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VOLUME 5
DATA MANAGEMENT STUDY

APPENDIX G
CONTRACTOR DATA PACKAGE
RELIABILITY ASSURANCE (RA)

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RELIABILITY ASSURANCE MANAGEMENT
VOYAGER SPACECRAFT SYSTEM PROJECT

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DATA MANAGEMENT AND CONTROL TASK
VOYAGER SPACECRAFT SYSTEM PROJECT

PREPARED FOR

JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
4800 OAK GROVE DRIVE
PASADENA CALIFORNIA

UNDER JPL CONTRACT No. 951112

GENERAL  ELECTRIC

MISSILE AND SPACE DIVISION
Valley Forge Space Technology Center
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INTRODUCTION

This appendix presents the Contractor Data Package (Data Item Matrix, Data Requirement Descriptions, User Flow Diagram, Document Relationship Tree, and Frequency and Phasing Charts) for Reliability Assurance (RA).

These data include plans, procedures, reports, and related information necessary to ensure that a system, subsystem, component, or part will perform its required functions under defined conditions at a designated time and for a specified operative period. This category also includes reliability assessment of test results and tests of a statistical sampling nature.

The complete list of Contractor Data Package appendixes is as follows:

Appendix A	-	Technical Description and System Engineering (SE)
Appendix B	-	Planetary Quarantine (PQ)
Appendix C	-	Manufacturing (MG)
Appendix D	-	Configuration Management (CM)
Appendix E	-	Quality Assurance (QA)
Appendix F	-	Test (TE) and Mission Operations (MP)
Appendix G	-	Reliability Assurance (RA)
Appendix H	-	Logistics and Support (LS)
Appendix I	-	Overall Management (MA), Scheduling (SC), and Manning and Financial (MF)
Appendix J	-	Procurement and Contracting (PC)
Appendix K	-	Data Management (DM)
Appendix L*	-	Facilities (FA)
Appendix M*	-	Safety (SA)
Appendix N*	-	Site Activation for Launch (AL)
Appendix O*	-	Science (SI)
Appendix P*	-	Related Project Interfaces (RP)
Appendix Q*	-	Advanced Missions (AM)

* Appendixes L through Q prepared under Contract NAS 7-584

DATA ITEM NUMBER	1 of 3 DATA ITEM <u>RELIABILITY ASSURANCE</u>	DESCRIPTION
	<u>DIRECTIVES</u>	
RA-001	*Reliability Action Directives	Formal means of communicating to cognizant groups uals regarding required actions to be performed in cc with reliability actions or tasks.
	<u>LISTS</u>	
RA-002	List, Critical and Limited Life Item	Provides identification and description of critical and life items as proposed for use, serves as a design gu selection, test, etc.
RA-003	List, Failure Rate Data	Provides a common reference for established failure both component or piece part level, used to dissemin rate data to design and analysis groups.
RA-004	List, Flight Critical Processes and Practices	Provides identification of flight critical processes and as a basis for reliability assurance, audits, and appr
RA-005	List, Parts Application Data	Provides application data for parts contained on appro lists, serves as a design guide in selection of items.
	<u>LOGS</u>	
RA-006	Log, Problem/Failure Summary	
	<u>MINUTES</u>	
RA-007	*Minutes, Failure Analysis Review Board (FARB)	Reviews, monitors, and determines the status of the s causes of discrepancies and the required corrective a

* KEY INFORMAL DATA

DATA ITEM LIST/USER MATRIX

	APPLICABILITY TO FUNCTIONAL USERS AT CONTRACTOR LEVEL															
	SE	PQ	MG	CM	QA	TE	RA	LS	MA	SC	PC	MF	MP	DM	FA	SA
or individ- nnection	U	U	U	-	U	U	R	U	A	-	U	-	-	-	-	U
limited de for	R	-	U	-	U	U	A	-	U	-	-	-	-	-	-	U
rates on te failure	R	-	U	-	U	U	A	-	-	-	-	-	-	-	-	-
practices isals.	U	U	U	-	U	U	A	-	U	-	U	-	R	-	-	U
ved parts	A	U	U	U	U	U	R	U	-	-	-	-	-	-	-	-
	U	U	U	-	U	U	A	U	U	-	-	-	-	-	-	-
pecific tion.	U	U	U	-	U	U	A	U	U	-	-	-	U	-	-	U

U - USE R - REVIEW AUTHORITY A - APPROVAL AUTHORITY PM - PROJECT MANAGER APPROVAL

				APPLICABILITY AT SUBCONTRACTOR/VENDOR/SUPPLIER LEVELS							APPLICABILITY TO PROJECT BOARDS										
				PRINCIPAL SUB-CONTRACTORS	MAJOR SUB-CONTRACTORS	KEY SUBCON AND VENDORS	OTHER VENDORS	KEY SUPPLIERS	KEY SUBSUPPLIERS	CONFIGURATION CONTROL	CONFIGURATION MANAGEMENT	DATA REVIEW	DESIGN REVIEW	FAILURE REVIEW	INTEGRATED SAFETY	INTEGRATED TEST	MAKE OR BUY	MATERIAL REVIEW	SOURCE EVALUATION	SOURCE SELECTION	
AL	SI	RP	AM																		
U	-	-	-	NA	NA	NA	NA	NA	NA	-	-	-	U	U	-	U	-	-	-	-	
U	U	-	U	S	S	S	(S)	C/S	(S)	-	-	-	-	-	-	U	-	-	-	-	
-	U	-	U	(C/S)	(C/S)	(C/S)	(S)	(C/S)	(S)	-	-	-	-	U	-	U	-	-	-	-	
U	-	-	-	S	S	(S)	NA	(C/S)	(S)	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	(C/S)	(C/S)	(C/S)	(S)	(C/S)	(C/S)	U	U	-	-	U	-	U	-	U	-	-	
-	U	-	-	NA	NA	NA	NA	NA	NA	-	-	-	U	U	-	U	-	-	-	-	
-	U	-	-	NA	NA	NA	NA	NA	NA	-	-	-	-	A	-	U	-	U	-	-	

DATA ITEM NUMBER	2 of 3 DATA ITEM <u>RELIABILITY ASSURANCE</u>	DESCRIPTION
	<u>PLANS</u>	
RA-008	Plan, Reliability Assessment	
RA-009	Plan, Reliability Program	Provides a totally integrated definition of the reliability requirements and controls to be implemented on both a long-term and day-by-day basis.
RA-010	Plan, Parts Control Program	
	<u>PROCEDURES</u>	
RA-011	Procedure, Reliability Operating	
	<u>RECORDS</u>	
RA-012	Card, Parts Data	
RA-013	Chart, Reliability Assurance Control	
	<u>REPORTS</u>	
RA-015	Report, Failure Review	

* KEY INFORMAL DATA

DATA ITEM LIST/USER MATRIX

	APPLICABILITY TO FUNCTIONAL USERS AT CONTRACTOR LEVEL															
	SE	PQ	MG	CM	QA	TE	RA	LS	MA	SC	PC	MF	MP	DM	FA	SA
	R	U	-	-	U	U	R	U	PM	-	U	-	U	-	-	-
ility program h milestone	R	U	U	-	U	U	R	U	A	U	U	-	U	-	-	-
	R	-	U	-	R	-	R	-	PM	-	U	-	-	-	-	-
	U	U	U	-	U	U	A	U	R	-	-	-	U	-	-	U
	A	-	-	-	U	-	R	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	A	-	U	-	-	-	-	-	-	-
	U	U	U	U	U	U	R	U	PM	-	-	-	U	-	-	U

U - USE R - REVIEW AUTHORITY A - APPROVAL AUTHORITY PM - PROJECT MANAGER APPROVAL

				APPLICABILITY AT SUBCONTRACTOR/VENDOR/SUPPLIER LEVELS							APPLICABILITY TO PROJECT BOARDS											
				PRINCIPAL SUB-CONTRACTORS	MAJOR SUB-CONTRACTORS	KEY SUBCON AND VENDORS	OTHER VENDORS	KEY SUPPLIERS	KEY SUBSUPPLIERS	CONFIGURATION CONTROL	CONFIGURATION MANAGEMENT	DATA REVIEW	DESIGN REVIEW	FAILURE REVIEW	INTEGRATED SAFETY	INTEGRATED TEST	MAKE OR BUY	MATERIAL REVIEW	SOURCE EVALUATION	SOURCE SELECTION		
AL	SI	RP	AM																			
U	-	-	-	(C/S)	(C/S)	(C)	NA	NA	NA	-	-	-	-	-	-	U	-	-	-	-		
U	-	-	-	S	S	(S)	NA	(C/S)	NA	-	-	-	U	-	-	U	-	-	-	-		
U	-	-	-	C/S	C/S	(C/S)	NA	(C/S)	(C/S)	-	-	-	-	-	-	-	-	-	-	-		
U	-	-	-	(C/S)	(C/S)	(C/S)	NA	(C/S)	NA	-	-	-	U	U	-	U	-	-	-	-		
-	-	-	-	NA	NA	NA	NA	NA	NA	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	NA	NA	NA	NA	NA	NA	-	-	-	-	-	-	-	-	-	-	-		
-	U	-	-	NA	NA	NA	NA	NA	NA	-	-	-	U	R	-	U	-	-	-	-		

	3 of 3	
DATA ITEM NUMBER	DATA ITEM	DESCRIPTION
	<u>RELIABILITY ASSURANCE</u>	
	<u>REPORTS (Cont'd)</u>	
RA-016	Report, Summary, Audit and Appraisal	Provides a summary of audit and appraisal activities (processes and practices) which could have a detrimental reliability aspects of the program.
RA-017	Report, Design Review	
RA-018	Report, Reliability Assessment	Provides periodic growth assessment (evaluation) of as a comparison against reliability design goals.
RA-019	Report, Reliability Program Status	Provides preestablished control points in the program review, hard design review), a complete summary a status.
	<u>STANDARDS</u>	
RA-014	Standard, Rework	Provides description of and allowable limits to rework components, equipment.

* KEY INFORMAL DATA

DATA ITEM LIST/USER MATRIX

	APPLICABILITY TO FUNCTIONAL USERS AT CONTRACTOR LEVEL															
	SE	PQ	MG	CM	QA	TE	RA	LS	MA	SC	PC	MF	MP	DM	FA	SA
s (i. e., critical ntal effect on the	U	-	U	-	U	U	R	-	PM	-	U	-	-	-	-	-
	U	U	U	-	U	U	A	-	U	-	U	-	U	-	-	-
systems reliability	U	-	U	-	U	U	A	-	U	-	U	-	-	-	-	-
n (e.g., precontract data ssessment of reliability	U	-	U	-	U	U	R	-	PM	-	U	-	-	-	-	-
ck of parts,	R	-	U	U	R	U	R	R	PM	-	-	-	-	-	-	U

				APPLICABILITY AT SUBCONTRACTOR/VENDOR/SUPPLIER LEVELS							APPLICABILITY TO PROJECT BOARDS											
AL	SI	RP	AM	PRINCIPAL SUB-CONTRACTORS	MAJOR SUB-CONTRACTORS	KEY SUBCON AND VENDORS	OTHER VENDORS	KEY SUPPLIERS	KEY SUBSUPPLIERS	CONFIGURATION CONTROL	CONFIGURATION MANAGEMENT	DATA REVIEW	DESIGN REVIEW	FAILURE REVIEW	INTEGRATED SAFETY	INTEGRATED TEST	MAKE OR BUY	MATERIAL REVIEW	SOURCE EVALUATION	SOURCE SELECTION		
-	U	-	-	NA	NA	NA	NA	NA	NA	-	-	-	U	U	-	U	-	-	-	-		
-	U	-	U	S	S	(S)	NA	NA	NA	-	-	-	A	U	-	U	-	-	-	-		
-	-	-	-	NA	NA	NA	NA	NA	NA	-	-	-	U	U	-	U	-	-	-	-		
-	-	-	U	S	S	(S)	NA	NA	NA	-	-	-	-	-	-	U	-	-	-	-		
-	-	-	-	C	C	C	(C)	(C)	(C)	U	U	-	-	U	-	-	-	U	-	-		

2-6-2

~~2-6-2~~

USER FLOW DIAGRAMS

This section contains User Flow Diagrams, which include functional tracks for those activities considered to be the major contributors to reliability. The design of these diagrams shows the progressive nature of most reliability functions when the activity continues over an extended period of time or when the documents continually become more complete and complex. Several items are influenced by the various program milestones (e.g., formal design reviews cease when the design is frozen with the HDR, reliability program status reports are periodic entities, and reliability review and approval of engineering documentation or monitoring of manufacturing activities is sporadic in nature). Key interfaces with the functional groups are also shown.

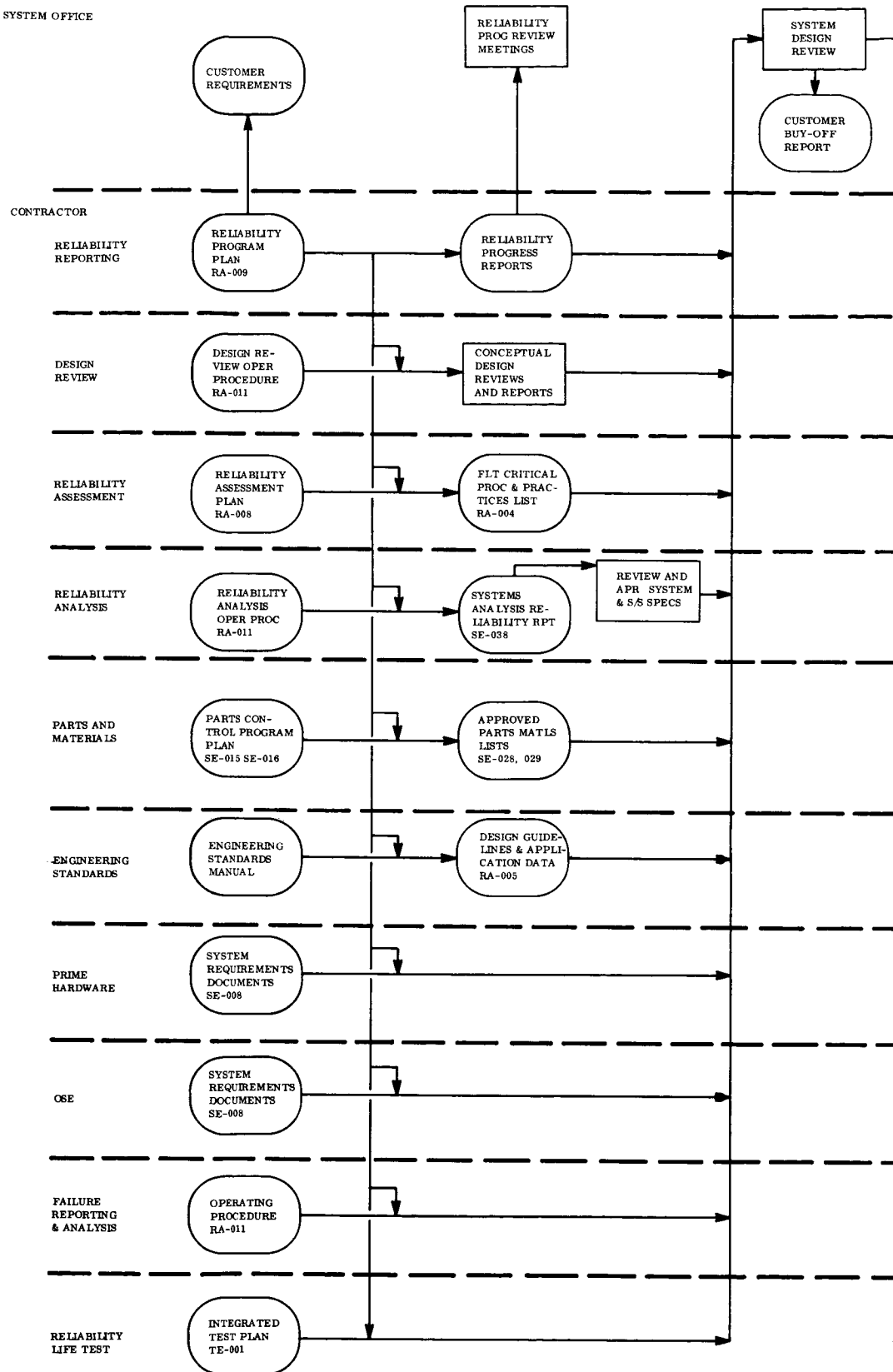
Individual tracks of the major activities are as follows:

