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GOVERNMENT PLAN FOR PROGRAM MANAGEMENT
FOR THE
MANNED ORBITING LABORATORY SYSTEM
(MOL)
PROGRAM

1 SEPTEMBER 1966

DEPARTMENT OF THE AIR FORCE
MANNED ORBITING LABORATORY
SYSTEMS PROGRAM OFFICE (OSAF)
AF UNIT POST OFFICE
LOS ANGELES, CALIFORNIA

SPECIAL ACCESS REQUIRED

**SPECIAL HANDLING REQUIRED
NOT RELEASABLE TO FOREIGN NATIONALS**

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FOREWORD

The primary objective of the "Government Plan for Program Management" is to present an early overview of the key features of the entire MOL Program to top level management officials, at the policy and decision making levels of those Government and industry agencies that may become directly associated with the MOL Program. This will enable early planning by all concerned key officials so that upon program initiation and during the conduct of the program, the combined talents of both Government and industry can be brought to bear in an integrated and orderly manner for the purpose of achieving the optimum product.

The secondary objective of the "Government Plan for Program Management" is that it will be the one key plan and focal point of the entire program to insure continuity. It will be used as the basis by all concerned agencies in formulating their respective Program Plans. In addition, these Program Plans will continually reflect and be in concert with the Government Plan.

This plan relates herein the primary objective of the MOL Program and the number of flights believed required to attain this objective. Further, the plan presents the MOL Program Segments (primary hardware and functional elements) of the entire MOL program; the agencies responsible for these segments; the interrelationship of these agencies relative to time; and, the roles and responsibilities of each agency during the conduct of the MOL Program.

It is emphasized that this plan is not cast in concrete, but will be revised and kept up to date during the Government/industry team formulation and during the conduct of the program.

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RECORD OF CHANGES

Change No.	Date of Change	Description of Change

1 September 1966

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SECTION 1
PROGRAM OBJECTIVES

1.0 INTRODUCTION.

(U) This section presents the primary objective of the MOL Program and the master flight schedule required to attain that objective.

1.1 MOL PROGRAM OBJECTIVE.

(S) A primary objective of the MOL program is development of technology to improve capabilities for manned and unmanned operations of military significance. This may include intermediate steps toward operational systems.

(S) This objective shall be accomplished as early as possible, with minimum system cost, and with careful attention to safety aspects. Minimizing cost and time for development and test, as well as enhancing safety and reliability, implies a minimum of innovations. Proven vehicle and ground hardware, procedures, and facilities, resulting from prior DOD and NASA programs, will be employed to the greatest extent practicable. Exceptions will be completely justified.

(S) Additional objectives are:

- (a) Quantitative determination of man's military usefulness in space.
- (b) Scientific and technological experiments of national importance.
- (c) Determine biological responses of man in orbit for 30 days or more.

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1.2 MASTER FLIGHT SCHEDULE AND OBJECTIVE.

(U) The following page presents the master MOL flight schedule and primary objective of each flight. This schedule, when finalized, will be the basic schedule to be followed by all concerned agencies.

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MASTER MOL FLIGHT SCHEDULE

CALENDAR YEARS MONTHS	1968												1970												1971											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
				15			1								15		15			15		15														
PHASE I: ENGINEERING DEVELOPMENT																																				
FLIGHT NO.1 (GEMINI B QUALIFICATION)																																				
FLT NO.2 (LAUNCH VEHICLE DEVELOPMENT DEMONSTRATION)																																				
FLT NO.3 (FULL MISSION, MANNED - AUTOMATIC)																																				
FLT NO.4 (FULL MISSION, MANNED - AUTOMATIC)																																				
FLT NO.5 (FULL MISSION, MANNED - AUTOMATIC)																																				
FLT NO.6 (FULL MISSION, AUTOMATIC)																																				
FLT NO.7 (FULL MISSION, AUTOMATIC)																																				

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SECTION 2

PROGRAM BREAKDOWN STRUCTURE

2.0 (U) INTRODUCTION.

The Program Breakdown Structure (PBS) is considered one of the key management tools that will be utilized by all concerned agencies during the conduct of the MOL Program. The PBS provides the framework for orderly integration of all primary hardware and functional elements, within a manageable boundary, which affords a ready top-level overview of the entire program.

2.1 (U) PROGRAM BREAKDOWN STRUCTURE.

The PBS in this section presents the Program Segments (PS) within the MOL Program. These Program Segments specify the tasks which are the primary roles and responsibilities of those agencies selected for the conduct of these Program Segments. The PBS will be the foundation and basis for expansion into greater levels of detail by all concerned government and industrial agencies. The PBS is also the basis and outline for formulating the Acquisition Phase Work Statements. Each Program Segment, when considered separately, is also known as the Work Breakdown Structure for the concerned agency. The PBS will be utilized as the starting point and the common basis for summarizing costs and for constructing top level management networks. The PS/WBS (Figures 2-6 through 2-16) are subject to review and revision throughout the Program Definition Phase.

A further refinement of the Roles and Responsibilities relative to the interrelationships between concerned agencies is contained within Tab A.

M O L
PROGRAM BREAKDOWN STRUCTURE
(PBS)

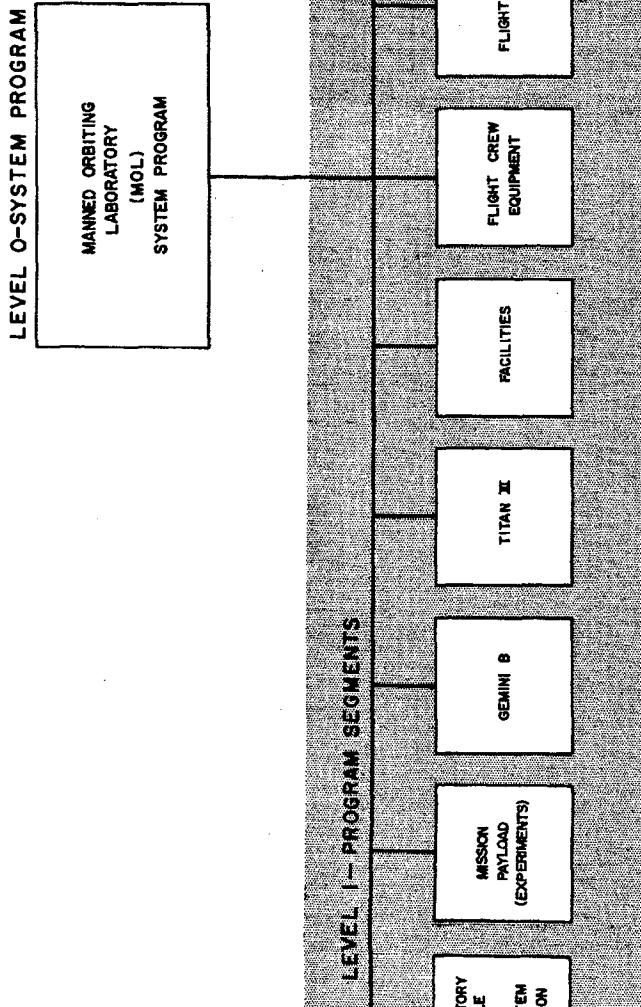


Figure 2-1. MOL Program Breakdown Structure (PBS)

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PROGRAM BREAKDOWN STRUCTURE
(ROLES & RESPONSIBILITY SUMMARY)
LEVEL 0 - SYSTEM PROGRAM

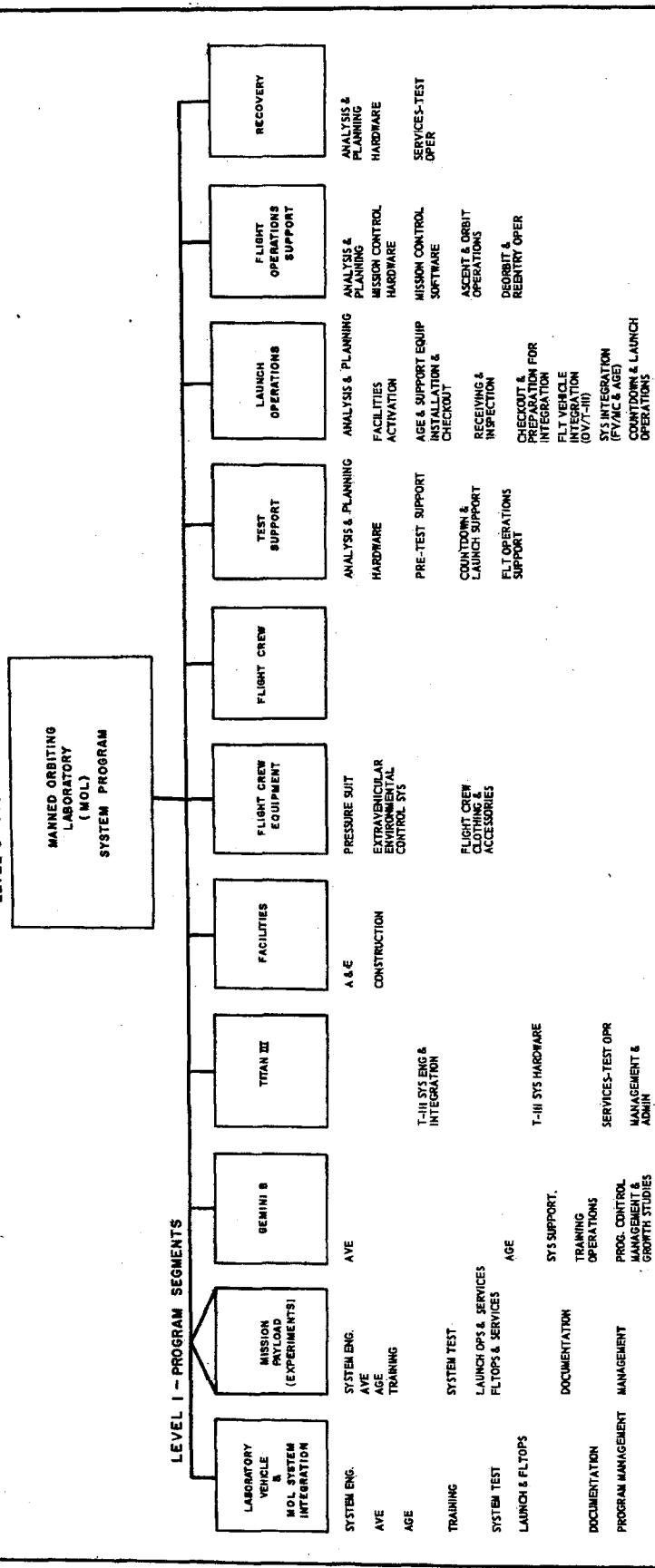


Figure 2-2. Program Breakdown Structure (Roles and Responsibility Summary)

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LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	
<small>GENERAL MANAGER (CIVIL ENGINEERING DIVISION)</small> <small>MANAGER (SEE THE FOLLOWING SECTIONS)</small>	<small>MANAGER (SEE THE FOLLOWING SECTIONS)</small>	SYSTEM ENGINEERING	SYSTEM LEVEL <small>SYSTEM ENGINEERING</small>	<small>INTERMEDIATE INFORMATION</small> <small>RFI DESIGN INFORMATION</small> <small>RFI SYSTEM ENGINEERING INFORMATION</small> <small>SOFTWARE DESIGN CONTROL SYS ENG</small>	
			<small>CV SYSTEM ENGINEERING</small>	<small>RF SYSTEM INFORMATION ANALYSTS</small> <small>RF SYSTEM INFORMATION</small> <small>RFI SYSTEM ENGINEERING REPORT</small> <small>SUBCONTRACTOR INFORMATION</small> <small>RFI FOR SYSTEM EFFECTIVENESS</small> <small>RELIABILITY</small> <small>MAINTAINABILITY</small> <small>REPAIR ENGINEERING</small> <small>REPAIR ENGINEERING</small> <small>SYSTEM EFFECTIVENESS INFORMATION</small> <small>TRAINING ENGINEERING</small>	
			<small>IF SYSTEM ENGINEERING</small>	ORBITING VEHICLE	<small>FLIGHT CREW SUPPORT</small> <small>LV CONSOLE</small> <small>LV ASSEMBLY & CHECKOUT</small> <small>LV ASSEMBLY & CHECKOUT</small> <small>MISSION MODES STRUCTURE</small> <small>STRUCTURE</small> <small>ATTITUDE CONTROL</small> <small>SC & LE</small> <small>DATA MANAGEMENT</small> <small>IDENTIFICATION & REPAIR</small> <small>COMMUNICATIONS</small> <small>ELECTRICAL POWER</small> <small>FLIGHT CREW TEST & MONITOR</small> <small>CREW STATIONS & ACCOMMODATIONS</small> <small>DATA RECOVERY</small> <small>WIRING HARNESS & LIGHTING</small>
			<small>LABORATORY VEHICLE</small>	<small>OPERATIONAL GROUND EQUIPMENT</small> <small>AGE SYSTEM SUPPORT</small> <small>OPERATIONAL GROUND EQUIPMENT</small> <small>MAINTENANCE GROUND EQUIPMENT</small> <small>I & C OF PDA AGE</small> <small>MAINTENANCE OF PDA AGE</small> <small>SPECIAL TEST EQUIPMENT</small> <small>FACILITY CRITERIA</small> <small>CONTRACTOR PROPERTY SUPPORT</small> <small>INTERCHANGE HARDWARE</small>	
			<small>ORBITING VEHICLE</small>	<small>LABORATORY VEHICLE</small>	<small>SYSTEM ENGINEERING</small> <small>EQUIPMENT</small> <small>OPERATIONS & SUPPORT</small> <small>TRAINING & PERSONAL SUPPORT</small> <small>FLIGHT CREW TRAINING</small> <small>SUPPORT PERSONNEL TRAINING</small> <small>MISSION CONTROL & NETWORK PERSONNEL</small>
			<small>SUPPORT EQUIPMENT</small>	<small>MISSION SIMULATOR</small>	<small>SYSTEM ENGINEERING</small> <small>EQUIPMENT</small> <small>OPERATIONS & SUPPORT</small> <small>TRAINING & PERSONAL SUPPORT</small> <small>FLIGHT CREW TRAINING</small> <small>SUPPORT PERSONNEL TRAINING</small> <small>MISSION CONTROL & NETWORK PERSONNEL</small>
		<small>TRAINING</small>	<small>SERVICE</small>	<small>RF ENVIRONMENTAL QUAL TEST & TEST SUPPORT</small> <small>LV/MS CONTROL DEVELOPMENT TEST</small> <small>LV CONTROL SYSTEM QUALIFICATION TEST</small> <small>LV SYSTEM DEVELOPMENT TEST & TEST SUPPORT</small> <small>LV SYSTEM DEVELOPMENT PROGRAM</small> <small>LV SYSTEM MODELS PLUS MODELS</small> <small>MAINTENANCE</small> <small>SYSTEM ACTIVATION</small> <small>VEHICLE PREPARATION & LAUNCH</small> <small>RFI LAUNCH OPERATIONS</small> <small>FLIGHT PLANNING ANALYSIS</small> <small>INITIAL SUPPORT & IMPLEMENTATION</small> <small>MISSION OPERATIONS</small> <small>RFI FLIGHT OPERATIONS</small>	
		<small>SYSTEM TEST</small>	<small>LABORATORY VEHICLE</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>LAUNCH & FLIGHT OPERATIONS</small>	<small>LAUNCH OPERATIONS</small>	<small>MAINTENANCE</small> <small>SYSTEM ACTIVATION</small> <small>VEHICLE PREPARATION & LAUNCH</small> <small>RFI LAUNCH OPERATIONS</small> <small>FLIGHT PLANNING ANALYSIS</small> <small>INITIAL SUPPORT & IMPLEMENTATION</small> <small>MISSION OPERATIONS</small> <small>RFI FLIGHT OPERATIONS</small>	
		<small>FLIGHT OPERATIONS</small>	<small>FLIGHT OPERATIONS</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>DOCUMENTATION</small>	<small>RFI DOCUMENTATION</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>DOCUMENTATION</small>	<small>IF DOCUMENTATION</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>PROGRAM MANAGEMENT</small>	<small>PROGRAM CONTROL MANAGEMENT</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>PROGRAM MANAGEMENT</small>	<small>CONFIGURATION MANAGEMENT</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>PROGRAM MANAGEMENT</small>	<small>MANUFACTURING MGMT</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>PROGRAM MANAGEMENT</small>	<small>ENGINEERING & TEST MANAGEMENT</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	
		<small>PROGRAM MANAGEMENT</small>	<small>TRAVEL (EXPENSE ONLY)</small>	<small>PROGRAM PLANNING & SCHEDULES</small> <small>FINANCIAL PLANNING & CONTROL</small> <small>PERMITS</small> <small>RFI RECORDS</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>RFI CONFIGURATION MANAGEMENT</small> <small>QUALITY ASSURANCE</small> <small>LOGISTICAL SUPPORT MANAGEMENT</small> <small>PRODUCTION & POSITIONING MGMT</small> <small>TRAINING MANAGEMENT</small> <small>REPAIRING MANAGEMENT</small> <small>TEST</small> <small>RFI MANAGEMENT</small> <small>CREW SUPPORT</small> <small>CV SYSTEM ENGINEERING SUPPORT</small> <small>LV TRAVEL (EXPENSE ONLY)</small> <small>RFI TRAVEL</small>	

