

AD-A259 381



REPAIR LEVEL ANALYSIS SOFTWARE  
(LSA Subtask 303.2.7)

—  
USER'S MANUAL  
(Version 1.0)

APJ 966-617

APJ



AMERICAN POWER JET CO. RIDGEFIELD N.J.

98 1 22 019

93-01131



REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION / AVAILABILITY OF REPORT <b>UNLIMITED</b>	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE <b>JAN 22 1993</b>		<b>DISTRIBUTION STATEMENT A</b> Approved for public release Distribution unlimited	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION <b>AMCCOM, Army</b>	6b. OFFICE SYMBOL (if applicable) <b>AMSMC-MAE-EA</b>	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) <b>Rock Island Arsenal Rock Island, IL 61299-6000</b>		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) <b>Repair Level Analysis Software (LSA Subtask 303.2.7), User's Manual (Version 1.0), (APJ 966-617).</b>			
12. PERSONAL AUTHOR(S) <b>DULCOS, RONALD SHEPHERD, NED</b> <span style="float: right;">kmk</span>			
13a. TYPE OF REPORT <b>FINAL</b>	13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day) <b>May 1991</b>	15. PAGE COUNT <b>134</b>
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	<b>EXECUTIVE MODULE USER'S MANUAL, TASK/SUBTASK USER'S MANUALS, AUTOMATED LOGISTICS SUPPORT ANALYSIS TOOLS, ALSAT, LOGISTICS SUPPORT ANALYSIS TASKS over</b>
19. ABSTRACT (Continue on reverse if necessary and identify by block number)			
This User's Manual is the complete users documentation package for the prototype version of the Repair Level Analysis (RLA) software. The RLA software provides a computer assisted guide to logisticians in the performance of Repair Level Analysis as defined in MIL-STD-1388-1A. It defines, organizes, tracks, models and reports on procedures that define a weapon system maintenance concept. It refers to LSA task 303 "Evaluation of Alternatives and Trade-Off Analysis", and fulfills the requirements of LSA Subtask 303.2.7, "Repair Level Analysis" in accordance with MIL-STD-1388-1A. RLA is a decision-making process which determines the most cost-effective actions for dealing with a failed item.			
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>	
22a. NAME OF RESPONSIBLE INDIVIDUAL <b>NED SHEPHERD</b>		22b. TELEPHONE (Include Area Code) <b>(309) 782-2479</b>	22c. OFFICE SYMBOL <b>AMSMC-MAE-EA</b>

18. AND SUBTASKS MODULES, WEAPON SYSTEM LIFE CYCLE STAGE INDEPENDENT, LIFE CYCLE PHASES, WEAPON SYSTEM/END ITEM, STAGE, DEFINES, ORGANIZES, TRACKS, MODELS AND REPORTS ON LSA PROCEDURES, COLLATING AND FORMATTING INFORMATION, ANALYSIS PROCESS, WEAPON SYSTEM SUPPORT CONCEPT, STRUCTURED METHODOLOGIES, SURVIVABILITY AND BATTLEFIELD DAMAGE REPAIR CHARACTERISTICS, EVALUATION OF ALTERNATIVES AND TRADE-OFF ANALYSIS, LOGISTIC SUPPORT ANALYSIS, LSA, OPTIMAL SOLUTIONS, SYSTEM DESCRIPTION AND ACQUISITION DATA INPUTS, DESIGN IMPACT, COST EFFECTIVENESS, AVAILABILITY OF DATA, ON-LINE HELP, SUPPORTABILITY OBJECTIVES, WEAPON SYSTEM/END ITEM ACQUISITION, SELECTION RATIONALE, ILS ELEMENT SUBELEMENT, BATTLE DAMAGE ASSESSMENT AND REPAIR.

DTIC TAB

<b>Accession For</b>	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/ _____	
<b>Availability Codes</b>	
<b>Dist</b>	<b>Avail and/or Special</b>
A-1	

APJ 966-617

**REPAIR LEVEL ANALYSIS SOFTWARE  
(LSA Subtask 303.2.7)**

----

**USER'S MANUAL  
(Version 1.0)**

**Under**

**CONTRACT DAAA21-86-D-0025**

**For**

**HQ US AMCCOM  
INTEGRATED LOGISTIC SUPPORT OFFICE  
AMSMC-LSP  
ROCK ISLAND, IL**

**By**

**AMERICAN POWER JET COMPANY**

**RIDGEFIELD, NJ**

**ARLINGTON, VA**

**WILLIAMSBURG, VA**

**ST. LOUIS, MO**

**May 1991**

## FOREWORD

This manual is the complete user documentation package for the Prototype Version of the Repair Level Analysis Software.

The RLA Software provides a computer assisted guide to logisticians in the performance of Repair Level Analysis as defined in MIL-STD-1388-1A. This automated LSA System is being developed by the American Power Jet (APJ) Company, under contract to HQs AMCCOM.

It is weapon system and life cycle stage independent and is designed to be tailored to a specific weapon system, life cycle stage, or other constraint. It defines, organizes, tracks, models and reports on the procedures that define a weapon system maintenance concept. It provides structured and comprehensive techniques to perform RLSA and saves time in organizing, and reporting the information developed.

Structured methodologies were used to develop the software logic in accordance with MIL-STD-1388-1A, "Logistic Support Analysis". It refers to LSA Task 303, "Evaluation of Alternatives and Trade-off Analysis" and fulfills the requirements of LSA Subtask 303.2.7, "Repair Level Analysis". The structured analysis and design for this task were presented in APJ Reports 966-210 and 966-223 respectively. APJ's task performance has been closely coordinated with AMCCOM and other materiel agencies. Their experience has been captured in APJ's logic through continued coordination and review at the working level.

This software simplifies the analyst's task. The user is taken through a series of data input screens that when completed produce meaningful results. Time is spent actually doing the work instead of determining what must be done next. Help is available at every step to guide the analyst through the task.

LSA Subtask 303.2.7 concerns the development of a Repair Level Analysis (RLA) for a specific equipment or system, including all of its major assemblies, subassemblies, and parts.

Repair Level Analysis (RLA) is a decision-making process which determines the most cost-effective actions for dealing with a failed item. The decisions that are required include whether to repair the failed equipment, assemblies, subassemblies, or parts, or to discard them and purchase replacement. If the decision is to repair, then a further decision must be made regarding the echelon at which each maintenance function should be performed.

This work was performed by a task team for APJ: George Chernowitz, Scott Lerman, Arthur Clancy and Jack Tauber. The team was ably supported in production by Barbara Boren and Denise Montanez.

The support Messrs. Ned A. Shepherd and Ron Duclos of AMCCOM, AMSMC-LSP is gratefully acknowledged for their assistance in many regards.

This LSA Software is available through HQ AMCCOM, AMSMC-LSP to Program Managers, ILS functional area personnel and Logistic Support Analysts.

Comments and recommendations on this version are welcome and should be addressed to:

George Chernowitz  
AMERICAN POWER JET COMPANY  
705 Grand Avenue  
Ridgefield, New Jersey 07657  
Phone: (201) 945-8203

# TABLE OF CONTENTS

<u>CHAPTER</u>	<u>TITLE</u>	<u>PAGE</u>
1	<b>INTRODUCTION</b> . . . . .	1-1
	1.1 General . . . . .	1-1
	1.2 Scope . . . . .	1-3
	1.3 LSA Subtask 303.2.7 "RLA" Description . . . . .	1-3
	1.4 RLA Software Logic and Organization . . . . .	1-5
	1.5 Overview of Software Operation and Task Implementation . . . . .	1-5
	1.6 VERT . . . . .	1-12
2	<b>SOFTWARE INSTALLATION AND BACKUP</b> . . . . .	2-1
	2.1 General . . . . .	2-1
	2.2 Equipment Requirements . . . . .	2-1
	2.3 Power On/Off . . . . .	2-1
	2.4 Notes on RLA Installation . . . . .	2-1
	2.5 Creating the RLA Directory Structure . . . . .	2-2
	2.6 Installation from 1.2 MB Disk to Hard Drive . . . . .	2-3
	2.7 Installation from 360 K Disk to Hard Drive . . . . .	2-3
3	<b>SYSTEM START-UP</b> . . . . .	3-1
	3.1 General . . . . .	3-1
	3.2 Initialization . . . . .	3-1
	3.3 Analyst Identification . . . . .	3-2
	3.4 Equipment Identification . . . . .	3-3
	3.5 Main Menu . . . . .	3-8
4	<b>DATA INPUT</b> . . . . .	4-1
	4.1 General . . . . .	4-1
	4.2 The Operations Submenu . . . . .	4-1
	4.3 System . . . . .	4-2
	4.4 Identify Level of Repair Candidates . . . . .	4-2
	4.5 Select Model and ID Mission Requirements . . . . .	4-5
	4.6 Develop Plan for Sensitivity Analysis . . . . .	4-6
	4.7 System Support Considerations . . . . .	4-7
	4.8 Repair Analysis Level Report Data . . . . .	4-8
	4.9 Palman Data Entry . . . . .	4-9
	4.10 Assign Input Variable Values Submenu . . . . .	4-12
	4.11 Enter Palman Sensitivity Analysis Values Submenu . . . . .	4-14
	4.12 The OSAMM Option . . . . .	4-15
	4.13 OSAMM Contract Data Screen . . . . .	4-16
	4.14 OSAM Data Sources for Input Variables . . . . .	4-17
	4.15 Other Items in the OSAMM Reference Information Window . . . . .	4-19

## TABLE OF CONTENTS (Cont'd)

<u>CHAPTER</u>	<u>TITLE</u>	<u>PAGE</u>
5	<b>PALMAN MODELING</b> . . . . .	5-1
	5.1 General . . . . .	5-1
	5.2 The Palman Submenu . . . . .	5-1
	5.3 Selection Options Menu Choice . . . . .	5-1
	5.4 Run Palman Program . . . . .	5-4
	5.5 View/Print Output File . . . . .	5-4
6	<b>REPORTS</b> . . . . .	6-1
	6.1 General . . . . .	6-1
	6.2 RLA Software Reports . . . . .	6-1
	6.3 Selection of Output Destination . . . . .	6-2
	6.4 RLA Output Reports . . . . .	6-3
7	<b>ASSISTANCE/UTILITIES/QUIT</b> . . . . .	7-1
	7.1 Assistance . . . . .	7-1
	7.2 Utilities . . . . .	7-1
	7.3 Reindex All Data . . . . .	7-2
	7.4 Import Data . . . . .	7-2
	7.5 Export Data . . . . .	7-2
	7.6 Setting the Data Directories . . . . .	7-3
	7.7 Re-Log Equipment . . . . .	7-4
	7.8 Exiting the Program . . . . .	7-4

## LIST OF APPENDICES

<u>APPENDIX</u>	<u>TITLE</u>	<u>PAGE</u>
A	How to use Function Keys . . . . .	A-1
B	Navigational Flow Charts . . . . .	B-1
C	Reports . . . . .	C-1
D	RLA Directory . . . . .	D-1

## LIST OF FIGURES

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
1-1	Simplified Software Structure . . . . .	1-8
3-1	RLA Files Directory . . . . .	3-10
3-2	Introductory Screen . . . . .	3-10
3-3	Welcome Screen . . . . .	3-11
3-4	Sponsor Screen . . . . .	3-11

## LIST OF FIGURES (Cont'd)

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
3-5	Analyst Log-On . . . . .	3-12
3-6	Analyst Sign-On . . . . .	3-12
3-7	Equipment Log-On Screen . . . . .	3-13
3-8	Equipment Data Screen . . . . .	3-13
3-9	Main Menu . . . . .	3-14
4-1	System Submenu . . . . .	4-22
4-2	Select/Add Assembly . . . . .	4-22
4-3	Assembly Selection . . . . .	4-23
4-4	Assembly Identification Screen . . . . .	4-23
4-5	Add/Edit Parts List . . . . .	4-24
4-6	Add/Edit Parts Entry . . . . .	4-24
4-7	Select Model and ID Mission Requirements . . . . .	4-25
4-8	Develop Plan for Sensitivity Analysis . . . . .	4-25
4-9	Add/Edit Variables . . . . .	4-26
4-10	System Support Considerations . . . . .	4-26
4-11	Repair Analysis Level Report Data . . . . .	4-27
4-12	Available Processes . . . . .	4-27
4-13	Repair vs Discard Decision Criteria . . . . .	4-28
4-14	Select Assembly . . . . .	4-28
4-15	Select Part . . . . .	4-29
4-16	Repair/Discard Results . . . . .	4-29
4-17	Repair/Discard Edit . . . . .	4-30
4-18	Input Variables Values Submenu . . . . .	4-30
4-19	Values for Standard Inputs . . . . .	4-31
4-20	Values for Initial Provisioning . . . . .	4-31
4-21	Values for Other Inputs . . . . .	4-32
4-22	Enter Sensitivity Analysis Values Submenu . . . . .	4-32
4-23	Supply Variables . . . . .	4-33
4-24	Test and Equipment Facilities Variables . . . . .	4-33
4-25	Personnel Variables . . . . .	4-34
4-26	Maintenance Variables . . . . .	4-34
4-27	End Item Variables . . . . .	4-35
4-28	Initial Provisioning Variables . . . . .	4-35
4-29	OSAMM Reference Information Submenu . . . . .	4-36
4-30	Contract Data . . . . .	4-36
4-31	OSAMM Reference Information Submenu . . . . .	4-37
4-32	Select Existing Source . . . . .	4-37
4-33	Data Source for Input Variables . . . . .	4-38
4-34	Edit General Notes on Sources . . . . .	4-38
4-35	Input File Reference . . . . .	4-39
4-36	Preprocessor Output File Reference . . . . .	4-39
4-37	Validation of Preprocessor Errors . . . . .	4-40
4-38	Application to OSAMM Model . . . . .	4-40
5-1	Palman Submenu . . . . .	5-6
5-2	Select Assembly . . . . .	5-6
5-3	Part Selection Screen . . . . .	5-7
5-4	Select Standard/Unique Sensitivities . . . . .	5-7

## LIST OF FIGURES (Cont'd)

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
5-5	Enter Output File Name . . . . .	5-8
5-6	Run Palman Program . . . . .	5-8
5-7	Output Selection . . . . .	5-9
6-1	Reports Submenu . . . . .	6-7
6-2	Select View/Create Report . . . . .	6-7
6-3	Select Report to View . . . . .	6-8
6-4	Set Report Output Designations . . . . .	6-8
6-5	Enter Report File Name . . . . .	6-9
6-6	Report Processing . . . . .	6-9
7-1	Assistance Submenu . . . . .	7-5
7-2	Utilities Submenu . . . . .	7-5
7-3	Tagging Assemblies . . . . .	7-6
7-4	Set Data Directory . . . . .	7-6
7-5	Equipment Log-On . . . . .	7-7
7-6	Quit . . . . .	7-7

## LIST OF TABLES

<u>NUMBER</u>	<u>FIELD DESCRIPTIONS</u>	<u>PAGE</u>
3-1	Equipment Data . . . . .	3-5
4-1	Assembly Identification . . . . .	4-4
4-2	Add/Edit Parts . . . . .	4-5
4-3	Select Model and ID Mission Requirements . . . . .	4-6
4-4	Add/Edit Variables . . . . .	4-7
4-5	Repair Analysis Level Report Data . . . . .	4-8
4-6	Repair vs Discard Decision Criteria . . . . .	4-9
4-7	Repair/Discard Results . . . . .	4-10
4-8	Contract Data . . . . .	4-12
4-9	Data Source for Input Variables . . . . .	4-16
4-10	Input File Reference . . . . .	4-18
4-11	Preprocessor Output File Reference . . . . .	4-19
4-12	Application to OSAMM Model . . . . .	4-20

## CHAPTER 1 INTRODUCTION

### 1.1 GENERAL

#### PROTOTYPE SOFTWARE

1.1.1 This User's Manual accompanies the Prototype Version 1.0 of the RLA Software. The APJ prototype software is designed to demonstrate a concept. All functions work correctly and produce meaningful results. All data input is accurately saved and can be retrieved. However, prototypes are inherently "fragile", i.e., procedures must be followed exactly with minimum deviations (e.g., no extra key strokes) and there was no effort made to make the program "bulletproof". This will be addressed in the Beta and delivery development stages.

1.1.2 To convert a prototype into a production version, the overall operation and user interface require additional capabilities. Also, additional functionality is required at the Menu and Data Input screen levels.

#### REQUIRE- MENT

1.1.3 Under AMCCOM Contract, DAAA21-86-D-0025, the American Power Jet Company undertook the Computer Aided Software Analysis (CASE) and Design of selected Integrated Logistics Support and Logistic Support Analyses tasks defined in Army Regulation 700-127 and MIL-STD-1388-1A.

1.1.4 This software addresses Repair Level Analysis (MIL-STD-LSA Task 303.2.7), and provides a determinate procedure for executing the sequence of Repair/Discard Analysis, followed by Repair Level Allocation. The performance of this task requires the use of the Palman Repair/Discard Model, followed by the OSAMM Level of Repair decision tool.

**LSA SUBTASK  
303.2.7**

1.1.5 This completed software is designed to assist Logisticians in the performance of a Repair Level Analysis for any Weapon System. Execution of this software guides the user through the accomplishment of LSA Subtask 303.2.7, Repair Level Analysis, as specified in MIL-STD-1388-1A. Output products, coupled with external modeling results, will fulfill most deliverable requirements.

**ON-LINE  
HELP**

1.1.6 The user is guided step-by-step through a series of screens and menus which, when completed, result in a comprehensive Repair Level Analysis. At each step along the way, on-line help is available. The on-line help contains detailed procedures for planning, collecting, organizing and analyzing the data needed to conduct the analysis. It also includes sources for obtaining the data and guidance on preparing narrative reports.

**ORIENTATION**

1.1.7 When APJ was under contract to rework the Palman Model, develop classroom training, computer-aided instruction, and video training tapes material, it became clear that a user friendly "Front End" was desirable to permit the Palman Model to be run in the batch mode. The attainment of this objective is the central goal of the Palman portion of this prototype.

1.1.8 Additionally, the software development was structured so that in subsequent versions of this program (Beta and ultimate Delivery System), automated interface with the Government controlled and restricted access OSAMM Model may be effected.

**PALMAN  
INTERFACE**

1.1.9 The PC Version of the Palman software has been completely encompassed by the RLA software. The Palman software is seamlessly accessed and executed through the RLA software without having to exit. All Palman results can be viewed and printed through the RLA software.

1.1.10 This manual, accompanied by the Palman User's Manual, provides the necessary documentation for the users to install and operate the software. The RLA software permits the user to run the entire Repair/Discard analysis as part of RLA. Details of Palman are available as part of an extensive training package, comprising Video Tapes, Hard copy instructions, as well as computer aided instructions.