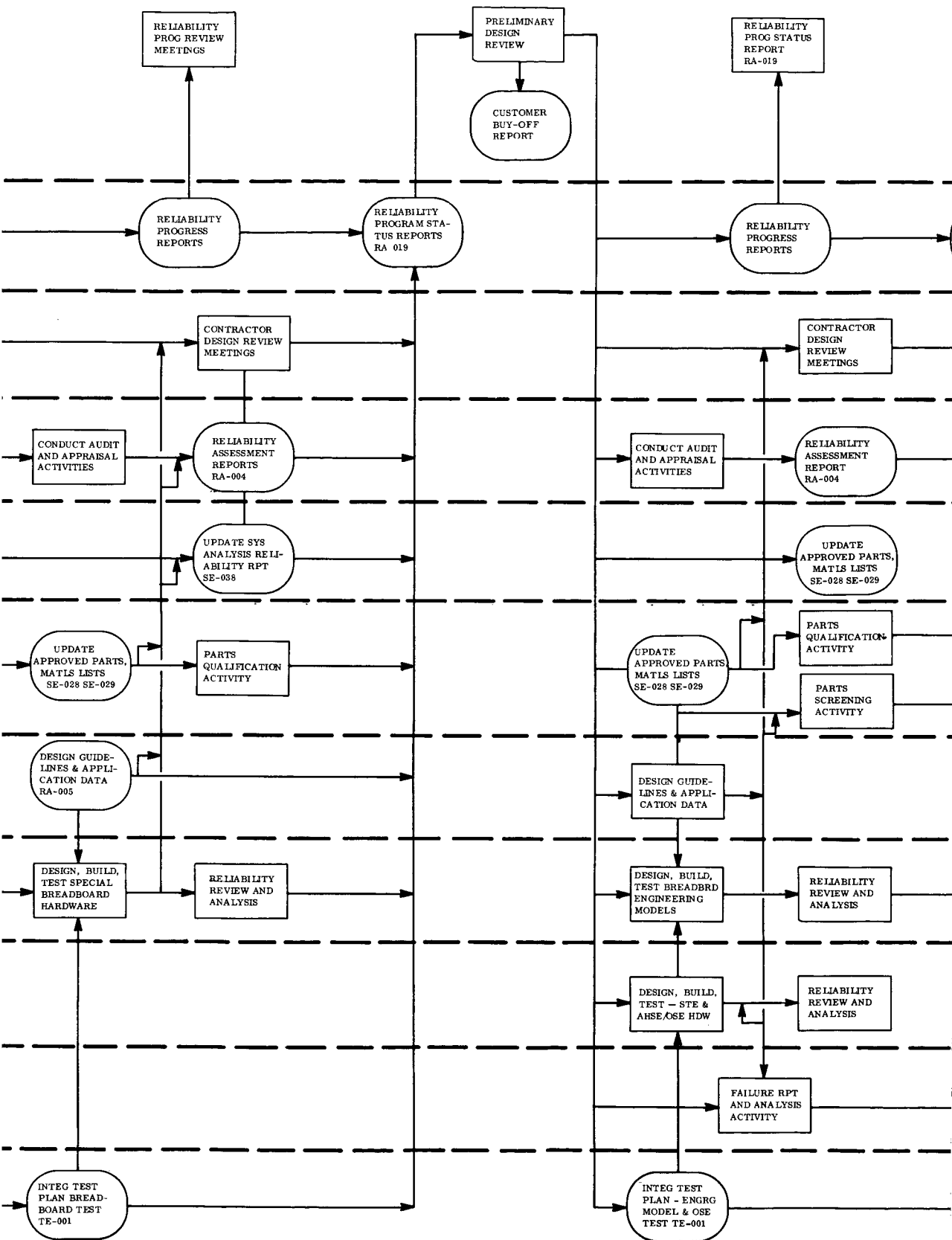
- a. System Office - Emphasizes key points of review and control of reliability program.
- b. Reliability Reporting - Highlights major reports provided to the customer. These documents accumulate all important reliability data into a few key reports.
- c. Design Review - Indicates the period over which contractor design reviews will be held. Beyond the HDR, formal reliability reviews will be ineffective. However, design reviews may be called in case of required critical design changes.
- d. Reliability Assessment - Portrays the wide variety of data (reliability analysis reports, performance and failure data, audit and appraisal results, design review results, etc.) which will contribute to the reliability (probability of success) assessment of the system.
- e. Reliability Analysis - Illustrates how the initial analysis provides apportioned requirements to the elements of the system and shows how the various data items are used to update the analysis of the inherent reliability of the system. The analysis serves as an input to the reliability assessment until the HDR, when the design is essentially frozen.
- f. Parts and Materials - Depicts the growth of activities involved with parts and materials. Quality Assurance is a major contributor to this program due to the extensive test and vendor control requirements. All parts and materials in the final configuration must appear on the Approved Parts and Materials Lists.
- g. Engineering Standards - Shows the engineering standards effort which is carried out early in the program, i.e., prior to detailed engineering model design.

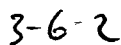
Reliability User Flow Diagrams

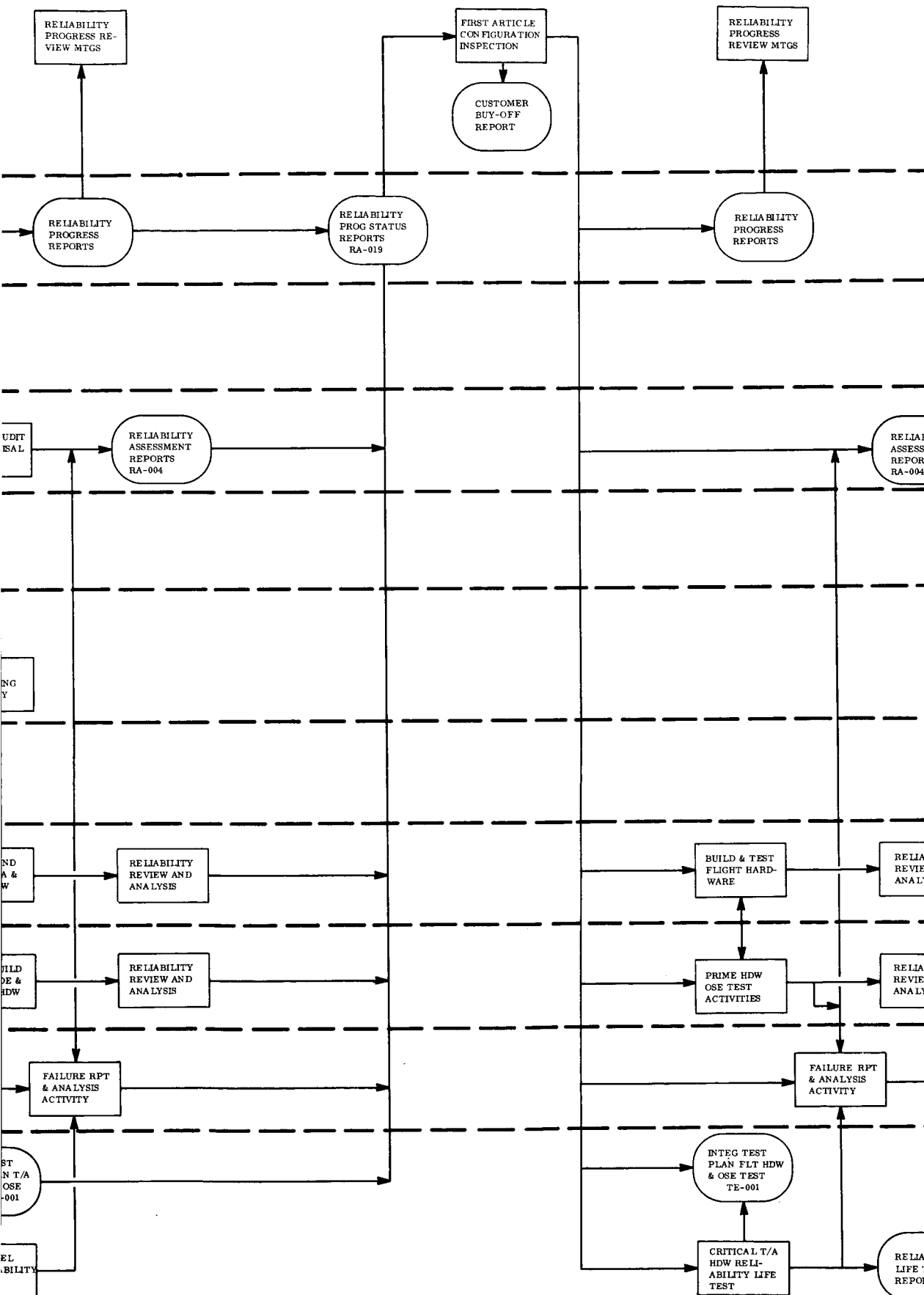
<u>Figure Number</u>	<u>Title</u>
G-1	Reliability Assurance User Flow Diagram - Summary
G-2	Reliability Assurance User Flow Diagram - Contract Award Through Preliminary Design Review
G-3	Reliability Assurance User Flow Diagram - Preliminary Design Review Through Critical Design Review
G-4	Reliability Assurance User Flow Diagram - Critical Design Review Through Joint Flight Acceptance Composite Test