Figure 2-3. Laboratory Vehicle & MOL System Integration PS/WBS
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LEVEL 4	LEVEL 3	LEVEL 2	LEVEL 1	LEVEL 0
MANEUVRE CONTROL LABORATORY SYSTEM PROGRAM	RESEARCH & DEVELOPMENT SYSTEM PROGRAM	SYSTEM ENGINEERING	OPERATIONAL SYSTEM ENGINEERING	GROUND OPERATION REQUIREMENTS FLIGHT EVALUATION INFORMATION MGMT REQUIREMENTS OPERATIONAL SYSTEMS INTEGRATION
			SOFTWARE SYSTEMS ENGINEERING	
			STUDIES & ANALYSES	MPSS ANALYSES & TRADE STUDIES CRI 3 ANALYSES & TRADE STUDIES DRY SECTION ANAL. & TRADE STUDIES GE AVE & MPSS TEST ANALYSES FLIGHT DYNAMICS ANALYSES
			SYSTEM INTEGRATION ENGINEERING	
			SYSTEM PERFORMANCE DESIGN REQMTS	
			INTERFACE CONTROL & DESCRIPTION	
			SYSTEM SUPPORT & SERVICES	
			SYSTEM EFFECTIVENESS ENGINEERING	CUSTOMER & ASSOC. SYSTEM EFFECT. INT. RELIABILITY ANALYSES & EVALUATION SYSTEM MAINTAINABILITY REQMTS SYSTEM SAFETY ENGINEERING
			EMULATOR/TRANSFER SYSTEMS ENGINEERING	
		AVE HARDWARE	GE AVE-AVE CRI 2	INTEGRATED MISSION MODULE CONSOLES & DISPLAYS COMMON COMMAND & INSTRUMENTATION NAVIGATION ELECT POWER & SIGNAL DISTRIBUTION STRUCTURES DATA RECOVERY VEHICLE BUS SPECIAL TOOLING/MOUSE SPEC TEST HARD-ACCEPT TEST MATERIALS & PROCESSES SUPPORT AVE LOGISTIC SPARES PARTS INSPECTION & TESTING M-REL. PARTS TESTING CONTAMINATION CONTROL
			DRY-AVE CRI 4	DESIGN SUPPORT QA & I SUPPORT DRY-R&D
AEROSPACE GROUND EQUIPMENT	INTEGRATED MISSION PAYLOAD	DESIGN ENGINEERING TRANSPORTER-MM-AGE CRI 1 TRANSPORTER CONSOLES ENV CONTR & MONITOR UNIT-LT TRAMP		
	TRANSPORTATION EQUIPMENT	INTEGRATED HANDLING EQUIPMENT LIFTING & POST. SLING-MMTMP CONSOLES HANDLING RING INT-MM-AGE ID CRI 3 MATING SURFACE GUARDS-T-3-LM-INTES DOOR TRUSS-MM PRDL. SLING-MP CONSOLES-AGE ID CRI 3 PRDL. VERT. CONN. SUBMOD.-ID CRI 3 VEHICLE CONTROLLER AGE ID CRI 2		
	HANDLING EQUIPMENT	INTEGRATED SUPPORT STRUCTURE EQUIP. HORIZONTAL SUPPORT FIXTURE-MM VERTICAL SUPPORT FIXTURE-MM WORK PLATFORMS-NORIK & VERTICAL TEST & SHIPPING YK - MP CONSOLE TEST ACCESS PANEL SET		
	SUPPORT STRUCTURE EQUIPMENT	INTEGRATED ENV. CONTROL EQUIPMENT EC. EQUIP. LAUNCH PAD-AGE CRI 3 ENV. COMBUSTION FLOWER-MM COLD PLATE COOL. UNIT MFC-AGE CRI 4 PORT. CLN. FM. MM/LM ALON-AGE CRI 5 PORT. CLN. RM-JCC. PANEL RM.-AGE CRI 6		
	ENVIRONMENTAL CONTROL EQUIPMENT	INTEGRATED MECHANICAL C/D EQUIPMENT WEIGHT & CENTER OF GRAVITY EQUIPMENT ALIGNMENT EQUIPMENT-MM ALBEDO EMULATOR SPECIAL TOOL KIT-MM PNEUMATIC CHECKOUT SET M/M/T-3 INTERFACE MATE FIXT. BATTERY CHARGING & SERVICE EQUIP. THERMAL COAT. TOUCH-UP KIT MM		
	MECHANICAL CHECKOUT EQUIPMENT	INTEGRATED SHIPPING EQUIPMENT SHIP. CONTAINERS AVE/AGE SP.		
	SHIPPING EQUIPMENT	INTEGRATED DRY AGE DRY INSTALLATION EQUIPMENT ADDET. DRY AGE		
	DRY AGE	INTEGRATED MOL. CITE MPSS DATA CONTROL, DISPLAY, ETC.-AGE CRI 9 VAN ELECTRICAL-AGE CRI-3 VIGILANT EQUIPMENT AGE-CRI-10 T/VAC. INVT. QRD.-MPSS-DACC-AGE CRI-11 THERMAL VACUUM INVT. GROUP-MPSS-08 ADC SUBSTITUTE GROUP MM SUBSTITUTE GROUP RF TRANSMISSION LINE AGE-MPSS SYSTEM INTERCON. CABLES		
	MOL. CITE - MPSS-AGE CRI 7	PRELIMINARY DESIGN BLANC DESIGN MAINTENANCE & UPDATING		
	CITE MPSS UTIL & DIAG PROG-S/W CRI 4	MOB. TO HANDLER FOR PORTER PLATE MOUNTING AOR LOGISTIC SPARES		
	FUNCTIONAL PERFORM. TEST EQUIP. TEST FIXTURES TEST CABLES STIMULATORS & EMULATORS			
	DESIGN ENGINEERING			
	TRANSPORTER-AGE CRI 10A TRANSPORTER-CONSOLES-ETE EC & MONITOR UNIT FOR L/V TRANSPORTER			
	INTEGRATED HANDLING EQUIP. MANUFACTURING			
	QA & R SLINGS HANDLING RING EQUIPMENT INTEB. SUPP. STRUCTURE EQUIP. COLLIES & TRANSDUCER SUPPORTS VERTICAL SUPP. STND-ID CRI 10A WORK PLATFORMS			
	SUPPORT STRUCTURES EQUIPMENT			

Figure 2-4. MHS-1
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AEROSPACE
GROUND
EQUIPMENT

MISSION PAYLOAD
SYSTEM SUPPORT

	MATERIALS & PROCESSES SUPPORT AGE LOGISTIC SPARES PARTS INSPECTION & TESTING MIL. REL. PARTS TESTING CONTAMINATION CONTROL
DRY-AGE CITE 4	DESIGN SUPPORT QA & R SUPPORT DRY-AGE
INTEGRATED MISSION PAYLOAD	DESIGN ENGINEERING TRANSPORTER-MM-AGE CIE 1 TRANSPORTER CONSOLES ENV CONTS & MONITOR UNIT-LV TRAMP
TRANSPORTATION EQUIPMENT	INTEGRATED HANDLING EQUIPMENT LIFTING & PORT. SLING ADAPTOR CONSOLES HANDLING RING SET-MM-AGE-10 CIE 1 LAYING SURFACE CHAIRS-T-1-LM-SYEA DOOR TRIM-MM RNDL. SLING-MP CONSOLE-AGE-10 CIE 1 RNDL. FIXT. CONL. SUBMOD.-10 CIE 1 YERMIER CONTROLLER AGE-10 CIE 2
HANDLING EQUIPMENT	INTEGRATED SUPPORT STRUCTURE EQUIP. HORIZONTAL SUPPORT FIXTURE-MM VERTICAL SUPPORT FIXTURE-MM WORK PLATFORMS-HOLES & VERTICAL TEST & SHIPING FIX. - MP CONSOLE TEST ACCESS PANEL-SET
SUPPORT STRUCTURE EQUIPMENT	INTEGRATED ENV. CONTROL EQUIPMENT EC. EQUIP. LAUNCH PAD-AGE CIE 1 ENV. CONDITONING BLOWER-MM COLD PLATE COOL. UNIT MPC-AGE CIE 4 PORT. CLM. MM. MM/LM ALIGN-AGE CIE 1 PORT. CLM. MM-ACC. PANEL PERM.-AGE CIE 6
ENVIRONMENTAL CONTROL EQUIPMENT	INTEGRATED MECHANICAL C/O EQUIPMENT WEIGHT & CENTER OF GRAVITY EQUIPMENT ALIGNMENT EQUIPMENT-MM ALBEDO SIMULATOR SPECIAL TOOL KIT-MM PNEUMATIC CHECKOUT SET MM/T-1 INTERFACE MATE FIXT. BATTERY CHARGING & SERVICE EQUIP. THERMAL COAT. TOUCH-UP KIT MM
MECHANICAL CHECKOUT EQUIPMENT	INTEGRATED SHIPPING EQUIPMENT SHIP. CONTAINERS AGE/AGE SP. INTEGRATED DRY AGE DRY INSTALLATION EQUIPMENT AGNT. DRY AGE
SHIPPING EQUIPMENT	DRY AGE
DRY AGE	INTEGRATED MOL CITE MPSE DATA CONTROL, DISPLAY, ETC.-AGE CIE 1 VAN ELECTRICAL-AGE CIE-8 VICINITY EQUIPMENT AGE-CIE-10 T/VAL. INST. CND. -MPSE-DACO-AGE CIE-12 THERMAL VACUUM DESIC. GROUP-MPSE-05 MPC SUBSTITUTE GROUP MM SUBSTITUTE GROUP RF TRANSMISSION LINE AGE-MPSE SYSTEM INTERCON. CABLES
MOL CITE - MPSE-AGE CIE 1	PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
CITE MPSE UTIL & DIAG PROG-AGE CIE 1	FUNCTIONAL PERFORM. TEST EQUIP. TEST FIXTURES TEST CABLES SIMULATORS & EMULATORS DESIGN ENGINEERING
MOB. TO DACO MM HOLDER PLATE MODL 104 AGE LOGISTIC SPARES	TRANSPORTER-MM CIE 104A TRANSPORTER-CONSOLES-STE EC & MONITOR UNIT FOR LV TRANSPORTER INTEGRATED HANDLING EQUIP. MANUFACTURING QA & R SLIPPS HANDLING RING EQUIPMENT
AGE SPECIAL TEST EQUIP. FOR IN-ROUTE	INTEA. SUPT. STRUCTURE EQUIP. DOLLIES & TRUCKS SUPPORTS VERTICAL SUPT. STD-ID CIE 107A WORK PLATFORMS TEST ACCESS PANELS-SET-ID CIE 108A TEST & SHIPING FIXT MISSION PAYLD CONS
INTEGRATED MISSION PAY AGE	INTEG ENVIR. CONTROL EQUIP ECU MM T/V TESTS CIE MOL 115A ECU LAUNCH PAD EC BLOWER MM CIE MOL 111A COLD PLATE COOL UNIT MP CONSOLE PORT CLM RM MM C/O CIE MOL 106A INTEG MECH C/O EQUIP WEIGHT & CG EQUIP MM STE ALIGNMENT MEAS MM STE ALBEDO SIMULATOR STE PNEUMATIC C/O SET STE BATTERY CHARG & SERV EQUIP STE THERMAL COATING TOUCH-UP KIT MM
TRANSPORTATION EQUIPMENT	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
HANDLING EQUIPMENT	INTEG MECH C/O EQUIP WEIGHT & CG EQUIP MM STE ALIGNMENT MEAS MM STE ALBEDO SIMULATOR STE PNEUMATIC C/O SET STE BATTERY CHARG & SERV EQUIP STE THERMAL COATING TOUCH-UP KIT MM
SUPPORT STRUCTURE EQUIPMENT	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
INTE CONTROL EQUIPMENT	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
MECH CHECKOUT EQUIPMENT	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
SHIPPING EQUIPMENT	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
DRY AGE	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
INTEG TEST EQUIP. - MPSE CIE MOL 400	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING
MOL CITE MPSE UTIL & DIAG SOFTWARE	INTEG SHIPPING EQUIPMENT SHIPPING CONTAINERS-AGE/AGE SPARES INTEGRATED DRY AGE AGNT. DRY AGE FROM SUBCONTRACT INTEG MOL CITE CENTRAL AREA EQUIP CIE 402A VICINITY EQUIPMENT CIE 401A TEST INTERFACE EQUIP CIE 403A MOL CITE MPSE ID CIE 506A TV INSTRUMENTATION ORPGE STE MISS PAYLD CONS TEST ADAPTER RF TRANSMISSION LINK STE MOL CITE MPSE STE INTERCON CABLES PRELIMINARY DESIGN BASIC DESIGN MAINTENANCE & UPDATING

Figure 2-4. Mission Payload (Experiments) PS/WBS (Sheet 1 of 2)
1 September 1966
SAFSL-4-390
2-9/10A

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4							
<p style="text-align: center;">MISSION PAYLOAD FUNCTIONAL SYSTEM PROGRAM</p>	<p style="text-align: center;">MISSION PAYLOAD FUNCTIONAL SYSTEM PROGRAM</p>	<p style="text-align: center;">TRAINING</p>	INTRO TRAINING PROGRAM	WASTE INTEGRATED TRNG PROGRAM PROJECT ENGINEERING							
			MP PROCD TRNG	INTEGRATED, MMSE							
			SUBSYSTEM TRAINERS	INTERFACE SUBSYSTEM							
			ON-ORBIT OPERATIONS TRAINING	DEV USE TRAINERS CONTROL SUBSYSTEM							
			EQUIP TRNG-G. E. PERSONNEL	TRNG OPS SUPPORT & ANALYSIS TRNG PLANS & PROCEDURES							
			AF OPERATING PERSONNEL TRNG	AVE AGE							
			<p style="text-align: center;">SYSTEM TEST</p>	<p style="text-align: center;">SYSTEM TEST</p>	<p style="text-align: center;">DAGO</p>	MPPT 110, INST C/O & OPERATION	CLASSROOM INSTRUCTIONS TEST INJECTION CONSOLE OPERATION STIMULUS CONVERSION COMMAND GENERATION COMPUTER OPERATION DATA REDUCTION PROCEDURES PREPARATION MPPT MAINTENANCE				
						TRAINER SPARES	FUNCTIONAL DEFT. TEST EQUIP				
						TRAINER COMPONENTS SPEC. TEST EQUIP	TEST FIXTURES TEST CABLES IN-PROCESS INSPECTION EQUIP STIMULATORS & EMULATORS				
						MISSION MODULE	GE TEST & HARDWARE				
						<p style="text-align: center;">LAUNCH OPERATIONS & SERVICES</p>	<p style="text-align: center;">LAUNCH OPERATIONS & SERVICES</p>	<p style="text-align: center;">DAGO</p>	LAUNCH SITE	LV INTEG SITE PLAN & ACTIVATION LV INTEG SITE AGE MPS INTEG & C/O LAB VEH INTEGRATION COMPUTER SOFTWARE SUPPORT LV SITE TEST SUPPORT GE SUPPORT SIL VEHICLE	
									DAGO	FACILITY PLANNING & ACTIVATION AGE LAUNCH SITE VEH PREP & LAUNCH COMPUTER SOFTWARE SUPPORT LAUNCH SITE VEHICLE TEST ENGINEERING LAUNCH SITE VEHICLE QUALITY CONTROL LAUNCH SITE TEST SUPPORT	
		MISSION SUPPORT OPER.							LV INTEG SITE PLAN & ACTIVATION LV INTEG SITE AGE MPS INTEG & C/O LAB VEH INTEGRATION COMPUTER SOFTWARE REPORT LV SITE TEST SUPPORT		
		<p style="text-align: center;">DOCUMENTATION</p>							<p style="text-align: center;">DOCUMENTATION</p>	MANAGEMENT DATA	MEO SITE ACTIVATION MEO SITE SUPPORT PRELIMINARY DESIGN BARC DESIGN MAINTENANCE & UPDATING
										TECHNICAL DATA	
		<p style="text-align: center;">MANAGEMENT</p>							<p style="text-align: center;">MANAGEMENT</p>	<p style="text-align: center;">PROGRAM CONTROL MANAGEMENT</p>	PHOTOGRAPHY
			CONFIGURATION MANAGEMENT	CONFIGURATION IDENTIFICATION CONFIGURATION CONTROL CONFIGURATION ACCOUNTING							
			<p style="text-align: center;">QUALITY ASSURANCE</p>	<p style="text-align: center;">QUALITY ASSURANCE</p>	QUALITY SYSTEMS & PROCEDURES	QUALITY SYSTEMS & PROCEDURES PERFORMANCE DATA MGMT CERTIFICATIONS QUALITY AUDITS CALIBRATION SERVICES QUALITY INTEGRATION RELIABILITY MGMT					
					IN-PLANT OPERATIONS	MATERIAL SUPPORT					
						PROGRAM DATA MANAGEMENT					

Figure 2-4. Mission Payload (Experiment's) PS/WBS (Sheet 2 of 2)
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2-9/10B

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RELEASE 1 JULY 2015

LEVEL 6	LEVEL 5	LEVEL 4	LEVEL 3	LEVEL 2	LEVEL 1
Manned Orbiting Laboratory (MOL) System Program		Total Gemini B Program	Manned Orbiting Laboratory System Program	ATF	Compatibility Vehicles Man-of-Arm Weapons System Integration - Total Spacecraft System Integration - Reentry Mobile Reentry Mobile Structures Live Station System Guidance & Control System Propulsion System Environmental Control System Tracking, Telemetry, Command & Voice Data Management & Recording System Mission Management System Propulsion System Reaction Seat Escape System Landing & Recovery System Post-Flight
					System Integration - Ampere Mobile Ampere Structures AMP Power & Electrical System AMP Power & Electrical System Environmental Control System Tracking, Telemetry, Command & Voice Data Management & Recording System Mission Management System Propulsion System Reaction Seat Escape System Landing & Recovery System Post-Flight
Gemini B Program	ACE	ACE	ACE	ACE	Complete ACE System Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT Recovery Area RT
					ACE ACE-CEI's Total ACE ACE ACE ACE ACE ACE ACE ACE ACE ACE ACE ACE ACE
					Publications Documentation Facility Support Facilities Design & Planning Trainers Training & Tours Support Operations Services Program Control Growth Studies
					Publications Documentation Facility Support Facilities Design & Planning Trainers Training & Tours Support Operations Services Program Control Growth Studies
					Publications Documentation Facility Support Facilities Design & Planning Trainers Training & Tours Support Operations Services Program Control Growth Studies
					Publications Documentation Facility Support Facilities Design & Planning Trainers Training & Tours Support Operations Services Program Control Growth Studies
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					Publications Documentation Facility Support Facilities Design & Planning Trainers Training & Tours Support Operations Services Program Control Growth Studies

Figure 2-5. Gemini B PS/WBS
1 September 1966

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LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	
Manned Orbiting Laboratory (MOL) System Program	Titan III	Launch Vehicle	Structure	Structures & Installations Navigation Guidance & Control Airborne Support Instrumentation Secondary Power	
			Propulsion	Stage 0 Stage I Stage II Stage III	
			Guidance & Control		
			Command Destruct		
			Propellants		
		Launch Services	Launch Vehicle	Structures Propulsion Guidance & Control Propellants	
		Training	Services	Contractor Training for Contractor Personnel	
		AGE Peculiar	Launch Vehicle	Structures Propulsion Guidance & Control	
		System Testing & Evaluation (Launch Vehicle)	R&D Tests		Reliability Tests Design Development Tests Qualification Tests Design Confirmation Tests Model Tests BVT Tests Bart Hardware Bart Fixtures Special Bart Equipment
				Production	Production Bart Tests Acceptance Tests
		System Eng'g / Management	System Engineering		System Studies Integration Reliability Maintainability Human Engineering Logistic Support Error & System Safety Quality Assurance Mass Properties Control Bart Control Design Requirements System Test Planning
			Program Management		Configuration Management Cost/Schedule Management Associate/Agency Liaison Photographic Requirements
		Data		Admin & Financial Config Management Draws Draw/IF Draw Facilities Handbooks Logistic/Provision Mgmt/Perf/OPN Procurement & Prod Rys. Subsystems Build/Maintain System Analysis Test	
		Site Activation		Integration Planning Installation Support Installation & C.O. Facility Design Supp.	
		Initial Spares			

Figure 2-6. Titan III PS/WBS

FACILITIES PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
<p>MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM</p>	<p>FACILITIES</p>	<p>ARCHITECTURAL & ENGINEERING (A&E CONTR)</p>			
		<p>MOL (MLC)</p>			
		<p>ORBITING VEHICLE ASSY BLDG</p>			
		<p>OPERATIONAL TRNG & EVAL FACILITY</p>			
		<p>OPERATIONAL READINESS UNIT</p>			
		<p>SATELLITE TEST CENTER</p>			
		<p>SPACE SYSTEMS TRNG FCULTY (EAFB ADDN)</p>			
		<p>ENGINEERING & OPERATIONS BLDG</p>			
		<p>HAZARDOUS HANDLING FACILITY</p>			
		<p>PYROTECHNIC STORAGE FACILITY</p>			

1 September 1966
Figure 2-7. Facilities Program Segment

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FLIGHT CREW EQUIPMENT PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	FLIGHT CREW EQUIPMENT	PRESSURE SUIT	SYS ENGINEERING & INTEGRATION	SYS ENGINEERING			
				DETAIL SYS & SUBSYS COMPONENTS, & INTERFACE DESIGN			
				SYS & SUBSYS ENG TEST & TEST SUPPORT			
						SYS INTEG & C/D	
			PRESSURE SUIT SYSTEM (HARDWARE)	FOOTGEAR			
				HELMET			
				SUIT			
				GLOVES			
				PORTABLE GROUND ECS			
				AGE			
			MANAGEMENT & ADMINISTRATION	SUPPORTING EQUIP			
				PROGRAM CONTROL MGMT			
		CONFIG MGMT					
		SYSTEM EFFECTIVENESS					
		SERVICES (TEST OPERATIONS)	MATERIAL SUPPORT				
			PROCUREMENT & PRODUCTION MANAGEMENT				
			FLIGHT PREP & LAUNCH				
			ORBIT & RECOVERY				
			TRAINING & REHEARSAL				
		EXTRAVENICULAR ENVIRONMENTAL CONTROL SYS	SYS ENGINEERING & INTEGRATION				
			EXTRAVENICULAR ECS HARDWARE				
			MANAGEMENT & ADMINISTRATION				
			SERVICES (TEST OPERATIONS)				
FLIGHT CREW CLOTHING & ACCESSORIES	BODY COVERING						
	FOOTGEAR						
	GLOVES						
	TETHERS						
	EYE PROTECTING DEVICES						
	BIO ASSURANCE VEST						
	BLOOD PRESSURE MEASURING DEVICE						
	RADIATION DOSEMETER						
	COMB HEADSET						
	CLEANING TISSUE						
	FOOD PACK						
	FLT MED KIT						
	PERS HYG TOWELS						
	MAIL CLIPPER						
	BOOT CLEANING PADS						
	PERS TELEM DEVICE						
	SHAYER						
	ORAL HYGIENE DEVICE						
DRINKING STRAW							

