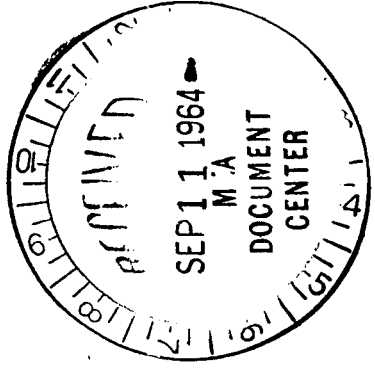


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VOLUME II

SATURN IB MISSION PLAN & TECHNICAL INFORMATION CHECK LIST

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FOREWORD

The Saturn IB Mission Plan and Technical Information Checklist consists of Volumes I and II. Volume I, a confidential document, contains vehicle configuration, weight, schedule, and mission information. This volume, Volume II, contains the following information.

- a. Saturn IB Launch Vehicle data.
- b. Stage and Instrument Unit configuration for each mission.
- c. Test objectives for each mission.
- d. Measurement summary for each mission.

Unless otherwise noted, vehicles SA-206 through SA-210 are identical to SA-205. Vehicles SA-211 and SA-212 are back-up vehicles for Apollo/Saturn IB missions.

Comments and suggestions should be directed to Mr. O. E. Moon, R-P&VE-VAS. A comment sheet is included in the back of this document for that purpose.

SATURN IB MISSION PLAN AND
TECHNICAL INFORMATION CHECKLIST
VOLUME II

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SECTION I.

GENERAL

1. SCOPE.

This document contains technical information relative to the Saturn IB configuration, test objectives, measuring program, and payload. The type of information and method of coverage are described in the following paragraphs. The data for the Saturn IB Launch Vehicle and payload are contained in Tables 1 and 2, respectively.

2. SATURN IB CONFIGURATION.

This information, contained in Section II, is divided into three areas of coverage: S-IB Stage, S-IVB Stage, and Saturn IB Instrument Unit. The major components and subassemblies of each of the three assemblies are listed in checklist form (according to the manufacturer's generation breakdown). Component and subassembly drawing numbers effective for specific launch vehicles are included. Effectivity of an item to a specific flight vehicle is indicated either by the applicable dash number or an "X".

3. SATURN IB TEST OBJECTIVES.

This information, contained in Section III, consists of the test objectives to be accomplished by the complete Saturn IB Launch Vehicle, its two stages and Instrument Unit. The test objective items peculiar to a specific launch vehicle mission are indicated with an "X" in the column under the appropriate vehicle number. After post flight evaluation, a letter indicating the "percent attainment of the test objective" will replace the "X" in the column. The percent attainment information will serve as a history for the test objectives.

4. SATURN IB MEASURING PROGRAM.

This information, contained in Section IV, is divided into three areas of coverage: S-IB Stage, S-IVB Stage, and Instrument Unit. The parameters to be measured and the number of measurements for a particular mission are tabulated. After the mission has been flown the number of usable measurements obtained during the flight will be recorded to serve as a history.

5. ILLUSTRATIONS.

Section V contains illustrations of interest to the user of this document.

Table 1. SATURN IB Launch Vehicle Data

Item	S-IB Stage	S-IVB Stage	Instrument Unit
Manufacturer	Chrysler Corporation	Douglas Aircraft	MSFC
Dimensions Length Diameter Span Across Fins Fin Area	80.2 ft. (24.5 m.) 21.4 ft. (6.5 m.) 40.7 ft. (12.4 m.) 53.5 ft. ² (5.0 m. ²) each (8 fins)	59.1 ft. (18.0 m.) [*] 21.7 ft. (6.6 m.) Not Applicable Not Applicable	3.0 ft. (.9 m.) 21.7 ft. (6.6 m.) Not Applicable Not Applicable
Main Propulsion System Engines Total Nominal Thrust Propellants Nominal Mixture Ratio (Oxidizer to Fuel) Expansion Ratio Oxidizer NPSH Req'd. Fuel NPSH Req'd. Turbine Propellants Engine Mounting	Rocketdyne H-1 (8) 1,600,000 lbs. (sea level) (7,116,000 N) LOX & RP-1 2.26:1 8:1 35 ft. (10.7 m.) of LOX 35 ft. (10.7 m.) of RP-1 LOX & RP-1 Inboard (4) 32 in. (81 cm.) radius 3° Cant Angle Outboard (4) 95 in. (241 cm.) radius 6° Cant Angle Hydraulic +8.0° square pattern (outboard engines only) 15°/sec. each plane 31 radians/sec. ²	Rocketdyne J-2 (1) 200,000 lbs. (vacuum) (890,000 N) LOX & LH ₂ 5:1 27.5:1 25 ft. (7.6 m.) of LOX 130 ft. (39.6 m.) of LH ₂ LOX & LH ₂ Stage Centerline Hydraulic +7.0° square pattern 8°/sec. each plane 30 radians/sec. ²	Not Applicable
Actuators Gimbal Angle Gimbal Rate Gimbal Acceleration			

Note: Quantities are given in both English and International System of Units.

* Includes approx. 8 inch protrusion of LH₂ container beyond S-IVB/IU mating surface.

Table 1. SATURN IB Launch Vehicle Data (Cont'd)

Item	S-IB Stage	S-IVB Stage	Instrument Unit
Pressurization System Oxidizer Container	Initial- helium from grd source S-IB Burn- GOX	Helium	Not Applicable
Fuel Container	Helium	Initial- helium from grd source S-IVB Burn- GH_2	
Design Pressure- Oxidizer	58.5 psia (40.3 N/cm^2 . abs.)	44 psia (30.3 N/cm^2 . abs.)	
Design Pressure- Fuel	34.2 psia (23.6 N/cm^2 . abs.)	42 psia (29.0 N/cm^2 . abs.) (201 thru 203)	
Ullage-Oxidizer		39 psia (26.9 N/cm^2 . abs.) (204 and subs.)	
Ullage-Fuel	1.5% 1.8%	9.9% 17.6%	
Environ. Control System Preflight Conditioning (Air)	Aft Compartment Instrument Cannisters F1 & F2	Aft Compartment	I. U. and S-IVB fwd. skirt, plus methanol/water for electronic equipment
Preflight Purge (GN_2)	Aft Compartment Instrument Cannisters F1 & F2	Aft Compartment	I. U. and S-IVB fwd. skirt
Flight	Not Applicable	Not Applicable	Methanol/water in closed loop system
Auxiliary Propulsion System	Not Applicable	TAPCO (6)	Not Applicable
Engines		150 lbs. (Vacuum)	
Nominal Thrust		each (666 newtons)	
Propellants		Hypergolic (MMH & N_2O_4)	
Arrangement		Two modules containing three engines each located on aft skirt	

Table 1. SATURN IB Launch Vehicle Data (Cont'd)

Item	S-IB Stage	S-IVB Stage	Instrument Unit
Separation System Severance Method	Not Applicable	Short coast, single-plane mode skin cutting at aft interstage/aft skirt interface	Not Applicable
Retromotors Propellants Arrangement		Thiokol TE-29-IB (4) Solid Equally spaced circumferentially on aft interstage	
Ullage Motors Propellants Arrangement		Thiokol TX-280 (3) Solid Equally spaced circumferentially on aft skirt	
Astrionics Systems Guidance	Roll & pitch program during S-IB burn PAM/FM/FM (2) - 240.2 mc & 244.3 mc. SS/FM - 252.4 mc PCM/FM/FM - 256.2 mc ODOP	Path adaptive guidance mode during S-IVB burn SS/FM - 258.2 mc	All-inertial guidance system PAM/FM/FM (2) - 250.7 mc & 245.3 mc SS/FM - 259.7 mc PCM/FM/FM - 255.1 mc C-Band Radar AZUSA Mistram Minitrack Radar Altimeter
Telemetry Links		Not Applicable	
Tracking		Batteries - 28 vdc Inverter-Converter - 28 vdc to 115 & 2 vac 400 cps Single Phase and 117, 22 & 5 vdc Master Measuring Voltage Supply - 28 vdc to 5 vdc	Batteries - 28 vdc 56V Power Supply Master Measuring Voltage Supply - 28 vdc to 5 vdc
Electrical	Batteries - 28 vdc 450 VA Inverter 28 vdc to 115 vac 400 cps three phase Master Measuring Voltage Supply - 28 vdc to 5 vdc		

Table 2. SATURN IB Payload Data

Item	Manufacturer	Length	Dia.	Functional Status					Propulsion							
				Cond.	Launch Vehicle Mission					Engine(s) (Live)	Motor(s) (Live)	Launch Vehicle Mission				
					SA-201	SA-202	SA-203	SA-204	SA-205			SA-201	SA-202	SA-203	SA-204	SA-205
Launch Escape System	North American Aviation	400 in. (1016 cm.)	26 in. (66 cm.)	Inert Live	X	X	X	X			Tower jettison Launch escape Pitch control	X	X	X	X	X
Command Module	North American Aviation	134 in. (340 cm.)	154 in. (391 cm.)	Inert Live	X	X	X	X		Reaction control		X	X	X	X	X
Service Module	North American Aviation	265 in. (673 cm.)	154 in. (391cm.)	Inert Live	X	X	X	X		Main Reaction control		X	X	X	X	X
Lunar Excursion Module (Ascent Stage)	Grumman Aircraft Corporation	122 in. (310 cm.)	177 in. (449cm.)	Inert Live	X	X	X	X	First flight on SA-206	Ascent Reaction control		X	X	X	X	Active on SA-206 and subsequent
LEM Adapter	North American Aviation	336 in. (853 cm.)	154 in. (391 cm.) Fwd. 260 in. (660cm.) Aft													

← Not Applicable →

SECTION II.

