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FINAL

GEMINI VIII
FLIGHT PLAN

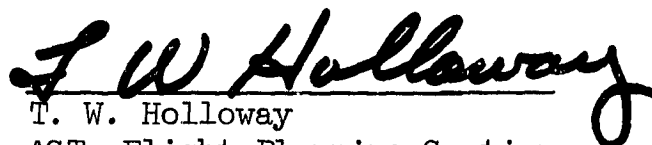
PREPARED BY
FLIGHT CREW SUPPORT DIVISION
SPACECRAFT OPERATIONS BRANCH
NASA, MSC, HOUSTON

FEBRUARY 24, 1966

FINAL

Gemini VIII Flight Plan, Final, February 24, 1966

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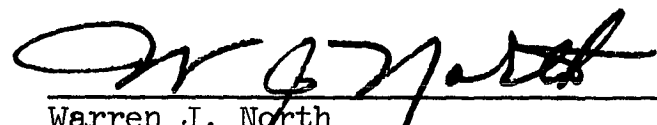

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Chief, Flight Crew Support Division

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I N T R O D U C T I O N

The sequence of activities outlined herein represents one of several alternatives by which the flight objectives can be achieved. Real-time considerations of Agena/spacecraft diversions, onboard systems monitoring activity, and global weather conditions may cause changes in flight plan procedures. In keeping with the desire to permit real-time flexibility, many extravehicular activities are planned, some of which may be omitted at the discretion of the pilots and/or the Flight Director.

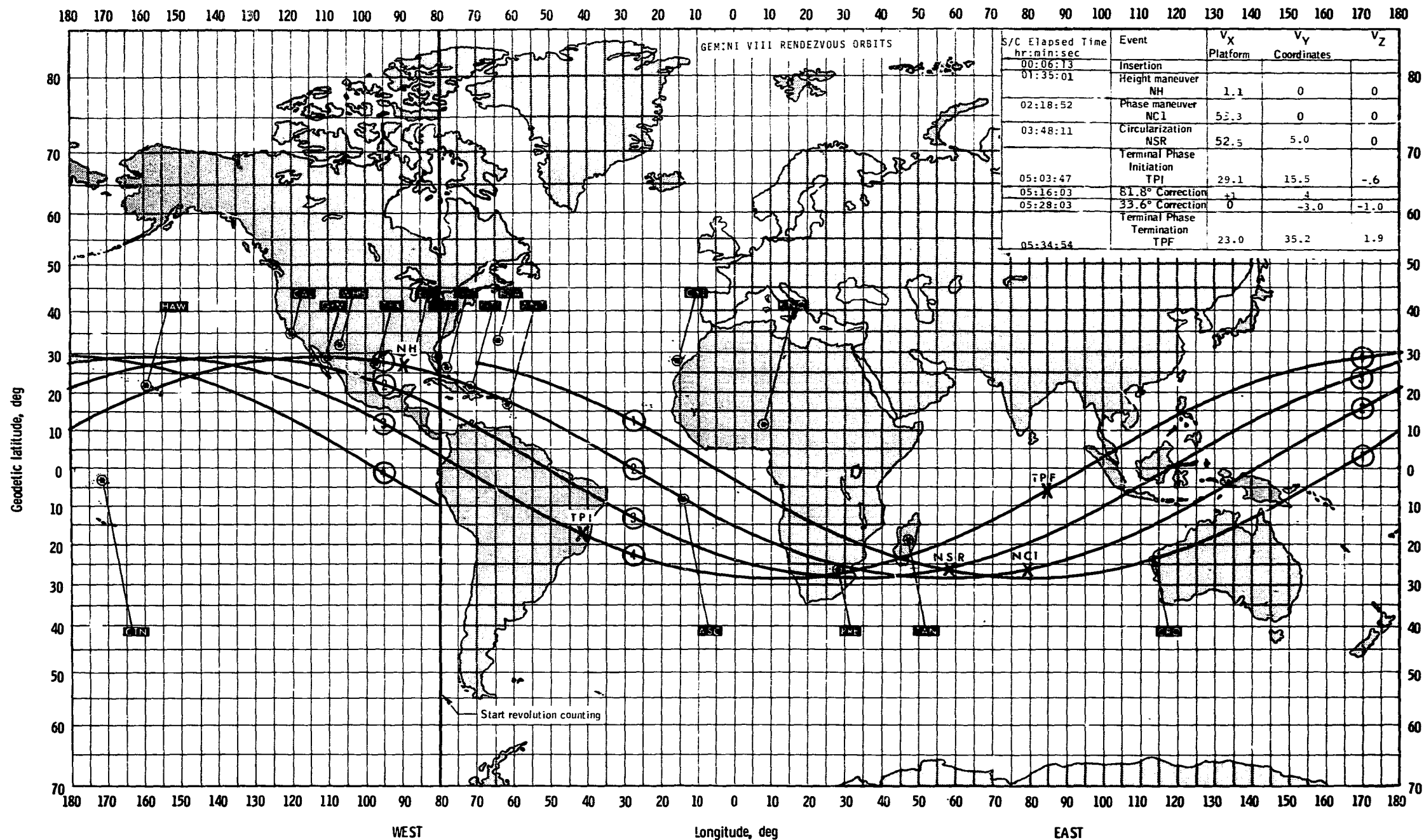
Reference MSC Internal Note No. 66-FM-8; Project Gemini; Orbital and Rendezvous for Gemini VIII for the nominal Gemini VIII Trajectory.

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All comments and/or questions should be forwarded to T. W. Holloway, Flight Planning Section, Flight Crew Support Division, extension 4271.

GEMINI TRACKING NETWORK

Revised March 17, 1965



SECTION I

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
0:00:00	ASC	FREE		CNV- <u>Report</u> lift-off A - <u>Report</u> clock start (Event Timer)					
0:00:09	ASC	FREE		A - <u>Report</u> Roll program initiated					
0:00:20	ASC	FREE		A - <u>Report</u> Roll program complete					
0:00:23	ASC	FREE		A - <u>Report</u> Pitch initiated					
0:00:50	ASC	FREE		CNV- <u>Give</u> 50 sec time hack for change to launch Mode II <u>NOTE</u> - 15K feet A - Confirm reported change to launch Mode II Release "D" Ring	A - Release "D" Ring Unclip Keying Switch				
NOTE "D" Ring stowed after insertion. Cmd Pilot will use the Keying Switch on the Attitude Controller.									
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
0:01:00	ASC	FREE		CNV-Give time hack at 01:40 <u>NOTE</u> - 70K feet A - Confirm time hack			A - <u>Report</u> cabin pressure holding at _____ psid.		
0:01:40	ASC	FREE							
0:01:45	ASC	FREE					DCS UPDATE RECEIVED		
							A - Reset DCS light Report DCS update received		
0:02:15	ASC	FREE					A - Report Stage II GO		
0:02:25	ASC	FREE					DCS UPDATE RECEIVED		
							A - Reset DCS light Report DCS update received		
0:02:36	ASC	FREE		<u>STAGING</u>					
				<u>NOTE</u> Engine I Lights - Momentarily ON Engine II Light - Out					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CN'L MODE	ACTION					
				COMMAND PILOT		PILOT			
	ASC	FREE		A - Report staging status Check "g" level FDI Scale Range - HI					
0:02:48	ASC	FREE		GUIDANCE INITIATE		A - Confirm guidance initiate			
0:04:25	ASC	FREE		CNV-Report GO/NO GO A - Report GO/NO GO					
0:05:10	ASC	FREE		CNV-Report $V/V_R = .8$ A - Confirm reported change to launch Mode III		A - Report FDI pitch and yaw error status			
				<u>NOTE</u> Change to launch Mode III at 21,000 ft/second					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
0:05:36	ASC	FREE	DIR	A - <u>Report</u> SECO Maneuver Controller - Unstow Maneuver Controller - On FDI Scale Range - L0			<u>SECO</u> A - ATTITUDE CONTROL - DIRECT Readout and copy computer Addresses 72, 94, & IVI's. A - OAMS ATT CNTL POWER - ON		
0:05:56	ASC	FREE	DIR	<u>SECO + 20 SECONDS</u>					
			RATE CMD	A - Initiate fwd thrust <u>NOTE</u> Initiate thrust and separate simultaneously. A - Apply a fwd separation velocity to null fwd/aft IVI's <u>NOTE</u> a. Do not control S/C attitude during first two (2) sec after S/C separation. b. Aft firing thrusters Nos. 9 and 10 used.			A - SEP SPCFT - Push ATTITUDE CONTROL - RATE CMD (Two sec delay from SEP S/C) JETT FAIRING - PUSH Report fairing jettison		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
				c. Minimum separation of 5 ft/sec (6 sec thrust) d. Retrograde IVAR corrections will not be applied. e. Maximum IVAR insertion is 30 feet/sec. f. Out-of-plane IVAR corrections will not be applied.	A - After burn, copy Addresses 72, 94, 52, 95, 89, and IVI's.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
0:06:14	ASC	FREE	RATE CMD	A - Roll left 90° to 0° roll attitude after OAMS firing.			<u>NOTE</u> If ground insertion is req: (insertion greater than 30 ft/sec) PLATFORM - ORB RATE COMPUTER - CTCH UP Apply required insertion velocity correction to count IVI's to correct value. <u>Give</u> voice mark for start and completion of OAMS thrust. CNV-Report GMT of lift-off, 1st time and apogee/perigee altitude. A - Copy update.		
	ASC	FREE	RATE CMD	A - Control S/C attitude to 0° roll, 0° yaw, 0° pitch. <u>NOTE</u> a. 0° pitch and roll is obtained by nulling the pitch and roll FDI. b. Yaw is obtained on the 8 ball.					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	ASC	FREE	RATE CMD	<u>INSERTION CHECKLIST</u>					
	PRE LN			A - BOOST-INSERT - SAFE RETROROCKET SQUIBS (4) - SAFE Maneuver Controller - OFF Maneuver Controller - Stow Stow "D" Ring "D" Ring Safety Pin - Install SEQ LIGHTS TEST - RED & GREEN/AMBER COMPUTER - PRE LN Left Sec O ₂ Bottle Shutoff - Closed ARM RESTRAINTS - STOW	A - Stow "D" Ring "D" Ring Safety Pin - Install Arm Restraints - Stow OAMS HEATERS'S C/B's - Closed H ₂ O HEATERS'S C/B's - Closed CRY QTY - OFF RECORD - OFF HF ANT - EXT/OFF (for 30 sec) ANT SEL - ADPT				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	PRE LN	FREE	RATE CMD		A - Voltmeter - BT Individually place each Main Battery to test <u>NOTE</u> 5 seconds maximum Check each amp and volt reading. The amp readings are the difference in readings on FC amp meters. Take readings on FC's first, then test. Main Battery #1 - G 1A #2 - G 1B #3 - G 2A #4 - G 2B Place batteries to "OFF" Complete electrical check Voltmeter - C Drogue Pins (R & L) - Install				
				A - <u>Report</u> checklist complete.					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
0:12	PRE LN	FREE	RATE CMD	A - Align Platform FDR - PLAT FDM - ATT ATTITUDE CONTROL - PULSE Hold pitch to 0° using horizon reference and null yaw and roll FDI's PLATFORM - CAGE (SEF) Hold roll attitude to 0° using the horizon When the "8" ball reaches 0°, 0°, 0° PLATFORM - SEF ATTITUDE CONTROL - PLAT Allow Plat mode to align Platform for 15 minutes		BDA-Update 1-4 reentry information as follows: 1. GETRC 2. RET 400K 3. RETRB			
		CAGE	PUL						
		SEF	PLAT						
	PRE LN	SEF	PLAT	Cmd Pilot aligning Platform		A - Copy update information			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
00:20	PRE LN	SEF	PLAT	ASC AOS - 00:20:29		A - NUC-EM - MODE 1; record time. (Maintain S/C heads up and in the yaw plane as possible until S-9 retrieval) ASC-Report via voice the following: 1. GMT of lift-off 2. Apogee altitude 3. Perigee altitude A - Copy update information <u>COMMUNICATION SYSTEMS CHECK</u> ASC-Participate in communications check and advise on the results <u>NOTE</u> Both transmission and reception HF should be checked. A - HF T/R - RNTY NO. 2 AUDIO - HF (Check operation) NO. 2 AUDIO - UHF UHF - NO. 2 (Check operation) UHF - NO. 1			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
				ASC LOS - 0:24:40 <u>SCANNER CHECK</u> PRE LN SEF PLAT A - When platform is aligned: After 15 min in PLAT: SCANNER - SEC After 15 min in PLAT: SCANNER - PRI Compare attitudes of the PLAT mode for the PRI & SEC SCANNERS ATTITUDE CONTROL - HOR SCAN TAN AOS - 0:34:03					
				PRE LN SEF HOR TAN-Report the following 1-4 SCAN reentry quantities, if required: 1. GMTRC 2. RET 400K 3. RETRB SUNSET - 0:34:08 TAN LOS - 0:41:43					
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION							
				COMMAND PILOT			PILOT				
00:35	PRE LN	SEF	PLAT				A - RAD -- FLOW				
00:40	PRE LN	SEF	HOR SCAN				A - C-RNTY - CMD C-ADAPT - CONT				
00:50	CTCH UP	ORB RATE	HOR SCAN	CRO AOS -- 00:49:40							
				CRO-GO/NO GO for 16-1			A - COMPUTER - CATCH UP Zero Addresses 25, 26, & 27 START COMP - PUSH Start clock. After 3 minutes, read Addresses 80, 81, and 82.				
	A - GO/NO GO for 16-1 ATTITUDE CONTROL - PLAT										
	NOTE During the CRO pass, the crew is conducting Accelerometer Bias Check. The MCC-H should also determine the accelerometer bias and be prepared to update it via DCS.			CRO-Give GO on RAD A - EVAP - NORMAL CRY QTY - ECS O ₂ /OFF (10 sec) CRO-Give S/C a GET time hack. A - Check GET clock After bias check: Notify ground and then COMPUTER - PRE LN							
	PRE LN		HOR SCAN	A - ATTITUDE CONTROL - HOR SCAN							
				CRO LOS - 00:58:14 SUNRISE - 01:10:38							
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
01:16	PRE LN	ORB RATE	HOR SCAN	A - After CRO GO, remove helmet and gloves. Remove and stow life vests. Survival Lanyard - Disconnect	A - After CRO GO, remove helmet and gloves. Remove and stow life vests. Survival Lanyard - Disconnect Unstow the following items: a. Hasselblad camera and film backs b. 16mm camera, magazines, and lens. HAW AOS - 01:15:31 HAW-Update Height Adjust Translation via DCS. Update M = 1.5 height translation.				
TRANS MINUS 15 Min (1:20:01)	PRE LN	ORB RATE SEF	HOR SCAN PLAT	If M = 1.5 height adjustment translation is required, perform the following: A - Control S/C attitudes to 0°, 0°, 0° (SEF) FDR - PLAT FDM - ATT PLATFORM - SEF ATTITUDE CONTROL - PLAT Allow PLAT mode to align platform.	A - Copy update. Check HAW DCS load. HAW LOS - 01:22:34 GYM AOS - 01:27:14 TEX AOS - 01:30:18				
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FLIGHT PLAN

MSC FORM 1008 (REV AUG 64)

NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
TRANS MINUS 5 Min (1:30:01)	CTCH UP	ORB RATE	RATE CMD	A -- ATTITUDE CONTROL - RATE CMD PLATFORM - ORB RATE COMPUTER - CATCH UP FDR - COMP Maneuver Controller - Unstow Maneuver Controller - ON GYM LOS - 01:33:50 CNV AOS - 01:34:09					
TRANS MINUS 1 Min (1:34:01)	CTCH UP	ORB RATE	RATE CMD	A - START COMP - PUSH					
M = 1.5 Height Adjustment Translation									
TRANS MINUS 0 Min (1:35 01)	CTCH UP	ORB RATE	RATE CMD	A - Translate fwd to zero IVI's <u>NOTE</u> a. Aft firing thrusters used b. Nominal ΔV is 1.1 ft/sec.			A - Time burn		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
01:36	PRE LN		HOR SCAN	A - Apply any necessary corrections to null Address 81, 82 and 80 within ± 0.2 ft/sec. <u>NOTE</u> The above corrections increase the accuracy of the ΔV application. A - Null FDI's A - ATTITUDE CONTROL - HOR SCAN COMPUTER - PRE LN Maneuver Controller - OFF Maneuver Controller - Stow TEX LOS - 01:36:51	A - Readout Addresses 81, 82, and 80 from MDU.				
	PRE LN	ORB RATE	HOR SCAN	CNV-D/T Tape Plybk Update accelerometer bias via DCS.	A - Readout and copy Addresses 80, 81, and 82 Zero Addresses 25, 26, & 27.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
01:55	PRE LN	ORB RATE	HOR SCAN	A - Eat period, as possible. ANT AOS - 01:39:08 CNV LOS - 01:40:22 ANT LOS - 01:45:48 ASC AOS - 01:52:27	A - Eat period, as possible. ASC-Update M=2 phase adjust translation. A - Copy update. Update phase adjust translation via MDU with ground updated values. <u>NOTE</u> Nominal values are: 25:00533 26:00000 27:00000				
				ASC LOS - 01:59:59 SUNSET - 02:03:01					
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
TRANS MINUS 15 Min (2:03:52)	PRE LN	ORB RATE SEF	HOR SCAN PLAT	A - FDR - PLAT FDM - ATT PLATFORM - SEF ATTITUDE CONTROL - PLAT Align platform					
2:10	PRE LN	SEF	PLAT			TAN AOS - 02:08:51			
						A - S-3 Experiment R/H Unit - #II R/H & L/H Heater Sws - ON Give ground time hack.			
TRANS MINUS 5 Min (2:13:52)	CTCH UP	ORB RATE	RATE CMD	A - ATTITUDE CONTROL - RATE CMD PLATFORM - ORB RATE COMPUTER - CATCH UP FDR - COMP MANEUVER CONTROLLER - UNSTOW MANEUVER CONTROLLER - ON		A - Read and copy onboard propellant quantity.			
						TAN LOS - 02:15:14			
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
02:25	CTCH UP	ORB RATE	RATE CMD	A - Null FDI's		A - Readout and copy Addresses 80, 81, and 82 Zero Addresses 25, 26, & 27. Read & copy prop quantity.			
	PRE LN		HOR SCAN	A - ATTITUDE CONTROL - HOR SCAN COMPUTER - PRE LN Maneuver Controller - OFF Maneuver Controller - Stow CRO AOS - 02:23:58					
	PRE LN	ORB RATE	HOR SCAN			CRO-If plane adjust translation is required, update plane adjust translation A - Copy update Update plane adjust transla- tion via MDU with ground updated values.			
				<u>NOTE</u> Nominal values are: 25:00000 26:00000 27:00000					
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FLIGHT PLAN

MSC FORM 1008 (REV AUG 64)

NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
TRANS MINUS 15 Min (2:30:30)	PRE LN	ORB RATE SEF	HOR SCAN PLAT	A - FDR - PLAT FDM - ATT PLATFORM - SEF ATTITUDE CONTROL - PLAT Allow PLAT mode to align Platform CRO LOS - 02:31:05			SUNRISE - 02:38:55		
TRANS MINUS 5 Min (2:40:30)	PRE LN CTCH UP	ORB RATE	RATE CMD	A - ATTITUDE CONTROL - RATE CMD PLATFORM - ORB RATE COMPUTER - CTCH UP Control S/C attitude to 0°, 90°, 0° or 0°, 270°, 0° Maneuver Controller - Unstow Maneuver Controller - ON					
TRANS MINUS 1 Min (2:44:30)	CTCH UP	ORB RATE	RATE CMD	A - START COMP - PUSH					
TRANS MINUS 0 Min (2:45:30)	CTCH UP	ORB RATE	RATE CMD	PLANE ADJUST TRANSLATION A - Translate fwd to drive IVI's to zero <u>NOTE</u> Nominal ΔV is zero					
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	CTCH UP	ORB RATE	RATE CMD	A - Apply any necessary corrections to null 81, 82, and 80 readouts within ± 0.2 ft/sec.	A - Readout Addresses 81, 82, and 80.				
	PRE LN		HOR SCAN	A - Null FDI's Control S/C attitudes to SEF ATTITUDE CONTROL - HOR SCAN COMPUTER - PRE LN Maneuver Controller - OFF Maneuver Controller - Stow Unstow & mount reticle Reticle - ON Set reticle brightness during following night period HAW AOS - 02:49:20 HAW LOS - 02:56:42	A - Readout and copy Addresses 80, 81, and 82 Zero Addresses 25, 26, & 27.				
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND .PILOT	PILOT				
02:50	PRE LN	ORB RATE SEF	HOR SCAN PLAT	A - FDR - PLAT FDM - ATT ATTITUDE CONTROL - PLAT PLATFORM - SEF Allow PLAT mode to align platform for 10 min. GYM AOS - 03:00:45	<u>NOTE</u> At the indicated times, the following agena actions occur: 1.) 02:50 a. Boom extend b. L-Band Beacon ON 2.) 02:55 a. Acq LTS ON b. YAW MANEUVER to TDA NORTH				
03:00	PRE LN	ORB RATE	PUL	A - ATTITUDE CONTROL - PULSE PLATFORM - ORB RATE RADAR - STBY					
03:02	PRE LN	ORB RATE	PUL	POSSIBLE HEIGHT ADJUST					
03:04	PRE LN	ORB RATE	PUL	TEX AOS - 03:08:54 TEX-D/T Tape Plybk					
				TEX-Report the Agena Acq update: 1. GET Acq 2. Target Azimuth 3. Target Elevation 4. GET of R = 248 n.m. 5. Time of Test Rndz data readout Report the GET of Agena sunrise (during terminal phase)					
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	PRE LN	ORB RATE	PUL			TEX-If required, update the following data: 1. $\frac{1}{A_T}$ (Address 24) 2. Orbital period (Agena) (Address 53) 3. Orbital radius (Agena) (Address 54) A - Copy updates Purge fuel cells (Section #1 and then Section #2)			
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
03:07	PRE LN	ORB RATE	PUL	A - RADAR - ON Control S/C attitudes to Agena Acq angles After lock-on: FDR - RDR FDM - ATT Null FDI's COMPUTER - CTCH UP GYM LOS - 03:08:20 CNV AOS - 03:08:26 TEX LOS - 03:11:06 RENDEZVOUS TEST		A - Readout range (Address 36) continuously			
GETRZM (03:12)	RNDZ	ORB RATE	PUL	A - When range data is available: COMPUTER - RNDZ <u>NOTE</u> The computer will be allowed to go thru three ΔV_T calcu- lations. Then START COMP will be pushed and the initiation ΔV will be allowed to be displayed on the IVI's.		A - Start stopwatch Readout range (Address 69) every 100 seconds Insert the following into the computer via MDU: 83:13000 ($130^\circ \omega t$) 93:04820 ($48.2^\circ \Delta \omega t$)			
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
3:23:40	RNDZ	ORB RATE	PUL	RKV AOS - 03:21:49 A - Test Rndz First ΔV displayed			A - START COMP - PUSH <u>Test Rndz Terminal Phase initiation ΔV displayed</u> COMP LITE - ON			
3:27:00	RNDZ	ORB RATE	PUL	ASC AOS - 03:27:31 A - Test Rndz Third ΔV displayed						
TRANS MINUS 20 Min (03:28)	RNDZ	ORB RATE SEF	PUL PLAT	A - Control S/C attitude to SEF FDR - PLAT FDM - ATT PLATFORM - SEF ATTITUDE CONTROL - PLAT Allow PLAT mode to align platform for 15 min. <u>NOTE</u> Platform is being aligned. SUNSET - 03:32:25 ASC LOS - 03:33:39						
							ASC-Update circularization translation (NSR) A - Copy update A - After Test Rendezvous: COMPUTER - CATCH UP Update circularization translation via MDU with ground updated values. <u>NOTE</u> Nominal values are: 25:00525 26:90050 27:00000			
MISSION		EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII		Final		Feb. 24, 1966						23

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
CIRCU TRANS MINUS 5 Min (3:43:11)	CTCH UP	ORB RATE	RATE CMD	A - ATTITUDE CONTROL - RATE CMD PLATFORM - ORB RATE Maneuver Controller - Unstow Maneuver Controller - ON FDR - COMP FDM - ATT Null FDI's TAN AOS - 03:43:23	A - Zero GET stopwatch Read and copy prop quantity.				
CIRCU TRANS MINUS 1 Min (3:47:11)	CTCH UP	ORB RATE	RATE CMD	A - START COMP - PUSH					
CIRCULARIZATION									
CIRCU TRANS MINUS 0 Min (3:48:11)	CTCH UP	ORB RATE	RATE CMD	A - Translate fwd to drive IVI's to zero <u>NOTE</u> a. Aft firing thrusters used. b. Nominal ΔV is 52.8 ft/sec. c. Approximately 70 seconds of thrust required.	A - 00:00 Start GET stopwatch at thrust initiation Monitor duration of translation				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						24

FLIGHT PLAN

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NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION				
				COMMAND PILOT	PILOT			
				A - Apply any required corrections to null 81, 82, and 80 within ± 0.2 ft/sec <u>NOTE</u> The above corrections increase the accuracy of the translations. A - Null FDI's Maneuver Controller - OFF Maneuver Controller - Stow ATTITUDE CONTROL - PULSE TAN LOS - 03:50:37 <u>NOTE</u> All times in parenthesis in both the Cmd Pilot and Pilot columns are elapsed times from the latest reset point on either the Event Timer or the GET stopwatch.	A - Readout Addresses 81, 82, and 80 from MDU A - Readout and copy Addresses 80, 81, and 82 Zero Addresses 25, 26 & 27 Read and copy prop quantity			
MISSION	EDITION	DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final	Feb. 24, 1966						25

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
3:52:34	CTCH UP	ORB RATE	PUL	A - Immediately after completion of circularization trans- lation, acquire radar lock-on FDR - RDR FDM - ATT Verify radar lock-on Remain be sighted on the Agena using either the FDI's c reticle Event Timer - STBY Set Event Timer to 03:00			A - Insert the following into the computer: 25:00284 26:90147 27:00000			
	CTCH UP	ORB RATE	PUL	(03:00) A - Start Event Timer counting up			(03:00) A - Give the Cmd Pilot a time hack			
	GETRZM (3:52:34)	RNDZ	ORB RATE	PUL	A - Load 16mm camera (with 75mm lens) Set camera to 1/50, f 2.8 and infinity			(04:00) A - COMPUTER - RNDZ Insert the following into the computer: 83:13000 (130° wt) 93:04820 (48.2° Δwt) Readout pitch angle (Address 96) and range (Address 69) and range rate (Address 35) from the computer at 100-sec intervals.		
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							26

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
4:04:14	RNDZ	ORB RATE	PUL	(15:40) First Total ΔV displayed		A - Verify Addresses 83, 93, 54, 53, 24, and 92 are correct in the computer. (05:40) data readout (07:20) data readout (09:00) data readout (10:40) data readout (12:20) data readout (14:00) data readout (15:40) data readout SUNRISE - 04:08:13			
4:22:34	RNDZ	ORB RATE SEF	PUL PLAT	(34:00 - Nominally) A - When pitch angle is 9° : Pitch down to 0° , 0° , 0° : PLATFORM - SEF ATTITUDE CONTROL - PLAT FDR - PLAT Align platform for 10 min.		A - Continue reading out pitch angle (Address 96) and range (Address 69) and range rate (Address 35) from the computer via MDU. A - Read out sin of radar elevation angle (Address 84) every 100 seconds.			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						27