SYSTEM OFFICE









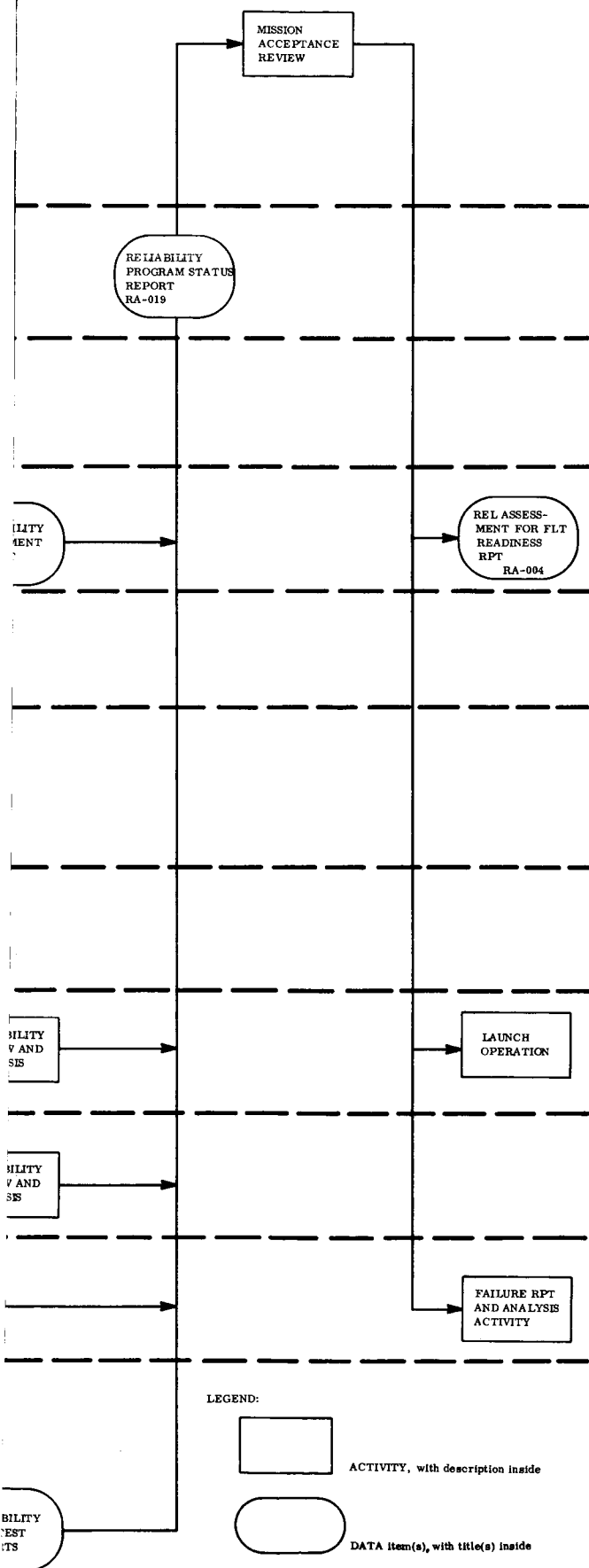


Figure G-1. Reliability User Flow
Diagram - Summary

3-6-4

3-6-4

SYSTEM OFFICE

RELIABILITY
GUIDELINES
DOCUMENTS

CONTRACTOR

PROJECT
IMPLEMENTATION
PLAN MA-007

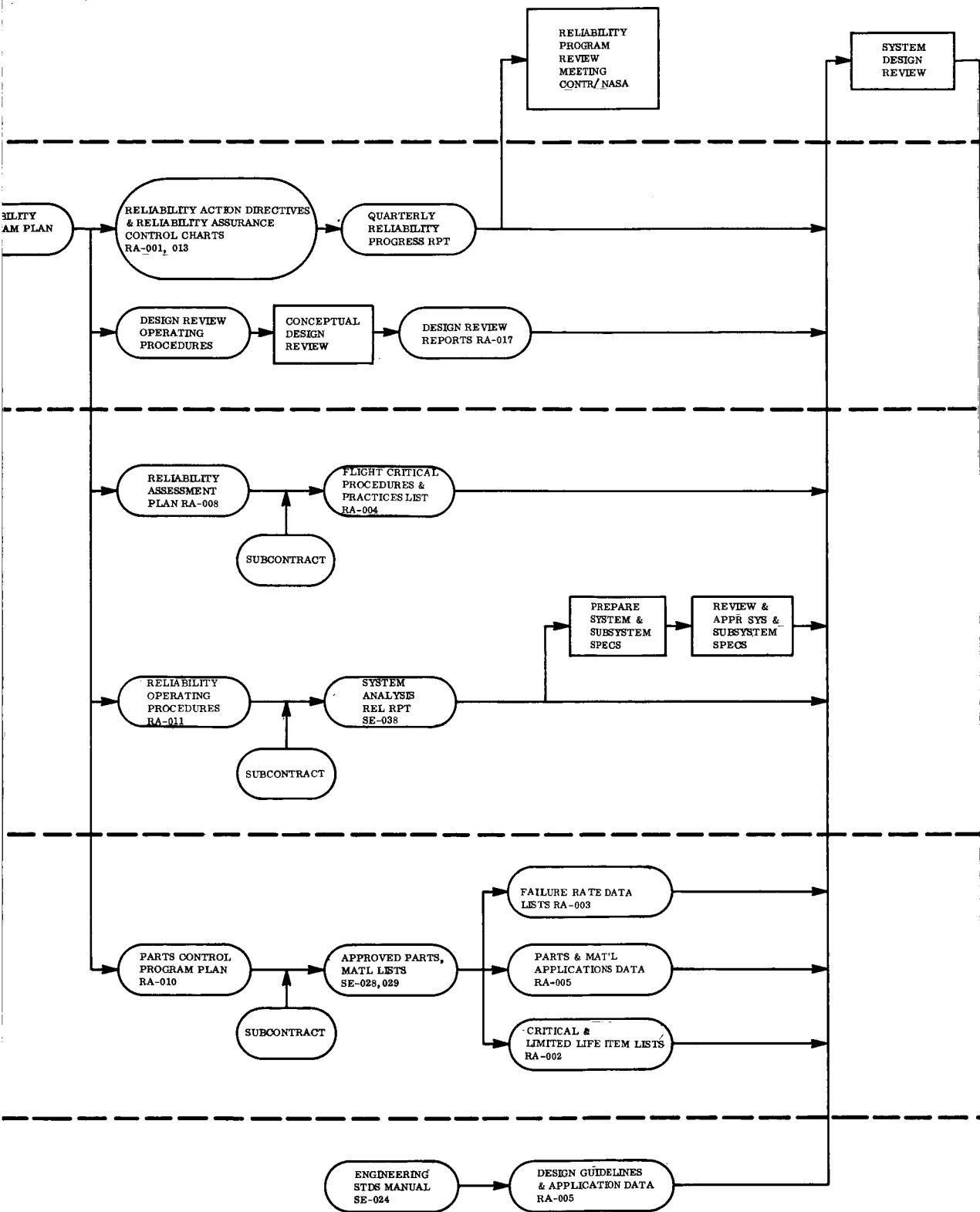
RELIABILITY
PROGRAM
RA-001

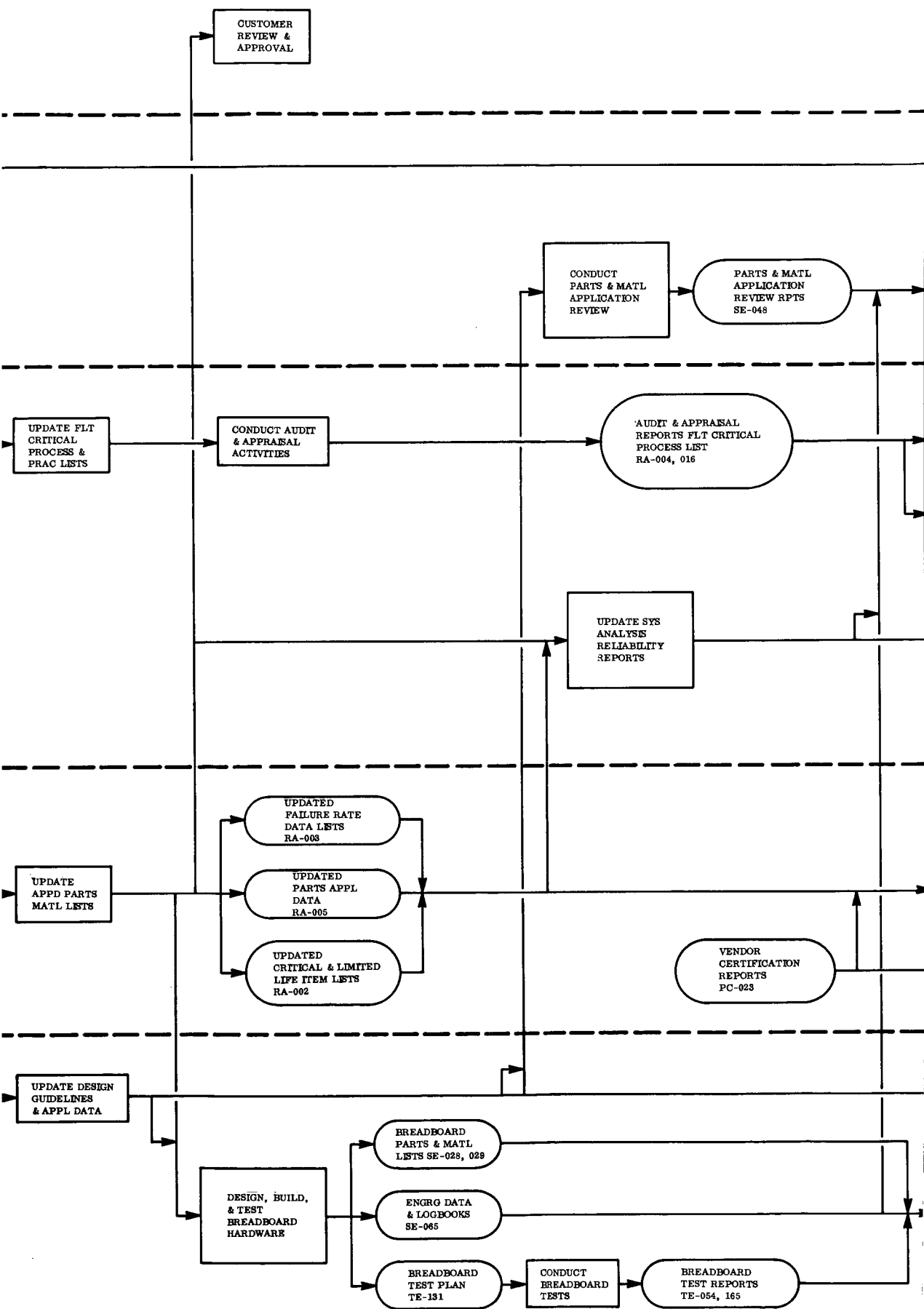
RELIABILITY
REPORTING AND
DESIGN REVIEW

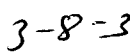
RELIABILITY
ASSESSMENT
AND ANALYSIS

PARTS &
MATERIAL

ENGINEERING
STANDARDS
AND HARDWARE
(INCLUDING O&E)







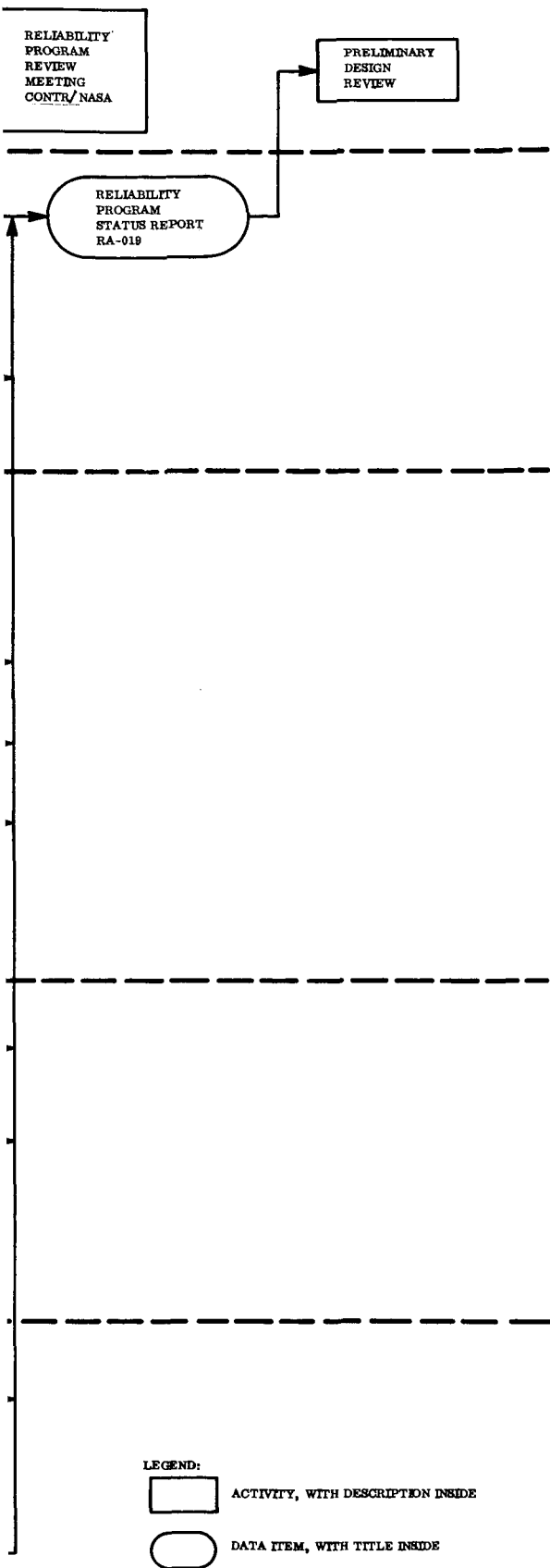


Figure G-2. Reliability User Flow Diagram -
Contract Award Through Preliminary
Design Review

SYSTEM OFFICE

PRELIMINARY
DESIGN
REVIEW

CONTRACTOR

RELIABILITY ACTION DIRECTIVES
& RELIABILITY ASSURANCE
CONTROL CHARTS
RA-001, 013

RELIABILITY
REPORTING
AND DESIGN
REVIEW

CONDUCT PARTS/
MATL APPLICATION
REVIEWS

PARTS/MATL
APPLICATION
REVIEW RPT
SE-046

DESIGN
REVIEW
MEETING

RELIABILITY
ASSESSMENT
AND
ANALYSIS

CONDUCT AUDIT
& APPRAISAL
ACTIVITY

PREPARE AUDIT
& APPRAISAL
REPORTS

FABR MINUTES,
FAILURE REV RPTS
RA-007, 015

PRELIM FAILURE
SUMMARY LOGS
RA-006

AUDIT & APPRAISAL
SUMMARY REPORTS
RA-016

UPDATED REL
ASSESSMENT
RPTS RA-018

SYSTEM ANALYSIS
REL REPORT
SE-038

CONDUCT
RELIABILITY
REVIEW & ANAL

PARTS AND
MATERIAL

QUALIFICATION
TEST REPORT
TE-165

APPROVED PARTS
& MATL LISTS
SE-028, 029

PARTS
SCREENING
REQT SE-015

PARTS
DATA CARDS
RA-012

PARTS
SCREENING
TEST RPTS
TE-165

QUALIFICATION
STATUS RPT
QA-030

REWORK STD RA-014
DESIGN GUIDELINES
SE-008, 009 PARTS
APPL DATA RA-005

DESIGN ANALYSIS
REPORTS SE-035
THRU SE-044

DESIGN & BUILD
BREADBOARD &
ENGRG MODS

ENGINEERING
MODEL PARTS
& MATL LISTS
SE-028, 029

ENGRG MODEL
DWG & SPECS
SE-027, 062

ENGRG MODEL
LOG BOOKS
SE-065

REVIEW QC
& MFG PLAN
DOCUMENTS

REVIEW
INTEGRATED
TEST PLAN
EM TEST

FAB & TEST
ENGRG MODEL
HARDWARE

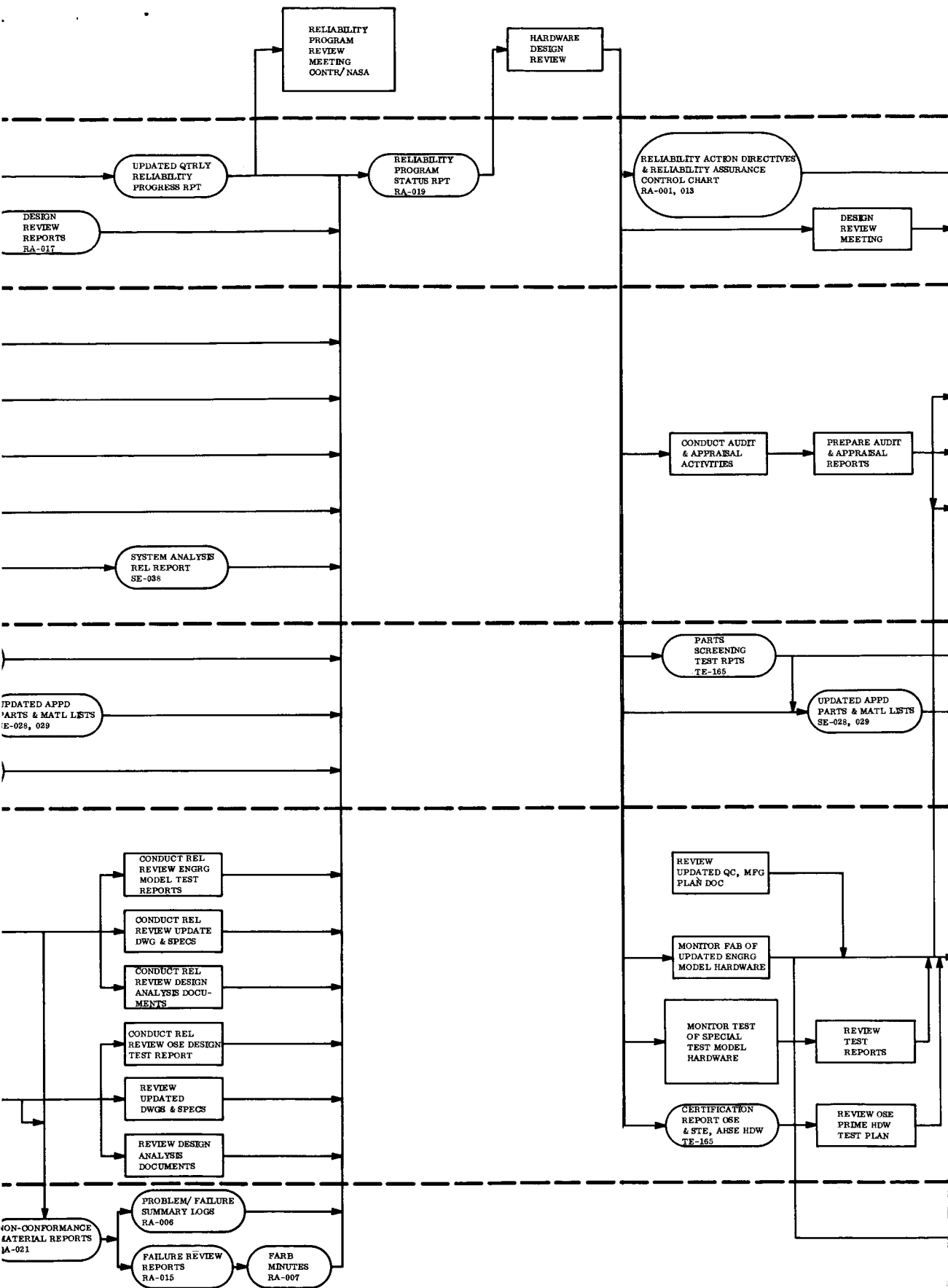
ENGINEERING
STANDARDS
AND HARDWARE
(INCLUDING OSE)

OSE - STE
AHSE DWGS
DEV - DATA
SE-056

REVIEW
INTEGRATED
TEST PLAN(OSE)