Figure 2-8. Flight Crew Equipment Program Segment
1 September 1966
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FLIGHT CREW PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	FLT CREW	PRELIMINARY MOL TRAINING	CURRICULUM	MOL VEHICLE 30 DAYS MISSION REQUIREMENTS CREW REQUIREMENTS	
			SPECIAL STUDIES	INLOAD REQUIREMENTS CONTINGENCY REQUIREMENTS BIO-MEDICAL NEEDS	
			EQUIPMENTS	MOCK-UPS TRAINING DEVICES SUB-SYSTEM SIMULATION SPECIAL SIMULATION	
			ADMINISTRATION	CARE & HOUSING RECORDS RESPONSIBILITIES	
		SYSTEM DEVELOPMENT & CREW INTEGRATION	PLANNING	ON-ORBIT OPERATIONS GROUND OPERATIONS FLIGHT HARDWARE MISSION SIMULATOR TRAINERS EMERGENCIES FLT CREW EQUIPMENT	
			ENGINEERING DEVELOPMENT & INTEGRATION	LAB VEHICLE GROUND OPERATIONS MISSION SIMULATORS TRAINERS FLT CREW EQUIPMENT RECOVERY	
		PRE FLIGHT TRAINING	MISSION PLANNING	FLIGHT PLANS GROUND SUPPORT PLANS CONTINGENCY	
			PROFICIENCY TRAINING	FAMILIARIZATION CONDITIONING PROCEDURAL	
			MISSION SIMULATION	COUNTDOWN & LAUNCH ASCENT & ORBIT OPERATION DEORBIT & REENTRY RECOVERY	
			CONTINGENCY	ASCENT ORBIT PLAN DEVIATIONS ON ORBIT EMERGENCIES RECOVERY	
			BASE LINE RECORD	PROCEDURES FACTORS ANALYSIS USE	
			BIOASTONAUTICS	PHYSICAL CONDITIONING PSYCHOLOGICAL DIET WORK/REST CYCLE ISOLATION	
		FLIGHT TEST OPERATIONS	FLIGHT ASSIGNMENT	CRITERIA PROCEDURES SCHEDULE	
			FLIGHT OPERATIONS	COUNTDOWN & LAUNCH ASCENT & ORBIT INSERTION ON ORBIT DEORBIT & REENTRY RECOVERY	
			GROUND SUPPORT OPNS		

Figure 2-9. Flight Crew Training Program Segment
1 September 1966

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TEST SUPPORT PROGRAM SEGMENT (CONT'D)

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	TEST SUPPORT	COUNTDOWN & LAUNCH SUPPORT	INSTRUMENTATION SUPPORT	T/M CHECK OUT	
				BEACON CHECKS	
				LCC TO MC	
			LAUNCH SERVICES	LAUNCH READINESS	
				FUELS & SUPPLIES	
				POWER-ELEC-MECH	
			RANGE SAFETY	SUPPORT EQUIPT OP	
				DATA GATHERING	
				TRAJECTORY PLOTS-OVER-FLTS	
			FLIGHT CREW SAFETY	RANGE CLEARANCE	
				PAID SAFETY	
				COMMAND DESTRUCT	
		FLIGHT OPERATIONS SUPPORT	POWERED FLIGHT MC SUPPORT	TRACKING & PLOTTING	
				ABORT SUPPORT	
				METRIC DATA	
			REMOTE SITE OPERATION	REAL TIME T/M	
				COMMUNICATIONS	
				COMPUTERS & DATA DISPLAY	
			COMMUNICATIONS	PERSONNEL PROCEDURES	
				EQUIPMENT SUPPORT & OPER	
				DATA HANDLING	
			COMPUTER OPERATION	CONTINGENCY OPERATIONS	
				ACCURACY & RELIABILITY	
SWITCHING,CALL UP, DOWNTIME					
DATA HANDLING	MAINTENANCE & REPAIR				
	EMERGENCY OPERATIONS				
	NORMAL PROGRAM OPERATION				
COMMAND AND CONTROL	CONTINGENCY OPERATION				
	DOWNTIME & BACKUP				
	MODIFIED OR NEW PROGRAM				
EVALUATION & REPORTS	REAL TIME				
	QUICK LOOK				
	POST LAUNCH				
			VOICE CONTROL SUPPORT		
			SPECIAL CONTROL SUPPORT		
			EMERGENCY CONTROL SUPPORT		

LAUNCH OPERATIONS PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	LAUNCH OPERATIONS	LAUNCH OPERATIONS ANALYSIS & PLANNING	MC INTERFACE REQMTS		
			MISSION DM INTERFACE REQMTS		
			AGE REQMTS		
			TRAINING REQMTS		
			SUPPORT EQUIP REQMTS		
			FACILITY REQMTS		
			TEST SUPPORT REQMTS		
			SERVICES REQMTS		
			PLANS & PROCEDURES		
			MANPOWER REQMTS		
			COMMUNICATION REQMTS		
			FLT READINESS DETERMINATION		
		SECURITY			
		SAFETY			
		HARDWARE			
		FACILITIES ACTIVATION	MOL LAUNCH COMPLEX		
			OV ASSEMBLY BLDG		
			OPERATIONAL TRNG & EVAL FACILITY		
			OPERATIONAL READINESS UNIT		
			HAZARDOUS HANDLING FACILITY		
AGE & SUPPORT EQUIPMENT INSTALLATION & CHECKOUT	ORBITING VEH AGE				
	LAB VEH AGE				
	GEM B AGE				
	PAYLOAD AGE				
	TITAN III AGE				
	FLT CREW EQUIP AGE				
	ILC EQUIP				
	MISSION SIMULATOR				
BIO ASTRONAUTICS COMM & ELECTRONICS					
RECEIVING & INSPECTION	OV CONTR SERVICES	LAB VEH	GEMINI B		
	T-III CONTR SERVICES	TITAN III			
		SOLID MOTORS			
		GUIDANCE			
CHECKOUT & PREPARATION FOR INTEGRATION	OV CONTR SERVICES	LAB VEH	GEMINI B		
	T-III CONTR SERVICES	TITAN III			
		SOLID MOTORS			
		GUIDANCE			

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Figure 2-12. Launch Operations Program Segment

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LAUNCH OPERATIONS PROGRAM SEGMENT (CONT'D)

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	LAUNCH OPERATIONS	FLIGHT VEHICLE (OV/T-III) INTEGRATION	OV CONTR SERVICES	LAB VEN GEMINI B	
			T-III CONTR SERVICES	TITAN III SOLID MOTORS GUIDANCE	
		SYSTEM INTEGRATION (F/WMC & AGE)	FLIGHT VEHICLE CONTRACTOR SERVICES	OV CONTR TITAN III CONTR	
			FLIGHT CREW		
			BIO-ASTRONAUTICS SUPPORT		
			TEST SUPPORT	RANGE SAFETY RANGE INSTRUMENTATION	
			MISSION CONTROL SERVICES		
			RECOVERY SUPPORT		
		COUNTDOWN & LAUNCH OPERATIONS	OV CONTR SERVICES	LAB VEN CONTR GEM B CONTR	
			T-III CONTR SERVICES	T-III CONTR SOLID MOTOR CONTR ENG CONTR GUIDANCE CONTR	
			FLIGHT CREW		
			BIO-ASTRONAUTICS SUPPORT		
			TEST SUPPORT	RANGE SAFETY RANGE INSTRUMENTATION COMMUNICATIONS WEATHER LOCAL RECOVERY	
			FLIGHT OPERATIONS	MISSION CONTROL MISSION SIMULATOR COMMUNICATIONS	
			RECOVERY SUPPORT	EMPS AIRCRAFT HELICOPTER COMM MEDICAL WEATHER	
		EVALUATION & REPORTS			

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Figure 2-13. Launch Operations Program Segment (Cont'd)

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TAB A

ROLES AND RESPONSIBILITIES
FOR THE
MANNED ORBITING LABORATORY SYSTEM
(MOL)
PROGRAM

1 September 1966

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TAB A

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TAB A

ROLES AND RESPONSIBILITIES
FOR THE MANNED ORBITING LABORATORY PROGRAM

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ROLES AND RESPONSIBILITIES FOR THE MANNED ORBITING LABORATORY PROGRAM

1.0 (U) INTRODUCTION.

This Tab contains a further refinement of the Roles and Responsibilities relative to the inter-relationships between concerned contractors/agencies responsible for the conduct of the MOL Program Segments. The Contractor Work Statements, the Program Breakdown Structure, and the established responsibilities of government agencies and/or working agreements between the government agencies and the MOL Program Office are intended to be consistent with the Roles and Responsibilities delineated herein.

2.0 (U) TASK CATEGORIES.

The tasks listed are divided into categories which correspond to the principal activities as the program proceeds through definition phase to completion of acquisition phase. The categories of tasks and activities are:

A. System Engineering Analysis.

The tasks in this category include generation and integration of system engineering data and analysis of system operations. It includes computation of trajectory and orbit mechanics, tracking, orbit determination, and ground station coverage as well as analysis of test data derived from the performance of the Test Operations Task and, as necessary to the analysis, from the performance of the Test and Integration Task.

B. Engineering Design.

Tasks include establishment of equipment design, production of drawings and hardware specifications and design integration of interfacing equipment of several contractors/agencies.

C. Fabrication.

This task provides for development prototypes for ground test and flight articles for test operations. This includes both make and buy items of supplying contractors.

D. Test and Integration.

The tasks include testing of contractor equipment for development, qualification and acceptance, as well as integration of equipment and conduct of system compatibility tests.

E. Test Operations.

This task category includes all functions, operations, and support occurring in direct association with the MOL flight missions. It includes preparatory tasks and documentation which contribute directly to mission operations, crew training, physiological functions related to experimentation and flight crew monitoring, launch site operations, powered flight operations and support, on-orbit and re-entry operations, and operations and support associated with hardware, data, and flight crew recovery.

F. Facilities.

This task category includes establishment of criteria for facilities at the launch site, conduct of facility design, and supervision of facility construction.

3.0 (U) ORGANIZATIONAL ROLES.

The relationship of responsibilities of contractors and agencies for the tasks shown are designated as follows:

▲ Primary Responsibility

S Support: A task of providing support in the form of information or assistance to the organizations with primary responsibility.

R Establish Requirements: A task of establishing requirements to be met by the organization with primary responsibility.

I Interface: An organization with responsibility for equipment with a physical or functional interface.

4.0 (U) CONTRACTOR OR AGENCY IDENTITY.

Program roles and responsibilities shown in this document have been assigned only to the principal participating contractors and agencies. In some instances tasks can be assigned unambiguously to a single contractor or agency with clear interfaces with other organizations. In other cases, the relationship of some supporting agencies is not well defined and some such functions have been designated as though they were to be performed by a single organization.

4.1 (U) ASSOCIATE CONTRACTORS AND AGENCIES.

4.1.1 (U) Laboratory Vehicle (Contractor). Douglas

4.1.2 (U) Gemini B (Contractor). McDonnell

4.1.3 (U) Titan III (Agency).

The Titan III portion of the MOL system is the responsibility of the SSD Titan III SPO. However, the equipment and services will be provided by contractors. Responsibilities are designated here as though they were to be performed by a single contractor whereas all Titan III associate contractors will actually participate with Martin acting as Titan III integrator.

4.1.4 (U) Pressure Suit Assembly (Contractor). David Clark

4.1.5 (U) Test Support (Agency), NRD.

All test operations support not identified as a direct responsibility of either the Launch Operations Agency or the Flight Operations Agency is the responsibility of the National Range Division (NRD). This test support includes the assignment of resources not only in the vicinity of the launch site, but other remote station support as may be required for the MOL Program.

4.1.6 Launch Operations (Agency). 6595th Aerospace Test Wing.

This function will be the responsibility of the 6595th Aerospace Test Wing (ATW). They are responsible, as a direct arm of the MOL SPO, for the direction and conduct of all assigned pre-launch and launch operations occurring at the launch site.

4.1.7 Flight Operations (Agency). AFSCF

The Air Force Satellite Control Facility is responsible for developing and providing those resources at the Satellite Test Center as well as the global tracking and communications networks of the SCF necessary to support the MOL Test Operations during the flight preparation and through all flight phases including Gemini-B re-entry. As assigned, SCF will function as a direct arm of the MOL SPO for the conduct of on-orbit operations.

4.1.8 Recovery (Agency), DOD Manager.

The DOD Manager for Manned Space Flight Support is responsible for planning and providing through all flight phases those recovery resources (including aircraft, helicopters, ships, recovery support teams, etc.) and the operation thereof, necessary to support the MOL Test Operations for the recovery of the Gemini B, Flight Crew, and data on board the spacecraft. As assigned, the DOD Manager will function as a direct arm of the MOL/SPO.

4.1.9 (U) Deputy for Civil Engineering (Agency).

Acquisition of MOL facilities will be delegated by the MOL SPO to the SSD Deputy for Civil Engineering. This agency will monitor and direct contractors in preparation of facility criteria in association with Architect and Engineer Contractors. Upon completion of the criteria, the facility designs will be prepared under the direction of the Deputy for Civil Engineering by the A&E Contractor. Stearns-Rogers is the

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contractor for ILC facilities and Daniel, Mann, Johnson and Mendenhall are associates for MOL-peculiar facilities. When the designs are complete they will be delivered to the Corps of Engineers for construction with monitoring by the Deputy for Civil Engineering. These activities are largely separate from other program activities and therefore this agency is included in the roles and responsibilities tables only under Task Category F, Facilities.

4.1.10 (U) SPO and GSE/TDC.

The MOL SPO has over-all responsibility for the program. The SPO and the GSE/TDC will review all significant program decisions and SPO approval is required for their implementation. SPO and GSE/TDC specific responsibilities are indicated in this document only where they represent a specific direct program responsibility which is not performed by another organization designated in another column, or where such designation will clarify the responsibilities of other contractors or agencies not identified at this time.

4.1.11 (U) Experiment Integration (Contractor), General Electric.

5.0 (U) CONFIGURATION TERMINOLOGY.

The terminology (see Figure 1) used in describing tasks defines the Orbiting Vehicle as consisting of the Laboratory Vehicle, Gemini B, and Flight Crew Equipment. The Titan III system consists of the launch vehicle, supporting AGE, and the ILC. The Gemini B spacecraft includes the re-entry module and the adapter section.

6.0 (U) OTHER CONTRACTOR/AGENCY RESPONSIBILITIES.

Other management or administrative activities such as control of drawings, configuration management and interface control, production and quality control, and schedule and cost control, are considered normal

program functions which must be accomplished by all contractors/agencies and therefore are not enumerated as specific tasks in this document.

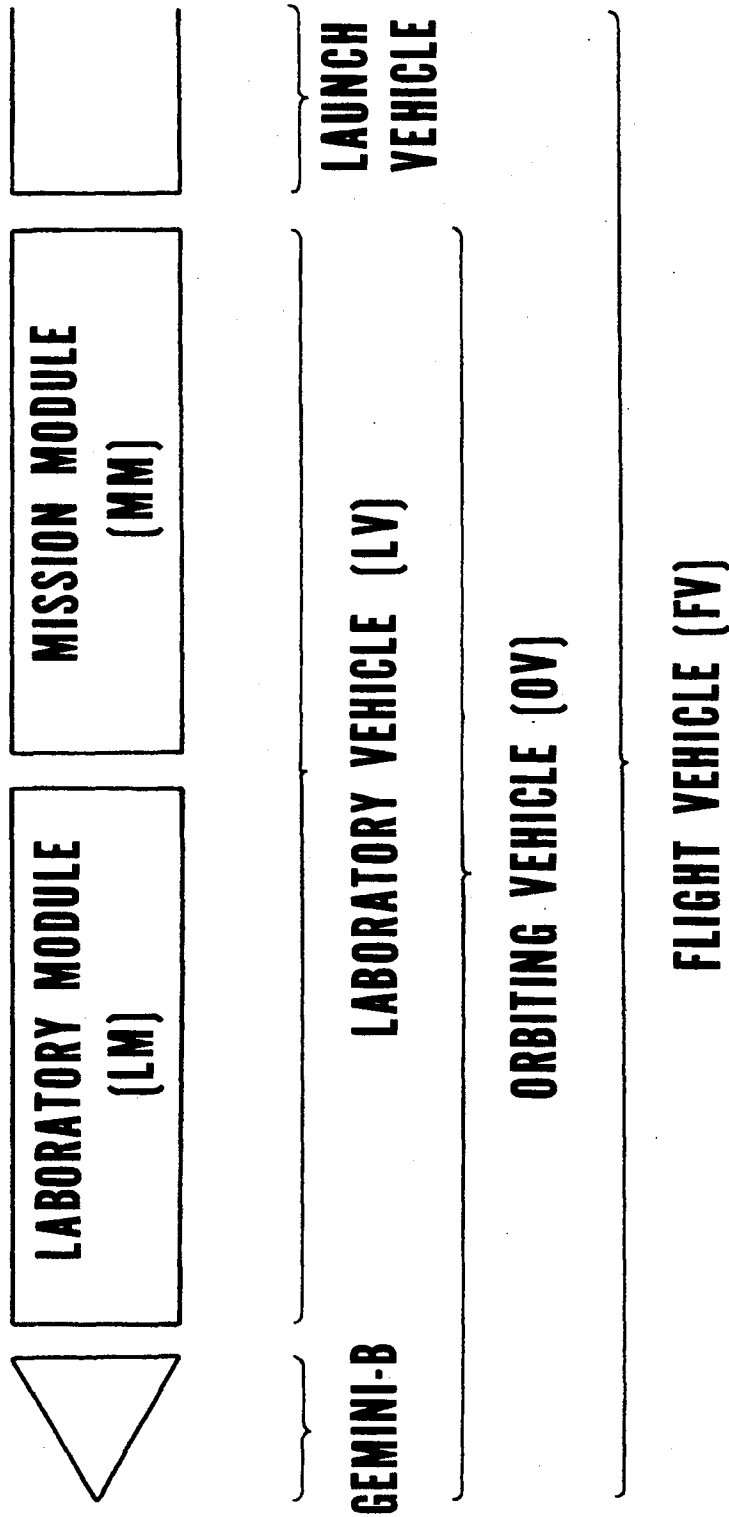
7.0 (U) ACTIVITY DESIGNATIONS.

Activities which have been assigned as specific responsibilities of contractors or agencies are identified briefly in the following roles and responsibilities tables. Wherever further explanation is required to clarify tasks or activities, see definition of tasks which follow tables.