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
GYM AOS (04:36)	RNDZ	ORB RATE	PUL	Then: ATTITUDE CONTROL - PUL PLATFORM - ORB RATE FDR - RDR Boresight on the Agena. GYM AOS - 04:35:13			A - Readout pitch angle, range, and range rate every 100 seconds. GYM-Update terminal phase backup and expected OAMS depletion point. A - Copy update Continue reading out pitch angle, range, and range rate.		
		ORB RATE	PUL						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						27a

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
04:40	RNDZ	ORB RATE	PUL	TEX AOS - 04:39:09 TEX-D/T Tape Plybk TEX LOS - 04:44:35 A - Continue boresighted on the Agena until selected initiation point.			A - Note pitch angle (Address 96) which exceeds 21.4°. If value is less than 22.2°, label it Point B. If not, label it Point C and the previous one Point B. Add 01:40 to Point B time to obtain time of Point C. Add 01:40 to Point C to obtain time of Point D. Add 02:10 to Point D to obtain TPI time. Add 00:40 to TPI time to obtain GET clock reset time.		
4:59:53	RNDZ	ORB RATE	PUL	(07:20 - Nominally) DATA POINT "C" RECEIVED (θ = 22.9) A - START COMP - PUSH			(07:20		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						28

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					A - Read pitch angle (Address 96) and range (Address 69) and range rate (Address 35). <u>NOTE</u> The Event Timer has counted thru 60:00 and is counting up again. (09:00 - Nominally) DATA POINT "D" RECEIVED A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35).				
	RNDZ	ORB RATE	PUL RATE CMD	A - Null FDI's to boresight on Agena ATTITUDE CONTROL - RATE CMD Maneuver Controller - Unstow Maneuver Controller - ON RKV AOS - 04:04:56:42					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						29

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					<u>NOTE</u> The Agena will have been configured for rendezvous and docking by the ground as follows: a. At -90° (TDA North) b. Acquisition Lights - ON c. Approach Lights - ON d. Status Display Panel - BRIGHT e. TDA Unrigidized f. DIPOLE ANT - EXTEND g. L-BAND BEACON - ON h. Flight Control Mode I				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						30

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
5:03:47	RNDZ	ORB RATE	RATE CMD	SUNSET - 05:02:13 $\omega T = 130^\circ$ TRANSFER TRANSLATION (11:10 - Nominally) A - When Start Comp Light comes on, translate to null IVI's <u>NOTE</u> a. Nominally aft firing thrusters used. b. Nominally 41 seconds of thrust required.	(11:10 - Nominally) A - Time duration of translation				
			PUL	A - Immediately after translation Maneuver Controller - OFF ATTITUDE CONTROL - PULSE Boresight S/C on Agena with either the FDI's or reticle Reset Event Timer to 02:00 and place in STBY					
5:04:23	RNDZ	ORB RATE	PUL		(11:50 - Nominally) (00:00) A - At 00:40 after TPI time, zero the GET stopwatch and start it counting up.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						31

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
5:05:23	RNDZ	ORB RATE	PUL			(01:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer.			
						(02:30) A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35) from the computer.			
5:07:23	RNDZ	ORB RATE	PUL	(03:00) A - On mark, start Event Timer counting up.		(03:00) A - At 03:00, give mark to Cmd Pilot. Read pitch angle (Address 96), range (Address 69) and range rate (Address 35) from the computer and copy.			
						(04:00) A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35) from computer and copy.			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						32

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					(05:00) A - ENCDR - ON Send Cmd 270 (L-Band ANT SEL - SPIRAL) to the Agena ENCDR - OFF (07:00) A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35) from the computer. (08:30) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer. (09:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						33

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
5:14:23	RNDZ	ORB RATE	PUL	(10:20) A - When Start Comp Light comes on: ATTITUDE CONTROL - RATE CMD Maneuver Controller - ON Boresight on Agena $\omega T = 82^\circ$ CORRECTION TRANSLATION			(10:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer.		
	RNDZ	ORB RATE	RATE CMD						
5:16:03	RNDZ	ORB RATE	RATE CMD	(11:40) IVI's count up to req ΔV A - Translate to null IVI's <u>NOTE</u> Null lateral errors first and fwd/aft errors last.			(11:40) A - When IVI's stop counting up, read range (Address 69)		
	RNDZ	ORB RATE	RATE CMD						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						34

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTRL MODE	ACTION					
				COMMAND PILOT	PILOT				
			PUL	A - Immediately after correction: Maneuver Controller - OFF ATTITUDE CONTROL - PUL Continue boresighted on the Agena. Start 16mm camera @ one frame/second.	(13:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer. (14:30) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						35

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					(15:00) A - Read pitch angle (Address 96), range (Address 69) and range rate (Address 35) from the computer and copy. (16:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer and copy. (19:00) A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35) from the computer. (20:30) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer.				
TAN AOS - 05:18:02									
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						36

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					(21:00) A - Read pitch angle (Address 96), range (Address 36), and range rate (Address 35) from the computer. (22:00) A - Read pitch angle (Address 96), range (Address 36) and range rate (Address 35) from the computer.				
TAN LOS - 05:26:23									
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						37

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
5:26:43	RNDZ	ORB RATE	RATE CMD	(22:20) When Start Comp Light comes on: A - ATTITUDE CONTROL - RATE CMD Maneuver Controller - ON					
$\omega T = 34^\circ$ CORRECTION TRANSLATION									
5:28:03	RNDZ	ORB RATE	RATE CMD	(23:40) IVI's count up to req ΔV A - Translate to null IVI's <u>NOTE</u> Null lateral errors first and fwd/aft errors last. (24:00) A - Continue boresighted on the Agena Null LOS motions	(23:40) A - When IVI's stop counting up: read range (Address 69) (24:00) A - COMPUTER - CATCH UP Zero Addresses 25, 26, & 27 START COMP - PUSH ENCODER - ON Monitor range (Address 36) and pitch angle (Address 96) to cont polar plot.				
	CTCH UP								
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						38

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
5:30:57	CTCH UP	ORB RATE	RATE CMD	(26:30 - Nominally) A - At 15,000 ft, translate aft along line-of-sight to reduce range rate to ≈ 40 ft/sec.					
5:36	CTCH UP	ORB RATE	RATE CMD	(31:34 - Nominally) A - At 3,000 ft range, translate aft along line-of-sight to reduce range rate to ≈ 10 fps.					
5:38	CTCH UP	ORB RATE	RATE CMD	SURPRISE - 05:38:06 A - If possible, mark sunrise and change camera setting to 1/200 and f16.					
5:40	CTCH UP	ORB RATE	RATE CMD	CSQ AOS - 05:40:38			(37:34 - Nominally) A - At 500 ft range: EXT LTS - DOCK Send Cmd 250 as required (Acq Lts - OFF) to the Agena		
5:42	CTCH UP	ORB RATE	RATE CMD	(39:14 - Nominally) A - At 100 ft range, translate aft to reduce range rate to $\frac{1}{2}$ ft/sec.					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
05:45 to 06:15	CTCH UP	ORB RATE	PUL	A - ATTITUDE CONTROL - PULSE Stop 16mm camera		A - At 50 ft range Agena BUS ARM - DOCK INDEX - EXTEND INDEX - OFF Agena BUS ARM - SAFE HF ANT - RET (1 MIN)			
	CTCH UP	ORB RATE	PUL	A - Formation flying Run 16mm at 1 frame/sec until depletion. Then: Change to 18mm lens, infinity 1/200 and f16. CSQ LOS - 05:49:34		A - Agena Status Display Check: 1. MAIN RED - <u>OFF</u> 2. MAIN GREEN - <u>ON</u> 3. ARMED - <u>OFF</u> 4. SEC HI - <u>ON</u> 5. SEC LO - <u>ON</u> 6. ATT - <u>ON</u> 7. DOCK - <u>ON</u> 8. RIGID - <u>OFF</u> 9. PWR - <u>ON</u>			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
HAW AOS (06:00)	CTCH UP	ORB RATE	DIR	HAW AOS - 05:59:09 HAW-Send Reset Timer - Reset to the Agena via RTC. Send SPC load to the Agena for the SPC loaded yaw maneuver and load V/M word for the SPS Translation. Update the start time of the SPC loaded yaw maneuver.	A - ENCDR - OFF If possible, report to HAW the following status display panel meter readings: Main Time _____ min:sec Sec Time _____ min:sec Att Gas _____ %				
06:15 to 06:25	CTCH UP	BEF ORB RATE	PLAT RATE CMD	A - PLATFORM - BEF ATTITUDE CONTROL -- PLAT Align platform PLATFORM - ORB RATE ATTITUDE CONTROL - RATE CMD	A - Send the following cmds to the Agena: (F.C. Mode 6) 471 - ACS GAIN HI DK 371 - ACS PRESS HI *451 - ACS D/B WIDE *571 - HYD GAIN DK Wait 10 seconds 271 - PWR RELAY RESET 070 - L-BAND BEACON OFF RDR - OFF				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
06:25 to 06:35	CTCH UP	ORB RATE	RATE CMD	<u>1ST DOCKING</u> (S/C - 0°, 90°, 0°) (Agena - 0°, -90°, 0° TDA North)					
				A - Run 16mm camera at 6 frames/ sec for docking. Mark start and stop times. DOCK Stop 16mm camera.					
				A - RIGID/STOP Switch - STOP (After Rigid Lite - ON) OAMS ATT CNTL POWER - OFF Post-docked Agena Status Display Panel Checklist DOCK - <u>OFF</u> RIGID - <u>ON</u> PWR - <u>ON</u> MAIN RED - <u>OFF</u> MAIN GREEN - <u>ON</u>		A - Post-docked Agena Status Display Panel Checklist MAIN RED - <u>OFF</u> MAIN GREEN - <u>ON</u> SEC HI - <u>ON</u> SEC LO - <u>ON</u> ATT - <u>ON</u>			
06:32				EKV AOS - 06:32:27 RKV- D/T Tape Plybk SUNSET - 06:33:06 RKV LOS - 06:40:48		Cycle Engine STOP/ARM Switch to verify hardline connection. (ARM LT ON & OFF)			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	CTCH UP PRE LN	ORB RATE	PUL	POST-DOCKED CHECKLIST A - SCANNER - OFF ATTITUDE CONTROL - PULSE RETICLE - OFF EVENT TIMER - STOP A - DOCKING LT - OFF C-ADPT R/T T/M - CMD COMPUTER - PRE LN A - Send the following cmds to the Agena: 250 - ACQ LTS - OFF (if req) 140 - APPROACH LTS - OFF 211 - STATUS DISPLAY - DIM					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
06:35 to 06:50	PRE LN	ORB RATE	PUL				A - Send the following cmds to the Agena to yaw the S/C to 0°, 180°, 0° (Agena - 0°, 0°, 0° - TDA Fwd): *471 - ACS GAIN HI DK *371 - ACS PRESS HI *451 - ACS D/B WIDE *571 - HYD GAIN DK Wait 10 seconds *271 - PWR RELAY RESET 411 - P/Y PLUS 420 - P/Y RATE LOW (1/2°/sec) 350 - GEO RATE OFF 441 - YAW ON (for 60 sec) 440 - YAW OFF 361 - GEO RATE NORMAL 310 - ROLL H/S YAW *321 - H/S PHASE IN 351 - GEO RATE ON 341 - GYRO COMPASSING ON		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
06:50 to 07:10	CTCH UP	ORB RATE	PUL	<u>PLATFORM PARALLELISM CHECK</u> A - FDR - COMP FDM - ATT RKV LOS -06:40:38 A - Observe and record the following: 1. Maximum left-right and up-down IVI readings. 2. Minimum fwd-aft IVI reading. 3. Maximum attitude errors. TAN AOS - 06:53:34		<u>NOTE</u> Before proceeding with platform parallelism check, allow at least 6 min of gyrocompassing in FC 6. A - COMPUTER - CATCH UP Load the computer via the MDU as follows: 25:99000 26:00000 27:00000 START COMP - PUSH Send Cmd 041 (RECORD DATA) to the Agena A - Readout and copy yaw and pitch error (Addresses 58 and 59 respectively)			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	CTCH UP	ORB RATE	DIR	A - Allow 1 minute for stabilization; then record the following: 1. Maximum left-right and up-down IVI readings. 2. Minimum fwd-aft IVI reading 3. Maximum attitude errors. 4. Time to stabilize.		(Agena F.C. Mode 3) A - Send the following cmds to the Agena: 450 - ACS D/B NARROW A - Readout and copy yaw and pitch errors (Addresses 58 and 59 respectively) (Agena F.C. Mode 7) A - Send Cmd 471 (ACS GAIN - HI DK) to the Agena <u>NOTE</u> HI GAS USAGE - Limit to 45 seconds.			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	CTCH UP	ORB RATE	DIR	A - After stabilization, record the following: 1. Maximum left-right and up-down IVI readings. 2. Minimum fwd-aft IVI reading 3. Maximum attitude errors. 4. Time to stabilize.		A - Readout and copy yaw and pitch errors (Addresses 58 and 59 respectively) A - Send the following cmds to the Agena: (Agena F.C. Mode 6) 451 - D/B - WIDE 030 - T/M & RECORDER OFF 021 - T/M ON ENCDR - OFF A - COMPUTER - RNDZ/CTCH UP Load computer as follows: 25:00104 26:00000 27:00995 FDR - COMP FDM - ATT NOTE If the crew is not prepared to perform the SPC loaded yaw maneuver, send cmd 240 (SPC DISABLE) to the Agena.			
				SUNRISE - 07:08:06					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
07:10 to 07:25	CTCH UP	ORB RATE	PUL	SPC LOADED YAW MANEUVER (S/C - 0°, 180°, 0°) (Agena - 0°, 0°, 0°, TDA Fwd) (00:00 to 01:00) Agena yaws to 0°, 90°, 0° (TDA South) at 1 1/2°/sec (S/C 0°, -90°, 0°) (01:00 to 07:00) Agena gyrocompassing at 90°. (07:00 to 07:04) Agena yaws to 0°, 96°, 0° (S/C 0°, -84°, 0°) (07:04 to 07:20) Agena stabilizes TAN LOS - 07:02:13 (09:04 to 10:08) Agena yaws to 0°, 0°, 0° (TDA Fwd) and start gyrocompassing. (S/C - 0°, 180°, 0°)	A - Start stopwatch (06:45) A - START COMP - PUSH (07:20 to 09:04) A - Record IVI readings Readout and copy yaw and pitch errors (Addresses 58 and 59 respectively)				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

MSC FORM 1008 (REV AUG 64)

NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
CSQ AOS (07:17)	CTCH UP	ORB RATE	PUL	CSQ-Agena Tape Plybk		CSQ AOS - 07:16:22 A - Purge fuel cells (Sect #2 and then Sect #1) CSQ LOS - 07:24:55			
07:25	CTCH UP	ORB RATE	PUL	A - OAMS ATT CNTL POWER - ON Allow the Gemini-Agena to stabilize for at least 2 min. HAW AOS - 07:34:42		A - Zero addresses 25, 26, & 27 in the computer ENCDR - ON Send the following cmds to the Agena: 300 - H/S OFF 350 - GEO RATE - OFF 400 - ACS OFF			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
07:35	CTCH UP	ORB RATE		S/C - AGENA 1ST BENDING TEST S/C - 0°, 180°, 0° (BEF) Agena - 0°, 0°, 0° (TDA Fwd)			<u>NOTE</u> This test must be performed over a R/T T/M site.		
			DIR A	- ATTITUDE CONTROL - DIRECT Apply a 3 sec pitch up thrust immediately followed by a 3 sec pitch down thrust. Allow the Gemini - Agena to stabilize for 2 min. Apply a 3 sec yaw left thrust immediately followed by a 3 sec yaw right thrust. Allow the Gemini - Agena to stabilize for 10 sec.			HAW-Update duration of the SPS Translation (min:sec).		
				HAW LOS - 07:45:43					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						50

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
07:40 to 07:55	CTCH UP	ORB RATE	DIR	A - Control S/C attitudes to 0°, -90°, 0° (Agena - 0°, 90°, 0°) (TDA South) (Agena F.C. Mode 6)		A - Send the following cmds to the Agena (F.C. Mode 5): 361 - GEO RATE NORMAL 311 - PITCH H/S YAW 320 - H/S PHASE OUT 401 - ACS ON 301 - H/S ON 351 - GEO RATE ON *341 - GYRO COMPASSING ON A - Prepare Hasselblad for possible photography of SPS illumination 1/50 & f2. Insert the following into the S/C computer via the MDU: 25:00000 26:00000 27:00200			
				A - OAMS ATT CNTL POWER - OFF					
	CTCH UP	ORB RATE	PUL	A - ATTITUDE CONTROL - PULSE Prepare 16mm camera for possible photography of SPS illumination 1/50 & f2.					
				SUNSET - 08:03:06					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						51

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
RKV AOS (08:10)	CTCH UP	ORB RATE	DIR	RKV AOS - 08:09:00 RKV-D/T Tape Plybk SPS - TRANSLATION (S/C - 0°, -90°, 0°) (Agena - 0°, 90°, 0° - TDA South) A - Set Event Timer to 59:00 Event Timer - STBY A - Event Timer - UP		<u>NOTE</u> 1. The SPS translation is performed out-of-plane. 2. The ΔV is 20 ft/sec. A - After at least 6 minutes of gyro compassing (After Cmd 341): START COMP - PUSH Perform the following at the indicated times prior to the SPS translation: 59:00 - Send Cmd 041 - RECORD DATA 59:14 - Send Cmd 450 (Agena D/B NARROW F.C. Mode 7) ARM STOP SW - ARM 59:30 - Send Cmd 521 - VM ENABLE 59:44 - Send Cmd 561 - SPS RDY 00:00 - Send Cmd 560 - 200# ON			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						52

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
				A - If practical, photograph thruster illumination	TRANSLATION A - If practical, photograph thruster illumination +23 sec - V/M CUT-OFF +25 sec - At V/M CUT-OFF + 2 sec - Send Cmd 550 - SPS C.O. and Cmd 451 - D/B WIDE (Agena F.C. Mode 6) ARM STOP SW - <u>STOP</u> +33 sec - At V/M CUT-OFF + 10 sec - Send the following cmds to the Agena: 520 - V/M DISABLE 030 - TM & RECORDER OFF 021 - TM ON Readout and copy Addresses 80, 81, and 82.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						53

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
08:53	OFF	OFF	PUL	CSQ AOS - 08:52:47 CSQ - Agena Tape Plybk A - Crew status report CSQ LOS - 09:00:40	CSQ-Block 2 PLA update A - Copy update Flight Plan report Crew status report				
<u>PRE-SLEEP CHECKLIST</u>									
				A - ENGINE - ARM Check SDP Arm Lt illuminated ENGINE - STOP Check SDP Arm Lt extinguished RCS HTRS - ON Agena attitude gas 39% or greater. Check SDP. PRI PUMP A - ON SEC PUMP B - ON					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						55

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT		PILOT				
	OFF	OFF	PUL	(S/C - 0°, 180°, 0°) (Agena - 0°, 0°, 0° - TDA FWD)		A - Send the following cmds to the Agena: (FC Mode 1) *070 - L-BAND BEACON OFF 460 - ACQ GAINS LOW 370 - ACS PRESS LOW *451 - ACS D/B WIDE 570 - HYD GAINS UNDK Wait 10 seconds 271 - PW RELAY RESET ENCDR - ON				
HAW AOS (09:12)	OFF	OFF	PUL	HAW-Flight Plan update A - Copy update						
09:20	OFF	OFF	PUL	HAW LOS - 09:18:03		A - After HAW AOS, send Cmd 230 (UHF DISABLE) to the Agena.				
09:30 to 17:00	OFF	OFF	PUL	A - Rest period CRO AOS - 16:50:20		A - Rest period SUNSET - 09:33:30				
17:00	OFF	OFF	PUL	A - Sleep period ends CRO LOS - 17:00:49		A - Sleep period ends				
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb, 24, 1966							56

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTRL MODE	ACTION						
				COMMAND PILOT		PILOT				
17:00 to 18:00	OFF	OFF	PUL	A - Eat period SUNSET - 17:05:30		A - Eat period				
17:20 to 17:35	OFF	OFF	PUL			A - Send the following cmds to the Agena to yaw the S/C to 0°, -90°, 0° (Agena - 0°, 90°, 0° TDA South) (F.C. Mode 6) 040 - RECORD DATA 471 - ACS GAIN HI DK 371 - ACS PRESS HI *451 - ACS D/B WIDE *571 - HYD GAIN DK Wait 10 seconds. 271 - PWR RELAY RESET 411 - P/Y PLUS 420 - P/Y RATE LOW 350 - GEO RATE OFF 441 - YAW ON (for 60 seconds) 440 - YAW OFF *361 - GEO RATE NORMAL 311 - PITCH H/S YAW 320 - H/S PHASE OUT 351 - GEO RATE ON *341 - GYRO COMPASSING ON				
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							57

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
ETR AOS (17:41)	OFF	OFF	PUL	SUNRISE - 17:41:00 ETR AOS - 17:40:49			(F.C. Mode 1) 460 - ACS GAINS LOW 370 - ACS PRESS LOW *451 - ACS D/B WIDE Wait 10 seconds. 271 - PWR RELAY RESET 030 - T/M & RECORDER OFF 021 - T/M ON ENCDR - OFF ANT-D/T Tape Plybk Agena Tape Plybk A - Purge fuel cells (Sect 2 and then Sect 1) CRYO QTY Readout ECS 0 FC 0 ² FC H ₂ ²		
CYI AOS (17:54)	OFF	OFF	PUL	ETR LOS - 17:50:45 CYI AOS - 17:53:21 A - Crew status report Set event timer to 00:00 and STBY CYI LOS - 18:02:26			CYI-Block 3 PLA update Update EVA sunrise time A - Copy update Crew status report		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						58

FLIGHT PLAN

MSC FORM 1008 (REV AUG 64)

NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
18:00 to 20:25	OFF	OFF	PUL	A - EVA Preparation (See Section II for details)		A - EVA Preparation (See Section II for details)			
19:15	OFF	OFF	PUL	U.S. Pass A - GO/NO GO for 31-1		SUNSET - 18:36:00			
19:42	OFF	OFF	PUL	MCC-GO/NO GO for 31-1 D/T Tape Plybk A - Start event timer counting up CRO AOS - 20:04:49		SUNRISE - 19:11:30			
CRO AOS (20:05)	OFF	OFF	PUL	CRO-D/T Tape Plybk Give GO/NO GO for Depress A - Give GO/NO for Depress CRO LOS - 20:13:53		SUNSET - 20:06:30			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						59

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
20:30	OFF	CAGE (SEF)	PUL	A - SEC PUMP A - ON PLATFORM - CAGE (SEF) Depressurize S/C (See Section II for details) CTN AOS - 20:26:57 CTN LOS - 20:31:50		A - OPEN HATCH <u>NOTE</u> Total hatch open time should not exceed one hour.			
20:42	OFF	CAGE (SEF)	PUL	SUNRISE - (00:00) A - Event Timer - UP		<u>Sequence 1</u> A - Mount camera fwd Retrieve S-9 Experiment Discard food bags & sextant container. <u>Sequence 2</u> A - Move to TDA Attach mirror to docking bar Actuate S-10 Experiment Evaluate umbilical <u>Sequence 3</u> A - Return to cabin Change film pack Rotate camera to D-16 position Clean and sample S/C window Pick up Hasselblad camera Close hatch			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						60

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
						<u>Sequence 4</u> A - Maneuver over S/C using handrails and velcro. Check ESP and adapter. Clean up separation plane debris. Observe for stars. Evaluate umbilical. <u>Sequence 5</u> A - Perform D-16 Experiment. <u>Sequence 6</u> A - Return to cabin. Open hatch. Deposit Hasselblad camera. Change film pack in 16mm camera. Place camera forward. Close hatch. <u>Sequence 7</u> A - Move to adapter. Secure umbilical to hand-rail and umbilical guide.			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						61

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
21:36	OFF	CAGE (SEF)	PUL	SUNSET (00:54)			(00:54) <u>Sequence 8</u> A - Don ESP. (See Section II for details). Check night visual actuity. Rest.		
22:12	OFF	CAGE (SEF)	PUL	(1:30) SUNRISE A - Undock and translate to 60 ft Back pack - Deploy <u>NOTE</u> If the Cmd Pilot is required to perform operations other than flying formation, he will switch the platform to FREE and ATTITUDE CONTROL to PLAT. Cmd Pilot will change voice tapes as required. A - Boresight on EV pilot to keep in field of view. A - Translate down at $\approx \frac{1}{2}$ ft/sec.			<u>Sequence 9</u> A - Move to nose of S/C. Attach umbilical to nose ring Attach 1st ring of tether (15-foot point) to harness. Check hatch actuation. <u>Sequence 10</u> A - Using HHMU, translate to 20 ft in front of S/C. Evaluate HHMU yaw, pitch, and roll stabilization. <u>Sequence 11</u> A - Translate to 20 feet in front and 10 feet above Agena. Translate down at $\approx \frac{1}{2}$ ft/sec.		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
				A - Formation flying at 100 ft from Agena			<u>Sequence 12</u> A - Return to S/C cabin Change film pack Secure HHMU to ESP Attach 2nd ring on tether to harness (45 ft point) <u>Sequence 13</u> A - Evaluate tether handling, dynamic forces, S/C reaction at 55 ft. Move to Nose of S/C using tether Attach 3 rd ring on tether to harness (75 ft point) Evaluate tether dynamics, forces & S/C reaction at 85 ft <u>Sequence 14</u> A - Hold to docking bar momentarily Translate to the Agena at 1 ft/sec		
				A - Translate to the EV PILOT					
				A - Translate to maintain slack in the tether					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						63

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
22:52	OFF	CAGE (SEF)	PUL	A - Translate to 250 feet from the Agena CYI AOS - 22:41:23 CYI LOS - 22:46:57 KNO AOS - 22:48:16 KNO LOS - 22:54:57 TAN AOS - 23:00:03			A - Follow S/C at 50 feet (02:10) <u>Sequence 15</u> A - Return to nose of S/C using tether Ingress preparation Jettison ESP and 75 tether AFT Ingress		
23:07	OFF	CAGE (SEF)	PUL	TAN LOS - 23:09:04 A - Repress S/C TAN AOS - TAN LOS -			(02:25 - SUNSET) A - If required, send the following cmds to the Agena: (F.C. Mode 6) 471 - ACS GAIN HI DK 371 - ACS PRESS HI *451 - ACS D/B WIDE *571 - HYD GAIN DK Wait 10 seconds 271 - PWR RELAY RESET		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	OFF	CAGE (SEF)	PUL	A - DOCK RIGID/STOP SW - STOP (After Rigid Lite ON) OAMS ATT CNTL POWER - OFF		A - Cycle ENGINE ARM/STOP Switch to verify hardline connection. If required, send the following cmds to the Agena: (F. C. Mode 1) 460 - ACS GAINS LOW 370 - ACS PRESS LOW *451 - ACS D/B WIDE 570 - HYD GAINS UNDK Wait 10 seconds 271 - PWR RELAY RESET ENCDR - OFF			
				A - Power down S/C		A - Purge Fuel Cells (Sect #1 and then Sect #2) Power down S/C.			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						65