FAB & TEST
OSE - STE
& AHSE HDW

FAILURE
REPORTING
& ANALYSIS



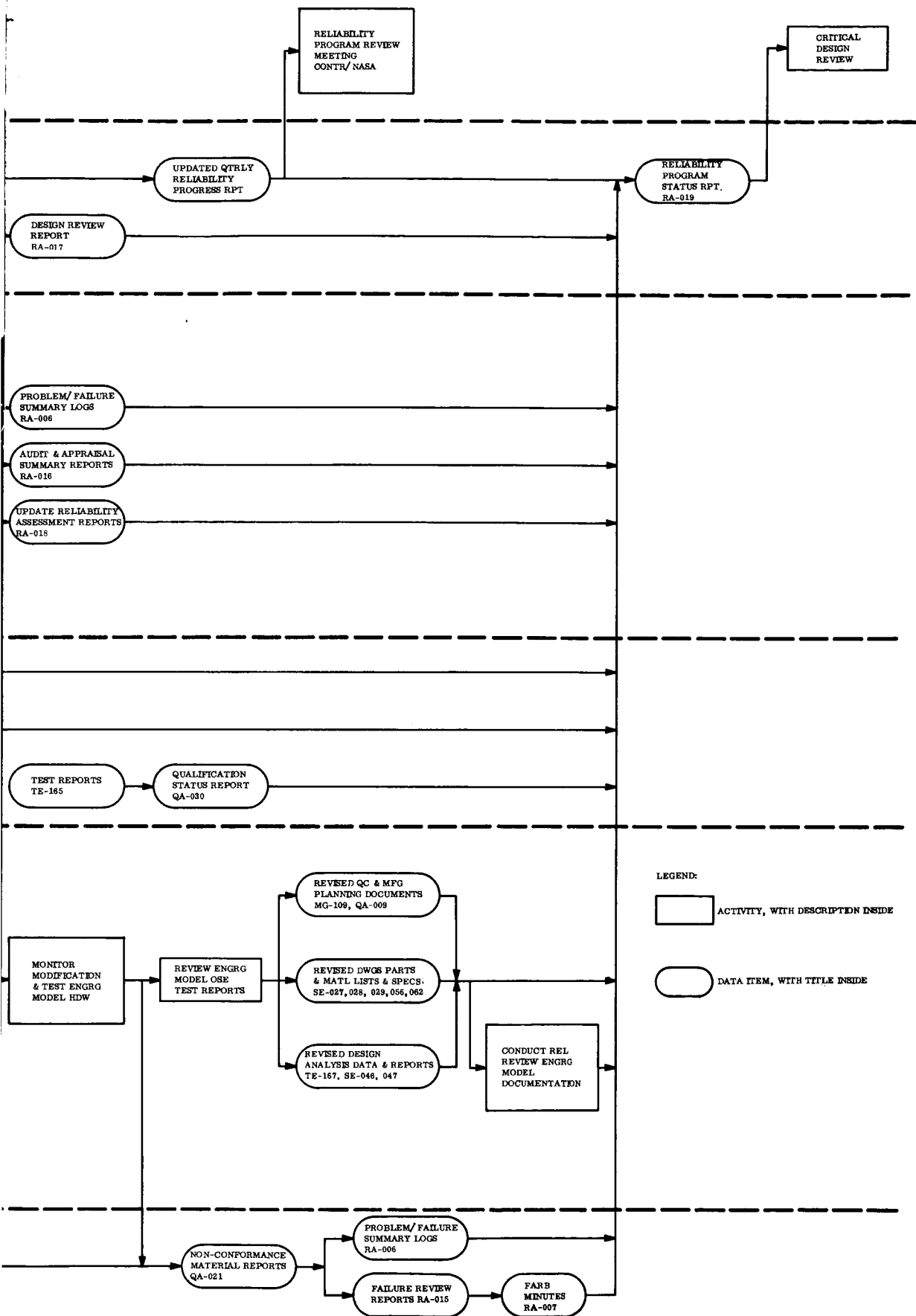
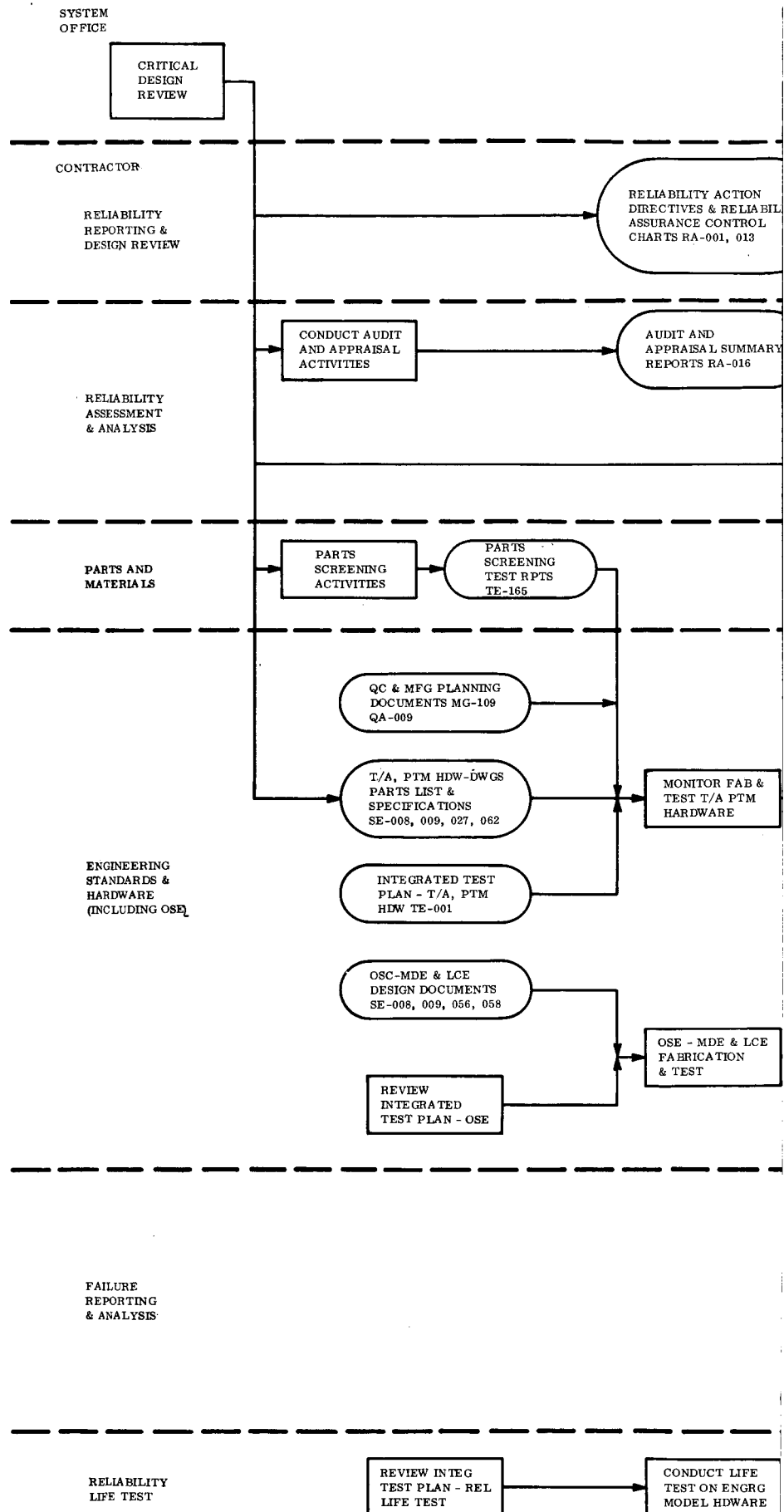
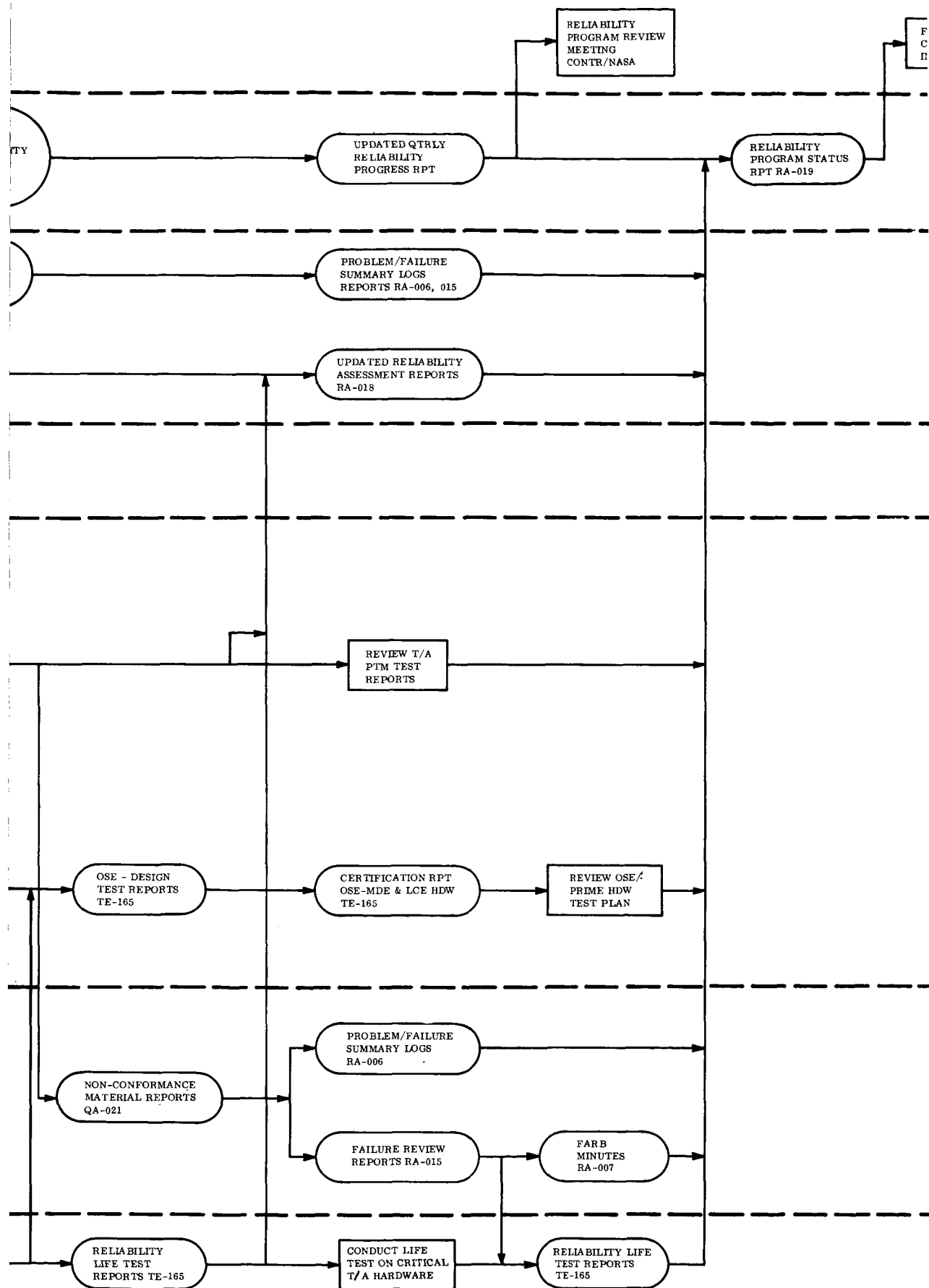
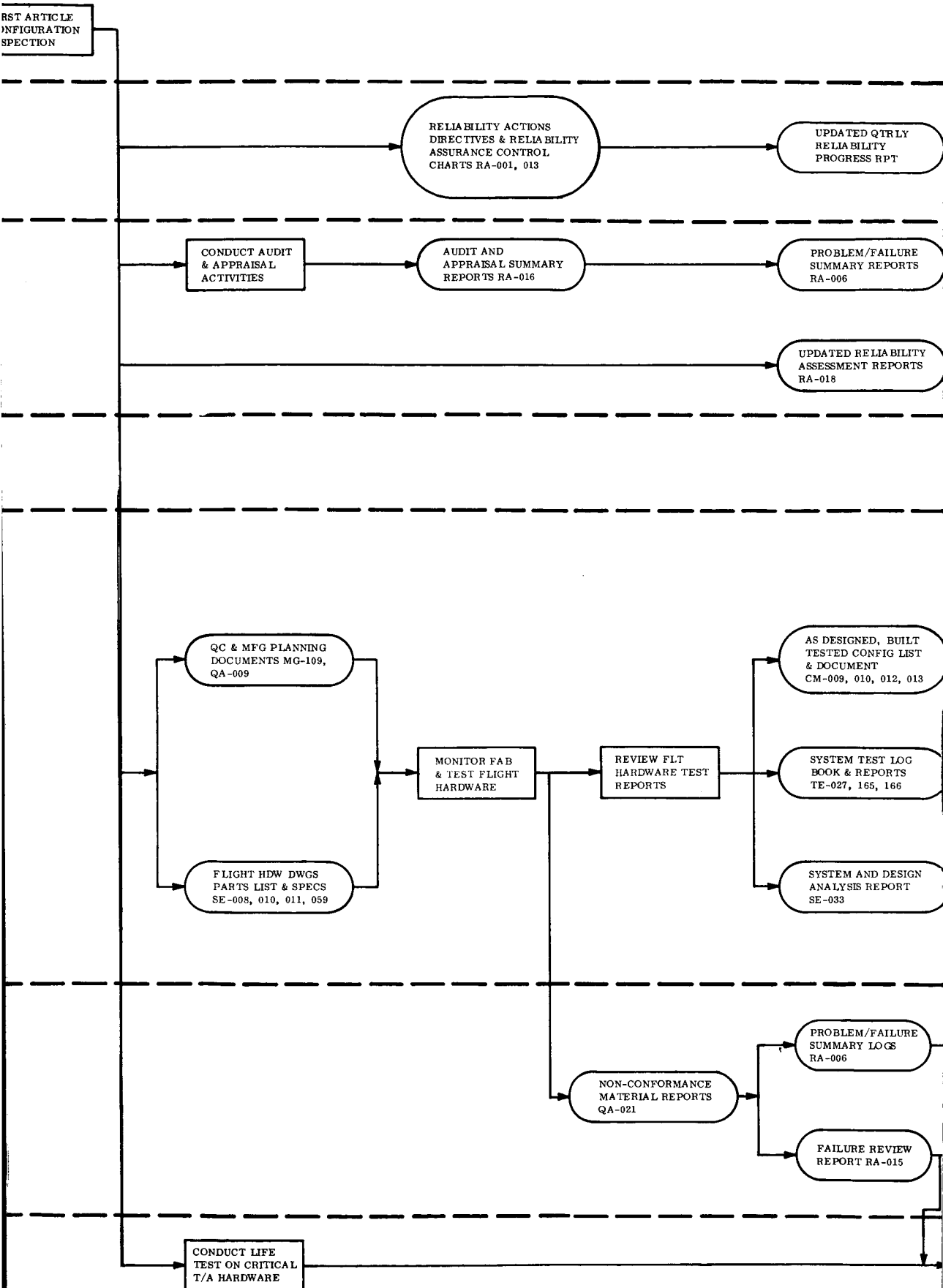
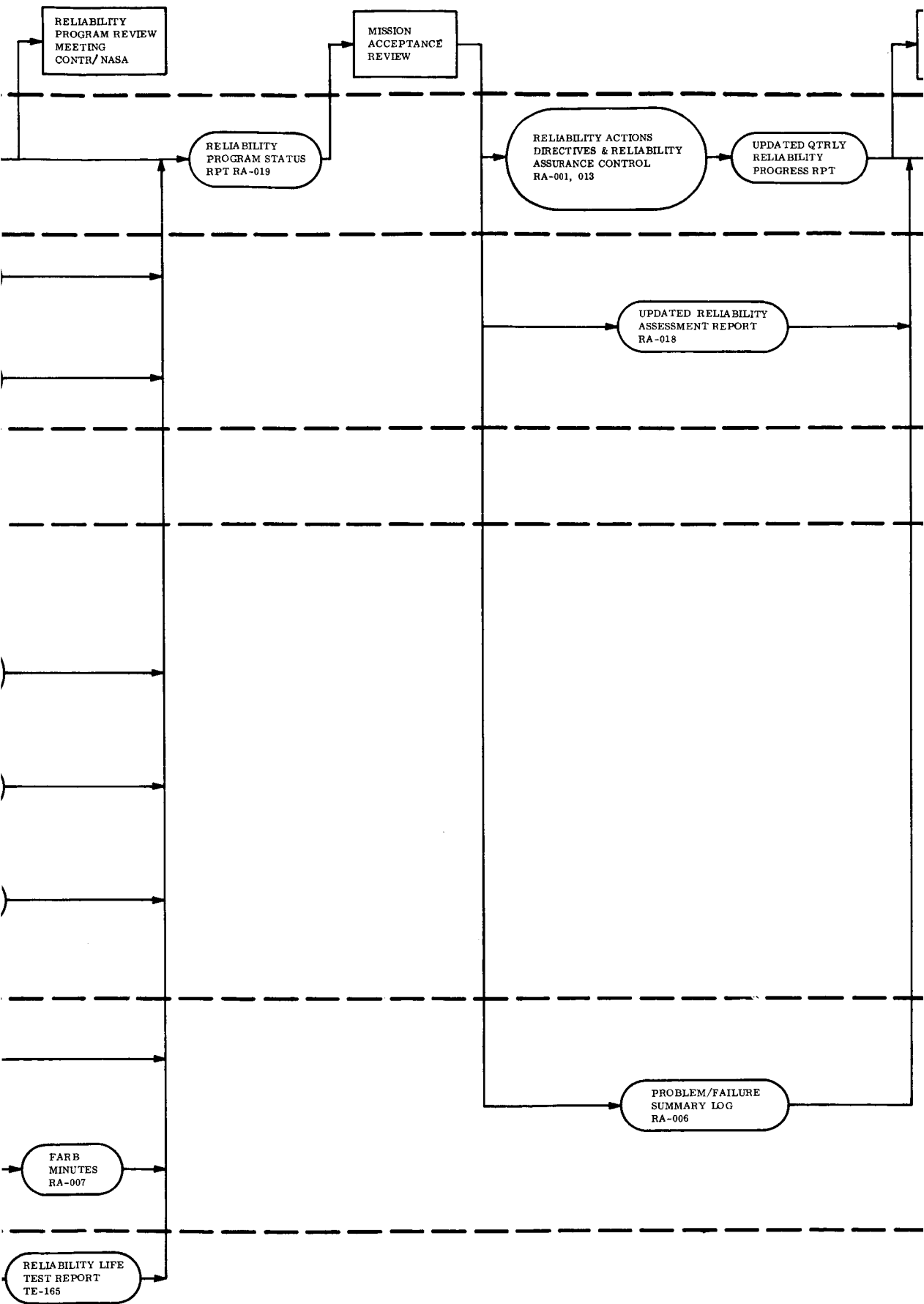


Figure G-3. Reliability User Flow Diagram - Preliminary Design Review Through Critical Design Review









RELIABILITY
PROGRAM REVIEW
MEETING
CONTR/ NASA

J FACT

RELIABILITY
PROGRAM STATUS
RPT RA-019

REL ASSESSMENT
FOR FLT READINESS
REPORT RA-018

LEGEND



ACTIVITY, WITH DESCRIPTION INSIDE



DATA ITEM, WITH TITLE INSIDE

Figure G-4. Reliability User Flow Diagram -
Critical Design Review Through Joint
Flight Acceptance Composite Test

Reliability Assurance Data Requirement Descriptions

<u>DRD Number</u>	<u>Title</u>
RA-001	*Reliability Action Directives
RA-002	List, Critical and Limited Life Item
RA-003	List, Failure Rate Data
RA-004	List, Flight Critical Processes and Practices
RA-005	List, Parts Application Data
RA-006	Log, Problem/Failure Summary
RA-007	*Minutes, Failure Analysis Review Board (FARB)
RA-008	Plan, Reliability Assessment
RA-009	Plan, Reliability Program
RA-010	Plan, Parts Control Program
RA-011	Procedure, Reliability Operating
RA-012	Card, Parts Data
RA-013	Chart, Reliability Assurance Control
RA-014	Standard, Rework
RA-015	Report, Failure Review
RA-016	Report, Summary, Audit and Appraisal
RA-017	Report, Design Review
RA-018	Report, Reliability Assessment
RA-019	Report, Reliability Program Status