1.1.11 Accordingly, the major objective of this prototype repair level automation is to explore the optimum interface with Palman and to provide the architecture for subsequent OSAMM interface development.

## 1.2 SCOPE

### DEFINES PROCEDURES

1.2.1 The Department of the Army has a requirement to provide definitive guidance to accomplish LSA Tasks specified in MIL-STD-1388-1A, "Logistic Support Analysis". Headquarters AMCCOM has initiated action to structure LSA Task performance by defining the procedures necessary to do an analysis and define the form of the results. This software embodies that initiative by laying out the approach using current U.S. Army policies, procedures, and techniques.

### LOGISTICIANS TOOL

1.2.2 The intent of this software is to provide Logisticians with a standardized tool that alleviates the need to develop an approach to performing the task. It defines the steps, organizes and tracks the information, models the data, and produces reports needed during the course of a Repair Level Analysis. Time savings are achieved by reducing the inherent administration involved with organizing, collating and formatting the information used to conduct the analysis. Almost as important is the development of audit trail to facilitate update through the equipment life cycle.

## 1.3 LSA SUBTASK 303.2.7 "RLA" DESCRIPTION

1.3.1 LSA Subtask 303.2.7 concerns the development of a Repair Level Analysis (RLA) for a specific equipment or system, including all of its major assemblies, subassemblies, and parts.

1.3.2 The Repair Level Analysis (RLA) is a decision-making process which determines the most cost-effective actions for dealing with a failed item. The decisions that are required include whether to repair the failed equipment, assemblies, subassemblies, or parts, or to discard them and purchase replacement. If the decision is to repair, then a further decision must be made regarding the echelon at which each maintenance function should be performed.

1.3.3 To assist in making these decisions, two computer programs have been made available: The Interactive Palman Model (IPM) operating on the PC and provided with this software, and the Optimum Supply and Maintenance Model (OSAMM) hosted on a mainframe computer and referenced through this software.

1.3.4 The Palman Model evaluates the breakeven purchase cost between a repair and a discard concept. The program calculates the breakeven point based on various cost factors impacted by the range of expected deployments. If the actual or expected cost of procuring an item exceeds the model output, the assembly is considered a candidate for repair; if the procurement cost is less, then discard should be considered.

1.3.5 The evaluation performed by the model provides the analyst with the following:

- A table of values for breakeven cost vs. number of end items
- An analysis of repair policy cost per failure, with breakdown of the elements and their percentage contribution to the overall cost (reveals cost "drivers")
- A sensitivity analysis to isolate critical, significantly impacting decision variables.

1.3.6 The Optimum Supply and Maintenance Model (OSAMM) is designed to simultaneously optimize support and maintenance policies for a new equipment. Inputs to the model are limited to the types of information that should be available early in development when the maintenance concept is being formulated. The model determines optimal Maintenance Task Distribution (MTD) and Replacement Task Distribution (RTD) for the major items in an equipment. It also compares the cost of throwing away an item with the cost of repairs. In making these decisions, the model considers the spares, special test equipment and special repairment that will be needed to support the maintenance policy. Other costs such as transportation, cataloging and documentation are also considered.

## 1.4 RLA SOFTWARE LOGIC AND ORGANIZATION

1.4.1 This software automates LSA Subtask 303.2.7, "Repair Level Analysis" and follows the requirements of APJ Report 966-223, "Structured Design - LSA Subtask 303.2.7, Repair Level Analysis".

1.4.2 A detailed Structured Analysis of the LSA Subtask was developed in APJ Report 966-210, "Structured Analysis - LSA Subtask 303.2.7, Repair Level Analysis". The Data Flow Diagrams (DFDs) provide an overview of the logic and approach to RLA.

## 1.5 OVERVIEW OF SOFTWARE OPERATION AND TASK IMPLEMENTATION

### APPROACH

1.5.1 The software uses a three-pronged approach to doing the task. Initially, basic Weapon System and support concept information is addressed by the program and input by the user. Also, in this section, the candidate items (Work Breakdown Structure Elements) for modeling are identified. Next, this information is used to generate input data for a repair/discard decision using the Palman Model. Finally, once the repair candidates have been determined, a repair level decision is made using the Optimum Supply and Maintenance Model (OSAMM).

1.5.2 Figure 1-1 provides a simplified software structure. A comprehensive description of the menus and menu options are discussed elsewhere in this manual. The intent here is to explain how to use the software to do a Repair Level Analysis.

### STARTING OUT

1.5.3 Upon executing the program, the name of the End Item/Weapon System to be modeled must be entered, followed by some project management data (e.g., Part Number, NSN, PM Name, PM Office, etc.). Once this data has been entered, the user must input an Identification Code (ID). Next, the user must enter Point of Contact information. This information is used when generating output reports.

1.5.4 After completing the End Item and Analyst information screens, the Main Menu is displayed. There are additional options on the Main Menu, but they are not depicted in Figure 1-1, since they are not used to perform this analysis. Only the OPERATIONS, REPORTS, and PALMAN options are used to fulfill the requirement of this LSA Task.

1.5.5 To start an analysis, select SYSTEM from the OPERATIONS submenu. The SYSTEM option is used to:

**SYSTEM  
OPTION**

- 1) Identify Level of Repair Candidates
- 2) Select Model and Identify Mission Requirements
- 3) Develop a Plan for Sensitivity Analysis
- 4) System Support Considerations
- 5) Document RLA Results

The SYSTEM option has three purposes. First, it is used to enter the Work Breakdown Structure (WBS), and identify the items that need to be modeled. Second, it is used to plan the logistic concepts used during modeling required, and provide rationale for repair and/or discard decisions. Third, it is used to document the final results and conclusion after the analysis has been completed.

**NOTE**

It is very important to input the System Work Breakdown Structure (Item 1) since it is used in many other places throughout the software.

1.5.6 Following input of the WBS, perform Items 2 through 4 to determine the scope of the analysis, and to collect the data necessary to do modeling. The mission requirement, preliminary maintenance concept, and ILS Element area requirements are all essential inputs to repair level modeling. See section 1.5.19 for use of Item 5.

1.5.7 Once Items 1 through 4 have been completed, select the PALMAN option from the OPERATIONS submenu. The PALMAN option is used to:

ASSIGNING  
PALMAN  
INPUT  
VARIABLE  
VALUES

- 1) Establish Repair vs. Discard Criteria
- 2) Assign Palman Input Variable Values
- 3) Enter Palman Sensitivity Values
- 4) Repair/Discard Results.

This option is used to establish Repair/Discard Decision Criteria and Results. In addition, it is used to assign the Palman Input Variables (Standard Inputs, Initial Provisioning, and other Inputs) and to select Palman Variables for Sensitivity Analysis. These items require the user to select an assembly and part from those identified for modeling under the SYSTEM option. Palman Variable Values should be assigned for each item of the WBS previously tagged. Those variables targeted for sensitivity analysis should also be specified at this time.

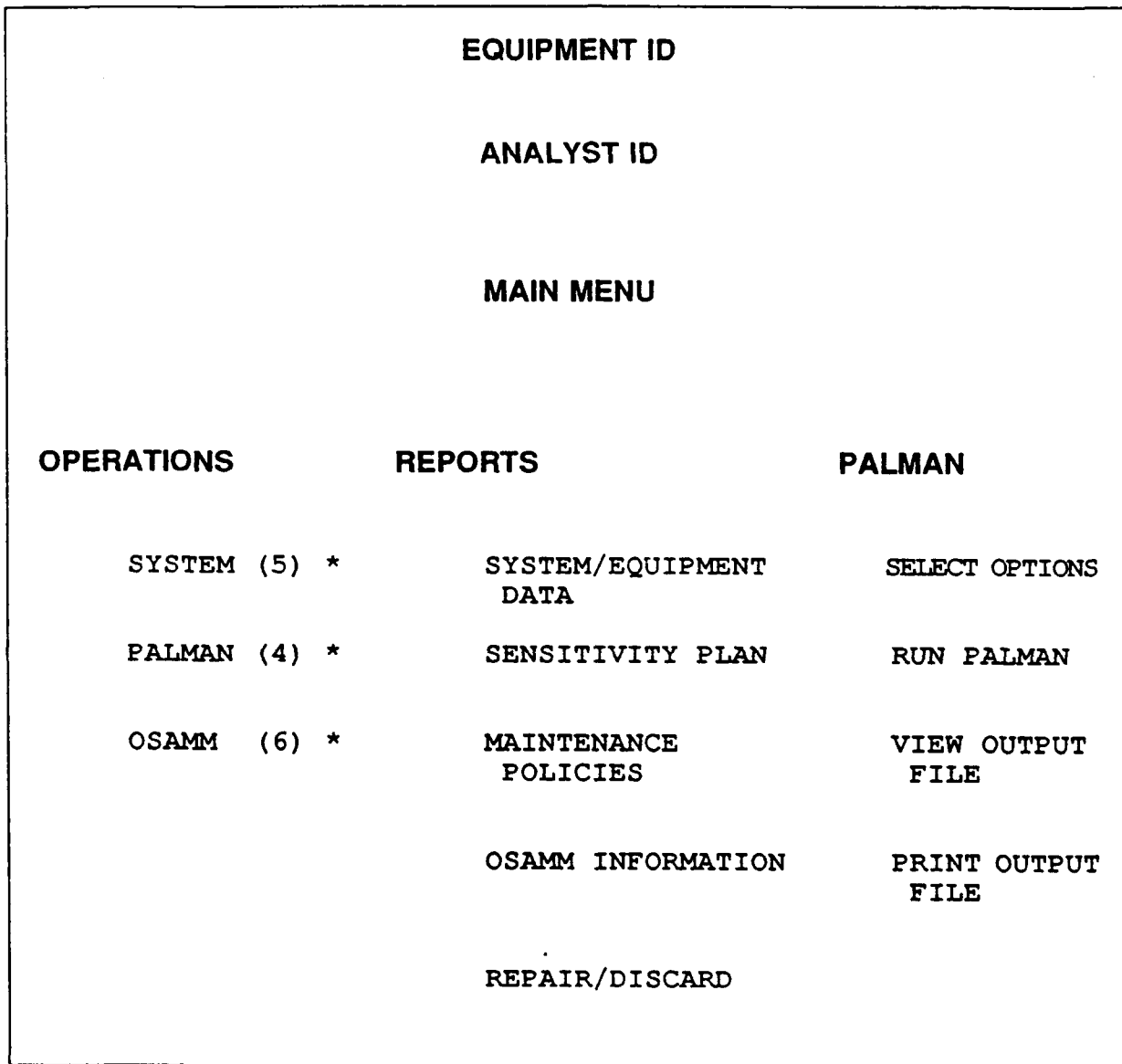


Figure 1-1 Simplified Software Structure

\* The number in brackets ( ) indicates the number of options available through each selection.

**PALMAN  
MODEL  
OPTIONS**

1.5.8 When all the items to be modeled have been assigned Palman Variables, the PALMAN option from the Main Menu should be selected.

1.5.9 For each item to be modeled, use the SELECT OPTIONS submenu choice to indicate the type of Palman sensitivity analysis required (e.g., standard or unique). Then, specify the name of the Palman output file that will be created for this item. Repeat this step for each item to be modeled.

---

**NOTE**

In order to use SELECT OPTIONS, the Palman Input Data for the part being modeled must have been previously entered under the PALMAN option of the OPERATIONS submenu.

---

**RUNNING  
PALMAN  
MODEL**

1.5.10 The SELECT OPTIONS submenu option creates a Palman input file and submits it to the Palman Model. The RLA software creates a seamless interface with Palman and executes it while RLA is still active. Once the message disappears from the screen, the Palman run is complete and the results can be reviewed using either the VIEW or PRINT OUTPUT FILE submenu option. When either of these submenu options is selected, the name of the output file must be picked from a window containing a list of previously generated reports.

---

**NOTE****GENERATING  
REPORTS**

Several DOS directories may be set up to store Palman Output Files. This may be done to separate data related to different subsystems of a Weapon System or for different Weapon Systems. Prior to running the Palman, use the UTILITIES option on the Main Menu to send the Palman Output to the correct directory.

---

**CHECKING  
PALMAN  
RESULTS**

1.5.11 Continue running Palman for all parts that were identified for modeling. Review the results of the runs to check for data input errors, incorrect assumptions, or areas where further sensitivity analysis is required. Adjust input data using the PALMAN submenu option under OPERATIONS in the Main Menu. Then, use the SELECT OPTIONS submenu options under PALMAN in the Main Menu. Continue this process until consistent and realistic results are achieved.

**REPAIR  
DISCARD  
RESULTS**

1.5.12 Make Repair/Discard decisions based upon the results, and document them in REPAIR/DISCARD selection found under the PALMAN submenu option located beneath OPERATIONS.

**RLA  
RESULTS**

1.5.13 When enough data has been entered into the software to generate interim reports, use the Main Menu REPORT option and generate output reports for SYSTEM/EQUIPMENT DATA, SENSITIVITY PLAN, MAINTENANCE POLICIES, and REPAIR/DISCARD.

**OSAMM  
MODELING**

1.5.14 From the Repair/Discard results, use those parts that are repairable as a basis for Optimum Supply and Maintenance Modeling (OSAMM). Do not model parts that were identified as discards, since you must pay for computer time when running OSAMM. With the OSAMM manual and a text editor (available through the OSAMM facility, or as a standalone PC-based Program), construct an OSAMM input file using the RLA Output reports plus any data suggested in the On-Line Help.

**OSAMM  
RESULTS**

1.5.15 Submit a batch job to the OSAMM Pre-Processor for a data validation check. Review the Pre-Processor results for errors. Correct the input file and submit it to the Main OSAMM Program. OSAMM then produces three output files which contain information on the repair concept.

1.5.16 Review the OSAMM output files and determine areas where a sensitivity analysis is required. Determine the variables that need further study and the ranges over which they should be studied.

Modify the OSAMM input file several times to observe the impact of changes in the variable values on the results and repair level decision. Upon completion of all sensitivity analyses, document the repair level, test equipment, and number of repair personnel required.

**DOCUMENT  
OSAMM  
RESULTS**

1.5.17 The RLA program does not interface with OSAMM since it is hosted on a remote mainframe computer. However, the RLA software can be used to store and retrieve information pertaining to the modeling methods used and locations of input/output files. By selecting the OSAMM option from the Main Menu, the following items are available:

- 1) Contract Data
- 2) Data Sources for Input Variables
- 3) Input File Reference
- 4) Preprocessor File Output Reference
- 5) Validation and Correction of Preprocessor Errors
- 6) Application of OSAMM Model.

1.5.18 As each aspect of OSAMM modeling is completed, the results or the location of the results can be documented using the RLA software.

1.5.19 Once the OSAMM modeling has been completed and all decisions made, the results can be documented under the SYSTEM option in the Main Menu. The REPAIR LEVEL ANALYSIS DATA item can be used to document your results.

**FINAL  
REPORT**

1.5.20 A final set of reports can be run after all the data has been entered. The OSAMM INFORMATION report will contain a complete picture of all the steps that were followed during the OSAMM modeling. The compilation of final reports can be merged into a final Repair Level Analysis report.

## 1.6 VERT

### DESCRIPTION

1.6.1 The Venture Evaluation Review Technique (VERT) is a network analysis technique to facilitate management decision making. It allows systematic planning and control of LSA Task performance using resource estimates. Simulations are done by entering estimated values for time, cost, and performance parameters, and then running a simulated network to create a trial solution. Values for time, cost and performance can be changed, and the simulation process repeated to create a number of different solutions.

### APPROACH

1.6.2 APJ successfully developed a method to convert the Data Flow Diagrams for a particular LSA Task into VERT networks using a PC based VERT model. The activities or processes on the Data Flow Diagram are converted into Arcs on the VERT networks. Where one or more activities need to be completed before other activities begin, a decision point or Node is established.

### IMPLEMENTATION

1.6.3 Once the network is completed, a VERT input file is created using dummy values for the time, cost, and performance criteria associated with each Arc and Node. The actual values for these parameters will have to be determined by the ILS or LSA manager responsible for task performance. After the actual values have been loaded, the simulation provides the manager with the probability of completing the LSA Task/Subtask using assigned resources.

## CHAPTER 2 SOFTWARE INSTALLATION AND BACKUP

### 2.1 GENERAL

2.1.1 This chapter describes the installation of the executable software and the procedures for making a backup file.

### 2.2 EQUIPMENT REQUIREMENTS

2.2.1 To operate the RLA program, the user must be equipped with at least the following equipment (or its equivalent).

#### HARDWARE

1. IBM-PC-XT with DOS version 3.3 or later and 640K RAM
2. 360K or 1.2MB Floppy Disk Drive and 20MB Hard drive
3. Printer: The following printer is currently supported by the software:

Epson E/F/J/RX/LQ

### 2.3 POWER ON/OFF

#### POWER

2.3.1 Since each computer system is slightly different, follow the manufacturer's specific start-up instructions before performing the LSA subtask. Make sure that both the Central Processing Unit (CPU) and the Monitor are powered up. Proceed to the system installation section for instructions on installation of the RLA Software.

### 2.4 NOTES ON RLA INSTALLATION

2.4.1 This section contains the miscellaneous information and procedures for installing the RLA program.

**BACK-UP  
ORIGINAL  
DISKS**

2.4.2 Before installing the software for the first time, duplicate the supplied disk. Apply a write protect tab to the original disk and store it in a safe place. Use the copy of the software for system installation.

**MODIFY  
CONFIG.SYS  
FILE**

2.4.3 To operate the RLA software properly, the CONFIG.SYS file must contain the statements: FILES = 51 and BUFFERS = 20. Add these statements if they do not already exist.

**ACHIEVED  
FILES**

2.4.4 The RLA program can operate from a 1.2MB floppy disk, however if your system has only a 360K floppy drive, the program will be provided in an archived (compressed) self-extracting format. Instructions for transferring these files to the hard disk and unarchiving them are provided in Section 2.7 below.

**2.5 CREATING THE RLA DIRECTORY STRUCTURE****HARD DISK**

2.5.1 To install the software on a hard disk make sure that at least 1MB of hard disk space is available, then perform the following procedures.

2.5.2 Turn the computer and monitor on. The computer should boot-up and the hard disk drive prompt (usually C:\) should appear on the screen.

**CREATING  
THE  
DIRECTORY  
STRUCTURE**

2.5.3 Type **MD\RLA** and press **<Enter>**. This will create an RLA directory on the "C" drive.

2.5.4 Type **CD\RLA** and press **<Enter>** to move to the RLA directory. Type **MD\DBF** and press **<Enter>** to create a subdirectory for database files under the RLA directory.