II.	SATURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.	S-IB Stage Assy.	60C10002	X	X	X	X	X
1.1	Propellant Container Assy.	60C10003	X	X	X	X	X
1.1.1	LOX Center Container Unit Assy.	60C10004	X	X	X	X	X
	105" LOX Container Assy.	60C10014	X	X	X	X	X
	Tail Unit Assy.	60C10013	X	X	X	X	X
	Spider Beam Assy.	60C10015	X	X	X	X	X
1.1.2	LOX Container Unit Assy. No. 1	60C10005	X	X	X	X	X
1.1.3	LOX Container Unit Assy. No. 2	60C10006	X	X	X	X	X
1.1.4	LOX Container Unit Assy. No. 3	60C10007	X	X	X	X	X
1.1.5	LOX Container Unit Assy. No. 4	60C10008	X	X	X	X	X
1.1.6	Fuel Container Unit Assy. No. 1	60C10009	X	X	X	X	X
1.1.7	Fuel Container Unit Assy. No. 2	60C10010	X	X	X	X	X
1.1.8	Fuel Container Unit Assy. No. 3	60C10011	X	X	X	X	X

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II. SATURN IB CONFIGURATION S-IB STAGE		Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.1.9	Fuel Container Unit Assy. No. 4	60C10012	X	X	X	X	X
1.1.10	Instrumentation Assy. No. 1	60C10233	X	X	X	X	X
1.1.11	Instrumentation Assy. No. 2	60C10234	X	X	X	X	X
1.2	Fin Structure	60C30650	X	X	X	X	X
1.2.1	Fin I Meas. Instl.	60C10321	X	X	X	X	X
1.2.2	Fin II Meas. Instl.	60C10322	X	X	X	X	X
1.2.3	Fin III Meas. Instl.	60C10323	X	X	X	X	X
1.2.4	Fin IV Meas. Instl.	60C10324	X	X	X	X	X
1.2.5	Fin V Meas. Instl.	60C10325	X	X	X	X	X
1.2.6	Fin VI Meas. Instl.	60C10326	X	X	X	X	X
1.2.7	Fin VII Meas. Instl.	60C10327	X	X	X	X	X
1.2.8	Fin VIII Meas. Instl.	60C10328	X	X	X	X	X
1.3	Flame Shield	30C03300	X	X	X	X	X
1.4	Rocket Engine Mod. 1	60C20411	X	X	X	X	X

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SA TURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.5	Rocket Engine Mod. 2	60C20412	X	X	X	X	X
1.6	Rocket Engine Mod. 3	60C20413	X	X	X	X	X
1.7	Rocket Engine Mod. 4	60C20414	X	X	X	X	X
1.8	Rocket Engine Mod. 5	60C20415	X	X	X	X	X
1.9	Rocket Engine Mod. 6	60C20416	X	X	X	X	X
1.10	Rocket Engine Mod. 7	60C20417	X	X	X	X	X
1.11	Rocket Engine Mod. 8	60C20418	X	X	X	X	X
1.12	Pyrotechnic Instl.	60C20446	X	X	X	X	X
1.13	Hydraulic System Instl.	60C20440	X	X	X	X	X
1.14	Instrumentation System						
	TM Assy., F1 (PAM/FM/FM)	50C12016	-3	-3	-7		
	RF Assy., F1	50C12196	-7	-7	-7		
	TM Assy., F2 (PAM/FM/FM)	50C12016	-5	X	X		

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SATURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	RF Assy., F2	50C12196	-9	-9	-9		
	TM RF Coupler	60C50074	X	X	X		
	TM Calibration Assy.	50M12011	-3	-3	-3		
	Remote Digital Multiplexer	50M12088			X		
	Remote Digital Submultiplexer	50M12089	-3	X	-3		
	TM Assy., S1 (SS/FM)	50M12195	X	-11	-1		
	RF Assy., S1	50M12196	-5	-11	-5		
	Power Divider (2 required)	50C12173	X	X	X		
	TM Power Divider	50C10186	X	X	X		
	Vibration Multiplexer Assy.	50C12192	-3	-3	-5		
	PCM/DDAS Assy., P1	50C12190	X	-3			
	PCM/DDAS Assy., P1	60C50079			-1		
	PCM/RF Assy., P1	50C12187	-1	-1	-1		
	TM Multiplexer, P1	50C12191	-3	-3	-5		
	TM Antenna (2 required)	50C10342	X	X	X		

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SATURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Tape Recorder	50C10338	X	-1	X		
	Measuring Rack Selector	50C10284	X	X	X		
	Selector Rack Assy.	50C10365	X	X	X		
	Measuring Rack	60C50034	-5	-11	-9		
	Measuring Rack	60C50035	-5	-11	-9		
	Measuring Rack	60C50038	-5	-11	-9		
	Measuring Rack	60C50040	-5	-11	-9		
	Measuring Rack	60C50043	-1				
	Measuring Rack	60C50044	-5	-11	-9		
	Measuring Rack	60C50045	-5				
	Measuring Rack	60C50046	-5	-11	-9		
	Measuring Rack	60C50047	-5		-9		
	Measuring Rack	60C50048	-5	-11	-9		
	Measuring Rack	60C50049	-5	-11	-9		
	Measuring Rack	60C50050	-3		-7		
	Measuring Rack	60C50052	-5	-11	-9		
	Measuring Rack	60C50053	-3	-11	-7		

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SATURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Measuring Rack	60C50054	-3	-11	-7		
	Measuring Rack	60C50077	-1	-3	-5		
	Measuring Rack	60C50055	-5	-11	-9		
	Measuring Rack	60C50056	-5	-7	-9		
1.15	Destruct System						
	Range Safety System Controller (2 required)	40M32016	-1	-1	-1	X	X
	No-safing Plug	40M32043	-1	-1	-1	X	X
	Command Receiver & Decoder (2 required)	50C12172	X	X	X	X	X
	Command Antenna (4 required)	50C12171	X	X	X	X	X
1.16	Control System						
	Rate Gyro	50C32498	X	X	X	X	X
	Control Accelerometer, Yaw	50C32496	X	X	X	X	X
	Control Accelerometer, Pitch	50C32497	X	X	X	X	X
1.17	Electrical System						
	Master Measuring Voltage Supply	40C20002	X	X	X	X	X

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SATURN IB CONFIGURATION S-IB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Power Supply	50C10363	X	X	X	X	X
	Battery (2 required)	60C40052	X	X	X	X	X
	Power Distributor	50C01138	X	X	X	X	X
	Measuring Distributor	60C41000	X	X	X	X	X
	Main Distributor	50C01466	X	X	X	X	X
	Propulsion System Distributor	50C01196	X	X	X	X	X
	Tail Measuring Distributor	60C41025	X	X	X	X	X
	Tail Measuring Distributor	60C41026	X	X	X	X	X
	AC Amplifier	50C10382	X	X	X	X	X
	DC Amplifier	50C10388	X	X	X	X	X
	DC Amplifier	50C10394	X	X	X	X	X
	Switch Selector	40C30640	X	X	X	X	X
	EBW Firing Unit	50C00902	X	X	X	X	X

Note: X - Drawing number is applicable to the flight vehicle number under which the symbol appears.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.	S-IVB Stage Assy.	1A74633	-1	-501	-503	-505	
1.1	Instrumentation Instl.	1A74913	-1				
		1A74914		-1			
		1A74915			-1		
		1A74916				-1	
1.2	Telemetry & Range Safety Antennas	1A69210	-1	-1	-1	-1	
1.3	Vehicle Structures Assy.	1A74634	-1	-1	-1	-1	
1.3.1	Forward Skirt Assy.	1B29835	-1	-1	-1	-1	
1.3.2	LO ₂ & LH ₂ Tank Assy.	1A39303	507	507	507	507	
1.3.2.1	Thrust Structure Instl.	1A39312	-501	-501	-501	-501	
1.3.3	Aft Skirt Instl.	1A78302	-501				
		1B29824		-1	-1	-1	
1.3.4	Exterior Tunnel Instl.	1A39313	-1	-1	-1	-1	
1.3.5	Auxiliary Tunnel Instl.	1B27716	X	X	X	X	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.3.6	LH ₂ Tank Insulation Instl.	1A39314	-1	-1	-1	-1	
1.3.7	Aft Dome External Insulation Instl.	1A95832	-501	-501	-501	-501	
1.4	Markings Instl.	1A39311	-1	-1	-1	-1	
1.5	Complete Propulsion Sys. Instl.	1A39318	-503	-503	-503	-503	
1.5.1	Engine Instl.	1A66894	-1	-1	-1	-1	
1.5.2	Engine Chilldown Instl.	1A59098	-1	-1	-1	-1	
1.5.3	Automatic Leak Check Pneu. Sys. Instl.	1B31545	-503	-503	-503	-503	
1.5.4	Main Oxidizer Tank Components Instl.	1A39321	-507	-507	-507	-507	
1.5.5	Main Fuel Tank Components Instl.	1A39322	-507	-507	-507	-507	
1.5.6	Main Fuel Tank Repressurization Pneu. Instl.	1A39323	-507	-507	-507	-507	
1.5.7	Main Oxidizer Tank Pressurization Pneu. Instl.	1A39325	-1	-1	-1	-1	
1.5.8	Main Fuel Tank Pressurization Pneu. Instl.	1A39326	-1	-1	-1	-1	
1.6	Stage Elect. Equip. Instl.	1A49601	-1	-1	-1	-1	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.6.1	Forward Skirt Elect. Equip. Instl.	1A49602	-1	-1	-1	-1	
1.6.1.1	Fwd. Skirt Ground Plane Instl.	1B28966	-1	-1	-1	-1	
1.6.1.2	Panel Mounted Elect. Equip. Instl.	1A78949	-1	-1	-1	-1	
	P/U Electronics Assy.	1A59358	-501	-501	-501	-501	
	Transmitter Switching Assy. - DDAS	1B29476	X	X	X	X	
	FM Power Amplifier	1A77080	-1	-1	-1	-1	
			-501	-501	-501	-501	
			-503	-503	-503	-503	
			-505	-505	-505	-505	
			-507	-507	-507	-507	
	Static Inverter Converter Electronics Assy.	1A66212	-1	-1	-1	-1	
	Decoder Bus Connector Module	1A84577	-1	-1	-1	-1	
	Bus Connector Module	1A84579	-1	-1	-1	-1	
	Range Safety Receiver EBW Firing Unit Assy.	1B28525	-1	-1	-1	-1	
	Forward Control Distributor Mounting Assy.	1A95142	-1	-1	-1	-1	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Forward Power Distributor Mounting Assy.	1A74917	-1	-1	-1	-1	
	Bus Connector Module	1A98042	-1	-1	-1	-1	
	Single Sideband Translator Assy. (GFE)	50M60010	X	X	X	X	
	Telemetry Oscillator Assy.	1B33187	X	X	X	X	
	PCM Digital Data Acquisition Assy.	1A74049	-1	-1	-1	-1	
	Time Division Multiplexer Assy.	1B29741	-1	-1	-1	-1	
	Time Division Multiplexer Assy.	1B29741	-503	-503	-503	-503	
	Vibration Multiplexer Assy.	1B32686	X	X	X	X	
	Central Telemetry Calibration Assy. (GFE)	50M60026	X	X	X	X	
	FM/DDAS Relay Assy.	1A67921	-1	-1	-1	-1	
	Bi-Directional Coupler Assy.	1A69214	-1	-1	-1	-1	
		1A69214	-501	-501	-501	-501	
	Tape Recorder Assy.	1A66884	-1	-1	-1	-1	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Telemetry RF Power Detector	1A74776	-1	-1	-1	-1	
	C/O Module RF Coaxial Switch	1A69213	-1	-1	-1	-1	
	SS/FM Transmitter	1A58842	-1	-1	-1	-1	
			-501	-501	-501	-501	
			-503	-503	-503	-503	
			-505	-505	-505	-505	
			-507	-507	-507	-507	
	C/O Module RF Dummy Load Assy.	1A84057	-1	-1	-1	-1	
			-501	-501	-501	-501	
	Telemetry RF Multiplexer Assy.	1A69212	-1	-1	-1	-1	
			-501	-501	-501	-501	
	RS RF Power Divider Assy.	1A74778	-1	-1	-1	-1	
	TM RF Power Divider Assy.	1A69215	-501	-501	-501	-501	
	Instrumentation 5-volt Module Excitation Assy.	1A77310	-1	-1	-1	-1	
1.6.1.3	Forward Skirt Battery Instl.	1A49537	-1	-1	-1	-1	
1.6.1.4	Forward Skirt Tunnel Wiring Feed thru Instl.	1B32349	-1	-1	-1	-1	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.6.2	LH ₂ Tank Mass Probe Instl.	1A49551	-1	-1	-1	-1	
1.6.3	LO ₂ Tank Mass Probe Instl.	1A49553	-1	-1	-1	-1	
1.6.4	Aft Skirt Elect. Equip. Instl.	1A49609	-1	-1	-1	-1	
1.6.4.1	Panel Mounted Elect. Equip. Instl.	1A49562	-1	-1	-1	-1	
	28-volt Aft Skirt Power Distributor Assy.	1A74975	-1	-1	-1	-1	
	Aft Control Distributor Mounting Assy.	1A77040	-1	-1	-1	-1	
	56-volt Aft Skirt Power Distributor Assy.	1A93590	-1	-1	-1	-1	
	Ullage Rocket Jettison EBW Firing Unit Box Assy.	7865719	515	515	515	515	
	Pulse Sensor Mounting Assy.	1A97791	-1	-1	-1	-1	
	Sequencer Mounting Assy.	1A67840	-1	-1	-1	-1	
	Time Division Multiplexer Assy (GFE)	50M60061	X	X	X	X	
	Instr. 5-volt Module Excitation Assy.	1A77310	-1	-1	-1	-1	
	Dual Bus Connector Module		X	X	X	X	
	Inverter Chillardown Electrical Assy.	1A74039	-1	-1	-1	-1	
	Bus Connector Decoder Module	1A84577	-1	-1	-1	-1	
	Bus Connector Module	1A98042	-1	-1	-1	-1	