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
CRO AOS (23:17)	OFF	OFF	PUL	CRO AOS - 23:16:27 CRO-D/T Tape Plybk CRO LOS - 23:25:28			HAW AOS - 23:42:36 - CRYO QTY Readout ECS 0 ₂ FC 0 ₂ FC H ₂ HAW LOS - 23:50:38			
23:43	OFF	OFF	PUL	SUNRISE - 23:42:30						
CNV AOS (24:01)	OFF	OFF	PUL	U.S. Pass CNV AOS - 24:00:42 CNV-D/T Tape Plybk CNV LOS - 24:09:47 SUNSET - 24:37:30						
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							66

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION								
				COMMAND PILOT		PILOT						
25:00	OFF	OFF	PUL	A - PLATFORM - CAGE (SEF) ATT IND - WITH FDI SUNRISE - 25:13:00		A - PRI & SEC PUMP B - OFF PRI & SEC PUMP A - ON AC POWER - IGS ACME BIAS PWR - PRI ATT IND LT C/B - CLOSED ATT IND - WITH FDI						
25:25	OFF	CAGE (SEF)										
25:25	OFF	FREE	PUL									
25:25	OFF	FREE	PUL	A - PLATFORM - FREE RATE GYROS (3) - PRI		A - ENCDR - ON Send the following cmds to the Agena: 300 - H/S OFF 350 - GEO RATE OFF 400 - ACS OFF						
25:30	OFF	FREE	PUL	A - Allow the Gemini-Agena to stabilize for at least 2 minutes.								
25:30	OFF	FREE	PUL	GYM AOS - 25:29:20								
25:30	OFF	FREE	PUL	GYM-Give GO/NO GO for preceeding with docking exercises								
MISSION				EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII				Final		Feb. 24, 1966						67

FLIGHT PLAN

TIME HR:MIN	COMP	FLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
GYM AOS (25:31)	OFF	FREE	PUL	<u>S/C - AGENA 2ND BENDING TEST</u> S/C - 0°, -90°, 0° Agena - 0°, 90°, 0° (TDA South) <u>NOTE</u> This test must be performed over a R/T T/M site.					
			DIR	A - ATTITUDE CONTROL - DIRECT Apply a 3 sec pitch up thrust immediately, followed by a 3 sec pitch down thrust. Allow the Gemini - Agena to stabilize for 2 min. Apply a 3 sec yaw left thrust immediately followed by a 3 sec yaw right thrust. Allow the Gemini - Agena to stabilize for 10 sec. TEX AOS - 25:32:27 CNV AOS - 25:36:26					
CNV AOS (25:37)	OFF	FREE	PUL	A - D/T Tape Plybk TEX LOS - 25:41:30 CNV LOS - 25:44:56					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						68

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
25:35 to 25:50	OFF	FREE	DIR	A - Control S/C attitudes to 0°, +90°, 0° (Agena - 0°, -90°, 0°) (TDA North) CNV AOS - 25:36:25 ETR AOS - 25:37:02 GYM LOS - 25:38:05 TEX LOS - 25:41:31 CNV LOS - 25:44:56 ETR LOS - 25:50:34 A - Prepare 16mm camera for photography of undocking	(Agena FC Mode 1) A - Send the following cmds to the Agena 360 - GEO RATE REVERSE 311 - PITCH H/S YAW 321 - H/S PHASE IN 401 - ACS ON 301 - H/S ON 351 - GEO RATE ON *341 - GYRO COMPASSING ON F.C. Mode 6 471 - ACS GAIN HI DI 371 - ACS PRESS HI *451 - ACS D/B WIDE *571 - HYD GAIN DK Wait 10 seconds 271 - PW RELAY RESET Allow the Agena to gyro compass for at least 6 minutes.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						69

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
25:50 to 26:00	CTCH UP	FREE	DIR	(S/C - 0°, 90°, 0°) (Agena - 0°, -90°, 0° - TDA North) (Agena FC Mode 6)					
			PUL	2ND UNDOCKING					
				A - Start 16mm camera at 6 frames per second. Mark start time. ASC AOS - 25:55:51		A - MANEUVER CONTROLLER - ON COMPUTER - RNDZ/CTCH UP Zero Addresses 25, 26, & 27 START COMP - PUSH Send the following cmds to the Agena: 071 - L-BAND BEACON ON 141 - APPROACH LTS ON 041 - RECORD DATA 220 - UNRIGIDIZE OAMS ATT CNTL POWER - ON Undock and translate to 60 ft at ½ ft/sec.			
				ASC LOS - 26:04:35		ATTITUDE CONTROL - PULSE			
				A - Stop 16mm camera Mark stop time					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
26:00 to 26:30	CTCH UP	FREE ORB RATE	PUL	A - RDR - STBY/ON ASC LOS - 26:04:35 TAN AOS - 26:12:51 TAN LOS - 26:18:18 CRO AOS - 26:28:48			A - Send the following cmds to the Agena: 030 - T/M OFF 021 - T/M ON A - Formation flying SCANNER - PRI Align platform as possible PLATFORM - ORB RATE SUNSET - 26:08:00			
26:30 to 26:40	CTCH UP	ORB RATE	PUL	3RD DOCKING CRO-Update re-rndz radial burn time. A - Copy update Start 16mm camera at one frame/sec A - Stop 16mm camera Change film pack Set event timer to 00:00 and STBY CRO LOS - 26:34:48			A - Send following cmds to Agena: 041 - RECORD DATA 070 - L-BAND BEACON OFF RDR - OFF DOCK After Rigid Lt ON: RIGID/STOP - STOP OAMS ATT CNTL POWER - OFF Cycle ENGINE ARM/STOP to verify hardline connection. Send the following cmds to the Agena: 030 - T/M OFF 021 - T/M ON SCANNER - OFF			
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							71

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
26:40 to 26:50	CTCH UP	ORB RATE	PUL	3RD UNDOCKING					
				A - Start Event Timer counting up SUNRISE - 26:43:30 A - Start 16mm camera at six frame/second (test position) A - Stop 16mm camera	A - COMPUTER - RNDZ/CTCH UP START COMP - PUSH Send the following cmds to the Agena: (F.C. Mode 1) 460 - ACS GAINS LOW 370 - ACS PRESS LOW *451 - ACS D/B WIDE 570 - HYD GAINS UNDK Wait 10 seconds 271 - PW RELAY RESET 041 - RECORD DATA 071 - L-BAND BEACON ON 220 - UNRIGIDIZE OAMS ATT CNTL POWER - ON Undock and fly formation.				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION							
				COMMAND PILOT			PILOT				
26:50 to 27:00	CTCH UP	ORB RATE	PUL	A - MANEUVER CONTROLLER - ON Maneuver to behind the Agena (S/C - 0°, 0°, 0°)			A - MANEUVER CONTROLLER - OFF RDR - STBY/ON Send the following cmds to the Agena: 030 - T/M OFF 021 - T/M ON ENCDR - OFF SCANNER - PRI				
26:54	CTCH UP	ORB RATE	PUL	HAW AOS - 26:53:35 HAW-Agena Tape Plybk							
RE-RENDEZVOUS											
27:00 to 27:10	CTCH UP	SEF	PUL PLAT	A - PLATFORM - SEF ATTITUDE CONTROLLER - PLAT Align platform			A - Unstow sextant and rendezvous data book				
27:06	CTCH UP	SEF	PLAT	HAW LOS - 27:02:06 GYM AOS - 27:04:59 TEX AOS - 27:08:18			A - S-3 Experiment Activate L/H Unit #1 Give ground a time hack				
27:10	CTCH UP	ORB RATE	PLAT PUL	TEX-D/T Tape Plybk A - PLATFORM - ORB RATE ATTITUDE CONTROL - PULSE Fly formation at 10 ft behind and 20 ft above the Agena Reticle - ON			A - COMP - RNDZ/CTCH UP Load computer as follows: 25:00000 26:90200 27:00000				
MISSION		EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
TRANS MINUS 3 MIN (27:25:30)	CTCH UP	ORB RATE	DIR	CNV AOS - 27:13:29 GYM LOS - 27:13:52 ETR AOS - 27:13:59 TEX LOS - 27:16:29 CNV LOS - 27:18:13 (48:00) A - FDM - RATE Pitch down to -90° at 2°/sec FDR - COMP FDM - ATT RKV AOS - 27:27:14						
				A - ATTITUDE CONTROL - RATE CMD Start 16mm camera			A - START COMP - PUSH			
<u>RADIAL SEPARATION TRANSLATION</u>										
TRANS MINUS 0 MIN (27:28)	CTCH UP	ORB RATE	RATE CMD	A - Translate aft to null the IVI's (20 ft/sec) (Fwd firing thrusters used)			(00:00) A - At start of thrust, start GMT stopwatch A - Readout Addresses 82, 80, and 81.			
MISSION		EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
27:31	CTCH UP	ORB RATE	PUL	A - Apply any necessary corrections to null 82, 81, and 80 readouts. Stop 16mm camera ATTITUDE CONTROL - PULSE Maneuver Controller - OFF Boresight on the Agena Set Event Timer to 03:00 Confirm radar lock-on FDR - RDR Null FDI's					
			PUL	(03:00) A - Start Event Timer counting up			(03:00) A - Give Cmd Pilot a 3-minute time hack ENCDR - ON Send Cmd 251 (Acq Lts ON) to the Agena		
27:32	CTCH UP	PLAT	PUL	(04:00) A - Boresight on the Agena.			(04:00) A - Set sextant to 0°, check and record bias. Set sextant to 47° Mark time at target/horizon superposition.		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION							
				COMMAND PILOT			PILOT				
				RKV LOS - 27:35:55			Read pitch angle (Address 96) and range (Address 36) from the computer. Repeat with sextant settings of 39°, 35°, and 29°.				
27:38	CTCH UP	ORB RATE	PUL	SUNSET - 27:38:00			A - Purge fuel cells (Section #2 and then Sect #1)				
27:57	CTCH UP	ORB RATE	PUL	(00:29:00)			(00:29:00) A - COMPUTER - RNDZ/CTCH UP Load computer as follows: 25:00000 26:00000 27:00000 Confirm radar lock-on FDR - RDR				
27:58	CTCH UP	ORB RATE SEF	PUL PLAT	(00:30:00) A - Control S/C attitudes to 0°, 0°, 0° FDR - PLAT FDI SCALE RANGE - LO ATTITUDE CONTROL - PLAT PLATFORM - SEF Align Platform.			(00:30:00) A - FDI SCALE RANGE - LO Mark when the Agena crosses the horizon (nominally 00:30:00)				
MISSION		EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII		Final		Feb. 24, 1966							76

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
28:08	CTCH UP	SEF	PLAT	(0:40:00 - Nominally) A - Continue to align PLAT			(0:40:00 - Nominally) A - When the Pitch FDI reads -3°, read sine of radar elevation (Address 84) from the computer		
			PUL	A - ATTITUDE CONTROL - PULSE NULL FDI's					
							<u>HORIZONTAL ADJUST</u>		
							A - Mark when Address 84 is zero. Determine fwd/aft and up/down ΔV using chart and GET of local horizontal crossing START COMP - PUSH		
		ORB RATE		A - Immediately after local horizontal crossing: PLATFORM - ORB RATE FDR - RDR ATTITUDE CONTROL - RATE CMD MANEUVER CONTROLLER - ON Thrust asap up/down and fwd/aft to computed values.			A - Readout Addresses 82 and 80.		
		RATE CMD							
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						77

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
CSQ AOS (28:12)	CTCH UP	ORB RATE	PUL	A - Apply any necessary corrections to drive Addresses 82 and 80 to appropriate values (chart values). Maneuver Controller - OFF ATTITUDE CONTROL - PULSE Continue to track the Agena. CSQ AOS - 28:11:52 CSQ-D/T Tape Plybk CSQ LOS - 28:19:38 (00:48:00) A - Continue boresighted	 SUNRISE - 28:14:00 (00:48:00) A - Prepare sextant for use.				
28:16	CTCH UP	ORB RATE	PUL	(01:00:00) A - ATTITUDE CONTROL - DIRECT Roll heads down ATTITUDE CONTROL - PULSE HAW AOS - 28:29:38	(01:00:00) A - Set sextant to 43°.				
28:28	CTCH UP	ORB RATE	DIR PUL						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

MSC FORM 1008 (REV AUG 64)

NASA MANNED SPACECRAFT CENTER

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
28:33	CTCH UP	ORB RATE	PUL	(01:05:00) A - Acquire target visually and maintain boresight.	(01:05:00) A - Acquire target and horizon with sextant. At target/horizon superposition, copy time and read and copy pitch angle (Address 96).				
		ORB RATE	PUL	A - Maintain boresight visually.	A - Set sextant to 47°. At target/horizon superposition, copy time, read and copy pitch angle (Address 96). Enter chart and read duration of fwd and up/down burn and time to transfer.				
		RATE CMD		A - ATTITUDE CONTROL - RATE CMD Maneuver Controller - ON HAW LOS - 28:38:01					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
				RE-RENDEZVOUS TERMINAL PHASE INITIATION					
28:40:52	CTCH UP	ORB RATE	RATE CMD	(Nominally - 01:12:52/00:00:00) A - Thrust up/down and fwd for specified times. Maneuver Controller - OFF ATTITUDE CONTROL - PULSE Set Event Timer to 03:00 and STBY. GYM AOS - 28:41:17		(Nominally - 01:12:52/00:00:00) A - Count down to transfer stop/reset and start GMT stopwatch.			
28:41:52	CTCH UP	ORB RATE	PUL	(00:01:00) A - On mark, Event Timer - UP Continue boresighted.		(00:01:00) A - Set sextant to 56°. At target/horizon super- position, copy time, read and copy pitch angle (Address 96).			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
28:43:52	CTCH UP	ORB RATE	PUL	(00:03:00) A - Continue boresighted.	(00:03:00) A - Give Cmd Pilot mark Set sextant to 62°. At target/horizon super- position, copy time and copy and read pitch angle (Add 96) Enter charts for first up/down correction.				
<u>1ST MIDCOURSE TRANSLATION</u>									
			RATE CMD	A - ATTITUDE CONTROL - RATE CMD MANEUVER CONTROLLER - ON Thrust up/down ASAP					
			PUL	Maneuver Controller - OFF ATTITUDE CONTROL - PULSE Continue boresighted					
				HAW LOS - 28:38:01					
28:47:22	CTCH UP	ORB RATE	PUL	(00:06:30) A - Continue boresighted.	(00:06:30) A - Set sextant to 72°. At target/ horizon superposition, copy time and read & copy pitch angle (Address 96).				
				GYM LOS - 28:48:06					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION													
				COMMAND PILOT			PILOT										
28:50:22	CTCH UP	ORB RATE	PUL	(00:09:30) A - Continue boresighted.			(00:09:30) A - Set sextant to 80°. At target/ horizon superposition, copy time and read and copy pitch angle (Address 96). Enter chart for 2nd up/down correction.										
			RATE CMD	<u>2ND MIDCOURSE TRANSLATION</u> A - ATTITUDE CONTROL - RATE CMD MANEUVER CONTROLLER - ON Thrust up/dwn ASAP FDM - RATE													
29:00	CTCH UP	ORB RATE	PUL	Begin LOS control and braking as necessary.			A - Give Cmd Pilot range estimates.										
			PUL	A - Null relative rates at 120 ft and fly formation			A - EXT LTS - DOCK ENCDR - ON Send the following cmds to the Agena: 250 - SDP BRIGHT 041 - RECORD DATA 250 - ACQ LTS - OFF 070 - L-BAND BEACON OFF										
MISSION		EDITION		DATE		STATION		AOS		LOS		TOTAL		REV		PAGE	
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
29:00 to 29:10	CTCH UP	ORB RATE	PUL	A - Start 16mm camera at 1 frame/sec. <u>4TH DOCKING</u> (S/C - 0°, 90°, 0°)(Agena - 0°, -90°, 0° - TDA North) (Agena F.C. Mode 1) RKV AOS - 29:02:33) RKV-Update undocked PPS transla- tion time and V/M load. A - Copy update A - Stop 16mm camera. RKV LOS - 29:11:29 SUNSET - 29:08:30	A - MANEUVER CONTROLLER - ON RDR - OFF DOCK When RIGID LITE comes on, RIGID/STOP - STOP OAMS ATT CNTL POWER - OFF Maneuver Controller - OFF Send the following cmds to the Agena: 030 - T/M OFF 021 - T/M ON 200 - SDP DIM				
29:20 to 29:25	CTCH UP	ORB RATE	PUL	A - Set event timer to 00:00 Maneuver Controller - Unstow Maneuver Controller - ON TAN AOS - 29:23:58	A - COMPUTER - RNDZ/CTCH Load computer via MDU as follows: 25:00000 26:00000 27:00000 Record prop qty remaining Send the following cmds to the Agena: 350 - GEO RATE OFF 300 - H/S OFF 400 - ACS OFF				
			RATE CMD	A - OAMS ATT CNTL POWER - ON ATTITUDE CONTROL - RATE CMD					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
29:25 to 29:35	CTCH UP	ORB RATE	RATE CMD	A - Control S/C attitudes to 0°, -90°, 0° (Agena - 0°, 90°, 0° - TDA North) Translate fwd for 25 seconds. Event Timer - UP Mark 18 seconds of thrust.			A - START COMP - PUSH		
	CTCH UP	ORB RATE	DIR	A - MANEUVER CONTROLLER - CFF ATTITUDE CONTROL - DIRECT Control S/C attitudes to 0°, 180°, 0° (Agena - 0°, 0°, 0°) (TDA Fwd)			A - Readout and copy ΔV from Addresses 80, 81, and 82. Read and copy propellant qty. A - Zero Addresses 25, 26 and 27. A - Send the following cmds to the Agena: 361 - GEO RATE NORMAL 310 - ROLL H/S YAW 321 - H/S PHASE IN 401 - ACS ON 301 - H/S ON 351 - GEO RATE ON		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
29:35 to 29:44	CTCH UP	ORB RATE	PUL	TAN LOS - 29:33:00 A - ATTITUDE CONTROL - PULSE		*341 - GYRO COMPASSING ON Send the following cmds to the Agena to load the velocity meter for the nominal undocked PPS translation: 531,(530, 530, 531)(531, 531, 531)(530, 531, 530)(531, 530, 530)(530, 530, 530) If desired to start over, send Cmd 340 (V/M interrogate) A - COMPUTER - RNDZ/CTCH UP START COMP - PUSH Send the following cmds to the Agena: 041 - RECORD DATA 071 - L-BAND BEACON ON 220 - UNRIGIDIZE			
			PUL	A - Event Timer - STBY Set Event Timer to 59:00					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	CTCH UP			A - Start 16mm camera at six frames/sec	A - Undock A - RDR - STBY/ON Send the following cmds to the Agena: 221 - RIGIDIZE Wait 30 seconds 271 - PWR RELAY RESET 030 - T/M OFF 021 - T/M ON A - COMPUTER - RNDZ/CTCH UP Load the computer as follows: 25:00000 26:00020 27:00000				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
TRANS MINUS 22 MIN (29:44)	CTCH UP	ORB RATE	RATE CMD	A - ATTITUDE CONTROL - RATE CMD FDR - COMP Translate aft to null IVI's			A - START COMP - PUSH		
				<u>NOTE</u> 2.0 ft/sec out-of-plane to the south translation.					
			PUL	ATTITUDE CONTROL - PULSE FDR - RDR Boresight on the Agena.					
				CSQ AOS - 29:46:00					
29:46	CTCH UP	ORB RATE	PUL	A - Crew status report			A - Crew status report		
				CSQ-Verify the Agena velocity meter is correct for the undocked PPS translation. If not, load the Agena velocity meter. D/T Tape Plybk			Prepare for the undocked PPS translation.		
				CSQ LOS - 29:55:43					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
30:06	CTCH UP	ORB RATE	PUL	HAW AOS - 30:05:14		<u>NOTE</u> The S/C is approximately 1500 ft out-of-plane from the Agena			
				<u>UNDocked PPS TRANSLATION</u> A - Continue to boresight on the Agena.		A.- Command a 2-sec in-plane PPS translation as follows: <u>NOTE</u> The velocity meter load has been verified correct or reload by the ground. Send following cmds to Agena: (F.C. Mode 3) 040 - RECORD DATA 470 - ACS GAIN HI UNDK 371 - ACS PRESS HI 450 - ACS D/B NARROW *570 - HYD GAIN UNDK Wait 10 seconds 271 - PW RELAY RESET Start 16mm camera at six frames/sec. At the indicated times, send the following cmds: 59:00 - 130 ARM/STOP LOGIC UNDK 59:30 - 521 V/M ENABLE 00:00 - 501 PPS START The following sequence of events occurs: +16 sec - SPS 16# thrust initiate			
A - Event Timer - UP Start the 16mm camera at six frames/sec (Test position)									
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
						1 min 20 sec - PPS ready 1 min 24 sec - PPS thrust initiate 1 min 25 sec - PPS display ON 1 min 26 sec - SPS thrust cutoff V/M PPS cutoff A - At the indicated times, send the following cmds to the Agena: 1 min 28 sec - 500 PPS OFF 2 min 28 sec - 520 V/M DISABLE Send the following cmds to the Agena: (F.C. Mode 1) 460 - ACS GAINS LOW 370 - ACS PRESS LOW 451 - ACS D/B WIDE *570 - HYD GAINS UNDK Wait 10 seconds 271 - PWR RELAY RESET 030 - T/M OFF 021 - T/M ON 140 - APPROACH LTS OFF 070 - L-BAND BEACON OFF ENCDR - OFF Purge fuel cells (Sect #1 and then Sect #2) Power down S/C			
	OFF	OFF	PUL	A - Stop the 16mm cameras A - Event Timer - STOP A - Power down S/C HAW LOS - 30:14:11					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
30:15 to 31:00	OFF	OFF	PUL	A - Eat period SUNSET - 30:39:00		A - Eat period			
RKV AOS (30:39)	OFF	OFF	PUL	RKV AOS - 30:38:39 RKV-Flight Plan & PLA update A - Copy update Flight Plan report RKV LOS - 30:46:32					
31:00 to 41:00	OFF	OFF	PUL	A - Rest period SUNRISE - 31:14:30		A - Rest period			
41:00	OFF	OFF	PUL	A - Rest period ends SUNSET - 41:11:30		A - Rest period ends CRO AOS - 41:00:54 A - Purge Fuel Cells (Sect #2 and then Sect #1) CRO LOS - 41:08:01 A - POLARIZATION ANT - EXT (1 min) POLARIZATION ANT - OFF			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
41:35 to 41:58	OFF	OFF	PUL	A - D-14 Experiment - Mode C (See Section II for details) CNV AOS - 41:47:14 ANT AOS - 41:47:49 BDA AOS - 41:50:03 CNV LOS - 41:51:36 ANT LOS - 41:55:45 BDA LOS - 41:56:25 CYI AOS - 41:59:24			A - D-14 Experiment - Mode C (See Section II for details) SUNRISE - 41:47:00			
CYI AOS (42:00)	OFF	OFF	PUL	CYI-D/T Tape Plybk						
42:00 to 42:10	OFF	OFF	PUL	A - S-7 Experiment (See Section II for details) CYI LOS - 42:08:27			A - S-7 Experiment (See Section II for details)			
42:15 to 42:25	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)			A - Apollo Landmark Investigation (See Section II for details)			
42:25 to 43:35	OFF	OFF	PUL	A - Eat period			A - Eat period			
MISSION	EDITION			DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
CRO AOS (42:35)	OFF	OFF	PUL	SUNSET 42:41:30			CRO AOS - 42:35:16			
							CRO-Block 5 PLA update			
							A - Copy update			
							CRO LOS - 42:44:17			
43:20 to 43:30	OFF	OFF	PUL	A - S-7 Experiment (See Section II for details)			A - S-7 Experiment (See Section II for details)			
				CNV AOS - 43:20:22						
CNV AOS (43:21)	OFF	OFF	PUL	A - Crew status report GO/NO GO for 45-1			A - Crew status report			
				CNV-GO/NO GO for 45-1 D/T Tape Plybk						
				ETR AOS - 43:20:31						
				TEX LOS - 43:24:13						
				CNV LOS - 43:28:47						
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT		PILOT				
				ETR LOS - 43:31:58						
43:35 to 43:45	OFF	OFF	PUL	A - S-7 Experiment (See Section II for details)		A - S-7 Experiment (See Section II for details)				
43:47 to 43:57	OFF	OFF	PUL	A - Apollo Landmark Investigation		A - Apollo Landmark Investigation				
				SUNSET - 44:12:00						
44:12 to 44:48	OFF	OFF	PUL	A - Meteor observation (See Section II for details)		A - Meteor observation (See Section II for details)				
				SUNRISE - 44:48:00						
44:50 to 45:00	OFF	OFF	PUL	A - S-7 Experiment (See Section II for details)		A - S-7 Experiment (See Section II for details)				
				GYM AOS - 44:49:16 TEX AOS - 44:51:44						
44:52	OFF	OFF	PUL	TEX-D/T Tape Plybk						
				CNV AOS - 44:55:28 ETR AOS - 44:55:56						
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
				GYM LOS - 44:57:13 TEX AOS - 45:00:35 CNV LOS - 45:04:32 ETR AOS - 45:07:42						
45:10 to 45:20	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)			A - Apollo Landmark Investigation (See Section II for details)			
CYI AOS (45:11)	OFF	OFF	PUL				CYI AOS - 45:10:49 A - Purge fuel cells (Sect #1 and then Sect #2) CYI LOS - 45:19:05			
45:23 to 45:33	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)			A - Apollo Landmark Investigation (See Section II for details)			
45:30	OFF	OFF	OFF				A - Prepare D-15 Experiment Monitor for use			
				SUNSET - 45:42:30 CRO AOS - 45:46:47						
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
45:47	OFF	OFF	PUL				A - PRI & SEC PUMP B - OFF PRI & SEC PUMP A - ON AC POWER - IGS ATT IND LT C/B - CLOSED ATT IND - WITH FDI		
		CAGE (SEF)		A - PLATFORM - CAGE (SEF) ATT IND - WITH FDI CRO LOS - 45:55:39					
46:00	OFF	CAGE (SEF)	PUL	A - Start Event Timer counting up			A - Power up D-15 equipment as follows: Verify TV C/B - CLOSED TV ON/OFF - STBY (for 5 min) Agena BUS ARM - EXP TV PWR DOOR - DOOR OPEN & RELEASE Agena BUS ARM - SAFE TV ON/OFF - ON TV PWR DOOR - PWR START (for 3 sec)		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MM	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
46:10 to 46:20	OFF	CAGE (SEF) SEF ORB RATE	PUL PLAT PUL	A - Control S/C attitudes to 0°, 0°, 0° PLATFORM - SEF ATTITUDE CONTROL - PLAT Align platform for 10 min ATTITUDE CONTROL - PULSE PLATFORM - ORB RATE HAW AOS - 46:14:38 HAW LOS - 46:19:43 GYM AOS - 46:24:05		SUNRISE - 46:18:00			
46:20 to 46:30	OFF	SEF	PUL	A - S-7 Experiment (See Section II for details)		A - S-7 Experiment (See Section II for details)			
TEX AOS (46:28)	OFF	CAGE (SEF)	PUL	U.S. AOS - 46:27:08 ETR AOS - 46:31:40 U.S. LOS - 46:40:09 ETR LOS - 46:44:26		TEX-D/T Tape Plybk			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
46:30 to 46:50	OFF	ORB	PUL	<u>D-15 EXPERIMENT</u>						
				(00:30 to 00:50) A - Scan coast lines and Atlantic Ocean.		(00:30 to 00:50) A - Monitor D-15 monitor (1 min 30 sec of recording time)				
46:50 to 46:55	OFF	ORB RATE	PUL	(00:50 to 00:55) A - Scan the west coast of Africa		(00:50 to 00:55) A - Monitor D-15 monitor (30 sec of recording time)				
46:55 to 47:05	OFF	ORB RATE	PUL	(00:55 to 01:05) A - Track west coast of Africa		(00:55 to 01:05) A - Monitor D-15 monitor (30 sec of recording time) Scan Africa (2 min of recording time)				
47:05 to 47:15	OFF	ORB RATE	PUL			(01:05 to 01:15) A - Scan/track Madagascar (1 min of recording time)				
47:15 to 47:20	OFF	ORB	PUL	(01:15 to 01:20) A - Scan for sea conditions		(01:15 to 01:20) A - Monitor D-15 monitor (2 min of recording time)				
MISSION	EDITION			DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
47:20 to 47:30	OFF	ORB RATE	PUL	CRO AOS - 47:22:25 CRO LOS - 47:31:29			(01:20 to 01:30) A - Track Carnarvon Pointing data updated (30 sec of recording time)			
47:30 to 47:40	OFF	ORB RATE	PUL	A - Scan Australia and South Pacific islands			A - Monitor D-15 monitor (4 min of recording time)			
47:40 to 48:00	CTCH UP	ORB RATE	PUL	A - COMPUTER PWR - ON COMPUTER - CTCH UP D-14 Experiment - Mode A (See Section II for details) HAW AOS - 47:48:05 HAW LOS - 47:56:51 GYM AOS - 47:59:40			A - D-14 Experiment - Mode A (See Section II for details) SUNRISE - 47:48:30			
48:02 to 48:23	CTCH UP	ORB RATE	PUL	A - D-14 Experiment - Mode 1 (See Section II for details)			A - D-14 Experiment - Mode 1 (See Section II for details) Purge fuel cells (Sect #2 & then Sect #1)			
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
TEX AOS (48:04)	CTCH UP	ORB RATE	PUL	U.S. AOS - 48:03:02 GYM LOS - 48:08:44 U.S. LOS - 48:15:54 ANT AOS - 48:12:14 ANT LOS - 48:21:12			TEX-D/T Tape Plybk		
48:23	OFF	ORB RATE	PUL	A - COMPUTER - PRE LN COMPUTER PWR - OFF ACS AOS - 48:26:20					
D-15 EXPERIMENT									
48:23 to 48:33	OFF	ORB RATE	PUL	ASC LOS - 48:35:09 (02:33 to 02:40)			A - Track ASC Island (acq data updated) (30 sec of recording time)		
48:33 to 48:40	OFF	ORB RATE	PUL	A - Scan Africa			A - Monitor D-15 monitor (2 min of recording time)		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT		PILOT				
48:40 to 48:50	OFF	ORB RATE	PUL	SUNSET - 48:43:00 (02:50 to 03:05) A - Scan sea conditions and celestial features CRO AOS - 48:58:29 (03:05 to 03:15)		(02:40 to 02:50) A - Search/track Madagascar (30 sec of recording time)				
48:50 to 49:05	OFF	ORB	PUL			(02:50 to 03:05) A - Monitor D-15 monitor (2 min of recording time)				
49:05 to 49:15	OFF	ORB RATE	PUL			(03:05 to 03:15) A - Scan East Indies Scan track north coast of New Guinea (3 minutes of recording time) CRO. LOS - 49:06:43				
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							100