2.5.5 Type **MD\PALMAN** and press **<Enter>** to create a subdirectory for storing the executable Palman file.

2.5.6 Type **MD\REPORTS** and press **<Enter>**. This directory is optional but is strongly recommended for data organization and control.

2.5.7 Once the subdirectories are made, a two-tier directory structure exists which separates the main RLA Executable file from other associated files.

## 2.6 INSTALLATION FROM 1.2MB DISK TO THE HARD DRIVE

2.6.1 Type **Copy A:\RLA\\*.\* C:\RLA** and press **<Enter>**. This will transfer the RLA root programs to the RLA directory on the hard drive.

2.6.2 Type **Copy A:\RLA\DBF\\*.\* C:\RLA\DBF** and press **<Enter>**. This will transfer the database files from "A" to the hard drive database subdirectory.

2.6.3 Type **Copy A:\RLA\PALMAN\\*.\* C:\RLA\PALMAN** and press **<Enter>**. This will transfer the Palman program from "A" to the Palman subdirectory on the hard drive.

## 2.7 INSTALLATION FROM 360K DISK TO THE HARD DRIVE

2.7.1 The RLA program cannot be run from a 360K disk. The software files contained on the disk are placed into an RLA directory and two sub-directories; DBF and Palman. To fit all the files onto a 360K floppy disk, APJ has provided self-extracting archived files and placed them in each directory and subdirectory.

2.7.2 Type **Copy A:\RLAEXE C:\RLA** and press **<Enter>**. This copies the archived RLA root files to the RLA directory on the hard drive.

2.7.3 Type **Copy A:\RLADB.F.EXE C:\RLA\DBF** and press **<Enter>**. This will copy the archived RLA database file from the floppy to the database subdirectory on the hard disk.

2.7.4 Type **Copy A:\RLAPALMN.COM C:\RLA\PALMAN** and press **<Enter>**. This will copy the archived PALMAN program to the PALMAN subdirectory on the hard disk.

2.7.5 Type **CD\RLA** and press **<Enter>**. The prompt for the new working directory is displayed as **C:\RLA**. Type **RLAEXE** and press **<Enter>**. This causes the execution of the self-extracting archived file to generate two files (RLA.EXE and DIRS.DBF) that reside in the RLA directory. Type **DEL RLAEXE.EXE** and press **<Enter>** to delete the self extracting archived file. It is no longer needed.

2.7.6 Type **CD\RLA\DBF** and press **<Enter>**. The prompt for the new working directory is displayed as **C:\RLA\DBF**. Type **RLADB** and press **<Enter>**. This causes the execution of the self-extracting archived file into the database files. There are 42 such files. See Appendix D for a complete list of all the files. Type **DEL RLADB.EXE** and press **<Enter>** to remove the archived file which is no longer needed.

2.7.7 Type **CD\RLA\PALMAN** and press **<Enter>** to move to the **PALMAN** subdirectory. Type **RLAPALMN** and press **<Enter>**. This causes the execution of the self extracting archived file into a **PALMAN** executable file. Type **DEL RLAPALMN.COM** and press **<Enter>** to delete the archived file.

## CHAPTER 3 SYSTEM START-UP

### 3.1 GENERAL

#### BACKGROUND

3.1.1 The U.S. Army RLA Software is an interactive menu driven system. The software is accessed by completing a series of identification screens prior to entering the Main Menu. The Main Menu allows you to capture RLA planning data, generate reports, process data through the Palman Model, obtain help, or exit the system. This chapter explains the operation of the software from Start-up through the Main Menu.

### 3.2 INITIALIZATION

#### BOOT-UP

3.2.1 When the back-up copy has been made and the programs transferred to the hard disk (and unarchived, if necessary), the RLA software is ready to be initialized. Use the following procedure to access the RLA program installed on the hard drive.

3.2.2 Turn on the computer and monitor. The monitor should display the C prompt (C:\) on boot-up. Type *CD\RLA* and press *<Enter>*. This places the prompt in the RLA directory and permits access to the RLA executable program.

#### INITIALIZE

3.2.3 Type *RLA* and press *<Enter>*. At Start-up the RLA software will initialize prior to displaying the Introduction Screen (Figure 3-2). The first time the program is run, Figure 3-1 is displayed.

3.2.4 This is a data entry screen used to view and set (if needed) the DOS paths to the directories where the files were loaded during installation of the RLA software. The path includes the disk drive, the directory and subdirectory designations.

**CHANGING  
DRIVE  
DESIGNATION**

3.2.5 Using the up and down keys, place the cursor on any drive designation requiring change and type in the correct letter designation. If the computer is in the INSERT mode, delete the old designation. Press <Enter> to move the cursor to the directory designation.

**CHANGING  
DIRECTORY  
NAMES**

3.2.6 Make any changes to the name of the directory or subdirectory and press <Enter>. If no changes are required, press <Enter> to accept. This moves the cursor to the drive designation on the next line. After completing all changes to drive designations and/or directory names, press <Pg Dn> to exit.

**CORRECTING  
DRIVE ON  
PATH ERRORS**

3.2.7 The paths shown on this screen must agree exactly with the paths established during installation. If an illegal drive designation is chosen, the cursor will not move until the analyst enters the correct drive letter. If an illegal directory or subdirectory is entered (including missing (\)), the cursor will return to the first character of the path following the drive designation.

**3.3 ANALYST IDENTIFICATION**

3.3.1 After system initialization, the Introductory Screen (Figure 3-2) appears. When any key is pressed, the Welcome Screen appears as shown in Figure 3-3, followed by Figure 3-4, the Sponsor Screen.

**ANALYST  
LOG-ON**

3.3.2 Following the two introductory screens, an Analyst Log-on Screen is displayed. This screen requires entry of an Analyst ID of up to four (4) characters. The first time an ID is entered, an exploding window containing two options is displayed on the Log-on Screen (see Figure 3-5).

ANALYST  
SIGN-ON

3.3.3 If the Analyst ID was entered incorrectly select the RE-ENTER option which returns you to the Analyst ID field. If this is your first time using the RLA Software select ADD NEW. This causes a second screen, the ANALYST SIGN-ON to be displayed for entry of additional analyst information (see Figure 3-6). If the Analyst ID entered matches one previously entered, an exploding box is displayed with two options ENTER EQUIPMENT ID and EDIT ANALYST ID. The Edit option displays the ANALYST SIGN-ON screen. The EQUIPMENT option causes the software to by-pass the ANALYST SIGN-ON Screen and display the EQUIPMENT SELECTION Screen Figure 3-7.

### 3.4 EQUIPMENT IDENTIFICATION

EQUIPMENT  
SELECTION  
SCREEN

3.4.1 The EQUIPMENT SELECTION screen is used to either add a new equipment for analysis or select an existing equipment and continue the analysis. To add a new equipment, use the up and down arrow keys to place the highlight bar on the NEW option and press <Enter>. To select a previously entered piece of equipment, place the cursor on the equipment name and press <Enter>. If NEW is chosen, then the EQUIPMENT DATA screen, Figure 3-8, is displayed with no data in the fields. If an existing equipment is selected, an exploding window is displayed over the EQUIPMENT SELECTION Screen. It contains two options ENTER RLA PROGRAM and EDIT EQUIPMENT ID INFORMATION as depicted by Figure 3-7.

EQUIPMENT  
DATA  
SCREEN

3.4.2 When the NEW option is selected, the EQUIPMENT DATA Screen (Figure 3-8) needs to be completed. The EQUIPMENT DATA Screen describes the equipment selected for the RLA, its relevant milestone data, the Program Manager point of contact, and other relevant information. The screen is displayed with the cursor in the EQUIPMENT NAME FIELD. Complete each field with the appropriate information and press <Enter>. Table 3-1 describes the contents of each field. Upon completion of the last field, press the <Enter> key to save the data. The software proceeds to the Main Menu. If the analyst would like to save the data before entering the last field, press <Ctrl W>.

---

**NOTE**

The Equipment Name is a required entry on this screen. All other fields may be bypassed by using the down arrow key or the **<Enter>** key.

The **<Ctrl W>** key is a combination key that is activated by pressing the **<Control>** key and then the letter **<W>**. After the **<W>** is pressed, both keys can be released.

---

**EDITING THE  
EQUIPMENT  
DATA  
SCREEN**

3.4.3 Selection of the EDIT EQUIPMENT option will display EQUIPMENT DATA screen Figure 3-8 with previously entered data.

To make changes to any field, use the up and down arrow keys or press **<Enter>** key to place the cursor on the field(s) requiring change(s). Type in the new data and press **<Enter>** or the down arrow key to continue. To save the changed data and exit press **<Control W>**.

## EQUIPMENT DATA SCREEN

TABLE 3-1

<b>EQUIPMENT NAME</b>	The formal name associated with the equipment being reviewed; a twenty (20) digit alphanumeric field.
<b>COMMON NAME</b>	The equipment name commonly used or normally associated with this equipment, and not previously identified under EQUIPMENT NAME or MILITARY NOMENCLATURE; a twenty (20) digit alphanumeric field, (e.g., Bradley instead of M2A1).
<b>MILITARY NOMENCLATURE</b>	The name of the equipment assigned by the Department of the Army; a twenty (20) digit alphanumeric field (e.g., AN/PSM-45, M1A1).
<b>PART NUMBER</b>	The Manufacturer's part number (a twenty (20) digit alphanumeric field) issued for that part.
<b>NATIONAL STOCK NUMBER</b>	This is a twenty (20) digit field that includes a thirteen (13) digit stock number with the following format characteristics: All field sizes are fixed.
	Prefix: Cognizance Code.....: 2A
	Materiel Control Code.....: 1A
	NSN: FSC.....: 4N
	NIIN.....: 9N
	Suffix: Special Materiel.....: 2A
	ID Code/Materiel Management
	Aggregation Code/Activity
	Code.....: 2A
	To review and select the applicable numbers, refer to DOD 4100.38-M.

**INDENTURE LEVEL**

The work breakdown indenture level associated with the equipment under review as indicated by MIL-STD-881; a one (1) digit numeric field.

**ASSEMBLY 1, 2 or 3**

The identification of the next higher assembly as indicated by the indenture level number. Use the Equipment Name of that specific assembly; a twenty (20) digit alphanumeric field. This is an optional field which requires no entry if the equipment under review is the top level of the work breakdown structure.

**PROGRAM PHASE**

The user may choose from four (4) phases:

Concept Exploration  
Demonstration & Validation (Dem/Val)  
Full Scale Development (FSD)  
Production

The abbreviations shown in brackets will reduce the name size to fit the Program Phase field. Determine the appropriate phase for entry and proceed.

**ACQUISITION  
MANAGEMENT  
MILESTONES**

The Acquisition Management Milestone System (AMMS) is comprised of a central database located at the Materiel Readiness Support Activity (MRSA), and includes current acquisition milestones from Operational and Organizational (O&O) plans through post fielding assessments with supporting data.

The traditional acquisition life cycle process is categorized into a series of intermediate milestones within each major milestone as follows (see AMMS Pamphlet 700.26, Table 1-1):

<u>PHASE NAME</u>	<u>INTERMEDIATE MILESTONES</u>
Concept Exploration	0100 - 1999
Demonstration & Validation	2000 - 2999
Full Scale Development	3000 - 3999
Production	4000 - 5050

To enter the Acquisition Management Milestone, determine the phase the developer is in (see Program Phase). Refer to DA PAM 700-26, Issue 1, Table 1-1 for the list of intermediate milestone numbers. Select the applicable number for entry and proceed. This is a four (4) digit numeric field.

**SIGNIFICANT PROGRAM  
MILESTONE**

This will identify the next major program event in the schedule. A twenty (20) digit alphanumeric field (e.g., Physical Configuration Audit, ILSMT #12, SSP Delivery).

**PM LAST NAME  
PM FIRST NAME**

Enter the Project Manager's last name, then the first name. Each name is limited to fifteen (15) characters. The first name field can also include the title (e.g., Col., Mr., Doctor, etc.) and the middle initial, if room is still available.

**COMMAND**

The military organization designation (a 20 digit alphanumeric field) of the Program Manager.

**PM OFFICE SYMBOL**

The Department of the Army official designation of the office associated with the Project Manager; a fifteen (15) digit alphanumeric field.

**PHONE #**

The telephone number of the Project Manager's office; a nine (9) digit fixed numeric field.

**AUTOVON**

The Autovon network telephone number of the Project Manager's office; a seven (7) digit fixed numeric field.

3.4.4 If the second option, ENTER RLA PROGRAM is selected, the EQUIPMENT DATA Screen is by-passed and the Main Menu is displayed. This option will be used most often, since changes to equipment data occur infrequently.

### 3.5 MAIN MENU

#### MAIN MENU

3.5.1 The first time the Main Menu is displayed, the software defaults to OPERATIONS, and its submenu is displayed. To make a selection from the OPERATIONS submenu, use the up and down arrow keys to highlight the choice, and press <Enter>. If a Main Menu option other than OPERATIONS is desired, use the right or left arrow keys to highlight that option. The submenu for the option chosen is displayed. To return to the Main Menu without displaying a submenu, press <ESC>. If no submenu is displayed, highlight the appropriate Main Menu option and press <Enter>. The following paragraphs describe each of the Main Menu choices.

#### OPERATIONS

3.5.2 OPERATIONS. Selecting this option displays three choices in a pull-down submenu (SYSTEM, PALMAN and OSAMM). Each of these choices displays additional exploding submenus to allow the user to enter and capture information pertinent to a Repair Level Analysis. This is explained further under each submenu option.

#### REPORTS

3.5.3 REPORTS. The selection of this option allows the analyst to generate reports from the data entered under the OPERATIONS options. New reports can be generated, or previously generated reports can be viewed. Report samples are shown in the Appendix.

#### PALMAN PROCESSING

3.5.4 PALMAN - The selection of this option provides the analyst with a pull-down menu containing options that are to be used sequentially. They include the selection of the Assembly/Part to be modeled, running the model and viewing and/or printing the output.

*ASSISTANCE*

3.5.5 ASSISTANCE - The selection of this option provides the analyst with a pull-down menu with INSTRUCTIONS and INTRODUCTION options. These allow the analyst to review the purpose and scope of the RLA program and to view helpful information regarding navigation through the system and entry of data on the various screens.

*UTILITIES*

3.5.6 UTILITIES - The selection of this screen permits the analyst to re-index all the database files in the event of data corruption, to import a data file created by another RLA program, to export a data file for use by another RLA program, and to set the various paths for the database files (the RLA and Palman executable programs, the reports, and the import/export files). It will also allow the user to select another equipment for analysis.

*EXIT*

3.5.7 QUIT - The selection of this option displays an exploding box indicating GO TO DOS or RETURN to RLA. Selection of GO TO DOS exits the program and returns control of the computer to DOS. RETURN TO RLA moves the cursor back to the GO TO DOS submenu under QUIT. The exploding box disappears.

04/15/91 REPAIR LEVEL ANALYSIS BOD ROBOT  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES

08:10:04  
 QUIT

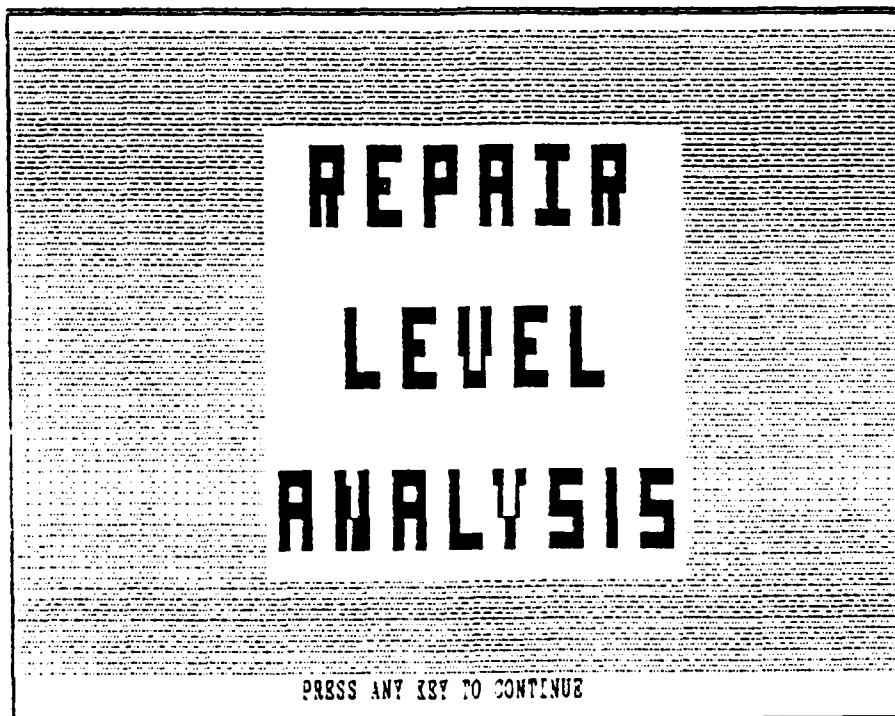
DIRECTORIES FOR RLA PROGRAM FILES ACCESS

DATABASES - DBF & DBT (MEMO) FILES  
 F:\RLA\DB  
 INDEXES - NTX FILES  
 F:\RLA\DB  
 REPORT FILES SENT TO DISK FILES  
 F:\RLA  
 RLA FILES TO BE IMPORTED INTO THIS SET OF RLA DATA  
 A:\  
 RLA FILES TO BE EXPORTED TO ANOTHER RLA PROGRAM  
 A:\  
 DIRECTORY WHERE THE PALMAN.EXE FILE RESIDES  
 F:\RLA\PALMAN  
 DIRECTORY FOR THE OUTPUT OF THE PALMAN PROGRAM  
 F:\RLA\PALMAN

EXAMPLE - C:\APJ\RLA\DATA  
 Drive MUST be Valid NO Trailing "\" on Path

SELECT THE DIRECTORY FOR DATA FILES TO BE STORED  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 3-1 RLA FILES DIRECTORY