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FIGURE 1-TERMINOLOGY



MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC Experiment Integration (Contractor)	
No.	ACTIVITIES										
1	Establish Flight Test Objectives	S	S	S	S	S	S	S	S	▲	S
2	Analyze Gemini B Spacecraft	SR	▲	SR	SR	S	S	S	R		SR
3	Analyze Laboratory Module	▲	SR		SR						SR
4	Analyze Mission Module	SR	S		SR			S	R		▲
5	Analyze Laboratory Vehicle	▲	SR	SR	SR						SR
6	Analyze Orbiting Vehicle	▲	SR	SR	SR						SR
7	Analyze Launch Vehicle	SR	SR	▲			S				SR
8	Analyze Flight Vehicle	S	S	▲	S	S	S	S			S
9	Analyze Launch Vehicle Induced Environment	S	S	▲	S						S
10	Analyze Pressure Suit Assembly	SR	SR		▲		S				SR
11	Analyze Integrated Launch Facilities	▲	SR	SR	S		SR				SR
11a	Analyze ILC Facilities	S	SR	▲	S		SR				SR
12	Analyze Integrated AGE Installation	▲	SR	SR	SR		SR				SR
12a	Analyze ILC AGE Installation	S	S	▲							S
13	Analyze Flt Crew Training	SR	SR	SR	SR	S	S	SR	SR	▲	SR
14	Analyze Mission Simulation Requirements	▲	SR	SR	SR		S	SR	R		SR

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TABLE A

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
15	Analyze Bioastronautics Instrumentation & Procedures	▲	S		SR			S	R		
16	Analyze Medical Monitoring and Operations	SR	SR		SR			SR	SR	▲	
17	Analyze Preliminary Orbiting Vehicle Time-lines	▲	SR	SR	SR	SR	SR	SR	SR		SR
17a	Analyze Preliminary Mission Module Time-lines	SR	SR	SR	SR	SR	SR	SR	SR		▲
18	Analyze Preliminary Flight Planning	SR	SR	SR	SR	SR	SR	SR	SR	▲	SR
19	Analyze Gemini B Ground Checkout	S	▲	S	S		S				
20	Analyze Laboratory Module Ground Checkout	▲	S		S			S			S
21	Analyze Mission Module Ground Checkout	S			S			S			▲
22	Analyze Laboratory Vehicle Ground Checkout	▲	SR		SR			SR			SR
23	Analyze Orbiting Vehicle Ground Checkout	▲	S		SR			SR			SR
24	Analyze Launch Vehicle Ground Checkout	S	S	▲			SR	SR			SR
25	Analyze Pressure Suit Assembly Checkout & Prep.	SR	SR		▲				S		
26	Analyze Flt Crew Checkout and Preparation	SR	SR	S	SR					▲	SR
27	Analyze Flight Vehicle Checkout	▲	SR	SR	SR		SR	SR			SR
27a	Analyze Launch Vehicle System Checkout	SR	SR	▲	SR		SR	SR			SR
27b	Analyze Flight Simulation Test	▲	SR	SR	SR	S	SR	SR	R		SR

TABLE A (Cont'd)

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
28	Conduct Launch Trajectory Analysis	SR	SR	▲		S	S			SR	
29	Analyze Flt Vehicle Final Preparation & Launch	▲	SR	SR	S	S	SR	S	S	SR	
29a	Analyze Powered Flight Operations	S	S	S				S	▲		
30	Analyze Launch and Ascent Abort	S	▲	SR		S	S	S		S	
31	Analyze Launch Vehicle and Orbiting Vehicle Separation	S	S	▲				S		S	
32	Analyze Gemini B On-Orbit Checkout	S	▲		SR			S			
33	Analyze Flt Crew Transfer (Factors Affecting Gemini B)	S	▲		S			S			
34	Analyze Flt Crew Transfer (Factors Affecting Lab Veh)	▲	S		S			S			
35	Analyze Lab Module On-Orbit Checkout	▲	S		SR			S		S	
36	Analyze Mission Module On-Orbit Checkout	S			S			S		▲	
36a	Analyze Gemini B Flt Crew Tasks	SRI	▲	S	S			S		S	
37	Analyze Lab Module Flt Crew Tasks	▲	SRI		S			S		SRI	
38	Analyze Mission Module Flight Crew Tasks	S			S			S		▲	
38a	Analyze Laboratory Vehicle Flight Crew Tasks	▲	SR		R			SR		SR	
39	Analyze On-Orbit Communications & Data Processing	▲	SR		S			SR		SR	
39a	Analyze Mission Module Data Handling	SR						SR		▲	

TABLE A (Cont'd)

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
40	Analyze AFSCF Data Processing	R	R	R	R	R	R	▲	R		R
41	Analyze LV Overlap Programs	▲						SR			SR
41a	Analyze Mission Module Software	SR						SR			▲
41b	Analyze Laboratory Module Software	▲						SR			SR
42	Analyze On-Orbit Abort	▲	SR		S	S		S	R		SR
43	Analyze Gemini B Separation	S	▲					S			
44	Analyze Laboratory Vehicle Disposal	▲	S					S			SR
45	Analyze Gemini B De-Orbit Operation		▲		S			S	S		
46	Analyze Gemini B Recovery Operations		S		S			S	SI	▲	SR
47	Analyze Integrated System Operation	▲	SR	SR	SR	SR	SR	SR	SR		SR
48	Post Flt Analysis of Count-down	▲	S	S	S		S	S			S
49	Post Flt Analysis of Launch Vehicle Data	S		▲		S	S	S			
50	Post Flt Analysis Laboratory Module Data	▲	S		S			S			S
51	Post Flt Analysis of Mission Module Data	S			S			S			▲
52	Post Flt Analysis of Gemini B Data	S	▲		S			S	S		
53	Post Flt Analysis of Pressure Suit Assembly Data	S	S		▲			S	S		

<u>MOL PROGRAM</u> <u>ROLES AND RESPONSIBILITIES</u> A. SYSTEM ENGINEERING & ANALYSIS (Cont'd)		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
54	Post Flight Analysis of Bioastronautics Data	S	S		S			S	S	▲	
55	Post Flight Analysis of Re-Entry Data		▲		S			S	S		
56	Post Flight Analysis of Flight Crew Performance	S	S		S			S		▲ S	
57	Post Flight Analysis of Mission Control Data	S	S	S	S	S	S	▲	S	S	
58	System Requirements Analysis	▲	SR	SR	SR	SR	SR	SR	SR	SR	
59	System Studies	▲	S	S	S	S	S	S	S	S	

TABLE A (Cont'd)

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES												
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)			
B. ENGINEERING DESIGN		No.	ACTIVITIES											
	1	Laboratory Vehicle Power System	▲	SRI		SRI								SRI
	2	Laboratory Module Consoles and Displays	▲	SRI		SRI					SR			SRI
	3	Mission Module Consoles and Displays	SRI			SRI				SR				▲
	4	MOL Communications & Data Processing	▲	SRI		SRI	R	R	SR					SRI
	5	Pressure Suit Assembly	SRI	SRI		▲		R						SRI
	6	Lab Module Software	▲						SRI					SRI
	7	Mission Module Software	SRI						SRI					▲
	8	Gemini B	SRI	▲	SRI	SRI		R	R	R				SR
	9	Laboratory Module	▲	SRI	SRI	SRI		R	R					SRI
	10	Mission Module Structure	SRI		SRI			R	R					▲
	11	Mission Module	SRI		SRI	SRI			R					▲
	12	Laboratory Vehicle Integration	▲	I	I									SRI
	13	Orbiting Vehicle Integration	▲	SI	I	SI		R	R					SI
	14	Titan III Design	SRI	SRI	▲			S						SRI
	15	Gemini B Attachments	SRI	▲										
	16	Orbiting Vehicle Attachment to Launch Vehicle	▲		SRI									SRI

TABLE B

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
17	Flight Vehicle Structural Integrity	SRI	SRI	▲						SRI	
18	Flight Crew Transfer Equipment	SRI	▲		SRI						
19	System Design Integration	▲	SRI	SRI	SRI	SR	SR	SR		SRI	
20	Gemini B AGE	SRI	▲	SRI	SRI		R	R			
21	Laboratory Module AGE	▲	SRI	SRI	SRI		R	R		SRI	
22	Mission Module AGE	SRI			SRI		R	R		▲	
23	Laboratory Vehicle AGE	▲	SRI	SRI	SRI					SRI	
24	Pressure Suit Assembly AGE	SI	SI	SI	▲		S				
25	Titan III AGE	R	R	▲			S				
26	Flight Vehicle AGE	▲	SI	SI	SI		S	S		SI	
27	Bioastronautics Instrumentation	▲	R		SR			R	R		
28	Gemini B Procedures Simulator		▲	SR	SRI			SI			
29	Lab Module Simulation Equipment	▲	SRI		S			SI		SRI	
30	Mission Module Simulation Equipment	SRI	SRI		S			SI		▲	
30a	Laboratory Vehicle Procedures Simulator	▲	SRI		S			SI		SRI	
31	Mission Simulators	▲	SRI	SR	SRI	S	S	SI		SRI	

TABLE B (Cont'd)

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (AIW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
32	Telemetry & Tracking Station Equipment	R	R	R	R			▲			R
33	Recovery Force Retrieval Equipment		SRI		SRI	S				▲	R
34	Mission Control Consoles	SR	SR	SRI		SR	S	▲	S		SR
35	SCF Systems Support Software	SR	SR	SR	SR	S	SR	▲	SR		SR
36	Establish Lab Veh Ground to Space Command Data Inter.	SRI						SRI			▲
37	Dev Lab Veh Ground Cmnd Syn & Compatibility Software	SRI						SRI			▲
38	Develop Gemini Ground to Space Cmnd Data Interface	SRI	▲			SI		SRI			
39	Develop Gemini B & Titan III Ground Software		SRI			S		SRI		▲	

TABLE B (Cont'd)

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES								
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC
No.	ACTIVITIES									
1	Flight Crew Accommodations Gemini B		▲		I					
2	Gemini B Attachments	I	▲							
3	Gemini B	I	▲	I	I			I		
4	Flt Crew Accommodations Laboratory Vehicle	▲			I					
5	Laboratory Module Consoles and Displays	▲	I		I					I
6	Mission Module Consoles and Displays	I			I					▲
7	MOL Communications and Data Processing	▲	I		I			I		I
8	Laboratory Vehicle Power System	▲	I							I
9	Laboratory Module	▲	I	I	I					I
10	Mission Module Structure	▲		I						I
11	Mission Module	I								▲
12	Pressure Suit Assembly	I	I		▲					
13	Flt Crew Transfer Equip.	I	▲		I					
14	Titan III	I	I	▲						I
15	Gemini B AGE	I	▲	I	I					
16	Laboratory Module AGE	▲	I	I	I					I

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TABLE C

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
17	Mission Module AGE	I			I					▲	
18	Pressure Suit Assembly AGE	I	I		▲						
19	Laboratory Vehicle AGE	▲	I		I					I	
20	Titan III AGE	I	I	▲							
21	No Entry										
22	No Entry										
23	No Entry										
24	Gemini B Procedures Simulator		▲		I						
25	Lab Module Simulator Equipment	▲			I					I	
26	Mission Module Simulator Equipment	I			I					▲	
27	Mission Simulator	▲	I		I		I			I	
28	Mission Control Consoles	I	I	I			▲			I	
29	Telemetry & Tracking Station Equipment	I	I	I			▲			I	
30	Laboratory Module Computer Software	▲					I			I	
31	Mission Module Computer Software	I					I			▲	
32	AFSCF System Support Software	I	I	I	I		I	▲	I	I	

TABLE C (Cont'd)

MOL PROGRAM ROLES AND RESPONSIBILITIES C. FABRICATION (Cont'd)		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
33	Gemini B Flight Support Software		SRI	SI				I		▲	
34	Command Synthesis and Compatibility Software	SRI						SRI		▲	

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TABLE C (Cont'd)

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
D. TEST & INTEGRATION		No.	ACTIVITIES								
1	Integrate & Test Lab Module Computer Subsys. Hrdwr & Software	▲						RI			SI
2	Integrate & Test Mission Mod Computer Hard & Software	SI						SRI			▲
3	Integrate Lab Veh Consoles and Displays	▲	S		S			S			SRI
4	Conduct Lab Mod Develop- ment, Qual & Accept Tests	▲	SRI		S						SRI
5	Conduct Gem B Development, Qual & Acceptance Tests	SRI	▲		S						R
6	Conduct Mission Module Dev Qual & Accept Tests	SRI									▲
7	Integrate Laboratory Vehicle Development Model	▲	SRI		SRI						SRI
8	Integrate Lab Veh	▲	SRI		SRI						SRI
9	Conduct Lab Veh Environ- mental Tests	▲	S		S						S
10	Assure Orbiting Vehicle Compatibility with System	▲	S	S				S			S
11	Conduct Lab Veh Dev Sys Test & Factory Accept Test	▲	SR		SR						SR
12	Install AGE in OV Facilities	▲	SRI								SRI
12a	Install AGE in ILC Facilities	SRI	SRI	▲							SRI
13	Checkout Gemini B AGE	I	▲	I							
13a	Checkout Laboratory Module AGE	▲	I								I
13b	Checkout Mission Module AGE	I									▲

TABLE D

MOL PROGRAM ROLES AND RESPONSIBILITIES D. TEST & INTEGRATION (Cont'd)		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
14	Conduct Titan III Assembly & Readiness for Orbital Veh Mating	I	I	▲		I				I	
15	Assembly of the Flight Vehicle	SRI	SRI	▲			S			SRI	
17	Integrate, Install & Checkout Mission Simulator	▲	SI		SI					SRI	
18	Integrate Mission Simulator with SCF	▲	S	S	S			SRI		S	
19	Gather Baseline Data on Flt Crew Performance	SR	SR		SR			S	▲		
20	Integrate & Test Airborne MOL Comm & Data Proc Sys	▲						SRI		SRI	

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TABLE D (Cont'd)

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
1	Prepare Flt Test Plan	▲	S	S	S	S	S	S	S		S
2	Prepare Sys Ops Plan	▲	S	S		S	S	S	S		
3	Prepare Program Requirements Document	S	S	S	S	S	S	S	S	▲	S
4	Prepare Orbital Requirements Document	S	S	S	S	S	S	S	S	▲	S
5	Prepare Gemini B Recovery Requirements Document	S	SRI	S	S			S	▲	SR	
6	Prepare Gemini B Checkout Procedures	S	▲	S	S		S	S			
7	Prepare Lab Module Checkout Procedures	▲	I		I						I
8	Prepare Orbiting Veh Checkout Procedures	▲	SR		SR	S	S	S			SR
9	Prepare Mission Module Checkout Procedures	R				S	S	S			▲
10	Prepare Pressure Suit Assembly Checkout Proced.	S	S		▲	S	S				S
11	Prepare T-III Checkout Procedures		S	▲		S	S				
12	Prepare Countdown Procedures	SR	SR	SR	SR	S	▲	S	S		SR
13	Prepare Ascent Guidance Equations		SR	▲		R					
14	Prepare Launch & Ascent Abort Procedures		▲	SR	S	SR	S	SR	SR		
15	Prepare Gem B On-Orbit Checkout Procedures	S	▲		S			S			
16	Prepare Lab Mod On-Orbit Checkout Procedures	▲	S		S			S			SR

TABLE E

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
17	Prepare Mission Module On-Orbit Checkout Procedures	SR					S			▲	
18	Prepare Lab Mod Orbital Procedures	▲	SR		S		S			SR	
19	Prepare Mission Module Operations Procedures	SR			S		S			▲	
20	Integrate Flt Crew Orbital Procedures	▲	SR		S		S			SR	
21	Prepare Re-Entry Guidance Equations		▲	SR		R		R			
22	Prepare Crew De-Orbit & Re-Entry Procedures	S	▲					S		S	
23	Integrate Orbital Abort Procedures	▲	SR		S			SR	S	SR	
24	Direct & Coordinate Flt Crew Training	SR	SR	SR	SR	SR	SR	SR	S	▲	SR
25	Operate Mission Simulator	SR	SR	S	S	S	S	S		▲	SR
26	Operate MOL Launch Facility			SR		S	▲				
27	Assemble T-III on the Launch Pad			▲				S			
28	Checkout of Gemini B at Launch Site		▲	S							
29	Checkout Lab Mod at Launch Site	▲	SR	S	SR	S	S	S			SR
30	Checkout Mission Module at Launch Site	S		S				S			▲
31	Checkout Pressure Suit Assembly	S	S		▲			S			S
32	Checkout Flt Crew	S	S	S	S			S		▲	S

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TABLE E (Cont'd)

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MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Recovery (Agency) (DOD Manager)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
33	Checkout T-III			▲			S	S			
34	Conduct Flight Vehicle Final Checkout at Launch Pad	SR	SR	▲	SR	S	S	S		SR	
35	Conduct Countdown	S	S	S	S		▲	S		S	
36	Conduct Range Safety Operations		S	S		▲		S	S		
37	Operate Mission Control	S	S	S	S	S	S	▲	S	S	
38	Monitor Flt Crew Condition	S	S		S			▲		S S	
39	Direct & Control Mission Operations	S	S	S	S	S	S	S	S	▲ S	
40	Conduct Gemini B Recovery Operations		S		S	S		S	▲	S	
41	Format Data for Users	R	R	R	R	S		▲		R SR	

TABLE E (Cont'd)

MOL PROGRAM ROLES AND RESPONSIBILITIES		CONTRACTORS OR AGENCIES									
		Laboratory Vehicle (Contractor)	Gemini B (Contractor)	Titan III (Agency)	Pressure Suit Assembly (Contractor)	Test Support (Agency) (NRD)	Launch Operations (Agency) (ATW)	Flight Operations (Agency) (SCF)	Deputy for Civil Engr. (Agency)	SPO and GSE/TDC	Experiment Integration (Contractor)
No.	ACTIVITIES										
1	Prepare Facility Criteria for Initial Launch Complex	SR	R	▲		R	SR	R	SR	SR	
2	Prepare Facility Criteria for OV Support Bldg.	▲	SR	SR	R		SR		SR	SR	
3	Deleted										
4	Prepare Fac Criteria for Operational Trng & Eval Fac	▲	R	R	R	R		SR	SR	SR	
5	Prepare Facility Criteria for Operational Readiness Unit	▲	R		SR		SR		SR	SR	
6	Prepare Facility Criteria for Engr & Operations Bldg	▲	R		R		R		SR	R	
7	Design Initial Launch Complex	S	S	S	S	S	S		▲	S	
8	Design Orbiting Veh. Support Building	S					S		▲	S	
9	Delete										
10	Design Operational Training & Eval Facility	S	S				S		▲	S	
11	Design Operational Readiness Unit	S			S		S		▲		
12	Design Engineering and Operations Building	S					S		▲	S	

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TABLE F

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DEFINITIONS
OF
TASKS
USED IN THE
ROLES AND RESPONSIBILITIES TABLES

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A. SYSTEM ENGINEERING AND ANALYSIS.

1. Establish Flight Test Objectives.

The SPO and GSE/ TD Contractor will establish Flight Test objectives including flight schedules and capabilities to be demonstrated, including relative priorities for each flight. Performance requirements, criteria and overall analysis methods will be provided. All Associate Contractors and Agencies will provide inputs and support this effort.

2. Analyze Gemini B Spacecraft.

The Gemini B Contractor will conduct a complete analysis of the operation and equipment of the Gemini B spacecraft of the MOL mission. This will include structural analysis for conditions during launch, on-orbit, and re-entry, as well as analysis of the operation of the subsystems.

3. Analyze Laboratory Module.

The Laboratory Vehicle Contractor will conduct a complete analysis of the operation of the Laboratory Module and its subsystems. This will include analysis of structural integrity during launch and on-orbit as well as analysis of the functioning of subsystems and analysis of Mission Module requirements.

4. Analyze Mission Module.

The Experiment Integration Contractor shall conduct a complete analysis of the operation of the Mission Module and its subsystems.

The Mission Module is defined as that module separating the laboratory module and the T-IIIM. The mission module will consist of the external structure, experiment payloads, and control equipments.

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Some of this control equipment will be physically located in the laboratory module but shall not be considered part of it. The Experiment Integration Contractor shall be responsible for this mission module and the experiment integration.

5. Analyze Laboratory Vehicle.

The Laboratory Vehicle Contractor will conduct a complete analysis of the operation of the Laboratory Vehicle and its subsystems. This will include analysis of structural integrity during launch and on-orbit as well as analysis of the functioning of subsystems.