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II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.6.4.2	Aft Skirt Battery Instl.	1A49538	-1	-1	-1	-1	
1.6.4.3	Aft Skirt Ground Plane Inst.	1B28965	-1	-1	-1	-1	
1.6.4.4	Aft Skirt Wiring Feed thru Instl. Tunnel	1B32346	-1	-1	-1	-1	
1.7	S-IVB Sys. Elect. Schematic	1B31369	-1				
		1B31370		-1			
		1B31371			-1		
		1B31372				-1	
1.7.1	Control Sys. Elec. Schematic	1B31219	-1				
		1B31220		X			
		1B31221			X		
		1B31222				X	
1.7.2	Instrumentation Sys. Elect. Schematic		X				
		1B26695		-1			
		1B26781			-1		
		1B26782				-1	
1.8	Stage Harness Instl.	1A69585	-1				
		1A69586		-1			
		1A69587			-1		
		1A69588				-1	

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II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.9	Hydraulic Sys. Instl.	1A39589	-1	-1			
					-503	-503	
1.9.1	Thermal Insulator Assy.	1A86847	-1	-1			
		1A86847			-503	-503	
1.9.1.1	Engine Driven Hydraulic Pump	1A66240	-501	-501	-501	-501	
1.9.1.2	Hydraulic Sys. Main Pump Inlet Thermal Switch	1A74764	-1	-1	-1	-1	
1.9.1.3	Hydraulic Sys. Temperature Control Thermal Switch	1A74765	-1	-1	-1	-1	
1.9.1.4	Hydraulic Sys. Check Valve	1A66245	-1	-1	-1	-1	
			-501	-501	-501	-501	
1.9.2	Auxiliary Motor Driven Hyd. Pump	1A66241	-1	-1	-1	-1	
1.9.3	Hydraulic Actuator Assy.	1A66248	-501	-501	-501	-501	
1.9.4	Accumulator Reservoir Assy.	1B29319	-501	-501	-501	-501	
1.10	Destruct Sys. Inert Parts Instl.		X	X	X	X	
1.11	Separation Sys. Inert Parts Instl.	1A92928	X	X	X	X	

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II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.12	Forward Interstage Environmental Control Distribution Sys.	1A69491	-1	-1			
1.13	Aft Interstage Purging System Instl.	1A67979	-1	-1	-1	-1	
1.14	Auxiliary Propulsion Sys. Instl.	1A83786	-1	-1	-1	-1	
1.14.1	Plane I APS Assy. Complete	1A83785	-1	-1	-1	-1	
1.14.1.1	APS Structure Instl.	1A79921	-1	-1	-1	-1	
1.14.1.2	APS Propellant System Instl.	1A82259	-1	-1	-1	-1	
1.14.1.3	APS Wiring Harness Instl.	1B27453	-1	-1	-1	-1	
1.14.1.4	Auxiliary Propulsion Module Disconnect Instl.		X	X	X	X	
1.14.1.5	Auxiliary Propulsion Module Wiring Support Instl.		X	X	X	X	
1.14.1.6	Pressurization Sys. Instl.	1A79372	-1	-1	-1	-1	
1.14.1.7	Automatic Leak Check Instl.	1A89550	-1	-1	-1	-1	
1.14.1.8	Engine Instl.	1A65684	-1	-1	-1	-1	

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II.	SATURN IB CONFIGURATION, S-IVB STAGE	Dwg. No.	SA- 201.	SA- 202	SA- 203	SA- 204	SA- 205
1.14.1.9	Disconnect Instl.		X	X	X	X	
1.14.1.10	APS Insulation Instl.	1B27473	-1	-1	-1	-1	
1.15	Ullage Rocket Jettison Inert Parts Instl.	1A86542	X	X	X	X	
1.16	Stage Support Instl.	1A95632	-1	-1	-1	-1	
1.16.1	Forward Skirt Support Instl.	1A95663	-1	-1	-1	-1	
1.16.2	Forward Dome Support Instl.	1A95634	X	X	X	X	
1.16.3	Aft Skirt Support Instl.	1A95635	X	X	X	X	
1.16.4	Aft Dome Support Instl.	1A95636	X	X	X	X	
1.16.5	Thrust Structure Support Instl.	1A95637	X	X	X	X	
1.16.6	Interior Tanks Support Instl.	1A95638	X	X	X	X	
1.16.7	Tunnel Support Instl.	1B31446	X	X	X	X	
2.	Aft Interstage Assy.	1B29836	-1	-1	-1	-1	
		1A58682	-1	-1	-1	-1	

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II. SATURN IB CONFIGURATION, S-IVB STAGE		Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
2.1	Electrical Equipment Instl.	1A81870	-1	-1	-1	-1	
2.1.1	Electrical Disconnect Instl.	1A82614	-1	-1	-1	-1	
2.1.2	Separation EBW Box Instl.	1A49540	-1	-1	-1	-1	
2.1.3	EBW Retro Rocket Box Instl.	1B28933	-1	-1	-1	-1	
2.2	Support Instl.	1A95640	X	X	X	X	
3.	Ullage Rocket Attachment Kit		X	X	X	X	
4.	Ullage Rocket Ignition Explosive Kit		X	X	X	X	
5.	Ullage Rocket Fairing Nose Cover Kit	1A79507	-1	-1	-1	-1	
6.	Ullage Rocket Motor	1A81960	-1	-1	-1	-1	
7.	Ullage Rocket Fairing Kit	1A78894	-1	-1	-1	-1	
8.	Ullage Rocket Jettison Explosive Kit	1A84701	-1	-1	-1	-1	
9.	Ullage Rocket Fairing Attachment Kit	1A79065	-1	-1	-1	-1	
10.	S&A Device Explosives Kit	1B32651	-1	-1	-1	-1	