American Power Jet Company VERSION 1.0

FIGURE 3-2 INTRODUCTORY SCREEN

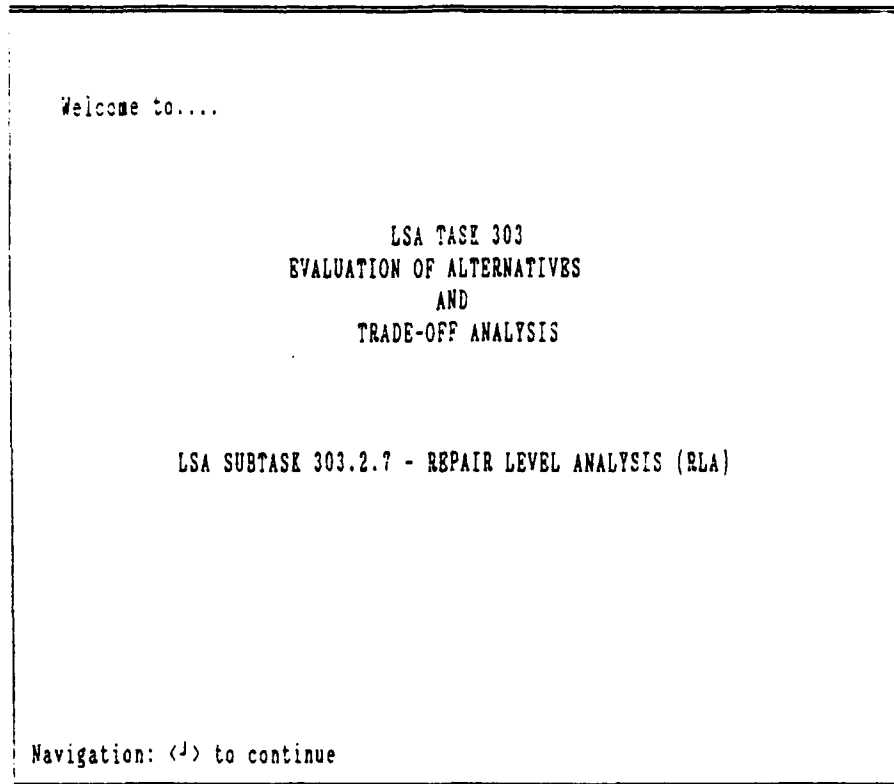


FIGURE 3-3 WELCOME SCREEN

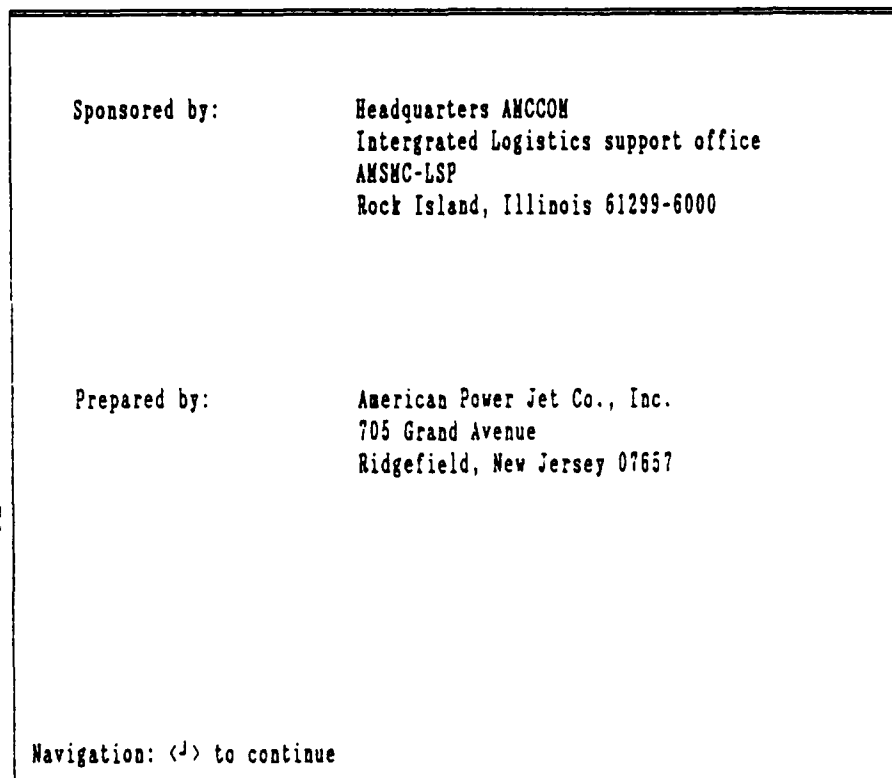


FIGURE 3-4 SPONSOR SCREEN

**THIS  
PAGE  
IS  
MISSING  
IN  
ORIGINAL  
DOCUMENT**

*3-12*

LSA Helper Version 1.0

Repair Level Analysis

EQUIPMENT LOG-ON

NEW  
EOD ROBOT

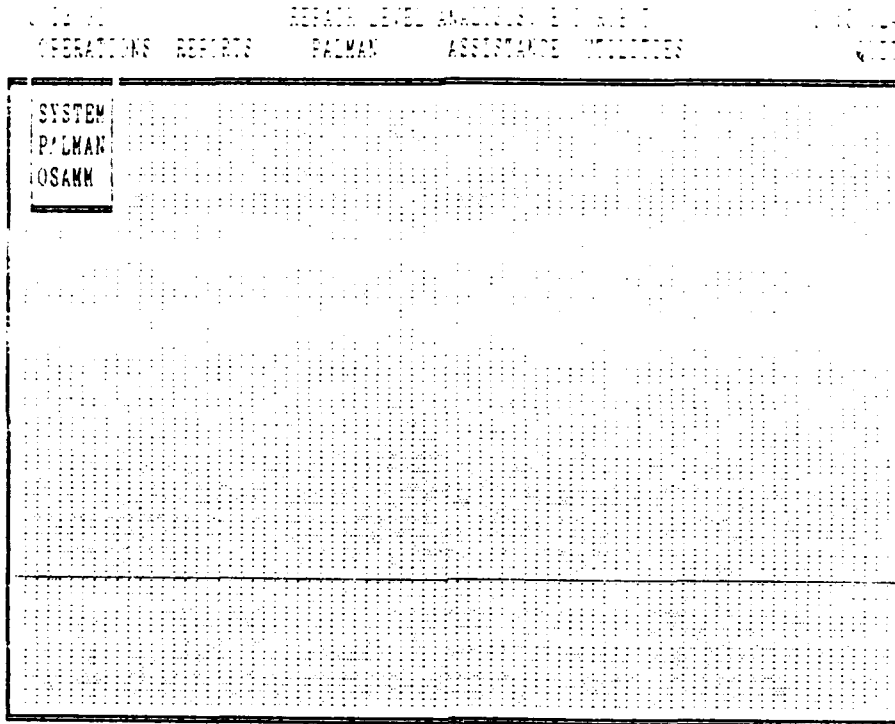
- 1) ENTER RLA PROGRAM
- 2) EDIT EQUIPMENT ID UNFO

FIGURE 3-7 EQUIPMENT LOG-ON SCREEN

EQUIPMENT IDENTIFICATION	
Equipment Name:	
Common Name :	Military Nomenclature:
Part number :	National Stock Number:
Indenture Level:	
Assembly 1 :	
Assembly 2 :	
Assembly 3 :	
-----Program Milestone Information-----	
Program Phase:	Amms Milestone:
Significant Program Milestone:	
-----Program Manager POC-----	
PM Last Name:	PM First Name:
Command :	
PM Office Symbol:	
Phone : ( ) -	
Autovon: -	

Enter new record. ^W to save; Esc to abandon

FIGURE 3-8 EQUIPMENT DATA SCREEN



SYSTEM SPECIFIC MODELING REQUIREMENTS  
Use Arrow Keys to Position      Press Enter Key to Accept

FIGURE 3-9 MAIN MENU

## CHAPTER 4 DATA INPUT

### 4.1 GENERAL

4.1.1 This chapter provides the user with instructions for completing the data input screens available under the OPERATIONS option of the Main Menu. These screens are used to record data and information generated during the process of performing a Repair Level Analysis.

### 4.2 THE OPERATIONS SUBMENU

4.2.1 This Main Menu option displays a pull down menu consisting of SYSTEM, PALMAN and OSAMM.

#### SYSTEM

4.2.2 The SYSTEM option is for entering the Weapon System/End Item Work Breakdown Structure (WBS) and identifying the items to be modeled using the Palman Repair vs Discard Model. It assists in Repair Level Analysis Planning to include documentation of mission requirements, the system support concept and maintenance levels available for repair. Finally, after the analysis is completed, a selection under this option can be used to document the results.

#### PALMAN

4.2.3 The PALMAN option is used to identify repair vs discard decision criteria, enter values for the Palman Model variables, specify the ranges for Palman unique sensitivity analysis, and to document repair vs discard decisions. Palman input variable values can be separately assigned for each item tagged for modeling under the SYSTEM option. Sensitivity analysis parameters for an item must be entered before a Palman run is conducted.

#### OSAMM

4.2.4 The OSAMM option is provided to record the results of each step in the process required to run the Model. These steps include recording specific contract data required to access OSAMM, generating the input files, correcting errors found by the preprocessor, specifying output file locations, and documenting results.

Since OSAMM is a proprietary model hosted on a mainframe computer, the RLA program does not interface with it. However, to run OSAMM requires the collection and documentation of a large amount of data. This option enables the logistician to record all the data in one place including the locations of files and information on Points of Contact to obtain any information or data.

### 4.3 SYSTEM

4.3.1 Selecting the SYSTEM option causes an exploding window entitled SYSTEM SPECIFIC MODELING REQUIREMENTS - AVAILABLE PROCESSES to be displayed (see Figure 4-1). The window contains submenu choices. Place the cursor bar on the desired selection and press <Enter>.

### 4.4 IDENTIFY LEVEL OF REPAIR CANDIDATES

4.4.1 This option is used to record the Work Breakdown Structure (WBS) for the Weapon System/End Item selected on the EQUIPMENT IDENTIFICATION Screen.

4.4.2 The WBS is entered one assembly at a time. In this case an "Assembly" is equivalent to subsystem. For each assembly, the parts that comprise the assembly are listed with their indenture level. At the time each part is entered, it can be selected as a candidate for Palman Modeling so that a Repair/Discard decision can be made.

4.4.3 When this choice is selected the SELECT/ADD ASSEMBLY Screen (Figure 4-2) is displayed followed by the ENTER ASSEMBLY Screen (Figure 4-3). Once these screens have been completed, the SUBSYSTEM/ASSEMBLY IDENTIFICATION Screen (Figure 4-4) is displayed.

4.4.4 The two options shown on Figure 4-2, permit the addition of a NEW ASSEMBLY or recall data for previously recorded assemblies (see Figure 4-4).

SELECT  
OPTION

*SELECT NEW/  
EXISTING  
ASSEMBLY*

4.4.5 If SELECT EXISTING ASSEMBLY is chosen, the ASSEMBLY SELECTION Screen is displayed (see Figure 4-3) with a list of assemblies that were previously entered. Use the up and down arrow keys to highlight the assembly that is to be worked on and press **<Enter>**. If more assemblies are on this list than fit on the screen continue pressing the down arrow to view them. If no assemblies were previously entered, the ASSEMBLY SELECTION Screen is by-passed and a blank ENTER ASSEMBLY Screen is displayed.

4.4.6 If ADD A NEW ASSEMBLY is selected, a blank ENTER ASSEMBLY Screen is displayed for entry of a NEW ASSEMBLY and its lower level parts.

*IDENTIFY/  
MODIFY  
ASSEMBLY*

4.4.7 After either ADD A NEW ASSEMBLY or SELECT AND EXISTING ASSEMBLY is chosen, the ENTER ASSEMBLY Screen is displayed. For a NEW ASSEMBLY it appears blank. The COMMON NAME, MILITARY NOMENCLATURE MFR PART NO., and REMARKS data fields have to be completed via the keyboard. For a description of the fields, see Table 4-1. For an EXISTING ASSEMBLY, the screen appears with the data that was entered into the data fields.

4.4.8 To enter data into the fields or edit data contained in them, use the up and down arrow keys or the **<Enter>** key to move between the fields. The right and left arrow keys are used to move the cursor one character at a time through the field. Text entered into the REMARKS field is saved using the **<F9>** key. When this is done, the cursor returns to the SCHEDULED DATE FIELD. There are then three choices available; exit and return to the Main Menu without saving this record **<F8>**, save the record and exit to the Main Menu **<F10>**, or ADD/EDIT PARTS data for the NEW/EXISTING ASSEMBLY **<F7>**.

FIELD NAME	DESCRIPTION
Scheduled Date:	estimated date for completion
Completion Date:	actual completion date inserted by the analyst after all item have been modeled.
Subsystem:	common name
Nomenclature:	military name
Part Number:	military part number
Remarks:	a scrollable region on the screen to allow for the entry of comments, notes problems and other information helpful in understanding the circumstances surrounding the selection of this subsystem.

Table 4-1

4.4.9 When <F7> ADD/EDIT parts is pressed, the ADD/EDIT parts list (Figure 4-5) is displayed beneath the REMARKS field of the ASSEMBLY IDENTIFICATION Screen.

VIEW  
PARTS

4.4.10 The cursor defaults to the first item on the list, SELECT THIS TO ADD NEW ITEM. Move the highlight bar to any part that requires changes and press <Enter>. To add a new part, use the default line and press <Enter>.

ADD/EDIT  
PARTS

4.4.11 In either case, a small window is displayed over the ADD/EDIT Parts List as shown by Figure 4-6. The data fields are blank when new items are to be added, or contain data for previously entered parts. Table 4-2 describes the data fields in the ADD/EDIT Parts Window.

FIELD NAME	DESCRIPTION
Name WBSN	The Military name for the part The Work Breakdown Structure Number
Indent Level	The stipulated level of indenture
Model	Should this part be modeled - Y/N?

Table 4-2

#### 4.5 SELECT MODEL AND ID MISSION REQUIREMENTS

SELECT  
OPTION

4.5.1 With the highlight on SYSTEM, press <Enter> to display the window entitled SYSTEM SPECIFIC MODELING REQUIREMENTS - AVAILABLE PROCESSES. Use the up and down arrow keys to place the highlight bar on SELECT MODEL and ID MISSION REQUIREMENTS and press <Enter>.

4.5.2 Selection of this choice displays the Screen shown in Figure 4-7. The screen is divided into three parts. The top portion displays assembly data previously entered which cannot be changed using this screen. The middle portion contains MODEL NAME, SPONSORING ACTIVITY and LOCATION OF MODEL. The highlight bar defaults to MODEL NAME. If any of this information was previously completed, it is displayed, otherwise the fields are blank. Data can be input into these fields if blank, edited if existing, or added to if additional information is required. After entering or editing the LOCATION OF MODEL field, press <Enter>.

SELECT  
OPTION

4.5.3 The highlight bar will move to the OPERATIONAL AVAILABILITY - WARTIME field (see Table 4-3 for descriptions of those fields). Type in the relevant information required for each field and press <Enter> to accept the data. The highlight bar moves to the next field. Upon completion of the entries, press <F10> to save and exit. If it is inopportune to save entries at this time, press <F8> to exit without saving. In either case the OPERATIONS submenu is displayed.

ITEM	IDENTIFICATION
Operational Availability	% in decimals of service uptime
Annual No. of Missions	estimated # missions per year
Annual Operating Days	estimated # days/year equipment will be used
Operating Hours/Mission	average # hours/mission
Annual Operating Time	(missions/year) x (hours/mission)
Mean Mission Duration	most likely time/mission
Measurement Base	hours or days for mean
mission	time
Operational Standby	(operational availability) -
Time	(operating hours)

Table 4-3

#### 4.6 DEVELOP PLAN FOR SENSITIVITY ANALYSIS

4.6.1 With the highlight bar on SYSTEM, press **<Enter>**. Using the up and down arrow keys to move the highlight bar to DEVELOP PLAN FOR SENSITIVITY ANALYSIS and press **<Enter>**. Selection of this option displays the screen shown in Figure 4-8. The highlight bar defaults to the SCHEDULED DATE field. If dates and data have been previously entered, that information will be displayed and may be edited, otherwise the fields are blank and can be completed.

4.6.2 After typing in the COMPLETED DATE, press **<Enter>** to arrive at the DISCUSS SENSITIVITY ANALYSIS portion of the screen. This is a (memo) text entry field for information relating to the types of sensitivity analyses, number of systems being fielded, MTBF, item cost, etc. Upon completion of the narrative entry for this section, press **<F9>** to save the text. The highlight bar will return to the SCHEDULED DATE field. Press **<F7>** to activate the ENTER VARIABLE AND RANGE portion of the screen. A list of previously entered variables will be displayed (if any).

ADD/EDIT

**SELECT  
OPTION**

4.6.3 The inputs made in this section of the screen deal with variables and associated ranges that will be used in the sensitivity analysis. The highlight bar defaults to the first line SELECT THIS TO ADD A NEW ITEM. Press **<Enter>** to add a new variable, otherwise use the up and down arrow keys to place the cursor on the variable to be edited. In either case an exploding box (see Figure 4-9) appears which is used to enter or modify variable data. Upon completion of the variables entry, press **<ESC>**. This will save the data entered and return the highlight bar to the DATE SCHEDULED field. Press **<F10>** to save and exit back to the OPERATIONS submenu, or if it is inopportune to save at this time, press **<F8>** to exit without saving.

**DATA  
ENTRY**

Field Name	Description
Variable	Factor considered to be driver for selected part
Range	Minimum - maximum to be tested

Table 4-4

**4.7 SYSTEM SUPPORT CONSIDERATIONS****SELECT  
OPTION**

4.7.1 Press **<Enter>** to bring up the System submenu. Use the up and down arrow keys to place the highlight bar on the SYSTEM SUPPORT CONSIDERATIONS option and press **<Enter>**. The selection of this option displays the screen shown in Figure 4-10.

**IDENTIFY  
LEVELS AND  
AREAS OF  
SUPPORT**

4.7.2 The highlight bar will default to the ORGANIZATION field. The screen is divided into two parts both requiring YES/NO answers. The ITEM MAINTENANCE POLICY section is used to provide information on relevant maintenance levels of support. The CHECKLIST OF SUPPORT CONSIDERATIONS section refers to generic areas of support that will be affected. The default values are N. To change any selection to Y, press **<Enter>** until the cursor falls on that selection and type Y. Upon completion, press **<F10>** to save and exit. If it is inopportune to save the record at this time, press **<F8>** to exit without saving. This returns the cursor to the OPERATIONS submenu screen.

#### 4.8 REPAIR ANALYSIS LEVEL REPORT DATA

*SELECT  
OPTION*

4.8.1 Press <Enter> to display the SYSTEM submenu. Use the up and down arrow keys to move the highlighted bar to the REPAIR ANALYSIS LEVEL REPORT DATA option and press <Enter>. The selection of this SYSTEM option displays the screen shown in Figure 4-11. The screen is displayed with the highlight bar on the SCHEDULED DATE field, the first on the screen.

*DATA  
ENTRY*

4.8.2 This screen is divided into three parts; SCHEDULED and COMPLETION DATES; DOCUMENT INFORMATION; and ADDITIONAL DATA. The upper portion of the screen contains reference information. Complete the fields in the upper two sections of the screen. After completing each field, press <Enter> to move to the next field. Pressing <Enter> also allows you to skip a field if there is no data available to complete it.