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
49:15 to 49:33	CTCH UP	ORB RATE	PUL	A - COMPUTER PWR - ON COMPUTER - CTCH UP D-14 Experiment - Mode A (See Section II for details)			A - D-14 Experiment - Mode A (See Section II for details) SUNRISE - 49:19:00			
49:24	CTCH UP	ORB RATE	PUL	HAW AOS - 49:23:50 HAW-Load position and velocity coordinates for touchdown predict mode for an elapse time of 50:00:00 HAW LOS - 49:32:42						
49:35	CTCH UP	ORB RATE	DIR	A - ATTITUDE CONTROL - DIRECT Maneuver Controller - Unstow Maneuver Controller - ON Control S/C to acquire a scene in the D-15 monitor. Translate up for 2 seconds. Maneuver Controller - OFF Maneuver Controller - Stow Power down S/C GYM AOS - 49:35:32 U.S. AOS - 49:38:40			A - Observe for degradation in the TV monitor system TV ON/OFF - OFF Power down S/C			
49:45 to 50:00	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)			A - Apollo Landmark Investigation (See Section II for details)			
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							101

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
50:00 to 51:00 51:00 									

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
51:25	OFF	OFF	PUL	A - COMPUTER - PRE LN COMPUTER PWR - OFF RKV AOS - 51:33:05	A - At 541 sec $\pm$ 10 sec after start comp, the following will be displayed on the IVI's: If the self check is correct: Aft - 328 $\pm$ 1 Rt - 007 $\pm$ 1 Dwn - 094 $\pm$ 1 If the self check is incorrect: Fwd/Aft - Variable Rt - 505 Up/Dwn - Variable				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966						102a

FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT			PILOT			
51:39 to 52:25	OFF	OFF	PUL	A - S-1 Experiment (See Section II for details) RKV LOS - 51:42:06 CSQ AOS - 52:17:29			A - S-1 Experiment (See Section II for details) SUNSET - 51:44:00 SUNRISE - 52:19:30			
52:25 to 52:45	OFF	OFF	PUL	A - D-14 Experiment - Mode C (See Section II for details) CSQ LOS - 52:26:11 HAW AOS - 52:35:52 HAW LOS - 52:44:24 RKV AOS - 53:08:59			A - D-14 Experiment - Mode C (See Section II for details)			
52:57 to 53:07	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)			A - Apollo Landmark Investigation (See Section II for details) RKV AOS - 53:08:59			
RKV AOS (53:03)	OFF	OFF	PUL	SUNSET - 53:14:00			RKV-D/T Tape Plybk RKV LOS - 53:17:33			
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
Gemini VIII	Final		Feb. 24, 1966							103

FLIGHT PLAN

TIME HH:MM	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT		PILOT				
53:14 to 53:50	OFF	OFF	PUL	A - Meteor observation (See Section II for details)		A - Meteor observation (See Section II for details)				
53:30 to 54:30	OFF	OFF	PUL	A - Eat period		A - Eat period				
53:35	OFF	OFF	PUL			TAN AOS - 53:30:11				
						A - Flight plan report				
				SUNRISE - 53:50:00		TAN LOS - 53:39:03				
				CSQ AOS - 53:52:58						
CSQ AOS (53:53)	OFF	OFF	PUL	A - Crew status report		CSQ-Block 6 PLA update				
						A - Copy update Crew status report				
				CSQ LOS - 54:01:49						
MISSION		EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION							
				COMMAND PILOT			PILOT				
54:02 to 54:20	OFF	OFF	PUL	A - D-14 Experiment - Mode C (See Section II for details) HAW AOS - 54:11:23 HAW LOS - 54:20:26			A - D-14 Experiment - Mode C (See Section II for details) SUNSET - 54:44:30				
RKV AOS (54:46)	OFF	OFF	PUL	RKV AOS - 54:45:33 A - Flight Plan report RKV-Flight Plan update RKV LOS - 54:53:07			A - Purge fuel cells (Sect #1 and then Sect #2)				
55:00 to 65:00	OFF	OFF	PUL	A - Rest period			A - Rest period SUNRISE - 55:20:30				
65:00	OFF	OFF	PUL	A - Rest period ends			A - Rest period ends				
CRO AOS (65:07)	OFF	OFF	PUL	SUNSET - 65:17:00			CRO AOS - 65:06:18 A - Purge fuel cells (Sect #2 and then Sect #1) CRO LOS - 65:14:38				
MISSION		EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION						
				COMMAND PILOT		PILOT				
65:44 to 66:04	OFF	OFF	PUL	A - D-14 Experiment - Mode 3 (See Section II for details) CNV AOS - 65:51:56 ANT AOS - 65:54:15 CNV LOS - 65:58:49 ANT LOS - 66:02:45		A - D-14 Experiment - Mode 3 (See Section II for details) POLARIZATION ANT - RET (1 min) POLARIZATION ANT - OFF SUNRISE - 65:53:00				
66:05 to 66:15	OFF	OFF	PUL	A - S-7 Experiment (See Section II for details)		A - S-7 Experiment (See Section II for details) CYI AOS - 66:05:35				
CYI AOS (66:06)	OFF	OFF	PUL			CYI-D/T Tape Plybk CYI LOS - 66:14:39				
66:10 to 66:25	OFF	OFF	PUL	A - Apollo Landmark Investigation (See Section II for details)		A - Apollo Landmark Investigation (See Section II for details)				
MISSION	EDITION		DATE		STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
CRO AOS (66:41)	OFF	OFF	PUL	CRO AOS - 66:40:53 A - Crew status report			CRO - Block 7 PLA update A - Copy update Crew status report		
66:45	OFF	OFF	PUL	A - PRI & SEC B PUMPS - OFF PRI & SEC A PUMPS - ON A - LT ATT IND - WITH FDI RATE GYROS (3) - PRI COMPUTER POWER - ON COMPUTER - PRE LN PLATFORM - CAGE (BEF) SCANNER - PRI OAMS ATT CNTL POWER - ON FDM - RATE ATT CNTL - DIRECT CNTL S/C ATTITUDE TO 0°, 180°, 0° ATTITUDE CONTROL - HOR SCAN			A - MDU PWR - ON AC POWER - IGS ACME BIAS PWR - PRI ATT IND LT C/B - CLOSED RT ATT IND - WITH FDI SUNSET - 66:47:30		
	PRE LN	CAGE (BEF)	DIR						
			HOR SCAN						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
66:45 to 68:15	OFF	OFF	PUL	A - Stow equipment according to reentry stowage chart		A - Stow equipment according to reentry stowage chart			
68:10	PRE LN	CAGE (BEF) BEF	HCR SCAN	A - When platform has caged:					
				CRO LOS - 66:49:59					
				PLATFORM - BEF					
				FDR - PLAT					
				FDM - ATT					
			PLAT	ATTITUDE CONTROL - PLAT		SUNRISE - 67:23:30			
				ALIGN PLATFORM					
				CNV AOS - 67:26:13					
CNV AOS (67:27)	PRE LN	BEF	PLAT	CNV-D/T Tape Plybk					
				Check ACC BIAS					
				CNV LOS - 67:35:04					
						SUNSET - 68:17:30			
						CRO AOS - 68:16:45			
						CRO LOS - 68:25:37			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
TEX AOS (69:02)	PRE LN	BEF	PLAT	GYM AOS - 68:54:57			TEX - D/T Tape Plybk		
				TEX AOS - 68:57:44			Transmit the following:		
				CNV AOS - 69:01:37			1. 45-1 T _R update		
				GYM LOS - 69:03:35			2. 45-1 Preretro Cmd Load		
				TEX LOS - 69:06:45			3. ACC BIAS update		
							Report reentry update, nominal IVI's & 3 (R _N - R _P) vs bank points.		
							A - Copy the 45-1 reentry update		
							CNV - Notify the crew of the weather conditions and barometric pressure in the 45-1 landing area.		
							A - Copy update		
							CNV - Report the MDU Reentry quantities, Addresses 03, 04, 05, 06, 07, 08, 09, 10 and 11.		
			A - Copy MDU quantities and check computer load.						
			ETR AOS - 69:02:10						
			CNV LOS - 69:10:41						
			ETR LOS - 69:14:14						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
69:15	PRE LN	BEF	PLAT	<u>PRERETRO CHECKLIST</u>					
			ORB RATE	DIR					
				A - Stow all equipment according to reentry stowage chart. Drogue pins - Out & stow Insert new voice tape. Survival lanyard - Install Connect shoulder harness and lap belt. SEQ LIGHTS - BRIGHT SEQ LIGHTS TEST - AMBER/RED & GREEN Verify Left C/B's - Closed T _R -256 C/B - Closed Verify ATT IND - WITH FDI's RETRO PWR - ARM Check RCS pressure. RCS - Push Check RCS pressure. RETRO PWR - SAFE OAMS ATT CNTL POWER - OFF ATTITUDE CONTROL - RATE CMD PLATFORM - ORB RATE RCS A ATT CNTL PWR - ACME Check operation. RCS A ATT CNTL POWER - DIRECT Check operation.	A - Stow all equipment according to reentry stowage chart. Drogue pins - Out & stow CYI AOS - 69:17:22 A - Monitor RCS pressure CYI LOS - 69:24:31				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	PRE LN		RATE CMD DIR PLAT BEF	A - RCS A ATT CNTL POWER - OFF RCS B ATT CNTL POWER - ACME Check operation RCS B ATT CNTL POWER - DIRECT Check operation RCS B ATT CNTL POWER - OFF OAMS ATT CNTL POWER - ON Check RCS pressure ATTITUDE CONTROL - PLAT PLATFORM - BEF Event Timer - STBY Set Event Timer to 20:00 Faceplate - Closed Left Sec O ₂ Bottle - OPEN		A - Verify Overhead C/B's (all)- Closed CTR LIGHT - BRIGHT SUIT FAN - No. 1 and No. 2 KEYING - CONT INTER - PTT C-RNTY - CONT T/M - R/T & ACQ ANT SEL - RNTY Electrical Check VOLTMETER - BT MAIN BATTERIES (4) - TEST/ OFF VOLTMETER - C POLARIZATION ANT - RET (1min) POLARIZATION ANT - OFF			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
CRO AOS (69:53)	PRE LN	BEF	PLAT	SUNSET - 69:48:00		Verify Right C/B's (all) - Closed			
				CRO AOS - 69:52:59		Verify ATT IND - WITH FDI			
				CRO-Backup CNV Reentry updates		Verify RT SEC 0 ₂ BOTTLE - OPEN			
				CRO-At T _R -15 min, give mark to start Event Timer counting down		AGENA CNTL C/B - OPEN			
				A - At CRO mark, Event Timer - Down Continue aligning platform		EXT LTS - OFF			
T _R -15 (69:57:30)	RNTY	BEF	PLAT	CRO LOS - 70:00:56		Faceplate - Closed			
A - Check T _R (Address 02) COMPUTER - RNTY									
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTI:JN					
				COMMAND PILOT	PILOT				
Tr-4:16 (70:08:14)	RNTY	BEF	PUL	<u>Tr-4:16 CHECKLIST</u> Sequence Lights - AMBER Event Timer reads 4:16 min A - When sequence lights go amber Verify COMPUTER - RNTY Verify SQUIB BATTERIES (3) - ON MAIN BATTERIES - ON Verify RCS PROP MOTOR VALVES A & B - OPEN Prop Gage - RCS A Verify CRY QTY - OFF A - ATTITUDE CONTROL - PULSE PLATFORM - ORB RATE FDR - PLAT FDM - RATE FDI SCALE RANGE - HI ATTITUDE CONTROL - RATE CMD Verify RATE GYROS (3) - PRI OAMS ATT CNTL POWER - OFF OAMS PROP MOTOR VALVES-Closed RCS A & B ATT CNTL POWER-ACME					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	RNTY	ORB RATE	RATE CMD	A - Control S/C attitude to and hold retroattitude (Check control mode operation in all axes). RETRO PWR - ARM	A - IND RETRO ATT - PUSH FDR - PLAT FDM - ATT FDI SCALE RANGE - HI				
	RNTY	ORB RATE	RATE CMD	A - Report T _R -4:16 Checklist complete	A - RECORD - CONT				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
T_{R-1}	RNTY	ORB RATE	RATE CMD	<u>T_{R-1} (MIN) CHECKLIST</u> (Event Timer reads 1:00) A - Hold retroattitude (20° pitch down) A - At T_{R-30}: Retro Rocket Squibs (4) - ARM CTN - Count down to T_R A - SEP OAMS LINE - Push SEP ELECT - Push SEP ADAPT - Push A - At T_{R-5} sec: ARM AUTO RETRO - Push					
T_{R-0} (70:12:30)	RNTY	FREE	RATE CMD	<u>RETROFIRE</u> (Event Timer reads 00:00) CTN AOS - 70:12:39 SUNRISE - 70:24:00 A - Check START COMP Lite Start GET clock					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
T _R +30	RNTY	FREE	RATE CMD	A - <u>Report</u> to CTN: 1. No. of retros fired 2. IVI readings 3. Estimated attitude during retrofire 4. Auto or manual retrofire		A - T _R + 2 sec MAN FIRE RETRO - Push PLATFORM - FREE Readout and copy Address 80.			
	RNTY	FREE	RATE CMD						
T _R +45	RNTY	FREE	RATE CMD	<u>RETRO JETT LIGHT - AMBER</u> A - RETRO JETT - ARM JETT RETRO - Push Report Retro Jett HAW AOS - 70:18:42 CTN LOS - 70:20:46 HAW LOS - 70:26:35					
				A - Readout and report Addresses 80, 81, and 82.					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	RNTY	FREE	RATE CMD	<u>POSTRETRO JETT CHECKLIST</u>					
			PUL	A - RETRO PWR - SAFE RETRO JETT - SAFE RETRO ROCKET SQUIBS (4)-SAFE FDR - COMP FDM - ATT FDI SCALE RANGE - HI ATTITUDE CONTROL - PULSE BOOST INSERT CNTL 1 & 2 C/B - OPEN RETRO SEQ CNTL 1 & 2 C/B - OPEN RCS B ATT CNTL POWER - OFF SCANNER - OFF Tighten and lock restraint harness Check Hatch Pawls - Neutral	A - PRI O ₂ HTR C/B - OPEN OAMS CNTL PROP C/B - OPEN CALIB C/B - OPEN TAPE RCDR CNTL C/B - OPEN ECS O ₂ HEATER - OFF FC H ₂ & O ₂ HEATER - OFF Sect ² #1 & ² #2 PWR - OFF 1A,1B,1C,2A,2B,2C - OFF FDM - RATE				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
	RNTY	FREE	PUL	A - Sync Event Timer to plus time			Tighten & lock restraint harness Check Hatch Pawls - Neutral <u>NOTE</u> Suit fans to remain ON until the crew becomes uncomfortably warm at which time O ₂ rate will be selected and the RECIRC Valve will be closed. GYM - Give the following reentry parameters: 1. RET 400K 2. (RN - R _p) I 3. Roll Angles (L & R) 4. RETRB 5. RETBBO 6. RETEBO 7. RET Drogue 8. RET MAIN 9. RET LANDING		
T _R +14:00	RNTY	FREE	PUL						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
T _R +28:41	RNTY	FREE	DIR	<u>70K FEET</u>					
T _R +29:21			RATE CMD	A - LANDING - ARM					
				MCC-Mark 50K		<u>50K FEET</u>			
				A - DROGUE - Push RCS A&B ATT CNTL PWR - ACME ATTITUDE CONTROL - RATE CMD		A - Mark point of chute deploy and dereefing on voice tape			
				A - <u>Report</u> via voice: 1. Drogue deployment 2. Status of reentry (closed or open loop) 3. Estimated miss distance					
				<u>35K CHECKLIST</u>					
				A - "D" Ring - Uncover & Unsafety Arm Restraints - Unstow Harness - Locked RCS A & B PROP MOTOR VALVES - Closed Blip thruster to relieve pressure		A - "D" Ring - Uncover & Unsafety Arm Restraints - Unstow Harness - Locked Check Water Seal - UP (open) INLET SNORKEL-DWN(Open) (27K) Cabin Air Recirc Valve - 45° O ₂ HI RATE - ON (If not previously accomplished)			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
T _R +30:21	RNTY	FREE		<u>10.6K FEET</u> MCC-Mark 10.6K A - PARA - PUSH LDG ATT - Push (Do not push LDG ATT until Main Chute has dereefed.) A - <u>Report</u> main chute deployment <u>POSTMAIN CHECKLIST</u> A - ATT IND CNTL LDG C/B - Open Call Recovery Forces Restraint Harness - LOCK Set Barometric pressure A - RESC BEACON - W/O LT ACME BIAS PWR - OFF RCS HTRS - OFF SCAN HTR C/B - OPEN Restraint Harness - LOCK COMPUTER - OFF PLATFORM - OFF RATE GYROS (3) - OFF AC POWER - OFF RCS C/B'S - OPEN					
	OFF	OFF							
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
				<u>2K CHECKLIST</u> A - INLET SNORKEL - UP (Closed) REPRESS - OPEN A - "D" RING - COVER & SAFETY "D" RING COVER & SAFETY <u>LANDING</u> <u>POSTLANDING CHECKLIST</u> A - PARA JETT - Push LANDING - SAFE Helmet - Off & Stow Arm Restraints - Stow Lap Belt - Release & Stow Shoulder Fittings - Stow Drogue Mortar Pins (2) - Install Hatch Pawls - Unlock A - HF ANT - EXT/OFF <u>NOTE</u> Must be done with Landing Switch Armed. A - Helmet - OFF & Stow Arm Restraints - Stow Lap Belt - Release & Stow Shoulder Fittings - Stow Drogue Mortar Pins (2) - Install					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
				A - All switches OFF and C/B's open except: - COAX CNTL C/B - Closed - AUDIO & UHF T/R C/B - Closed - UHF Relay C/B - Closed - TONE VOX C/B - Closed - HF T/R C/B - Closed - HF WHIP ANT C/B - Closed - IND LT TEST C/B - Closed - SEQ LT CNTL C/B - Closed - UHF - NO. 1 - NO. 1 AUDIO Mode Switch - UHF			A - Hatch Pawls - Unlock HF T/R - RNTY Call Recovery NO. 2 AUDIO - HF-DF (as req)		
							A - All switches OFF and C/B's open except: Suit 1 & 2 C/B's - Closed Rescue Beacon C/B's - Closed DC-DC Converter C/B - Closed DC-DC Converter - PRI SUIT FAN - NO. 1 OR NO. 1 & NO. 2 HF T/R Switch - RNTY RESC BEACON CONTROL Switch - W/O LT Bio Med Inst C/B - Closed TAPE RCD PWR C/B - Closed		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
				A - IND LT TEST C/B - OPEN SEQ LT CNTL C/B - OPEN	A - Bio-Med RCDS 1 & 2 - ON Main Battery Switches (4) - ON Squib Battery No. 3 - ON When RCS fumes and/or other are no longer present: CABIN VENT - DWN (Open) CABIN AIR RECIRC - 45° INLET SNORKEL - DWN (Open) CABIN REPRESS - CLOSED WATER SEAL - DWN (Closed) A - 10 minutes after landing: DC-DC CONVERTER - OFF DC-DC CONVERTER - OPEN				
<u>NORMAL EGRESS TO HELICOPTER CHECKLIST</u>									
				A - Verify HF WHIP ANT C/B - Closed All switches and C/B's - OFF Hatch Pawls - Neutral EGRESS Close and lock hatch if time permits	A - MAIN BATTERIES (4) - ON HF ANT RET All switches and C/B's - OFF Except: RESCUE BEACON C/B - Closed RESCUE BEACON - ON Hatch Pawls - Neutral EGRESS Close and lock hatch if time permits				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

SECTION II

SECTION II

LIFT-OFF SWITCH POSITIONS

Remarks

- B - 1. Drogue Pins - STOWED
2. Stowage Boxes - SECURE
3. Stowage Vents - OPEN
4. Splash Curtains - SECURE
5. Ditch Handle - LOCKED
6. Hatch Handle - SECURED
7. "D" Ring - UNSTOW
8. Arm Restraints - UP
9. Shoulder Restraints - LOCKED

- C - 10. Left SECONDARY O₂ BOTTLE
SHUTOFF Handle -²OPEN
11. ABORT Handle - NORMAL
12. GUIDANCE Switch - OFF
13. AUX RECP Switch - OFF
14. Left Utility Light - STOWED
15. All left C/B's - CLOSED
16. BOOST-INSERT Switch - ARM
17. RETRO PWR Switch - SAFE
18. RETRO JETT Switch - SAFE
19. LANDING Switch - SAFE
20. RETRO ROCKET SQUIBS Switches (4) - ARM
21. SEQ LIGHTS TEST Switch - OFF
22. SEQ LIGHTS Switch - BRIGHT
23. ATT IND Switch - WITH FDI
24. Maneuver Controller - OFF
25. Maneuver Controller - STOWED
26. EMERG PRE MAIN Switch - GUARDED
27. Altimeter - SET
28. IVI - ZERO
29. Flight Director REF Switch - COMP
30. Flight Director MODE Switch - RATE
31. FDI SCALE RANGE Switch - LO
32. EVENT TIMER - STBY and ZEROED
33. Left Mirror - STOWED

15. Except T_R-256 C/B - OPEN

- P - 34. All Overhead C/B's - CLOSED
35. T/M AC Switch - ON
36. DC-DC CONV Switch - PRI
37. Center Light - BRIGHT
38. ACME BIAS PWR - PRI
39. ROLL JETTS Switch - YAW
39a. OAMS RESV - SAFE
40. ATTITUDE DRIVERS Switch - PRI
41. ACME LOGIC Switches (3) - PRI
42. Swizzle Stick - STOWED

34. Except OAMS HTRS &
H₂O HTRS - OPEN

- C - 43. CABIN AIR RECTING Handle - UP (Open)

Remarks

- P - 44. INLET SNORKEL Handle - UP (Closed)
45. CABIN VENT Handle - UP (Closed)
46. WATER SEAL Handle - UP (Open)
47. O₂ HIGH RATE RECOCK Handle - UP
48. SUIT FAN Switch - NO. 1
49. PRIMARY PUMP A Switch - ON
50. PRIMARY PUMP B Switch - OFF
51. RAD Switch - BY-PASS
52. EVAP Heat Switch - OFF
53. EVAP Switch - MAX FLOW
54. SECONDARY PUMP A Switch - ON
55. SECONDARY PUMP B Switch - OFF
55a. O₂ HI RATE Switch - CLK LT
B - 56. All Light Dimmers - Open as required
P - 57. Sequential Teletlights - LOCKED
58. O₂ CROSS FEED Switch - CLOSED
58a. CLK LT Dimmer - Full Bright
58A. TDA RIGIDIZE CNTL Switch - OFF
58B. TDA UNDOCK CNTL Switch - OFF
59. CRY QTY Switch - ECS O₂
60. ECS O₂ HEATER Switch - OFF
61. FC O₂ HEATER Switch - OFF
62. FC H₂ HEATER Switch - OFF
63. OAMS² REG Switch - GUARDED
64. PROP Indicator Switch - RCS B
65. Digital Timer - START
66. UHF T/R Switch - NO. 1
67. HF T/R Switch - OFF
68. KEYING Switch - CONT INT/PTT
69. NO. 2 AUDIO Switch - UHF
70. RESC BEACON CONTROL Switch - OFF
71. C-ADAPT BEACON CONTROL Switch - CMD
72. C-RNTY BEACON CONTROL Switch - CONT
73. T/M CALIB Switch - OFF
74. T/M Control STBY T/M Switch - OFF
75. T/M CONTROL T/M Switch - R/T & ACQ
76. TAPE PLYBK Switch - CMD
77. ANT SEL Switch - RNTY
78. HF ANT Switch - OFF (Center)
C - 79. NO. 1 AUDIO Switch - UHF
80. RADAR Switch - OFF
81. PLATFORM Mode Switch - FREE
82. SCANNER Switch - PRI
83. RATE GYROS Switches (3) - PRI
84. COMPUTER Power Switch - ON
85. COMPUTER Mode Switch - ASC
86. ATTITUDE CONTROL Mode Switch - RATE CMD
87. OAMS PROP MOTOR VALVE Switch - OPEN
88. RCS A & B PROP MOTOR VALVE Switches - OPEN
89. OAMS ATT CNTL POWER Switch - OFF
90. RCS A & B ATT CNTL POWER Switches - OFF
91. REPRESS Knob - CLOSED
92. MANUAL O₂ HIGH RATE Handle - Down (Closed)
93. Blood Pressure Cuff Plug - Removed