* Key Informal Data

GE EXHIBIT DRD RA-001

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:		DATE:		DATA CATEGORY:							
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA		OFFICE RESPONSIBLE FOR DRD:		CODE:		DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.:		DRD NO.: RA-001			
TITLE OF DOCUMENT: *RELIABILITY ACTION DIRECTIVES						ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:							
						ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.							
						ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.							
TYPE OF DOCUMENT: ☐ CONTROL ☒ ACTION ☐ REFERENCE ☐ INFORMATION						ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE		NO OF COPIES 15									
USE OF DOCUMENT: This DRD will be used as a formal method of communicating to cognizant groups or members of the contractors or subcontractors organization for required actions to be performed in connection with reliability problems or tasks, to ensure the success of the Reliability Program. Directives will also provide a record and a basis for follow-up.						ESTIMATED MANHOURS FOR SINGLE PREPARATION		INFORMATION CUTOFF DATE OR MILESTONE									
						ESTIMATED COST (\$) FOR SINGLE PREPARATION		DATE DATA CUE TO USER									
						FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE SDR UPDATE (FREQUENCY OR MILESTONE) Not applicable ESTIMATED EXPIRATION DATE									
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-009, Plan, Reliability Program RA-013, Chart, Reliability Assurance Control RA-016, Report, Audit & Appraisal Summary RA-017, Report, Design Review																	
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED						☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN									
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER _____ _____						KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☒ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX						☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☐ PLAN ☐ PROCEDURE ☐ REGULATION ☐ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER					
						REFERENCE DOCUMENTS:											
						APPLICABLE STANDARDS:											
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)																	
SUBMIT FOR REVIEW TO: _____				BY _____				DATE _____									
SUBMIT FOR APPROVAL TO: _____				BY _____				DATE _____									
Project Manager																	

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-001

This DRD is applicable to the prime contractor and principal subcontractors as a method of communicating reliability actions to be taken throughout the period of the contract.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

Although this document will not have a fixed format, it will contain the following minimum requirements:

- a. Identity of the area or item for action
- b. Mechanism (source) generating requirement for action (i.e., design reviews)
- c. Responsibility for accomplishing action
- d. Schedule for completion
- e. Step-by-step direction
- f. Control number
- g. Authorizing signatures

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-002

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:		DATE:		DATA CATEGORY:					
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA		OFFICE RESPONSIBLE FOR DRD:		CODE:		DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.:		DRD NO.: RA-002	
TITLE OF DOCUMENT: LIST, CRITICAL AND LIMITED LIFE ITEMS						ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:					
						ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:					
						ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:					
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION						ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE		NO OF COPIES 40							
USE OF DOCUMENT: To provide identification of the critical and limited life items used or proposed for use on the Program, together with data on criticality, limitations and where used information. The list will serve as a guide-line for design, parts or components selection, test durations, redundancy application, etc.						ESTIMATED MANHOURS FOR SINGLE PREPARATION		INFORMATION CUTOFF DATE OR MILESTONE							
						ESTIMATED COST (\$) FOR SINGLE PREPARATION		DATE DATA DUE TO USER							
						FREQUENCY OF ISSUE ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE SDR UPDATE (FREQUENCY OR MILESTONE) As required ESTIMATED EXPIRATION DATE							
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-020, *Report, Failure Analysis RA-005, List, Parts Application Data RA-009, Plan, Reliability Program SE-029, List, Approved Parts															
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED						☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN							
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						☐ INSTRUCTION ☐ LETTER ☒ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☐ PLAN ☐ PROCEDURE ☐ REGULATION ☐ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER									
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)						REFERENCE DOCUMENTS: NPC 250-1									
						APPLICABLE STANDARDS:									
SUBMIT FOR REVIEW TO: _____						BY _____									
SUBMIT FOR APPROVAL TO: _____						BY _____									
Manager, Reliability Assurance															

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS

DRD NO.:

RA-002

This DRD is applicable to the prime contractor and principal subcontractors responsible for the design of subsystem or components unique to this program.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

Critical and limited life item lists will identify all items (components or parts) used on the Program which are limited to a specified number of operations, or time period, and which have critical parameters. The list as a minimum shall identify the item by name; common designation; part, drawing, or model number; manufacturer; where used; and description of the limitation (i. e., maximum operating time (hours), number of cycles or other limitations).

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-003

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:		DATE:		DATA CATEGORY:																																	
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA	OFFICE RESPONSIBLE FOR DRD:		CODE:	DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.: RA-003																																	
TITLE OF DOCUMENT: LIST, FAILURE RATE DATA						ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:																																	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:																																	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:																																	
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION						ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 40																																			
USE OF DOCUMENT: To provide a common reference for established failure rates on a component and piece part level. The list is used as a vehicle to record and disseminate failure rate data to design and analysis groups for reference in the selection of items with the lowest failure rate for specific applications, and as an input to reliability predictions.						ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:																																			
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-013, Procedure, Test/Inspection RA-005, List, Parts Application Data RA-009, Plan, Reliability Program SE-015, Specification, Part ()						ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:																																			
						FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE: SDR UPDATE (FREQUENCY OR MILESTONE): Revise as required ESTIMATED EXPIRATION DATE:																																			
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REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)																																											
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VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

DRD NO.:

RA-003

SPECIAL INSTRUCTIONS:

This DRD applies to the prime contractor and to principal subcontractors. The document is to be applicable to designs throughout the system. It is to be a growth document, maturing as additional failure rate data is available.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

Documents will initially contain failure rate data covering part types on the approved parts list. As the design stages progress, failure rates will be established at the component level and listed by that designation. The list will contain as a minimum the following:

- a. Description of part or component
- b. Common designation (part, or drawing number)
- c. Specification
- d. Characteristics
- e. Failure rate (percent per 1000 hours)
- f. Data source

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-004

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:																																																		
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-004																																																		
TITLE OF DOCUMENT: LIST, FLIGHT CRITICAL PROCESSES AND PRACTICES				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:																																																		
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:																																																		
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				TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION																																																					
USE OF DOCUMENT: To provide identification of flight critical processes and practices as a basis for reliability assurance audits and appraisals throughout the Program. The list identifies those tasks, which if out of control, would result in sources of unreliability.				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 13																																																			
				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:																																																			
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INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: MG-009, Plan, Manufacturing QA-009, Plan, Quality Assurance Program RA-009, Plan, Reliability Program RA-011, Procedure, Reliability Operating RA-013, Chart, Reliability Assurance Control				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE: SDR																																																			
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	Manager, Reliability Assurance																																																								

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

DRD NO.:

RA-004

SPECIAL INSTRUCTIONS:

The flight critical processes and practices list is developed as a result of a detailed review of all processes and practices to be implemented on the Program. The list is dynamic — subject to revision as new conditions develop.

This DRD is applicable to the prime contractor, and in preparation, would be coordinated with major subcontractors.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The list will include those processes and practices which contribute to the reliability of the system and which by audit and appraisal would provide a measure of their accomplishment in terms of reliability. Typical examples of items to be listed include:

- a. Vendor rating system
- b. Problem/failure reporting, analysis system
- c. Traceability procedures
- d. Test monitoring plans

The list will cross-reference published documents used to specify and control the processes and procedures.

The list is a working document within reliability assurance. Therefore, specific format is not required.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-005

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:		DATE:		DATA CATEGORY:																																	
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA	OFFICE RESPONSIBLE FOR DRD:		CODE:	DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.:	DRD NO.: RA-005																																
TITLE OF DOCUMENT: LISTS, PARTS APPLICATION DATA						ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:																																	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:																																	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:																																	
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION						ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 35																																			
USE OF DOCUMENT: To provide a common source of bonafide application data for parts contained on the Approved Parts Lists. It serves as a design guide in selection of items for equipment design, and as a checklist and control document in the review and assessment of these designs.						ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:																																			
						ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:																																			
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-009, Plan, Reliability Program Plan RA-012, Card, Parts Data RA-017, Report, Design Review SE-015, Specification, Part () SE-029, List, Approved Parts						FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE: SDR UPDATE (FREQUENCY OR MILESTONE): Revise as required ESTIMATED EXPIRATION DATE:																																			
CLASSIFICATION: ☐ SECRET ☐ GROUP 1 ☐ CONFIDENTIAL ☐ GROUP 2 ☐ SECRET RESTRICTED DATA ☐ GROUP 3 ☐ CONFIDENTIAL RESTRICTED DATA ☐ GROUP 4 ☒ UNCLASSIFIED ☐ PROPRIETARY ☐ PUBLIC DOMAIN ☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN																																											
FORM OF DATA: KIND OF DATA: ☒ PRINTED DOCUMENT ☐ ABSTRACT ☐ INSTRUCTION ☐ CHART ☐ BROCHURE ☐ LETTER ☐ DIAGRAM ☐ BULLETIN ☒ LIST ☐ DRAWING ☐ CATALOG ☐ LOG ☐ FILM (STATIC OR MOTION) ☐ CONTRACT ☐ MANUAL ☐ ILLUSTRATION ☐ DIRECTIVE ☐ MEMORANDUM ☐ MODEL ☐ DISCLOSURE ☐ MINUTES ☐ RECORDING (TAPE OR DISC) ☐ ENGINEERING CHANGE ORDER ☐ PLAN ☐ COMPUTER CARD ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ PROCEDURE ☐ COMPUTER TAPE ☐ ENGINEERING CHANGE PROPOSAL ☐ REGULATION ☐ MICROFILM (W/OR W/O CARD) ☐ ENGINEERING CHANGE PROPOSAL ☐ REPORT ☐ OTHER ☐ SCHEDULE _____ _____ ☐ SPECIFICATION _____ ☐ STANDARD _____ ☐ VOUCHER						REFERENCE DOCUMENTS:																																					
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Manager, Product Engineering																																											

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

DRD NO.:

RA-005

SPECIAL INSTRUCTIONS:

Prime contractor will be responsible for document preparation, coordination with affected subcontractors, and dissemination of documents. The document will be released as an original issue and updated as additional data becomes available.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

This document contains application data for each item covered by the Approved Parts Lists. Format for the different types of items varies depending upon the specific information to be presented. The data shall be of sufficient detail to ensure a clear understanding of content and ultimate achievement of system design goals. As a guideline document for the application of parts, the document will include the following:

- a. Description of part or material
- b. Common designation
- c. Specification
- d. General application criteria and constraints
- e. Conservative design limit data
- f. Derating data

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-006

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:		DATA CATEGORY:						
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA	OFFICE RESPONSIBLE FOR DRD: CODE:		DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.: DRD NO.: RA-006					
TITLE OF DOCUMENT: LOG, PROBLEM/FAILURE SUMMARY					ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:					
					ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:					
					ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:					
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION					ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 6							
USE OF DOCUMENT: To provide a dynamic means of identifying, categorizing and presenting summary data for all open problems and failures experienced in prime equipment and flight-critical OSE.					ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:							
					ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:							
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-009, Plan, Quality Assurance Program QA-020, *Report, Failure Analysis QA-021, *Report, Nonconforming Material RA-009, Plan, Reliability Program RA-011, Procedure, Reliability Operating					FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☒ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☐ OTHERWISE, AS SPECIFIED		PUBLICATION DATE: PDR							
							UPDATE (FREQUENCY OR MILESTONE): Quarterly							
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED					☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN		ESTIMATED EXPIRATION DATE:					
FORM OF DATA: ☐ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☒ OTHER ADP Printout					KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX					REFERENCE DOCUMENTS: NPC 250-1				
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)														
SUBMIT FOR REVIEW TO: _____														
BY _____														
SUBMIT FOR APPROVAL TO: _____														
BY _____														
Manager, Reliability Assurance														

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS:

DRD NO.:
RA-006

The log will be initiated with problems resulting from preliminary design reviews, and failures commencing with engineering model tests, and will be concluded at the end of mission operations. Problems/failures will be listed chronologically with problems being deleted as corrective actions are finalized. Working reports will be developed bi-weekly. Formal printings will be included in quarterly reliability progress reports.

This DRD is applicable to the prime contractor and principal subcontractors which requires operation and testing at the subcontractors facility.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Problem/Failure Summary Log is an EDP printout consisting of a chronological listing of all "open problems" and failures experienced on the prime equipment. Problem summaries will include pertinent information such as: problem identification (title), problem analysis report number, operation/hardware affected, proposed solution, expected completion date. Failure summaries will include coded information such as: item identification (nomenclature), failure report number, failure analysis report number, description of failure, test in which failure occurred, environmental condition at time of failure, operating mode at the time of failure, class of failure, accumulated operating hours of item, time to recover, apparent cause of failure. Failure summaries shall be of sufficient scope to permit analysis and implications of composite failures on systems reliability.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-007

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-007
TITLE OF DOCUMENT: *MINUTES, FAILURE ANALYSIS REVIEW BOARD (FARB)				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION							
USE OF DOCUMENT: To provide a detailed report (i. e., minutes) of the Failure Analysis Review Board (FARB) activities including: identification of unresolved Failure Analysis Reports; status of corrective actions; and conclusions, recommendations and action items of the FARB.				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 20	
				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-009, Plan, Quality Assurance Program QA-020, *Report, Failure Analysis QA-021, *Report, Nonconforming Material (NCRM) RA-001, *Reliability Action Directives RA-009, Plan, Reliability Program				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED Per each board mtg		PUBLICATION DATE: SDR	
						UPDATE (FREQUENCY OR MILESTONE): Weekly	
						ESTIMATED EXPIRATION DATE:	
CLASSIFICATION:							
☐ SECRET ☐ GROUP 1 ☐ CONFIDENTIAL ☐ GROUP 2 ☐ SECRET RESTRICTED DATA ☐ GROUP 3 ☐ CONFIDENTIAL RESTRICTED DATA ☐ GROUP 4 ☒ UNCLASSIFIED ☐ PROPRIETARY ☐ PUBLIC DOMAIN				☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN			
FORM OF DATA: KIND OF DATA: ☒ PRINTED DOCUMENT ☐ ABSTRACT ☐ INSTRUCTION ☐ CHART ☐ BROCHURE ☐ LETTER ☐ DIAGRAM ☐ BULLETIN ☐ LIST ☐ DRAWING ☐ CATALOG ☐ LOG ☐ FILM (STATIC OR MOTION) ☐ CONTRACT ☐ MANUAL ☐ ILLUSTRATION ☐ DIRECTIVE ☐ MEMORANDUM ☐ MODEL ☐ DISCLOSURE ☒ MINUTES ☐ RECORDING (TAPE OR DISC) ☐ ENGINEERING CHANGE ☐ PLAN ☐ COMPUTER CARD ORDER ☐ PROCEDURE ☐ COMPUTER TAPE ☐ REQUEST FOR ENGINEER- ☐ REGULATION ☐ MICROFILM (W/OR W/O CARD) ING CHANGE PROPOSAL ☐ REPORT ☐ OTHER ☐ ENGINEERING CHANGE ☐ SCHEDULE PROPOSAL ☐ SPECIFICATION ☐ HANDBOOK ☐ STANDARD ☐ INDEX ☐ VOUCHER				REFERENCE DOCUMENTS: NPC 250-1			
				APPLICABLE STANDARDS:			
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)							
DRAFT		DATE		PREPUBLICATION PROOF		DATE	
SUBMIT FOR REVIEW TO: _____		_____		_____		_____	
_____		BY _____		_____		BY _____	
_____		_____		_____		_____	
_____		_____		_____		_____	
SUBMIT FOR APPROVAL TO: _____		BY _____		_____		BY _____	
_____		_____		_____		_____	
Chairman, Failure Analysis Review Board _____							

SPECIAL INSTRUCTIONS:

This DRD is applicable to the prime contractor and principal subcontractors. FARB minutes will be prepared for each session of the board.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Failure Analysis Review Board Minutes will contain the following:

1. Review of open action items from prior meetings.
2. Identification of new failure analysis reports and the corrective actions pending or completed.
3. Conclusions, recommendations and assigned action items based on an "in depth" evaluation of the failure analysis reports by the board.
4. Concurrence with the analysis and/or corrective action to designate closing a failure analysis report.
5. Identify deficient analysis or corrective action, and cause the report to remain open for further action.
6. Identify members designated to follow-up on open items.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:		DATA CATEGORY:		
ORGANIZATION ORIGINATING REQUIREMENT:		CODE:	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY:	DATE:		CONTRACT NO.:	DRD NO.:	
		RA			K. R. Thomas	7/28/67			RA-008	
TITLE OF DOCUMENT: PLAN, RELIABILITY ASSESSMENT					ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION:		TASK OR SUBTASK:		DRD ITEM NO.:	
					Reliability Assurance					
					ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:	
					ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:	
TYPE OF DOCUMENT: ☒ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION					ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES:			
USE OF DOCUMENT: To provide a description and definition of the methods to be utilized for the periodic assessment of the Reliability of the system, subsystems, and components during the progress of the Program. The Plan will cover the utilization of the data generated as it is related to the design and other significant activities of the Program.							25			
					ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:			
					ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:			
					FREQUENCY OF ISSUE:		PUBLICATION DATE:			
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-021, *Report, Nonconforming Material RA-003, List, Failure Rate Data SE-008, Specification, System Performance/Design Requirements SE-065, Logbook, Engineering TE-001, Plan, Integrated Test					☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED		SDR			
							UPDATE (FREQUENCY OR MILESTONE):			
							One time			
							ESTIMATED EXPIRATION DATE:			
CLASSIFICATION:					GROUP 1 ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED		GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN	
FORM OF DATA:					REFERENCE DOCUMENTS:					
KIND OF DATA:					NPC 250-1 Customer Guideline Document					
☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER					☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX					
☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☒ PLAN ☐ PROCEDURE ☐ REGULATION ☐ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER					APPLICABLE STANDARDS:					
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)										
DRAFT DATE PREPUBLICATION PROOF DATE										
SUBMIT FOR REVIEW TO: _____ BY _____										
SUBMIT FOR APPROVAL TO: Project Manager BY _____										