6. Analyze Orbiting Vehicle.

The Laboratory Vehicle Contractor will conduct a complete analysis of the operation of the Orbiting Vehicle and its subsystems. This will include analysis of structural integrity during launch and on-orbit as well as analysis of the functioning of subsystems and analysis of Titan III requirements.

7. Analyze Launch Vehicle.

The Launch Vehicle Contractor, under the direction of the Titan III SPO, will be responsible for a complete analysis of the Launch Vehicle during the period of launch and during ascent. This will include structures, dynamics, controls, checkout, countdown, guidance, etc. It will include all features of the Launch Vehicle as they affect the MOL Flight Vehicle.

8. Analyze Flight Vehicle.

The Launch Vehicle Contractor will conduct analysis of the flight vehicle during launch and ascent. This will include structural loads, vehicle dynamics, controls and guidance. Detailed analysis of the orbiting vehicle subsystems will be accomplished by the orbiting Vehicle Contractors.

9. Analyze Launch Vehicle Induced Environment.

The Launch Vehicle Contractor, under the direction of the Titan III SPO, will conduct a complete analysis of the environment which will be imposed upon the Flight Vehicle during launch. These parameters will be supplied to the other contractors/agencies as design requirements upon their equipment.

10. Analyze Pressure Suit Assembly.

The Pressure Suit Assembly Contractor will be responsible for conducting those analyses necessary to establish the requirements for the Pressure Suit Assembly and support equipment, e. g., CWG, EV visors, waste collection devices, etc.

11. Analyze Integrated Launch Facilities.

The Laboratory Vehicle Contractor will be responsible for the analysis and planning of the total, integrated criteria for the MOL Launch Facility.

11a Analyze ILC Facilities.

The Launch Vehicle Contractor will be responsible for the analysis and planning of the criteria for the ILC facilities.

12. Analyze Integrated AGE Installation.

The Laboratory Vehicle Contractor will be responsible for the analysis and planning of the integrated installation of AGE in the MOL Launch Facility.

12a Analyze ILC AGE Installation.

The Launch Vehicle Contractor will be responsible for the analysis and planning of the installation of AGE in the ILC facilities.

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13. Analyze Flight Crew Training.

Flight Crew Training will include coverage of such items as operation of the Laboratory Vehicle, Gemini B, payload equipment, communications, data transmission, and escape procedures. Training requirements and support in the use of equipment and simulators will be supplied by equipment contractors. The Training Plan is the responsibility of the MOL SPO/Aerospace.

14. Analyze Mission Simulation Requirements.

Each affected Associate Contractor and Agency will analyze their Mission Simulation requirements and establish design and operations criteria pertinent to their areas of responsibility. The Laboratory Vehicle Contractor will be responsible for integrating the design and operations criteria and for establishing the overall mission simulation design and operations criteria.

15. Analyze Bioastronautics Instrumentation and Procedures.

The Laboratory Vehicle Contractor has responsibility for the analysis of the integration of the equipment and procedures to be used to monitor the physiological and psychological condition of the flight crew. The requirements for such measurements and monitoring will be provided by the MOL SPO/Aerospace.

16. Analyze Medical Monitoring and Operations.

Analyses necessary to establish the requirements for flight crew physiological and psychological measurements, and for medical monitoring and medical operations in terms of information, number, and types of medical personnel, procedures, training and equipments will be conducted by the MOL SPO/Aerospace.

17. Analyze Preliminary Orbiting Vehicle Time-lines.

The Laboratory Vehicle Contractor will be responsible for the preparation of time-line commencing with initial injection into orbit and terminating with Gemini-B separation and laboratory vehicle disposal. The time-lines will include the specifications of the time and approximate location of each event and a description of the conditions required for the events to be initiated and accomplished. Time-lines for alternative events and contingency conditions will also be prepared.

17a Analyze Preliminary Mission Module Time-lines.

The Experiment Integration Contractor will be responsible for preparation of time-lines for periods of experiment activities. Basic requirements for experiment activation scheduling will be provided by the SPO. Detailed time and motion studies will be made for each event to include description of the conditions required for the events to be initiated and accomplished. Time-lines for alternate events and contingency conditions will also be prepared.

18. Analyze Preliminary Flight Planning.

The SPO and GSE/TDC will be responsible for analyzing and maintaining the baseline Flight Plan. This information will be available to all Contractors and Agencies.

19. Analyze Gemini B Ground Checkout.

The Gemini B Contractor will analyze all ground test and checkout requirements for the Gemini B including the preparations, preflight testing and countdown sequences at the launch area, and will determine the AGE configuration, capabilities and design to accommodate these requirements.

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20. Analyze Laboratory Module Ground Checkout.

The Laboratory Vehicle Contractor will analyze all ground test and checkout requirements for the Laboratory Module including the preparations, preflight testing and countdown sequences at the launch area, and will determine the AGE configuration, capabilities and design to accommodate these requirements.

21. Analyze Mission Module Ground Checkout.

The Experiment Integration Contractor will analyze all ground test and checkout requirements for the Mission Module including the preparations, preflight testing and countdown sequences at the launch area, and will determine the AGE configuration capabilities and design to accommodate these requirements.

22. Analyze Laboratory Vehicle Ground Checkout.

The Laboratory Vehicle Contractor will analyze all ground test and checkout requirements for the Laboratory Vehicle including the preparations, preflight testing and countdown sequences at the launch area, and will determine the AGE configuration, capabilities and design to accommodate these requirements. The Laboratory Vehicle Contractor will include the Mission Module ground test requirements in the Laboratory Vehicle analysis.

23. Analyze Orbiting Vehicle Ground Checkout.

The Laboratory Vehicle Contractor will conduct an overall analysis of the ground test and checkout requirements for the Orbiting Vehicle after assembly on the launch pad and will define the requirements for Orbiting Vehicle testing including the considerations of the Gemini B and Mission Module AGE. This analysis will define the extent and requirements for interface testing prior to electrical mating to the

Launch Vehicle by the Laboratory Vehicle and by the Gemini B to the Laboratory Vehicle. The requirements for testing of the total Orbiting Vehicle prior to mating electrically to the Launch Vehicle will also be included.

24. Analyze Launch Vehicle Ground Checkout.

The Launch Vehicle Contractor will analyze all ground test and checkout requirements for the Launch Vehicle including the preparations, preflight testing and countdown sequences at the launch area, and will determine the AGE configuration, capabilities and design to accommodate these requirements.

25. Analyze Pressure Suit Assembly Checkout and Preparation.

Procedures for checkout of the Pressure Suit Assembly and support equipment and for defining backup and contingency requirements will be established by the Pressure Suit Assembly Contractor.

26. Analyze Flight Crew Checkout and Preparation.

The preparation and checkout procedures for the Flight Crew will be defined by the MOL SPO/Aerospace. Various contingencies, e. g. , back-up crew, launch holds, etc. , will be analyzed. Resources in manpower and facilities will be identified.

27. Analyze Flight Vehicle Checkout.

The Laboratory Vehicle Contractor will analyze the combined systems testing, electromagnetic compatibility demonstrations and Simulated Flight test requirements, objectives and procedures for the complete Flight Vehicle after assembly on the launch pad. This analysis will include the integration and incorporation of necessary requirements from the other associate contractors, and will provide the basis for integrated Flight Vehicle system test procedures conducted prior to start of countdown.

27a Analyze Launch Vehicle System Checkout.

The Launch Vehicle Contractor will analyze the launch vehicle system checkout prior to preparation for launch. For purposes of definition, the launch vehicle system test will consist of a countdown, starting at an appropriate simulated time, such as T-3 minutes, and proceeding through the automatic count to ignition, liftoff, and subsequent countup through orbiting vehicle separation.

27b Analyze Flight Simulation Test.

The Laboratory Vehicle Contractor will analyze the flight simulation test, starting at orbiting vehicle/booster separation and continuing to Gemini "B" splash down.

28. Conduct Launch Trajectory Analysis.

The Launch Vehicle Contractor under the direction of the Titan III SPO will conduct analysis of launch trajectories and prepare data showing the pertinent parameters of each portion of the launch and the occurrence of significant events. Nominal trajectories will be analyzed as well as off-nominal trajectories. Such factors as environmental conditions encountered during launch, and launch injection accuracy will be determined.

29. Analyze Flight Vehicle Final Preparation and Launch.

The Laboratory Vehicle Contractor will conduct an analysis of the overall requirements for the total Flight Vehicle final preparations to enter countdown, the requirements, sequences and procedural controls of the countdown and the requirements and procedures of the launch as they affect powered flight capability, data transmission to, and control of the powered flight, by the flight crew and the Mission Control Center. Included will be the proper sequencing of critical and time

sensitive activities during final preparations and countdown, with due consideration to toxic propellants, cryogenics, explosives, range checks and flight crew time limitations and requirements.

29a Analyze Powered Flight Operations.

The Systems Program Office will conduct an analysis of the period from Flight Vehicle lift off through orbital insertion to define procedures and controls for normal and emergency powered flight conditions. Included will be the definition of data transmission requirements and reliability, Mission Control Center participation and the establishment of software and procedural items for the total powered flight regime.

30. Analyze Launch and Ascent Abort.

The Gemini-B Contractor will conduct a complete analysis of the conditions which would exist if an abort is required during the launch or ascent phase so as to permit safe recovery of the flight crew. Various types of malfunctions of the Flight Vehicle will be investigated and the timing of initiation of an abort signal established. For each of the different critical points in the launch or ascent phase, a complete abort sequence will be analyzed from receipt of the initiating signal to retrieval of the flight crew. The time period to be analyzed will start as soon as the Flight Crew members are placed in the Gemini-B and will continue through final insertion into orbit.

31. Analyze Launch Vehicle and Orbiting Vehicle Separation.

Analysis of separation mechanics and dynamics of the spent booster final stage will be performed by the Launch Vehicle Contractor under the direction of the Titan III SPO. This will include determination of timing and events of the separation sequence and establishment of limiting tip-off rates and separation velocities.

32. Analyze Gemini B On-Orbit Checkout.

The Gemini B Contractor will analyze the on-orbit checkout of the Gemini B spacecraft prior to transfer of the flight crew from the Laboratory Vehicle. This will include itemization of the parameters to be checked out and analysis of the instrumentation required. Both routine and emergency checkout procedures will be established.

33. Analyze Flight Crew Transfer (factors affecting Gemini B).

The analysis of flight crew transfer operations which affect the Gemini B spacecraft or its equipment will be performed by the Gemini B Contractor. This includes transfer both to and from the Gemini B spacecraft. Both routine and emergency conditions of transfer will be considered. Sequence of events to be encountered in flight crew transfer will be analyzed as well as procedures to be followed by the flight crew. Hazardous conditions which might arise in the course of transfer will be studied and procedures established to maximize flight crew safety. (Laboratory and Gemini B checkout for readiness for occupancy are analyzed in other activities.)

34. Analyze Flight Crew Transfer (factors affecting Laboratory Vehicle).

The Laboratory Vehicle Contractor will analyze those factors involved in the physical transfer of the flight crew which affect the Laboratory Vehicle. The contractor will work closely with the Gemini B and Pressure Suit contractors in the establishment of requirements and procedures compatible with items of equipment and maximum flight crew safety. (Laboratory and Gemini B checkout for readiness for occupancy are analyzed in other activities.)

35. Analyze Laboratory Module On-Orbit Checkout.

The establishment of a condition of readiness for occupancy of the Laboratory Vehicle is the responsibility of the Laboratory Vehicle Contractor. This will include an itemization of the parameters to be

measured and the designation of instrumentation to be used for these measurements. It will include analysis of means for the transmitting of information to the flight crew in the Gemini B spacecraft and/or to the ground for analysis and re-transmission. It will include analysis of the effects of equipment failure on the checkout procedures.

36. Analyze Mission Module On-Orbit Checkout.

The Experiment Integration Contractor will analyze the on-orbit checkout requirements for the MM equipments. He will define the equipment and procedures required to prepare the equipment to perform its on-orbit functions.

36a Analyze Gemini B Flight Crew Tasks.

The Gemini B Contractor will analyze the tasks to be performed by the flight crew while they are in the Gemini vehicle. This will include tasks to be conducted prior to launch, during launch, and following transfer prior to and during re-entry. The Gemini B Contractor will be responsible for flight crew tasks any time that the flight crew is contained in equipment provided by that contractor. (Transfer is analyzed as a separate activity.)

37. Analyze Laboratory Module Flight Crew Tasks.

The Laboratory Vehicle Contractor will be responsible for the analysis and integration of Laboratory Module Flight Crew tasks while the Flight Crew is in the Laboratory Vehicle. These tasks will include operation of Laboratory module equipment under normal and contingent cases, and housekeeping tasks.

38. Analyze Mission Module Flight Crew Tasks.

The Experiment Integration Contractor will be responsible for the analysis and determination of Flight Crew tasks related to the mission module equipment and experiment operations.

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38a Analyze Laboratory Vehicle Flight Crew Tasks.

The Laboratory Vehicle Contractor will be responsible for the analysis and integration of the Laboratory and equipment module Flight Crew tasks and to determine Lab Vehicle normal and emergency operating procedures.

39. Analyze On-Orbit Communications and Data Processing.

The Laboratory Vehicle Contractor will be responsible for the integration of the analysis of the communications support requirements throughout the orbiting vehicle, including voice and telemetry. Included shall be format and bandwidth requirements, ground data processing requirements and time phased duty cycles. Analysis will consider as inputs the requirements of the flight crew, Gemini B, Laboratory Vehicle and Mission Module.

39a Analyze Mission Module Data Handling.

The Experiment Integrated Contractor will analyze and integrate requirements for vehicle data handling, telemetry and ground data processing of experiment peculiar data.

40. Analyze AFSCF Data Processing.

The Flight Operations Agency will analyze the system support equipment, computer programs and techniques necessary to secure, process, store, format and display data written to MCC and between the MCC remote tracking stations and the flight vehicle.

41. Analyze LV Overlap Programs.

The Laboratory Vehicle Contractor is responsible for definition of overlap program requirements. Overlap functions are those functions which are required for operation of the Laboratory Vehicle at any time and are to be included in both LM and MM Programs. These include monitor and alarm, computer self-test, manual mode control,

laboratory vehicle commands, and the operations restart, load and copy. The Laboratory Vehicle Contractor will determine the procedures and conditions for operating LM and MM Programs simultaneously in separate Computer units without conflict of overlap tasks.

41a Analyze MM Software.

The Experiment Integration Contractor is responsible for the analysis of MM peculiar programs, overlap programs and their associated executive program.

41b Analyze LM Software.

The Laboratory Vehicle Contractor is responsible for the analysis of LM peculiar programs, overlap programs and their associated executive program.

42. Analyze On-Orbit Abort.

The Laboratory Vehicle Contractor will analyze the conditions which will exist if an abort is required during the period when the crew is on orbit and in the laboratory vehicle. The analysis will include detection of conditions requiring abort, the establishment of safe conditions for transfer of the flight crew to the Gemini B from the Laboratory Vehicle, and the timing of donning pressure suits and accomplishing the transfer operation. Critical and minimum standards of crew support and recovery capabilities will be supplied by the respective system segments for inclusion in the analysis.

43. Analyze Gemini B Separation.

The Gemini B Contractor will analyze the equipment and procedures used for separation of the Gemini from the Laboratory Vehicle. This will include equipment for attachment of the Gemini to the Laboratory Vehicle, the equipment which affects separation, and the means for providing signals to activate and indicate separation.

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44. Analyze Laboratory Vehicle Disposal.

The Laboratory Vehicle Contractor will analyze the requirements and tasks to be accomplished in disposing of the laboratory and mission module segments. The experiment contractor/agencies will establish the security and safety requirements of their equipments.

45. Analyze Gemini B De-Orbit Operations.

The Gemini B Contractor will analyze the operations of the Gemini B capsule and the flight crew necessary for separation from the orbiting vehicle through descent. The operation will include loiter time prior to retrofire, the alignment and retrofire operation, the re-entry maneuver, and parachute descent control. Both programmed and emergency conditions will be considered.

46. Analyze Gemini B Recovery Operations.

The MOL SPO will analyze the operations for the recovery of the Gemini B, astronaut and data following successful re-entry into the atmosphere. The primary responsibility for the recovery operations will rest with the DOD Manager for Manned Space Flight.

47. Analyze Integrated System Operation.

The Laboratory Vehicle Contractor will be responsible for the detailed analysis of the operation of the over-all MOL system. This analysis will be conducted on the basis of data provided by the other contractors and agencies within the program and his own analysis. In general, analysis will be based upon the inputs and outputs from the equipment provided by other associates and it will not be the responsibility of the Laboratory Vehicle contractor to analyze the internal operation of the equipment provided by others.

48. Post-Flight Analysis of Countdown.

Each of the associate contractors shall be responsible for the detailed post flight analysis of their part of the countdown data. The Laboratory Vehicle Contractor shall be responsible for collecting and collating this information for presentation to the Aerospace Test Wing and final post flight analysis by the MOL SPO/Aerospace.

49. Post-Flight Analysis of Launch Vehicle Data.

The Launch Vehicle Contractor will be responsible for the analysis of data concerning the operation of the Launch Vehicle throughout the countdown and ascent phase.

50. Past Flight Analysis Laboratory Module Data.

The Laboratory Vehicle Contractor will be responsible for the analysis of data concerning the operation of the Laboratory Vehicle throughout the duration of the mission.

51. Post-Flight Analysis of Mission Module Data.

The Experiment Integration Contractor will be responsible for the analysis of data concerning the operation of the Mission Module throughout the duration of the mission.

52. Post-Flight Analysis of Gemini B Data.

The Gemini B Contractor will be responsible for analysis of data concerning operations of the Gemini B capsule throughout the duration of a mission.

53. Post-Flight Analysis of Pressure Suit Assembly Data.

The Pressure Suit Assembly Contractor will analyze the data concerning the performance of the pressure suit assembly.

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54. Post-Flight Analysis of Bioastronautics Data.

The data concerning measurements of the biomedical functions and the general human performance of the flight crew will be evaluated by the MOL SPO/Aerospace. Support for these analyses will be provided by the Laboratory Vehicle Gemini B, Pressure Suit Assembly contractors, etc.

55. Post-Flight Analysis of Re-entry Data.

The Gemini B Contractor will be primarily responsible for the post-flight analysis of re-entry data.

56. Post-Flight Analysis of Flight Crew Performance.

The analysis of performance of the flight crew in the course of a mission is the responsibility of the MOL SPO/Aerospace. Each Contractor/Agency will analyze the detailed performance of the flight crew in the operation of his equipment and provide data to the SPO.

57. Post-Flight Analysis of Mission Control Data.

The Flight Operations Agency (SCF) will analyze the data concerning the mission control performed in the course of a flight. The Laboratory Vehicle, Gemini B, and other contractors/agencies will provide support in this analysis.

58. System Requirement Analysis.

The Laboratory Vehicle Contractor will be responsible for those analyses/studies necessary to define the system design requirements. This task includes review of engineering data and change proposals prepared by participating contractors and agencies which affect or change interfaces for which the laboratory contractor is custodian,

and/or changes which are developed in view of over-all system requirements and constraints. The system engineering documentation will be used as the basis for system requirements synthesis and shall be expanded or revised, as appropriate, to reflect the latest integrated system requirements.

59. System Studies.

The Laboratory Vehicle Contractor will conduct studies to define the impact of system requirement and conceptual changes on the MOL program baseline and to optimize the selection of alternative technical approaches.

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B. ENGINEERING DESIGN.

1. Laboratory Vehicle Power System.

The Laboratory Vehicle Contractor will design the Laboratory Vehicle power system to meet all Orbiting Vehicle ascent and on-orbit power requirements including that of Gemini B.

2&3 Laboratory Module Consoles and Displays and Mission Module Consoles and Displays.