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II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
1.	Instrument Unit Assy.						
1.1	Instrument Unit Structure	30M13100	X				
1.2	Thermoconditioning System						
	Mounting and Thermal Conditioning Panel	20M42000	X				
	Coolant Pump Assy.	20M42001	X				
	Heat Sink (Inflight)	20M42002	X				
	Heat Exchanger (Preflight)	20M42003	X				
	Temperature Control Assy.	20M42007	X				
	Pressure Regulator, First Stage	20M42013	X				
	Methanol/Water Accumulator	20M42040	X				
1.3	Platform Gas Bearing Supply System		X				
	Gas Bearing Mounting Plate Assy.	20M42041	X				
	Gas Bearing Pressure Regulator	20M42012	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Gas Bearing Heat Exchanger	20M42048	X				
	Gas Bearing Switch Assy						
	1000 psi	20M42016-1	X				
	3000 psi	20M42016-2	X				
	Gas Bearing Filter	20M30414	X				
1.4	Guidance and Control System						
	Inertial Platform Assy., ST-124M-3	50M22100	X				
	Platform Electronic Assy., ST-124M-4	40M22102	X				
	ST-124M Accelerometer Signal Conditioner		X				
	Launch Vehicle Digital Computer	50M35010	X				
	Launch Vehicle Data Adapter	50M35011	X				
	Switch Selector Mod. 1	50M04008	X				
	Intertial Data Box, ST-124M-4	50M22105	X				
	Command Decoder	50M12264	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Command Receiver	50M10691	X				
	Command Power Divider	50M12173	X				
	Command Antenna (2 required)	50M12321	X				
	Flight Control Computer	50M32550	X				
	Control Signal Processor	50M35500	X				
	Q-Ball Transducer	D50M30645	X				
	Control - E. D. S. Rate Gyro Package	50M35021	X				
	Control Accelerometer (yaw)	50M35023	X				
	Control Accelerometer (pitch)	50M35022	X				
1.5	Instrumentation Systems						
	Instrumentation Program and Components List	50M12020	X				
	Telemeter Assv., F1 (PAM/FM/FM)	50M12206	X				
	Telemeter Assv., F2 (PAM/FM/FM)	50M12207	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	RF Assy., F1	50M12205	-1				
	RF Assy., F2	50M12205	-3				
	Slow Speed Multiplexer Assy.	50M12208	X				
	Multiplexer Assy., P1 (PCM/FM/FM)	50M12212	X				
	PCM/RF Assy.	50M12211	X				
	Telemeter PCM/DDAS Assy.	50M12210	X				
	DDAS Computer Interface Unit	50M12216	X				
	Remote Digital Submultiplexer	50M12213	X				
	Remote Digital Multiplexer	50M12214	X				
	VSWR Measuring Assy.	50M10683	X				
	Telemeter Assy., S1 (SS/FM)	50M12209	X				
	RF Assy., S1	50M12205	-5				
	Telemeter Calibrator Assy.	50M12011	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Telemeter RF Coupler	50M10269	X				
	Telemeter Power Divider	50M10186	X				
	Telemeter Antenna (2 required)	50M12284	X				
	Measuring Rack Assy.	50M66650	X	X	X		
	Measuring Rack	50M12271	-1				
	Measuring Rack	50M12272	-1				
	Measuring Rack	50M12273	-1				
	Measuring Rack	50M12274	-1				
	Measuring Rack	50M12275	-1				
	Measuring Rack	50M12276	-1				
	Measuring Rack	50M12277	-1				
	Measuring Rack	50M12278	-1				
	Measuring Rack	50M12279	-1				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Measuring Rack Selector	50M12270					
	Tape Recorder	50M10338	X				
1.6	Tracking Systems						
	C-Band Transponder	50M12261	X				
	C-Band Antenna	50M10347	X				
	Minitrack Transmitter	50M12240	X				
	Minitrack Power Divider	50M12050	X				
	Minitrack Antenna (2 required)	50M12294	X				
	Azusa Transponder (Type C)	50M12266	X				
	Azusa R. I. Filter Assy.	50M12267	X				
	Azusa Antenna	50M10677	X				
	Mistram Transponder	50M12268	X				
	Mistram Antenna (2 required)	50M10343	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

II.	SATURN IB CONFIGURATION, INSTRUMENT UNIT	Dwg. No.	SA- 201	SA- 202	SA- 203	SA- 204	SA- 205
	Radar Altimeter Transmitter	50M12262	X				
	Radar Altimeter Antenna	50M12263	X				
1.7	Electrical System		X				
	Electrical Equipment List	50M03757	X				
	Cable Interconnecting Diagram	40M33000	X				
	Platform AC Power Supply	50M22106	X				
	56 Volt Power Supply Assy.	40M20236	X				
	Master Measuring Voltage Supply	40M20881	X				
	Minitrack Battery	40M20948	X				
	Battery (4 required)		X				
	Auxiliary Power Distributor	40M37213	X				
	Auxiliary Power Distributor	40M37214	X				
	Control Distributor	40M37210	X				

Note: The part configuration effective for a particular vehicle consists of the drawing number combined with the number under the applicable vehicle.

SECTION III.

III. SATURN IB TEST OBJECTIVES		SA-201	SA-202	SA-203	SA-204	SA-205
1.	Vehicle Test Objectives					
1.1	Confirm aerodynamic and dynamic characteristics through the following measurements:	X	X	X	X	
	Measure pitch, yaw, and roll rates and angle of attack as a function of flight time	X	X	X	X	
	Measure longitudinal and lateral acceleration as a function of flight time	X	X	X	X	
	Determine vehicle bending modes and frequencies for engine start and holddown, launch, and flight	X	X	X	X	
1.2	Confirm structural and thermal characteristics through the following measurements:	X	X	X	X	
	Determine bending moment versus vehicle station for prelaunch, launch and flight	X	X	X	X	
	Measure sound intensity for engine start and holddown, launch and flight	X	X	X	X	
	Measure internal and external pressure environments as a function of flight time	X	X	X	X	
	Measure internal and external thermal environments as a function of flight time	X	X	X	X	
1.3	Demonstrate S-IB Stage - S-IVB Stage compatibility	X	X	X	X	
1.4	Demonstrate S-IVB Stage - Instrument Unit compatibility	X	X	X	X	

Legend: An "X" indicates that the test objective is applicable to the vehicle. After post flight evaluation, the "X" is replaced with a letter which indicates the percent attainment of the test objective. A=100%, B=75 to 99%, C=50 to 74%, D=25 to 49%, and E=0 to 24%.

III. SATURN IB TEST OBJECTIVES		SA-201	SA-202	SA-203	SA-204	SA-205
2. S-IB Stage Test Objectives						
2.1 Demonstrate the propulsion system capability through the following measurements:						
Measure oxygen and fuel flow rates as a function of engine burning time		X	X	X	X	
Measure oxygen and fuel residuals		X	X	X	X	
Measure oxygen and fuel turbopumps speed as a function of engine burning time		X	X	X	X	
Measure gas pressure at the turbine inlet as a function of engine burning time		X	X	X	X	
Measure oxygen and fuel pressures and temperatures at pump inlets as a function of engine burning time		X	X	X	X	
Measure combustion chamber pressure as a function of engine burning time		X	X	X	X	
Measure engine cutoff transients		X	X	X	X	
2.2 Demonstrate the propellant management systems capability		X	X	X	X	
2.3 Demonstrate the hydraulic system capability		X	X	X	X	
2.4 Demonstrate the oxygen and fuel container pressurization systems capability		X	X	X	X	

Legend: An "X" indicates that the test objective is applicable to the vehicle. After post flight evaluation, the "X" is replaced with a letter which indicates the percent attainment of the test objective. A=100%, B=75 to 99%, C=50 to 74%, D=25 to 49%, and E=0 to 24%.

III. SATURN IB TEST OBJECTIVES		SA-201	SA-202	SA-203	SA-204	SA-205
3.	S-IVB Stage Test Objectives					
3.1	Demonstrate the propulsion system capability through the following measurements:	X	X	X	X	
	Measure LO ₂ and LH ₂ flow rates as a function of engine burning time	X	X	X	X	
	Measure LO ₂ and LH ₂ residuals	X	X	X	X	
	Measure LO ₂ and LH ₂ turbopumps speed as a function of engine burning time	X	X	X	X	
	Measure propellant pressures and temperatures at the turbine inlets as a function of engine burning time	X	X	X	X	
	Measure LO ₂ and LH ₂ pressures and temperatures at pump inlets as a function of engine burning time	X	X	X	X	
	Measure combustion chamber pressure as a function of burning time	X	X	X	X	
	Measure engine start and cutoff transients	X	X	X	X	
3.2	Demonstrate the oxygen and fuel container pressurization systems capability	X	X	X	X	
3.3	Demonstrate the hydraulic system capability	X	X	X	X	
3.4	Demonstrate the propellant utilization system capability	X	X	X	X	

Legend: An "X" indicates that the test objective is applicable to the vehicle. After post flight evaluation, the "X" is replaced with a letter which indicates the percent attainment of the test objective. A=100%, B=75 to 99%, C=50 to 74%, D=25 to 49%, and E=0 to 24%.

III. SATURN IB TEST OBJECTIVES					SA-201	SA-202	SA-203	SA-204	SA-205
3.5 Demonstrate retromotor capability					X	X	X	X	
3.6 Demonstrate ullage motor capability					X	X	X	X	
3.7 Demonstrate auxiliary propulsion system capability					X	X	X	X	
3.8 Evaluate the structure through the following measurements:					X	X	X	X	
Measure vibration frequencies and amplitudes and extent of thrust structure deformation resulting from engine thrust and gimbaling action					X	X	X	X	
Measure aerodynamic loads on S-IVB/S-IB interstage and determine effectiveness of controlled venting during flight					X	X	X		
Determine structural effects of heat load from aerodynamic heating during ascent phase of flight					X	X	X	X	
Determine effectiveness of slosh baffles and vortex suppression devices					X	X			
Verify that structural effects of heat load from engine exhaust is negligible					X	X			
3.9 Demonstrate the Astrionics systems capability					X	X	X	X	

Legend: An "X" indicates that the test objective is applicable to the vehicle. After post flight evaluation, the "X" is replaced with a letter which indicates the percent attainment of the test objective. A=100%, B=75 to 99%, C=50 to 74%, D=25 to 49%, and E=0 to 24%.

SECTION IV.

IV.	SATURN IB MEASURING PROGRAM S-IB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
1.	S-IB Stage Flight Measurements - Total	447		353							
1.1	Acceleration - Total	3		3							
	Longitudinal	1		1							
	Yaw	1		1							
	Pitch	1		1							
1.2	Acoustic - Total	2		2							
	Upper Container	1		1							
	Engine Shroud	1		1							
1.3	Temperature - Total	92		76							
	Gas Generator Chamber	0		0							
	Heat Exchanger	1		1							
	Engine Nozzle	2		2							
	Gear Case Lubricant	8		8							
	Hydraulic Oil	4		4							
	LOX Pump Bearing	8		8							
	Fuel Pump Inlet	0		0							
	LOX Pump Inlet	8		8							
	GOX Control Valve	1		1							
	Fuel	4		4							
	Pressurization Gas - Fuel Container	0		0							
	Pressurization Gas - LOX Container	0		0							
	Tail Section Base	2		2							

Legend: "A" indicates number of measurements per parameter to be made per flight.
 "B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Engine Compartment	8		8							
	Heat Shield	13		13							
	Flame Shield	1		1							
	Engine Shroud Skin	2		2							
	Tail Section Skin	2		2							
	Fins	16		0							
	S-IB/S-IVB Interstage Skin	5		5							
	Retromotor Fairing	1		1							
	S-IB/S-IVB Interstage Compartment	2		2							
	Instrument Compartment	2		2							
	High Pressure Spheres	1		1							
	Battery	1		1							
1.4	Pressure - Total	89		73							
	Combustion Chamber	8		8							
	Gas Generator Fuel Injector	8		8							
	Gas Generator LOX Injector	8		8							
	Turbine Inlet	8		8							
	Fuel Pump Inlet	4		4							
	LOX Pump Inlet	4		4							
	GOX Control Valve	1		1							
	Pressurization Gas - Fuel Container	1		1							
	Pressurization Gas - LOX Container	1		1							
	Actuators	8		8							
	Hydraulic Source	4		4							

