad B			
	A-11 - (1) moved switch			
	to open position			
	went back to			
	gray			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				27
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
3+38	T & D went okay Turnaround, accel end went to rate and - may have used more prop - went out to 100 ft vs 66 ft. preliminary back at usage total of 100#			
3+43	working Lm press Step 13 waiting for cabin press to go to 5.0. turning 4.4 repress to fill manually repress in off ??? Ecom safe press on with procedure			
6 & C	recomm cycling off 4 sec. Bm/RCS Secondary fuel press A-11 in work			
3+50	BSE non propulsive went on Booster			

FLIGHT DIR MISSION LOG		DAY	REV	PG 28
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	haze - particles			
3+52	Or high flow			
3+53	COR can see North America Alaska Cuba northern part of South America - then Jupiter			
	C & C estimates 65 to 67 # Total usage in SMKES.			
3+56	Expect no midcourse #2 based on preliminary data			
3+57	12 latches locked			
3+59	reading up exami pad.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				29
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
4+02	reading now			
	evening pad readback correct			
4+06	hter current good on LM 9 & N			
4+12	late on LM eject			
4+14	logic arm go for pyro arm			
4+17+30	with LM ejection Cryo pressure hter auto O ₂ for manuals			
	logic & pyro safed			
4+28	told A-11 about prop usage #20 over A-11 roger			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				30
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
4730	Shigshat will need extra mvr to get to P-23			
	New Pitch to see Shigshat 290 mvr 24/4			
	R 2.5			
	P 289.3			
	Y 357			
	Shigshat manually at 5+05			
	Guid in P-40 auto mvr.			
4733	Jimbals & Btry's on			
4740+10	Evasive mvr			
	Jimbals off			
	Guest pitch #1			
	Lms AV -4.4			
	TVC Suro per off			
	in rate and should have seen			

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FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				31
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
4+43	cycle pitch #1 on got inboard indication BTry's off			
	update for slingshot mva start damp 12 minutes 13 48 terminate			
	A-11 Roger			
4+50	MCC #1 17 fps will not do 21 fps FIDO			
	Ecom - cys balancing procedure ready - running it by SPAW			
	Can't see the STIB in slingshot attitude			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
				32
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	P 354, X019.5, R 307 - slight shot alt			
	These numbers are FIDO			
	generated - are different from			
	FAO because of window number			
	versus camera location number.			
5+03+20	Lox dump - BSE			
5+05+05	Lox dump terminated - BSE			
	Trimmin bias update ready - Guido			
	will uplink when ready.			
	GOING			
	Cryo balancing plan			
	O ₂ Tk 1 Heaters - off			
	O ₂ Tk 2 Heaters - Auto (verify)			
	O ₂ Tk 1 fans - off			
	O ₂ Tk 2 fans - off			
	H ₂ Tk 1 Heaters - Auto (verify)			
	H ₂ Tk 2 Heaters - off			
5+13+30	Trimmin bias update - guid			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				33
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
5+14	Can see SIVB non propulsive vent			
	BSE cranking antenna low gain			
5+19	ECOW - Verify waste valve in vent / Lm / cm AP - 0.2 -			
★	been in vent for 45 minutes			
	O ₂ flow looks funny all day			
5+23	Wishing Dr. Mueller happy birthday & California.			
5+26	ECOW & FDO WAST WASTE H ₂ O Dump - dump WAST next dump would be ~25 H ₂ O -			
5+28	Asked CW to dump waste water to 25% A-11 roger			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				34
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
5+34	Completing P-52 - guidance			
	Targeting - negative			
	call a little larger			
	repeat P-52			
5+37	Waste water 13%			
	Terminate A-11 again			
	SLV allage burn			
	Camera - with auto			
	optics different stars than			
	alignment.			
	FIDO no MCC L again			
5+42	NO MCC, will be			
	needed FIDO Swears			
A-11	Third Star (no. 30)			
	right in the middle			
5+45	TLI #11 block data			
	- 2.38 X			
	- .7 Y			
	- .77 Z			

FLIGHT DIR MISSION LOG		DAY	REV	PG 35
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
5+53	SLV function performed			
	SLV safed			
	all okay.			
5+58	A-11 optics cal			
	data altitudes			
6+09	Taking marks for Optics cal.			
6+25	#2 O ₂ TANK FAN ON -			
	it is turned on because			
	we need more heat in			
	tank at the present			
	time.			
	The high with drawl			
	rate tends to confirm			
	that the O ₂ FLOW			
	Xducer is erratic.			
	089 AR looks large -			
	handmark lat, long, alt			
	AR, AV - RAN the			
	test 3 times, the			
	limit is 50, so repeated			
	the test 3 times			
	PAGE 38 - notes			

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FLIGHT DIR MISSION LOG		DAY	REV	PG
KRAVZ		7/16/69	TLC	3836
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>Open Items - Shift II</u>			
1. Watch 10	2. <u>Pipa bins - .50 shift</u> Noted & confirmed in knowen ϕ - May be accel sensitive - watch			
3. Normal 2	Radiator ΔT not as expected ΔT was caused by sec Loop OK during E.O. - Status.			
3. Shorted Patch cord at GDS.	TV - No Modulation at GDS - Apparently OK at MLA.			
4. Nothing 4	Evaluation of Res Q and B new to ply b/c.			
5. Fuel crew did not hit 50 proceed on P3-A of C.L.	AWANOLY see (1) Some problem with accel during TD & E.			
Normal 10 Crew mission of Decal.	Cabin press during initial LM press was only 5 psi @ 130 ft pre ejection C.L.			
	To do -			
1. Complete nothing new	1. Docking Data Ply b/c			
2. Barb - OK	2. SPS Evasive data evaluation			
OIC -	3. Evaluation of all consumables -			
	Res			
	Hz, O ₂			
4. Normal 6-10% variation	Flow rate xducers - Fuel cell			
5. MCC 21 ft	5. MCC Status -			
4 HRS - Auto	6. Cryo Plan			
4 FANS - OFF				

$$258 \overline{) 12000}$$
FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				3937
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Open Item			
Stratification	8. Check P-57 Gyro			
	compensation + need +			
watch in future -	9. Pitch Gimbal motor			
	- watch on future			
	burns for turnoff			
Anything we should know	problems.			
	10. How serious about the			
	Russians - BORUMAN			
***	Don Lind - setup for			
	laser vis'by test			
	at 1200 during east			
	period - apparently			
	Low is unhappy			
	should check with			
	him first -			
	Mc Donald & Dr			
	Alley*			
	Next opportunity is at			
	1200 3200			
Q-	11. All Pulse Torque deleted			
Q-	12. Why cycle L.R. Pos			
	1-2-1. -			
	* <u>Grave SPAN the Problem</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				3738
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Rad out Temp between 25 & 31°, Evaporator will be turned off.			
7+00	Auto Optics ARE NOT GIVING PROPER POINTING to sub stellar point. 198.6 130.7 340.0			
7+00	Altitude 31,725 miles V ₁ — 10,765 fps —			
	Crew sez P-23 Pointing Data may be wrong — — however at our altitudes the shaft & horizon /s were about what we would expect / there ARE an infinite number of altitudes, we think the crew is doing right, however he may not be seeing the nice symmetrical horizon he is used to seeing in the simulator			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				36 39
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>Retro</u>	TLI +11 DATA is onboard Now working on the Abort plan for the will provide Hardcopy.			
FDO -	Scrubbed MCC#1, MCC#2 = 21.3 fpa - LOT OK - MIT & math physics ± 5 km Tolerance in Emission (now 24 km) Loaded - on Horizon Alt			
7+29				
RTCC	Down to 1 Machine - standby is available within <u>2</u> min			
<u>Guido</u>	- P23 is working OK, most be difference in Real & Sim world.			
<u>GNC</u>	Down to <u>36</u> on RCS			
7+34	Crew now missed the STAR 44 marks, there was a red glow in ext (reflections off the LM) now running 45 { R 197.8 } Retical { P 128.5 } off 30° R Y 340.0 & star not in sight			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				40
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Down 21# O ₂ } 2.5# H ₂ }			
	with EOM Wom of			
	112# O ₂ & 8.600 H ₂ ,			
	the however values are			
	due to Lesser Load than plane			
	A 32.6 C 37.6 B Charge			
	Grew may not have been			
	— Play back of Data from			
	GDS was RF Site			
	Recording — they			
	should have played			
	DAC the Dump			
	Data *			
08+21	DTC Refsumat uplinked			
	to S/C —			
	* Big discussion on possible			
	platform drift & its			
	effects on P-23 NAV			
	sightings — for a			
	while we talked about			
	performing a P-23 to			
	PAD Refsumat &			
	computing a drift			
	check — GNC sez			
	that he does not			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				41
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	have enof time to get good back on Drift terms — so we didn't row drift check —			
8+26	Advised crew to perform P-52 Opt #1 Preferred to PTC Refsumat & start PTC —			
	# Alarm 401 # crew jumped out of P-52 since they got alarm that said they would move into Simba lock —, now maneuvering into O.O.O they will row P-52 as a weapon			
**	This Team is not too Red hot *			
8+43	uplinking cam 2V — Crew will refer to LM Slot 3 via V-66 — also had to uplink new Refsumat since			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				42
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	the S.O. update wiped out the STABOFF where the Refs was in Temp storage prior to the P-52.			
8+47	TV Problem - we think there was a shorted patch cord at GDS upstream of RCDR+ The MLA B TV DATA was good - Texas also saw FM -			
8+53	- in Attitude, cannot get HBR - uplink to CMC LBR -			
*	LM HTR 2.43 AVERAGE			
	Low .8			
	H+ 6.8			
	15% duty cycle IMU			
	24% " " L:R with variations up to <u>50%</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				43
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	• CRYO PLAN ALL 4 HRS Ago, All FAWs off After starting			
	• A & D Qonds for PTC,			
9+20	TURN off B & C			
*	• Not too change an Attitude profiles — we maneuvered into an attitude where we have NO own coverage — Looking up the SPS. Voice is unusable — Crew pitched down			
9+32	— Crew ran P-52, repeated data — star $\angle$ diff was .76 — Exited PROGRAM — finally got a good star $\angle$ diff. <u>.01</u> was having a problem due to reflections from LM & "Dump" Cloud			
	Maybe things are getting better			