- P - 94. Right Mirror - STOWED
95. AUX TAPE PWR - OFF
96. AUX TAPE SELECTOR Switch - STBY
97. TV Switch - OFF
98. TV DOOR Switch - OFF
99. Polarization Antenna - Retract
100. Polarization XMTR - OFF
101. NUC-EM-OFF
102. X-OVER - OFF
103. SECTION 1 PURGE - OFF
104. SECTION 1 POWER - ON
105. SECTION 2 POWER - ON
106. SECTION 2 PURGE - OFF
107. 1A, 1B, 1C, 2A, 2B, & 2C Switches - ON
108. FC Δ P SELECTOR Switch - OFF
109. Voltmeter Selector Switch - C
110. MDU PWR Switch - ON
111. MDU - 72:00000
112. FDI SCALE RANGE Switch - LO
113. Flight Director REF Switch - COMP
114. Flight Director MODE Switch - ATT
115. All Right C/B's - CLOSED
116. Maneuver Controller - OFF
117. ATT IND Switch - WITH FDI
118. AC POWER Switch - IGS
119. BIO-MED RCDR 1 Switch - CONT
120. BIO-MED RCDR 2 Switch - CONT
121. RCS HTRS Switch - OFF
122. BUS TIE Switches 1 & 2 - OFF
123. MAIN BATTERIES Switches (4) - ON
124. SQUIB BATTERIES Switches (3) - ON
125. ENCDR - OFF
126. EXTERNAL LTS - OFF
127. INDEX EXT - OFF
128. ENGINE - STOP
129. Agena BUS ARM - SAFE
130. AUX RECP Switch - OFF
131. Right Utility Light - STOWED
132. Right SECONDARY O₂ BOTTLE SHUTOFF Handle - OPEN
133. Drinking Nozzle - ²STOWED
134. CNDSATE VALVE Switch - NORM
135. H₂O TANK VALVE Switch - NORM
136. URINE Valve - OFF
137. Urine HTR Switch - OFF
138. Blood Pressure Cuff Plug-Removed
139. RECORD - CONT
140. SILENCE Switch - NORMAL

- B - 141. Hatches - LOCKED
142. Hatch Pawls (2) - Neutral
143. Clip PTT Buttons (2) to "D" Rings
144. SUIT TEMP CONTROL - As Required
145. CABIN TEMP CONTROL - Full Warm
146. SUIT FLOW - As Required
147. Harness Secure and Locked

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	ASC	FREE	RATE CMD	<u>INSERTION CHECKLIST</u> A - BOOST INSERT - SAFE RETROROCKET SQUIB (4) - SAFE Maneuver Controller - OFF Maneuver Controller - STOW Stow "D" Ring "D" Ring Safety Pin - Install SEQ LIGHTS TEST - RED & GREEN/AMBER COMPUTER - PRE LN LT SEC O₂ Bottle - SHUT Arm Restraints - STOW					
				A - Stow "D" Ring "D" Ring Safety Pin - Install Arm Restraints - Stow OAMS HTR C/B - Closed H₂O HTR C/B - Closed CRY QTY - OFF					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					RECORD - OFF HF ANT - EXT/OFF ANT SEL - ADPT Voltmeter - BT Individually place each Main Battery to test <u>NOTE</u> 5 second maximum Check each amp & volt reading. Place batteries to "OFF" Complete Electrical Check Voltmeter - C Drogue Pins (R & L) -Install				
				A - <u>Report</u> Checklist complete					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	PRE LN	CAGE (REF)	PLAT	<u>PRERETRO CHECKLIST</u> A - Stow all equipment according to the Reentry Stowage Chart Drogue Pins - Out & Stow A - Insert new voice tape Survival lanyard - Install Connect shoulder harness & lap belt SEQ LIGHTS - BRIGHT SEQ LIGHTS TEST - AMBER/RED & GREEN Verify Left C/B - Closed Tr-256 C/B - Closed Verify ATT IND - WITH FDI'S Check RCS Pressure RETRO PWR - ARM Check RCS Pressure RCS - PUSH RETRO PWR - SAFE OAMS ATT CNTL PWR - OFF					
				Stow all equipment according to the Reentry Stowage Chart Drogue pins - Out & Stow Survival lanyard - Install Connect shoulder harness & lap belt A - MONITOR RCS Pressure					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
			RATE CMD	ATTITUDE CONTROL - RATE CMD PLAT - ORB RATE			A - Verify Overhead C/B's (all) - Closed		
				RCS A ATT CNTL PWR - ACME Check operation					
			DIR	RCS A ATT CNTL PWR - DIRECT Check operation					
				RCS A ATT CNTL PWR - OFF					
				RCS B ATT CNTL PWR - ACME Check operation					
			DIR	RCS B ATT CNTL PWR - DIRECT Check operation					
				RCS B ATT CNTL PWR - OFF					
				OAMS ATT CONTROL PWR - ON Check RCS pressure					
			PLAT	ATTITUDE CONTROL - PLAT PLAT - BEF					
				Event Timer - STBY Set Event Timer to 20:00 Left Sec 0 Bottle - OPEN Faceplate 2 Closed					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	PRE LN	CAGE (BEF)	PLAT			CTR Light - BRIGHT SUIT FAN - No. 1 & 2 Both COOLANT LOOPS - ON KEYING - CONT INTER - PTT C-RNTY - CONT T/M - R/T & ACQ ANT SEL - RNTY Electrical Check Voltmeter - BT MAIN BATTERIES (4) - TEST/OFF Voltmeter - C Verify Right C/B's (all) - Closed Verify RT Sec O ₂ Bottle-OPEN Verify ATT IND - WITH FDI AGENA CNTL C/B - OPEN EXTERNAL LTS - OFF Faceplate - Closed			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
T _R -15	RNTY	BEF	PLAT	CRO - At T _R -15 min, give mark to start Event Timer counting down A - At CRO mark, Event Timer - DWN Continue aligning platform		A - Check T _R (ADDRESS 02) COMPUTER - RNTY			
T _R -4:16	RNTY	BEF	PUL	<u>T_R-4:16 CHECKLIST</u>		Sequence Lights - AMBER Event Timer reads 4:16 min A - When sequence lights go amber, Verify COMPUTER - RNTY Verify SQUIB BATTERIES (3) - ON MAIN BATTERIES - ON Verify RCS PROP MOTOR VALVES A & B - OPEN Prop Gage - RCS A Verify CRY QTY - OFF			
		ORB RATE							
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
		ORB RATE	RATE CMD	A - ATTITUDE CONTROL - PULSE PLATFORM - ORB RATE FDR - PLAT FDM - RATE FDI SCALE RANGE - HI ATTITUDE CONTROL - RATE CMD Verify RATE GYROS (3) - PRI OAMS ATTITUDE CONTROL - OFF OAMS PROP MOTOR VALVES - Closed RCS A & B ATT CNTL POWER - ACME Control S/C attitude to & hold retroattitude (Check control mode operation in all axes) RETRO PWR - ARM					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
STA AOS	RNTY	ORB RATE	RATE CMD	A - Report T _R -4:16 Checklist complete			A - IND RETRO ATT - PUSH FDR - PLAT FDM - ATT FDI SCALE RANGE - HI A - RECORD - CONT		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

HR:MIN	COMP	PLAT	MODE	COMMAND PILOT	PILOT				
T_R-1	RNTY	ORB RATE	RATE CMD	<u>T_R-1 (MIN) CHECKLIST</u> (Event Timer reads 1:00) A - Hold retroattitude (20° pitch down) A - At T_R-30 sec: RETRO ROCKET SQUIBS (4) - ARM CTN - Count down to T_R A - SEP OAMS LINE - PUSH SEP ELECT - PUSH SEP ADAPT - PUSH A - At T_R-5: ARM AUTO RETRO - Push					
T_R-0	RNTY	FREE	RATE CMD	<u>RETROFIRE</u> (Event Timer reads 00:00) A - Check Start Comp - LT ON Start GET Clock					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
$T_R + 30$	RNTY	FREE	RATE CMD	A - <u>Report</u> to CTN: 1. No. of retros fired 2. IVI readings 3. Estimated attitude during retrofire 4. Auto or manual retrofire		A - $T_R + 2$ sec MAN FIRE RETRO - Push PLATFORM - FREE Readout and copy Address 80			
$T_R + 45$	RNTY	FREE	RATE CMD						
				<u>RETRO JETT LIGHT - AMBER</u>					
				A - RETRO JETT - ARM JETT RETRO - Push Report Retro Jett		A - Readout and report addresses 80, 81 & 82			
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND	PILOT	PILOT			
	RNTY	FREE	RATE CMD	<u>POST-RETRO JETT CHECKLIST</u>					
			PUL	A - RETRO PWR - SAFE RETRO JETT - SAFE RETRO ROCKET SQUIBS (4) - SAFE FDR - COMP FDM - ATT FDI SCALE RANGE - HI ATTITUDE CONTROL - PULSE BOOST INSERT CNTL 1 & 2 C/B - OPEN RETRO SEQ CNTL 1 & 2 C/B - OPEN RCS B ATT CNTL PWR - OFF SCANNER - OFF Tighten & lock restraint harness Check Hatch Pawls - Neutral					
				A - PRI O ₂ HTR C/B - Open OAMS CNTL PROP C/B - OPEN					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
	RNTY	FREE	PUL	A - Sync Event Timer to plus time		CALIB C/B - OPEN TAPE RCDR CNTL C/B - OPEN ECS O ₂ HEATER - OFF FC H ₂ & O ₂ HEATER - OFF Section #1 & #2 PWR - OFF 1A, 1B, 1C, 2A, 2B, 2C - OFF FDR - COMP FDM - RATE Tighten & lock restraint harness Check Hatch Pawls - Neutral GYM - Give the following reentry parameters: 1. RET 400K 2. (Rn-Rp) I 3. Roll Angles (L & R) 4. RETRB 5. RET BBO 6. RET EBO 7. RET Droque 8. RET MAIN 9. RET LANDING			
T _R +14:00	RNTY	FREE	Pul						
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
T _R +30:21	RNTY	FREE		<u>35K CHECKLIST</u> A - "D" Ring - Uncover & unsafety Arm Restraints - Unstow Harness - Locked RCS A & B PROP MOTOR VALVES - CLOSED Blip thruster to relieve pressure MCC - MARK 10.6K A - PARA - PUSH LDG ATT - Push (Do not push LDG ATT until Main Chute has dereefed) A - <u>Report</u> main chute deployment					
				A - "D" Ring - Uncover Arm Restraints - Unstow Harness - Locked Check Water Seal - UP (Open) INLET SNORKEL - DWN (Open) (27K) Cabin Air Recirc Valve - 45° O ₂ HI RATE - ON (If not previously accomplished) <u>10.6K FEET</u> A - Mark point of main chute deploy, main chute dereef and single point release on voice tape recorder					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
	RNTY	FREE		<u>POSTMAIN CHECKLIST</u> A - ATT IND LDG C/B - Open Call Recovery Forces Set updated barometric pressure in the altimeter Restraint Harness - LOCK Set Barometric pressure					
	OFF	OFF		<u>2K CHECKLIST</u> A - "D" Ring - Cover & Safety					
				A - RESC BEACON - W/O LT ACME BIAS PWR - OFF RCS HTRS - OFF SCAN HTRS C/B - OPEN Restraint Harness - LOCK COMPUTER - OFF PLATFORM - OFF RATE GYROS (3) - OFF AC POWER - OFF RCS C/B'S - OPEN A - INLET SNORKEL - UP (Closed) REPRESS - OPEN "D" Ring - Cover & Safety					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT		PILOT			
				<u>LANDING</u> <u>POST-LANDING CHECKLIST</u> A - PARA JETT - PUSH LANDING - SAFE Helmet - Off & Stow Arm Restraints - Stow Lap Belt - Release & Stow Shoulder Fittings - Stow Drogue Mortar Pins (2) - Install Hatch Pawls - Unlock A - HF ANT - EXT/OFF <u>Note</u> Must be done with Landing Switch Armed. A - Helmet - Off & Stow Arm Restraints - Stow Lap Belt - Release & Stow Shoulder Fittings - Stow Drogue Mortar Pins (2) - Install Hatch Pawls - Unlock HF T/R - RNTY Call Recovery NO. 2 AUDIO - HF-DF (as req)					
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT			PILOT		
				A - All switches OFF & C/B'S open except: COAX CNTL C/B - Closed AUDIO & UHF T/R C/B.- Closed UHF Relay C/B - Closed TONE VOX C/B - Closed HF T/R C/B - Closed HF WHIP ANT C/B - Closed IND LT TEST C/B - Closed SEQ LT CNTL C/B - Closed UHF - NO. 1 NO. 1 AUDIO Mode Switch - UHF			A - All switches OFF & C/B'S open except: Suit 1 & 2 C/B'S - Closed Rescue Beacon C/B'S - Closed DC-DC CONVERTER C/B - Closed DC-DC Converter - PRI SUIT FAN - NO. 1 OR NO. 1 & 2 HF T/R Switch - RNTY RESC BEACON CONTROL Switch - W/O LT Bio-Med Inst C/B - Closed TAPE RCD PWR C/B - Closed Bio-Med RCDS 1 & 2 - ON		
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

TIME HR:MIN	COMP	PLAT	CNTL MODE	ACTION					
				COMMAND PILOT	PILOT				
					Main Battery Switches (4) - ON Squib Battery No. 3 - ON When RCS fumes and/or other are no longer present: CABIN VENT - DWN (Open) CABIN AIR RECIRC - 45° INLET SNORKEL - DWN (Open) CABIN REPRESS - CLOSED WATER SEAL - DWN (Closed)				
			A - IND LT TEST C/B - Open SEQ LT CNTL C/B - Open		A - 10 mins after landing: DC-DC CONVERTER - OFF DC-DC CONVERTER C/B - Open				
MISSION	EDITION		DATE	STATION	AOS	LOS	TOTAL	REV	PAGE
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FLIGHT PLAN

POWER DOWN CHECKLIST

CMD PILOT

1. AUX RECP - OFF
2. ATT IND - OFF
3. Event Timer - STOP
4. RADAR - OFF
5. PLATFORM - OFF
6. COMPUTER PWR - OFF (PRE LN)
7. SCANNER - OFF
8. OAMS ATT CNTL POWER - ON
9. RATE GYROS (3) - OFF
10. ATTITUDE CONTROL - PULSE
11. Left Cabin LT - OFF

PILOT

1. ACME BIAS POWER - OFF
2. PRI & SEC PUMP A - OFF
3. PRI & SEC PUMP B - ON
- or (2a. PRI PUMP A - ON
3a. SEC PUMP B - ON
4. ATT IND LT C/B - OPEN
5. NO. 1 & NO. 2 AUDIO - INT
6. HF T/R - OFF
7. C-ADAPT - CMD
8. C-RNTY - CMD
9. T/M - CMD
10. ATT IND - OFF
11. AC POWER - OFF
12. AUX RECP - OFF
13. RCS HTRS - ON (During Sleep Period)
14. 1 SUIT FAN - ON
15. CENTER LT - OFF
16. RT CABIN LT - OFF
17. O₂ HI RATE SW - OFF

COMMUNICATIONS PROCEDURES

1. Negative reporting will be used in most air-ground transmissions to eliminate unnecessary contacts. UHF will be the normal mode for station communications.
2. Unless initially contacted by the crew, the ground stations will not attempt voice contact until after T/M lock-on and inspection of the data.
3. The general voice communications procedure for station passes will consist of the following:
 - a. Ground Station - Report T/M lock-on and status of T/M readouts.
 - b. Ground Station request pilot's report on:
 - (1) T/M values not reliably received on the ground.
 - (2) T/M values near unacceptable limits or changing at excessive rates.
 - (3) Other values or conditions specifically requested by MCC.
 - c. Crew gives status report (GO/NO GO).

NOTE: A GO report will be given if all S/C readouts are nominal and there are no known problem areas affecting the continuation of the mission.
 - d. Ground Station - Advise crew of current or impending problems, of known errors in cockpit gage readings, of other information specifically requested by the pilot such as T/M values monitored only on the ground.
4. If ground stations do not establish contact at first attempts, the Cap Com will transmit in the blind within two minutes of T/M contact or at point of closest approach and report appropriate information under a, and d of item 3 before again attempting to establish voice contact.
5. Each station should insure their air/ground transmissions do not interfere with the onboard activities of the crew except where required by an emergency condition of the S/C.
6. T/M, Tape Playback and C-Band Beacon Procedures

In general, all control of the T/M, Tape Dump and C-Band Beacons will be by Real-Time Commands (RTC). The onboard switches will be in the Cmr position for the entire flight except for launch thru rndz when the TM will be in "R/T & ACQ" and one C-band Switch in "CONT" and, after the Pre-Retro Checklist when the T/M will be in "R/T & ACQ" and the C-Rnty Beacon will be in "CONT." During EVA the T/M will be in "R/T & ACQ" position.

Tape Dump: The D/T Tape will be played back by DCS approximately once per revolution at the best ground station available for that purpose. The appropriate stations will be selected real time.

7. T/M Calibrations

T/M Calibration Commands will be command on once per day. Additional calibrations will be scheduled as required. The S/C will be notified prior to a calibration command being sent.

8. The flight crew will report completion of each checklist to the appropriate ground station. The checklist will not be read by the flight crew or the ground station over air/ground during the conduct of the checklist.

10. During communications the spacecraft will be referred to by name: (i.e., Gemini VIII and the ground will be referred to by station name (i.e., Hawaii). The individual crew members will be referred to as follows:

- a. Left Seat - Command Pilot (CMD)
- b. Right Seat - Pilot (Pilot)

11. Onboard Gage Readouts

All onboard gage readings reported to the network will be read directly from the S/C gages and not corrected by the appropriate factors.

12. Flight Plan Updates

Once per day following the activities over the United States, the flight crew will make a report to the ground containing the following flight plan information:

- a. Particular flight plan items accomplished, including the revolution (or approximate time) of accomplishment.
- b. Changes from nominal operational or experimental procedures due to S/C anomalies or experiment equipment malfunctions.
- c. Quantity and type of photographic film used.
- d. Quantity of voice recording tape used.

Negative reporting will be used in all other cases.

13. GO/NO GO Procedures

A GO/NO GO check will be conducted once per day by both the ground and the flight crew to verify the ability of the S/C to proceed with the mission to the next GO/NO GO area. The following sequence of events will be followed:

- a. No more than one revolution prior to the GO/NO GO station, the flight crew will accomplish the following:
 - (1) Battery Test each (4) Main Battery
Report anomalies (voltage 22.5 volts)
 - (2) Verify systems required for GO/NO GO are operational
- b. Over GO/NO GO site, the flight crew will report stack currents and GO/NO GO and the ground reports the GO/NO GO.
- c. The 45-1 Preretro Cmd Load and T_R will be loaded prelaunch.

The following is the nominal schedule for the GO/NO GO areas:

GO/NO GO STATIONS

<u>Area</u>	<u>Station</u>	<u>Rev</u>
16-1	CRO	1
31-1	MCC	13
45-1	MCC	30

14. PLA Updates

The flight crew will be updated by voice with the retro-sequence information for the Planned Landing Area (PLA) in each revolution. This updating will be accomplished by blocks with one ground station relaying the information for a block. Each block will contain approximately 7 PLA's. The PLA update is as follows:

- a. Area _____
 - b. GET RC _____
 - c. RET 400K _____
 - d. RET RB _____
- } If the same update only one

PLA UPDATE STATIONS

<u>Block</u>	<u>Station</u>	<u>Rev</u>
1	Prelaunch	

<u>Block</u>	<u>Station</u>	<u>Rev</u>	<u>Time</u>
2	CSQ	6	08:53
3	CYI	12	17:54
4	RKV	20	30:39
5	CRO	27	42:35
6	CSQ	34	53:53
7	CRO	42	66:42

15. As required, the flight crew will be updated for forthcoming translations. The following format will be observed:

- a. Purpose of translation
- b. GET of Burn
- c. **Δ** V Total
- d. Duration of burn (Min:Sec)
- e. YAW, PITCH (degrees)
- f. Computer load
 - 25:XXXXX
 - 26:XXXXX
 - 27:XXXXX
- g. Thruster (AFT, etc.)
- h. Posigrade, Retrograde, etc.

16. During EVA the crew will report the following information after each EVA sequence.

- a. Pilot
 - Wrist gage suit pressure
 - ESP O₂ percent
 - Emergency O₂ pressure
 - Verify NO warning lights
 - Status of sequence just performed
- b. Cmd Pilot
 - Wrist gage suit pressure
 - ECS O₂ qty and pressure
 - Next sequence to accomplish

CREW STATUS REPORTS

Purpose

To provide the necessary medical monitoring of the flight crews during the mission to insure crew safety.

Procedure

Two crew status reports per 24 hours will be scheduled for both crewman over designated ground stations. Each crew status report will consist of:

a. Oral temperature measurement

b. Food report

NOTES:

1. The oral temperature probe must remain in the mouth for three minutes without talking. They will be started prior to station AOS and the ground will notify the spacecraft as soon as a valid reading is obtained. The ground should not request information from the crewman who is taking an oral temperature prior to obtaining a valid reading.

2. Each crewmember will report the amount of food consumed during the previous day. (The food report will only be reported during the last crew status report each day.)

GEMINI VIII ESTIMATED OAMS PROPELLANT USAGE

The following is Spacecraft No. 8 OAMS propellant loading:

	<u>Loaded</u>	<u>*Usable</u>
Fuel	357.4 lbs.	**340.6 lbs.
Oxidizer	<u>417.7</u>	<u>353.3</u>
Total	775.1 lbs.	693.9 lbs.

NOTES: * The usable oxidizer can vary depending upon how much attitude control versus translation is done in the actual mission. The above usable propellant is based on a mission mixture ratio of 1.04.

** Includes 14.2 lbs. usable in the auxiliary tank.

The following estimated propellant usage represents the nominal propellant usage and does not reflect any dispersions.

NOMINAL PROPELLANT REQUIREMENTS

	<u>Fuel</u>	<u>Prop</u>
1. Rendezvous	126.50	269.30
2. Re-Rendezvous	47.66	96.4
3. Operational requirements	67.93	128.50
4. Experiments	26.47	49.05
5. General attitude control	5.9	10.0
6. Retrofire preparation	3.5	6.0
Totals	277.96	559.25

NOMINAL RENDEZVOUS PROPELLANT REQUIREMENTS

Purpose	Nominal		
	ΔV	Fuel	Prop
1. Insertion	10.0 ft/sec	4.77	10.2
2. Height Adjust	1.0	0.51	1.1
3. Phase Adjust	53.3	25.0	54.4
4. Circularization	$\Delta X - 52.5$ $\Delta Y - 5.0$	25.0	54.0
5. Terminal Phase Initiation	$\Delta X - 29.1$	15.7	33.7
	$\Delta Y - 15.5$	0.47	1.0
	$\Delta Z - 0.6$	0.3	0.7
6. 82° Correction	$\Delta X - 1.0$	0.44	0.95
	$\Delta Y - 4.0$	0.5	4.8
	$\Delta Z - 0.0$	0.0	0.0
7. 34° Correction	$\Delta X - 0.0$	0.44	0.95
	$\Delta Y - 3.0$	1.0	2.2
	$\Delta Z - -1.0$	0.0	0.0
8. Velocity match	$\Delta X - 23.0$	12.0	25.8
	$\Delta Y - 35.2$	19.8	42.2
	$\Delta Z - 1.9$	1.07	2.3
9. LOS Control		7.7	15.0
10. Attitude control		11.8	20.0
Totals		126.50	269.30

NOMINAL RE-RENDEZVOUS PROPELLANT REQUIREMENTS

<u>Purpose</u>	<u>ΔV</u>	<u>Fuel</u>	<u>Prop</u>
1. Undock (26:40 to 26:50)	--	5.66	11.0
2. Formation flying (26:50 to 27:00)	--	1.03	2.0
3. Align Platform while flying formation (27:00 to 27:10)	--	1.54	3.0
4. Formation flying (27:10 to 27:28)	--	1.88	3.6
5. Radial separation (27:28)	20.0	10.3	22.4
6. Midcourse correction	0.0	0.0	0.0
7. Terminal Phase initiation	$\Delta X - 1.8$ $\Delta Y - 0.4$	0.84 0.2	1.8 0.4
8. Velocity match	$\Delta X - 1.9$ $\Delta Y - 16.0$	6.1 9.0	13.0 19.2
9. LOS Control	--	5.21	10.0
10. Attitude control during tracking	--	5.9	10.0
Totals		47.66	96.4

NOMINAL EXPERIMENTS PROPELLANT REQUIREMENTS

	<u>Fuel</u>	<u>Prop</u>
1. D-3 Experiment	9.3	19.8
2. D-14 Experiment (7 passes)	3.1	5.25
3. D-15 Experiment (Includes 2 sec up translation)	8.8	15.0
4. S-1 Experiment	3.5	6.0
5. S-7 Experiment (passes)	1.77	3.0
Totals	26.47	49.05

NOMINAL OPERATIONAL CHECKS PROPELLANT REQUIREMENTS

	<u>Fuel</u>	<u>Prop</u>
1. Formation flying (05:45 to 06:15)	3.1	6.0
2. Platform alignment (06:05 to 06:25) (while flying formation)	1.54	3.0
3. 1st Docking (06:25 to 06:35)	5.66	11.0
4. 1st Bending Test (07:35 to 07:40)	1.76	3.0
5. Cntl S/C - Agena to 0°, -90°, 0° (07:40 to 07:55)	1.76	3.0
6. EVA Undocking and Docking (2nd docking)	11.3	22.0
7. EVA Formation flying	7.7	15.0
8. 2nd Bending Test (25:30 to 25:35)	1.76	3.0
9. Cntl S/C - Agena to 0°, -90°, 0° (25:35 to 25:50)	1.76	3.0
10. 2nd Undocking and 3rd Docking	11.3	22.0
11. Formation flying (26:00 to 26:30)	3.1	6.0
12. See Re-rendezvous requirements	---	---
13. 4th Docking (29:05)	5.66	11.0
14. 4th Undocking (29:30 to 29:40)	5.66	11.0
15. Separation Translation (29:44)	1.38	3.0
16. Radar track for undocked PPS translation (29:45 to 30:06)	1.76	2.0
17. Apollo Landmark Investigation	2.55	4.5
Totals	67.93	128.50