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Control Equipment	2		2							
	High Pressure Spheres	1		1							
	Tail Section Base	3		3							
	Engine Compartment	1		1							
	Heat Shield	1		1							
	Container Skirts	2		2							
	60° Fairing	1		1							
	Retromotors	4		4							
	Instrument Compartment	1		1							
	Spider Beam Fairing	0		0							
	Seal Plate	1		1							
	S-IB/S-IVB Interstage	1		1							
	Fins	16									
1.5	Vibration - Total	54		46							
	Fins	8									
	Thrust Chamber Dome	8		8							
	Turbine Gear Box	8		8							
	Spider Beam	6		6							
	Instrument Panel	3		3							
	Containers and Supports	4		4							
	Thrust Structure	12		12							
	Electrical Components	5		5							
1.6	Guidance and Control-Total	8									
1.6	Hydraulic Oil Level	4		4							
	Angle-of-Attack	4									

Legend: "A" indicates number of measurements per parameter to be made per flight.
 "B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
1.7	Signals - Total	37			37						
	Selector Switch	1			1						
	First Motion	1			1						
	Cutoff Signals (inboard and outboard)	2			2						
	Engine Cutoff	8			8						
	Fuel Level Cutoff	2			2						
	LOX Level Cutoff	2			2						
	Fuel Depletion Cutoff	2			2						
	Retromotor EBW Voltage	8			8						
	Destruct EBW Voltage	2			2						
	Separation EBW Voltage	2			2						
	Retromotor Ignition	1			1						
	Separation Prestart	1			1						
	LOX Emergency Pressure Switch	1			1						
	LOX Relief Control	1			1						
	Cutoff and Destruct	2			2						
	GOX Control Valve	1			1						
	LOX Tank Pressure Switch	1									
1.8	Liquid Level - Total	18			18						
	Fuel Level - Discrete	4			4						
	LOX Level - Discrete	5			5						
	Fuel Level - Continuous	4			4						
	LOX Level - Continuous	5			5						

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
1.9	Voltage, Current & Frequency - Total	10		10							
	AGC Voltage	1		1							
	Bus Voltage	3		3							
	Battery Voltage	2		2							
	Measuring Voltage	2		2							
	Battery Current	2		2							
1.10	Angular Velocity - Total	2		4							
	Pitch	1		2							
	Yaw	1		2							
1.11	Strain - Total	124		72							
	Container Mounting Stud	8		8							
	Tension Ties	16		16							
	Spider Beam	48		48							
	Fins	52									
1.12	RPM-Turbine	8		8							
2.	S-IB Stage Blockhouse Measurements - Total	70		73							
2.1	Temperature - Total	38		38							
	Gear Case Lubricant	8		8							
	Hydraulic Oil	4		4							
	LOX Pump Bearing	8		8							
	Instrument Compartment	2		2							

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IVB STAGE															SA-201		SA-202		SA-203		SA-204		SA-205	
																A	B	A	B	A	B	A	B	A	B
3.	S-IVB Stage Flight Measurements - Total															417			438						
3.1	Acceleration - Longitudinal															1			1						
3.2	Acoustic - Forward Skirt															6			6						
3.3	Temperature - Total															159			161						
	Thrust Chamber															1									
	Fuel Injection															1									
	LH ₂ Turbopump															7									
	LOX Turbopump															8									
	LH ₂ Circulation															3									
	LOX Circulation															3									
	Gas Generator															7									
	Heat Exchanger															2									
	GH ₂ System															3									
	Helium System															11									
	LH ₂ Supply Line															2									
	LOX Supply Line															3									
	Hydraulic System															5									
	P. U. System															1									
	Thrust Structure															2									
	Aft Interstage															3									
	Aft Skirt															11									
	LH ₂ Container															11									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IVB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	LOX Container	4									
	Forward Skirt	10									
	Ullage	12									
	Auxiliary Propulsion System	24									
	Tunnels & Fairings	6									
	Base Region	6									
	Electrical Components	13									
3.4	Pressure - Total	62		72							
	Thrust Chamber	1									
	LH ₂ Injector	1									
	LOX Injector	1									
	LH ₂ Turbopump	3									
	LOX Turbopump	6									
	LH ₂ Circulation	2									
	LOX Circulation	2									
	Gas Generator	3									
	Heat Exchanger	1									
	GH ₂ System	2									
	Helium System	4									
	LH ₂ Container Inlet	1									
	LOX Container Inlet	1									
	Engine Pump Purge Regulator	1									
	Engine Actuators	2									
	Pneumatic System	2									

Legend: "A" indicates number of measurements per parameter to be made per flight.
 "B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IVB STAGE												
		SA-201		SA-202		SA-203		SA-204		SA-205			
		A	B	A	B	A	B	A	B	A	B		
	P. U. System	2											
	Auxiliary Propulsion System	22											
	Hydraulic System	2											
	Ullage	2											
	Forward Skirt - Internal	1											
3.5	Vibration - Total	38		38									
	Forward Skirt	8											
	Aft Skirt	3											
	Actuator & Attachment Points	8											
	Gimbal Point	3											
	LH ₂ Turbopump	2											
	LOX Turbopump	2											
	TM Rack	0											
	Electrical Gear, Aft Skirt	6											
	Electrical Gear, Forward Skirt	6											
3.6	Flow Rate - Total	4		4									
	LH ₂	2											
	LOX	2											
3.7	Position - Total	8		8									
	Actuator	2											
	Main LH ₂ Valve	1											
	Main LOX Valve	1											

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IVB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Gas Generator Valve	1									
	LOX Turbine Bypass Valve	1									
	GH ₂ Start Valve	1									
	P. U. System Ratio Valve	1									
3.8	Event-Total	52		53							
	Container Valves	16									
	Engine System Valves	6									
	Engine	9									
	Gas Generator	4									
	Helium Control	1									
	Fire Detection	1									
	Heater	1									
	Start Tank	3									
	Switches	8									
	Switch Selector	1									
	Range Safety	2									
3.9	Level - Total	6		6							
	LH ₂ Container	2									
	LOX Container	3									
	Reservoir Oil	1									
3.10	Voltage, Current & Frequency - Total	38		46							
	Voltage - Static Inverter-Converters	3									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM S-IVB STAGE	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Voltage - Chilldown Inverters	8									
	Voltage - 5 V Excitation Module	2									
	Voltage - Bus	2									
	Voltage - Batteries	4									
	Voltage - EBW Firing Units	10									
	Current - Batteries	4									
	Frequency - Static Inverter-Converter	1									
	Frequency - Chilldown Inverters	2									
	Frequency - 5 V Excitation Module	2									
3.11	Miscellaneous - Total	29		29							
	P. U. System	5									
	Antenna Power Measurements	8									
	Liquid Gas Differentiator	1									
	Extensometer	4									
	Range Safety Receiver Signal Strength	2									
	Telemeter Transmitter Output Power	5									
	Auxiliary Propulsion System Propellant Quantities	4									
3.12	Strain - Total	12		12							
	Forward Skirt	6									
	Aft Skirt	6									
3.13	Speed - Turbopumps	2		2							

Legend: "A" indicates number of measurements per parameter to be made per flight.
 "B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM INSTRUMENT UNIT	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
5.	Instrument Unit Flight Measurements - Total	259									
5.1	Acceleration - Total	7									
	Longitudinal	3									
	Pitch	2									
	Yaw	2									
5.2	Acoustic - Total	1									
5.3	Temperature - Total	62									
	Thermoconditioning System	21									
	Platform Gas Bearing Supply System	5									
	ST-124M Inertial Platform	2									
	Horizon Sensor	6									
	Azusa	1									
	C-Band	1									
	Launch Vehicle Guidance Computer	2									
	Launch Vehicle Data Adapter	2									
	Q-Ball	1									
	RF Assy., F1	1									
	TM Assy., F1	1									
	TM Assy., F2	1									
	PCM/RF Assy., P1	1									
	Accelerometer Signal Conditioner	1									
	ST-124M Electronic Box	1									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM INSTRUMENT UNIT	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Battery	4									
	Compartment	2									
	Skin	8									
	250 VA Inverter	1									
5.4	Pressure - Total	15									
	Delta P Pitch	2									
	Delta P Yaw	2									
	Dynamic Pressure	2									
	Thermoconditioning System	4									
	Platform Gas Bearing Supply System	2									
	ST-124M Inertial Platform	1									
5.5	Vibration - Total	29									
	Mounting Rings	8									
	ST-124M Support	6									
	Panel - RF Assy., F2	2									
	Panel - Air Bearing Supply	2									
	Panel - Flight Control Computer	2									
	Inertial Gimbal	3									
	Launch Vehicle Guidance Computer	3									
	Launch Vehicle Data Adapter	3									
5.6	Flow Rate-Thermoconditioning System	11									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM INSTRUMENT UNIT	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
5.7	Position - Total	12									
	Pitch Actuator	5									
	Yaw Actuator	5									
	Thermoconditioning System Control Valves	2									
5.8	Guidance and Control - Total	51									
	Pitch Actuator	5									
	Yaw Actuator	5									
	Control Engines	3									
	Accelerometer Pickup ST-124M	3									
	Accelerometer Servo ST-124M	3									
	Pitch Program	1									
	Roll Program	1									
	Servo Box	1									
	Gyro Pickup ST-124M	3									
	Output Gyro Servo	3									
	Attitude (Ladder Network Outputs)	3									
	Launch Vehicle Guidance Computer	8									
	Accelerometer	12									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM INSTRUMENT UNIT	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
5.9	RF and Telemetry - Total	25									
	Azusa	2									
	Mistram	4									
	C-Band	3									
	Radar Altimeter	6									
	Command Receiver	1									
	Guidance Decoder	1									
	F1 Telemeter	2									
	F2 Telemeter	2									
	P1 Telemeter	2									
	S1 Telemeter	2									
5.10	Signals - Switch Selector	6									
5.11	Voltage Current & Frequency - Total	15									
	Measuring Voltage	1									
	Command Voltage	1									
	Voltage, 56 VDC Supply	1									
	Frequency, 250 VA Inverter	1									
	Voltage, 250 VA Inverter	3									
	Bus Voltage	4									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

IV.	SATURN IB MEASURING PROGRAM INSTRUMENT UNIT	SA-201		SA-202		SA-203		SA-204		SA-205	
		A	B	A	B	A	B	A	B	A	B
	Battery Current	4									
5.12	Rate - Total	27									
	Angular Velocity, Control	3									
	EDS Rate Switch	9									
	EDS Locking Relay Monitor	3									
	EDS Wheel Speed	3									
	EDS Angular Velocity	9									
6.	Instrument Unit Blockhouse Measurements - Total	30									
6.1	Temperature - Total	16									
	Thermoconditioning System	3									
	Platform Gas Bearing Supply System	1									
	ST-124M Inertial Platform	1									
	Launch Vehicle Guidance Computer	1									
	Launch Vehicle Data Adapter	1									
	Accelerometer Signal Conditioner	1									
	ST-124M Electronics Box	1									
	Battery	4									
	Compartment	2									
	250 VA Inverter	1									

Legend: "A" indicates number of measurements per parameter to be made per flight.
"B" indicates number of useable measurements obtained per parameter during flight.