CSM SYSTEMS

RCS STATUS @	7+30			
QUAD	A	B	C	D
FLT PLAN	285	286	284	286
ACTUAL	277	276	273	276
DELTA	- 8	- 10	- 11	- 10

RCS ΔV	DAP	73 SPS
	SCS	62
BT	DAP	400 SEC
	SCS	343 SEC

SPS ΔV	10170	CSM ONLY
	5430	W/LM

FLIGHT DIR MISSION LOG		DAY	REV	PG
				44
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
* 9+45	I think we shod make book on AT of Neil's conversations —			
* 9+50	P-52 complete — lets make sure that we get a good drift check on the IMU			
	Advised crew to start into PTC —			
	Att Set-Sw in <u>GDC</u> Pos we think it is in GDC IMU — it shod have been in GDC —			
Q	what is Proper Pos'n for the Att Set Sw for P-52			
	CDO IMU < 15			
	Cryo ECS usage is between .4 & .6 #/hour — we still dont know if we are flowing O ₂ — there is a rubber bladder in waste water system that			

MSC FORM 1441 (APR 66)

10+02

MISSION NOTES

Problem: ^{And check & verify this} O₂ flow ^ Does not confirm
CABIN purge through waste vents

(this procedure assumes URINE DUMP WORKING NORM)

- Install Filter Assembly ^(Vent) ~~(Vent)~~
(stowage compartment R6) ON
URINE CONNECTOR (PNL 251)
- Waste Stowage Vent - closed
- Waste Management OVER BOARD
DRAIN - DUMP
- Wait 30 minutes for O₂ flow
to Peg.

FLIGHT DIR MISSION LOG		DAY	REV	PG
				46
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Vent During PTC - Transmit Above procedure to crew tomorrow when they wake up - • This will determine if we have bad flow sensor, if we were enriching cabin. if • If we do it while in PTC after sleep, we can find out for future missions if those cloggers the PTC - may be this is why 1st nite of A-10 PTC did not work.			
10+14	See the A-10 & A-11 Evasive maneuver, they look identical to me, P₀ & F₀ & O₀ Interface look noisy			
10+20	Rates are low enough			
10+23	Armstrong - called & wanted to know if we wanted some data TV prior to the PTC -			

FLIGHT DIR MISSION LOG		DAY	REV	PG 47
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
10+32	GDS Receiving TV — <u>Good Quality</u> —			
	Query f 22 Adequate for T/V * no white spots reported from S/C —			
	Requested Verbal to go with 10 min of data —			
				
	Next Page			

FLIGHT DIR MISSION LOG		DAY	REV	PG 48
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Cryo	Auto on all 4 heaters			
PIAD	All FANS OFF			
10+49	Terminate TV at their convenience			
	• Rates Super for starting PTC			
	• LM/CW ΔP 0.5			
10+56	• Note Gorman noted that RZ & ECG from center coach had a lot of ripple during TV downlink			
10+57	Crew has started the PTC Roll Rate Block Data — thru			
	Return to earth stop v2 in front of book			
	Configuring the S/C for minor switching Beam wide —			
11+13	Terminate BATT <u>B</u> Chg			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				49
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Note - we did not O2 Dodge the Fuel Cells to write since we started PTC early - SPAW CONCORDS -			
<u>11+17</u>	Remind crew of using Down voice B.V. if they want to call us to write -			
	RAD COR-11002			
	CWP-10002			
	LWP-09002			
	no med - Fit as A fiddle -			
	Have they tried GAS H2O Sep -			
	it works OK			
	LEAK @ Junction between food bag AND			
<u>11+26</u>	Crew starting to Eat - all comm closed down			

FLIGHT DIR MISSION LOG		DAY	REV	PG
		7/16/69	6+30 → 14+30	50
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	— Shift Summary —			
	1. Cryo Plan - HTR2 Auto (4)			
	FANS-OFF (4)			
	2. Had much trouble w			
	P-23, we did not see any			
	crew procedural problem			
	& TROMION L ^s Looked good-			
	we are trying to reconstruct			
	with Mattingsly & MIT in			
	the simulators			
	3. MCC#2 ≈ 21.3 fps			
	4. For next P-22 book &			
	see what drift rate			
	was & see if we need			
	update any drift terms.			
	5. Got Good T/V from S/C			
	at 10+30			
	6. LM Henterscycling looks			
	Good —			
	7. See Procedure p 45 for			
	Cabin O ₂ Enrichment			
	- Cryo O ₂ usage & O ₂ flow			
	rate say we are ≈ 4-6			
	#/hr — this is not what			
	we expected.			
	8. We did not O ₂ purge the			
	Fuel Cells — get it			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				50B
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	I am not sure we did not want to disturb PTC Network is configured for Down voice B/C crew should call to write to see check that Chg this Pg			
12+31	N65 is called up X AGC People don't like to leave it called up for an extended time (displaying CMC time) for it will wear out dsky relays.			
* }	V34E — to kill DSKY			
* }	N65			
* }	2 Normal voice is not off +			
* We think maybe crew terminated the PTC with a V46 vice V34 — we will continue to monitor				
<u>Note</u>	V-46 Collapsed db from 30° to 0.5°			
**	we Advised crew not to turn on AWD			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				51
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Study of CH-53D	RCS Select during nite period — we will have to use A different procedure if we when we termin- ate PTC Tomorrow The Procedure will be to Reverse the first two steps on P 9-8 of checklist			
	• 1 - MAX ATT (2) - Accel and • 2 - Auto RCS Sel (12) - MAX A/B Rest of steps are the same			
	This should be A permanent checklist change			
* {	2-1012 POCA 1825 NM AT 79+12+30, <u>LAT POCA 7°N, 61°11E</u>			
12+59	O ₂ Flow rate sensor looks bad — we need think the cabin enrichment was OK — but we will probably			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				52
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
13+00	Crew still not sleeping			
	MCC2 26+40 21.2 fps			
	$\Delta T 2.96''$			
	LOI 75+50+17 $\Delta V 2916$			
	w/MCC2 bot fly by			
	Land 174 w @ 145+00			
	No MCC2 POCA @ 174 NM			
	$\gamma_{er} - 47^\circ$ +A @ 75+39			
	Pc+2 @ 78+00 with MCC2			
	$\Delta V 3400$ fps			
	w/o MCC2			
	$\Delta V 3675$ fps			
	Both Cases Land MPL 50			
	At 120 HRS.			
<u>13+21</u>	{ Alt 62033			
	{ Velocity 7411			
13+20	CMP Asleep —			
14+00	All Asleep			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				53
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	P-23:			
	Flew Run 2 in simulator			
	- Collins knows how reticle			
	shd be -			
	1. Reticle perpendicular			
	2. Our Attitudes were			
	correct -			
	3. Shaft $\angle$ is sensitive			
	to P & Y Attitude			
	changes - crew			
	would go free			
	& by time of			
	MARK would not			
	have reticle 1			
	4. Control TASK difficult			
	looks like crew			
	shd use Auto maneuver			
	capability of P-23,			
	do not pause,			
	establish attitude			
	so horizon is normal			
	to reticle - take			
	marks, if notice			
	that we drift out,			
	use Auto maneuver			
	for next set of MARKS			
	5. Will use simulator & dr			
	run all of tomorrow's			
	PLAN			

FLIGHT DYNAMICS CHANGE OF SHIFT

SHEET 1 OF

MISSION APOLLO 11

DATE

GET 15:00:00

PHASE TRANSLUNAR

REV

GMT 04:32:01

CURRENT

h_a 285,000 nm

V_i 6865 ft/sec wrt Earth

h_p 125 nm BEHIND US

GET_{pc} 75:39:10 h_{pc} 174 nm

Orbit Period min

h_{earth} 70142 nm

NON-FREE

$\gamma_{EI} = -47^\circ$ GET_{EL} 146:32

h_{moon} 148 303 nm

MANEUVERS

☒ Predicted

☐ Actual

Mvr MCC 2

GET 26:39:58

GMT 16:11:59 (THUR)

Rev Over

ΔV 21 . 2

Thruster SPS

Δt_B M: 3 sec

PREBURN

POSTBURN

h_a nm

h_p 174 60 nm

☒ Predicted

☐ Actual

Mvr LOI

GET 75:50:17

GMT 17:22:18 (SAT)

Rev Over

ΔV 2916 . 0

Thruster SPS

Δt_B 6 M: 3 sec

PREBURN

POSTBURN

h_a 170 nm

h_p 60 nm

☐ Predicted

☐ Actual

Mvr

GET : :

GMT : :

Rev Over

ΔV .

Thruster

Δt_B M: sec

PREBURN

POSTBURN

h_a nm

h_p nm

NOTE:

PERILUNE ALTITUDES

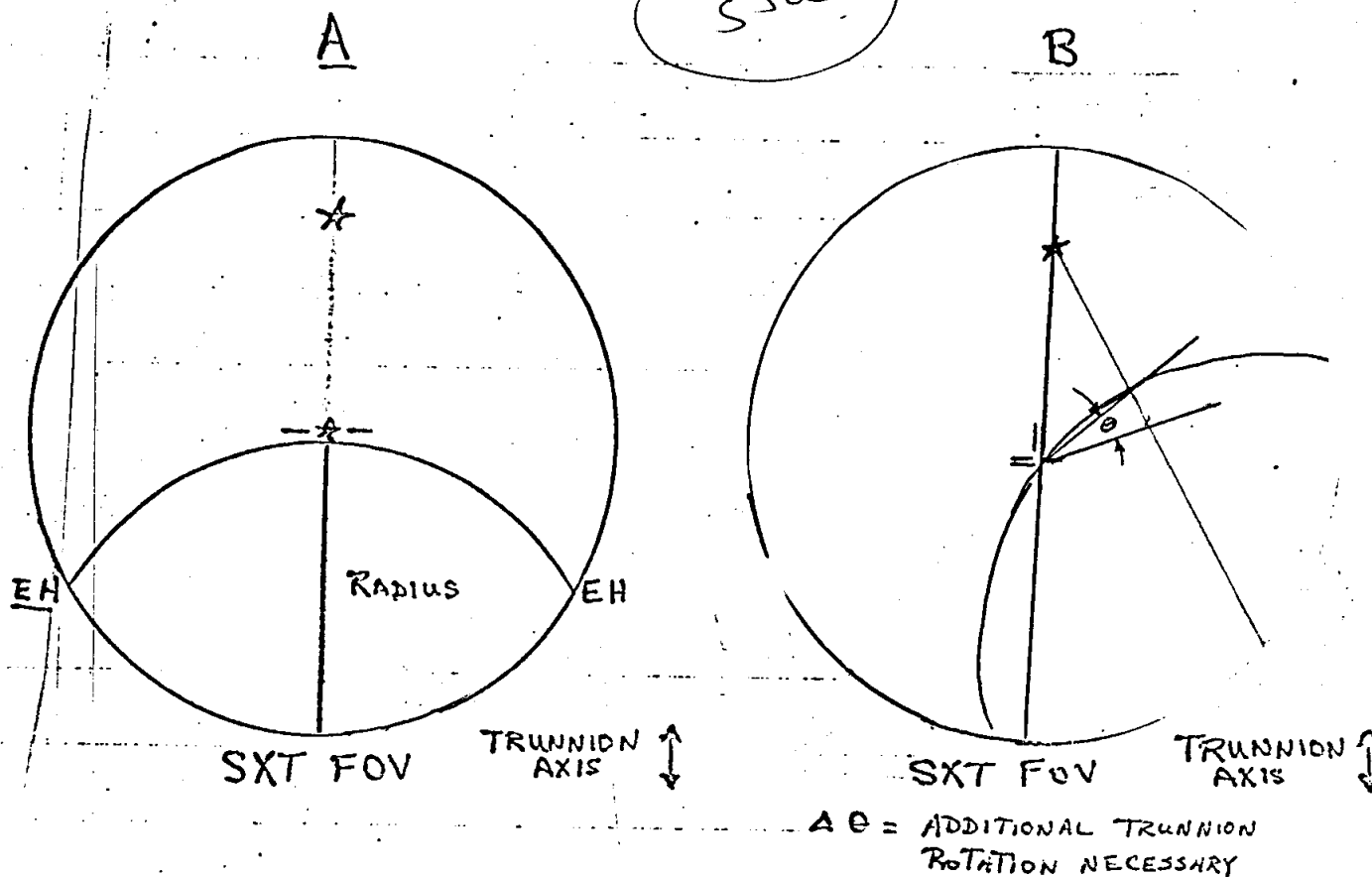
NOTE:

NOTE:

Prepared by

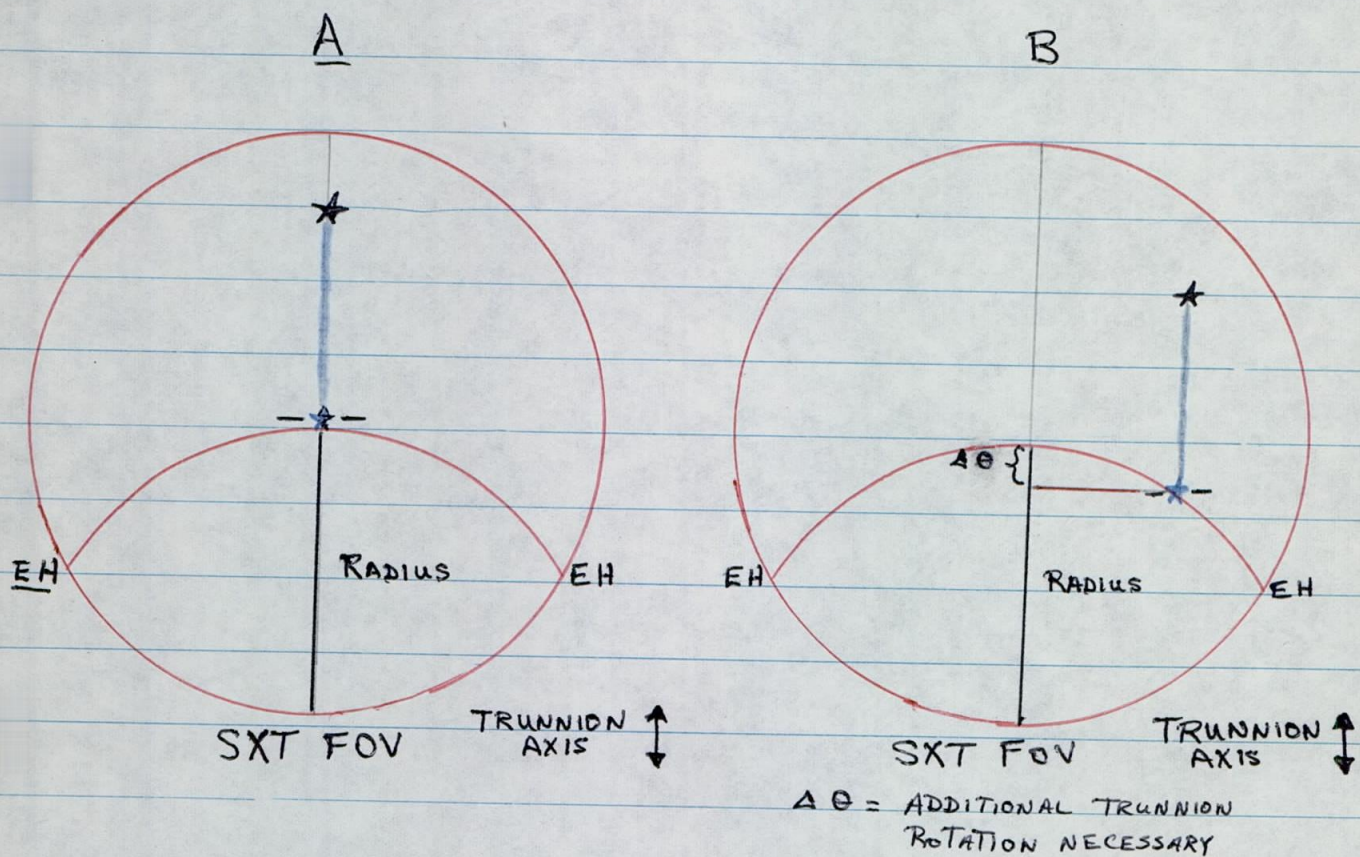
FLIGHT DIR MISSION LOG		DAY	REV	PG <u>55</u>
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	TEAM BRIEFING			
	FIDU -			
(INFO)	MCC-2 GET 26+40			
	DV 21.1 f/s 2.99sec SPS -			
	RGTRO -			
(INFO)	WITHIN 45 f/s for Hyby GET 145 GET			
	UPTO 25745 15 GET, MPL 49 PICKED			
	25 GET 2499 W PICKED			
	BLOCK TLI+25, +35 +44 +53			
	ONBOARD - \$IT'S GOOD -			
	GUID -			
	P23 - SUBSET - PENNERS			
★	FUEL - (GNC WILL ESTIMATE)			
	P52 DUTYING P52 -			
★	WATCH TORQUE ANGLES -			
(FOR UPDATE)	UPDATE \$PIPP TOMORROW (GNC)			
(MAYBE)	CONSIDER GYRO COMP REMOVING			
	UPON P52			
(FOR CREW)	RAN SOME CMS WORK - ^{BLOGS} NONALIGNED			
	ARTICLE -			
	KEN MATTHEWS TO RUN SOME GEOMETRY			
	\$ THEN COME OVER TO BRIEF MIKE			
	BEFORE P23 TOMORROW - (550)			
	SEE CONNERS NOTES PG 55			

SSa



IN CASE A, THE EARTH HORIZON IS HORIZONTAL IN THE SEXTANT FOV. THE TRUNNION ROTATION BRINGS THE SUB-STELLAR POINT TO THE TRUE HORIZON-RADIUS INTERSECTION, WHICH RESULTS IN CORRECT S.V. UPDATES BASED ON THE TRUNNION ANGLE MEASUREMENT.

IN CASE B, THE E.H. IS NOT HORIZONTAL IN THE FOV, THUS, WHEN THE TRUNNION IS ROTATED TO BRING THE STAR TO THE HORIZON, IT RESULTS IN A GREATER TRUNNION ROTATION THAN ACTUALLY NECESSARY. THIS TRUNNION ANGLE DIFFERENCE BETWEEN TRUE AND APPARENT TRUNNION ANGLES RESULTS IN INCORRECT S.V. UPDATES. IT CAUSES THE CMC TO BELIEVE IT IS FARTHER AWAY FROM THE EARTH THAN IT REALLY IS.



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FLIGHT DIR MISSION LOG		DAY	REV	PG 56
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	GNE -			
	EECDT1 -			
	① - FUNNY O ₂ FLOW X DUCCER			
	SHOULD BE 1 st / HR -			
	HIGHEST IS .5 th / HR -			
	☆ GET A PLOT U/F O ₂			
	CONCERN FOR CABIN PURGE TO VERIFY			
	THAT WSTG MGMT VALVE IS FLOWING			
	PROPER O ₂ -			
	BYPASS WSTG MGMT -			
	FILTER ASSEMBLY QD FOR UPING			
	ASSEMBLY SHUD CAUSE			
	O ₂ FLOW TO <u>REG(2)</u>			
	CHECK STOWAGE + FLOW			
(FOR CREW)	☆ <u>PROC DUEBY</u> MORNING - ✓			
(INFO)	② WATER SEPARATOR APPARENTLY			
	WORKING WELL / MEMPHANG			
	PRESS FIT INGR WATER GUN			
	LEAKING LITTLE BIT			
(FLT PLAN UPDATE)	③ DUMP AT 26 GET -			
(INFO)	④ PRI EVAP WORKED WELL AS FOR AS			
	CAN FILL			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				57
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
INFO	(5) CREW MANUALLY RAMPAGE -			
	FANS OFF HEADERS OFF			
	O ₂ -10% ON NOM FLT PLAN			
	H ₂ -2.7%			
INFO	(6) AT EJECTION, O ₂ STRAT - PRESS DOWN JUST LIKE 10.			
INFO	(7) LOAD SHARING			
	FC 3 - 3% MORE THAN 1 & 2			
	ALL PARAMETERS STABLE -			
INFO	(8) BOTS CHG COMPLETE - 40AH.			
	BAT A TOMORROW -			
INFO	(9) OMNI SWITCHING - 100% HBR			
FLT PLAN	(10) O ₂ PURGE F/C TOMORROW - 124/0565			
	<u>GNC-</u>			
FOR CREW	(1) DEAD BAND CHECKLIST -			
	BEING PREPARED BY FAD (Pg 93)			
	FOR READUP TOMORROW -			
INFO ON KCS USAGE	(2) 6-11 55% P23 INCL, P52 TWICE PTC.			
	HOW 45% DUE TO T T			
CONSIDER	GNC THINKS FUEL ^{APPROQATE} GOOD FOR P23			
	WATCH FUEL CONSUMPTION DURING			
	P23 TO THINK ABOUT SKIPPING IT.			
	IF IT PROBS ON LIKE FIRST ONE, CONSIDER			
	SKIPPING.			