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS:

DRD NO.:
RA-008

Document is applicable to the prime contractor, and to principal subcontractors, responsible for the design of subsystems, or components unique to this program.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Reliability Assessment Plan will provide a description of the techniques, materials (data) and controls to be utilized in the periodic assessment of system, subsystem and components. The plan will define: organizational (functional) responsibilities; identification of test programs from which performance data, failure data and operating times will be accumulated; description of computer programs for risk assessment, and systems modeling techniques for reliability assessment; statistical handling of reliability data; methods of utilizing design review, quality assurance, manufacturing, etc., data; and means of calculating and presenting the assessed reliability of the items.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-009

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-009
TITLE OF DOCUMENT: PLAN, RELIABILITY PROGRAM				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:
TYPE OF DOCUMENT: ☒ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 75	
USE OF DOCUMENT: Provide a totally integrated definition of the reliability program requirements and controls to be implemented on the Program				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: MA-007, Plan, Project Implementation MG-009, Plan, Manufacturing QA-009, Plan, Quality Assurance Program SE-038, Report, System Analysis, Reliability TE-001, Plan, Integrated Test				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One issue		PUBLICATION DATE: SDR	
						UPDATE (FREQUENCY OR MILESTONE): One time	
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED				☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN			
				☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN			
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER _____				KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX			
				REFERENCE DOCUMENTS: NASA Publication 250-1 JPL Reliability Guidelines Document JPL /Contractor/Subcontractor Reliability Operating Procedures			
				APPLICABLE STANDARDS:			
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)							
DRAFT		DATE		PREPUBLICATION PROOF		DATE	
SUBMIT FOR REVIEW TO: _____		_____		_____		_____	
_____		_____		_____		_____	
_____ BY _____		_____		_____ BY _____		_____	
_____		_____		_____		_____	
_____		_____		_____		_____	
SUBMIT FOR APPROVAL TO: Project Manager		BY _____		_____		BY _____	
_____		_____		_____		_____	

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-009

This DRD is applicable to the prime contractor and to principal subcontractors (i. e., those responsible for design, fabrication and test of subsystems or components unique to the Program).

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Reliability Program Plan must provide a mutually agreed (i. e., JPL/contractor major subcontractor) contractually binding, clearly defined Reliability Program requirement which can be effectively implemented within cost and time constraints of the overall Program. It must include a definition of:

- a. Reliability organization and its interrelation to customer, in-house, and subcontractor management, and the various other functional operations.
- b. Milestone tasks and schedules.
- c. Reliability deliverable items.
- d. Reliability activities to be implemented throughout the Program (i. e., analysis, design review, test, etc.)
- e. Reliability surveillance, monitoring and program control requirements.

The plan should also include a recognition of potential problem areas and predetermined action alternatives to eliminate or control the problem should it occur.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-010

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:		DATA CATEGORY:			
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA	OFFICE RESPONSIBLE FOR DRD: CODE:		DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.: DRD NO.: RA-010		
TITLE OF DOCUMENT: PLAN, PARTS CONTROL PROGRAM					ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:		
					ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:		
					ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:		
					TYPE OF DOCUMENT: ☒ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION						
USE OF DOCUMENT: To provide a definition of the parts control requirements and controls to be implemented on the Program. Document will be used throughout the Program as a guide for the prime contractor and subcontractor organizations to accomplish the requirements defined in NPC 250-1 and as further defined and agreed to by contractor.					ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 75				
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-002, List, Critical and Limited Life Items RA-003, List, Failure Rate Data RA-005, List, Parts Application Data RA-009, Plan, Reliability Program					ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:				
					ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:				
					FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One issue		PUBLICATION DATE: SDR UPDATE (FREQUENCY OR MILESTONE): One time ESTIMATED EXPIRATION DATE:				
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED					☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN ☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN						
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/O OR W/O CARD) ☐ OTHER					KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX ☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☒ PLAN ☐ PROCEDURE ☐ REGULATION ☐ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER					REFERENCE DOCUMENTS: NPC 250-1 JPL Guidelines Document	
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)					APPLICABLE STANDARDS:						
SUBMIT FOR REVIEW TO: _____ _____ BY _____ _____ BY _____ SUBMIT FOR APPROVAL TO: Project Manager BY _____					DRAFT DATE PREPUBLICATION PROOF DATE						

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS:

DRD NO.:
RA-010

This DRD is applicable to the prime contractor, and to principal subcontractors responsible for the design, fabrication and test of subsystems or components unique to this Program.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Parts Control Program Plan will provide a comprehensive outline of the controls and procedures to be implemented and continued throughout the parts activity period of the Program. As a minimum the plan will include:

- a. Organization responsibilities and management
- b. Procedures for fulfilling the requirements of NPC 250-1
- c. Part selection and qualification
- d. Supplier/selection and qualification
- e. Part specifications and standards
- f. Part screening
- g. Part derating and application
- h. Approved parts list

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-011

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-011
TITLE OF DOCUMENT: PROCEDURE, RELIABILITY OPERATING				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:
TYPE OF DOCUMENT: ☒ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 15	
USE OF DOCUMENT: Procedures will be used by contractors and subcontractors Reliability Organizations in accomplishing the Reliability Program. Procedures will also be made available to customer and other contractors and subcontractors to provide information and assistance in the integration of activities of the Reliability Program.				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE: SDR	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-009, Plan, Reliability Program				UPDATE (FREQUENCY OR MILESTONE): As required		ESTIMATED EXPIRATION DATE:	
				CLASSIFICATION:			
				☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED		☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN	
FORM OF DATA:				REFERENCE DOCUMENTS:			
KIND OF DATA: ☒ PRINTED DOCUMENT ☐ ABSTRACT ☐ INSTRUCTION ☐ CHART ☐ BROCHURE ☐ LETTER ☐ DIAGRAM ☐ BULLETIN ☐ LIST ☐ DRAWING ☐ CATALOG ☐ LOG ☐ FILM (STATIC OR MOTION) ☐ CONTRACT ☐ MANUAL ☐ ILLUSTRATION ☐ DIRECTIVE ☐ MEMORANDUM ☐ MODEL ☐ DISCLOSURE ☐ MINUTES ☐ RECORDING (TAPE OR DISC) ☐ ENGINEERING CHANGE ORDER ☒ PROCEDURE ☐ COMPUTER CARD ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ REGULATION ☐ COMPUTER TAPE ☐ ENGINEERING CHANGE PROPOSAL ☐ REPORT ☐ MICROFILM (W/OR W/O CARD) ☐ SCHEDULE ☐ OTHER ☐ SPECIFICATION ☐ HANDBOOK ☐ STANDARD ☐ INDEX ☐ VOUCHER				NPC 250-1			
APPLICABLE STANDARDS:							
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)							
DRAFT		DATE		PREPUBLICATION PROOF		DATE	
SUBMIT FOR REVIEW TO:		_____		_____		_____	
_____		BY _____		_____		BY _____	
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_____		_____		_____		_____	
SUBMIT FOR APPROVAL TO:		_____		_____		_____	
_____		BY _____		_____		BY _____	
Manager, Reliability Assurance		_____		_____		_____	

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

DRD NO.:

RA-011

SPECIAL INSTRUCTIONS:

Procedures covered by this document are applicable to prime contractor and to principal subcontractors coordinated.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Reliability Operating Procedures will cover the major activities of the reliability program as outlined in the approved reliability program plan and other contractual reliability items as applicable. The total set of documents will include the policies and procedures associated with the preparation and utilization of the reliability data items as listed for this Program. Where needed, specific subjects may be covered in more detail, e.g., reliability assessment, reliability analysis, etc.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-012

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:		DATE:		DATA CATEGORY:	
ORGANIZATION ORIGINATING REQUIREMENT:		CODE: RA	OFFICE RESPONSIBLE FOR DRD:		CODE:	DRD PREPARED BY: K. R. Thomas		DATE: 7/28/67		CONTRACT NO.:	DRD NO.: RA-012
TITLE OF DOCUMENT: CARD, PARTS DATA						ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:		DRL ITEM NO.:	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:		LEVEL NO.:	
						ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:		FILE NO.:	
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION						USE OF DOCUMENT:		ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 3	
To provide pertinent data relative to each part used on the Voyager Project.						ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:			
						ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:			
						FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE AS SPECIFIED Original, plus updates		PUBLICATION DATE: SDR		UPDATE (FREQUENCY OR MILESTONE) Revised as Required	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-009, Plan, Reliability Program RA-019, Report, Reliability Program SE-015, Specification, Part () SE-029, List, Approved Parts						CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED		☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN	
FORM OF DATA: KIND OF DATA: ☐ PRINTED DOCUMENT ☐ ABSTRACT ☐ INSTRUCTION ☐ CHART ☐ BROCHURE ☐ LETTER ☐ DIAGRAM ☐ BULLETIN ☐ LIST ☐ DRAWING ☐ CATALOG ☐ LOG ☐ FILM (STATIC OR MOTION) ☐ CONTRACT ☐ MANUAL ☐ ILLUSTRATION ☐ DIRECTIVE ☐ MEMORANDUM ☐ MODEL ☐ DISCLOSURE ☐ MINUTES ☐ RECORDING (TAPE OR DISC) ☐ ENGINEERING CHANGE ORDER ☐ PLAN ☐ COMPUTER CARD ☐ PROCEDURE ☐ COMPUTER TAPE ☐ REGULATION ☐ MICROFILM (W/OR W/O CARD) ☐ REPORT ☒ OTHER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ SCHEDULE Preprinted Form ☒ SPECIFICATION _____ _____ ☐ HANDBOOK ☐ STANDARD _____ ☐ INDEX ☐ VOUCHER						REFERENCE DOCUMENTS: None					
						APPLICABLE STANDARDS:					
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)											
SUBMIT FOR REVIEW TO: _____											
BY _____											
SUBMIT FOR APPROVAL TO: _____											
BY _____											
Manager, Product Engineering											

DRD NO.:

RA-012

SPECIAL INSTRUCTIONS:

This DRD is applicable to the prime contractor and to principal subcontractors (i.e., those responsible for design, fabrication and test of subsystems and components unique to this Program.)

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The part data card shall be prepared for each part selected for use on the Program. The data provided will become the basis for the part classification as required by the parts control program. In addition to complete part identification, name, description, source, etc., the card will provide data on characteristics, acceptance parameters, rejection criteria, screening requirements, test data and complete part qualification data. This card with completed data is the basic record for the parts control procedure.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-013

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-013
TITLE OF DOCUMENT: CHART, RELIABILITY ASSURANCE CONTROL				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:
				TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION			
USE OF DOCUMENT: Used to display the status of reliability assurance activities, documents due to, or from the customer/contractor/subcontractors, and action items pending or completed.				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 1	
				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED One time		PUBLICATION DATE: SDR	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: MA-008, Plan, Project Control RA-009, Plan, Reliability Program RA-019, Report, Reliability Program Status SE-008, Specification, System Performance/Design Requirements				UPDATE (FREQUENCY OR MILESTONE): Continuous		ESTIMATED EXPIRATION DATE:	
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED				☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN	
FORM OF DATA: KIND OF DATA: ☐ PRINTED DOCUMENT ☒ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX ☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☐ PLAN ☐ PROCEDURE ☐ REGULATION ☒ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER				REFERENCE DOCUMENTS: NPC 250-1		APPLICABLE STANDARDS:	
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)							
DRAFT		DATE		PREPUBLICATION PROOF		DATE	
SUBMIT FOR REVIEW TO: _____				_____			
		BY _____				BY _____	
_____				_____			
_____				_____			
SUBMIT FOR APPROVAL TO: _____				_____			
		BY _____				BY _____	
Manager, Reliability Assurance							

SPECIAL INSTRUCTIONS:

DRD NO.:
RA-013

Data on Reliability Assurance Control Charts is accrued from many sources throughout the Program. It is reduced to those elements which have a major impact upon the success of the Program, maintained accurate through close surveillance by reliability project personnel. Format for the control charts is not specifically defined, but must be compatible with other project control charts.

This DRD is applicable to the prime contractor and to principal subcontractor (i.e., those responsible for design, fabrication and test of subsystems or components unique to the Program).

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

Reliability Assurance Control Charts must provide that information necessary to achieve management decisions required to eliminate sources of unreliability. The standard indicators to be provided are divided into three categories:

- a. Items for action and decision relating to outstanding current problems, anticipated critical problems, and actions for solution as required.
- b. Information relating to technical performance versus requirements.
- c. Information relating to program activity versus schedule.

Examples of indicators to be maintained on control charts are:

- a. Current estimate of mission success probability versus goal.
- b. Proportion of delinquent or suspected program activities under surveillance, and number cleared, versus previous period showing trend of exceptions taken to standards conformity.
- c. Specific areas currently under appraisal, categorized by criticality and reason for appraisal; i.e., random selection, suspect problem, or known problem.
- d. Problem/failures to date, percent cleared, and forecast of trend.
- e. Piece-part count trend curves; planned versus actual, preferred versus nonpreferred high versus low usage.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-014

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-014
TITLE OF DOCUMENT: STANDARD, REWORK				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRL ITEM NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:
				TYPE OF DOCUMENT: ☒ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION			
USE OF DOCUMENT: To control the incorporation of design changes into previously fabricated hardware, or rework of T/A, PTM and Flight hardware to ensure against endangering the "designed and built-in" reliability.				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 20	
				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED		PUBLICATION DATE: SDR	
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: CM-003, Change Notice MG-009, Plan, Manufacturing Program QA-009, Plan, Quality Program QA-014, Procedure, Rework RA-009, Plan, Reliability Program				UPDATE (FREQUENCY OR MILESTONE): Final by HDR		ESTIMATED EXPIRATION DATE:	
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:	
				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☒ OTHERWISE, AS SPECIFIED		PUBLICATION DATE: SDR	
				UPDATE (FREQUENCY OR MILESTONE): Final by HDR		ESTIMATED EXPIRATION DATE:	
CLASSIFICATION: ☐ SECRET ☐ GROUP 1 ☐ CONFIDENTIAL ☐ GROUP 2 ☐ SECRET RESTRICTED DATA ☐ GROUP 3 ☐ CONFIDENTIAL RESTRICTED DATA ☐ GROUP 4 ☒ UNCLASSIFIED ☐ PROPRIETARY ☐ PUBLIC DOMAIN				SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN			
				Original issue			
				REFERENCE DOCUMENTS:			
				APPLICABLE STANDARDS:			
FORM OF DATA: KIND OF DATA: ☒ PRINTED DOCUMENT ☐ ABSTRACT ☐ INSTRUCTION ☐ CHART ☐ BROCHURE ☐ LETTER ☐ DIAGRAM ☐ BULLETIN ☐ LIST ☐ DRAWING ☐ CATALOG ☐ LOG ☐ FILM (STATIC OR MOTION) ☐ CONTRACT ☐ MANUAL ☐ ILLUSTRATION ☐ DIRECTIVE ☐ MEMORANDUM ☐ MODEL ☐ DISCLOSURE ☐ MINUTES ☐ RECORDING (TAPE OR DISC) ☐ ENGINEERING CHANGE ☐ PLAN ☐ COMPUTER CARD ORDER ☐ PROCEDURE ☐ COMPUTER TAPE ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ REGULATION ☐ MICROFILM (W/OR W/O CARD) ☐ ENGINEERING CHANGE PROPOSAL ☐ REPORT ☐ OTHER ☐ SCHEDULE ☐ SPECIFICATION ☐ HANDBOOK ☒ STANDARD ☐ INDEX ☐ VOUCHER							
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)							
DRAFT		DATE		PREPUBLICATION PROOF		DATE	
SUBMIT FOR REVIEW TO: _____		_____		_____		_____	
_____ BY _____		_____		_____ BY _____		_____	
_____		_____		_____		_____	
_____		_____		_____		_____	
SUBMIT FOR APPROVAL TO: _____		_____ BY _____		_____ BY _____		_____	
_____		_____		_____		_____	
Project Manager		_____		_____		_____	

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-014

This DRD is applicable to the prime contractor and principal subcontractors. These documents, are prepared coincident with the design or manufacturing and quality control planning cycle for the hardware.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

Rework Standards will be formally prepared, published and controlled documents providing:

- a. Standards (limitations) for rework (i.e., what elements may or may not be reworked) as applicable to various elements of hardware.
- b. Standards (limitations) for extent (i.e., complexity) of rework as applicable to various elements of hardware.
- c. Standards (limitations) for frequency (i.e., number of times) of rework for various elements of hardware.
- d. Standards (procedures) for methods and equipment for rework as applicable for various elements of rework.
- e. Standards (controls) for acceptance criteria (i.e., inspection and test) of rework as applicable to various elements of hardware.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

DRD NO.:

RA-015

SPECIAL INSTRUCTIONS:

This DRD applies to all failure analysis reports whether issued against prime contractor's hardware or that manufactured and being tested by principal subcontractors.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Failure Review Report will document the results of the FARB's review and evaluation of all failure analysis and corrective action reports. The report will include an analysis of:

- a. The completeness of the cause and effect analysis of the failure (discrepancy);
- b. The adequacy of the recommended or implemented corrective action, and the means of verifying its effectiveness;
- c. The criticality of the failure and its impact on other elements of the system;
- d. The conclusions, recommendations and assigned action items.