SECTION V.

ILLUSTRATIONS

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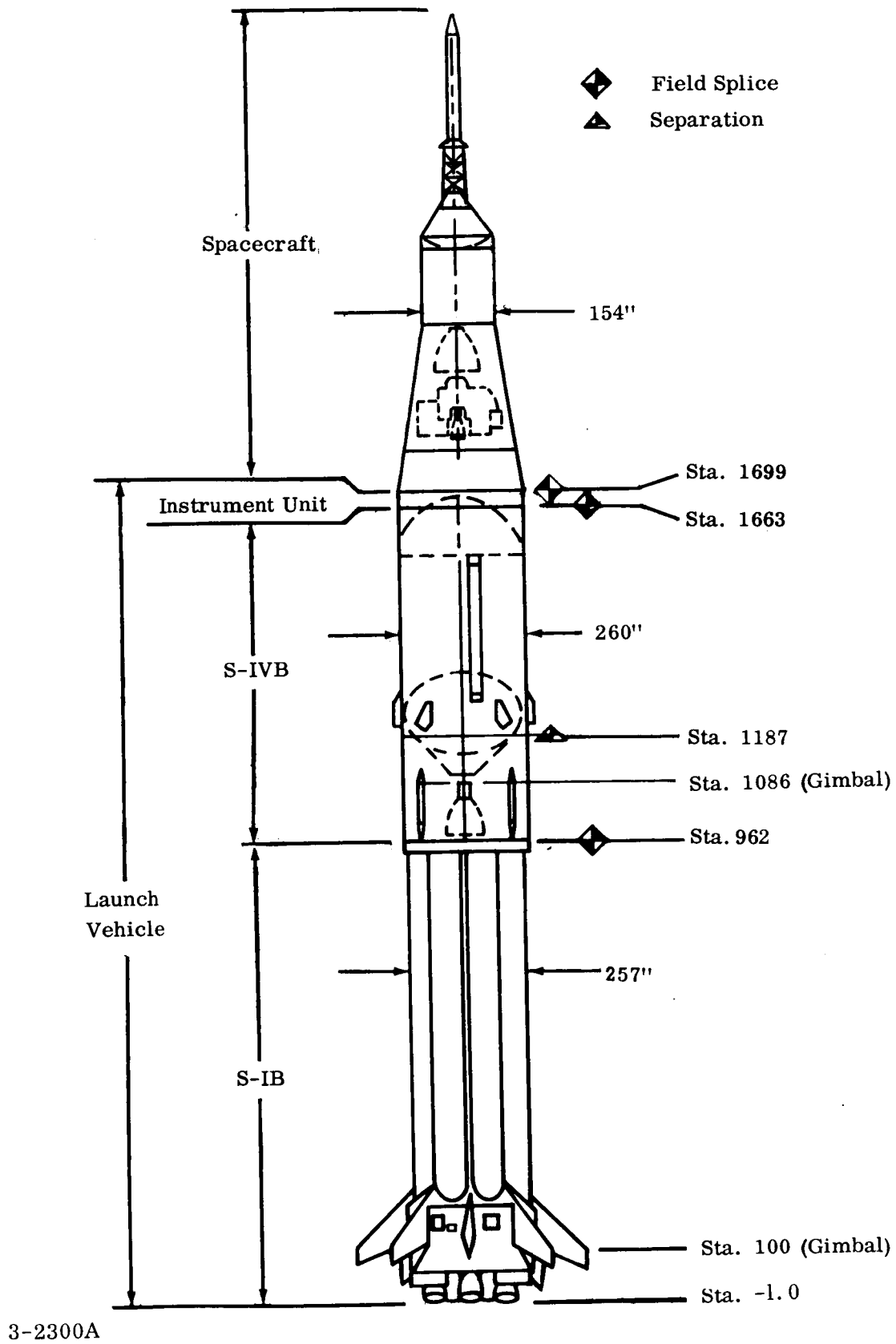


Figure 1. Saturn IB Configuration

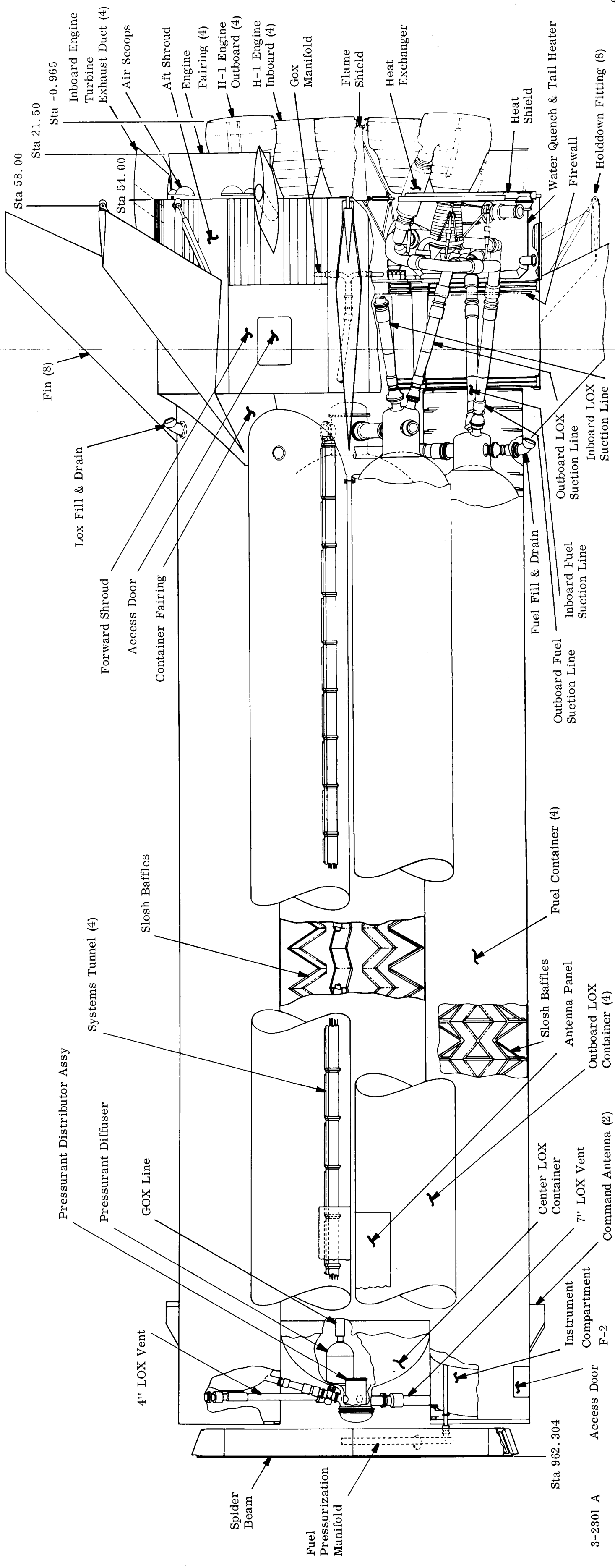
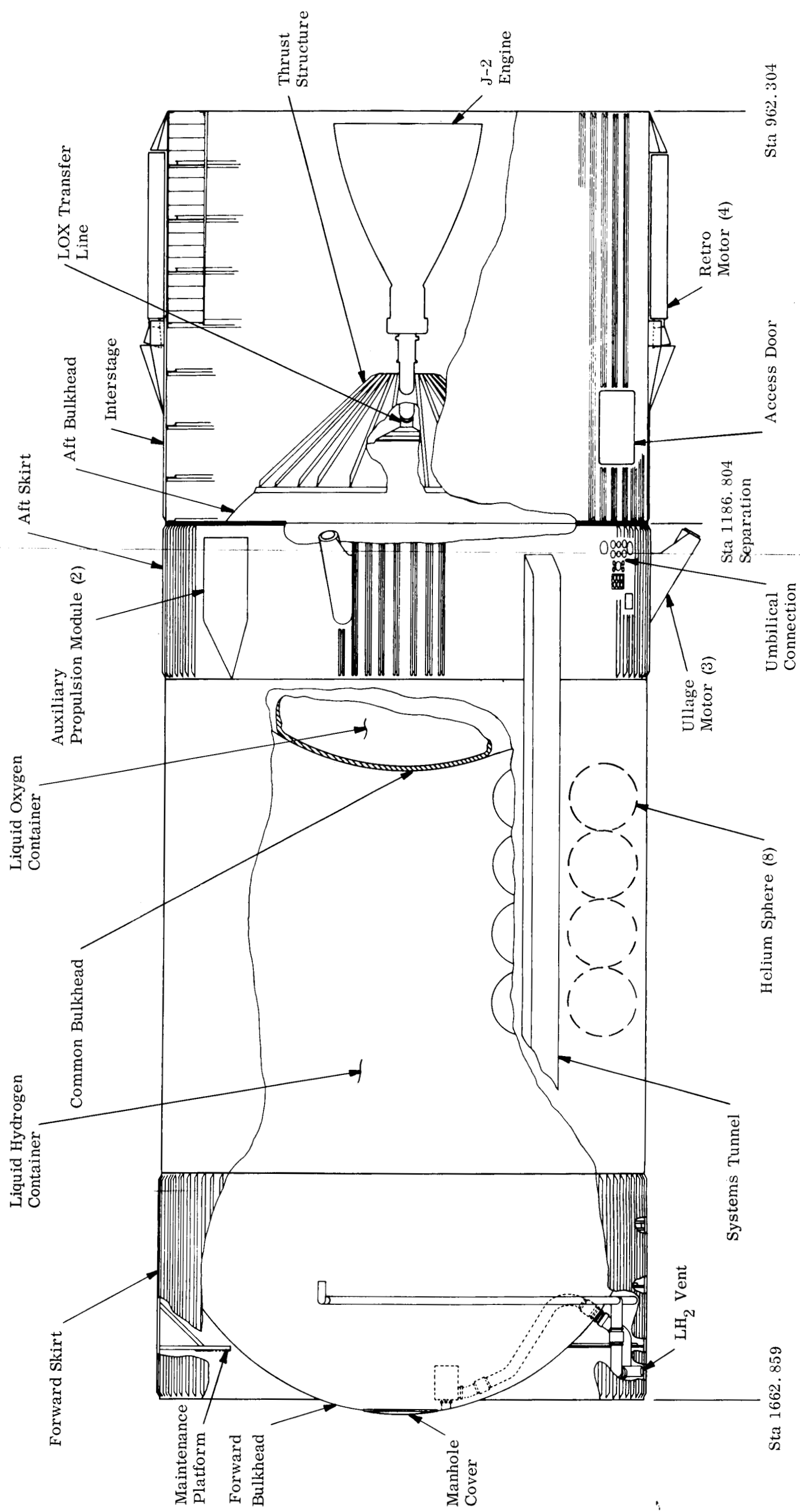
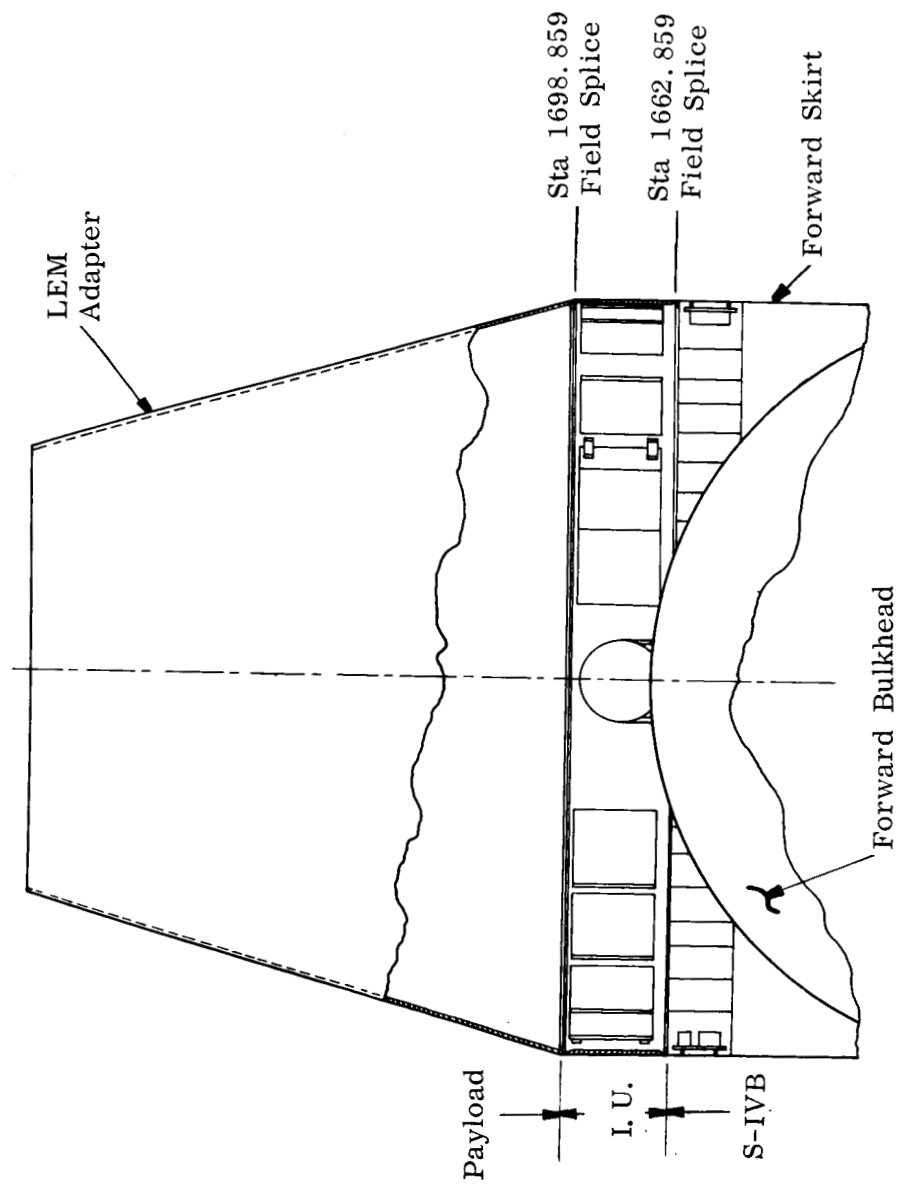