4.8.3 Use the bottom section of the screen to enter a narrative explaining the results of the Repair Level Analysis. Upon completion of this field, press <F9> to save the text. The highlight bar returns to the SCHEDULED DATE field to allow for continued editing. Press <F10> to save and exit if no further changes are required.

#### CONSIDER THE FOLLOWING FOR ENTRY INTO THE "ADDITIONAL DATA" FIELD

Identification of end item, nomenclature, part # & Model  
RLA objectives  
Description of maintenance policies used  
Special support requirements (personnel, tools, etc.)  
Repair concept by component and maintenance level  
Repair decision rationale  
OSAMM input/output/or notes to clarify analysis

Table 4-5

## 4.9 PALMAN DATA ENTRY

### PALMAN SUBMENU

4.9.1 Use the up and down arrow keys to highlight PALMAN under the OPERATIONS option of the Main Menu and press <Enter>. This selection displays the screen shown in Figure 4-12. A window is displayed containing the various considerations involved with using the Palman Model. Place the highlight bar on the desired selection and press <Enter>.

FIELD	DESCRIPTION
Scheduled Date	Data Report identified is scheduled for completion
Completion Date	Date Report is actually completed
Document Title	Actual Report Title
Document Number	Document Reference Number assigned by preparing organization
Revision Number	Sequential Revision Number assigned
Location	Where the Report is filed
Prepared by	Person and/or organization preparing Report
Office Symbol	Agency Symbol of preparing organization if Military
Phone No.	Phone No. of organization/person preparing Report
Autovon No.	Autovon designation of Agency/person preparing Report

Table 4-6

### DATA ENTRY

4.9.2 The screen is displayed with the highlight bar on REPAIR VS DISCARD CRITERIA DECISION selection. Press <Enter> to select, or use the up and down arrow keys to highlight another selection. This selection displays the screen shown in Figure 4-13. The screen is displayed with the SCHEDULED DATE field highlighted. The fields are explained in Table 4-6.

4.9.3 The upper section contains either previously entered data or blank fields and requires the EDIT or ENTRY of the optional SCHEDULED and COMPLETION DATES. After each entry, press <Enter>. The cursor moves into the SPECIFY DECISION CRITERIA section of the screen.

4.9.4 This section is used to enter a narrative of relevant information regarding the Repair/Discard Decision Criteria to be used. Upon completion of the entries, press <F9> to save the narrative text, then press <F10> to save and exit. If it is inopportune to save the data at this time, press <F8>, the OPERATIONS submenu is displayed.

FIELD NAME	DESCRIPTION
Scheduled Date	Estimated completion date for Palman Modeling
Completed Date	Actual completion date of Palman Modeling
Equipment Name	From the previous Equipment ID entry
Nomenclature	From the previous Equipment ID entry
Part Number	From the previous Equipment ID entry
Specify Decision Criteria	Include this type of information in the fields: Item and support costs Manpower and other non-economic constraints Factors that will negate an economic decision to discard Quantitative and qualitative criteria for a repair/discard decision

Table 4-7

4.9.5 Place the highlight bar on PALMAN and press <Enter> to display the PALMAN considerations window. Use the up and down arrow keys to select any of the next three options ASSIGN PALMAN INPUT VARIABLE VALUES, ENTER PALMAN SENSITIVITY VALUES or REPAIR/DISCARD RESULTS. The selection of any of these options will display the screen SELECT ASSEMBLY shown in Figure 4-14.

SELECT

**OPTION**

4.9.6 Use the procedures in this paragraph to reach one of the three screens selected from the PALMAN CONSIDERATIONS WINDOW. Place the highlight bar on the ASSEMBLY that contains parts for Palman Modeling and press <Enter>. The screen shown in Figure 4-15 is displayed with a list of parts tagged for modeling for the previously selected ASSEMBLY. Use the up and down arrow keys to select the part for analysis and press <Enter>.

**SELECT  
ASSEMBLY**

---

**NOTE**

The Assemblies and associated Parts were previously entered from the SYSTEM option under OPERATIONS. The IDENTIFY LEVEL OF REPAIR CANDIDATES Screen (Figure 4-4) was used to input the information and document the decision to model a part using Palman. If changes to assemblies or parts are required (including the addition of new ones), it will be necessary to return to that screen.

---

**INPUT  
VARIABLES**

4.9.7 For the ASSIGN INPUT VARIABLE VALUES or ENTER PALMAN SENSITIVITY VALUES selections a second window is displayed containing selections for inputting the different types of Palman Variables. (See sections 4.10 and 4.11 for a further discussion of these selections).

4.9.8 The information documented regarding Part, Cost, Breakeven and Repair or Discard Decision is based on the results of processing the Palman Model (see Chapter 5 for instructions on using Palman within the RLA program). The information documented on this screen may be built-up incrementally (e.g., following the Palman run for each part) or totally (e.g., running Palman for all parts and using these results).

4.9.9 The REPAIR/DISCARD RESULTS selection works somewhat differently from the other two selections. When this selection is made, SELECT ASSEMBLY Screen (Figure 4-14) is displayed. Once the assembly has been selected, the screen in Figure 4-16 is displayed for the parts contained in that assembly that were selected for modeling.

FIELD NAME	DESCRIPTION
Equipment	From previous Equipment ID screen entry
Assembly	From previous New Assembly screen entry
Part Name	From previous New Assembly <F7> entry
Part Cost	Copy from Palman Standard Input Variables
Breakeven Decision	Copy from Palman output report If Cost > = Breakeven, Repair If Cost < Breakeven, Discard

Table 4-8

4.9.10 The REPAIR/DISCARD RESULTS of the PALMAN MODEL processing may be changed. This is done by placing the highlight bar on the part to be changed and pressing <Enter>. This displays the screen shown in Figure 4-17. To change any of the fields, type in the information, then press <Enter> to move to the next field. After completing the last field, press <Enter>. The data entered is saved and the window closes. Control returns to the REPAIR/DISCARD RESULTS Screen (Figure 4-16), where another part can be selected. After editing, the information can be saved by pressing <F10>. This screen is exited and the software goes back to the OPERATIONS option submenu.

**MODIFY  
RESULTS**

#### 4.10 ASSIGN INPUT VARIABLE VALUES SUBMENU

4.10.1 Once a part has been selected for assignment of Palman Variables, a submenu is displayed in an exploding window. This contains choices for the three different types of input. At least one type is required. They are: Standard Inputs, Initial Provisioning and Other Inputs. The highlight bar will default to VALUES FOR STANDARD INPUTS.

**ENTRY  
SELECTION**

4.10.2 The sequence of the input variable selections should be followed from the first through the third selections until all the input information is captured. Use the up and down arrow keys to place the highlight bar on each option in the sequence and press **<Enter>**. When the input entries are complete, select the ALL PALMAN INPUT VARIABLES ASSIGNED and press **<Enter>** to return to the OPERATION submenu (see Figures 4-19 through 4-21).

**STANDARD  
INPUTS**

4.10.3 The screen is divided into two sections. The upper section displays the SYSTEM/ASSEMBLY/PART selected while the lower section displays the variable fields. When the screen is displayed, the input variables shown are Palman default values. They may be changed by moving the highlight bar to the field(s) requiring change with the up and down arrow keys, or the **<Enter>** key. Type in the changes. Press **<F10>** to save and exit to the ASSIGN INPUT VARIABLE VALUES submenu or use the **<F8>** key to exit without saving. Once the values have been changed and the screen saved, and this Assembly/Part combination is again selected, the changed values are displayed.

**INITIAL  
PROVISIONING**

4.10.4 When this screen is initially displayed, the input variables shown are Palman default values. They may be changed by moving the highlight bar to the field(s) requiring change with the up and down arrow keys, or by using the **<Enter>** key. Type in the changes and press **<F10>** to save and exit to the ASSIGN INPUT VARIABLE VALUES submenu or use the **<F8>** key to exit without saving. The changed values are displayed when the ASSEMBLY/PART COMBINATION is again selected.

**OTHER  
INPUTS**

4.10.5 The input variables initially displayed are Palman default values. They may be changed by moving the highlight bar to the field(s) requiring change with the up and down arrow keys, or by using **<Enter>** key. Type in the changes and press **<F10>** to save and exit to the ASSIGN INPUT VARIABLE VALUES submenu or use the **<F8>** key to exit without saving. The values that were changed for the ASSEMBLY/PART COMBINATION are displayed when that option is again selected.

#### 4.11 ENTER PALMAN SENSITIVITY ANALYSIS VALUES SUBMENU

##### SENSITIVITY ANALYSIS VALUES SUBMENU

4.11.1 Use the up and down arrow keys to move the cursor to the ENTER PALMAN SENSITIVITY VALUES and press **<Enter>**. The Assembly and Parts selection screens will appear to allow the user to select an Assembly/Part for sensitivity analysis. After the selections have been made, a window (Figure 4-22) is displayed containing six support categories where variable ranges can be assigned for UNIQUE SENSITIVITY ANALYSIS. As many variables as necessary can be selected for sensitivity analysis.

4.11.2 Figures 4-23 through 4-28 show the six support category screens that can be used to input unique sensitivity data. Default values are provided for each variable. These values may be changed based on the Weapon System/End Item being modeled and its proposed operation and maintenance scenario.

##### REVIEW SCREENS

4.11.3 In order to determine which of the six unique sensitivity data screens will be used in the sensitivity analysis, the analyst is urged to review all of those screens, organize the data for each that will be selected and then using the up and down arrow keys, move the highlight bar to the appropriate selection and press **<Enter>**. A screen for inputting ranges for unique sensitivities is displayed.

##### EDIT SCREENS

4.11.4 The screens are divided into two sections. The upper section contains system/assembly/part data. The lower section contains the sensitivity model variables NAMES, descriptions (i.e., a field indicating whether this variable will be used) and the variable ranges (FROM/TO). The cursor defaults to the RUN SENSITIVITY field for the first variable displayed on the screen. Use the **<Enter>** key to move from field to field. To select a variable for sensitivity analysis, type a "Y" in the RUN SENSITIVITY field and press **<Enter>**. Change the FROM/TO range field, if desired and press **<Enter>**.

---

**NOTE**

In order for the software to accept changes, the **<Enter>** key must be pressed for each field where changes have been made.

---

4.11.5 When the cursor is located in the last field on the screen, press **<Enter>** to save the changes and exit to the window containing the six support categories. Continue choosing categories and selecting variables for unique sensitivity analysis until all those areas that require further study have been selected. After the variable selection is complete, choose the ALL ENTRIES COMPLETE option and press **<Enter>** to return to the Main Menu.

**4.12 THE OSAMM OPTION**

4.12.1 The OSAMM option under OPERATIONS should not be used until all parts tagged for Palman Modeling have been processed and Repair/Discard decisions made. Unlike Palman, the RLA software does not directly interface with OSAMM since it is hosted on a remote mainframe computer. Screens (Figures 4-29 through 4-38) are provided as a means of documenting the steps involved in the OSAMM Modeling process. As each aspect of OSAMM is completed, the results and/or the location of the results can be documented.

4.12.2 Use the up and down arrow keys to place the highlight bar on the OSAMM option and press **<Enter>**. Selection of OSAMM displays a window (Figure 4-29) containing a list of entry screens that, when selected, can be used to capture OSAMM reference data.

DISPLAY  
OSAMM  
SUBMENU

### 4.13 OSAMM CONTRACT DATA SCREEN

4.13.1 Use the up and down arrow keys to move the highlight bar to OSAMM CONTRACT DATA item displayed in the window. This screen (see Figure 4-30) is divided into two sections. The upper section has fixed fields for inputting reference information, while the lower section is a text field where narrative data pertaining to the contract requirements can be entered. Press <Enter> after each insertion to move the cursor to the next field, and after completing entering or editing the reference data. Press <Enter> when the last field in the reference area is processed. The highlight bar will be placed in the memo field. Type in any significant comments for referral and press <F9> to save. The cursor will move to the SCHEDULED DATE field. Press <F10> to save and exit the data recorded, or if it is inopportune at this time to save this data, press <F8> to exit without saving. The OPERATIONS submenu will then be displayed with the highlight bar on OSAMM.

FIELD	DESCRIPTION
Scheduled Date	Date scheduled for OSAMM to be in place
Completed Data	Date OSAMM contract is actually in place
CECOM P.O.C.	CECOM person to contact re: OSAMM contract
Phone	Phone number of person at CECOM
Autovon	Autovon number of person at CECOM
OSAMM Data Obtained	Is OSAMM reference data available Y/N?
OSAMM Reference Document Title	Name of report containing all OSAMM documentation

Table 4-9

4.13.2 When the screen is displayed, the first field is highlighted indicating that data can be entered if the field is blank or edited if data already exists. To move through the fields use the up and down arrow keys or press **<Enter>**. To complete a field, type in the data required and press **<Enter>** to continue to the next field.

4.13.3 After moving through all the fields on the upper section of the screen, the software places the cursor in the narrative text field. Type in the required information and press **<F9>** to save the text and return to the first field on the screen.

4.13.4 To save the entries made on the screen, press **<F10>**. If you wish to abort without saving, press **<F8>**. Both options exit this screen and return to the OSAMM option under OPERATIONS.

#### 4.14 OSAMM DATA SOURCES FOR INPUT VARIABLES

4.14.1 Use the up and down arrow keys and place the highlight bar on the DATA SOURCES FOR INPUT VARIABLES selection and press **<Enter>**. The screen shown in Figure 4-31 will be displayed. This is a submenu for data sources with three choices available; SELECT EXISTING SOURCE; ADD A NEW DATA SOURCE; and EDIT GENERAL NOTES ON SOURCES.

SELECT  
SOURCE

4.14.2 Use the up and down arrow keys to place the highlight bar on SELECT EXISTING SOURCE to edit or add to previously entered data. A screen similar to the one shown in Figure 4-32 will be displayed.

ADD/EDIT  
SOURCE  
DATA

4.14.3 Use the up and down arrow keys to place the highlight bar on the data source desired and press **<Enter>**, Figure 4-33 will be displayed. This screen is used to document the source where OSAMM input data was obtained and the name of the report that was used to collect the data (see Table 4-9). Move to the fields requiring additions or changes by pressing **<Enter>** until the highlight bar reaches the selected field(s). Make the necessary additions or changes and press **<F10>** to save and exit or **<F8>** to exit without saving. The screen will return to the Main Menu display.

FIELD NAME	DESCRIPTION
Scheduled Date	Estimated date for obtaining OSAMM input data
Completed Date	Actual date OSAMM input data is obtained
Source of OSAMM Information	Person who provides the OSAMM input data
Office Symbol	Agency symbol of person providing input data
Phone	Phone number of person providing input data
Autovon	Autovon number of person providing input data
Reference Document Title	Title of another document providing OSAMM input data
Document Number	The number assigned to the Reference Document
Document Date	Date that the Reference Document was created
Responsible Activity	Government agency responsible for this OSAMM Input Reference Document

Table 4-10

4.14.4 The selection of ADD A NEW DATA SOURCE will display a blank Figure 4-33. Complete the entries as indicated in 4.14.3. Additional data sources may be added or edited by repeating paragraphs 4.14.1-4 until all data sources are entered and correct.

4.14.5 Use the up and down arrow keys to place the highlight bar on EDIT GENERAL NOTES ON SOURCES and press <Enter>. Figure 4-34 will be displayed. This is a memo (scrollable text) field to capture information relevant to all data sources, plus any rationale required to understand their selection and use. After completing the entry, press <F9> to save and exit.

GENERAL  
NOTES ON  
SOURCES

#### 4.15 OTHER ITEMS IN THE OSAMM REFERENCE INFORMATION WINDOW

4.15.1 The data input screens corresponding to the other four items in the OSAMM REFERENCE INFORMATION WINDOW work the same way as the OSAMM CONTRACT DATA SCREEN (Reference Section 4.13). Follow the procedures in that section to complete the fixed field inputs and narrative text fields on those screens. Figures 4-35 through 4-38 are provided to illustrate the format and content of each screen. Corresponding Tables (4-10 through 4-12) describing the fields are included on the screen.

4.15.2 The following paragraphs explain the purpose of each screen.

4.15.3 Screen (Figure 4-35) is used to document the location of the OSAMM input files and an individual who can be contacted to obtain additional information. The narrative field is used to document how the input file was constructed and the extent to which the Item/Weapon System was modeled.

**INPUT  
FILE  
REFERENCE**

FIELD NAME	DESCRIPTION
Scheduled Date	Estimated date of OSAMM input file generation
Completed Date	Date input file generation is completed
File Name	OSAMM input file name
Location	Where OSAMM input file is physically located
Date	Date OSAMM file was last used
OSAMM Data Format Repository P.O.C.	Person to contact regarding obtaining OSAMM input file or data
Office Symbol	Government agency symbol where P.O.C works
Phone	Phone number of P.O.C.
Autovon	Autovon number of P.O.C .

Table 4-11

4.15.4 Screen (Figure 4-36) is used to document the location of the preprocessor output file and the individual responsible for them. The narrative field can be used to document the contents of the file and the results of the preprocessor run.

**PREPRO-  
CESSOR  
OUTPUT FILE  
REFERENCE**

FIELD NAME	DESCRIPTION
Scheduled Date	Estimated date for input file submission
Completed Date	Actual date input file is submitted
File Name	Name of Preprocessor output file
Location	Physical location where file is held
Point of Contact	Person to contact for copy of output
Office Symbol	Government agency symbol of P.O.C.
Phone	Phone number of P.O.C.
Autovon	Autovon number of P.O.C.

**Table 4-12**

4.15.5 Screen (Figure 4-37) contains only a narrative text field. The information placed in this field should contain a discussion of the errors found in the OSAMM input file and what was done to correct them. Include any information about the organization contacted, changes to the data itself and the method used to structure the End Item/Weapon System.

**VALIDATION  
OF PRE-  
PROCESSOR  
ERRORS**

4.15.6 Screen (Figure 4-38) is used to document the names of the three output files created by OSAMM and their location. In addition, fields are provided to identify a point of contact for information pertaining to the OSAMM output. The narrative field is available to document the results of OSAMM modeling. This documentation may include the number of runs made, sensitivity analyses conducted, and size and format of the output files. Decision regarding repair levels, test equipment, and maintenance personnel can be documented under REPAIR LEVEL ANALYSIS DATA under the SYSTEM submenu.

**APPLICATION  
TO OSAMM  
MODEL**

FIELD NAME	DESCRIPTION
Scheduled Date	Estimated date for completing OSAMM model
Completed Date	Actual date OSAMM model completed
Main Output File Name	Name designated for Main OSAMM output
Other Cost Break-out File Name	Name designated to Cost Breakout output
Stockage List File Name	Name designated to Stockage list output
Location of Files	Physical location of file storage
Point of Contact	Person to contact for getting OSAMM files
Office Symbol	Government agency symbol for P.O.C.
Phone	Phone number of P.O.C.
Autovon	Autovon number of P.O.C.