The Laboratory Vehicle Contractor will be responsible for the design of the displays/controls peculiar to operating the laboratory module subsystems. The Experiments Integration Contractor will be responsible for the design of the displays/controls peculiar to operating the mission module equipment. The Laboratory Vehicle Contractor will be responsible for integrating the overall control/display design. As integrator, the Laboratory Vehicle Contractor will be responsible for ensuring that all display panels have uniform appearance, arrangement philosophy, etc., and will be custodian contractor for the specifications for consoles/displays equipment standards, shape, color, decor, lighting, wiring, safety, etc. Crew station integration of mission and vehicle operation functions will be accomplished by appropriate arrangement of the mission module and laboratory module panel sections.

4. MOL Communications and Data Processing.

MOL Communications and Data Processing is accomplished by three systems: the Communications System, the Data Management System, and the Instrumentation and Display System. The Communication System consists of the transmitters, receivers, and antennas associated with prime and backup data and voice transmission. The Data Management System consists of four subsystems: The Command, Data Acquisition, Data Computation and Timing Subsystems. The Command Subsystem consists of the decoder, teleprinter, and controller. The Data Acquisition Subsystem performs the telemetry, signal conditioning,

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and recording functions. The Data Computation Subsystem includes the airborne data computers and their peripheral equipment, LV and MM data adaptor units, computer LV and MM simulators, and LV, MM, and overlap software. The Timing Subsystem includes a time and sync generator and a clock to provide an accurate time source. The Instrumentation and Display System provides the monitor and alarm function and any special sensors and signal conditioning equipment needed for the operating displays. The Laboratory Vehicle Contractor is responsible for the design of all the equipment listed above except that labeled Mission Module (MM). The Experiment Integration Contractor is responsible for the MM data adaptor units, the computer MM simulator and the MM software.

5. Pressure Suit Assembly.

The engineering design and development of the Pressure Suit Assembly will be the responsibility of the Pressure Suit Assembly Contractor.

6. Laboratory Module Software.

The design of the Laboratory Module software package will be completed by the Laboratory Vehicle Contractor. This package includes the Laboratory Module peculiar programs, overlap programs, and their associated executive program. These programs must be compatible with the ground data processing requirements established by the SCF.

7. Mission Module Software.

The Experiment Integration Contractor is responsible for the design of MM peculiar programs, overlap programs and their associated executive program.

8. Gemini B.

The Gemini B Contractor will be responsible for the design and operation of the Gemini B spacecraft including integration of its subsystem and structure.

9. Laboratory Module.

The Laboratory Vehicle Contractor will be responsible for the design and operation of the Laboratory Module including integration of its subsystems, structure and Mission Module.

10. Mission Module Structure.

The Experiment Integration Contractor will be responsible for the dynamic design of the mission module structure.

11. Mission Module.

The Experiment Integration Contractor will be responsible for the design of the mission module equipments.

12. Laboratory Vehicle Integration.

The Laboratory Vehicle Contractor will be responsible for the integration of the Laboratory Vehicle design including all equipment forming a portion of the Laboratory Vehicle. The contractor will obtain design information from the contractors/agencies supplying equipment and assure that the overall operation of the Laboratory Vehicle is compatible with the functioning of the other system segments.

13. Orbiting Vehicle Integration.

The Laboratory Vehicle Contractor will be responsible for the integration of the Orbiting Vehicle design including all equipment forming a portion of the Orbiting Vehicle. The contractor will obtain design information from the contractors/agencies supplying equipment

and assure that the overall operation of the Orbiting Vehicle is compatible with the functioning of the other system segments.

14. Titan III Design.

The Titan III SPO will be responsible for the Titan III system design and the integration of all equipment forming a portion of either the launch vehicle or its AGE.

15. Gemini B Attachments.

The equipment used for the attachment of the Gemini B spacecraft to the Laboratory Vehicle will be the design responsibility of the Gemini B contractor, together with the devices used for separation of the Gemini B.

16. Orbiting Vehicle Attachment to Launch Vehicle.

The Laboratory Vehicle Contractor will determine the design of the attachment and separation fittings for the Orbiting Vehicle at the Launch Vehicle interface, based on the respective interface requirements.

17. Flight Vehicle Structural Integrity.

The Titan III agency has responsibility for determination of the overall structural design integrity of the Flight Vehicle based on structural analyses including contributions from the Laboratory Vehicle and Gemini B contractors. These analyses will be based on loads and trajectory assumptions defined by the Titan III agency and accepted by the other contractors/agencies.

18. Flight Crew Transfer Equipment.

The Gemini B Contractor will design the internal tunnel to be used in the transfer of the crew from the Gemini B to the Laboratory Vehicle.

19. System Design Integration.

The Laboratory Vehicle Contractor is responsible for integration of the engineering design of the overall system. This task includes review of performance characteristics (but not the detailed design) of contributed equipment, and verification of interface compatibility between associates.

20. Gemini B AGE.

The Gemini B Contractor will be responsible for the design of new AGE and the redesign of existing NASA AGE as necessary to support the Gemini B Program Segment.

21. Laboratory Module AGE.

The Laboratory Vehicle Contractor is responsible for the design and development of new and/or development of existing AGE to be used for the Laboratory Module and its subsystems.

22. Mission Module AGE.

Mission Module AGE will be designed by the Experiment Integration Contractor. A ground computer identical to that provided with the Laboratory Vehicle AGE shall be used. Interaction between the Mission Module AGE and Laboratory Vehicle AGE shall be through a link between identical computers (Reference MOL Systems Office TWX SSM _____).

23. Laboratory Vehicle AGE.

The Laboratory Vehicle Contractor is responsible for the design and/or integration of that AGE required for the overall system testing and checkout of the Laboratory Vehicle. The Experiment Integration Contractor is responsible for the design and development of all mission payload peculiar AGE, except for that AGE peculiar to the overall system test.

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24. Pressure Suit Assembly AGE.

The Pressure Suit Assembly Contractor will be responsible for overall engineering design of the Pressure Suit Assembly and AGE.

25. T-III AGE.

The Launch Vehicle Contractor, under the direction of the T-III SPO is responsible for the design of the Launch Vehicle AGE.

26. Flight Vehicle AGE.

The Laboratory Vehicle Contractor has the responsibility for over-all planning and schedule integration of the complete AGE design for the MOL System. The responsibility will include review of the AGE design requirements to assure total system compatibility with the MOL launch facility.

27. Bioastronautical Instrumentation.

Bioastronautical instrumentation, as needed to meet the requirements directed by the MOL SPO/ Aerospace for physiological or psychological measurements on the flight crew members, shall be designed, developed, and integrated into the Orbiting Vehicle by the Laboratory Vehicle Contractor.

28. Gemini B Procedures Simulator.

The Gemini B Contractor will be responsible for the design of the Gemini B procedures simulator. This design will be similar to the NASA Gemini Mission Simulator, only modified as required to simulate the Gemini B configuration and mission.

29, 30,
& 30a. Laboratory Module Simulation Equipment, Mission Module
Simulation Equipment, and Laboratory Vehicle Procedures
Simulator.

The Experiment Integration Contractor will be responsible for the design of the mission module simulation equipment. This includes the mission payload peculiar consoles and displays for the simulated laboratory, the simulated payload, and payload peculiar panels for the laboratory vehicle instructor operator consoles. The Experiment Integration Contractor will also be responsible for providing payload peculiar design requirements for the simulated laboratory and for the laboratory vehicle procedures simulator computer complex. The Laboratory Vehicle Contractor will be responsible for the design of the laboratory module simulation equipment. This includes the simulated laboratory module, the laboratory vehicle procedures simulator computer complex, and, except for those payload peculiar panels previously referenced, the laboratory vehicle procedures simulator instructor operator consoles. The Laboratory Vehicle Contractor is also responsible for design integration of the laboratory module simulation equipment and the mission module simulation equipment into the design for the laboratory procedures simulator.

31. Mission Simulators.

The Laboratory Vehicle Contractor is responsible for integrating the Gemini B Procedures simulator, the Laboratory vehicle procedures simulator, and interface with the SCF into a mission simulator design.

32. Telemetry and Tracking Station Equipment.

The AFSCF is responsible to insure remote Tracking Station Equipments are capable of supporting requirements of the SPO and as outlined in the ORD.

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33. Recovery Force Retrieval Equipment.

The MOL SPO maintains responsibilities associated with the recovery equipment required by the recovery force for retrieval of the flight crew, the Gemini B spacecraft and data.

34. Mission Control Consoles.

All mission control consoles in the Satellite Test Center will be the design responsibility of the Flight Operations Agency (SCF) regardless of which on-orbit equipment they monitor or control. The various associates will establish requirements for the mission control consoles and provide support in their design.

35. SCF Systems Support Software.

AFSCF is responsible for developing the software that is not MOL peculiar used in the support of MOL Flight Operations.

36. Establish Laboratory Vehicle Ground to Space Command Data Interface.

The Experiment Integrating Contractor is responsible for establishing the specification defining the ground to space command data interface, including command verification. The Laboratory Vehicle Contractor shall conform to this specification in preparation of command subroutines.

37. Develop Ground Command Synthesis and Compatibility Software.

The Experiment Integrating Contractor is responsible for Ground Command Synthesis and Compatibility including processing event data from other computer programs and generation of the command message which will be processed by the network and transmitted to the Orbiting Vehicle. Prior to release of the command message for network

processing, routines will be provided to check the message for any undesirable or taboo modes of operation, the effects of a partial or complete command message, and word length and parity.

38. Develop Gemini Ground to Space Command Data Interface.

The Gemini B Contractor is responsible for establishing the specification defining the ground to space command data interface, including command verification. The Laboratory Vehicle Contractor shall conform to this specification in preparation of command subroutines.

39. Develop Gemini B and Titan III Ground Software.

The Systems Program Office will be responsible for the development of all ground software programs which support Ascent and Re-entry Control. This responsibility will include the development of Mission Control displays, and the techniques to be utilized in real time control, in addition to insuring that the STC program is integrated and compatible with the flight vehicle requirements.

C. FABRICATION.

1. Flight Crew Accommodations - Gemini B.
2. Gemini B Attachments.
3. Gemini B.
4. Flight Crew Accommodations - Laboratory Vehicle.
5. Laboratory Module Consoles and Displays.

The Laboratory Vehicle Contractor is responsible for the consoles and displays peculiar to the laboratory module.

6. Mission Module Consoles and Displays.

The Experiment Integration Contractor is responsible for fabricating the payload peculiar consoles and displays for the laboratory module.

7. MOL Communications and Data Processing.
8. Laboratory Vehicle Power System.
9. Laboratory Module.
10. Mission Module Structure.
11. Mission Module.
12. Pressure Suit Assembly.

Pressure Suit Assembly will be fabricated by the Pressure Suit Assembly Contractor.

13. Flight Crew Transfer Equipment.

14. Titan III

15. Gemini B AGE.

16. Laboratory Module AGE.

17. Mission Module AGE.

18. Pressure Suit Assembly AGE.

Pressure Suit Assembly AGE will be provided by the
Pressure Suit Assembly Contractor.

19. Laboratory Vehicle AGE.

20. Titan III AGE.

21. No entry

22. No entry

23. No entry

24. Gemini B Procedures Simulator.

25. Laboratory Module Simulator Equipment.

The Laboratory Vehicle Contractor will be responsible for
the simulated laboratory module, the laboratory vehicle procedures
simulator computer complex, and, except for the payload peculiar panels,
the laboratory vehicle instructor operator consoles.

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26. Mission Module Simulator Equipment.

The Experiment Integration Contractor will be responsible for the payload peculiar consoles and displays for the simulated laboratory vehicle, the simulated payload, and the payload peculiar panels for the laboratory vehicle instructor operator consoles.

27. Mission Simulator.

The Laboratory Vehicle Contractor is responsible for all equipment, other than those called out in the Gemini B procedures simulator and laboratory vehicle procedures simulator, and is required to fabricate a complete mission simulator.

28. Mission Control Consoles.

29. Telemetry and Tracking Station Equipment.

30. Laboratory Module Computer Software.

31. Mission Module Computer Software.

32. AFSCF System Support Software.

33. Gemini B Flight Support Software.

34. Command Synthesis and Compatibility Software.

D. TEST AND INTEGRATION.

1. Integrate and Test Laboratory Module Computer Hardware and Software.

The Laboratory Vehicle Contractor is responsible for the integration and testing of the Data Computation Subsystem Group including the Laboratory Module data adapter unit, computer system and Laboratory Module Software. This does not include those items pertinent to the Mission Module functions.

2. Integrate and Test Mission Module Computer Hardware and Software.

The Experiment Integration Contractor is responsible for the integration and testing of the Mission Module data adapter unit and Mission Module software with the computer system. An AVE computer with appropriate peripheral equipment and a Laboratory Module Simulator will be supplied for this purpose.

3. Integrate Laboratory Vehicle consoles and Displays.

The Laboratory Vehicle Contractor is responsible for the overall integration and test of the consoles and displays located in the laboratory module. The Experiment Integration Contractor will receive and inspect all payload peculiar consoles, displays and equipments at Huntington Beach and install certain special equipments. The Laboratory Vehicle Contractor will install the remainder of the payload peculiar equipments. The Experiment Integration Contractor will perform functional checkout and integrated checkout of the payload peculiar consoles, displays and equipment. The Laboratory Vehicle Contractor will conduct overall systems test.

4. Conduct Laboratory Module Development, Qualification and Acceptance Tests.

The Laboratory Vehicle Contractor will conduct development tests on components, subsystems and the complete Laboratory Module.

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Tests will include environmental simulation, orbit duration, structural, electromagnetic interference and equipment performance tests. Tests will be conducted principally at the contractor's facility.

5. Conduct Gemini B Development, Qualification and Acceptance Tests.

The Gemini B Contractor will conduct development tests on the Gemini B as required to test and qualify modifications from the NASA Gemini. Acceptance tests will be conducted at the contractor's facility prior to shipment to the Laboratory Vehicle contractor.

6. Conduct Mission Module Development, Qualification and Acceptance Tests.

Development, qualification and acceptance tests will be conducted on the components, subsystems and the complete Mission Module by the Experiment Integration Contractor. These tests will be conducted at the contractors facility prior to shipment to the Laboratory Vehicle Contractor.

7. Integrate Laboratory Vehicle Development Model.

The Laboratory Vehicle development model will be fabricated and/or assembled by the Laboratory Vehicle Contractor at his facility from equipment provided by contributing associates. System integration tests will be performed on the development model.

8. Integrate Laboratory Vehicle.

The Laboratory Vehicle Contractor will integrate the parts of the Laboratory Vehicle and conduct system tests to assure compatible system operation. Tests will include developmental tests of the assembled Laboratory Vehicle at the Laboratory Vehicle at contractor's plant and acceptance and inspection tests of the Laboratory Vehicle at the launch site. The contractor will also be responsible for compatibility tests at the launch pad after the Laboratory Vehicle is assembled on the Launch Vehicle.

9. Conduct Laboratory Vehicle Environmental Tests.

Those portions of the Orbiting Vehicle which have an interface which might be affected by environmental exposure shall be subjected to such environmental simulation tests at the Laboratory Vehicle contractor's plant. Substitute tools will be provided by the respective system segment contractor as required.

10. Assure Orbiting Vehicle Compatibility with System.

The Laboratory Vehicle Contractor will be responsible for tests to determine that the communications equipment aboard the Orbiting Vehicle is compatible with the communications and control equipment on the ground. This includes both voice communications and telemetry. This task will include assurance that the data format of telemetry signals is compatible with the ground receiving and data processing equipment. These tests will be performed in close coordination with the Flight Operations Agency (SCF).

11. Conduct Laboratory Vehicle Development System Test and Factory Acceptance Tests.

The Laboratory Vehicle Contractor will be responsible for system testing of the Laboratory Vehicle and for factory acceptance test of the Laboratory Vehicle. The other contractors contributing equipment to this vehicle will contribute test procedures, personnel and support to the operation. Each contractor will remain responsible for the proper functioning values of equipment as supplied to specification values and requirements.

12. Install AGE in OV Facilities.

The Laboratory Vehicle Contractor will be responsible for the installation of all AGE in the Orbiting Vehicle facilities.

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12a Install AGE in ILC Facilities.

The Launch Vehicle Contractor will be responsible for the installation of all AGE in the ILC Facilities.

13. Checkout Gemini B AGE.

The Gemini B Contractor will be responsible for checkout of all Gemini B AGE.

13a Checkout Laboratory Module AGE.

The Laboratory Vehicle Contractor will be responsible for checkout of all Lab Module AGE.

13b Checkout Mission Module AGE.

The Experiments Integration Contractor will be responsible for checkout of all MM AGE.

14. Conduct Titan III Assembly and Readiness for Orbital Vehicle Mating.

The Launch Vehicle Contractor will prepare procedures for the assembly of the Titan IIIM on the launch pad, and will assemble the Launch Vehicle and prepare for Mating of the Orbiting Vehicle, under the direction of the Launch Operations Agency (ATW). The Launch Operations Agency (ATW) will approve the readiness of the T-IIIM Orbiting Vehicle Mating.

15. Assembly of the Flight Vehicle.

The Laboratory Vehicle shall be delivered to the launch pad by the Laboratory Vehicle Contractor. The Launch Vehicle Contractor will conduct the mating of the Laboratory to the Launch Vehicle. The Gemini B shall be delivered to the launch pad by the Gemini B Contractor.

Gemini 'B' mating to the laboratory vehicle shall be conducted under supervision of the Laboratory Vehicle Contractor. Operations of the assembly sequences shall be conducted by the Launch Vehicle Contractor, under the overall direction of the Launch Operations Agency (ATW).

17. Integrate, Install and Checkout Mission Simulator.

The Laboratory Vehicle Contractor is responsible for integrating the Lab Module Simulation Equipment and the Mission Module Simulation Equipment into the Lab Vehicle procedures simulator and for integrating the lab vehicle procedures simulator and Gemini B procedures simulator into the mission simulator. He is responsible for installing each mission simulator into the simulator facilities and for conducting total system checkouts of the mission simulator, the Gemini B Contractor and Experiment Integration Contractor will assist in the installation and checkout of their equipments.

18. Integrate Mission Simulator with SCF.

The Laboratory Vehicle Contractor is responsible for effecting a direct operating interface between the mission simulator located at VAFB and the MCC.

19. Gather Baseline Data on Flight Crew Performance.

The MOL SPO/Aerospace will be responsible for testing to determine flight crew performance in operating Orbiting Vehicle equipment on the ground in order to form a performance baseline for comparison with flight crew performance in orbit.

20. Integrate and Test Airborne MOL Communications and Data Processing System.

The Laboratory Vehicle Contractor is responsible for the integration and testing of the overall MOL Communications and Data Processing System after installation in the Laboratory Vehicle.

E. TEST OPERATIONS.

1. Prepare Flight Test Plan.

The Laboratory Vehicle Contractor will be responsible for the preparation, assembly and integration of a Flight Test Plan which provides a functional description of the Flight Test Program (from factory delivery through recovery, analysis, evaluation and reporting). The scope of this plan will include system checkout at any location following delivery of flight hardware from the factory.

2. Prepare Systems Operations Plan.

The Laboratory Vehicle Contractor will be responsible for the preparation, assembly and integration of a system operations "plan" which provides a description of the flight test and support operations. This will be a source document for the operational aspects of the flight test program. It will describe facilities and equipment only to the detail necessary for the next level of operations planning, and will define general operations and responsibilities and operations management and control.

3. Prepare Program Requirements Document.

The MOL System Program Office will be responsible for the preparation, assembly, and integration of the Program Requirements Document, with contributions from the Contractors/Agencies which will be assembled and integrated by the SPO.

4. Prepare Orbital Requirements Document.

The MOL System Program Office will be responsible for the preparation, assembly and integration of the Orbital Requirements Document with contributions from the Contractors/Agencies which will be assembled and integrated by the SPO.

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5. Prepare Gemini B Recovery Requirements Document.

The MOL SPO will prepare a Recovery Requirements Document identifying the requirements necessary for the recovery of the astronauts, data and Gemini B.