The Failure Review Report will also include identifying information such as: identification number, cross-reference to failure analysis reports, cross-reference to other supporting documentation, corrective action implementation schedule, authorized signatures.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

GE EXHIBIT DRD RA-016

VOYAGER DATA REQUIREMENT DESCRIPTION						DRD APPROVED BY:	DATE:	DATA CATEGORY:
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-016	
TITLE OF DOCUMENT: REPORTS, SUMMARY, AUDIT AND APPRAISAL					ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance	TASK OR SUBTASK:	DRL ITEM NO.:	
					ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:	DRL NO.:	LEVEL NO.:	
					ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:	DDL NO.:	FILE NO.:	
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION								
USE OF DOCUMENT: To provide management with an up-to-date summary of audit and appraisal activities of those critical processes and practices which could have a detrimental affect on the reliability aspects of the Program. This is a tool of management control.					ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:	NO. OF COPIES: 10		
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-009, Plan, Reliability Program RA-013, Chart, Reliability Assurance Control RA-019, Report, Reliability Program Status					ESTIMATED MANHOURS FOR SINGLE PREPARATION:	INFORMATION CUTOFF DATE OR MILESTONE:		
					ESTIMATED COST (\$) FOR SINGLE PREPARATION:	DATE DATA DUE TO USER:		
					FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☒ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☐ OTHERWISE, AS SPECIFIED	PUBLICATION DATE: SDR UPDATE (FREQUENCY OR MILESTONE): Not applicable ESTIMATED EXPIRATION DATE:		
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED					☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN ☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN			
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER					KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX ☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☐ MINUTES ☐ PLAN ☐ PROCEDURE ☐ REGULATION ☒ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER			
REFERENCE DOCUMENTS: NPC 250-1					APPLICABLE STANDARDS:			
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)								
SUBMIT FOR REVIEW TO:		DRAFT	DATE	PREPUBLICATION PROOF		DATE		
_____			_____	_____		_____		
_____		BY	_____	_____		BY _____		
_____			_____	_____		_____		
_____			_____	_____		_____		
SUBMIT FOR APPROVAL TO:			_____	_____		_____		
_____		BY	_____	_____		BY _____		
Manager, Reliability Assurance			_____	_____		_____		

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-016

This DRD is applicable to the prime contractor who will maintain "audit and appraisal" responsibility for both contractor and principle subcontractor activities.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Audit and Appraisal Summary Report must serve as a management control and awareness document over "critical processes and practices" (i. e., sources of unreliability) which could materially affect the success of the program. The report, therefore, must provide:

1. Identification of the subject critical processes and practices audited during the period.
2. Summary of appraisal results both "pro" and "con".
3. Discussion of the detected potential problem areas.
4. Recommendations for corrective actions and status of in-process corrective actions.
5. Recommended follow-up plan and responsible parties.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY: K. R. Thomas		DATE:	DATA CATEGORY:		
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY:	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-017		
TITLE OF DOCUMENT: REPORT, DESIGN REVIEW				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION: Reliability Assurance		TASK OR SUBTASK:	DRD ITEM NO.:		
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:		
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:		
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☐ INFORMATION				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 35			
USE OF DOCUMENT: To provide a detailed report (i.e., minutes) of: attendees, discussions, questions and answers, identified problem areas, recommended solutions, assigned action items, and scheduled action completion dates. To provide management and design control by both engineering and project managers.				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:			
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:			
				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☐ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☒ WEEKLY ☐ DAILY ☐ OTHERWISE, AS SPECIFIED		PUBLICATION DATE: SDR UPDATE (FREQUENCY OR MILESTONE): Not applicable ESTIMATED EXPIRATION DATE:			
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: RA-019, Report, Reliability Program Status SE-010, Contract End Item (CEI) Detail Specification (Prime Equipment) Part I (Requirements) SE-011, Contract End Item (CEI) Detail Specification (Prime Equipment) Part II SE-013, Contract End Item (CEI) Detail Specification (Identification Item)				CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED		☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN ☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN			
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER				KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX ☐ INSTRUCTION ☐ LETTER ☐ LIST ☐ LOG ☐ MANUAL ☐ MEMORANDUM ☒ MINUTES ☐ PLAN ☐ PROCEDURE ☐ REGULATION ☐ REPORT ☐ SCHEDULE ☐ SPECIFICATION ☐ STANDARD ☐ VOUCHER				REFERENCE DOCUMENTS: NPC 250-1	
APPLICABLE STANDARDS:									
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)									
DRAFT		DATE		PREPUBLICATION PROOF		DATE			
SUBMIT FOR REVIEW TO:		BY		BY					
SUBMIT FOR APPROVAL TO:		BY		BY					
Chairman, Design Review Board									

VOYAGER DATA REQUIREMENT DESCRIPTION - 2ND SHEET

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-017

This DRD is applicable to the prime contractor and to principal subcontractors (i. e., those responsible for design, fabrication and test of subsystems or components unique to the program)

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

All attendees of specific design review meetings.
Managers of individual assigned action items.

OUTLINE OF CONTENTS:

The Design Review Reports must provide a comprehensive report of all proceedings and results in the design review meeting. It must include:

- a. Identification of all attendees of the review meeting.
- b. Identification of item being reviewed.
- c. A summary of the various presentations and identification of responsible parties.
- d. A brief description of questions and ensuing discussions.
- e. Description of all detected problems and recommendations.
- f. Identification of all action items, responsible parties, and due dates.
- g. Review of status of previous design review action items.

The Design Review Report must serve as a suitable record of all design review activities and follow-up on "actions".

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

VOYAGER DATA REQUIREMENT DESCRIPTION				DRD APPROVED BY:		DATE:	DATA CATEGORY:								
ORGANIZATION ORIGINATING REQUIREMENT:	CODE: RA	OFFICE RESPONSIBLE FOR DRD:	CODE:	DRD PREPARED BY: K. R. Thomas	DATE: 7/28/67	CONTRACT NO.:	DRD NO.: RA-018								
TITLE OF DOCUMENT: REPORT, RELIABILITY ASSESSMENT				ORGANIZATION RESPONSIBLE FOR DOCUMENT PREPARATION:		TASK OR SUBTASK:	DRL ITEM NO.:								
				Reliability Assurance											
				ORGANIZATION RESPONSIBLE FOR DOCUMENT REPRODUCTION:		DRL NO.:	LEVEL NO.:								
				ORGANIZATION RESPONSIBLE FOR DOCUMENT DISTRIBUTION:		DDL NO.:	FILE NO.:								
TYPE OF DOCUMENT: ☐ CONTROL ☐ ACTION ☐ REFERENCE ☒ INFORMATION				ORGANIZATION RESPONSIBLE FOR DOCUMENT STOWAGE:		NO. OF COPIES: 20									
USE OF DOCUMENT: Provide Project management with a periodic growth assessment of Systems reliability. Through reliability assessment, design and performance weak-links will be identified on a timely basis permitting corrective actions to be taken as necessary.				ESTIMATED MANHOURS FOR SINGLE PREPARATION:		INFORMATION CUTOFF DATE OR MILESTONE:									
				ESTIMATED COST (\$) FOR SINGLE PREPARATION:		DATE DATA DUE TO USER:									
INTERRELATIONSHIP WITH OTHER DATA REQUIREMENTS: QA-020, *Report, Failure Analysis RA-009, Plan, Reliability Program SE-038, Report, System Analysis, Reliability TE-001, Plan, Integrated Test				FREQUENCY OF ISSUE: ☐ ANNUALLY ☐ SEMI-ANNUALLY ☒ QUARTERLY ☐ BI-MONTHLY ☐ MONTHLY ☐ SEMI-MONTHLY ☐ BI-WEEKLY ☐ WEEKLY ☐ DAILY ☐ OTHERWISE, AS SPECIFIED		PUBLICATION DATE: PDR									
						UPDATE (FREQUENCY OR MILESTONE): Not applicable									
						ESTIMATED EXPIRATION DATE:									
CLASSIFICATION: ☐ SECRET ☐ CONFIDENTIAL ☐ SECRET RESTRICTED DATA ☐ CONFIDENTIAL RESTRICTED DATA ☒ UNCLASSIFIED				☐ GROUP 1 ☐ GROUP 2 ☐ GROUP 3 ☐ GROUP 4 ☐ PROPRIETARY ☐ PUBLIC DOMAIN		☐ SPECIAL HANDLING ☐ NASA DISCREET ☐ JPL DISCREET ☒ PROJECT DISCREET ☐ NOFORN									
FORM OF DATA: ☒ PRINTED DOCUMENT ☐ CHART ☐ DIAGRAM ☐ DRAWING ☐ FILM (STATIC OR MOTION) ☐ ILLUSTRATION ☐ MODEL ☐ RECORDING (TAPE OR DISC) ☐ COMPUTER CARD ☐ COMPUTER TAPE ☐ MICROFILM (W/OR W/O CARD) ☐ OTHER				KIND OF DATA: ☐ ABSTRACT ☐ BROCHURE ☐ BULLETIN ☐ CATALOG ☐ CONTRACT ☐ DIRECTIVE ☐ DISCLOSURE ☐ ENGINEERING CHANGE ORDER ☐ REQUEST FOR ENGINEERING CHANGE PROPOSAL ☐ ENGINEERING CHANGE PROPOSAL ☐ HANDBOOK ☐ INDEX				REFERENCE DOCUMENTS: NPC 250-1							
												APPLICABLE STANDARDS:			
REVIEWS AND/OR APPROVALS REQUIRED: (LIST IN ORDER OF SUBMITTAL)															
DRAFT		DATE		PREPUBLICATION PROOF		DATE									
SUBMIT FOR REVIEW TO:		BY		BY											
SUBMIT FOR APPROVAL TO:		BY		BY											
Manager, Reliability Assurance															

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-018

This DRD is applicable to the prime contractor with inputs from principal subcontractors. Reliability Assessment Reports will be released at major review points in the Program

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Reliability Assessment Report will be developed around a basic set of reliability growth curves which reflect reliability probability of success values at the successive assessment intervals. Basically, the report will provide a comprehensive assessment of the inherent/operational reliability of the system, subsystem and components in quantitative terms on a comparative basis with the apportioned reliability design goals. Initially, the assessment will be dependent upon reliability analysis (predictions) design reviews, and related engineering inputs. As test data, operating time and failure date become available, the assessment will be operationally oriented. Continued engineering judgement will be applied to the reliability assessment. The report will include: identification of any serious reliability problems, a description of the consequences, and the degree of risk involved.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

SPECIAL INSTRUCTIONS:

DRD NO.:

RA-019

The Reliability Program Status Report is developed for accumulative data provided by all available Program data items. The data is analyzed and formalized into a measure of its impact on probability of success of the mission from both a subjective and objective viewpoint. These reports are to provide management with sufficient data to equate reliability growth (status) to time and cost curves for the Project.

SPECIAL DISTRIBUTION: (IF DISTRIBUTION IS NOT COVERED BY AN EXISTING DDL WRITE IN DISTRIBUTION BELOW)

OUTLINE OF CONTENTS:

The Reliability Program Status Report need not conform to any specific format requirements. However, it must present to management a concise appraisal of the total Program activities as they affect, or potentially affect, reliability growth during the specified assessment period. The report may include: narrative discussion, summary data tables, charts, graphs, computer printouts, etc. The report will include summary information from sources such as:

- a. Design review - status of design reviews and approvals, identification of problem areas, corrective actions, etc.
- b. Reliability assessment - quantitative or statistical assessment resulting from existing data, design margin analysis, etc.
- c. Reliability analysis - analytical prediction of inherent reliability, failure mode, effects and criticality analysis, redundancy analysis, etc.
- d. Problem/failure summary logs - identification of manufacturing inconsistencies and impact of rework.

(CONTINUE ON THIRD SHEET, IF NECESSARY, AND AFFIX TO THIS DRD.)

- e. Manufacturing degradation analysis reports - deficiencies in the production cycle which require corrective actions.
- f. Quality assurance inspection records - identification of manufacturing inconsistencies and impact of rework.
- g. Parts and materials qualification status - determine percentage of items qualified to those specified and used in early stage hardware.

All information must be reducible to an indicator of "risk" resulting from the activity if full conformance to established performance standards is not maintained.

DOCUMENTATION RELATIONSHIP TREES

A documentation relationship tree has been prepared to show the relationships of data items within each functional category as well as their relationships across categories.

Relationships within each functional category are shown by constructing a tier pattern beginning with the top-level (or governing) data item and relating in descending order all data items within the category to this top-level data item. (The location of a data item at a given level on the diagram does not necessarily indicate the importance of that specific item but identifies and defines its relation to all other data items in that category.)

Relationships between data items in one category and data items in other functional categories are shown by (1) shaded arrows to indicate the direction of the relationship and (2) an alphabetic code to indicate the nature of the interrelationship as follows:

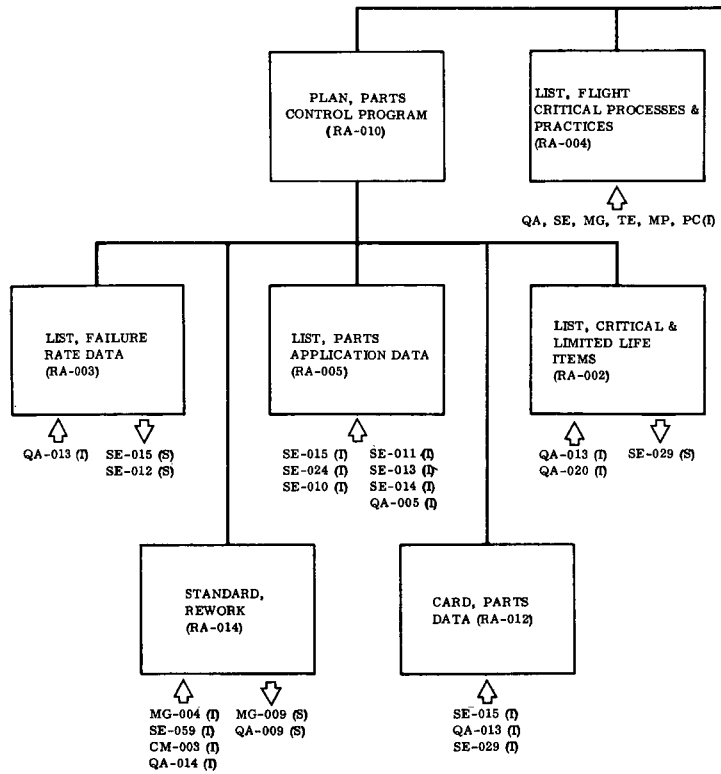
- a. Data items needed for preparation and/or support of the referenced item. (I)
- b. Data items that are supported or needed by this data item. (S)
- c. Data items that relate "to" and provide information of a general nature but are not required in an input or support role. (G)

Each data item appearing on the Data Item List (DIL) was examined and evaluated with respect to its contribution to, or dependence upon, data items appearing in other categories and is included in the diagrams. Additionally, certain data elements indicated in the user flow diagrams (but currently not identified as individual data items) have been shown within a dashed rectangle to clarify relationships.