FLIGHT DIR MISSION LOG		DAY	REV	PG 59
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
TALKW BACKUP	CONTROL - (1) PITCHOVER RATE PARASCENT -			
WE'LL HEAR	(2) LOG RADAR SELFTEST 1-2-1			
	TO BE RESOLVED BY BULENVER JULY 17			
GAGG ACTION	(3) ERASABLE QTY FOR LOG RADAR			
	ANT. POSITION.			
	NO COMMENTS FROM SPAN -			
	ALL COVERED -			
	TV SCHEDULE IN FRONT OF BOOK -			
16/28				
EEOMM	FLOW RATE SHOULD BE SAME FOR URINE			
	PICTER ASSEMBLY AS FOR WEIGHT NOT WLG -			
	URINE PUMP NOZZLE SIZE CONSTRAINS			
	FLOW.			
	THESE PICTURES INDICATE SOMETHING			
	IS FUNNY. HOWEVER, I'VE AGREED ECOM TO			
	PURSUE THIS TEST SOME. SUPPOSE THE FLOW			
	DOES THE SAME THING. I CAN IMAGINE THAT			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

MISSION NOTES

Consumption Status 15+00

FED

50amp: Single Tank Capable

O₂ 564 # (-10 #)

105 GET

H₂ 48.7 # (-2.7 #)

142 GET

Next Waste H₂O Dump @ 26 GET

Batt A 32.2 a-h

B 39.6 "

C 38.6 "

109.4 (+ Margin)

110.4

FLIGHT DIR MISSION LOG		DAY	REV	PG 60
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	THE NEXT QUESTION WILL BE WHETHER THE URINE			
	DUMP NOZZLE IS BLOCKED. ESPECIALLY IF YOU DON'T			
	WANT TO BELIEVE THAT THE X-DUCKER IS ACTING			
	UP. (APPARENTLY JOHN APRON ADD TO DO SOME			
	TALKING TO CONVINCE PEOPLE THAT THAT WAS THE			
	MOST LIKELY POSSIBILITY -)			
<u>16/56</u>	<u>NETWORK</u> - TURNED OVER LINE 527			
	TO TELCO - (GSIC TO MCC) GETTING DROPPED -			
	LINE 526 ALSO DROPPING OUT OCCASIONALLY -			
	(WE ARE ON AN ALTERNATE ROUTE ON BOTH			
	LINES. SOME PROBLEM IN JASPER, ALABAMA			
	ON PRI ROUTE).			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				61
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
17/03	E/ TCE ON FC#2 CYCLING EVERY 5 MIN PERIOD (LO AMP)			
★	GONE TO LOOK AT STRIP CHART			
	TCE	17:05	157.7	
	FC#1	156.4	17:10	157.3
		17:12	157.7	
	FC#3	157.9	17:12:50	156.5
		17:13	156.1	
		17:14	156.5	
		17:15	156.9	
	<u>NET</u> 526 & 527 ARE BACK ON PRI ROUTE.			
	526 SET OUT TO TELCO, RUNNING TBSSIS.			
17/25	NET7 BOTH LINES BACK - BOTH DUE TO TELCO EQUIPMENT PROBLEM.			
	MSB UNIT RADIO BETWEEN JASPER AND HOUSTON			
17/35	<u>GNC</u> SECOND CYCLE AROUND THE PTL CIRCLE WAS INSIDE THE FIRST ∴ PTL STABLE & EVEN GETTING BETTER -			
17/39	E/ FC#3 3 amp higher load sharing			

MCC 2

$$\Delta V = 21.1 \text{ fps}$$

$$\Delta t_B = 2.95 \text{ sec}$$

$$t_{ig} = 26 + 39 + 57.94$$

LVLH ATTITUDES

PITCH DOWN 55.8 deg
FROM HORIZONTAL
2 deg OUT OF PLANE

11.5 fps forward
17.7 fps down
0.1 fps north of plane



FLIGHT DIR MISSION LOG		DAY	REV	PG 62
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	15 nominal due to higher F [#] 3 skin Temp			
	which in turn is due to the calibration of			
	the H ₂ bypass valve - <u>See span report</u> -			
	F [#] CABIN GOING DOWN			
	⑦ WITH NOO ₂ FOR CREW, CO ₂ WOULD HAVE SET OFF HCN/M			
	ON THE SIDE OF NORMAL O ₂ FLOW			
	① CABIN P HISTORY VERSUS 78.9%10 FROM ANALYST ^{SEAL OFF} CABIN ^{TO}			
	② ACCUM CYCLE - NO HUMIDITY - ^{W/AL CLOSING REG LEVEL.}			
	③ NORMAL METABOLIC LEAKAGE RQMTS - CURRENTLY			
	④ URINE PUMP WORKED (3 TIMES)			
	→ READING .196 ^g /HR WHICH IS ZERO ON CALIB SCALE			
	⑤ FAILURE TO REG WHEN CABIN AT 4.2 DURING LM PRESS			
	⑥ CRYO QTY MINUS F/C SHOWS .770.5 ^g /HR FOR RCS			
	VICE .196 ^g /HR.			
19/38	ON THIS P23 business, all parties are			
★	talking about this symmetrical horizon			
	business. However, it appears that Mike			
	asked that if we told him it didn't matter			

SC Houston, Apollo 11.
CAPCOM Go ahead. Over.
SC Okay, Charlie. Is the attitude
you gave me on star number 45. The radial is off, I'd say,
a good 30 degrees in roll and the star is not in sight. Over.
CAPCOM Roger. Stand by.
SC Something's wrong with those
attitudes.
CAPCOM Hello, Apollo 11, Houston.
I wondered if you have auto optics selected. Over.
SC That's affirmative.
CAPCOM Roger. Looks like to us we need
a proceed, Mike, to get the sextant pointed at the star. Over.
SC Okay. Stand by.
CAPCOM 11, Houston. Those shaft and
trunnion angles were exactly what we were computing on the
ground. Over.
SC Okay, I'm going to trim up the
attitude here. I'll give it another try.
SC Okay, I have it loud
and clear, now, Charlie, so I might as well do a bunch of
marks on this one to get a horizon count.
CAPCOM Roger. Stand by.
SC It still looks like I'm far from
the substellar point, however, I'm off quite a bit in roll.
CAPCOM Roger, we'd like you to mark
right where it is now, Mike, and we'd like two sets of marks
on this. Over.
SC Okay, fine, but the radial is
not parallel to the horizon. I have to move off quite a bit
in order to get it parallel to the horizon.
CAPCOM Apollo 11, Houston. Our
procedures guys are saying that the radial does not have to
be parallel. Over.
SC Well, then we're going to have
to substellar point it for now.
CAPCOM Rog.

END OF TAPE

FLIGHT DIR MISSION LOG		DAY	REV	PG
				620
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	See A16 Transcript attached -			
	It looks to me like Mike understood			
	all that coded horizon business & was			
	trying to tell us. Will Ferner just told			
	me that Russ Larsen says you have to			
	be Target & bring in the transition to			
	get store on horizon at the sub-stellar			
	point.			
20/05	GNC → 3.5 % Avg below flight plan SM RGS			
20/09	E/ FC#2 TCE 160° TOT excursion			
	Strip Chart started at +6 hours 06G -			
	TCE has been doing it since that			
	Time -			
	EECOM working on getting data to see			
	when it happened to that started			
	to happen.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				64
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	So it's been going on as long as we have			
	had it on strip charts & probably longer.			
	(First reported time at GET 17:03)			
<u>20/19</u>	Caplan suggests that we calibrate the			
	Xducer with the Direct O ₂ valve in order			
	to see what where we stand on having			
	MC+W protection. EECOM concurs, and			
	is pursuing.			
<u>20/21</u>	A lot of evidence exists that O ₂ flow			
	is Xducer problem. (page 62). We really			
	have some explaining to do if it is not Xducer			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				65
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>20/43</u>	Data @ 3+45 as for back as 3+45.			
	@ 4+12 started to oscillate			
	@ 5+40 30min period of no activity			
	6+10 started to oscillate &			
	still at it -			
	SPAN looking at data before 3+45 -			
	Sounds like it has been here quite			
	while today.			
<u>21/17</u>	<u>E/</u> Direct O ₂ Valve - 45° 3#/HR			
	20min to get to relief -			
	Slowly increase to 45° & watch			
	O ₂ flow -			
	Will wait to see how discussion of G4 flow			
	comes out on how to get the remaining			
	2 hours of crunch went.			