Table 4-13

02/07/91 REPAIR LEVEL ANALYSIS: NEW 11:26:16  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
PALMAN  
OSAMM

SYSTEM SPECIFIC MODELING REQUIREMENTS  
AVAILABLE PROCESSES

IDENTIFY LEVEL OF REPAIR CANDIDATES  
SELECT MODEL AND ID MISSION REQMNTS  
DEVELOP PLAN FOR SENSITIVITY ANAL.  
SYSTEM SUPPORT CONSIDERATIONS  
REPAIR ANALYSIS LEVEL REPORT DATA

SYSTEM SPECIFIC MODELING REQUIREMENTS  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-1 SYSTEM SUBMENU

03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 14:11:35  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
PALMAN  
OSAMM

SELECT EXISTING ASSEMBLY  
ADD A NEW ASSEMBLY

SYSTEM SPECIFIC MODELING REQUIREMENTS  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-2 SELECT/ADD ASSEMBLY

REPAIR LEVEL ANALYSIS: EOD ROBOT  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES

SYSTEM  
 PALMAN  
 OSAMM

SELECT EOD ROBOT ASSEMBLY  
 COMMONNAME MILITARY NOMENCLATURE MFR PART No.

ELECTRIC MOTOR ASSY	EMA	8A150D-1
CAMERA ASSEMBLY	CA	8A107A
TV ELECTRONICS	TVE	8A12345D-1

SYSTEM SPECIFIC MODELING REQUIREMENTS  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-3 ASSEMBLY SELECTION

03/01/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 14:50:17  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

IDENTIFY LEVEL OF REPAIR CANDIDATES EQUIPMENT: EOD ROBOT

Scheduled Date: 02/20/91 Completed Date: 02/25/91  
 TOP LEVEL ASSEMBLY  
 SubSystem: Nomenclature: Part No:  
 ELECTRIC MOTOR ASSY EMA 8A150D-1

REMARKS: F9 - SAVE REMARKS  
 FROM EOD ROBOT LORA REPORT, PAGE B-2

F8 -Exit NO SAVE F7 - ADD/EDIT - PARTS F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-4 ASSEMBLY IDENTIFICATION SCREEN

05/22/91 REPAIR LEVEL ANALYSIS EOD ROBOT 11:15:33  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

IDENTIFY LEVEL OF REPAIR CANDIDATES		EQUIPMENT: EOD ROBOT	
Scheduled Date: 05/22/91		Completed Date: 05/30/91	
TOP LEVEL ASSEMBLY			
SubSystem:	Nomenclature:	Part No:	
ELECTRIC MOTOR ASSEY	EMA	85150D-1	
REMARKS: F9 - SAVE REMARKS			
FROM EOD ROBOT LORA REPORT, PAGE B-2			
Part	WBSN	Indent Level	Model?
SELECT THIS TO ADD A NEW ITEM			
BELTING V	3A115C-10	2	YES
ELECTRIC MOTOR	3A150D-1A-10	2	YES
VOLTMETER	75-200	2	YES

Esc - EXIT (PART - ADD/EDIT)  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-5 ADD/EDIT PARTS LIST

05/22/91 REPAIR LEVEL ANALYSIS EOD ROBOT 11:16:54  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

IDENTIFY LEVEL OF REPAIR CANDIDATES		EQUIPMENT: EOD ROBOT	
Scheduled Date: 05/22/91		Completed Date: 05/30/91	
TOP LEVEL ASSEMBLY			
SubSystem:	Nomenclature:	Part No:	
ELECTRIC MOTOR ASSEY	EMA	85150D-1	
REMARKS: F9 - SAVE REMARKS			
FROM EOD ROBOT LORA REPORT, PAGE B-2			
SELECT THIS TO ADD A NEW ITEM	NAME	BUILDING	YES
BELTING V	3A115C-10	2	YES
ELECTRIC MOTOR	3A150D-1A-10	2	YES
VOLTMETER	75-200	2	YES
	INDENT LEVEL		YES
	MODEL		YES

Esc - EXIT (PART - ADD/EDIT)  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-6 ADD/EDIT PARTS ENTRY

03/01/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 15:05:00  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

```

SELECT MODEL AND ID MISSION REQMENTS      EQUIPMENT: BOD ROBOT
End Item Name      : BOD ROBOT
Nomenclature      :
Part Number       : BA108E-10
-----
LORA MODEL
Model Name        : PALMAN
Sponsoring Activity : APJ
Location of Model  : RIDGEFIELD
-----
OPERATIONAL AND ORGANIZATIONAL DATA
Item              Wartime      Peacetime
Operational Availability  0.300      0.300
Annual Number of Missions 200        40
Annual Operating Days     250        50
Operating Hours per Mission 12.00     10.00
Annual Operating Time     3000      500
Mean Mission Duration     12.00     10.00
Measurement Base
Operational Standby Time  0          0
    
```

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-7 SELECT MODEL & ID MISSION RQMTS

03/29/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 14:31:36  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

```

DEVELOP PLAN FOR SENSITIVITY ANALYSIS
-----
Scheduled Date: 11/22/90      Completed Date: 11/25/90
-----
DISCUSS SENSITIVITY ANALYSIS F9 - SAVE REMARKS
The sensitivity analysis will concentrate on the high drivers for this
assembly. It has been determined that these are Type of Terrain, Weather and
the number of units to be deployed.

Enter Variable and Range:
    
```

F8 -Exit NO SAVE F9 - ADD/EDIT - PARTS F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-8 DEVELOP PLAN FOR SENSITIVITY ANAL

03/29/91                      REPAIR LEVEL ANALYSIS: EOD ROBOT                      14:42:36  
 OPERATIONS REPORTS      PALMAN                      ASSISTANCE UTILITIES                      QUIT

DEVELOP PLAN FOR SENSITIVITY ANALYSIS

Scheduled Date: 11/22/90                      Completed Date: 11/25/90

DISCUSS SENSITIVITY ANALYSIS      P9 - SAVE REMARKS

The sensitivity analysis will concentrate on the high drivers for this assembly. It has been determined that these are Type of Terrain, Weather and the number of units to be deployed.

Variable

SELCT T        EDIT VAR/RANG	VARIABLE: # of units
Slopes	RANGE : 50 - 125
Temperature	
# of units	

Esc - EXIT (Variable & Range - ADD/EDIT)  
 Use Arrow Keys to Position      Press Enter Key to Accept

FIGURE 4-9 ADD/EDIT VARIABLES

03/01/91                      REPAIR LEVEL ANALYSIS: EOD ROBOT                      15:11:51  
 OPERATIONS REPORTS      PALMAN                      ASSISTANCE UTILITIES                      QUIT

MAINTENANCE POLICY AND SUPPORT CONSIDERATION WORKSHEET

ITEM MAINTENANCE POLICY

Organizational: N                      Direct Support : N                      Depot: N  
 General Support: N

CHECKLIST OF SUPPORT CONSIDERATIONS

RAM DATA	N
Training	N
Technical Publications	N
Provisioning	N
Loose Parts	N
Safety	N
Tools	N
Support Equipment	N
Transportation	N

Esc - Exit      F10 - Save & Exit  
 Use Arrow Keys to Position      Press Enter Key to Accept

FIGURE 4-10 SYSTEM SUPPORT CONSIDERATIONS

03/01/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 15:15:47  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

REPAIR ANALYSIS LEVEL REPORT DATA

Scheduled Date: 03/01/91 Completed Date: 03/01/91

Document Information

Document Title: RLA Users Manual  
 Document Number: 001  
 Document Date: 04/01/91  
 Revision: .0  
 Location: Ridgefield

Prepared By: Jack Tauber  
 Office Symbol: RDG  
 Phone: 201-945-8203 Autovon:

Additional Data: F9 to SAVE Data  
 This reference material was developed as part of the RLA User's Manual development effort.

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-11 REPAIR ANALYSIS LEVEL REPORT DATA

02/21/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 10:52:54  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
 PALMAN  
 OSAMM

PALMAN MODEL CONSIDERATIONS  
 AVAILABLE PROCESSES

REPAIR vs DISCARD DECISION CRITERIA  
 ASSIGN PALMAN INPUT VARIABLE VALUES  
 ENTER PALMAN SENSITIVITY VALUES  
 REPAIR DISCARD RESULTS

ASSIGN PALMAN INPUT VARIABLE VALUES  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-12 AVAILABLE PROCESSES

02/07/91 REPAIR LEVEL ANALYSIS: NEW 14:43:59  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

REPAIR vs. DISCARD DECISION CRITERIA

---

Scheduled Date: 02/05/91 Completed Date: 02/05/91

Equipment Name: NEW  
 Nomenclature:  
 Part Number:

Specify Decision Criteria: F9 to SAVE Remarks  
 The repair decision discard criteria is straight forward. If the item cost more to repair then to purchase new the decision is to discard. If the item repair cost is less the then the purchase cost then the decision is to repair.

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-13 REPAIR VS DISCARD DECISION CRITERIA

02/21/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 14:49:51  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM PALMAN OSANN		
	SELECT EOD ROBOT	ASSEMBLY
	COMMONNAME	MILITARY NOMENCLATURE WFE PART No.
	ELECTRIC MOTOR ASSY EMA	8A150D-1
	CAMERA ASSEMBLY CA	8A107A
	TV ELECTRONICS TVB	8A12345D-1

ASSIGN PALMAN INPUT VARIABLE VALUES  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-14 SELECT ASSEMBLY

05/22/91 REPAIR LEVEL ANALYSIS EOD ROBOT 13:42:30  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM PALMAN OSAMH	SELECT EOD ROBOT / ELECTRIC MOTOR ASSEY ITEM FOR MODELING ITEM NAME WBSN INDENT LEVEL		
	BELTING V	8A115C-10	2
	ELECTRIC MOTOR	8A150D-1A-10	2
	VOLTMETER	75-200	2

ASSIGN PALMAN INPUT VARIABLE VALUES  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-15 SELECT PART

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 11:16:40  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM PALMAN OSAMH	SELECT ITEM FOR ADJUSTMEN TO REPAIR / DISCARD DECISION CRITERIA EQUIPMENT: EOD ROBOT ASSEMBLY: ELECTRIC MOTOR ASSY		
	PART NAME	PART COST	BREAKEVEN DECISION
	BELTING V	3000.00	2000.00 REPAIR
	ELECTRIC MOTOR	300.00	500.00 DISCARD
	MOTOR STAND	0.00	0.00 DISCARD
	VOLTMETER	310.00	310.00 DISCARD

F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-16 REPAIR/DISCARD RESULTS

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 11:16:12  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

EQUIPMENT: EOD ROBOT		SUB-SYSTEM: ELECTRIC MOTOR ASSY	
ITEM	COST	BREAKEVEN	DECISION
BELTING V	3000.00	2000.00	R
SELECT ITEM FOR ADJUSTMEN TO REPAIR / DISCARD DECISION CRITERIA			
EQUIPMENT: EOD ROBOT		ASSEMBLY: ELECTRIC MOTOR ASSY	
PART NAME	PART COST	BREAKEVEN	DECISION
BELTING V	3000.00	2000.00	REPAIR
ELECTRIC MOTOR	300.00	500.00	DISCARD
MOTOR STAND	0.00	0.00	DISCARD
VOLTMETER	210.00	210.00	DISCARD

F10 -SAVE & EXIT

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-17 REPAIR/DISCARD EDIT

02/07/91 REPAIR LEVEL ANALYSIS: NEW 14:50:42  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
 PALMAN  
 OSAMM

ASSIGN PALMAN INPUT VARIABLE VALUES  
 AVAILABLE PROCESSES

---

VALUES FOR STANDARD INPUTS  
 VALUES FOR INITIAL PROVISIONING  
 VALUES FOR OTHER INPUTS  
 ALL PALMAN INPUT VARIABLE VALUES ASSIGNED

ASSIGN PALMAN INPUT VARIABLE VALUES

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-18 INPUT VARIABLES VALUES SUBMENU

02/21/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 11:22:06  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

VALUES FOR STANDARD INPUTS

Equipment : BOD ROBOT ASSEMBLY : ELECTRIC MOTOR ASSY  
 Nomenclature : SUBPART : BELTING V  
 Part Number : BA108E-10

Variable	Symbol	Value
INVENTORY HOLDING COST (% OF PURCHASE COST)	COSTH	0.17
LABOR COST PER HOUR INCL O/H	COSTLB	14.50
MAINT FACIL COST PER HOUR	COSTMF	36.00
REPAIR PARTS REQUISITION COST	COSTR	18.64
TRANSPORTATION AND HANDLING COST PER ASSY	COSTTH	18.64
COST TO ENTER LINE ITEM NUMBER	FSNI	648.00
YEARLY COST TO MANAGE NSN	FSNR	648.00
ADMIN AND ENGINEERING COST PER NSN	PROCUR	3196.00
TECH MANUAL PER PAGE COST	PAGESC	550.00
ASSY ATTEMPTED UNSUCCESSFUL REPAIR PERCENT	REPNOT	0.10
ASSY RETURNED AND RECEIVED PERCENT	RETURN	0.90
PREPARING SQUAP COST PER NSN	SQUAP	559.00
TE AND FACIL MAINT COST - % OF PROCUR	TFMAIN	0.10
YEARS OF LIFE/ANALYSIS	YEARS	10.00

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-19 VALUES FOR STANDARD INPUTS

02/21/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 11:30:07  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

VALUES FOR INITIAL PROVISIONING

Equipment : BOD ROBOT ASSEMBLY : ELECTRIC MOTOR ASSY  
 Nomenclature : SUBPART : BELTING V  
 Part Number : BA108E-10

Variable	Symbol	Value
ORDER AND SHIP (OST) DAYS DX TO EQUIP	OST(1)	0.00
OST DX TO MAINT LEVEL SUPPLY (MLS) -DAYS	OST(2)	0.00
OST MLS TO DEPOT SUPPLY -DAYS	OST(3)	60.00
OST DEPOT TO FACTORY -DAYS	OST(4)	300.00
OST PARTS FOR MAINT -DAYS	OST(5)	300.00
TURN AROUND TIME FOR MAINT -DAYS	TAT	20.00
SAFETY STOCK COEF DECIMAL %	SKZ	1.35
NON-STANDARD PART REPAIR DECIMAL %	RNSTD	1.35
ASSY INITIAL PROV MIN -DAYS	INIPA	300.00
PARTS INITIAL PROV MIN -DAYS	INIPP	300.00
NUMBER OF DX SUPPLY LOCATIONS	DXN	53.00
NUMBER OF MAINT LEVEL SUPPLY LOCAT	MXN	0.00

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-20 VALUES FOR INITIAL PROVISIONING

03/29/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 11:06:01  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

VALUES FOR OTHER INPUTS	
Equipment : BOD ROBOT	ASSEMBLY : ELECTRIC MOTOR ASSY
Nomenclature :	SUBPART : BELTING V
Part Number : BA108E-10	
Variable	Symoc. Value
REPAIR TIME HOURS	REPHRS 1.00
AVERAGE REPAIR PARTS COST	COSTRF 55.00
NUMBER OF UNIQUE PARTS	UNIQUE 0.00
TTL TEST EQUIP & FACILITIES DEV COST	COSTFD 6.00
TTL TEST " & " PROCUR COST	COSTFP 100.00
FAILURES PER MILLON HOURS	FAILUR 50.00
PERCENT OF NON-OPERATIONAL FAILURES	PNFAIL 0.250
ADDITIONAL PUBLICATION PAGES	PAGES 3.00
ADDITIONAL TRAINING TIME IN HOURS	HT 24.00
ASSEMBLIES PER END ITEMS IN USE	Q 2.00
DECIMAL % OF TIME OPERATED	FRACOP 0.02
PERSONNEL TRAINED PER YEAR	PT 72.00 1
MIN/MAX NUMBER OF END ITEMS IN USE	EN1/EN11 1

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-21 VALUES FOR OTHER INPUTS

03/29/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 15:35:48  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
 PALMAN  
 OSAMM

1) SUPPLY  
 2) TRST EQUIPMENT AND FACILITIES  
 3) PERSONNEL  
 4) MAINTENANCE  
 5) END ITEM  
 6) INITIAL PROVISIONING  
 7) ALL ENTRIES COMPLETED - RETURN

ASSIGN PALMAN INPUT VARIABLE VALUES  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-22 ENTER SENSIT'Y ANAL VALS SUBMENU

05/22/91

REPAIR LEVEL ANALYSIS EOD ROBOT

11:49:40

SUPPLY VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSEY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
COSTH	- HOLDING COST ,DECIMAL % OF INVENTORY COST	N	0.170	0.200
COSTR	- REQUISITION (REPAIR PARTS) COST	N	18.640	20.000
COSTTH	- TRANSPORTATION AND HANDLING COST	N	18.640	20.000
FSNI	- INITIALIZATION OF PART NUMBER (UNIQUE) COST	N	648.000	700.000
PSNR	- YEARLY MAINT OF PART NUMBER COST	N	648.000	700.000
PROCUR	- ADMIN AND ENGINEERING SUPPORT COST	N	3196.000	3400.000
SQUAP	- SUPPLEMENTAL QUALITY ASSURANCE PLAN COST	N	553.000	600.000

F10 -SAVE & EXIT

FIGURE 4-23 SUPPLY VARIABLES

05/22/91

REPAIR LEVEL ANALYSIS EOD ROBOT

11:51:48

TEST EQUIP AND FACILITIES VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSEY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
TESTME	- MAINT FACIL COST PER HOUR	N	36.000	40.000
TESTM	- FACILITIES COST DECIMAL % OF PROCUREMENT COST	N	25.000	28.000
TESTFD	- D.E. AND FACIL DEVELOPMENT COST	N	1.000	50000.000
TESTFF	- D.E. AND FACIL PROCUREMENT COST	N	1.000	50000.000

FIGURE 4-24 TEST & EQUIP FACILITIES VARIABLES

05/22/31

REPAIR LEVEL ANALYSIS EOD ROBOT

11:53:10

PERSONNEL VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSEY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
COSTLH	- MAINT LABOR COST PER HOUR	N	14.500	16.000
HT	- TRAINING HOURS	N	30.000	40.000
PT	- PERSONNEL TRAINED PER YEAR	N	24.000	30.900