Figure 2. S-IB Stage Inboard Profile



3-2302A

Figure 3. S-IVB Stage Inboard Profile



3-2303A

Figure 4. Instrument Unit Arrangement

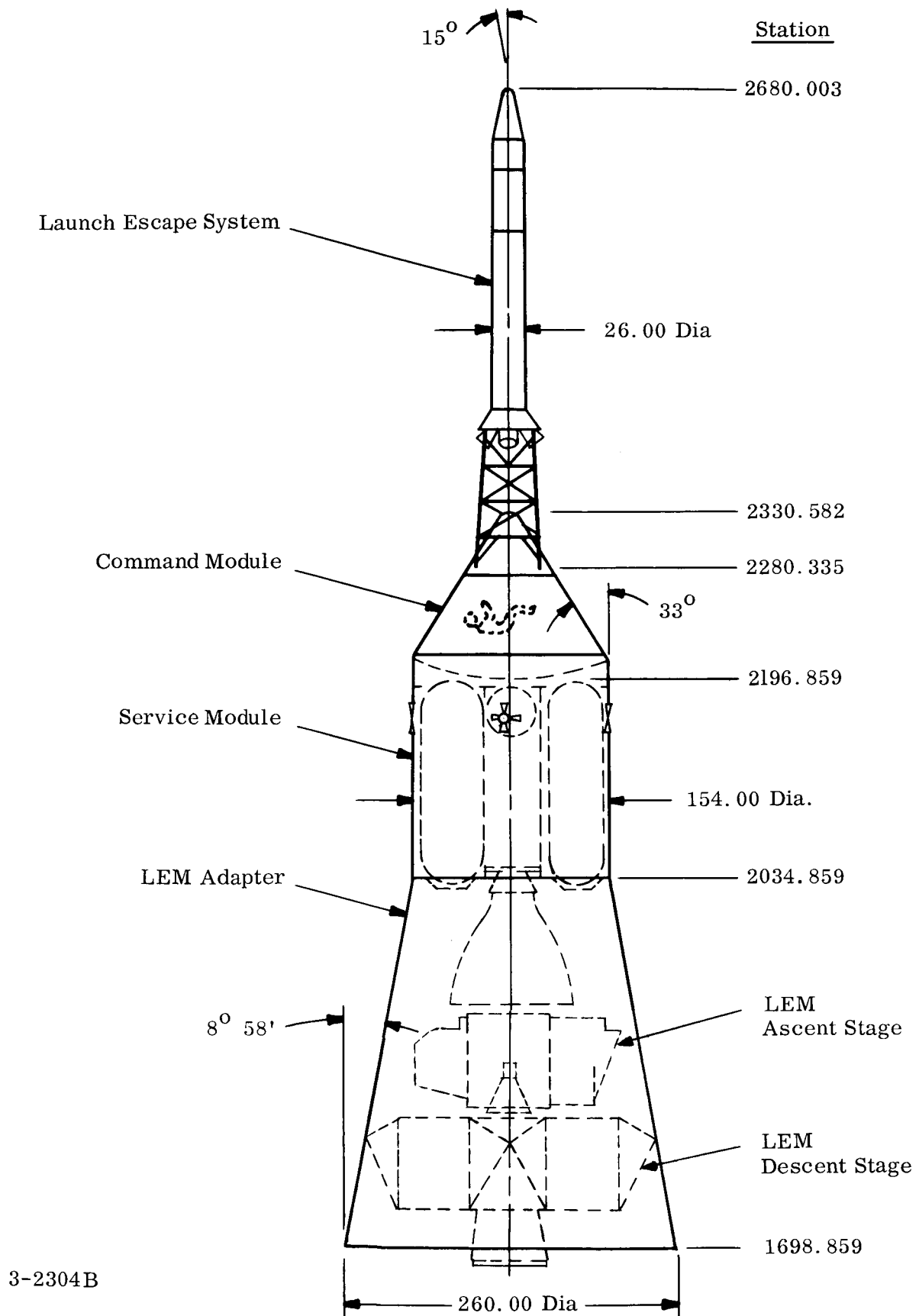
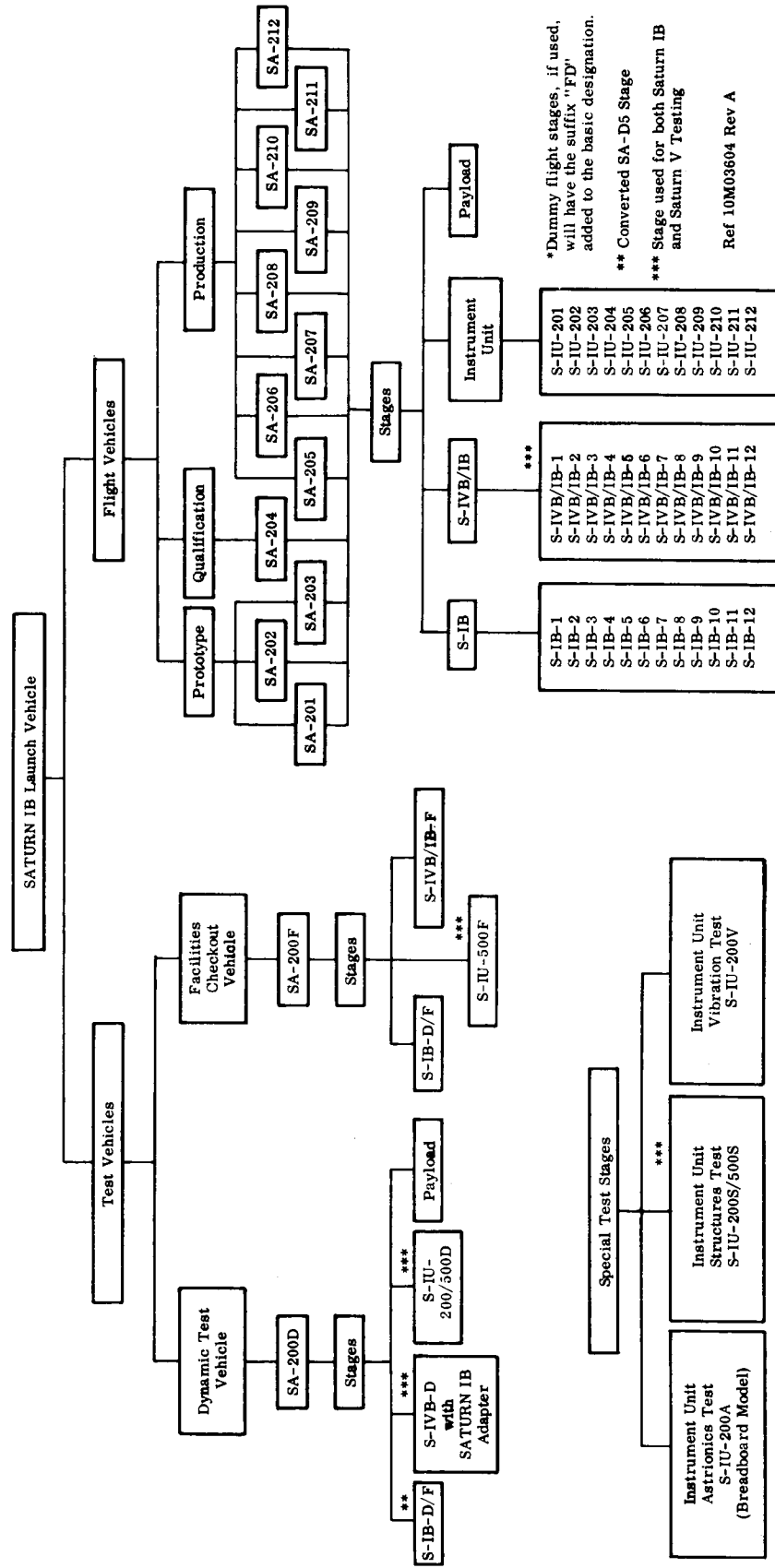