FLIGHT DIR MISSION LOG		DAY	REV	PG 66
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>SHIFT SUMMARY</u>			
	1) O ₂ FLOW ANOMALIES			
	A) MUCH EVIDENCE (CONCLUSIVE TO ME)			
	THAT IT IS LOWER			
	B) STILL NEED 2 MORE HOURS OF O ₂			
	ENRICHMENT			
	WSTIGHT VALVE VS. URINE FILTER			
	(DOES NOT MATTER SINCE OUR			
	CONCLUSION IS WSM VALVE HAS			
	BEEN FLOWING) <u>GMLOW THIS A.M.</u>			
	C) EECOM WRITING UP DIRECT O ₂			
	CHECK WHICH IS DESIGNED TO			
	CHECK MCLW PROTECTION OF			
	O ₂ FLOW HI WARNING GLITE. (MAY			
	GET A TEST WHEN ENRICHMENT			
	BLEED IS EXERCISED)			
	2) P23			
	I BELIEVE MIKE UNDERSTOOD			
	WHY IT WASN'T WORKING. OUR			
	CURRENT EXPLANATION IS WHAT			
	HE WAS SAYING (SEE A/G TRANSCRIPT			
	PAGES) IN LOG OR READ IN ENTIRETY)			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				67
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	KEN MATTINGLY IS IN CMS CHECKING			
	SAME GEOMETRY. WILL BE OVER TO DISCUSS			
	WITH MIKE. WE SHOULD CONCUR WITH			
	MIKE'S STATEMENT OF YESTERDAY ABOUT			
	BEING TANGENT AT SUB-STELLAR			
	POINT -			
	(PROBABLY DO FINE IF WE LEFT HIM ALONE)			
	(DON'T USE TOO MUCH SIMRCS FOR P23)			
	3) TCE ON FC#2 HAS BEEN SLOWLY			
	OSCILLATING 1.50 OVER SEVERAL			
	MINUTE PERIOD.			
	HAS BEEN OCCURRING FOR SOME TIME.			
	NO ACTION BUT WATCH -			
	4) SIMRCS IS ⁵⁰ 30 # BELOW FLIGHT PLAN			
	<u>CONSERVE.</u>			
	5) MCC-2 ~ 21.1 fps - NO PROBLEM			
	6) PTC HAS BEEN GOOD			
	7) WATCH P52 FOR MERU UPDATE.			
	8) PITCH#1 GIMBAL SWITCH NEEDED TO			
	RECYCLED AFTER LAST BURN -			
	<u>WATCH.</u>			

[illegible]

MISSION NOTES

Consumables Update 2000 + 2001

O ₂ tot. 555# (-4#)	Single Tank lifetime @ 50 amp
	O ₂ 169 GET
H ₂ tot. 48# (-2#)	H ₂ 146 GET

Batt A	32.0 a-h	remaining	will be charged
B	39.0 "	"	@ 22+40
C	38.6 "	"	
	109.6 a-h		

~~Waste~~ H₂O @ 85% @ 35 GET
 Next Dump @ 25+30 GET

QUADS A -12 # C -18

B -8

D -12

50# down

~~Waste~~

FLIGHT DYNAMICS CHANGE OF SHIFT

SHEET 1 OF 1

MISSION A 11

DATE 7/17

GET 22:30:00

PHASE TLC

REV _____

GMT _____

CURRENT

h_a _____ nm

V_i 5524.9 ft/sec

h_p _____ nm

GET_{pc} 75:39:12 h_{pc} 176.2 nm

Orbit Period _____ min

h_{earth} 96569 nm

h_{moon} 125493 nm

MANEUVERS

☒ Predicted

☐ Actual

Mvr MCC 2

GET 26:39:57.9

GMT 16:11:57.1

Rev _____ Over _____

ΔV 21.2

Thruster SPS

Δt_B _____ M: 2.96 sec

☒ Predicted

☐ Actual

Mvr LOI

GET 75:53:00

GMT _____

Rev _____ Over _____

ΔV 29.99

Thruster SPS

Δt_B 6 M: 02 sec

☐ Predicted

☐ Actual

Mvr _____

GET _____

GMT _____

Rev _____ Over _____

ΔV _____

Thruster _____

Δt_B _____ M: _____ sec

PREBURN POSTBURN

h_a 176 nm

h_p 60 nm

PREBURN POSTBURN

h_a 60 nm

h_p 170 nm

PREBURN POSTBURN

h_a _____ nm

h_p _____ nm

NOTE:

LVLH ATT

$P = -55.3$

$Y = -2.5$



NOTE:

NOTE:

Prepared by GREENE

[illegible]

CSM CONSUMABLES UPDATE PAD

CONSUMABLES UPDATE	
GET:	22:00
RCS TOT	-3.5%
A	-3.5%
B	-1.5%
C	-5.0%
D	-4.0%
H ₂ TOT	-2 #
O ₂ TOT	-4 #

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 70
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
22+40	Green Team on #2			
	Crew stirring but not awake yet			
	open from last shift.			
	(1) O ₂ flow transducer			
	(2) P-23 - Ken Mattingly.			
	running procedure in trainer			
★	watch for prop usage during P-23			
	3) We owe 2 hrs of O ₂ enrichment			
22+45	MC & W get low			
	press button warning tank #1 - pressure coming back up now. Ecom thinks they cycled the fans			
22+50	called A-11			
	A-11 good morning.			
	updated post sleep checklist concerning auto RCS select switches & rest of flight plan updated (previous page)			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				71
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
23+00	CDR 7.0 } sleep EMP 7.0 } Status LMP 5.5 } onboard qty of SM RCS 86.7% A 87 % B 88 % C 90 % D			
	Guid waking up recommendation for P-23 work today			
23+06	A-11 Starting Charging Bat A voltage started high coming down now. Bat B did not start this high yesterday Even says no problem difference in Btry's probably.			
23+14	reading up news on A			
23+23	Interrupt Btry 1 Charge for MCC			
CDR	Or enrichment - do next PTC ???			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				72
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
23+27	asked guid & FAO for priority on P-23 & prop usage. - got procedure -			
23+59	gone A-11 comments on P-23 Stopping P-52			
24+11	A-11 only seg on f.c. pages - MCC negative A-11 looking at N-93 value?? proceed we would like to uplink State vector A-11 f.c. 3 showing more in purge & putting out more current than other 2 load in & verified A-11 Star 37 optical cal?? use one computed angles for mvr.			

FLIGHT DIR MISSION LOG		DAY	REV	PG 73
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
24+27	Need LM/CM AP???			
	readout - ? ? ? ? ?			
	has he changed consisten			
	FAO has rechecked			
	altitudes - zero optics			
	A-marking on star			
	five balls			
	going to Poo V49			
	move to Substellar			
	part.			
	wait on LM/CM SP			
	have not changed			
	Consistent			
	A-11 moving to alt			
	R 8.37			
	P 61.33			
	V 331.7			
	Code 110			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				74
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
24+32	Consistent measurements on platform based on P-52 X = 2.24 Y = .87 } merw. Z = .11 } talk to G&C about this later			
	A-11 auto man works fine at sub stellar point but no star in sight. Star may be lost in glow cannot find			
	Shaft 331.2 Turbine 35.85 Grd confirms these values			
24+53	MCC #2 pad available except for stars.			
25+07	.95 Lm/cm ΔP A-11			
25+11	Lonell called Neil			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				75
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	A-11			
25+14	M line 90 deg out of phase			
	{ Shaft 112.2 Torque 35.9 }			
	Sitting & holding			
	A-11 appears okay now			
	{ Auto optics procedure in first part of P-123. Auto mms. may be problem.			
25+22	preparing gyro drift & accelerometer updates C & C recommends doing after MCC #2.			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				76
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
25+26	Econ pre MCC 2			
	(1) water dump			
	(2) Bat Charge off at			
	26 hr. #1 Start			
	after burn.			
25+39	Hoaray - P-23			
	Seems to be working.			
A	get paragraph summary			
	of problem.			
	get into			
	Guid - 11 opt cal - he			
	did not bypass			
	Should do better a			
	proceed			
D	Completed 3rd set			
25+48	recommended that			
	terminate P-23			
	at this time.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				77
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
MCB	25+52 pad readup - readback			
# 2	correct.			
pup	Status return - OK on pad			
	FIDO - 3 secs execution			
	Brief - Tgt & new			
	load - about			
	5 minutes			
	G & C - SPS OK.			
	All set.			
	ECM - water dump in			
	progress.			
	Capcom - okay			
26+00	Doo & accept			
	A-11 need one minute			
	to check P-23			
	effects.			
26+01	BAT A Charge Terminated			
	ECM.			
	I have asked FAD for			
	a agreed upon summary for			
	the P-23 problems.			
26+03	loads in & verified			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				78-
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	reaching CP's.			
26+08	5 Star check in line of sight of S-band Antenna			
Ground Scouting	A-11 now on Omni A			
	Waste dump was okay.			
26+20	P-23 P-23 work cost 15 to 17 # B & C - cost ~ twice as much as expected			
26+24	Ellen would like for gain P-35 } for high 4 0 } gain.			
	PCS Δ from flight plan. A - 19 B - 10 C - 23 D - 14			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				79
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
26+38	A-11 high gain antenna angles			
26+40	good for burn from MCC			
	Bats in line			
	Gimbals on - 87 amps to 90 amps			
	BTry A & B not very close to equal. in load sharing. prior to burn.			
	gimbals off & BTry's off			
	A-11 87 & 88 psi pc during burn. We saw 95 to 97			
	Even satisfied gimbals are off			
	ΔVc - 3.8 fps			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				80
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
26+51	Guid - V66 reminder			
	Comms Change			
	Jury - changed			
	A-11 Comms 1.7%			
	Prep bal standpoint			
	use Quad A & B			
	to start - GEC			
	A-11 roger			
27+00	he has done V66			
	guidance			
27+01	Bat A Charge started			
27+04	Ecom - Turn Hars off			
	in Oz Tank #1			
	Oys balance			
	A-11 roger			
27+1.3	A-11 Comn configuration			
	for PTC			
	Sent up			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				81
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
27+17	Buzz thru Binoculars View out of this world Binocular has tendency to move around. Weather comments			
27+21	point where sun reflects backs to us - ocean color uniform except for region $1/8$ earth radius in diameter - the blue is grayest color.			
27+25	A-11 Satisfied with P-23 now pick Stars differently - not Satisfied with procedures			
27+27	Buzz been having ball floating around Mike been busy - looking forward to afternoon off Neil - little warmer - cooled off during PTC			

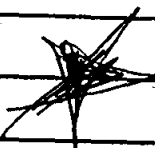
FLIGHT DIR MISSION LOG		DAY	REV	PG 52
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Sent Temp in leaf high			
	40 ^{'s} Cabin in high			
	60 ^{'s} - no moisture			
	in S/C			
	Hydrogen Separators -			
	leaving leak but			
	doing good job			
	Mike has had 3			
	cups of coffee			
	Ready to go ahead with			
	PTC			
27+36	A-11 PTC started			
	and looks good			
27+45	Ecom Oz Test to see			
	if flow sensor is problem			
	Also need 2 hrs			
	of cabin enrichment			
27+49	Giving A-11 procedure			
27+53	Configuration complete			
	A-11			

FLIGHT DIR MISSION LOG		DAY	REV	PG 83
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
28+07	Mike sees would can't describe			
28+25	Cnd reset up Tm			
28+27	lost MMD Cnd computer			
28+34	B&C - SPS data indicates good engine 94 psi & solid compared very well with yesterday's burn			
★				
28+36	A-11 LM/CM DP 0.98			
	O2 flow onboard .35 before config offscale low Accurate cycle sends to .75 - .8			
28+38	told him SPS results were good			

FLIGHT DIR MISSION LOG		DAY	REV	PG 84
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Compliments to Chief			
	Balmon outstanding			
	.95 flow on board			
	Or doing recomater			
	cycle			
	★ Crew reported 87 to 88 psc during MCC 2 burn - we should think about this in terms of LOT monitoring.			
29+41	ECom & TELcom & SPAN want additional how on Or launch - makes terminate at 230+53			
29+43	Guid ready for uplink for platform & beacons - Standby, May need SH uplink, can do all at once.			