6. Prepare Gemini B Checkout Procedures.

The procedures to be utilized for the checkout of the Gemini B prior to launch shall be prepared by the Gemini B Contractor. Gemini B procedures that do not affect the Gemini B to Laboratory Module interface and which are limited solely to Gemini B functions will be conducted entirely by the Gemini B Contractor. Gemini B procedures affecting the interface or the Orbiting Vehicle shall be conducted by Gemini B contractor personnel, in conjunction with, or as a part of integrated test procedures under the direction of the Laboratory Vehicle Contractor.

7. Prepare Laboratory Module Checkout Procedures.

The procedures to be utilized for checkout of the Laboratory Module will be prepared by the Laboratory Vehicle Contractor. Procedures utilized in testing the Laboratory Module which affect the Gemini B interface, the Mission Module interface, the Orbiting Vehicle or the Flight Vehicle shall be conducted by the Laboratory Vehicle Contractor.

8. Prepare Orbiting Vehicle Checkout Procedures.

Procedures to be utilized in the checkout of the Orbiting Vehicle prior to launch shall be prepared by and conducted under the direction of the Laboratory Vehicle Contractor. The portions of the Orbiting Vehicle procedures pertaining to the Gemini B or Mission Module shall be prepared and conducted by the Gemini B and Experiment Integration contractors respectively, and shall be integrated and directed as an integrated test procedure by the Laboratory Vehicle Contractor.

9. Prepare Mission Module Checkout Procedures.

The procedures to be utilized for the checkout of the Mission Module prior to launch shall be prepared by the Experiment Integration Contractor. Mission Modules procedures that do not affect the Laboratory Module to Mission Module interface and which are limited solely to Mission Module functions will be conducted entirely by the Experiment Integration Contractor. Mission Module procedures affecting the interface or the Orbiting Vehicle shall be conducted by the Experiment Integration contractor personnel in conjunction with, or as a part of integrated test procedures under the direction of the Laboratory Vehicle Contractor.

10. Prepare Pressure Suit Assembly Checkout Procedures.

Pressure Suit Assembly checkout procedures will be prepared by the Pressure Suit Assembly Contractor.

11. Prepare T-III Checkout Procedures.

The procedures to be utilized for checkout of the Launch Vehicle prior to launch shall be prepared by the Launch Vehicle Contractor. Procedures which do not affect the Launch Vehicle to Orbiting Vehicle interface shall be conducted by Launch Vehicle contractor personnel. Launch Vehicle procedures which affect the interface or the Flight Vehicle shall be prepared by Launch Vehicle contractor personnel in conjunction with, or as a part of the overall test procedure integrated by the Laboratory Vehicle Contractor.

12. Prepare Countdown Procedures.

Procedures for the total launch countdown will be prepared by the Launch Operations Agency. All associate contractor/agencies requirements will be integrated into these total countdown procedures.

13. Prepare Ascent Guidance Equations.

The Titan III SPO will be responsible for preparation of ascent guidance equations for both the launch vehicle guidance system and the Gemini "B" backup guidance system. Mechanization of the guidance equations in their respective computers will be the responsibility of the guidance system contractor.

14. Prepare Launch and Ascent Abort Procedures.

The Gemini B Contractor will prepare the procedures to be followed by the Flight Crew in the event of an abort during the launch or ascent phases. These will include consideration of aborts arising directly from the operation of the malfunction detection system, those which are detected by the flight crew and initiated by them, and those detected on the ground and communicated to the flight crew.

15. Prepare Gemini B On-Orbit Checkout Procedures.

The Gemini B Contractor will prepare procedures for checkout of the Gemini B capsule from the Laboratory Vehicle prior to flight crew transfer. This may include both operations within the Laboratory Vehicle and ground checkout by telemetry of the Gemini B.

16. Prepare Laboratory Module On-Orbit Checkout Procedures.

The Laboratory Vehicle Contractor will prepare the procedures required for checkout of the Laboratory from the Gemini B capsule prior to flight crew transfer. This may include operations within the Gemini B and ground checkout by telemetry.

17. Prepare Mission Module On-Orbit Checkout Procedures.

The Experiment Integration Contractor will prepare procedures for the checkout of the mission module prior to experiment activation and operation. This may include both operating within the Laboratory Vehicle and ground checkout by telemetry.

18. Prepare Lab Module Orbital Procedures.

The Laboratory Vehicle Contractor will prepare procedures to be followed in the operation of the Laboratory Module while on orbit. This will include both normal and emergency procedures.

19. Prepare Mission Module Operations Procedures.

The Experiment Integrating Contractor will prepare procedures to be followed in the experiment operations on orbit.

20. Integrate Flight Crew Orbital Procedures.

The Laboratory Vehicle Contractor will act as an integrating agent for establishment of the flight crew orbital procedures. This will include contributions from all contractors and agencies involved in the operations of the Orbiting Vehicle. It will also include the contributions and directions received from the MOL SPO/Aerospace.

21. Prepare Gemini B Re-entry Guidance Equations.

The Gemini B Contractor is required to prepare and maintain Gemini B re-entry guidance equations for each mission.

22. Prepare Crew De-Orbit and Re-entry Procedures.

The Gemini B Contractor will prepare flight crew procedures for orientation of the spacecraft, the de-orbit retrorocket firing, and re-entry following mission termination. These procedures will include both normal conditions and emergency conditions.

23. Integrate Orbital Abort Procedures.

The Laboratory Vehicle Contractor will prepare procedures for orbital abort when the flight crew is in the Laboratory Vehicle. This will include integration of contributions from the Gemini B Contractor, the Pressure Suit Assembly Contractor, the Flight Operations Agency, and the Recovery Agency.

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24. Direct and Coordinate Flight Crew Training.

The MOL SPO will control, direct, and coordinate all aspects of crew selection, acquisition, logistics, and training. MOL flight crew training will be over an extended period, involving support by many agencies and contractors, and closely coordinated with the program schedule; therefore, the flight crew will become an integral part of the SPO and control of supporting training agencies will necessarily reside in the SPO.

25. Operate Mission Simulator.

The Mission Simulator will be operated by the MOL SPO with Contractor participation to train flight crew members; to exercise the Satellite Test Center; and to develop operating procedures.

26. Operate MOL Launch Facility.

For MOL operation, the MOL Launch Facility will be operated under the direction of the Launch Operations Agency (ATW).

27. Assemble T-III on the Launch Pad.

The Launch Vehicle Contractor will assemble the T-III Launch Vehicle on the launch pad and will conduct procedures and tests necessary to prepare the Launch Vehicle for integrated Flight Vehicle testing.

28. Checkout of Gemini B at Launch Site.

The Gemini B Contractor will checkout the Gemini B at the launch site, and will conduct and direct all test procedures affecting only the Gemini B, subsystems or components.

29. Checkout Laboratory Module at Launch Site.

The Laboratory Vehicle Contractor will checkout the Laboratory Module at the launch site and will conduct and direct all test procedures affecting only the Laboratory Module, subsystems or components.

30. Checkout Mission Module at Launch Site.

The Experiment Integration Contractor will checkout the Mission Module at the launch site and will conduct and direct all test procedures affecting only the Mission Module, subsystems or components.

31. Checkout Pressure Suit Assembly.

The checkout of the Pressure Suit Assembly will be the responsibility of the Pressure Suit Assembly Contractor.

32. Checkout Flight Crew.

Flight proficiency certification, medical checkout and evaluation of the selected flight crew during checkout and launch operations will be the responsibility of the MOL SPO.

33. Checkout T-III.

"The Titan III SPO will be responsible for checkout of the Titan III system. Checkout and activation may be performed by the applicable Titan III associate contractors or by the launch vehicle contractor, under the direction of the Launch Operations Agency (ATW)."

34. Conduct Flight Vehicle Final Checkout at Launch Pad.

The final Simulated Flight Test of the assembled flight vehicle will be conducted by the Laboratory Vehicle Contractor, utilizing procedures which incorporate all associate contractor requirements,

integrated by the Laboratory Vehicle Contractor. Each associate contractor will furnish personnel and equipment for testing/checkout of his equipment. The overall test shall be conducted under the direction of the Launch Operations Agency (ATW).

The Launch Vehicle System test (T-3 to separation) shall be conducted by the launch vehicle contractor, utilizing procedures which incorporate appropriate associate contractor requirements. Each appropriate associate contractor shall furnish personnel and equipment for the testing/checkout of his equipment. The overall test direction shall be under the supervision of the Launch Operations Agency (ATW).

35. Conduct Countdown.

The Launch Countdown will be conducted by the Launch Operations Agency (ATW).

36. Conduct Range Safety Operations.

Monitoring of ascent trajectories, tracking and computation of IIP's and range safety decisions will be the responsibility of the Test Support Agency.

37. Operate Mission Control.

The operation and manning of mission control consoles and instrumentation will be the responsibility of the Flight Operations Agency (SCF) as defined by the MOL SPO. Each contractor or agency participating in the operations will furnish appropriate personnel to support this activity.

38. Monitor Flight Crew Condition.

The medical-psychological condition of the flight crew will be monitored by a medical team representing the MOL SPO during the entire

mission. Support will be given for this task by the Laboratory Vehicle, Gemini B, and Pressure Suit Assembly contractors.

39. Direct and Control Mission Operations.

The MOL SPO will direct and control all phases of Mission Control. Although certain positions or consoles will be manned by AFSCF personnel, the key authoritative positions in the Mission Control Organization will be manned by appropriate MOL SPO personnel.

40. Conduct Gemini B Recovery Operations.

The DOD Manager for Manned Space Flight will conduct Gemini B recovery operations required for pad, powered flight and on-orbit aborts and for the end of Mission in accordance with the Recovery Requirements Document and the Recovery Support Plan.

41. Format Data for Users.

The Flight Operations Agency will be responsible for the integration of all telemetered Data Formatting requirements and procedures, and for providing the data to using Agencies/Contractors in the required format.

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F. FACILITIES.

1. Prepare Facility Criteria for Initial Launch Complex.

The Launch Vehicle Contractor will receive technical support requirements from participating contractors and agencies and prepare the ILC criteria.

2. Prepare Facility Criteria for Orbiting Vehicle Support Building.

The Laboratory Vehicle Contractor will receive technical support requirements from participating contractors and agencies and prepare the Laboratory Vehicle Acceptance Building Facility criteria.

3. Deleted.

4. Prepare Facility Criteria for Operational Training and Evaluation Facility.

The Laboratory Vehicle Contractor will receive simulator and biomedical related requirements from participating Contractors and Agencies and prepare the Operational Training and Evaluation Facility criteria.

5. Prepare Facility Criteria for Operational Readiness Unit.

The Laboratory Vehicle Contractor will receive medical and operational requirements from the MOL SPO and prepare the ORU Facility criteria.

6. Prepare Facility Criteria for the Engineering and Operations Building.

The Laboratory Vehicle Contractor will receive engineering support requirements from participating contractors and agencies and prepare the facility criteria for the Engineering and Operations Building.

7. Design Initial Launch Complex.

Design of the Initial Launch Capability (ILC) complex for the Titan IIIM vehicle is the responsibility of the Deputy for Civil Engineering. This includes MOL peculiar facilities in the launch complex area only.

8. Design Orbiting Vehicle Support Building.

The Deputy for Civil Engineering is responsible for design of a Lab Vehicle Acceptance Building for receipt and inspection functions of the orbiting vehicle.

9. Deleted.

10. Design Operational Training and Evaluation Facility.

Design of an Operational Training and Evaluation Facility is the responsibility of the Deputy for Civil Engineering. This includes a mission simulator area and a physiological training and evaluation area.

11. Design Operational Readiness Unit.

The Deputy for Civil Engineering is responsible for design of an Operational Readiness Unit to include quarters, messing, and physical conditioning areas.

12. Design Engineering and Operations Building.

Design of an Engineering and Operations Building is the responsibility of the Deputy for Civil Engineering. This building will provide administrative support to all MOL contractors and Air Force personnel.

FLIGHT OPERATIONS SUPPORT PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	FLIGHT OPERATIONS SUPPORT	FLIGHT OPERATIONS ANALYSIS & PLANNING	MC INTERFACE REQMTS				
			MISSION SIMULATOR INTERFACE REQMTS				
			TRAINING REQMTS				
			SUPPORT EQUIP REQMTS				
			FACILITY REQMTS				
			TEST SUPPORT REQMTS				
			SERVICES REQMTS				
			RECOVERY REQMTS				
			PLANS & PROCEDURES				
			MANPOWER REQMT*				
			TRACKING REQMTS				
			COMMUNICATIONS REQMTS				
		FLY READINESS DETERMINATION					
		SECURITY					
		MISSION CONTROL HARDWARE	COMPUTER				
			DISPLAYS				
			CONSOLES				
			COMM & ELECTRONICS				
			CHECKOUT EQUIPMENT				
			MC INTERFACE HDWR				
			MC/EXTERNAL INTERFACE HDWR				
		MISSION CONTROL SOFTWARE	ORBIT DETERMINATION COMP PROG				
			MISSION CONTROL COMPUTER PROG				
			TELEMETRY PROCESSING COMP PROG				

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Figure 2-14. Flight Operations Program Segment

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FLIGHT OPERATIONS SUPPORT PROGRAM SEGMENT (CONT'D.)

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	FLIGHT OPERATIONS SUPPORT	ASCENT & ORBIT OPERATIONS	FLIGHT CREW	NORMAL MISSION PROCEDURES	
				CONTINGENCY & EMER PROCEDURES	
				PERSONAL REQMTS	
				DATA ANALYSIS	
			BIO-ASTRONAUTICS		
			DV CONTR SERVICES	LAB VEH CONTR	
			GEM B CONTR		
		TEST SUPPORT	RANGE SAFETY		
			RANGE INSTRUMENTATION		
		RECOVERY SUPPORT	PAD ABORT		
			POWERED FLT ABORT		
	MISSION CONTROL SERVICES	MISSION CONTROL			
		GLOBAL TRACKING NET			
		GLOBAL COMM NET			
	DE-ORBIT & RE-ENTRY OPERATIONS	FLIGHT CREW			
BIO-ASTRONAUTICS SUPT					
DV CONTR SERVICES		LAB VEH CONTR			
		GEM B CONTR			
TEST SUPPORT					
RECOVERY SUPPORT	NORMAL DEORBIT				
	CONTINGENCY DEORBIT				
MISSION CONTROL SERVICES	MISSION CONTROL				
	GLOBAL TRACKING NET				
	GLOBAL COMM NET				
EVALUATION &					

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Figure 2-15. Flight Operations Program Segment (Cont'd)

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RECOVERY PROGRAM SEGMENT

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		
MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM	RECOVERY	RECOVERY ANALYSIS & PLANNING	MC INTERFACE REQMTS				
			TRAINING REQMTS				
			MANPOWER REQMTS				
			PLANS & PROCEDURES				
			DEORBIT PLANNING & PREP				
			ABORT PLANNING & PREP				
			RECOVERY SITES				
			WEATHER				
			SUPPORT FORCES				
			COMMUNICATIONS				
			SECURITY				
			READINESS DETERMINATION				
			EMERGENCIES				
			HARDWARE				
		GROUND MEDICAL					
		TERMINAL DESCENT TRACKING					
				HARDWARE	FLOTATION COLLARS		
					COMMUNICATION EQUIP		
					SHIPS		
					AIRCRAFT		
					HELICOPTERS		
					MC INTERFACE HARDWARE		
					HANDLING EQUIP		
				RECOVERY OPERATIONS	FLIGHT CREW		
					BIO-ASTRONAUTICS SUPT		
		GEMINI B SERVICES					
		SUPPORT FORCES					
		COMMUNICATIONS					
		MISSION CONTROL SERVICES					
		EVALUATION & REPORTS					

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Figure 2-16. Recovery Program Segment

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SECTION 3
PROGRAM MANAGEMENT NETWORK

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SECTION 3

PROGRAM MANAGEMENT NETWORK

3.0 (U) INTRODUCTION.

The Program Management Network (PMN) herein portrays the significant milestones and the interactions of the Program Segments. This PMN will serve as the starting point for all concerned agencies in construction of their respective more detailed PMN.

3.1 (U) MOL PROGRAM MANAGEMENT NETWORK - DEFINITION PHASE.

Figure 3-1 presents the PMN which outlines the time phasing and significant events of the Program Segments during the Definition Phase.

3.2 (U) MOL PROGRAM MANAGEMENT NETWORK - ACQUISITION PHASE.

Figure 3-2 presents the PMN format which will outline the time phasing of significant events of the Program Segments relative to flight dates, during the Acquisition Phase.

MOL PROGRAM MANAGEMENT NETWORK - PHASE I (CONTRACT DEFINITION PHASE)

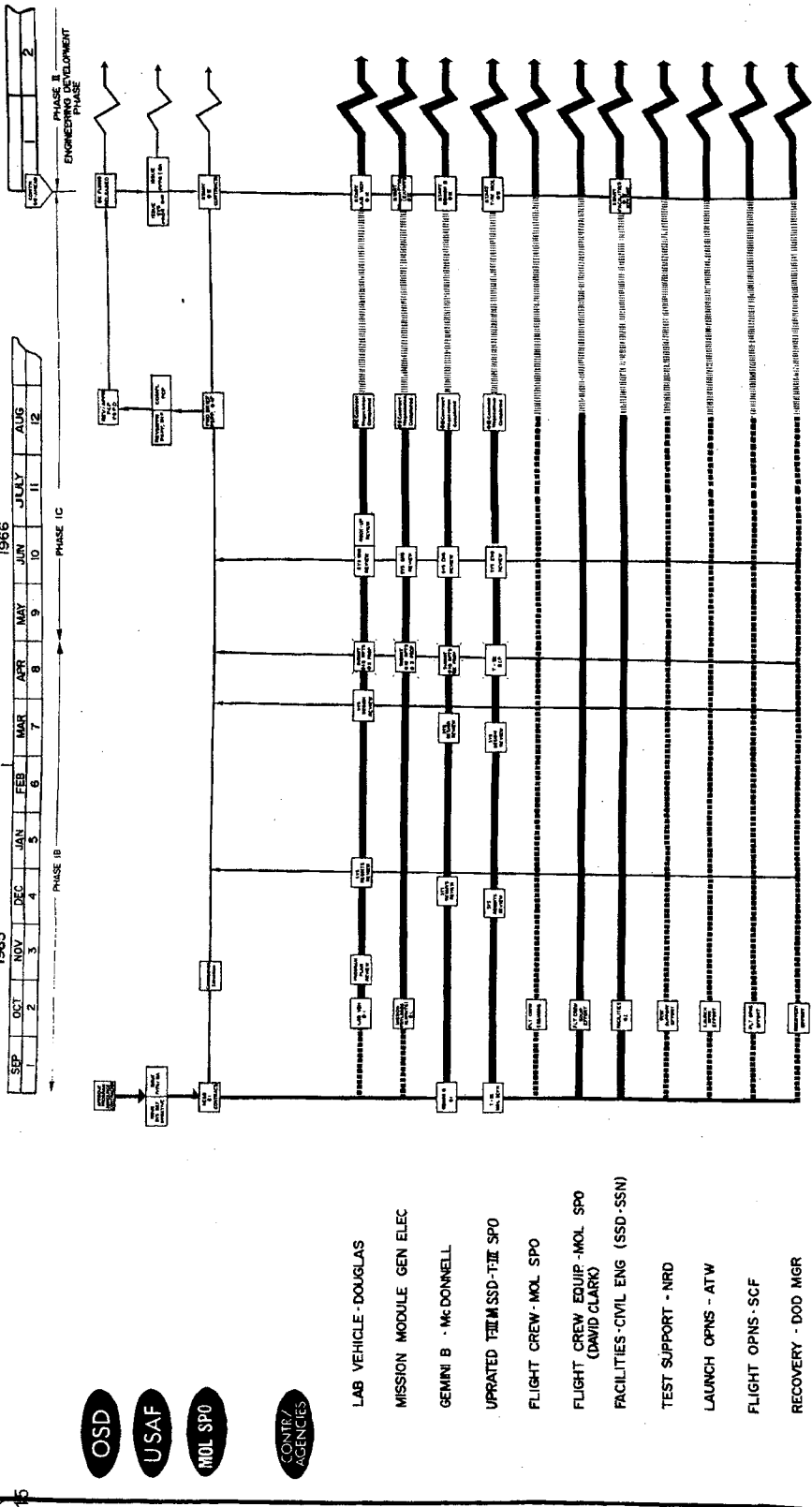


Figure 3-1. MOL Program Management Network - Definition Phase
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MOL PROGRAM MANAGEMENT NETWORK-ACQUISITION PHASE