Figure 5. Saturn IB Payload (SA-201 through SA-205)

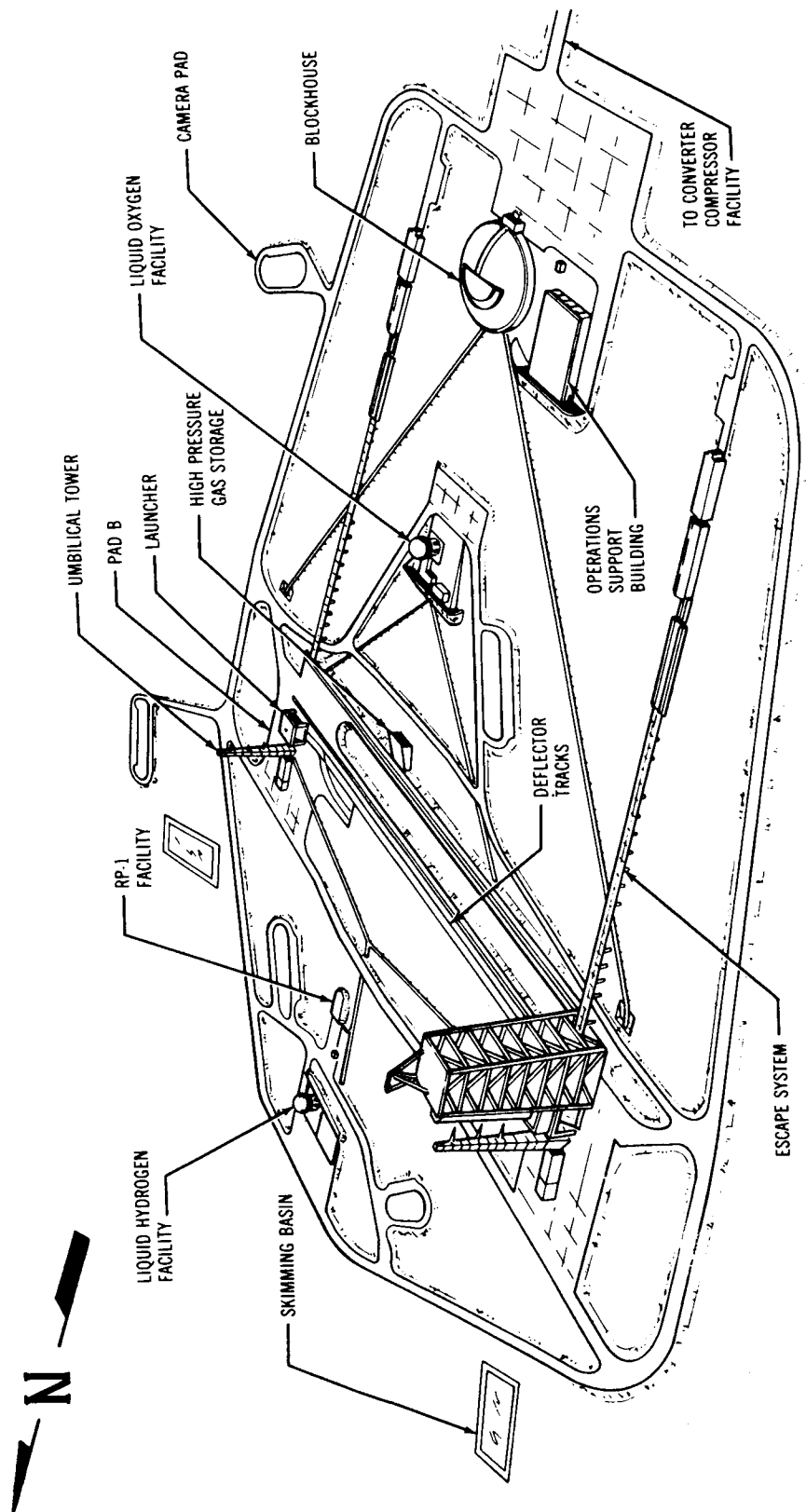


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3-2305B

Figure 7. Saturn IB Nomenclature

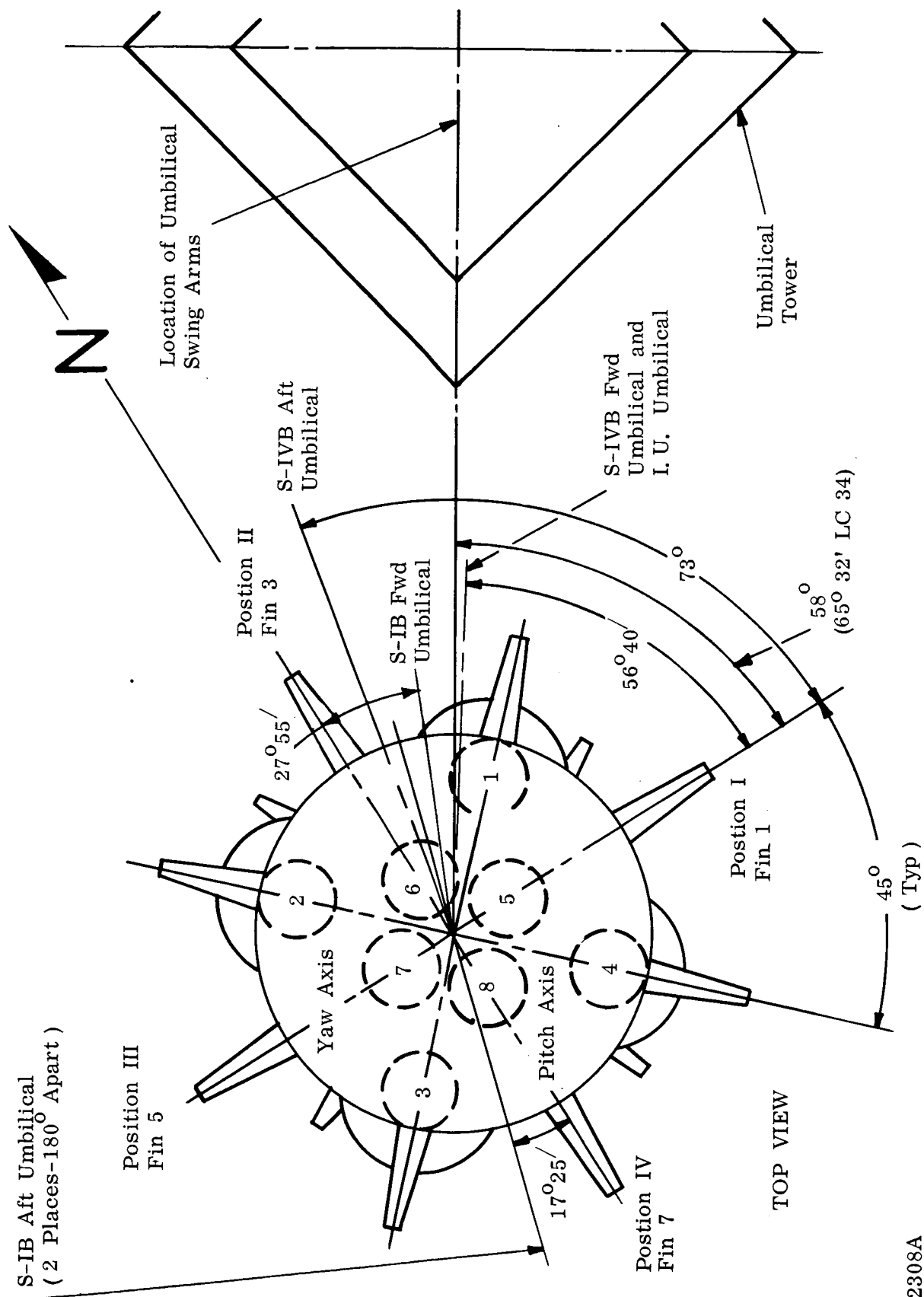


STORAGE CAPACITY

- LOX ~ 125,000 GAL.
- RP-1 ~ 49,000 GAL.
- LH₂ ~ 125,000 GAL.
- LN₂ ~ 35,000 GAL.

Figure 8. Launch Complex 37

3-2309 A



3-2308A

Figure 9. Saturn IB and Umbilical Tower (VLF 37) Orientation