FLIGHT DIR MISSION LOG		DAY	REV	PG 85A-
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Shift Summary:			
	Old problems			
	1) had problems ago with P-23 - we had some problems today but were able to get 3 good sets. Cost us 15# prop which is too damn much. I have asked FHO to summarize problem and get Guido, M.T., and everybody else to agree.			
	2) P-52 drift drift rate check - Platform appears to show consistent numbers b & c looking at at accelerometer & gyro drift update requirement			
	3) We did the O ₂ fuel cell purge following wakeup			
	4) O ₂ flow rate sensor - over			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				82B-
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	My Shift Summary:			
	1) we updated post sleep Checklist on auto RCS select switches			
	2) We are down probably 60# on RCS - better wait although there is no more P-23 work.			
	3) P-23 much more discussion but finally got good results. A-11 satisfied with results but not procedure.			
	4) CO ₂ reading 1.7 after this morning temperature change			
	5) Platform & accel update requirements needed from B/C planned at 30 hrs			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	6) We screwed up the mms slow segtly. Someway prior to MCC 2. did not account for h-gain antenna. Check with guidance on this. we recovered okay			
	7) Prior to MCC 2 with Bats online. BAT A was hogging load. we had been changing prior to this & Ecom thinks that is reason - might pay to look at history on BAT A.			
	8) Neil reported 87 & 88 psi during MCC 2. We saw 94 solid - consider this for LOT.			
	9) Ecom has ktes off in 8. Take 1 for Cyno balance.			

[illegible]

FLIGHT DIR MISSION LOG		DAY	REV	PG
KRAUZ(2)		7/17/69		86
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>White Team</u>			
31+00	Crew - verify that the cabin enrichment was been terminated -			
	GDS/madrid have			
	② <u>PIPA</u> ③ <u>IRIG</u> updates			
	GDS obtaining TV			
	Data from S/C -			
	some horizontal			
	streaking -			
31+12	GSE CP Faulted -			
	recycled - people still			
	spooky - will follow			
	up - GSE CP - GDS			
	Cnd w for our "D"			
	Crew selected Bowd -			
	We are at limit of			
	our w1 coverage for			
	TV -			

MISSION NOTES

Battery status at 30:00 GET

BAT A 39.8 amp hours

Next purge (fuel cell)

BAT B 36.9 amp hours

Or : 34:50

BAT C 38.6 amp hours

CRYO STATUS

O₂ Total 536 lbs

Margin -5.9 lbs

H₂ Total 46.0 lbs

Margin -2.46 lbs

Mission lifetime @ on one tank @ 50 amp pwr level

O₂ ~~200~~ hrsH₂ ~~200~~ hrsNext H₂O dump (~~unscheduled~~) will be at 49:00

FLIGHT DIR MISSION LOG		DAY	REV	PG 88
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Crew view thru the Sxt is Great —			
	O ₂ Purge is Terminated the LM/CM AP is 0.98 at 28+00,			
	EECOM Consistent imbalance in TANK #2, may have slightly degraded Element About 1# differential, using as predicted. Fuel Cell Load Sharing 30% #1 } 33% #2 } * 36% #3 }			
	Very Poor Reactants, purge did not help Volts —			
	Cryo P1W - 4 hrs Auto Fans off —			
	O ₂ Flow Hi (C & W) now is biased so it would come on at 5#/hr			
	CO ₂ Sensor is reading 2 mm/Hg - may be sensor problem.			

89 4

ΔV CAPABILITY

GET

31 HRS

GNC

white

RCS ΔV FROM FLIGHT PLAN
A -17 B -11 C -21 D -13
-62 # TOTAL

SM RCS

WPU

USABLE
TOTAL

1044

CSM WEIGHT

62810

1 OR 3 MEN

DAP SM ΔV

71

TOTAL BT

399

SCS SM ΔV

59

TOTAL BT

335

SPS

AC roll
BD village

WPU

39799

BT

599

CSM
WEIGHT

62810

ΔV

10,177

CSM WEIGHT
+ LM

96117

ΔV

5418

CSM WEIGHT
+ LM (ASCENT)

ΔV

MISSION NOTES

UPDATE TO CMC ERASABLE LOADS IN ALTERNATE
CONTINGENCY CHECKLIST, PAGE F/2-20

NEW DATA

LOAD A

LINE 05

01042

07

00256

11

00070

OK @

12

00042

32:32 GET

13

77730

LOAD B

LINE 03

00000

04

00017

05

20616

FLIGHT DIR MISSION LOG		DAY	REV	PG
				(95)
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Estimate we will move			
	into PTC About 34+00,			
	it will take about 1-2#			
	to exit & reenter PTC			
	for TV PASS - we are			
	following nominal			
	usage -			
	TV Attitude			
	34+00 R 261 HGA P +28			
	<u>P 090</u> Y 271			
	Y 000			
	LH window pointing at			
	the earth.			
32+25	Providing crew updates			
	to Alt & Emer C.O.			
	Discussion with crew			
	① Accel cmd -			
S/C Ctrl Sw	② Thrusters - ON Auto Rec Select			
③ SES	③ Rate cmd - R, P, Y			
④ CMC				
	At roll of 261 -			
	when db collapsed;			
	established a new Att			
	REFERENCE: PRIOR			
	to selecting Rate			
	cmd - must cycle			
	S/C Ctrl Sw from			
	SES to CMC			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

P23 Problems & Comment

The basic problems were a bad state vector, incorrect ground advice, and minor crew procedural misunderstanding. The P23 series on Day 1 did result in some good marks. The P23 series on Day 2 provided very good marks.

The bad state vector on Day 1 caused the CMC to incorrectly position the optics. If good marks had been made, the state vector would have improved and thus the pointing would have improved. The real problem was the crew took bad marks because the ground incorrectly said that the marks did not have to be made with the optic line of sight parallel to the earth. The star (44) that the crew could not see was probably blocked by the LM structure. A replay of the attitudes and the shaft and gunner angles is needed to verify this.

The series of marks today were good. The situation was helped when a good state vector was uplinked to the CMC. Again the crew could not see the star and horizon when they maneuvered to the CMC calculated attitude. The LM blocked the SXT field of view. When the ground requested they maneuver to the flight plan attitudes, the crew acquired the star & horizon, and made good marks. ~~the~~

There were some minor crew misunderstandings of the procedures. The crew assumed that they could get auto optics at a point in P23 where they can't, they have to proceed past that point for auto optics. We can solve this by detailed explanation of the procedures to the crew.

sheet / 20
cycle
ses
cwe

FLIGHT DIR MISSION LOG		DAY	REV	PG
				91
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
Goibo	- have changes to Inflight ELoad			
	Also have AH update from P-23.			
	// L.R. Body /s for			
	update update to ELoad			
	Are still in work			
	* Inrig / PIPA / Tephem			
	E update data to Capcom -			
	* AH For mid course			
	NAV will be available			
	to us @ 3400			
FBO	- WORKING TRACK DATA,			
	evaluating MCCs, data			
	- MCC 3.02, MCC 5.03			
	based on oobd Vg			
	If we use downlink			
	T/M Vector we get			
	12.4 fps for MCC -			
Retro	- Blic data oob'd OK			
	LOI - 2 Flyby to			
	Prime CHA is only			
	PAD data -			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				90
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Oobd P. Meter is 0-150			
	psi / crew was reading			
	87 psi we read 94 on T/M.			
Telcom	—			
LM	Cabin leak rate 0.065 #/hr			
	Heater currents are			
	nominal —			
	Peters sez that CM			
	Purge was satisfied			
	LM O ₂ Concentration for			
	EVA — SPAN Covers.			
Control	+ Concensor is that			
	we shud press on			
	with L.R. Test. — I			
	understand that Mr.			
	Low does not concern			
	L.R. Test —			
Capcom	+ Sergio Happy —			
	GAF, CP got into			
	problems due to L.S.			
	was cue up — when			
	recycling they had			
	equivalent of buffer			
	pool over flow —			

MISSION NOTES

SURFACE 20 OF THE LM POWERDOWN FOR LUNAR STAY
CHECKLIST, INDICATES THAT THE PPGS DISPLAY CB
ON ROW 1 IS OPEN. IF THIS CB WERE CLOSED,
IT WOULD PROVIDE A SECONDARY CUE FOR AN RCS
~~HELIUM~~ OR PROPELLANT LEAK. RECOMMEND THAT THE
CHECKLIST BE CHANGED TO ~~BE~~ CLOSE THIS CB.

LM CONTROL

John A. Wegener

FLIGHT DIR MISSION LOG		DAY	REV	PG
				102
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	<u>GOLD FD w/ BLACK TEAM ON #3</u> Sleep period will end at 47400 GET.			
38+37	We've lost all D-TV - have lost it for 15 to 20 minutes Network think problem is in RTCC to display interface - no estimate Petro - flyby good on board Fido - MCC 3 < .8 fps MCC 4 < 2 fps about 4.5 minutes early on arrival Guido - no problems GNC - no problems Computer Sage - MOCR 1 (2nd floor) works OK @ QCC on MOC and DSC. He feels problem is not in comp. Ecom - no change or problem Singer - all asleep - good data			

[illegible]

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

9/17/69

THE FOLLOWING E-LOAD
CHANGES MUST BE MADE TO THE
LGC PRIOR TO DESCENT:

NAME	ADDRESS	NEW VALUE	OCTAL
LRALPHA	2522	+ 6.000°	01042
LRBETA1	2523	+24.000°	04211
LRALPHA2	2524	+ 6.000°	01042
LRBETA2	2525	+ 0.000°	00000

NOTE: 6° is 0.0166666667 revs., 24° is 0.0666666667

THESE NUMBERS ARE THE OUTPUT OF A CONFERENCE
CALL BETWEEN GAEC, MIT, G+CD, AND FSB
WITH CONCURRENCE FROM LAB.