F10 -SAVE & EXIT

FIGURE 4-25 PERSONNEL VARIABLES

05/22/31

REPAIR LEVEL ANALYSIS EOD ROBOT

11:54:09

MAINTENANCE VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSEY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
REPNOT	- DECIMAL % OF ASSY UNSUCCESSFULLY REPAIRED	N	0.000	0.200
RETURN	- DECIMAL % OF ASSY FAILED RETURNED FOR REPAIR	N	0.000	0.300
PAGES	- TECH PYS PAGES ABOVE DISCARD	N	98.000	115.000
PAGESC	- TECH PYS PAGE COST	N	500.000	7.000
REPHRS	- MAINT REPAIR TIME IN HRS	N	0.00	5.000

FIGURE 4-26 MAINTENANCE VARIABLES

03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 18:39:01  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

END ITEM VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
YEARS	- YEARS OF LIFE OF SYSTEM	N	10.000	15.000
COSTRP	- AVG REPAIR PARTS COST	N	25.000	350.000
EN	- DENSITY RANGE FOR SYSTEM	N	10.000	20.000
FAILUR	- EXPECTED FAILURES PER MILLION OPERATING HRS	N	25.000	350.000
PNFAIL	- % OF NON-OPERATIONAL FAILURES	N	0.100	0.200
FRACOP	- DECIMAL % OF CALENDAR TIME SYSTEM OPERATIONAL	N	0.000	99.000
Q	- ASSEMBLIES PER END ITEM	N	1.000	5.000
UNIQUE	- NEW UNIQUE PART NUMBERS NECESSARY FOR REPAIR	N	0.000	0.000

F10 -SAVE & EXIT

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-27 END ITEM VARIABLES

03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 15:40:41  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

INITIAL PROVISIONING VARIABLES		PART: BELTING V		
EQUIPMENT : EOD ROBOT		ASSEMBLY : ELECTRIC MOTOR ASSY		
VARIABLE		RUN	RANGE	
NAME	DESCRIPTION	SENSITIVITY	FROM	TO
OST(1)	-DAYS TO RETRIVE AND REPLACE FAULTY ASSY	N	5.000	8.000
OST(2)	-OST FROM MAINT LEVEL SUPPLY TO DX SUPPLY-DAYS	N	10.000	14.000
OST(3)	-OST FROM DEPOT SUPPLY TO MAINT LEVEL SUPPLY-DAYS	N	30.000	40.000
OST(4)	-OST FROM FACTORY TO DEPOT-DAYS	N	180.000	220.000
OST(5)	-OST FOR NON-STANDARD REPAIR PARTS FOR MAINT-DAYS	N	45.000	60.000
TAT	-TURNAROUND TIME(DAYS) FOR ATTEMPTD REP ASSY	N	30.000	45.000
CKK	-SAFETY STOCK LEVEL (DECIMAL PERCENT)	N	0.850	0.900
RPNSTD	-NON-STANDARD REPAIR PART DECIMAL %	N	0.800	0.900
INIPA	-MINIMUM DAYS OF INITIAL PROV FOR ASSY	N	60.000	75.000
INIPP	-MINIMUM DAYS OF INITIAL PROV FOR PARTS	N	60.000	75.000
DXN	-NUMBER OF DX SUPPLY LOCATIONS	N	24.000	30.000
MXN	-NUMBER OF MAINT LEVEL SUPPLY LOCATIONS	N	8.000	15.000

F10 -SAVE & EXIT

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-28 INITIAL PROVISIONING VARIABLES

02/07/91 REPAIR LEVEL ANALYSIS: NEW 16:00:44  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM PALMAN OSAMM	OSAMM REFERENCE INFORMATION AVAILABLE PROCESSES <hr/> CONTRACT DATA DATA SOURCE FOR INPUT VARIABLES INPUT FILE REFERENCE PREPROCESSOR OUTPUT FILE REFERENCE VALIDATION OF PREPROCESSOR ERRORS APPLICATION TO OSAMM MODEL
---------------------------	---

OSAMM REFERENCE INFORMATION

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-29 OSAMM REFERENCE INFO SUBMENU

02/07/91 REPAIR LEVEL ANALYSIS: NEW 16:04:12  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

CONTRACT DATA	
Scheduled Date: 02/05/91	Completed Date: 02/05/91
CRCOM P.O.C. :	PHONE : 201-532-9090
Mr. John Smith	AUTOVON: 992-9090
HOST COMPUTER P.O.C. :	
Ms. Adrian White	PHONE : 213-449-9023
PALMAN DATA OBTAINED : Y	AUTOVON: n/a
PALMAN REFERENCE DOCUMENT TITLE :	
Preliminary RAM predications	
MEMO: F9 to SAVE MEMO	
The contract was established with Concurrent Computer Corp. through their local Woodbridge, NJ office. The contract is for a six month period. The cost is \$3000. We have approximately 20 computer hours. Each run is expected to take about 1 minute. The preprocessor time is free.	
There are two 6 month options to extend the period of performance. Each	

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-30 CONTRACT DATA

4/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 08:45:57  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM	
PALMAN	
OSAMM	

SELECT EXISTING SOURCE  
 ADD A NEW DATA SOURCE  
 EDIT GENERAL NOTES ON SOURCES

OSAMM REFERENCE INFORMATION

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-31 OSAMM REFERENCE INFOR SUBMENU

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 08:45:54  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM	
PALMAN	
OSAMM	

SOURCE	DOCUMENT TITLE
Mr. John Smith	Preliminary RAM Prediction Rpt

OSAMM REFERENCE INFORMATION

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-32 SELECT EXISTING SOURCE

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 08:12:06  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

DATA SOURCE FOR INPUT VARIABLES

---

Scheduled Date: 02/05/91 Completed Date: 02/05/91

Reference Information

Source of OSAMM Information: Mr. John Smith  
 Office Symbol: AMSMC-ME-LS  
 Phone: 309-782-5448  
 Autovon: 12345678

Reference Document Title: Preliminary RAM Prediction Rpt  
 Document Number: CDRL #A016  
 Document Date: 06/15/90  
 - Responsible Activity: SMCAR-CCS-CS

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-33 DATA SOURCE FOR INPUT VARIABLES

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT 08:42:12  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM  
 PALMAN  
 OSAMM

Additional Data: F9 to SAVE Data

This report contains the preliminary data from phase II of 6.2 development. The results of the test are not included. The method for predicting the reliability seems to be incorrect.

OSAMM REFERENCE INFORMATION  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-34 EDIT GENERAL NOTES ON SOURCES

03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 16:46:22  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

INPUT FILE REFERENCE	
Scheduled Date: / /	Completed Date: / /
File Name:	
Location:	
Date: / /	
OSAMM Data Format Repository P.O.C. :	
Office Symbol:	
Phone:	
Autovon:	
Enter, in the following area, information on input sources. (F9 to SAVE)	

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-35 INPUT FILE REFERENCE

03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 16:05:22  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

PREPROCESSOR OUTPUT FILE REFERENCE	
Scheduled Date: / /	Completed Date: / /
Output File Information	
File Name:	
Location:	
File Date: / /	
Point of Contact:	
Office Symbol:	
Phone:	
Autovon:	
Additional Information: P9 to SAVE Information	

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-36 PREPROCESSOR OUTPUT FILE REF

02/05/91 REPAIR LEVEL ANALYSIS: NEW 16:11:09  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

VALIDATION OF PREPROCESSOR ERRORS	
Scheduled Date: 02/05/91	Completed Date: 02/05/91
<p>Notes on preprocessor errors, corrections made and lessons learned. SAVE-FF                  There are a total of 19 errors in the file. Most of the errors have to do                  with the placement of data in the record. However several logic errors                  were found where the input in one record did not agree with the input in                  another.</p>	

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-37 VALIDATION OF PREPROCESSOR ERRORS

03/29/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 16:11:14  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

APPLICATION TO OSAMM MODEL	
Scheduled Date: / /	Completed Date: / /
OSAMM Result Information	
<p>Main Output File Name:                  Other Cost Breakout File Name:                  Stockage List File Name:                  Location of Files:</p> <p>Point of Contact:                  Office Symbol:                  Phone:                  Autovon:</p>	
Notes on Results:	F9 to SAVE Notes

F8 -Exit NO SAVE F10 -SAVE & EXIT  
 Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 4-38 APPLICATION TO OSAMM MODEL

## CHAPTER 5 PALMAN MODELING

### 5.1 GENERAL

5.1.1 This chapter contains instructions on creating the Palman input file, determining the type of sensitivity analysis to run, running the model, and viewing and/or printing the output. This chapter deals solely with the interface between RLA and Palman. For instructions on Palman Data Input see Chapter 4.

### 5.2 THE PALMAN MODEL SUBMENU

5.2.1 Use the left and right arrow keys to place the highlight bar on the PALMAN option on the Main Menu and press **<Enter>**. Figure 5-1 shows the screen that will be displayed. The pull-down menu shown is sequenced in the order that should be selected to run the Palman Model using the RLA software. The highlight bar will default to SELECT OPTIONS.

PALMAN  
SUBMENU

### 5.3 SELECTION OPTIONS MENU CHOICE

5.3.1 The SELECT OPTIONS submenu choice is used to select a specific assembly and its associated parts for PALMAN Modeling. Figure 5-2 displays the ASSEMBLY SELECTION screen. Use the up and down arrow keys to place the highlight bar on the assembly desired and press **<Enter>**. This displays Figure 5-3.

SELECT  
ASSEMBLY

5.3.2 Figure 5-3 displays the PARTS SELECTION screen. Use the up and down arrow keys to place the highlight bar on the part to be modeled and press **<Enter>**. If a part does not appear on this screen and modeling is required, additional parts can be added by exiting this screen, selecting OPERATIONS from the Main Menu, then choosing IDENTIFY LEVEL OF REPAIR CANDIDATES. Follow the instructions in section 4.4 to add additional parts.

SELECT  
PART

5.3.3 After the selection of the part for modeling, the screen shown in Figure 5-4 is displayed. This window contains the two choices shown. The Palman Model allows two types of sensitivity analyses to be run. Use the highlight bar to select STANDARD, UNIQUE, or both sets of sensitivity variables for processing by the Palman Model. Both types are optional. The choices displayed in the window can both be set to "No" and the Palman Model still runs.

---

#### NOTE

##### Sensitivity Analysis

PALMAN provides the option of running sensitivity analyses on several parameters which could be identified as cost drivers in the maintenance policy. PALMAN has the capability to run sensitivity on the following parameters automatically: (1) Average repair parts cost; (2) Failure rate; (3) Replacement assembly cost; (4) Number of unique parts; (5) Test equipment and facilities development cost and (6) Test equipment and facilities procurement cost.

Further sensitivity analyses can be performed on any of the input variables at the User's request. This is done by selecting UNIQUE sensitivity.

---

SELECT  
SENSITIVITY  
TYPES

5.3.4 Set one or both selections to YES/NO by placing the highlight bar on the relevant option(s) and pressing <Enter>. After establishing the options required, place the highlight bar on the third choice, BUILD PALMAN FILE WITH ABOVE OPTIONS and press <Enter>. This will display the screen shown in Figure 5-5.

---

**NOTE**

The variables that are to be used in the UNIQUE sensitivity analysis must be selected from the OPERATIONS submenu PALMAN option. If the USE UNIQUE SENSITIVITY ROUTINE is set to YES and the variables to use in the UNIQUE SENSITIVITY ANALYSIS have not been selected, the software will report an error.

---

NAME  
PALMAN  
OUTPUT  
FILE

5.3.5 The Palman Output file name is entered through the screen shown in Figure 5-5. Only the name must be entered, the path (disk and directory designations) was previously established under the UTILITIES submenu options on the Main Menu. (Figure 7-4). The results of the basic PALMAN RUN and the SENSITIVITY ANALYSES (either type) are contained in this file. To enter a name different from the default shown, type over the default name.

---

**NOTE**

Make sure to specify different names for output files to avoid overwriting a previously created file.

---

5.3.6 Any errors in the Palman Input Data are detected by the RLA Software. An error message is displayed via an exploding box on the bottom of the screen. Correct the errors by returning to the PALMAN option under OPERATIONS on the Main Menu. If no errors exist, this file can be used by the Palman Model for execution. Upon completion of the name entry, the screen continues to display the PALMAN submenu for the next option.

PALMAN  
PROGRAM

## 5.4 RUN PALMAN PROGRAM

5.4.1 This option processes the input file for the Assembly/Part chosen through the Palman Program. It will use the data previously entered via the OPERATIONS submenu. The output file previously named will be created for printing or viewing. Figure 5-6 shows the message displayed by the RLA software while the Palman Model is running.

5.4.2 After the data has been processed through the model, the message disappears and the PALMAN submenu becomes active and available for further use. To continue, use either the SELECT OPTION, to process another part through Palman, or the VIEW/PRINT OUTPUT FILE option, discussed in Section 5.5.

## 5.5 VIEW/PRINT OUTPUT FILE

5.5.1 If either the VIEW or PRINT option is selected, the following sequence of events occurs. A list of Palman Output files that were previously created are displayed. If the list exceeds the size of the window use the down arrow key to scroll through the rest of the files. If no files exist a message is displayed stating that no files have been found.

5.5.2 Use the up and down arrow keys to place the highlight bar on the VIEW OUTPUT FILE submenu option and press <Enter>. Select the desired file by moving the highlight bar to it and pressing <Enter>. Figure 5-7 shows how the report name is displayed on the monitor. Use the up and down arrow keys or the <Pg Up> and <Pg Dn> keys to scroll through the report. An example of the Palman output file is included in Appendix C. Press <ESC> to return to the PALMAN submenu.

5.5.3 To select the PRINT OUTPUT FILE, move the highlight bar to it and press <Enter>. Select the desired file to print and press <Enter>. The file prints out on the local printer. When the report has finished printing, control is returned to the PALMAN submenu. An example of the Palman output is presented in Appendix C.

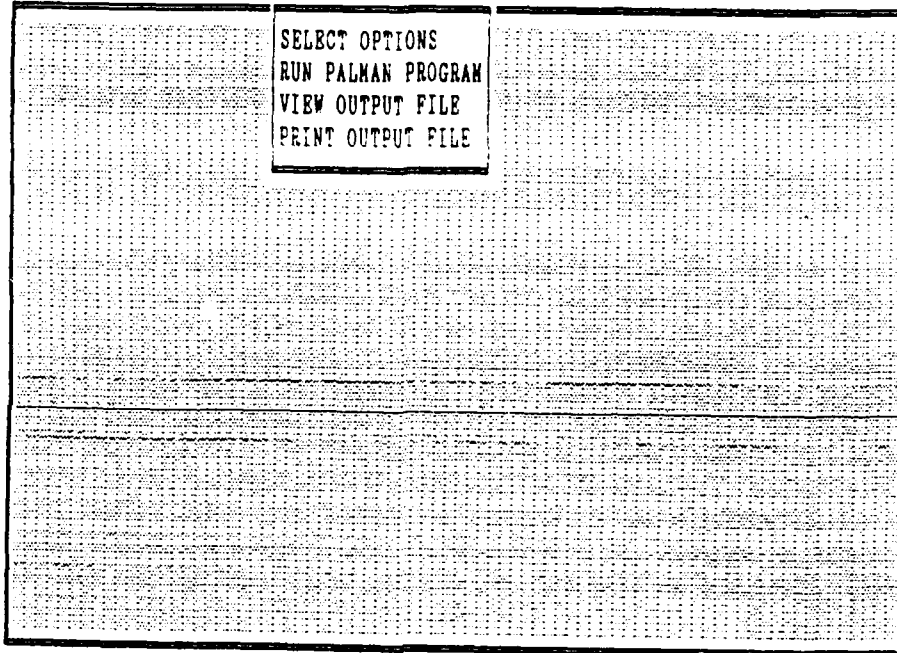
---

**NOTE**

Your printer must be Turned-on and On-line or an error message will be displayed by a window with two options; RETRY or ABORT. Power up your printer to On-line and select RETRY to start printing. Otherwise select ABORT.

---

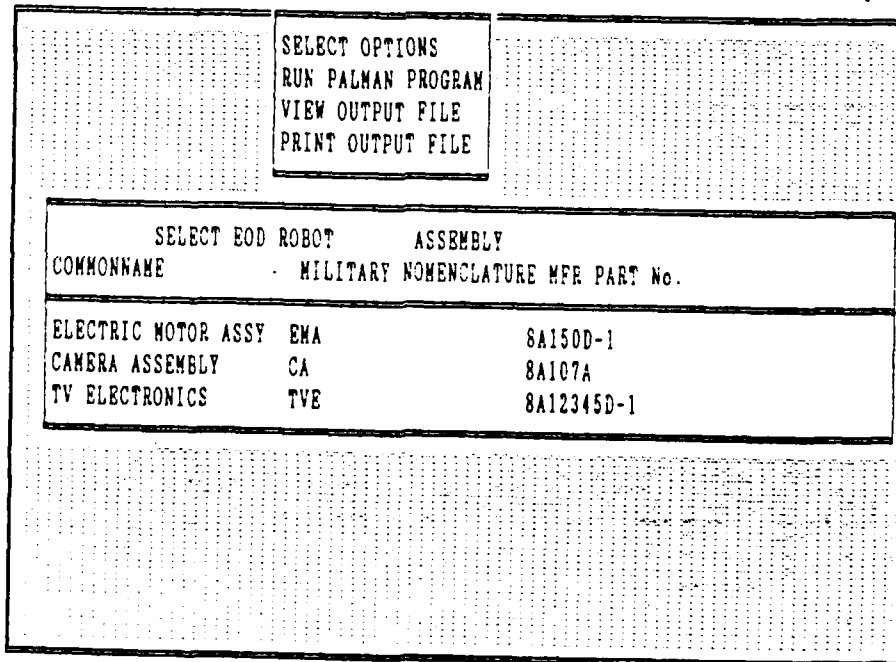
03/29/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 16:13:50  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT



SELECT PALMAN PROGRAM OPTIONS. INCLUDING STANDARD AND UNIQUE SENSITIVITY  
 Use Arrow Keys to Position Press Enter Key to Accept