GEMINI VIII ELECTRICAL LOAD ANALYSIS

<u>Continuous Power Down Load</u>	<u>Amps</u>	<u>Intermittent Loads</u>	<u>Amps</u>	<u>Hrs</u>	<u>Amp-Hrs</u>
Electronic Timer	.23	Clock Light	.14	48.00	6.72
Elapsed Time Digital Clock	.11	Lighting	0.61	48.00	29.30
Suit Fan (Compressors)	3.30	ECS O ₂ Heater	0.40	24.00	9.60
(1) Pump B & (1) Pump A	5.95	FC O ₂ Heater	2.32	2.18	5.06
Acq Aid Beacon	.20	FC H ₂ Heater	0.60	5.46	3.12
Biomed systems	.34	H ₂ O Evap Heater	3.32	0.22	0.73
Biomed Rcdr 1	.05	UHF T/R (Xmtr $\frac{1}{2}$ time,			
Biomed Rcdr 2	.05	Rcdr $\frac{1}{2}$ time)	1.00	18.30	18.30
DCS	.40	R/T-T/M Xmtr			
RCS Heaters	.42	(25 min/orbit)	0.75	18.35	13.75
Time Correlation Buffer	.09	D/T-T/M Xmtr			
Voice Cntl Center	.11	(6 min/orbit)	0.75	4.40	3.30
UHF T/R - INT	.10	Urine Dump Heaters			
OAMS Heater C/B - Closed	2.06	(3 min/orbit)	2.24	2.20	4.94
H ₂ O Heater C/B - Closed	1.22	C-Adapt Beacon			
S-3 Experiment	.35	(10 min/orbit)	1.05	7.33	7.70
DC-DC Converter	1.72	Cryo Qty Gage			
		(5 min/day)	0.43	.25	.11
Total @ 27 V	16.70	Voice Tape Recorder			
		(9 spools)	0.08	9.00	0.72
		Total @ 27 V			103.35

MISSION SUMMARY

<u>Phase</u>	<u>Amp</u>	<u>Hrs</u>	<u>Amp-Hrs</u>
Power Down	16.70	70.29	1,173.8
Intermittent Load	13.69		103.4
Pre Launch	---	---	160.0
Lift off to 03:00	26.50	3.0	79.6
03:00 to 06:35	30.60	3.584	109.8
06:35 to 08:30	25.20	1.918	48.4
20:30 to 23:12	17.20	2.7	46.4
25:00 to 25:50	19.20	.834	16.0
25:50 to 29:00	28.35	3.167	89.8
29:00 to 29:45	27.38	.75	20.5
29:45 to 30:15	30.77	.50	15.4
41:00 to 45:50	.69	4.834	3.3
45:50 to 47:40	24.50	1.835	44.9
47:40 to 48:23	30.05	.717	21.9
48:23 to 49:15	23.67	.866	20.5
49:15 to 49:40	31.43	.416	13.1
49:40 to 55:00	8.46	5.334	45.1
65:45 to 66:45	0.78	1.0	.8
66:45 to 70:17	28.70	3.534	101.4
Total			2,193.7

Fuel Cell Loadings (assuming no venting):

	H ₂ (lbs)	O ₂ (lbs)
Total, assumes [136% (H ₂) & 100% (O ₂)]	7.9000	46.
Purge allowance, 12 purges	.0972	1.405
	7.8028	45.605
Residual	.24	3.73
	7.5628	41.875
Usable for Power Production		

Cryogenic Flow Rates:

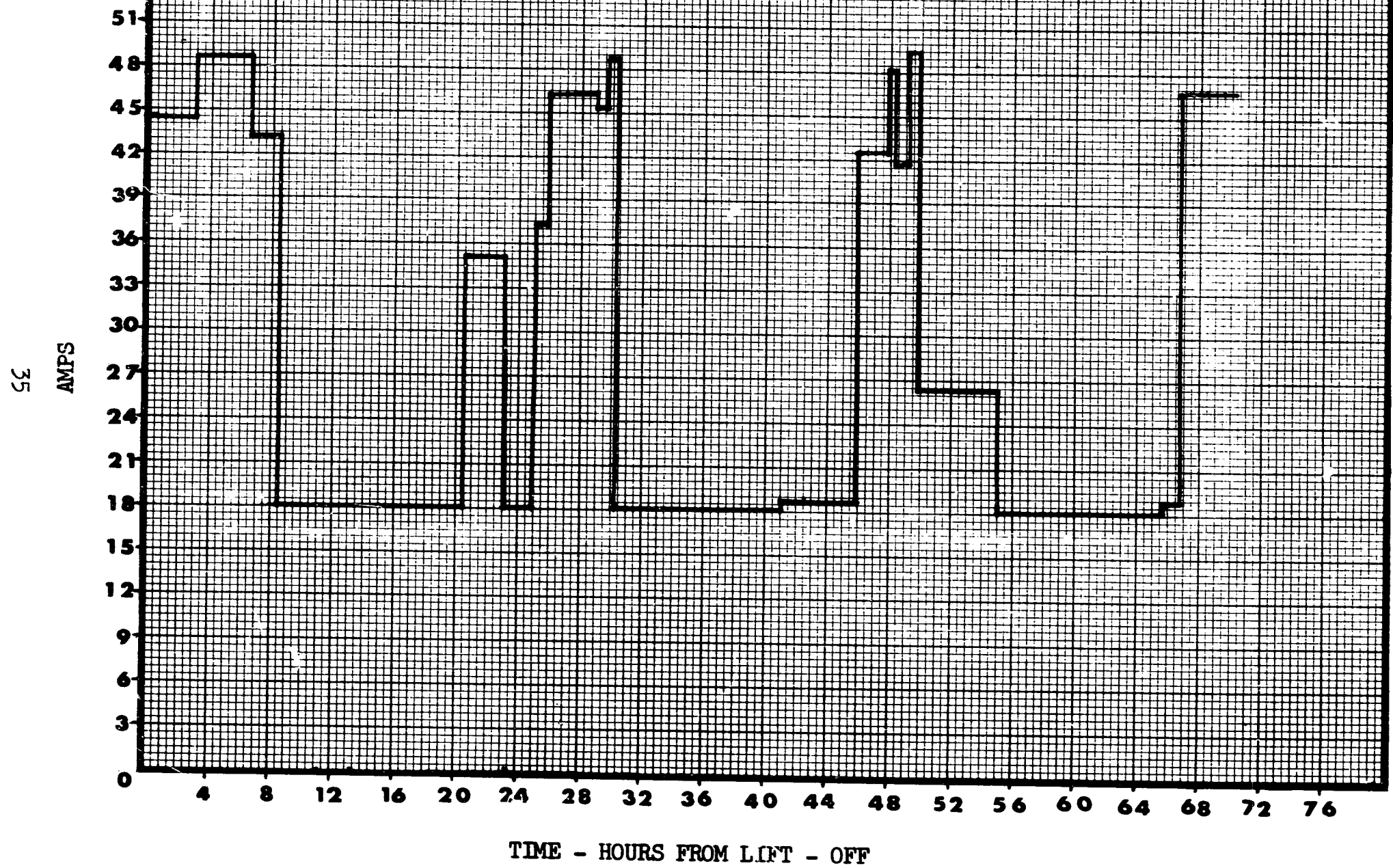
H₂ Rate = 0.002972 #/amp-hr.
O₂ Rate = 0.02357 #/amp-hr.
H₂O Rate = 0.02384 #/amp-hr.

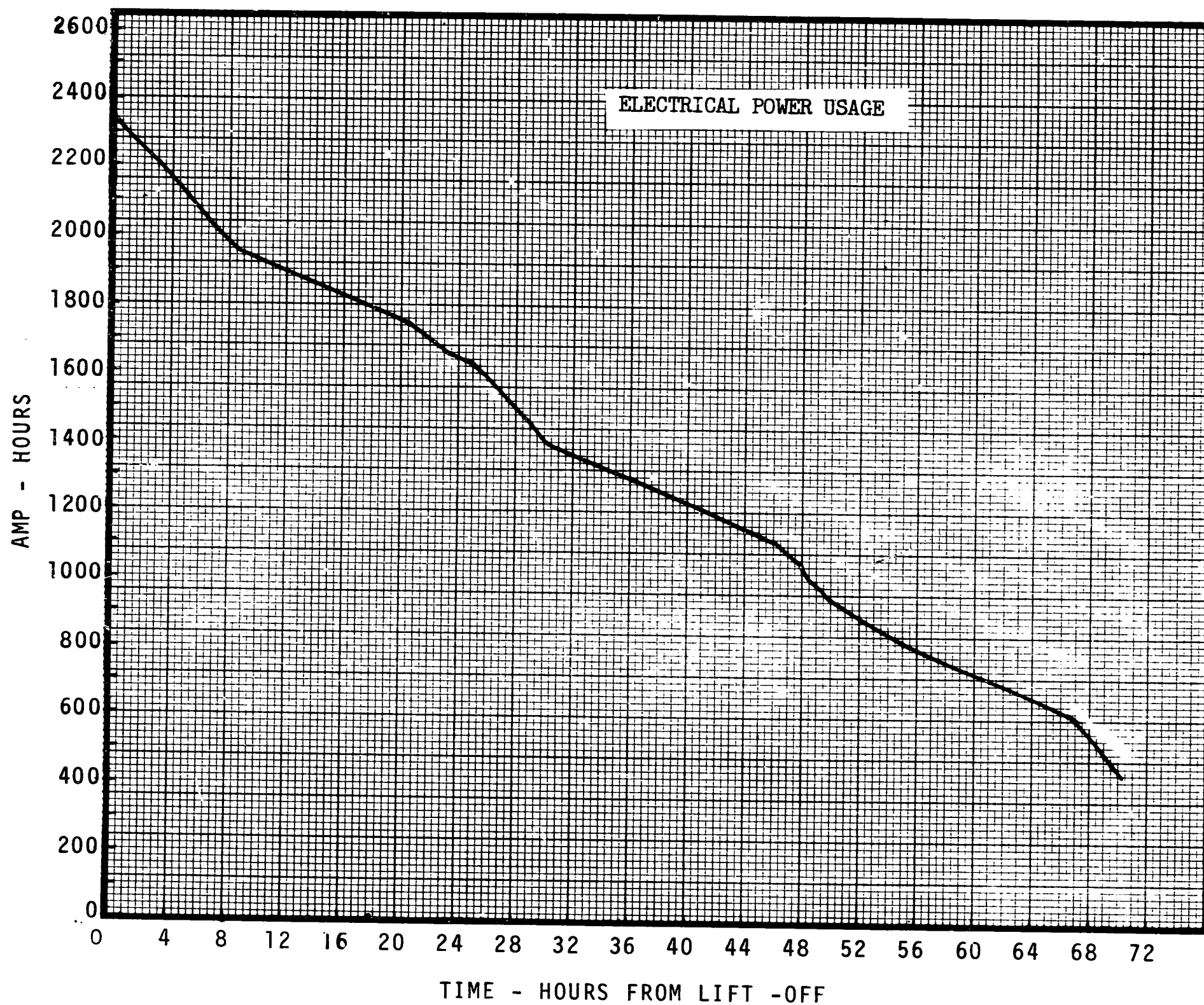
Limitations on Power Production:

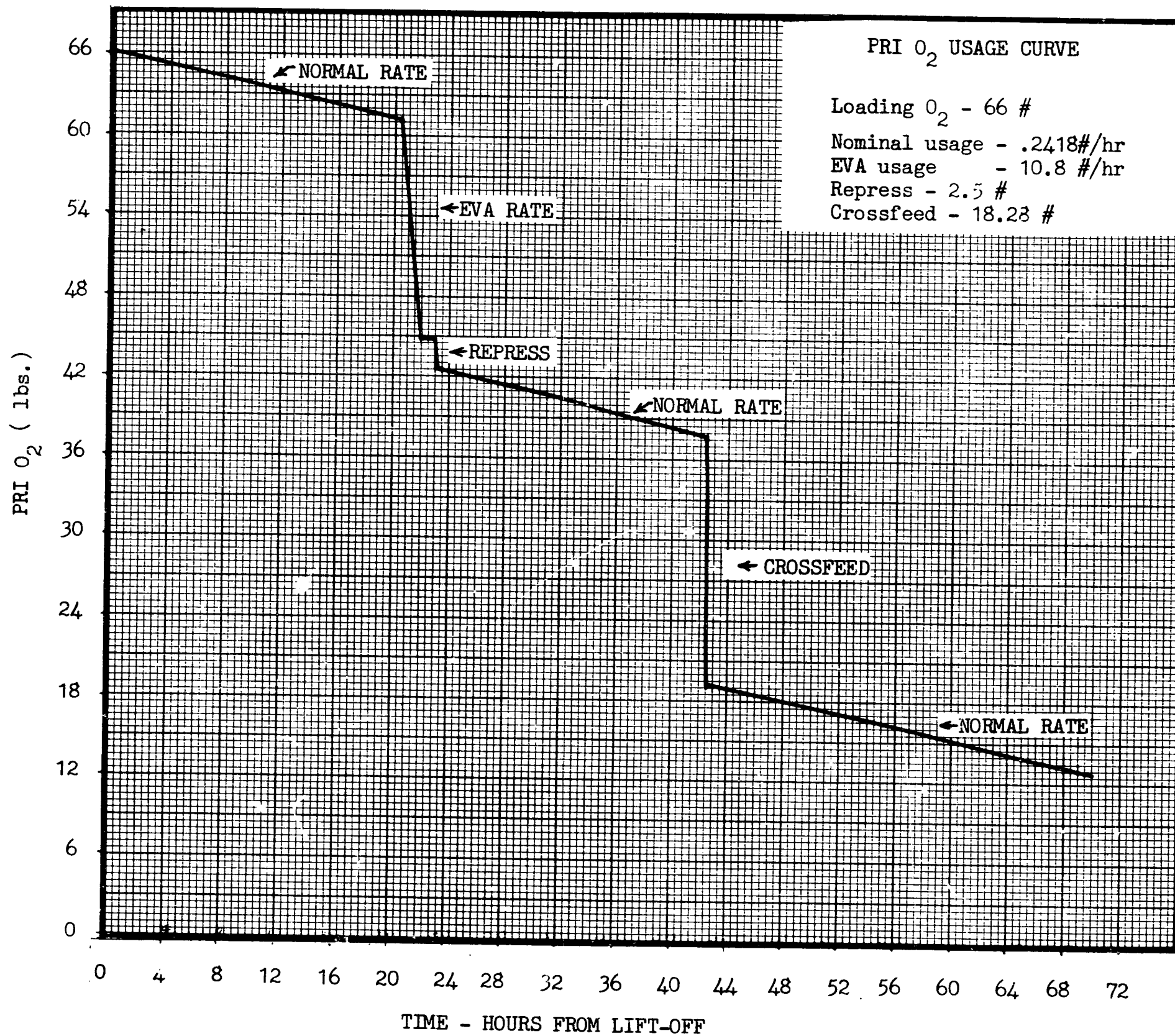
1. 1776.6 amp-hrs. based on available O₂.
2. 2552.0 amp-hrs. based on available H₂.

The desired limit is the 2552 amp-hrs. based on H₂ consumption, therefore, O₂ will be transferred from the ECS supply to make up the difference (18.28#).

ELECTRICAL LOAD PROFILE







DOCKING PRACTICES

Purpose

1. To provide crew training for both crewmen in actual dockings.
2. To evaluate docking techniques under various configurations of the spacecraft and Agena.

NOTE: A total of four dockings will be accomplished.

Spacecraft Systems Configuration

1. PLATFORM - ORB RATE
2. RATE GYROS (3) - PRI
3. COMPUTER - As required

Time of Dockings

1. First - 06:30
2. Second - 23:05
3. Third - 26:35
4. Fourth - 29:05

First Docking Configuration

1. Agena at 0° , -90° , 0° yaw (TDA North) (S/C - 0° , 90° , 0°)
2. Agena Flight Control Mode 6
3. Performed by Cmd Pilot

Second Docking Configuration (Performed after EVA)

1. Agena at 0° , 90° , 0° (TDA South) (S/C - 0° , -90° , 0°)
2. Agena Flight Control Mode 1 or 6
3. Performed by Cmd Pilot

Third Docking Configuration

1. Agena at 0° , -90° , 0° (TDA North) (S/C - 0° , 90° , 0°)

2. Agena Flight Control Mode 6

3. Performed by Pilot

Fourth Docking Configuration

1. Agena at 0° , -90° , 0° (TDA North) (S/C - 0° , 90° , 0°)

2. Agena Flight Control Mode 1

3. Performed by Pilot

Procedures

1. Prior to undocking, send the following cmds to the Agena:

*a. 141 - APPROACH LTS - ON

*b. 071 - L-Band Beacon - ON

*c. 041 - RECORD DATA

d. 220 - UNRIDGIDIZE (TDA CONTROL - UNDOCK during EVA)

*2. Start 16mm camera at 1 frame/sec

3. OAMS ATTITUDE CONTROL POWER - ON

4. Undock and translate to 60 feet at $\frac{1}{2}$ ft/sec

*5. Stop 16mm camera

*6. RDR - STBY/ON

*7. Send the following cmds to the Agena:

030 - T/M OFF

021 - T/M ON

8. Proceed with undocked operation

*9. Send the following cmds to the Agena:

a. 041 - RECORD DATA

b. 070 - L-Band Beacon - OFF

*10. RDR - OFF

- *11. Start 16mm camera at 1 frame/sec
- *12. At a range of 25 ft start 16mm camera at 6 frames/sec
- 13. DOCK
- 14. When the RIGID LT comes on:
 - a. RIGID STOP - STOP
 - b. OAMS ATT CNTL POWER - OFF
 - c. ENGINE - ARM
 - d. Check SDP ARMED LT illuminated
 - e. ENGINE - STOP
 - f. Check SDP ARMED LT extinguished
- *15. Stop 16mm camera
- *16. Send the following cmds to the Agena:
 - 030 - T/M OFF
 - 021 - T/M ON

*NOTE - These items will not be performed during the EVA undocking and docking.

Propellant Requirements

Docking	11.0#
Undocking	11.0#
Dockings (3)	33.0#
Undockings (3)	<u>33.0#</u>
	66.0#

Note - The propellant required for undocking and docking during EVA is included in the EVA requirements.

EXTRAVEHICULAR ACTIVITY

Purpose

1. To evaluate the operation of the Extravehicular Life Support System (ELSS) and the Extravehicular Support Package (ESP).
2. To evaluate handrails and velcro for maneuvering over the spacecraft.
3. To evaluate the Handheld Maneuvering Unit (HHMU) for maneuvering in space.
4. To evaluate tether operations.
5. To perform the S-9, S-10, and D-16 experiments.

Systems Configuration

1. S/C - Agena Docked
2. Agena at 0°, 90°, 0° (S/C - 0°, -90°, 0°)
3. Agena in Flight Control Mode 1
4. S/C powered down

Procedures

Egress Preparation

1. Configure the cockpit as follows:

a. ECS System

PRI PUMP A - ON
SEC PUMP B - ON
Both SUIT FLOW - Full Increase
CRY QTY Gage - ECS O₂
ECS O₂ HTR - AUTO
FC O₂ HTR - AUTO
FC H₂ HTR - AUTO
SUIT FAN - No. 1
ECS O₂ Pressure - MAXIMUM
CABIN AIR RECIRCU - DWN (CLOSED)
INLET SNORKEL - UP (CLOSED)
CABIN VENT - UP (CLOSED)
WATER SEAL - UP (OPEN)
O₂ HIGH RATE RECOCK - UP (cycle to recock)

LT SEC O₂ BOTTLE - CLOSED
RT SEC O₂ BOTTLE - OPEN
CONDENSATE - NORMAL
H₂O TANK VALVE - NORMAL
WASTE - OFF

b. GNC System

AC POWER - IGS
ACME BIAS PWR - PRI
Both FDR - PLAT
Both FDM - RATE
Both ATT IND - WITH FDI's
OAMS ATT CNTL PWR - OFF
OAMS PROP MOTOR VALVE - OPEN
Prop gage - 0
RCS HTRS - ON
ATTITUDE CONTROL - PULSE
RATE GYROS (3) - PRI
RDR - OFF

c. Electrical System

VOLT METER - M
ALL CABIN LTS - Full white
ATT IND LT C/B - CLOSED
O₂ HI RATE - Clk LT
All Agena CONTROL C/B's - CLOSED
POLARIZATION ANT - RET/OFF (1 MIN)
EVENT TIMER - SYNCED

d. Communications

HF ANT - RET/OFF (1 min)
No. 1 & No. 2 AUDIO - UHF
UHF - No. 1
HF - OFF
Keying - CONT INTER/PTT
ANT SEL - ADAPT
T/M - R/T & ACQ
C-Bands - OFF

e. Agena

F. C. MODE 1
ENCDR - ON
Send the following cmds:
071 - L Band Beacon ON
141 - Approach LTS ON
201 - SDP Bright
Set 40 in the ENCDR.

2. Verify the following items:
 - a. Gloves doffed
 - b. Helmets doffed
 - c. Life vests stowed
 - d. "D" rings secured
 - e. Shoulder and leg restraints stowed
 - f. Zippers closed and checked
 - g. Release and stow lap restraint harness
 - h. Hasselblad, film packs, voice tape accessible
 - i. Overhead C/B guard attached
 - j. Camera lens attached, camera bracket attached
 - k. Voice tape loaded and voice tapes accessible
3. Prepare food bags and sextant container to throw away
4. Pilot Unstow:
 - a. Inter Connects
 - b. Debris cutters
 - c. EVA Hasselblad
 - d. EVA 16 mm
 - e. Stand up hoses
5. Set EV cameras as follows:
 - a. 70 mm
speed-1/250
f -11
 - b. 16 mm
speed-1/200
f -16
6. Cmd pilot remove EV gear from left food box.

NOTE - Stowage box will contain:

- a. "Y" connectors
- b. Electrical jumper
- c. Standup hoses (2 sets)
- d. Thermal gloves
- e. Interconnect
- f. Umbilical bag
- g. D-16 restraint system
- h. ELSS restraint system with "wrist" lanyard

7. Pilots remove and attach hatch closing devices.
8. Cmd pilot stow gear temporarily (Umbilical bag stowed in Cmd Pilot's footwell. Other items velcroed to wall.)
 - 8a. Stow TV monitor above CP seat.
9. Pilot attach ELSS restraint and D-16 restraint systems.
10. Cmd Pilot check that both connector ports of "Y" connectors are in the open position. Hand to the Pilot on his request.
11. Pilot perform the following:
 - a. Disconnect ECS outlet hose from suit and connect the bottom of "Y" connector.
 - b. Connect "Y" connector to suit outlet fitting.
 - c. Disconnect ECS inlet hose from suit and connect to bottom of "Y" connector.
 - d. Connect "Y" connector to suit inlet fitting.
12. Cmd Pilot unstow camera box and hold in lap.
13. Pilot unstow ELSS.
14. Cmd Pilot restow camera box.
15. Pilot perform the following:
 - a. ELSS BATTERY - ON
 - b. ELSS TEST/DIM/BRIGHT Switch - DIM/BRIGHT (Verify operation.)
 - c. ELSS TEST/DIM/BRIGHT Switch - TEST (Verify "Suit Press" audio tone and "Emerg O₂" Lts ON).
 - d. ELSS O₂ SELECTOR - OFF
 - e. ELSS BYPASS - NORMAL
- 16.. Cmd Pilot hand electrical jumper to Pilot.
17. Pilot perform the following:
 - a. Connect electrical jumper to ELSS.
 - b. BIOMED INSTRU C/B - OPEN
 - c. Disconnect S/C electrical connector from suit and hand to Cmd Pilot.
 - d. Connect 37 pin of elec. jumper to suit.

18. Cmd Pilot perform the following:
 - a. CABIN REPRESS - OPEN (for 30 seconds - purges filter in valve)
 - b. Prepare umbilical for connection to S/C.
19. Connect O₂ quick disconnect to quick disconnect on S/C.
20. Pilot attach umbilical S/C tether hook to Ingress Bar.
21. Cmd Pilot perform the following:
 - a. Connect S/C electrical connector to connector on S/C end of umbilical.
 - b. Prepare umbilical for connection to ELSS.
22. Pilot perform the following:
 - a. Connect O₂ umbilical to top plug of ELSS.
 - b. Connect 37-pin connector of umbilical electrical to ELSS jumper.
 - c. BIOMED INSTRU C/B - CLOSED
23. Cmd Pilot attach tether hook on pigtail end of umbilical to survival kit lanyard "D" ring of pilot's parachute harness.
24. Pilot remove inlet and outlet plugs of ELSS and stow temporarily.
25. Cmd Pilot remove interconnect from ends of both ELSS standup hoses and temporarily stow interconnects. Hand hoses to Pilot when requested.
26. Pilot connect inlet (short) and outlet (long) standup hose to ELSS.
27. Cmd Pilot performs:
 - a. Connect inlet and outlet standup hoses to suit and ECS hoses, verify both interconnectors locked.
 - b. Connect elect extensions to suit and S/C electrical
 - c. Connect tether to arm restraint and parachute harness.
28. Cmd Pilot perform the following:
 - a. Don pressure gloves and helmet.
 - b. Check all fittings; position helmet tiedown.
 - c. Attach and tighten lap belt.
 - d. Stow all loose items.

29. Cmd Pilot perform Suit Integrity Check as follows:
 - a. Cmd Pilot close visor.
 - b. Pilot - SUIT FLOW - FULL INCREASE
 - c. Cmd Pilot - LH SUIT FLOW - OFF
 - d. Cmd Pilot disconnect suit outlet hose.
 - e. Pilot actuate MANUAL O₂ HI RATE.
 - f. Cmd Pilot monitor suit pressure.
 - g. Pilot recock O₂ High Rate when Cmd Pilot suit pressure reads 8.0 psia.
 - h. Cmd Pilot verify that suit pressure is stable and read.
 - i. Cmd Pilot allow 30 sec pressure decay and read suit pressure.
 - j. Cmd Pilot re-install suit outlet hose.
 - k. Cmd Pilot - SUIT FLOW - FULL INCREASE
30. Pilot hand swizzle stick to Cmd Pilot.
31. Cmd Pilot open Cabin Repress Valve.
32. Pilot performs the following:
 - a. Verify ELSS Suit Press light and Audio Tone is "ON".
AUDIO RESET - DEPRESS
 - b. Verify Tone "OFF".
 - c. ELSS O₂ FLOW SELECT - HI (for 30 sec)
 - d. ELSS O₂ FLOW SELECT - OFF
 - e. Connect inlet standup hose to top of inlet "Y" connector.
 - f. Connect outlet standup hose to top of outlet "Y" connector.
 - g. SUIT FLOW VALVE - OFF
33. Both pilots disconnect pilot's ECS inlet and outlet hoses from "Y" connectors.
34. Pilot insert ELSS plugs into open "Y" connector ports.