THEY ARE THE POSITION 1 and 2 LR BODY MOUNT
ANGLES USED BY THE LGC TO TRANSFORM
READINGS INTO NAVIGATION COORDINATES.

THE NUMBERS WERE INITIALLY OFFSET FROM THE
NOMINAL (ABOVE) ANGLES BY ACTUAL MEASUREMENTS.
THE OFFSETS WERE MADE WITH INVERTED
POLARITY, HOWEVER. THE ORIGINAL INTENT
WAS TO LOAD THE NOMINAL NUMBERS (WHICH
IS ALL THE RTCC HAS) AND THE DECISION
WAS MADE TO DO EXACTLY THAT. ALTHOUGH
NOT SPECIFICALLY STATED, I PERSONALLY HAVE
THE IMPRESSION THAT UNCERTAINTY IN MEASURED
DATA, ^{OFFSET} POLARITY UNCERTAINTIES, AND THE SMALL
VALUES OF THE OFFSETS MEASURED LED TO THIS
CONCLUSION TO LOAD THE NOMINALS.

J.R. GARMAN

1. GAEC/SODB numbers for ELON
2. Emenhond was ~~from~~ for wrong L.R. - orig numbers were from MIT, these were SPEC numbers -
After mounting measured Actual pos'n -
3. New "offset" numbers were ~~computed~~ ^{used} incorrectly (signs reversed)
4. ELON sign convention is reversed.
5. Computer presently was twice offset
6. Perform update at PIPs bias update in Activation.
7. 15° error ≈ 30

FLIGHT DIR MISSION LOG	DAY	REV	PG 97
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
	offset — we will		
	update, but we asked		
	SIPAD to Romanoff		
	it & obtain GAEQ		
	Coordinate Position.		
	we will update E		
	New Location @ 99+00		
	Along with PIPABIAS.		
33+42	Start of Flap at		
	F.O. Position		
	ECs Redundant		
	Comp CK — this		
	+ will end in an AND		
33+59	Network configured		
	for TV —		
	TV right on		
34+11	End Earth View —		
	start interior —		
34+24	— Apollo 11 TV End		
<u>34+32</u>	Error Rst to clear		
	downlink registers		
34+37	O2 FC Pierce }		
	LIGHT Chance }		

FLIGHT DIR MISSION LOG

DAY

REV

PG

SITE/ACQ/LDS

FLIGHT EVENTS/HISTORY/BRIEFING

FLIGHT DIR MISSION LOG		DAY	REV	PG
				98
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
34+52	Steady blue light 1/2 hours - west Texas - will try it for next 1 hour			
	CO ₂ PP came down from 3.1 to 2.4			
	We blew the initial attempt at PTC, picked up 0.7°R, 0.3Y, 0.2P V06 N20 ICDU < 2 - Load then in V06 N22 & Go thru normal PTC Initiation. When we started PTC we did not			
35+27	P-70, Y 90 HGA - Advised crew that we would pulse <u>laser</u> about 1 cps from McDonald - it is near the terminator now -			

MSC FORM 1441 (APR 66)

FLIGHT DIR MISSION LOG		DAY	REV	PG
				99
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	296.8 Clearance for			
	Recovery tomorrow			
	for use in recovery			
	exercise -			
35+34	141.5 shaft			
	39.5 Transition			
	Did not see Laser			
35+50	Crew went thru step			
	7 of the PTC Procedure			
	then got an operator			
	error			
36+10	Finally got into PTC			
	Heaters Auto - 4 fans off			
	O2 Heaters Auto -			
	Optics Zero for sleep			
37+00	Play back data			
	from first PTC			
	Attempt -			
	Tracking			
	MCC 3 0.9 fps			
	MCC 4 2.5 fps			
	CAN do LOI w/o MCC			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG	DAY	REV	PG
KRANE	7/17/09	31+00 → 38+30	101
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING		
	— Shift Summary —		
	1. PIDA & IIRIG Bias updates		
	were xmitted to S/C		
	2. Updated Crews orb'd list		
	of Erasable Loc with		
	above values		
	3. Cryo Plan - Htrs - Auto (4)		
	FANS - OFF (4)		
	4. CO ₂ Sensor reading about		
	2mm/Hg HIGH.		
	5. Info: Stopping PTC,		
	TV Pass & 3 attempts to		
	start PTC cost 9# RCS		
	6. FLAP Items -		
	(a) Bolleuder & Morris say		
	do L.R. Test as written		
	- Low sez don't cycle		
	will get input tomorrow		
	(b) Low & ECS People		
	want to do redundancy		
	Component Check (ECS)		
	Prior to LOI - this		
	will also be discussed		
	tomorrow.		
	7. Have GAEC Data on L.R.		
	to MIT NAV coordinate data		
	for LGC E Memory		

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	it will be loaded with PIPA data during LM C/O.			
	8. TRACKING indicates MCC3 < .9 fps, MCC4 < 2.5 fps - will probably do LOI w/o a MCC.			
	9. Tried looking for Lase from Mc Donald about sunset to write - did not see it.			
	10. Crew may try TV early tomorrow tomorrow about 56 hours if TV cable will reach into the LM.			
	1. R. Self Test mts in Dir Conf Room @ 0800 Tomorrow			

2-Way Memo

Subject: RTCC Digital/TV Problem.

DATE OF MESSAGE	7/18/69
DATE OF REPLY	
INSTRUCTIONS	
Use routing symbols whenever possible.	
SENDER: Forward original and one copy. Conserve space.	
RECEIVER: Reply below the message, keep one copy, return one copy.	

to: Jlt Director.
Lunney & Griffin

1 copy to J. Stokes
1 copy to L. Hall

FOLD

USE BRIEF, INFORMAL LANGUAGE

FOLD

At 03:39:26 GMT on 18 July the RTCC outputs to MOCR 2 digital television system was observed to fault. Coincident to this was a unit check on device 240, (D/TV), with sense byte 4400 indicating loss of interlock, i.e., essentially an indication that equipment is not available to be driven. Displays re-requested at this time appeared to update but the data was incomprehensible. The MOC at this time was 75B. A second computer, 75C was brought on-line as a DSC at 03:48:39 with checkpoint tape #1567 written at 02:42:01 and was verified as processing output to ADEG 2 channels. 75A was high speed restarted from 75B at 03:47:00 and its ability to process output to MOCR 1 channels was found satisfactory.

Based on these results, a decision was made to high speed restart 75C from 75B. This was done and 75C processed output to ADEG 2 channels correctly; however, when 75C was selected as the MOC, it appeared to fault on output to MOCR 2. Time at this point was 04:01:00. 75B was re-selected as the MOC and 75C as the DSC at 04:06:00, and again, 75C processing to ADEG 2 channels was normal.

m:

2-Way Memo

Subject:

DATE OF MESSAGE
DATE OF REPLY
INSTRUCTIONS Use routing symbols whenever possible. SENDER: Forward original and one copy. Conserve space. RECEIVER: Reply below the message, keep one copy, return one copy.

To:

FOLD

USE BRIEF, INFORMAL LANGUAGE

FOLD

At 04:20:00 the engineers tested RTCC output from 75 A to MOCR 2 channels with the maintenance testing program proving that the RTCC could process to that equipment. The next item to be checked by the maintenance program was to be 75 B; however, the Network Controller requested that this not be done.

A checkpoint tape was then written on 75 B and used to restart 75 B since it was considered possible that re-initialization might clear the problem - it did not. At 04:30:00 the checkpoint tape just written on 75 B was used to initialize 75 D to output to MOCR 1 channels, and proved satisfactory - this computer was then patched to output to MOCR 2 channels and proved satisfactory at 04:45:00. 75 C, which had been preserved during this problem period, i.e., was processing data arrivals, radar and telemetry, was selected as the MOC and used to refresh 75 D. This action was completed at 04:55:00 so that full television service to all controllers was restored at that time.

It should be noted that a circuit check on device R40,

From:

3

UNITED STATES GOVERNMENT

2-Way Memo

Subject:

To:
→

DATE OF MESSAGE

DATE OF REPLY

INSTRUCTIONS

Use routing symbols whenever possible.

SENDER:

Forward original and one copy.
Conserve space.

RECEIVER:

Reply below the message, keep
one copy, return one copy.

FOLD

USE BRIEF, INFORMAL LANGUAGE

FOLD

with sense byte 5600, an equipment check, was received on 75 B at 03:47:59. This was a significant pointer to hardware in the RTCC but was not interpreted as significant at the time.

Investigation has shown that a unit, the Z701, between the MOC and the RTCC's SSU had a faulty circuit card causing the television problem. This device is an adapter for driving television from the MOC, and, in this case, had caused a bit to be sent to the TV equipment, in fact, a bit that is returned in the status word, that could not be eliminated until a computer was initialized with a restart tape, or until the TV equipment had this bit configuration changed by some action in the TV area.

From:

E. Clayton

FLIGHT DIR MISSION LOG		DAY	REV	PG
				104
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
39+30	Recovered DTV system - we were w/o data display for $\approx 1+20$. Network owes us an explanation of failure and quickest way to recover if it happens again.			
42+15	Taking down the DSC and bringing up a "cold" machine. DSC will be out of sync with MOC per discussion of Kranz / Leroy Hall. I'm not sure what it's all about but I am assured it is the thing to do.			
	GNC sez we are only 8# lower on S4 RCS than at the same time of Apollo 10.			

[illegible]

MSC Form 1190 (Apr 65)

FLIGHT DYNAMICS CHANGE OF SHIFT

SHEET 1 OF 1

MISSION

DATE 2/18/69

GET 47 : 00 : 00

PHASE TLC

REV

GMT 12 : 32 : 00

CURRENT

h_a nm

V_i 3578.1 ft/sec

h_p nm

GET_{pc} 75 : 53 : 39 h_{pc} 65.05 nm

Orbit Period min

h_{earth} 158706 nm

h_{moon} 66345 nm

MANEUVERS

☐ Predicted

☐ Actual

Mvr MCC 3

GET : :

GMT : :

Rev Over

ΔV .