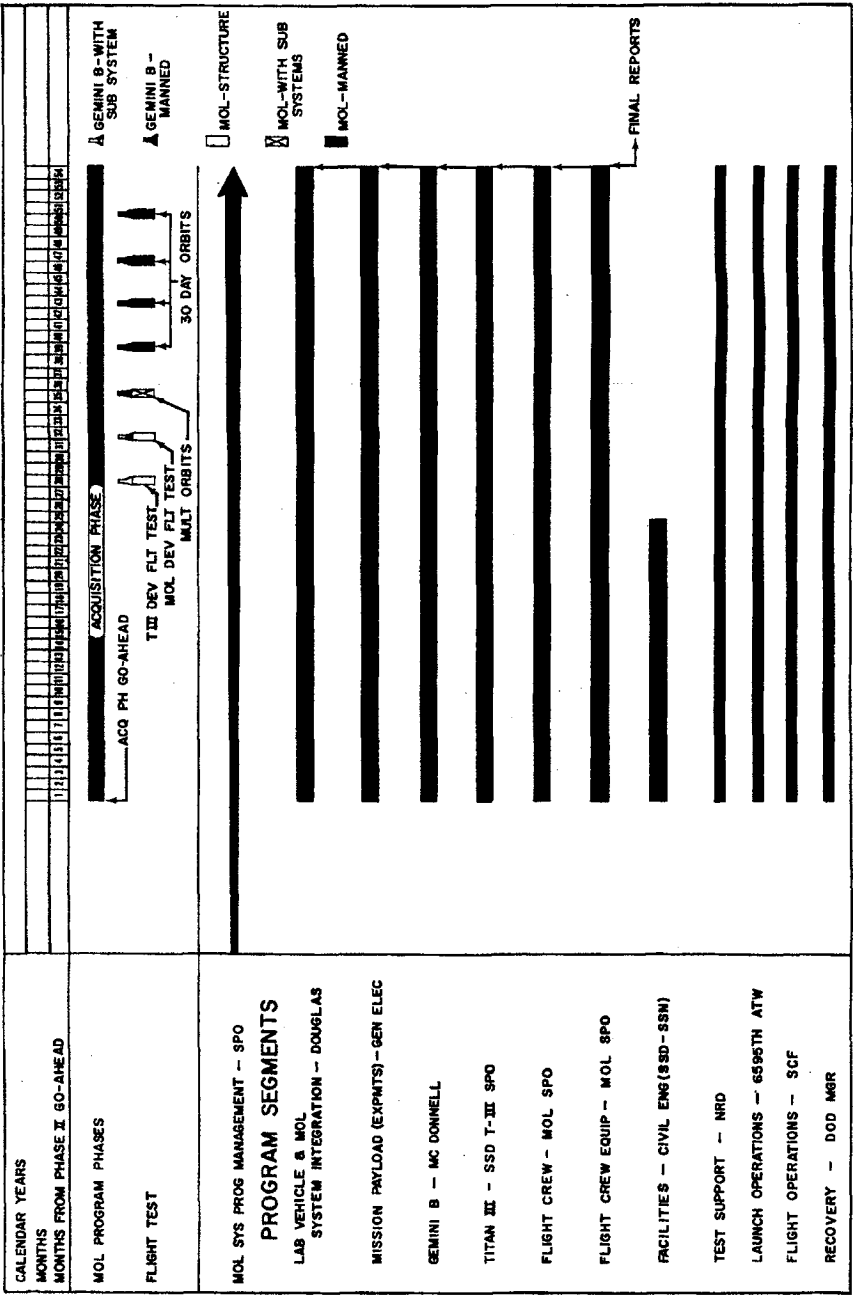


Figure 3-2. MOL Program Management Network - Acquisition Phase
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SECTION 4

TOP LEVEL MANAGEMENT

4.0 (U) INTRODUCTION.

The purpose of this section is to present the top-level management officials who will be directly involved and responsible for the MOL System Program and the associated Program Segments.

4.1 (U) USAF MANAGEMENT ORGANIZATION FOR MOL PROGRAM.

The basic management objective of the MOL Program is to provide a single clear line of direction. In view of this, the USAF has formulated a responsive streamlined, integrated vertical management structure (Figure 4-1) which is defined by three discrete functional levels:

- a. Policy, guidance and final AF approval -- SAF.
- b. Program Direction -- Director, MOL (SAF-SL).
- c. Program Implementation -- Deputy Director, MOL (SSD).

4.1.1 (U) SAF - Program Policy, Guidance and Approval.

The Secretary of the Air Force is responsible for executive management of the MOL Program. SAF will be responsible for all Air Force decisions and directions pertaining to the MOL Program and will be the final reviewing and committing authority for the Department of the Air Force on this Program. The SAF will assign management responsibility and delegate commensurate authority to the Director, MOL.

4.1.2 (U) Director, MOL - Program Direction.

The Director, MOL will report directly to SAF. Director, MOL will be responsible to establish, manage and conduct all aspects of the approved MOL Program as assigned by the SAF. He will be the principal operating agent for the direction of the MOL Program. He and his Washington office will be located in the Pentagon near the Office of SAF. His office will handle the Hq USAF and other Washington area Air Force staffing of the program, including liaison with other Government agencies. His office will provide complete and timely program status information available in comprehensive form for OSAF and OSD review. He will be responsible for keeping selected senior members of the Air Staff personally informed concerning the MOL Program. The Director, MOL will establish a strong integrated systems and program implementation office located at SSD, El Segundo, California.

4.1.3 (U) Deputy Director, MOL - Program Implementation.

The Deputy Director, MOL will be responsible to the Director, MOL for specific responsibilities and functions assigned by Director, MOL. The Deputy Director, MOL is responsible for implementing all program direction by the Director, MOL for system procurement, design, development, test and evaluation. He is also responsible for overall mission operations, including man's safety during all phases of manned flight. SSD offices will provide the required functional assistance to the Deputy Director, MOL to fulfill his overall responsibilities.

The Deputy Director, MOL will be responsible for overall systems integration and general system engineering and technical direction. The overall system consists of all hardware, software, and personnel elements required for launch through recovery. He will be responsible for the development, acquisition and integration of the Gemini B, the laboratory module, and the mission module. The Deputy Director, MOL is also responsible for all technical liaison at field level with other military services and NASA.

The Deputy Director, MOL will have a MOL Systems Office under his direct control and supervision. This office will be manned and organized to perform functions peculiar to the MOL program, and will direct and control supporting agencies in accordance with policies and procedures established by the Director, MOL for the conduct of this program. Offices and agencies participating in major elements of the MOL Program (e.g., U.S. Navy) may furnish well-qualified personnel for full-time duty as part of the program office to provide the Deputy Director, MOL the resources necessary for the most efficient and effective conduct of the MOL Program.

From funds provided through the Director, MOL, he will obtain the following hardware and services from the normal SSD offices established to handle these areas: all launch and booster vehicles, selected AGE, selected equipments and services, launch pads and facilities. For range and tracking station equipments and services funded by other program elements the Deputy Director, MOL will be responsible for insuring that his requirements are furnished on a timely basis to the proper offices and the Director, MOL; the Director, MOL will designate the monitoring responsibility.

All SSD offices will provide functional support as requested by the Deputy Commander (SSD) for MOL, but, except for such requested support, will not be involved in the MOL program management.

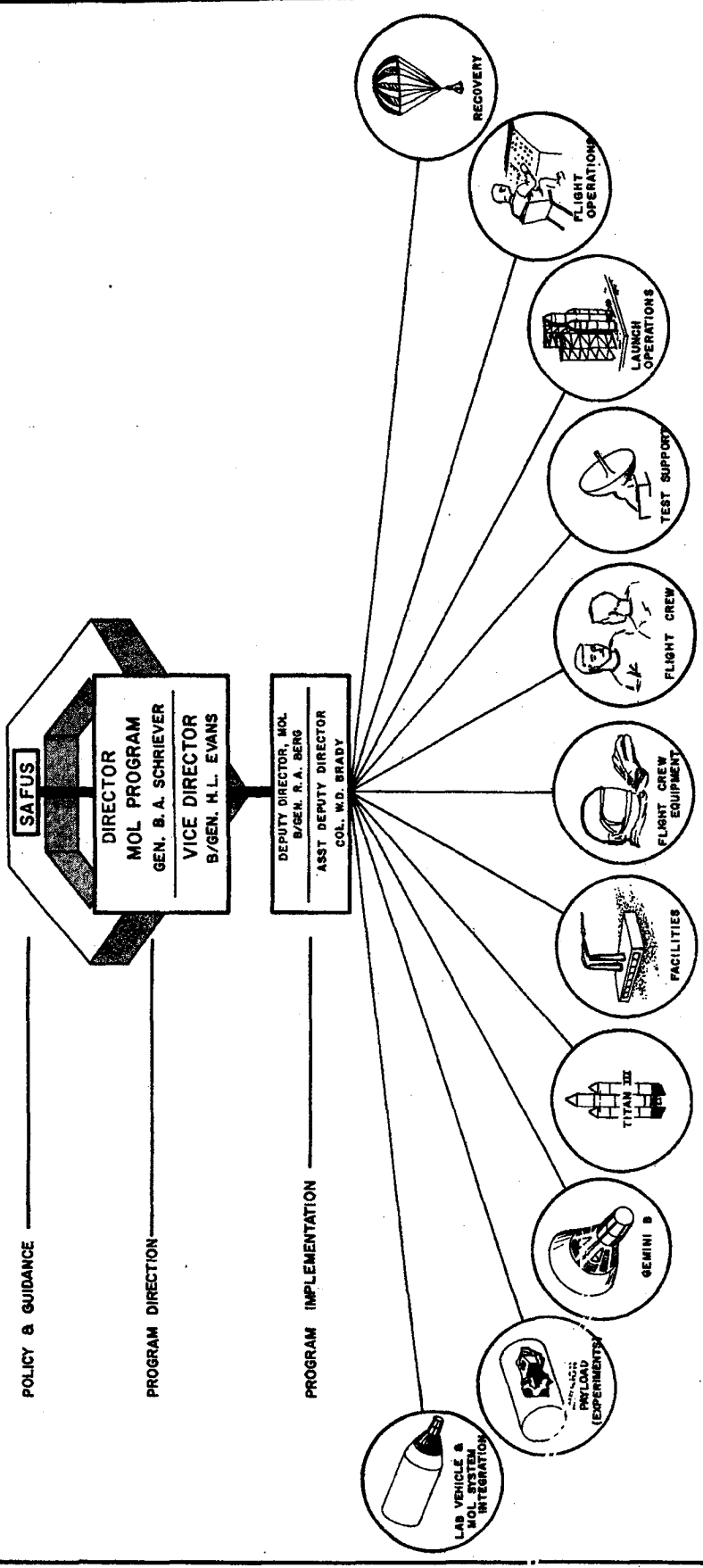
4.2 (U) MOL SYSTEM PROGRAM OFFICE (MOL SPO).

Figure 4-2 outlines the MOL SPO organization that is responsible for implementing the MOL Program.

4.3 (U) MOL SPO AND ASSOCIATE AGENCIES TOP-LEVEL
MOL MANAGEMENT OFFICIALS.

Figure 4-3 relates the individuals within the MOL SPO that are directly responsible to the Deputy Director, MOL for conduct of Program Segments as outlined in the MOL Program Breakdown Structure. The key top-level management officials of associate contractor and government agencies are also shown. It is the desire of the MOL SPO that the Associate Program Manager of each Program Segment be delegated the responsibility for "policy and decision making" relative to the conduct of their respective Program Segment.

USAF MANAGEMENT ORGANIZATION FOR MOL PROGRAM



NRO APPROVED FOR
RELEASE 1 JULY 2015

Figure 4-1. USAF Management Organization for MOL Program
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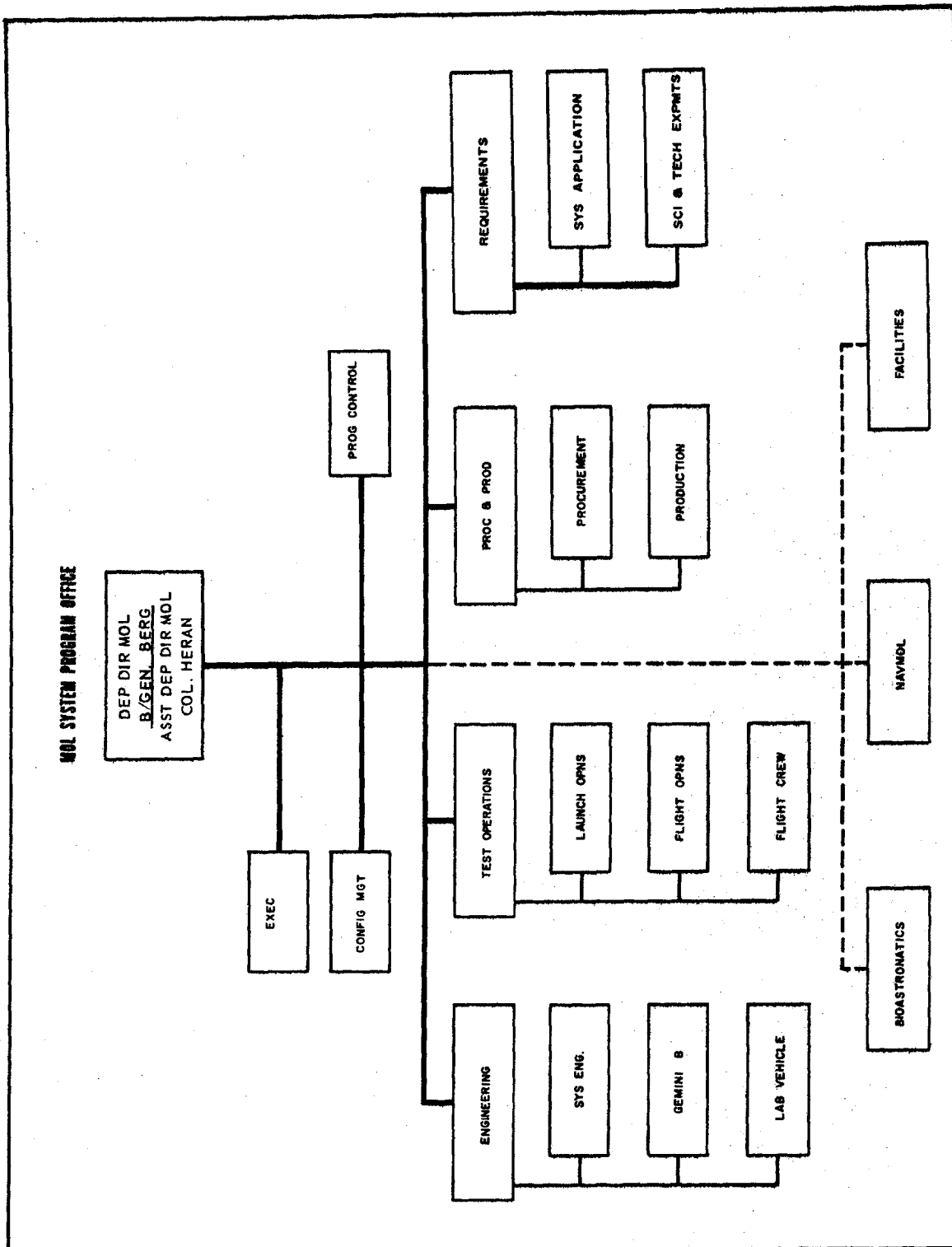


Figure 4-2. MOL System Program Office (MOL SPO)

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MOL SPO & ASSOCIATE AGENCY KEY TOP-LEVEL M O L MANAGEMENT OFFICIALS
(BY PROGRAM BREAKDOWN STRUCTURE)

BRIG GEN R. A. BERG DEPUTY DIR MOL PROGRAM COL. P. HERAN ASST DEPUTY DIR MOL PROGRAM MOL SYS PROG OFFICE SSO	MANNED ORBITING LABORATORY (MOL) SYSTEM PROGRAM
--	--

COL. W. H. BRASSFELD (L/C. SKAWLENSKI) DEPUTY MOL SPO	LABORATORY VEHICLE & MOL SYSTEM INTEGRATION
--	---

COL. W. H. BRASSFELD DEPUTY MOL SPO	MISSION PAYLOAD (EXPERIMENTS)
---	-------------------------------------

COL. W. H. BRASSFELD (L/C. CLANNY) DEPUTY MOL SPO	GEMINI B
--	----------

COL. W. H. BRASSFELD (MAJ. BRANSON) DEPUTY MOL SPO	TITAN III
---	-----------

COL. T. W. MORGAN (MAJ. G. M. HREBEC) DEPUTY MOL SPO	FACILITIES
---	------------

COL. A. J. KARBETEN (MAJ. E. WESTLAKE) DEPUTY MOL SPO	FLIGHT CREW EQUIPMENT
--	--------------------------

COL. T. W. MORGAN DEPUTY MOL SPO	MP-7C FLIGHT CREW
--	----------------------

COL. T. W. MORGAN (MAJ. G. M. HREBEC) DEPUTY MOL SPO	MP-7A TEST SUPPORT
---	--------------------------

COL. T. W. MORGAN (MAJ. G. M. HREBEC) DEPUTY MOL SPO	MP-7A LAUNCH OPERATIONS
---	-------------------------------

COL. T. W. MORGAN (L/C. J. P. O'DOLE) DEPUTY MOL SPO	FLIGHT OPERATIONS SUPPORT
---	---------------------------------

COL. T. W. MORGAN (L/C. J. P. O'DOLE) DEPUTY MOL SPO	MP-7B RECOVERY
---	-------------------

ASSOCIATE CONTRACTOR & GOVERNMENT AGENCIES

R. L. JOHNSON V.P. MOL DIRECTOR DOUGLAS	LABORATORY VEHICLE & MOL SYSTEM INTEGRATION
---	---

E. MILLER PROG. MANAGER G. E.	MISSION PAYLOAD (EXPERIMENTS)
-------------------------------------	-------------------------------------

R. A. PEPPIG PROG. MANAGER MC DONNELL	GEMINI B
---	----------

COL. D. V. MILLER COL. F. W. KNISS PROG. MANAGER T-III SPO	TITAN III
---	-----------

COL. E. JACKSON PROG. MANAGER CIVIL ENG. SST	FACILITIES
--	------------

COL. A. J. KARBETEN (MAJ. E. WESTLAKE) DEPUTY MOL SPO	FLIGHT CREW EQUIPMENT
--	--------------------------

COL. T. W. MORGAN DEPUTY MOL SPO	MP-7C FLIGHT CREW
--	----------------------

LT/GEN. L. I. DAVIS COL. R. C. ANDERSON PROG. MANAGER NRD	TEST SUPPORT
--	-----------------

COL. P. C. NEWTON PROG. MANAGER ATW	LAUNCH OPERATIONS
---	----------------------

COL. W. R. HEDRICK PROG. MANAGER AF SAT COMT FACIL	FLIGHT OPERATIONS SUPPORT
--	---------------------------------

LT/GEN. L. I. DAVIS (COL. R. OLSON) PROG. MANAGER DOD MANAGER	RECOVERY
--	----------

Figure 4-3. MOL SPO and Associate Agencies
Top-Level Management Officials

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