35. Pilot perform the following:
 - a. BUS ARM - EXP
 - b. INDEX - EJECT
 - c. EXT LTS - EVA
36. Cmd Pilot perform the following:
 - a. PLATFORM - CAGE (SEF)
 - b. RATE GYROS (3) -PRI
 - c. Check for maximum ECS O₂ pressure
 - d. RECORDER - CONT (Change voice tape as required)
37. Pilot perform the following:
 - a. Don pressure gloves and helmet.
 - b. Check security and operation of EV visor on helmet.
38. Pilot check suit pocket stowage:
 - a. Wire cutters
 - b. Pen Lts
 - c. Screw driver
 - d. Docking bar mirror
 - e. HHMU nozzle
39. Both pilots make final check of all fittings.
40. Pilot check helmet restraint. Check in mirror for proper locking. Stow mirror.
41. Pilot position hatch GAIN & DRIVE SELECTOR to the "U" (unlock) position.
42. Cmd Pilot hold umbilical in lap.
43. Pilot perform the following:
 - a. Don ELSS by attaching restraint straps.
 - b. Attach "wrist" lanyard to top of ELSS.
44. Cmd Pilot check all gear.
45. Perform Pilot Suit Integrity Check as follows:

- a. Slowly close visor to pressurize suit.
 - b. When suit pressure reaches 3.0 psi above cabin, ELSS O₂ FLOW SELECTOR - MED
 - c. Monitor suit pressure.
 - d. Cmd Pilot - CABIN REPRESS - OFF
 - e. Read suit pressure.
 - f. Monitor suit pressure for 30 seconds.
 - g. Cmd Pilot - CABIN REPRESS - OPEN
 - h. ELSS O₂ FLOW SELECT - HIGH
 - i. Activate ELSS emergency O₂ supply.
 - j. Verify suit pressure, emergency O₂ light and Audio Tone - OFF.
 - k. Monitor suit pressure to approximately 8.7 psia.
- 46. Cmd Pilot - CABIN REPRESS - CLOSED
 - 47. Pilot verify Emerg O₂ Light and Audio Tone - ON
 - 48. Cmd Pilot - CABIN REPRESS - OPEN
 - 49. Pilot verify Emerg O₂ Light and Audio Tone - OFF.
 - 50. Pilot - ELSS EVAPORATOR - ON.
 - 51. Both pilots verify visors locked, helmets locked, gloves locked, and all gas connectors locked, Hasselblad, film packs, EVA camera, voice tape, other equipment stowed and/or accessible.

SPACECRAFT DEPRESSURIZATION & EGRESS

- 1. Cmd Pilot perform the following:
 - a. PRI PUMP A - ON
 - b. SEC PUMP B - ON
 - c. PLATFORM - CAGE (SEF)
 - d. Verify CABIN AIR RECIRC - CLOSED
 - e. Slowly open Cabin Vent to depress cabin to 3.5 psia. Verify systems integrity while holding cabin @ 3.5 psia.

- f. CABIN VENT - OPEN (complete depress cabin)
 - g. Hold hatch closing device to preclude hatch explosive opening.
2. Pilot perform the following:
 - a. Open S/C hatch.
 - b. Rotate EV visor into position.
 - c. Push up on the hatch to open.
 - d. Position Hatch Gain & Drive Select to "L" (lock) position.
 - e. Stow hatch handle.
 3. Both pilots make final check of all systems.
 4. Pilot stand in seat.
 5. Both pilots feed umbilical out of bag and out of hatch.
 6. Cmd Pilot attach umbilical into guard.
 7. Attach umbilical guard to hatch frame. Verify umbilical is in umbilical guard.

FIRST DAY PASS EVA (00:00)

1. At sunrise Cmd Pilot start event timer counting up.
2. Discard food bags and sextant container.
3. Mount EV camera facing forward.
4. Retrieve S-9 experiment. (See S-9 Experiment)
5. Move to TDA.
6. Attach mirror to docking bar.
7. Actuate S-10 experiment. (See S-10 Experiment)
8. Evaluate umbilical.
9. Return to S/C cabin.
10. Change film in EV camera.

11. Place EV camera to D-16 position.
12. Clean and sample S/C window.
13. Pick up Hasselblad camera.
14. Close S/C hatch.
15. Maneuver over S/C using handrails and velcro.
16. Check ESP and adapter. Remove and sample separation plane debris.
17. Observe for stars.
18. Move to D-16 area.
19. Perform D-16 experiment. (See D-16 Experiment)
20. Return to S/C cabin.
21. Open S/C hatch.
22. Deposit Hasselblad camera.
23. Change film in EV camera.
24. Place camera forward.
25. Close hatch.
26. Move to adapter. Secure umbilical to handrail and umbilical guide.

FIRST NIGHT PASS EVA (00:52)

1. Pilot don ESP as follows:
 - a. Move to donning station in adapter.
 - b. Stand on footbar facing ESP.
 - c. Pull umbilical taut and attach to HB.
 - d. Open and position and/or adjust mirrors. Remove crescent wrench, velcro to HB.
 - e. Remove pen lights, actuate and velcro to the top of HB's on each side.

- f. ESP Battery - ON
- g. Confirm comm in hardline position - (aft)
- h. Confirm freon in line shutoff valves in "open" position - (in)
- i. Rotate freon supply valve to "open" position - (90° ccw to horizontal)
- j. Unmount HHMU and velcro to right side of ESP.
- k. Rotate ESP O₂ supply valve to open - (90° cw to horizontal)
- l. Confirm Freon/O₂ Switch - O₂ (aft)
- m. Detach ESP O₂ line from QD, velcro to side.
- n. Attach wrist tether hook to D-ring on tether bag.
- o. Release and jettison tether bag restraints.
- p. Mount tether bag on top of ESP.
- q. Remove flap cover to expose elec/tether connectors. Remove velcro flap on right end of bag.
- r. Remove tether/elec connectors and velcro to sides of ESP.
- s. Connect tether ESP elect connector to ESP.
- t. Detach wrist tether; velcro ESP restraint straps to side of ESP.
- u. Confirm proper donning position of all connectors, all valves open.
- v. Rotate CC into ESP.
- w. Attach and firmly secure ESP restraint straps.
- x. Disconnect umbilical elect connector from ELSS jumper.
- y. Connect umbilical elects to + tether electrical connectors.
- z. Connect tether hook to umbilical ring.
- aa. Connect -tether elect connector to ELSS jumper.
- bb. Check comm on both systems.
- cc. Check freon/O₂ bottles pressure.

dd. Delay to 5 minutes prior to sunrise (01:25).

ee. Attach ESP O₂ line to ELSS.

SECOND DAY PASS EVA (01:30)

1. Cmd Pilot - REPRESS - SHUT
2. Pilot verify no warning tones.
3. Cmd Pilot - REPRESS - OPEN
4. Pilot tighten ESP restraint system.
5. Grasp excess umbilical for separation.
6. Cmd Pilot performs the following:
 - a. OAMS ATT CNTL PWR - ON
 - b. TDA CONTROL - UNDOCK
 - d. Undock, translate to 60 feet out-of-plane and fly formation with the Agena.
7. Cmd Pilot - REPRESS - CLOSED
8. Cmd Pilot perform the following:
 - a. OAMS ATT CNTL PWR - OFF
 - b. BACKPACK - DEPLOY
9. Pilot holds to handle bars.
10. Pilot performs the following:
 - a. Remove 25-foot umbilical from restraint on adapter.
 - b. Move to hatch area.
 - c. Open-close hatch.
 - d. Move to nose of S/C.
 - e. Attach umbilical to nose ring.
11. Pilot - Open ELSS O₂ QD Guard. Release umb O₂ plug from ELSS QD.

- f. Attach first ring of tether (15-foot point) to pigtail hook.
 - g. Detach umb-tether ring-hook from pigtail hook.
 - h. OAMS ATT CNTL PWR - ON
 - i. Using HHMU translate to 20 feet in front of S/C.
 - j. Evaluate HHMU in yaw, pitch, and roll stabilization and control.
 - k. Translate to 20 feet in front and 10 feet above S/C.
 - l. Translate down at $\frac{1}{2}$ ft/sec.
12. Cmd Pilot translate down to demonstrate S/C angular momentum removal and then continue flying formation with the Agena at approximately 100 ft.
13. Pilot perform the following:
- a. Return to S/C cabin.
 - b. Open hatch.
 - c. Change film pack in EV camera.
 - d. Secure HHMU to ESP.
 - e. Attach second ring on tether (45-foot point) to pigtail hook.
 - f. Evaluate tether dynamics and S/C reaction at 55 feet.
 - g. Move to nose of S/C using tether.
 - h. Attach third ring on tether (75-foot point) to pigtail hook.
14. Pilot evaluate tether dynamics, forces and S/C reactions at 85 ft.
15. Com Pilot translate to the EV Pilot.
16. Pilot hold to docking bar momentarily.
17. Pilot translate to the Agena at 1 ft/sec.
18. Cmd Pilot maintain slack in the tether during translation to the Agena.
19. Cmd Pilot translate to 250 feet from the Agena.

20. Pilot follow S/C at approximately 50 feet.
21. Pilot return to nose of S/C using tether.

INGRESS PREPARATION

1. Pilot performs the following while the Cmd Pilot is flying formation at 250 feet:
 - a. Attach D-16 tether to nose ring.
 - b. Detach umbilical from nose ring.
 - c. Retrieve suit end of 25-foot umbilical.
 - d. Attach umbilical ring to pigtail hook.
 - e. Attach umbilical O₂ to ELSS QD.
2. Cmd Pilot perform the following:
 - a. Cabin Repress - Open
 - b. EXT LT - DOCK
3. Pilot perform the following:
 - a. Remove tether hook from umbilical ring.
 - b. Remove tether ring from pigtail hook.
 - c. Remove tether elec from ELSS jumper.
 - d. Remove umbilical electrical from tether electrical
 - e. Attach umbilical elec to ELSS jumper.
 - f. Remove ESP O₂ from ELSS QD.
 - g. Release ESP restraint.
 - h. Remove tether elec from ESP.
 - i. Jettison ESP and 75-foot tether aft.
 - j. Move to S/C hatch, open hatch and stand in seat.
 - k. Retrieve EV camera and hand to Cmd Pilot.

INGRESS (02:10)

1. Pilot open hatch holding device (sawtooth).
2. Check hatch pawls to lock.
3. Check hatch seal for proper seating and debris.
4. Cmd Pilot perform the following:
 - a. PLATFORM - FREE
 - b. ATTITUDE CONTROL - PLAT
 - c. MANEUVER CONT - OFF
5. Remove EV visor.
6. Cmd Pilot retrieve umbilical and stow in footwell (Pilot assist).
7. Pilot perform the following:
 - a. Partially ingress cabin.
 - b. Release ELSS restraints and hand ELSS to Cmd Pilot.
 - c. Check helmet tie down strap.
 - d. Complete ingress.
8. Both pilots close hatch tight by pulling on hatch closing device.
9. Pilot complete hatch locking.
10. Cmd Pilot perform the following:
 - a. Hand ELSS to Pilot.
 - b. ATTITUDE CONTROL - PULSE
 - c. MANEUVER CONTROLLER - ON
11. Pilot stow hatch holding device.
12. Pilot perform the following:
 - a. CABIN VENT - CLOSED
 - b. ELSS BYPASS - BYPASS
 - c. ELSS EVAP - OFF
 - d. SEC O₂ BOTTLE - CLOSED
13. Both pilots monitor cabin pressure and when it reaches 4.5 psia, gradually open visors to depress suit.
14. Cmd Pilot - CABIN REPRESS - SHUT
15. Pilot position hatch gain and drive select to "N" (neutral).
16. Pilot monitor ELSS emergency O₂ pressure. When ELSS emergency O₂ pressure reaches 100 psi, shut off ELSS emergency O₂ supply.
17. Cmd Pilot perform the following:
 - a. CABIN AIR RECIRC - UP (Open)
 - b. Remove interconnect from ECS hoses and stow temporarily.
18. Pilot - SEC O₂ BOTTLE - OPEN

19. If required, Pilot perform the following:
 - a. RDR - STBY/ON
 - b. Send the following cmds to the Agena: (F.C. Mode 6)
 - 471 - ACS GAINS HI DK
 - 371 - ACS PRESS HI
 - *451 - ACS D/B WIDE
 - *571 - HYD GAINS DK
 - Wait 10 seconds
 - 271 - PWR RELAY RESET
 - 070 - L-BAND BEACON OFF
 - c. RDR - OFF
20. Cmd Pilot dock.
21. When the light comes on:
 - a. RIGID/STOP Switch - STOP
 - b. OAMS ATT CNTRL POWER - OFF
22. Pilot purge fuel cells (Sect #1 and then Sect #2).
23. Power down S/C as follows:
 - a. Agena BUS ARM - SAFE
 - b. ENCDR - OFF
 - c. PLATFORM - OFF
 - d. RATE GYROS (3) - OFF
 - e. EVENT TIMER - STOP
 - f. EXT LTS - OFF
 - g. CYRO QTY GAGE - OFF
 - h. AC POWER - OFF
 - i. ACME BIAS PWR - OFF
 - j. COOLANT PUMPS - AS DESIRED
 - k. HF ANT - EXT (for 1 min)
 - l. ENCDR - ON
24. Send cmd 140 (APPROACH LTS OFF) to the Agena.

25. If required, send the following cmds to the Agena:
(i.e. step 19 was performed) (F.C. Mode 1)
- 460 - ACS GAINS LOW
 - 370 - ACS PRESS LO
 - *451 - ACS D/B WIDE
- Wait 10 seconds
271 - PWR RELAY RESET
26. Pilot perform the following:
- a. Disconnect inlet "Y" connector and connect inlet ECS hoses.
 - b. SUIT FLOW - OPEN
 - c. Disconnect outlet "Y" connector and connect outlet ECS hoses.
27. Cmd Pilot hand ELSS to Pilot.
28. Pilot disconnect standup hoses from chestpack and from "Y" connectors. Hand to Cmd Pilot for stowage.
29. Cmd Pilot remove ELSS plugs. Hand to Pilot for connection into ELSS.
30. Pilot perform the following:
- a. BIOMED INSTRU C/B - OPEN
 - b. Disconnect electrical jumper from suit and umbilical and hand to Cmd Pilot for stowage. Disconnect S/C electrical connector from S/C end of umbilical and connect S/C electrical connector to suit.
 - c. BIOMED INSTRU C/B - CLOSED
31. Cmd Pilot perform the following:
- a. Disconnect umbilical O₂ socket from ELSS.
 - b. Disconnect tether from Pilot's suit and elbow guard.
 - c. Disconnect umbilical at S/C and place umbilical in bag.
32. Pilot turn ELSS battery off.
33. Cmd Pilot unstow camera box.
34. Pilot stow ELSS.
35. Pilot remove and stow hatch closing device.

36. Cmd Pilot stow miscellaneous EV gear.

Propellant Requirements

1. Undocking and docking	22.0 lbs.
2. Formation flying	<u>15.0</u>
Total	37.0 lbs.

RE-RENDEZVOUS

Purpose

1. To evaluate techniques for use in rendezvous with a passive target.
2. To investigate the lighting conditions during rendezvous with a passive target.
3. To evaluate the use of a sextant to provide angular data during rendezvous.

Flight Systems Configuration

1. Spacecraft
 - a. PLATFORM - ORB RATE
 - b. RATE GYROS (3) - PRI
 - c. COMPUTER - ON/CTCH UP
 - d. S/C docked
 - e. ENCDR - ON
 - f. Event Timer set at 00:00 and STBY
2. Agena
 - a. Attitude at 0° , -90° , 0° (S/C - 0° , 90° , 0°)
 - b. Flight Control Mode 6

Procedures

1. At 00:00
 - a. Start Event Timer counting up from 00:00
 - b. Start the GET stopwatch
 - c. COMPUTER - RNDZ/CTCH
 - d. START COMP -Push

- e. ENCDR - ON
 - f. Send the following cmds to the Agena:
 - 460 - ACS GAINS LOW
 - 370 - ACS PRESS LOW
 - *451 - ACS D/B WIDE

 - WAIT 10 SECS
 - 271 - PWR RELAY RESET
 - 041 - Record DATA
 - 071 - L-Band Beacon ON
 - g. Start the 16mm camera at 1 frame/sec
 - h. RT MANEUVER CONTROLLER - ON
 - i. Send Cmd 220 (unrigidize) to the Agena
 - j. Undock and translate to 60 ft.
 - k. Stop the 16mm camera
2. From 0:10:00 to 0:20:00
- a. RT MANEUVER CONTROLLER - ON
 - b. Maneuver to behind the Agena (S/C - 0° , 0° , 0°)
 - c. RT MANEUVER CONTROLLER - OFF
 - d. RDR - STBY/ON
 - e. Send the following cmds to the Agena:
 - 030 - T/M OFF
 - 021 - T/M ON
 - f. SCANNER - PRI
3. From 0:20:00 to 0:30:00
- a. PLATFORM - SEF
 - b. ATTITUDE CONTROL - PLAT
 - c. ALIGN PLAT
 - d. UNSTOW sextant and rendezvous book

4. From 0:30:00 to 0:45:30
 - a. PLATFORM - ORB RATE
 - b. ATTITUDE CONTROL - PULSE
 - c. Fly formation at 10 feet behind and 20 feet above the Agena
 - d. RETICLE - ON
 - e. COMPUTER - RNDZ/CTCH UP
 - f. Load the computer as follows:

25:00000
26:90200
27:00000
5. At 0:45:30 (Separation MINUS 3 MINS)
 - a. FDM - RATE
 - b. Pitch down to -90° at $2^{\circ}/\text{sec}$
 - c. FDR - COMP
 - d. FDM - ATT
6. At 0:48:00 (Separation MINUS 30 SECS)
 - a. ATTITUDE CONTROL - RATE CMD
 - b. Start 16mm camera at 1 frame/sec
 - c. START COMP - PUSH
7. At 0:48:30 (Separation minus 0 sec)

Transalte up to NULL IVI'S. At start of thrust, start GMT stopwatch.
8. Readout addresses 82, 80, and 81
9. Apply any necessary corrections to null addresses 82, 80, and 81.
10. See pages thru in Section I for the remainder of the Re-rendezvous Procedures.

DOCKED AGENA SPS TRANSLATION

Purpose

1. To demonstrate the Flight Crew's ability to command a docked SPS translation.
2. To evaluate the S/C - Agena systems during a SPS burn.

Flight Systems Configuration

1. Spacecraft
 - a. PLATFORM - ORB RATE
 - b. COMPUTER - CTCH UP
 - c. Computer loaded as follows (20 ft/sec out-of-plane translation)
25:00000
26:00000
27:00200
 - d. Event Timer set at 59:00 and in STBY
2. Agena
 - a. Attitudes at 0°, 90°, 0° (S/C - 0°, -90°, 0°).
 - b. Gyro compassing in Flight Control Mode 6.

Procedures

1. START COMP - PUSH
2. At the indicated times perform the following:
 - a. -60 sec - EVENT TIMER -UP
Send Cmd 041 - RECORD DATA
 - b. -46 sec - Send Cmd 450 - D/B NARROW
 - c. ENGINE - ARM
 - d. -30 sec - Send Cmd 521 - V/M ENABLE
 - e. -16 sec - Send Cmd 561 - SPS READY
 - f. - 0 sec - Send Cmd 560 - 200# ON
3. Translation (Note - Translation is nominally 23 seconds)
4. At + 23 sec - V/M CUT-OFF

5. At + 25 sec, perform the following:

- a. Send Cmd 550 - SPS CUTOFF
- b. Send Cmd 451 - D/B WIDE
- c. ENGINE - STOP

6. At + 33 sec, send the following cmds to the Agena:

- a. 520 - V/M DISABLE
- b. 030 - T/M OFF
- c. 021 - T/M ON

UNDocked AGENA PPS TRANSLATION

Purpose

1. To demonstrate the crews ability to control an undocked PPS Translation.
2. To obtain photographs of an Agena PPS Translation with the 16mm sequence (75mm lens) camera and the Hasselblad camera.

Flight Systems Configuration

1. S/C POWER - UP
2. Agena velocity meter loaded by ground.
3. Agena at 0°, -90°, 0°.
4. Agena in Flight Control Mode 6.

Time - 30:06

Procedures

1. 30 minutes prior to PPS Translation:
 - a. Set the Event Timer to 59:00 & STDBY
 - b. COMPUTER - RNDZ/CTCH UP
 - c. START COMP - Push
 - d. Send the following cmds to the Agena:
 - 460 - ACS GAINS LOW
 - 370 - ACS PRESS LOW
 - 451 - ACS D/B WIDE
 - 570 - HYD GAINS UNDK
 - WAIT 10 SECS
 - 271 - PWR RELAY RESET
 - 041 - RECORD DATA
 - 070 - L-BAND BEACON ON
 - 220 - UNRIGIDIZE
 - e. OAMS ATT CNTL POWER - ON
 - f. Start 16mm camera at 6 frames/second.
 - g. Undock
 - h. RDR - ON
 - Send the following cmds to the Agena:
 - 221 - RIGIDIZE
 - Wait 30 seconds
 - 271 - PWR RELAY RESET
 - 030 - T/M and RECORDER OFF
 - 021 - T/M ON
 - i. Stop 16mm camera.

j. COMPUTER - RNDZ/CTCH UP

k. Load the computer as follows:

25:00000

26:00020

27:00000

2. 22 minutes prior to PPS translation:

a. ATTITUDE CONTROL - RATE CMD

b. START COMP - PUSH

FDR - COMP

c. Translate AFT to null IVI's

FDR - RDR

d. ATTITUDE CONTROL - PULSE

e. Boresight on the Agena

3. Send the following cmds to the Agena:

040 - RECORD DATA

470 - ACS GAIN HI UNDK

371 - ACS PRESSURE HI

450 - ACS D/B NARROW

*570 - HYD GAIN - UNDK

271 - PW RELAY RESET

4. Event Timer - UP; Send Cmd 130 (ARM/STOP LOGIC UNDK) to the Agena.

5. At the indicated times, send the following cmds to the Agena:

a. -30 sec - 521 V/M ENABLE

b. - 0 sec - 501 PPS START

6. The following sequence of events occur:
 - a. +16 sec - SPS 16# thrust initiate
 - b. 1 MIN 20 SEC - PPS ready
 - c. 1 MIN 24 SEC - PPS thrust initiate
 - d. 1 MIN 26 SEC - PPS display
PPS display ON
V/M PPS CUTOFF
7. At the indicated times, send the following cmds to the Agena:
 - a. +1 MIN 28 SEC - 500 PPS OFF
 - b. +2 MIN 28 SEC - 520 V/M DISABLE
8. Event Timer - Stop
9. Send the following cmds to the Agena:
 - a. 460 - ACS GAINS LOW
 - b. 370 - ACS PRESS LOW
 - c. 451 - ACS D/B WIDE
 - d. *570 - HYD GAINS UNDK
WAIT 10 SEC
 - e. 271 - PWR RELAY RESET
 - f. 140 - Approach LTS OFF
 - g. 030 - T/M OFF
 - h. 070 - L-Band Beacon OFF
10. ENCDR - OFF
11. RDR - OFF

Propellant Requirements - 5.0#

GEMINI-AGENA FIRST BENDING MODE CHECK

Purpose

To obtain damping, frequency, and elastic coupling data of the Gemini-Agena 1st Bending Mode. NOTE: This check will be performed twice.

Flight Systems Configuration

1. S/C PLATFORM - ORB RATE
2. S/C RATE GYROS (3) - PRI
3. S/C COMPUTER - CTCH-UP
4. Agena at any cardinal heading

TIME - 07:35 (OVER HAW) & 25:30 (OVER GYM)

NOTE - This test must be conducted over a T/M site, since the data desired is only on R/T T/M.

Procedures

1. ATTITUDE CONTROL - DIRECT
2. Send the following Cnds to the Agena:
 - 300 - H/S - OFF
 - 350 - GEO RATE - OFF
 - 400 - ACS - OFF
3. Allow the Gemini-Agena to stabilize for at least 2 minutes.
4. Apply a 3-second pitch up thrust immediately followed by a 3-second pitch down.
5. Allow the Gemini-Agena to stabilize for 2 minutes.
6. Apply a 3-second yaw left thrust immediately followed by a 3-second yaw right thrust.
7. Allow the Gemini-Agena to stabilize for 10 seconds.
8. Proceed to the next operation

Propellant Requirements - 3.0#/check - 6.0 #

PLATFORM PARALLELISM CHECK

Purpose

1. To evaluate the dynamics of the S/C-AGENA combination in various flight control configurations.
2. To determine the respective alignment of the S/C-Agena while docked.

Flight Systems Configuration

1. S/C-Agena docked
2. Agena at 0° , 0° , 0° (TDA fwd) (S/C - 0° , 180° , 0°)
 - 301 - H/S - ON
 - 361 - GEO RATE - NORMAL
 - 351 - GEO RATE - ON
 - 310 - ROLL H/S - YAW
 - 321 - H/S PHASE - IN
 - 341 - GYRO COMPASSING - ON
 - 471 - ACS GAIN - HI DK
 - 371 - ACS PRESSURE - HI
 - 451 - ACS D/B - WIDE
 - 571 - HYD GAIN - DK
 - 271 - PW RELAY - RESET
 - 401 - ACS - ON
3. S/C PLATFORM Aligned/ORB RATE
4. S/C RATE GYROS (3) - PRI
5. S/C COMPUTER - CATCH-UP
6. FDR - PLAT
7. FDM - ATT

Time of Check - 06:35 to 06:55

Procedures

1. a. Insert the following into the computer via the MDU:

25:99000

26:00000

27:00000

- b. START COMP - PUSH
- c. Send Cmd 041 (RECORD DATA) to the Agena
- d. Observe and record in the flight book the following readings:
 - (1) Maximum readouts in left-right and up-down windows.
 - (2) Minimum readout in the fwd-aft IVI window.
 - (3) Maximum attitude indicator (FDI's) errors.
 - (4) Readout and copy pitch & yaw error (Addresses 59 & 58)
 - (5) Crew observations of oscillation rates and overall impressions of stability.

2. Flight Control 3 Check

- a. Send Cmd 450 (ACS DEADBAND NARROW) to the Agena.
- b. Allow one minute for stabilization.
- c. Observe and record in the flight book the following readings:
 - (1) Maximum readouts in left-right and up-down IVI windows.
 - (2) Minimum readout in the fwd-aft IVI window.
 - (3) Maximum attitude indicator (FDI's) errors.
 - (4) Readout and copy pitch & yaw error (Addresses 59 and 58)
 - (5) Crew observations of oscillation rates and overall impressions of stability.
 - (6) Time required to reach fine heading stabilization after Command 450 deadband NARROW was sent.

3. Flight Control 6 Check

- a. Send Cmd 471 - ACS GAIN HI-DOCKED

NOTE: This is very high gas usage mode, therefore, the check is limited to 45 seconds.

- b. At the end of 45 seconds observe and record the following readings:

- (1) Maximum readouts in left-right and up-down IVI windows.
- (2) Minimum readout in the fwd-aft IVI window.
- (3) Crew impression of stability.
- (4) Readout and copy pitch and yaw errors (Addresses 59 & 58)
- (5) Time required for vehicle to stabilize in the fine flight control mode.

- c. After recording data, send the following Cmds to the Agena:

451 - Deadband Wide

030 - T/M - OFF

021 - T/M - ON

SPC LOADED AGENA YAW MANEUVER

Purpose

To evaluate the accuracy of a ground loaded Agena yaw maneuver to 90° and 96° (84° S/C).