Thruster

Δt_B M : sec

PREBURN	POSTBURN
h_a <u> </u>	<u> </u> nm
h_p <u> </u>	<u> </u> nm

NOTE:

NOT
NEEDED

☐ Predicted

☐ Actual

Mvr

GET : :

GMT : :

Rev Over

ΔV .

Thruster

Δt_B M : sec

PREBURN	POSTBURN
h_a <u> </u>	<u> </u> nm
h_p <u> </u>	<u> </u> nm

NOTE:

☐ Predicted

☐ Actual

Mvr

GET : :

GMT : :

Rev Over

ΔV .

Thruster

Δt_B M : sec

PREBURN	POSTBURN
h_a <u> </u>	<u> </u> nm
h_p <u> </u>	<u> </u> nm

NOTE:

Prepared by GREENE

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

EECOM Consummables
Update to Flight Director
for 46+00 GET

Cryos

Present Totals

H₂ 43.5 (-2#)

O₂ 509# (+1#)

Single Tank Lifetime (GET)

~~50~~ 50 amp 73 amp

O₂ 211+38 * 183

H₂ 195+00 * 157+43

Waste H₂O Tank 85% @ 47+40 GET

Next Dump @ 48+00 GET

Battery a-h remaining

Batt A 39.1 a-h

" B 35.9 a-h

" C 38.6 a-h

113.6 Total a-h

[Signature]

FLIGHT DIR MISSION LOG		DAY	REV	PG
				106
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
46+33	CPC w Console - #3 Buffin Strikes again.			
46+59	Reflex will update clock when guidance updates now - now vector is slightly degraded.			
	Sergeant - Sound sleep all nite - 9 hrs ago.			
47+09	Crew still asleep - will not wake them for awhile.			
47+13	MCC3 - .8 fps } FIDO MCC4 - 2 fps } Coming in 65 n.m. point of closest approach pay 4 or 5 fps more at LOI, but cost is out of SPS.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				107
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
47+15	PTC - biggest angle			
	pitch - 4 deg			
	yaw - 5 } within			
6 deg	10 deg half			
	cone angle			
	RCS prop 66# behind			
	flight plan however			
	8# different from A-10			
	at this time.			
	Both burns were on			
	Bank A			
	Ecom needs water			
	dump at 48 hrs. will			
	be at 85%			
47+42	Jim Stokes - made made			
	another build & running			
	on another machine,			
	we don't have a DSC			
	at this time - this			
★	concerns the problem with			
	DC causing problems earlier			
	in flight.			

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
★	Cap com made unilateral info only discussion of pc gage being 13 to 15 psi out of calibration. This was based apparently on Mike & B&C's discussion earlier. I scolded him but the point is we should get complete story on this and decide what if anything we need to discuss with Com.			
	George Low has asked his people to look at this and come up with story on			
	1) what we expect for single & dual port burner			
	2) what the bias may be on the pc gage			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				108
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
47+47	CDR stirring a little - Surgeon. -			
47+53	FIDO - new version of computer program - will operate during day, will need check plots more often			
48+00	Econ ended using Antenna			
48+07	Surgeon Thanks Buzz is Awake. Now he thanks they are all awake.			
48+09	Called - Buzz answered immediately. A-11 off how are our Systems - mcc great.			
	flight plan update			
	Econ - started Charge w BTag B & water dump.			

MSC FORM 1441 (APR 66)

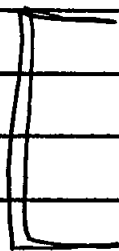
FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
				109
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
48+17	A-11 Btry Charge in work Water dump " "			
	Crew status report			
	A 82			
	B 84			
	C 85			
	D 87			
	Sleep { 8 CDR } { 9 CMT } { 8 LMP }			
	Cryo alarm while storing up Tonks			
48+28	Waste dump Terminated at 20.5 %			
48+29	water dump affecting PTC out to 14 deg.			
48+32	A-11 Med-Termin Clear remarkable cloud between Pakistan & Afghanistan			

SITE/ACQ/LOS

FLIGHT EVENTS/HISTORY/BRIEFING

additinal weather &
cloud description
length about size of
persians gulf.



A-11 maybe next
time if water dump
we should split the
dump.

B&C yaw rate decreasing

A-11 Can see Nile
river up to source
than Sextant.

MCC waste dump affects
on optics - Dump 4:25 minutes

A-11 Telescopes useless
OMP Sextant - you can
differentiate between
water droplets & stars.

48+56 Sextant would
be quite usable at
this time

dump + 30

FLIGHT DIR MISSION LOG		DAY	REV	PG
				111
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
A-11 48+58	MPAD Star Charts are most useful - no decent star patterns thru Telescope with LM attached			
49+41	A-11 O2 flow transducer worse accumulator cycle just barely caused movement			
49+56	Elcom - what we have seen so far the flow is about the same.			
50+41	CDR send & clear CK with FAO on errata - back page of buzz ops Checklist.			



FLIGHT DIR MISSION LOG		DAY	REV	PG 112
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
51+09	uplinking State vector & clock update.			
	loads in & verified			
	A-11 no.gov			
<u>Comm</u>	Terminate Charge on Bat B at 51+30			
	A-11 no.gov.			
51+38	Charge is off			
52+00	A-11 O ₂ ☒ H ₂ purge?			
	Affirmative			
	Going ahead with H ₂			
52+13	Purge complete all cells			
52+25	PTC - purging may have canceled it to move out more - may have to restart it			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				113
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
52+49	LMP report report of O ₂ flow sensor & our data is the same as we have seen.			
	ECom looking at MAL procedures which use the O ₂ flow sensor as an a input			
52+57	Starting P-52			
	Star angle diff .01 difficult will torque to do at .3 rate			
53+55	reading up news to A-11			
	gas filters fine except with food bag & back pressure reduces efficiency leaving alone couple of hours helps the efficiency			

MSC FORM 1441 (APR 66)

FLIGHT DIRECTOR'S MISSION LOG

FLIGHT DIR MISSION LOG		DAY	REV	PG
		114		
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
54+01	B & C platform since last P52			
	1 menu in X			
	- .2 4			
	- .3 2			
54+15	B & C has story on pc			
	for LOT, -			
54+34	Asked crew about			
	TV			
	A-11 no gun and will			
	accept alt. trucks			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				112
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>54+50</u>	White Team on Shift LM/CM AP <u>1.58</u>			
	Comm very noisy -			
54+51	HGA Data Good -			
	PTC stopped at			
	POGO, YO, R 263			
54+52	Bringing up the			
	CSM Cabin from			
	4.8 to 5.7 for start			
	of LM Press -			
	How far open is dir			
	O ₂ - Arrow about			
	1 O'clock, At the			
	2 O'clock it is about			
	.3#/hr, at 1 O'clock			
	it was about .9#/hr -			
	≈ 30° travel from closed			
	position to 3 O'clock pos.			
55+02	Cabin 5.7 - Terminated			
	direct O ₂ , also			
	advised them to bring			
	back to CSM			
	• SFC Checklist			
	• MSW Roles NO/GO			
	• DPS/APS/RCS Limit			
	Coe CARD -			

ΔV CAPABILITY

GET 55100

GNC WHITE

FLT PLAN RCS	270	268	268	269
ACTUAL	<u>256</u>	<u>266</u>	<u>250</u>	<u>262</u>
MARGIN	<u>-14</u>	<u>-2</u>	<u>-18</u>	<u>-7</u>

TOTAL -41

SM RCS

IMPROVEMENT SINCE YESTERDAY IS THE
RESULT OF NOT USING THE 20160 budgeted FOR
WPU USABLE TOTAL 1034 MCC-3

CSM WEIGHT

62764

1 OR 3 MEN

DAP SM ΔV

72

TOTAL BT

403

SCS SM ΔV

59

TOTAL BT

334

SPS

WPU

39799

BT

598

CSM
WEIGHT

62764

ΔV

10194

CSM WEIGHT
+ LM

96066

ΔV

5422

CSM WEIGHT
+ LM (ASCENT)

ΔV

FLIGHT DIR MISSION LOG		DAY	REV	PG
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	EECOM Consumables			
	Update to Flight Director			
	for <u>55:00</u> GET			
	<u>Cryos</u>			
	<u>Present Totals</u>			
	<u>H₂ 41.8 (-2.1)</u>			
	<u>O₂ 492 (+1)</u>			
	<u>Single Tank Lifetime (GET)</u>			
	<u>50 amp</u>	<u>73 amp</u>		
	<u>O₂ 211 hrs</u>	<u>184 hrs</u>		
	<u>H₂ 203 hrs</u>	<u>161 hrs</u>		
	<u>Waste H₂O Tank 85% @</u> <u>GET</u>			
	<u>Next Dump @ ~57+00 GET</u>			
	<u>Battery a-h remaining</u>			
	<u>Batt A 38.7 a-h</u>			
	<u>" B 40.0 a-h</u>			
	<u>" C 38.6 a-h</u>			
	<u>Total a-h</u>			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				116
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
<u>55+11</u>	Wire TV to GDS Excellent - showing the Probe removal			
55+19	Probe has been removed No dents or marks on the probe -			
55+03	Removing the drogue - Roll $\angle$ 2.05			
	LM Leak Rate is .052 #/hour -			
<u>55+36</u>	LM Hatch is open			
55+42	Bozz in LM - Opened the windows - completely day lit - Visual Inspection looks good			
<u>55+47</u>	Very clean - no debris			
<u>OPR</u>	{ CDR 57-5800 LMP 5800 Crew taking LM data back to CSW			

FLIGHT DIR MISSION LOG		DAY	REV	PG
				117
SITE/ACQ/LOS	FLIGHT EVENTS/HISTORY/BRIEFING			
	Very little debris in either			
<u>56+00</u>	ISA Placement back over the instrument panel -			
	Crew found the 16mm CRAWK & asked what it was for - we told them -			
	About 50% of time we are getting			
	CSM hoses are causing a bit of circulation - comfort level			
<u>56+45</u>	Don't Forget H ₂ O Dump TV End			
<u>56+59</u>	EVA Light Charred - probably during launch - Light still works -			
<u>56+55</u>				
<u>57+00</u>	Water Dump Started - Down to 0 %			