LEGEND:

- (I) INDICATES DATA ITEMS NEEDED FOR PREPARATION OR SUPPORT OF THE REFERENCED ITEM (INPUT).
- (S) INDICATES DATA ITEMS THAT ARE SUPPORTED OR NEEDED BY THIS ITEM.
- (G) DATA ITEMS THAT RELATE TO AND PROVIDE INFORMATION OF A GENERAL NATURE BUT ARE NOT REQUIRED IN AN INPUT OR SUPPORT ROLE
- △ INDICATES PRINCIPAL RELATIONSHIP (I, S, OR G) BETWEEN DATA ITEMS IN OTHER FUNCTIONAL CATEGORIES.

TE-161 (I)
MG-006 (I)
QA-014 (I)
QA-017 (I)
QA-020 (I)
SE-048 (I)
QA-009 (I)
MA-007 (I)
QA-029 (I)
TE-046 (I)



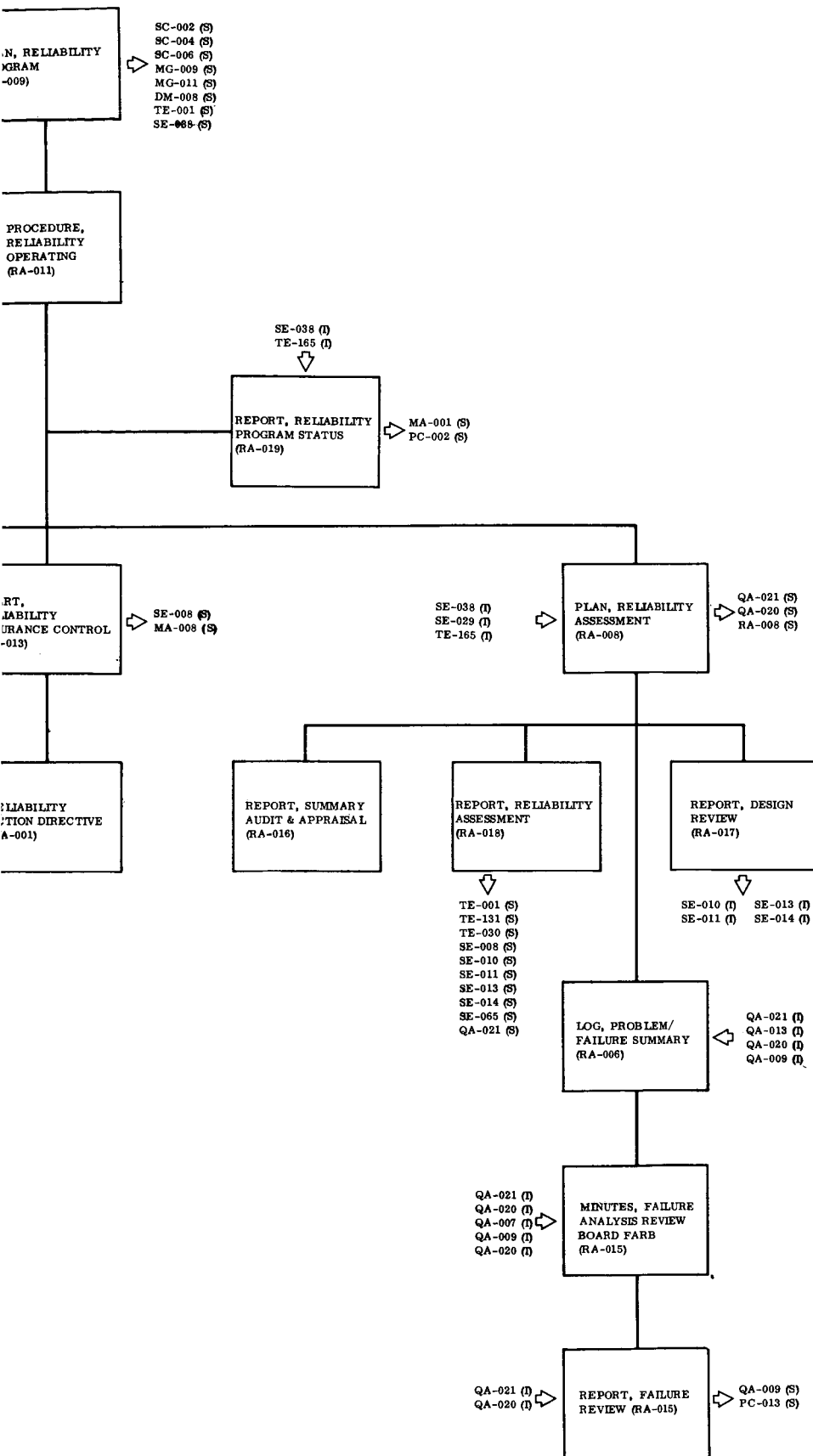


Figure G-5. Reliability Assurance Documentation Relationship Tree (RA)

DATA ITEM PHASING/FREQUENCY

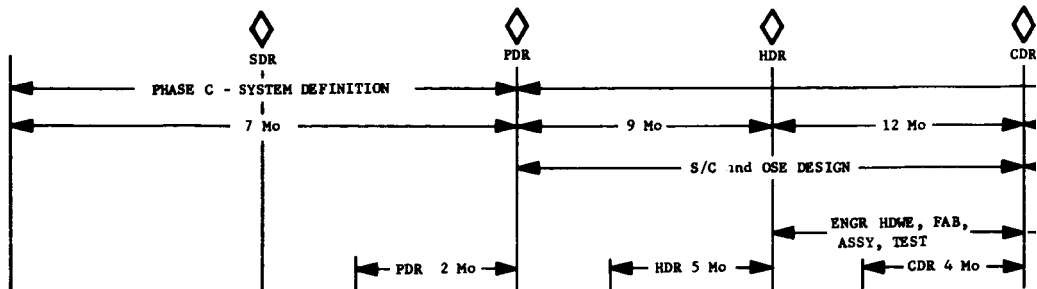
Figure G-6, Reliability Assurance Data Item Phasing and Frequency Matrix, provides a detailed picture of data item preparation requirements by the reliability function. Control and reporting requirements are of particular significance. Not reflected, however, but of equal significance, is the interrelationship with and surveillance by reliability of the engineering, manufacturing, and quality, assurance functions.

Figure G-7, Reliability Assurance Data Item Density Profile, reflects the distribution and density of data item preparation requirements in monthly averages by major project review periods.

Requirements for preparation of Parts Data Cards (RA-012) early in the project cause some distortion to an otherwise well-distributed data item preparation cycle.

RELIABILITY
(RA)

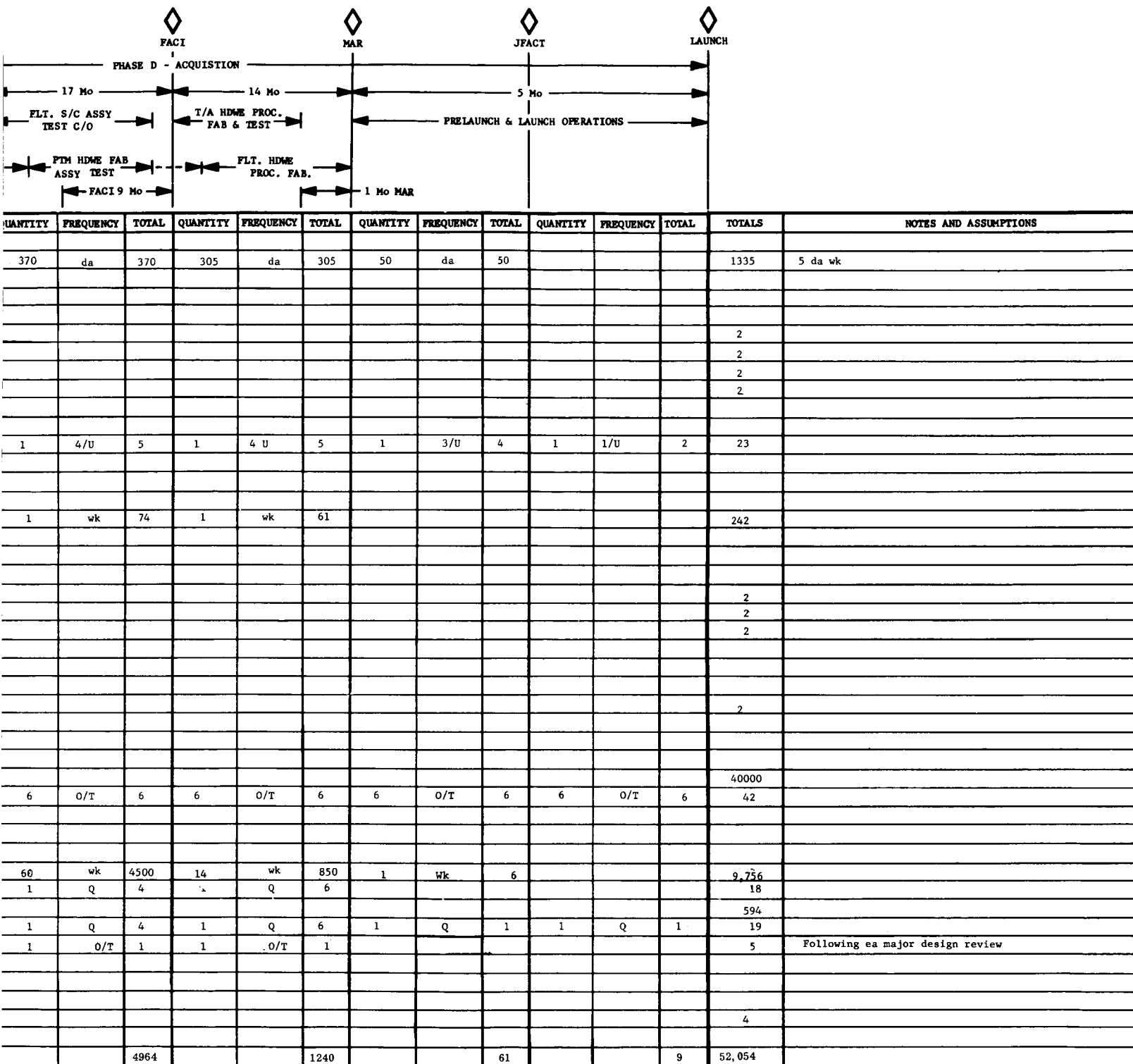
DATA ITEM
TITLE



DATA ITEM TITLE	QUANTITY	FREQUENCY	TOTAL	QUANTITY	FREQUENCY	TOTAL	QUANTITY	FREQUENCY	TOTAL	QUANTITY	FREQUENCY	TOTAL
DIRECTIVES												
RA-001 *Reliability Action Directives	75	Da	75	75	Da	75	200	Da	200	260	Da	260
LISTS												
RA-002 List, Critical and Limited Life Item	1	I	1	1	U	1						
RA-003 List, Failure Rate Data	1	I	1	1	U	1						
RA-004 List, Flight Critical Processes and Pract.	1	I	1	1	U	1						
RA-005 List, Parts Application Data	1	I	1	1	U	1						
LOGS												
RA-006 Log, Problem/Failure Summary							1	2/U	3	1	3/U	4
MINUTES												
(FARB)												
RA-007 *Minutes, Failure Analysis Review Board				1	wk	15	1	wk	40	1	wk	52
PLANS												
RA-008 Plan, Reliability Assessment	1	I	1	1	U	1						
RA-009 Plan, Reliability Program	1	I	1	1	U	1						
RA-010 Plan, Parts Control Program	1	I	1	1	U	1						
PROCEDURES												
RA-011 Procedure, Reliability Operating	1	I	1	1	U	1						
RECORDS												
RA-012 Card, Parts Data				20000	O/T	20000	20000	O/T	20000			
RA-013 Chart, Reliability Assurance Control				6	O/T	6	6	O/T	6	6	O/T	6
REPORTS												
RA-015 Report, Failure Review							36	wk	1400	60	wk	3,000
RA-016 Report, Summary, Audit and Appraisal				1	Q	1	1	Q	3	1	Q	4
RA-017 Report, Design Review	1	wk	15	1	wk	15	5	wk	200	7	wk	364
RA-018 Report, Reliability Assessment							1	Q	3	1	Q	4
RA-019 Report, Reliability Program Status				1	O/T	1	1	O/T	1	1	O/T	1
STANDARDS												
RA-014 Standard, Rework				1	M	3	1	F	1			
TOTALS			98			20124			21,857			3,695

*Key Informal Data

A	Annual	O/T	One Time	I	Initial	CDR	Critical Design Re
S/A	Semi-Annual	A/R	As Required	F	Final	FACI	First Article Conf
WK	Weekly	U	Update	N/R	New and Revised	MAR	Mission Acceptanc
MO	Monthly	I/U	One Update	SDR	System Design Review	J FACT	Joint Flight Accept
B/W	Bi-Weekly	DA	Daily	PDR	Preliminary Design Review		Composite Testin
B/M	Bi-Monthly	Q	Quarterly	HDR	Hard Design Review		



iew
uration Inspection
Review
nce
3

Figure G-6. Reliability Assurance Data Item Phasing and Frequency Matrix

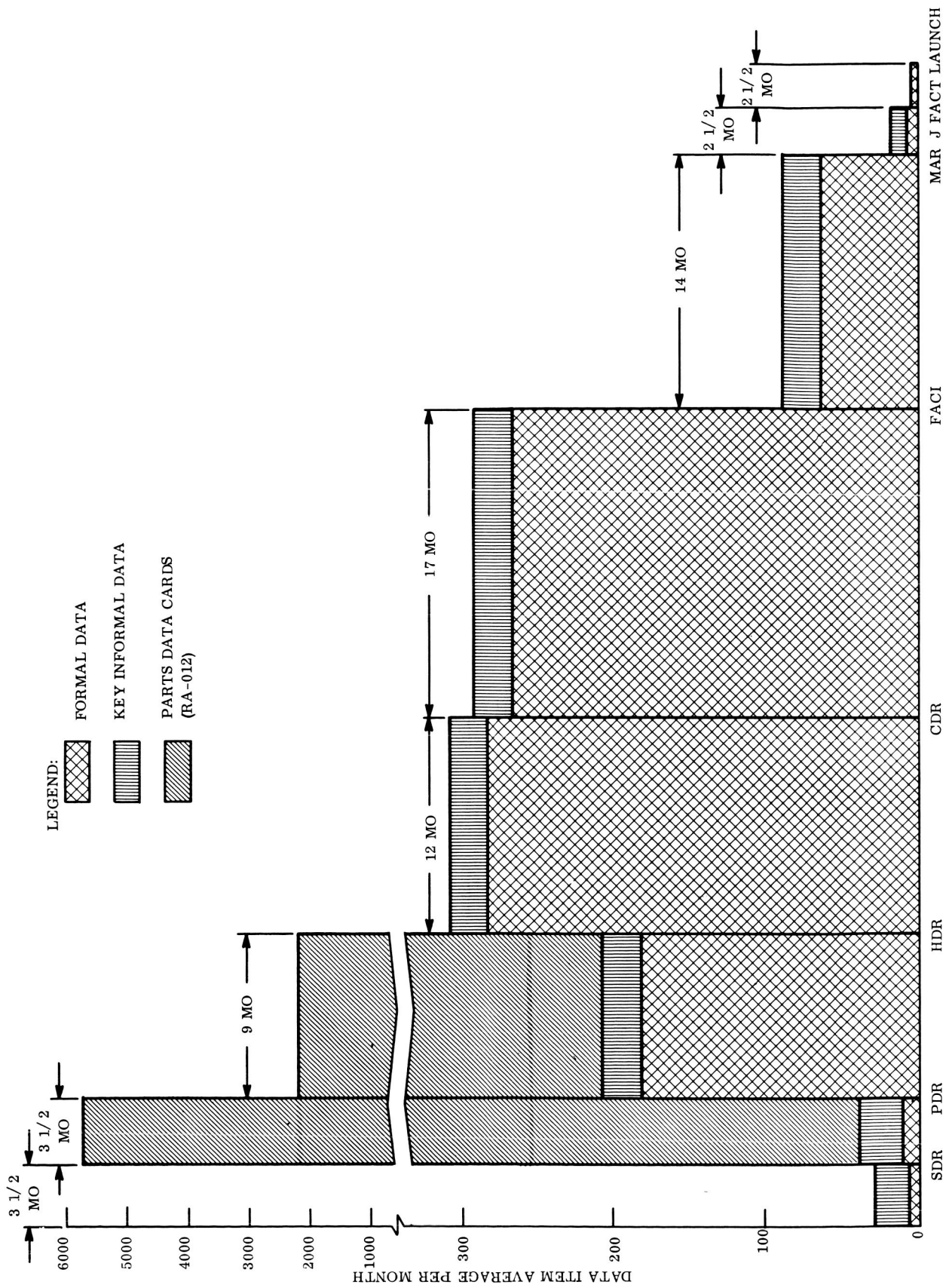


Figure G-7. Reliability Assurance Data Item Density Profile