Flight Systems Configuration

1. S/C - Agena - DOCKED
2. Agena TDA Forward - 0° , 0° , 0° (S/C - 0° , 180° , 0°).
3. S/C PLATFORM - ALIGNED/ORB RATE
4. S/C COMPUTER - CTCH-UP
5. S/C RATE GYROS (3) - PRI
6. FDR - COMP
7. FDM - ATT
8. S/C ATTITUDE CONTROL - DIRECT
9. Agena memory loaded for yaw maneuver

NOTE: The Agena memory is loaded with a 90° yaw maneuver to $+90^{\circ}$ (TDA South), 6 minutes of gyro compassing at 90° , then a 6° yaw maneuver to 96° , 30 seconds at 96° and then yaw back to 0° (TDA Forward).

Procedures

NOTE: If the crew is not prepared to perform the SPC loaded yaw maneuver, send Cmd 240 (SPC DISABLE) to the Agena.

1. LOAD COMPUTER VIA MDU

25:00104

26:00000

27:00995

START COMP - START

2. At initiation time (8:20) the Agena starts a 90° yaw maneuver.
3. At initiation time plus 1 minute the yaw maneuver is completed.
4. Between initiation time plus 1 minute and initiation time plus 7 minutes, the Agena gyrocompasses at 90° .
5. At initiation time plus 7 minutes, the Agena yaws to 96° .
(4 seconds required)
6. The Agena remains at 96° for 2 minutes during which time the crew records the IVI readings and pitch and yaw errors (Addresses 59 & 58)
7. At 9 minutes 4 seconds, the Agena yaws back to 0° (TDA FORWARD) and configures for gyrocompassing.

APOLLO LANDMARK EVALUATION

Purpose

1. To evaluate selected Apollo landmarks for suitability as orbit navigation references.
2. To obtain photographs of landmarks for use in the evaluation and selection of landmarks.

Spacecraft Systems Configuration

1. AC POWER - ACME
2. ACME BIAS PWR -- PRI
3. Hasselblad camera prepared for photography (color film only).
4. Appropriate Apollo maps unstowed and prepared for use.
5. ATTITUDE CONTROL - PULSE

Procedures

1. Control spacecraft attitude to acquire landmark
2. Take one oblique photograph at acquisition and if difficulty arises in identifying landmark, take one photograph of area at nadir.

NOTE: If good unscheduled landmarks are acquired during the Apollo Landmark Investigation, take one photograph at the nadir.

3. RECORD - CONT
4. Identify task and mark time accomplished.
5. Comment on ease of acquisition and identification and weather conditions.
6. RECORD - OFF

Propellant Requirements:

6 passes @ .5#/pass - 3.0 #

AUXILIARY TAPE MEMORY EXERCISE

Purpose

1. To evaluate the auxiliary tape memory
2. To evaluate the capabilities of the touchdown predict mode.

Spacecraft Systems Configuration

1. AC POWER - IGS
2. ACME BIAS POWER - PRI
3. COMPUTER POWER - ON
4. COMPUTER MODE - PRE LN
5. MDU POWER - ON
6. ATM POWER - OFF
7. ATM MODE - STDBY

Procedures

Time

ATM Evaluation

1. Insert via MDU address 62 the ATM command for reprogramming and verify the T.D. predict module. 62:13303
2. ATM POWER - ON/RESET
3. ATM MODE - AUTO
4. Monitor IVI's and computer running light
 - a. IVI fwd-aft and lft-rt windows zero at start of operation.
 - b. The TPW is monitored in lft-rt window and counts up.
 - c. The module i.d. number (004) must appear in fwd-aft window when first TPW of module (133) appears in its window before computer running light comes on.
 - d. At end of operation computer running light - off
Fwd-aft IVI window reads (004)
Lft-rt IVI window reads (158)
Computer reverts to PRE-LN mode.
NOTE: Computer will make two runs through the ATM tape.
5. Insert via MDU address 62 the command to verify the reprogramming of the T.D. predict mode. 62:13302
6. Monitor IVI's and computer running light as before.
After computer running light comes on
ATTITUDE CNTL - RATE CMD
Thrust with $\frac{1}{2}$ sec thrusts every 15 secs - 1st in roll, then pitch, and yaw for 30 secs in each axis.
7. ATTITUDE CONTROL - PULSE

8. After the operation is complete:

ATM MODE - STDBY

ATM POWER - OFF

9. COMPUTER POWER - PRE LN/OFF

T. D. Predict Evaluation

1. COMPUTER POWER - ON
COMPUTER MODE - PRE LN
2. Ground updates orbital position and velocity initial conditions via DCS. Update verbally latitude and longitude of the 33-4 landing area.
3. Verify DCS load or enter T.D. Predict command load via MDIU: 13, 14, 15, 16, 17, 18, 19, 12.
4. After receiving initial conditions; at specified time (T_E') enter T_F via MDIU: 12:XXX:XX
5. COMPUTER - T.D. PREDICT
6. Select a running time (T_E'') and a time (T_{TRE}) after which T_R should occur based on orbital map ($4^\circ/\text{MIN}$ or $4 \text{ n.m.}/\text{SEC}$).
(T_{TRE0} = Orbital time from T_E'' to target - 20 min) (20 min from T_{TRE} to target).
7. Insert T_{TRE0} = 20:XXX:XX (MIN:SEC) into the MDIU and press enter.
8. At T_E'' :
START COMP - PUSH
MONITOR COMP RUNNING LIGHT
9. When comp running light goes off:
Read T_{TRE1} 85:XXX:XX (min:sec), referenced to T_{EO}
10. START COMP - PUSH
Read touchdown latitude @ 50K and copy:
86:XXX:XX
11. START COMP - PUSH
Read touchdown longitude @ 50K and copy:
87:XXX:XX
12. Plot touchdown latitude and longitude on world orbital map and record T_{TRE} beside the plotted value.
13. If the T.D. point is not acceptable, select a new T_{TRE}

Determine T_{TRE2} based on $\left\{ \left[2 \times (\theta_{TGT} - \theta_1) \right] \div 4^\circ/\text{min} \right\} =$

ΔT_1 to insure overshoot

$$T_{TRE2} = T_{TRE1} + \Delta T_1$$

14. Repeat 7 thru 12 using T_{TRE_2}

15. Determine T_{TRE_3}

Then the proportion of time between T_{TRE_1} and T_{TRE_2} from T_{TRE_1} that is required to reach θ_{TGT} is = the proportion of distance between θ_1 and θ_2 that is required to reach θ_{TGT} , or:

$$T_{TRE_3} = T_{TRE_1} + \left(\frac{\theta_{TGT} - \theta_1}{\theta_2 - \theta_1} \right) \Delta T_1$$

16. Repeat 7 thru 12 using T_{TRE_3}

17. If the T.D. point is acceptable, insert the accept code 88:11111 and press enter.

18. Set Event Timer to STDBY for warmup

19. START COMP - PUSH (180 sec hold begins for Event Timer set and/or reject)

START GET

20. Comp light will come on when the START Comp is pushed and the T_{RC} (21:XXX:XX) (time to retro) will be displayed automatically.

21. Set Event Timer to T_{RC} , start Event Timer counting down when comp light goes out (3 min on GET)

22. Insert ϕ_{TGT} (10), θ_{TGT} (11) during 3 mins comp lite ON

23. If reject necessary: Enter 88:99999 during 3 min comp lite ON

24. COMPUTER MODE - PRE LN

25. Insert via MDIU a new T_R
 T_R - 02:899:59

Read out T_R and check to see if value is correct.

Propellant Requirement - 2.0#

EXPERIMENT D-3
MASS DETERMINATION

Purpose

To test the technique and accuracy of a direct contact method of determining the mass of an orbiting object (Agena Target Vehicle).

Flight Systems Configuration

1. S/C - GATV DOCKED
2. Agena ACS OFF by the following cmds:
350 - GEO RATE - OFF
300 - H/S - OFF
400 - ACS - OFF
3. S/C RATE GYROS (3) - PRI
4. S/C COMPUTER - CTCH-UP
5. S/C PLATFORM - ORB RATE

Time

1. Calibration Translation - Same as Phase Adjust Translation
2. Mass Determination Translation - 29:20

Procedures

1. Calibration translation
 - a. Time duration of Phase Adjust & Circulazation Translation
 - b. Readout Address 80 to determine thrust accomplished to 0.1 ft/sec
 - c. Read and copy S/C propellant and O₂ quantity.
2. Mass determination translation
 - a. Read and record propellant gage reading in the flight book.
 - b. Zero address 25, 26 and 27 in the computer.
 - c. ATTITUDE CONTROL - RATE CMD
 - d. ControlSpacecraft attitudes to 0°, -90°, 0° using the S/C

- e. Maneuver Controller - Unstow
- f. Maneuver Controller - ON
- g. ATTITUDE CONTROL - RATE CMD
- h. Cmd Pilot - Translate fwd for 25 seconds
- i. After 18 seconds of thrust, the pilot push START COMP
- j. Pilot time duration of translation and give Cmd Pilot a mark to terminate thrust.
- k. Readout Address 80, 81 and 82 to determine thrust accomplished to 0.1 ft/sec
- l. Read and copy S/C propellant and O₂ quantity.

3. After the experiment is completed, proceed to the next operation.

NOTE: Due to time constraints, the computations for this experiment will be performed postflight.

Propellant Requirements

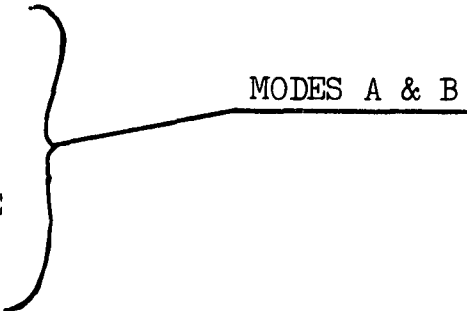
1. Translation	17.3
2. Attitude	<u>2.5</u>
Total	19.8

EXPERIMENT D-14
UHF - VHF POLARIZATION

Purpose:

To obtain precise measurements of the electron content of the ionosphere below the spacecraft by measuring the Faraday rotation of electromagnetic transmissions from the spacecraft.

Spacecraft Systems Configuration:

1. Undocked
 2. Experiment antenna extended (See Antenna Operation Procedures)
 3. Reticle mounted
 4. ACME BIAS PWR - PRI
 5. AC POWER - IGS
 6. ATTITUDE CONTROL - PULSE
 7. PLAT UP AND ALIGNED
- 
- MODES A & B

Procedures:

A. Mode A (with platform and computer)

1. Ten minutes prior to task start:
 - a. COMPUTER - CTCH UP
 - b. Load computer with pointing commands:
25:XXXXX
26:XXXXX
27:XXXXX
 - c. START COMP - PUSH
 - d. NULL FDI's
 - e. ROLL 158° RIGHT (Determined from 8-ball)

2. At task start time:

a. POLARIZATION XMTR - ON

3. 12 minutes after task start:

a. POLARIZATION XMTR - OFF

b. COMPUTER - PRE LN/OFF

B. Mode B (Without Computer)

If the computer is not available, the above procedures will be used with the references to the computer deleted. Spacecraft pointing will be accomplished by using the 8-ball to obtain the updated values of pitch and yaw.

C. Mode C (Without Computer and Platform)

1. Ten minutes prior to task start:

a. ACME BIAS PWR - PRI

b. AC POWER - ACME

c. ATTITUDE CONTROL - PULSE

d. YAW 90° left or right as updated

e. PITCH DOWN until the reticle is aimed at the horizon.

f. ROLL 158° RIGHT as indicated by the reticle pattern.

2. Two minutes prior to task start:

a. POLARIZATION XMTR - ON

b. Hold attitudes during pass

Record comments about attitude holding results.

3. Ten minutes after pass, POLARIZATION XMTR - OFF

D. Antenna Operation Procedures:

1. Antenna Erection
 - a. POLARIZATION ANT - EXT (1 minute)
 - b. POLARIZATION ANT - OFF
2. Antenna Retraction (Before S/C Adapter Separation)
 - a. POLARIZATION ANT - RET (1 minute)
 - b. POLARIZATION ANT - OFF

Experiment Equipment Power Requirements:

1. Antenna erection or retraction - 80 watts for 10-15 seconds
2. Experiment transmitter - 45 watts

Experiment Task Locations and Requirements:

1. Hawaii station - 159.775° W, 22.033° N
2. Antigua station - 61.79° W, 17.063° N
3. An acceptable S/C pass should have a minimum 20° maximum elevation angle. There is no upper limit, but 45° maximum elevation is ideal.

Electrical C/B Requirements:

1. Agena Pwr C/B - transmitter
2. Agena Control C/B - antenna extension and retraction.

Propellant Requirements - 0.75 # pass

7 passes - 5.25#

EXPERIMENT D-15
NIGHT IMAGE INTENSIFICATION

Purpose:

To investigate the use of a television system to observe land and sea features under low-light conditions.

Spacecraft System Configuration:

1. Undocked
2. Viewing monitor mounted and connected to experiment system.
3. Cabin lighting reduced.
4. Reticle mounted in left window.

Detailed Procedures:

1. To activate experiment equipment:
 - a. TV C/B - CLOSED
 - b. TV - STDBY (5 minutes)
 - c. AGENA BUS ARM - EXP (first time only)
 - d. TV - DOOR OPEN and release (first time only)
 - e. AGENA BUS ARM - SAFE (first time only)
 - f. TV - ON
 - g. TV - PWR START and release

NOTE: The following modes of operation assume that the above experiment activation has been completed.

2. Mode A Scanning Mode
 - a. ACME BIAS POWER - PRI
 - b. AC POWER - ACME (IGS if PLAT IS BEING USED)
 - c. ATTITUDE CONTROL - PULSE
 - d. Control to PITCH DOWN 90° attitude.
 - e. Mark time and identify task on recorder.
 - f. Press PHOTO RECORD BUTTON as feature of interest passes through view.

- g. Pilot record scene description on voice recorder.
 - h. CMD Pilot describe out-the-window scene on voice recorder.
3. Mode B Tracking Mode
- 5 minutes prior to Tracking Task:
- a. Platform powered up and aligned
 - b. ACME BIAS PWR - PRI
 - c. ATTITUDE CONTROL - PULSE
 - d. Mark time and identify task on recorder
 - e. Pilot maneuver to acquisition pointing directions as updated
 - f. Pilot optimize TV Beam Control
- Start of Tracking Task:
- a. Pilot track designated scene using TV monitor
 - b. Press PHOTO RECORD BUTTON
 - c. Pilot record comments and description on voice recorder.
 - d. CMD Pilot describe out-the-window scene
- End of Tracking Task:
- a. Release PHOTO RECORD BUTTON
 - b. Record comments and run completion time
4. Mode C Search/Tracking Mode
- a. ACME BIAS PWR - PRI
 - b. AC PWR - ACME (IGS if PLAT is being used)
 - c. ATTITUDE CONTROL - PULSE
 - d. Pilot search ahead of S/C track for some prominent feature on the TV monitor
 - e. Pilot track this feature until it passes 20° past nadir.
 - f. Press PHOTO RECORD BUTTON while feature is being tracked

- g. Pilot record comments and describe scene and task on voice recorder
- h. CMD Pilot describe out-the-window scene
- 5. Mode D Thruster Effects (at end of experiment time)
 - a. Maneuver S/C to obtain some scene in TV monitor.
 - b. Translate S/C up 2 seconds
 - c. Pilot note any degradation of monitor view and record comments on recorder
- 6. To deactivate experiment equipment:
 - a. TV - OFF
 - b. Stow monitor

Features of Interest:

- 1. Coastlines
- 2. Peninsulas
- 3. River mouths and intersections
- 4. Islands
- 5. Snow-capped mountains
- 6. Marshes and inland lakes
- 7. Deserts and salt lakes
- 8. Cities and other man-made features
- 9. Sea conditions and clouds

Propellant Requirements:

0.75 lbs/task

Experiment Equipment Power Requirements:

TV-STDBY = 20 watts

TV-ON-PWR START = 150 to 165 watts

Electrical C/B Requirements:

1. Agena Pwr C/B - Filament Relay Control (STDBY) and Mirror
Fairing Jettison
2. Agena Control C/B - 28VDC Series Filament Supply (STDBY) and
Power Supply Start (PWR START)
3. TV C/B - TV Power (ON)

EXPERIMENT D-16

MINIMUM REACTION POWER TOOL EVALUATION

Purpose

To evaluate man's capability to perform work under space conditions.

Spacecraft Systems Configuration

1. Pilot EVA at D-16 work area.
2. 16mm sequence camera mounted. Use a frame rate of 6 frames per second.

Procedures

- a. Grasp handrail and position self for knee tether attachment.
- b. Attach right knee tether to handrail.
- c. Grasp tool box handle, release lock, and extend toolbox until positive lock is engaged.
- d. Open tool box, extend power tool handle, check light switch on, forward-reverse switch to forward position, and tool in impact mode.
- e. Grasp power tool, tighten instrumented bolt for five (5) seconds.
- f. Reverse switch, loosen instrumented bolt until "just loose".
- g. Unscrew, in succession four (4) worksite bolts.
- h. Stow power tool, turn over worksite plate and hand-start three (3) bolts.
- i. Reverse switch, grasp power tool, tighten three (3) bolts.
- j. Stow power tool on tool box lid and remove hand tool.
- k. Tighten instrumented bolt for five (5) seconds, and loosen instrumented bolt.
- l. Stow hand tool in tool box.
- m. Detach knee tether from handrail.
- n. Remove power tool, check light on and tool in impact mode.

- o. Unscrew, in succession three (3) worksite bolts.
- p. Stow power tool, turn over worksite plate and hand-start four (4) bolts.
- q. Reverse switch, grasp power tool, tighten four (4) bolts.
- r. Using power tool, tighten instrumented bolt for five (5) seconds.
- s. Reverse switch, loosen instrumented bolt until "just loose".
- t. Stow power tool in tool box, fold handle, and remove hand tool.
- u. Tighten instrumented bolt for five (5) seconds, and loosen instrumented bolt.
- v. Stow hand tool in tool box.
- w. Close tool box lid.
- x. Release latch on worksite and stow box in adapter section.

NOTE: During performance of Steps "r" and "s", if the astronaut is able to stabilize his position at the worksite he may release his grip on the tool box handle. This will be done at the astronaut's discretion depending on his realtime analysis of his ability to remove motions of his body relative to the spacecraft and work area.

EXPERIMENT M-5
BIOASSAYS OF BODY FLUIDS

Purpose

To analyze body fluids to determine the physiological stress resulting from space flight.

Spacecraft Systems Configuration

Urine receiver connected
Sample bag unstowed

Procedures

Mark sample bag C or CP and GET
Collect sample
Stow sample bag

NOTE: Log if tracer pump is passed more than once per sample.

EXPERIMENT S-1
ZODIACAL LIGHT PHOTOGRAPHY

Purpose

To obtain photographs of the zodiacal light, airglow, and the day sky.

Spacecraft Systems Configuration

1. Reticle mounted in left window.
2. 35mm Zodiacal Light camera mounted in right window.
3. AC POWER - ACME
4. RATE GYROS - PRI or SEC
5. FDI SCALE RANGE - LO
6. FDM - RATE
7. ATTITUDE CONTROL - PULSE
8. All Cabin Lighting - OFF

If lighting is required, momentary actuation of the fingertip lights should be used when the camera shutter is closed, i.e., red camera light is ON.

Conditions

1. Sunset, and darkness, and sunrise on one rev.
2. Moon light not in camera field of view

Procedures

1. Zodiacal Light photographs
5 minutes prior to sunset

a. Maneuver S/C as follows:

S/C BEF to start

Yaw 20° right

Pitch down to earth horizon

Roll 90° left

b. Track the earth limb for the remainder of the night and morning pass.

15 seconds after sunset

a. Automatic Camera - ON

b. Maneuver S/C to track earth's limb only when RED LIGHT is ON.

c. Record start time and comments in log.

5 minutes after sunset

a. Automatic Camera - OFF

b. Yaw 0°; pitch 17° down; roll 90° left. S/C BEF to start.

c. Record stop time and comments in log.

2. Night Airglow Photographs

a. Take one (1) exposure every four (4) minutes for the remainder of the night.

b. Mark times and comments in log.

c. Continue to track the earth's horizon.

3. Day Sky Photographs

2 minutes after S/C sunrise:

a. CAMERA - ON

b. Continue to track the earth's horizon.

7 minutes after S/C sunrise:

a. CAMERA - OFF

b. Mark times and comments in log.

NOTE: 20 exposures at 15 seconds each are available. In the automatic mode, there are 30 seconds between each exposure.

Propellant Requirements - 4.0#

EXPERIMENT S-3

FROG EGG GROWTH

Purpose

To study the effects of zero gravity on the cellular development of frog eggs.

Spacecraft Systems Configuration

Not critical.

OPERATION	NOMINAL TIME OF OPERATION (hr:min GET)	OPERATION
1	As updated from the ground	R/H Unit #1
2	2:10	R/H Unit #II R/H & L/H Switches-ON (Heat)
3	27:06	*L/H Unit #I

*Note: The L/H Unit #II will not be fixed during the flight.

Procedures

1. Twist the designated handle 90° to a positive stop in the direction shown by the yellow arrow.
2. Release handle.
3. Give time mark of operation to the ground site for relay to MCC.

Electrical Power Requirements

5.5 watts cooling (each)
2 watts heating (each)

Electrical C/B Requirements

Agena Pwr C/B

EXPERIMENT S-7

CLOUD TOP SPECTROMETER

Purpose

To obtain spectrograms of cloud formations

Spacecraft Systems Configurations

1. AC POWER - ACME
2. RATE GYROS - PRI
3. ATTITUDE CONTROL - PULSE
4. Spectrometer prepared for photographs (spectrometer is hand-held)

Conditions

1. Cloud should be at least 10 miles X 10 miles in area.
2. Sun should be at least 10° above horizon.

Procedures

1. Several spectrograms will be taken of different type cloud formations.
2. For each measurement the S/C should be oriented, if possible, such that the optical look axis of the spectrograph is vertical (S/C window parallel to local horizontal).
3. Each cloud formation will be photographed 2 times. The camera setting should be $1/8$ sec for the first photo and $1/4$ sec for the second photo.
4. The camera contains 30 usable frames, enough for 15 tasks.
5. Once during the flight the S/C should be oriented such that the sun shines through the window. Using the spectrometer, photograph the white calibration card with the card normal to the sun's rays. The card will be returned for post flight analyses.

Areas to be Photographed

- | | |
|----------------|------------|
| 1. SAN DIEGO | 4. GUAM |
| 2. PUERTO RICO | 5. HAWAII |
| 3. DAKAR | 6. HOUSTON |

Voice Recorder Usage

1. Prior to task:

- a. RECORD - CONT
- b. Identify task to be accomplished.

2. During the task:

- a. Mark time on voice tape when photographs were taken.
- b. Describe cloud and indicate angle with the cloud and the zenith angle.

3. After task:

RECORD - OFF

Propellant Required

(0.5) = 5.0#

EXPERIMENT S-9

NUCLEAR EMULSION

Purpose

To obtain data for the study of the cosmic radiation incident upon the earth's atmosphere.

Spacecraft Systems Configuration

1. S/C in heads up condition $\pm 15^\circ$.
2. For South Atlantic Anomaly area, when possible, S/C in BEF heads up configuration $\pm 15^\circ$.

Procedures

1. Normal operation
 - a. NUC - EM - MODE 1 at insertion.
 - b. Record time of actuation in data book.
 - c. NUC - EM - OFF after EVA.
 - d. Record time of package recovery.
2. Backup operation (as directed by ground support)
 - a. S/C - normal or anomaly orientation.
 - b. NUC - EM - MODE 2 (15 seconds)
 - c. NUC - EM - OFF
 - d. Record time of actuation in data book.
 - e. NUC - EM - MODE 2 (15 seconds) - (if planned to be out of S/C orientation more than 10 minutes).
 - f. NUC - EM - OFF (at least 15 seconds).
 - g. Record time of actuation and time of orientation deviation in data book.

3. Experiment Package Recovery

- a. S/C - EVA condition
- b. Pilot slightly rotate package handle.
- c. Pilot connect tether to package handle.
- d. Pilot rotate handle to upright position.
- e. Pilot pull package from mounting well by the handle.
- f. Pilot hand experiment package to CMD pilot.
- g. Disconnect tether.
- h. CMD pilot fasten experiment package to interior S/C walls with the provided Velcro until after EVA.
- i. After EVA, pilot stow experiment package in its insulated receptacle.

EXPERIMENT ELECTRICAL REQUIREMENTS

MODE 1:

38 m.a. for 0.6 sec every 60 seconds and 0.54 m.a. for the remaining time

MODE 2:

38 m.a. for 4 seconds and 2.5 m.a. thereafter as long as NUC-EM-MODE 2.

Electrical C/B Requirement:

Agna Pwr. C/B

EXPERIMENT S-10

MICROMETEORITE CRATER COLLECTION

PURPOSE

To collect craters of micrometeorite impacts on specially prepared and polished surfaces that can be recovered for study and analysis.

SPACECRAFT SYSTEMS CONFIGURATION

1. S/C docked with ATV
2. Pilot EVA

PROCEDURES

1. To open the collector (Mode A)
 - a. Remove forward fairing and discard.
 - b. Attach wrist tether to collector handle.
 - c. Remove collector from bracket.
 - d. Attach collector to Velcro.
 - e. Open collector being careful not to touch prepared surfaces.
 - f. Detach wrist tether.
 - g. CMD pilot record time of collector deployment.
2. To recover the collector (Mode B)
 - a. Attach wrist tether to collector handle.
 - b. Close collector.
 - c. Remove collector from Velcro attachment on the target vehicle.
 - d. Attach unit to Velcro on chest pack until return to S/C.
 - e. After return to S/C, lock the handle and insert the unit in its stowage bag.

METEOR OBSERVATION

Purpose

To obtain a meteor influx rate as a function of visual magnitude.

Conditions

Complete darkness following sunset, just before sunrise, and at midnight, local time.

Procedures

1. Pilot observe a familiar star group to determine faintest magnitude star that can be observed.
2. Check that no vented materials from the spacecraft will interfere with viewing conditions during meteor observation period (5 minutes).
3. Cmd Pilot orient spacecraft straight down if possible. If spacecraft cannot be oriented due to lack of fuel, the meteors can be counted if the spacecraft is revolving so the earth is visible for a reasonable length of time. Start count when horizon reaches top of spacecraft window and stop when it reappears in the spacecraft window. Record spin rate of spacecraft so the viewing area and time can be determined.
4. Pilot keep head in restrained position to maintain same viewing area through the window.
5. Count meteors for a period of about 5 minutes following sunset, 5 minutes at local midnight, and 5 minutes just prior to sunrise.
6. The following data should be recorded the Cmd Pilot:
 - a. Length of viewing period.
 - b. Approximate magnitude of each meteor.
 - c. Spacecraft orientation relative to earth.
 - d. Estimation of angular distance of each meteor from a line to the center of the earth.
 - e. Time of observation (spacecraft clock).
 - f. Approximate direction of travel of each meteor.
 - g. Unusual features regarding the meteor, varying brightness, color fragmentation, etc.

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