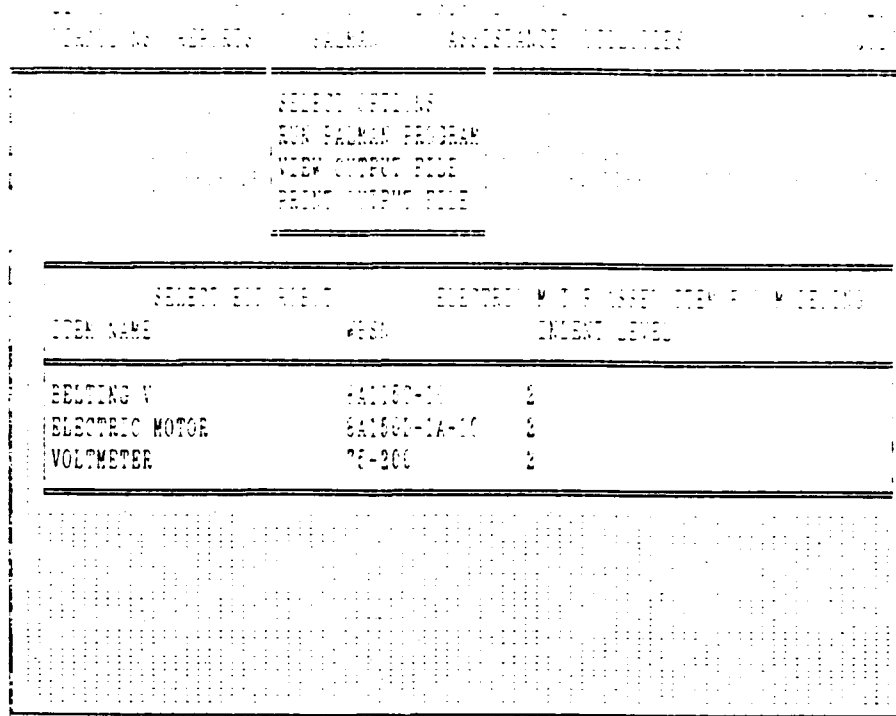
FIGURE 5-1 PALMAN SUBMENU

02/21/91 REPAIR LEVEL ANALYSIS: EOD ROBOT 15:43:32  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT



SELECT PALMAN PROGRAM OPTIONS. INCLUDING STANDARD AND UNIQUE SENSITIVITY  
 Use Arrow Keys to Position Press Enter Key to Accept

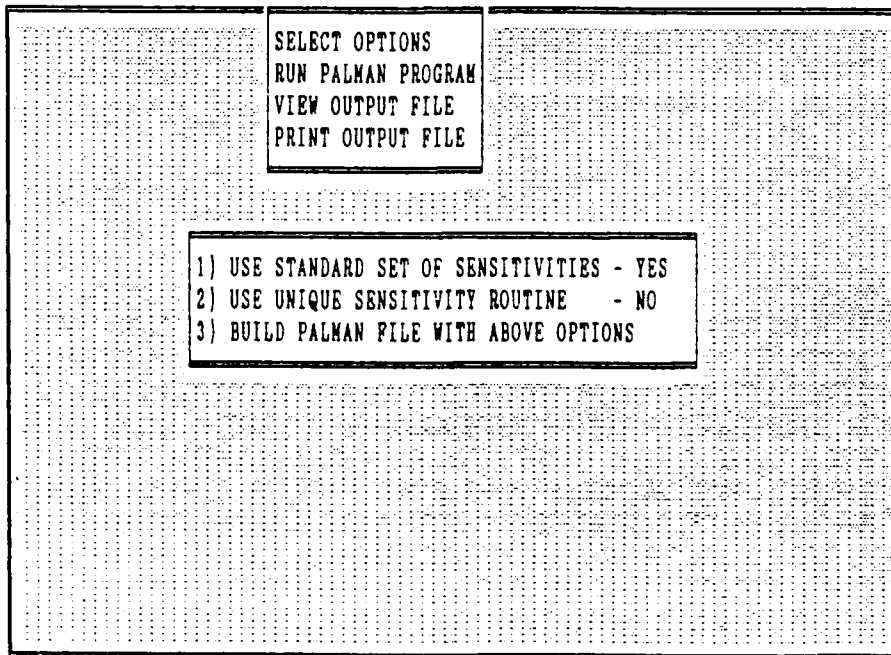
FIGURE 5-2 SELECT ASSEMBLY



SELECT PALMAN PROGRAM OPTIONS, INCLUDING STANDARD AND UNIQUE SENSITIVITY  
 Use Arrow Keys to Position      Press Enter Key to Accept

**FIGURE 5-3 PART SELECTION SCREEN**

02/21/91      REPAIR LEVEL ANALYSIS: EOD ROBOT      15:49:12  
 OPERATIONS REPORTS      PALMAN      ASSISTANCE UTILITIES      QUIT



SELECT PALMAN PROGRAM OPTIONS, INCLUDING STANDARD AND UNIQUE SENSITIVITY  
 Use Arrow Keys to Position      Press Enter Key to Accept

**FIGURE 5-4 SELECT STANDARD/UNIQUE SENSITIVITIES**

02/27/91                      REPAIR LEVEL ANALYSIS: EOD ROBOT                      14:41:04  
 OPERATIONS   REPORTS           PALMAN           ASSISTANCE   UTILITIES                      QUIT

	SELECT OPTIONS RUN PALMAN PROGRAM VIEW OUTPUT FILE PRINT OUTPUT FILE	
ENTER NAME FOR PALMAN OUTPUT PAL_FILE=PAL		

SELECT PALMAN PROGRAM OPTIONS. INCLUDING STANDARD AND UNIQUE SENSITIVITY  
 Use Arrow Keys to Position      Press Enter Key to Accept

**FIGURE 5-5 ENTER OUTPUT FILE NAME**

02/27/91                      REPAIR LEVEL ANALYSIS: EOD ROBOT                      14:47:57  
 OPERATIONS   REPORTS           PALMAN           ASSISTANCE   UTILITIES                      QUIT

	SELECT OPTIONS RUN PALMAN PROGRAM VIEW OUTPUT FILE PRINT OUTPUT FILE	
PALMAN Program is running normally This will take several minutes Please be patient.		

RUN PALMAN PROGRAM WITH ITEMS PREVIOUSLY SELECTED  
 Use Arrow Keys to Position      Press Enter Key to Accept

**FIGURE 5-6 RUN PALMAN PROGRAM**

```

      TITLE PAGE          PALMAN          ASSISTANCE STRUCTURE          DATE
-----
SELECT OPTION
RUN PALMAN PROGRAM
VIEW OUTPUT FILE
PRINT OUTPUT FILE
-----
PAL_FILE.PAL 11 11 80 100 100
ASSIST.PAL 11 11 80 100 100
TEST.PAL 11 11 80 100 100
-----

```

VIEW THE OUTPUT FILE PRODUCED FROM THE LAST PALMAN SESSION  
Use Arrow Keys to Position      Press Enter Key to Accept

**FIGURE 5-7 OUTPUT SELECTION**

## CHAPTER 6 RLA REPORTS

### 6.1 GENERAL

6.1.1 This chapter provides instructions for the creation and presentation of reports. The destination for these reports can be selected as screen, printer or file. Use the left and right arrow keys to move the highlight bar on the Main Menu to the REPORT option and press **<ENTER>**. The monitor will display the information shown in Figure 6-1.

6.1.2 The pull-down menu shown, contains several report options. Before these reports can be run, data must have been previously entered for use in the report.

### 6.2 RLA SOFTWARE REPORTS

6.2.1 Selection of any option requires the analyst to choose from three options as shown in Figure 6-2, VIEW A PREVIOUS REPORT FILE, PRINT PREVIOUS REPORT FILE or CREATE A NEW REPORT. If VIEW or PRINT is chosen, then Figure 6-3 is displayed.

6.2.2 The selection of VIEW A PREVIOUS REPORT FILE or PRINT PREVIOUS REPORT FILE within the option of a selected report type will display a list of files previously created and stored to disk (see Figure 6-3). The files displayed depend upon the option chosen and the number of reports that have been created and filed for that option. Move the highlight bar to the file name to be chosen and press **<Enter>**. The stored report will be displayed on the monitor with a highlight bar at the top, or output to the printer according to the choice made. To view the rest, or a particular part of the report not displayed on the screen, use the down arrow key to move the highlight bar downwards until that section of the report is displayed on the screen. Press **<ESC>** after reviewing the report to return to the VIEW/PRINT/CREATE window to view or create another report of this type, or press **<ESC>** again to return to the REPORT submenu to select another type of report or another option from the Main Menu.

**SELECT  
VIEW A  
PREVIOUS  
REPORT  
FILE**

SELECT  
CREATE A  
NEW REPORT

6.2.3 The selection of CREATE A NEW REPORT within the option of a report type, will display a window of where to send the file once it is created.

### 6.3 SELECTION OF OUTPUT DESTINATION

6.3.1 The report can be sent to the monitor for display and/or the printer for hardcopy output. To select one or more destinations for the newly created report, place the highlight bar on the destination(s) desired and press **<Enter>**. The **<Enter>** key acts as a toggle switch changing the NO to YES and vice versa. The designations that can be chosen are:

- (1) VIEW A PREVIOUS REPORT FILE and/or
- (2) CREATE A NEW REPORT and/or
- (3) SEND A REPORT TO A FILE

When all destinations required are tagged as YES, place the highlight bar on RUN REPORT WITH ABOVE OPTIONS and press **<Enter>**.

6.3.2 The location of the report that is filed to disk (hard or floppy), is designated when setting up the DIRECTORIES FOR RLA PROGRAM FILES ACCESS that appears when selecting the SET DATA DIRECTORY under the UTILITIES option on the Main Menu. Do not enter the disk designation or the directory/subdirectory here.

ENTER  
NEW REPORT  
FILE NAME

6.3.3 After selecting RUN REPORT WITH THE ABOVE OPTIONS, Figure 6-5 is displayed. This window is required to enter the name of the file that is being created. The file name is necessary when viewing reports at a later date.

6.3.4 If both the VIEW and PRINT options are chosen, the report will first be displayed. After reviewing the display, press **<ESC>**. The report will start printing. Make sure that the printer is ready to receive it. After the printing is complete, press **<ESC>** to bring up the VIEW/CREATE REPORT window to allow another report of the selected type to be viewed or created, otherwise press **<ESC>** again to return to the REPORT submenu to select another report type or another option from the Main Menu.

## 6.4 RLA OUTPUT REPORTS

6.4.1 After selecting the report to be processed, Figure 6-6 is displayed showing that the report is indeed being processed. The reports and their contents are identified in Sections 6.4.2 - 6.4.7.

### 6.4.2 SYSTEM/EQUIPMENT IDENTIFICATION REPORT

This report provides information on the Weapon System/End Item being analyzed (the equipment selected in the Equipment Log-On Screen). Information related to the life cycle phase, project manager, and individual doing the analysis is also included. It contains the following information:

- Equipment Identification
- Milestone
- Program Management P.O.C.
- Analyst P.O.C.
- Operational and Organizational

A copy of the printed report is included in Appendix C, Sample Report #1.

### 6.4.3 SENSITIVITY PLAN REPORT

This report provides a plan for conducting a repair level sensitivity analysis for the Weapon System/End Item being analyzed. It is used to identify the variables and drivers that are expected to have the most impact on Life Cycle Cost and Repair Level decisions. The notes sections should indicate the relationships to examine and the methods for conducting the analysis. It contains the following information:

- Equipment/Analyst Identification
- Sensitivity High Drivers and Ranges
- Sensitivity Notes regarding How/why Drivers were selected.

A copy of the printed report is included in Appendix C, Sample Report #2.

#### 6.4.4 MAINTENANCE POLICY REPORT

This report provides an indication of the allowable maintenance levels for the Weapon System/End Item. For some types of equipment or acquisition programs, a policy decision is made that delineates the maintenance level that can be used for repair (e.g., a two vs three level maintenance concept).

In addition, the report will also indicate the support considerations (e.g., test equipment, publications etc.) that must be taken into account during modeling and repair level designation. These considerations must be based on the maintenance policy and the availability of logistic resources for the acquisition program.

The report contains the following information:

- Equipment/Analyst Identification
- Allowable Maintenance Levels
- System Support Considerations Required for Repair/Discard Decisions

A copy of the printed report is included in Appendix C, Sample #3.

#### 6.4.5 OSAMM INFORMATION REPORT

This report provides the information documented for the OSAMM runs conducted for the Weapon System/End Item. It will contain as little as references to input/output files or as much as a complete description of all results including the repair level decisions.

The report layout corresponds to the steps required to run OSAMM from the initial gathering of data to the final discussion of the results. It contains the following information:

- Equipment/Analyst Identification
- OSAMM Input Data References
- Additional References
- OSAMM Input File References
- Notes on Input Data Formats
- OSAMM Preprocessor Output File Reference
- Notes on Preprocessor File

Notes on Preprocessor Errors, Corrections and  
Lessons Learned  
OSAMM Output File Reference  
Notes on OSAMM Results

A copy of the printed report is included in  
Appendix C, Sample Report #4.

#### 6.4.6 REPAIR/DISCARD REPORT

This report documents the results of the Palman  
runs for all parts that were modeled. For each  
part, its cost and breakeven repair cost (obtained  
from the Palman output) are shown along with the  
Repair/Discard decision. The report summarizes the  
Repair/Discard decisions for the Weapon System/End  
Item. It contains the following information:

Equipment/Analyst Identification  
Assembly Name  
WBS Number  
Item (Part) Name  
Cost (to Repair)  
Breakeven (Amount)  
(Repair/Discard) Decision

A copy of the printed report is included in  
Appendix C, Sample Report #5.

#### 6.4.7 RLA REPORT DATA

This report consists of three parts containing the  
following:

##### Part 1: Weapon System/End Item Information

Equipment Name/Analyst ID  
Part Number/National Stock Number

##### Part 2: Reference Information

Document Name or Information  
Document Reference or Number  
Document Data (Creation)  
Revision #  
Location of Document  
Document prepared by Name  
Office Symbol of preparer

Phone # of preparer  
Autovon # of preparer

Part 3: Repair Level Decisions

This section contains narrative text entered into a memo field documenting Analysis Results and Repair Level Decisions.

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID
SENSITIVITY PLN
MAINTENANCE POL
OSAMM INFO
REPAIR/DISCARD
RLA REPORT DATA

SYSTEM / EQUIPMENT IDENTIFICATION REPORT  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-1 REPORTS SUBMENU

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID
SENSITIVITY PLN
MAINTENANCE POL
OSAMM INFO
REPAIR/DISCARD
RLA REPORT DATA

1) VIEW PREVIOUS REPORT FILE
2) PRINT PREVIOUS REPORT FILE
3) CREATE A NEW REPORT

SENSITIVITY ANALYSIS PLAN  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-2 SELECT VIEW/CREATE REPORT

04/15/91 REPAIR LEVEL ANALYSIS EOD ROBOT  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID	
SENSITIVITY PLN	
MAINTENANCE POL	
OSAMM INFO	
REPAIR/DISCARD	
RLA REPORT DATA	SENSITIV.RPT 04/15/91 14:18:56 SENS-3.RPT 04/15/91 14:24:32

SENSITIVITY ANALYSIS PLAN

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-3 SELECT REPORT TO VIEW

04/16/91 REPAIR LEVEL ANALYSIS EOD ROBOT 11:21:18  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID	
SENSITIVITY PLN	
MAINTENANCE POL	
OSAMM INFO	
REPAIR/DISCARD	
RLA REPORT DATA	1) VIEW REPORT ON SCREEN - YES 2) SEND REPORT TO PRINTER - NO 3) SEND REPORT TO A FILE - YES 4) RUN REPORT WITH ABOVE OPTIONS

SYSTEM / EQUIPMENT IDENTIFICATION REPORT

Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-4 SET REPORT OUTPUT DESIGNATIONS

03/29/91 REPAIR LEVEL ANALYSIS: BOD ROBOT 16:34:22  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID	
SENSITIVITY PLN	
MAINTENANCE POL	
OSAMM INFO	
REPAI	
ENTER FILENAME FOR REPORT EQUIPNT.RPT	

SYSTEM / EQUIPMENT IDENTIFICATION REPORT  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-5 ENTER REPORT FILE NAME

04/16/91 REPAIR LEVEL ANALYSIS BOD ROBOT 09:52:35  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

SYSTEM/EQUIP ID	
SENSITIVITY PLN	
MAINTENANCE POL	
OSAMM INFO	
REPAI	
RLA R	ENTER FILENAME FOR REPORT DATA_REF.RPT

REPORT IS NOW BEING PROCESSED..... This may take several minutes Please be patient.
---

RLA REPORT REFERENCE DATA FOR BOD ROBOT  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 6-6 REPORT PROCESSING

## CHAPTER 7 ASSISTANCE/UTILITIES/QUIT

### 7.1 ASSISTANCE

7.1.1 Using the right and left arrow keys, place the highlight bar on the ASSISTANCE option of the Main Menu and press **<Enter>**. The Assistance submenu with two choices is displayed (see Figure 7-1).

7.1.2 Using the up and down arrow keys, place the highlight bar on the INSTRUCTION option and press **<Enter>**. A narrative screen is displayed that contains a general set of instructions for operating the RLA program. Scroll through the text using the up and down arrow keys or **<Pg Up>** and **<Pg Dn>** keys. After viewing the Instructions, press **<ESC>** to return to the Assistance submenu.

7.1.3 Using the up and down arrow keys, place the highlight bar on the INTRODUCTION option and press **<Enter>**. A text screen displays the RLA Introduction. Use the up and down arrow keys to view the text. The RLA introduction provides some background on why the application was developed, how it assists Logisticians, why time saving is achieved through automation and a description of the RLA Subtask. After viewing the INTRODUCTION, press **<ESC>** to return to the ASSISTANCE submenu.

### 7.2 UTILITIES

7.2.1 Using the right and left arrow keys, place the highlight bar on the UTILITIES option and press **<Enter>**. A UTILITIES submenu containing five choices (Figure 7-2) is displayed. The choices are reindexing, importing database files, exporting selected database files, re-setting the paths to the directories containing the necessary files to operate the RLA software, and re-logging on to an equipment.

### 7.3 REINDEX ALL DATA

7.3.1 Selection of the REINDEX ALL DATA option from the UTILITIES submenu runs routines that create new index files for the databases. Upon completion of the reindexing, the UTILITIES submenu is displayed.

---

#### NOTE

Remember, an index is used to present the information contained in a database file in a different order than the physical order of the data as it appears in the database. These index files may become corrupted and therefore need correction through reindexing.

---

### 7.4 IMPORT DATA

7.4.1 Import is used to append (or add) a set of records to the existing database files. This operation does not eliminate any existing records. Use the up and down arrow keys to place the highlight bar on IMPORT DATA and press <Enter>. This selection permits the RLA program to import a set of database files that were previously exported. The location of the import file must be set correctly in the SET DIRECTORY FILES (see Figure 7-4) option of the UTILITIES submenu. After importing the data, the UTILITIES submenu is displayed. Once the import is complete, reindex your databases.

### 7.5 EXPORT DATA

7.5.1 EXPORT creates a new set of database files for the purpose of copying a subset of records to use with RLA software hosted on another computer. The records are selected by designating specific assemblies with their related parts for inclusion in the exported database files.

TAG  
ASSEMBLIES  
FOR EXPORT

7.5.2 Place the highlight bar, using the up and down arrow keys, on EXPORT and press <Enter>. An ASSEMBLY SELECTION screen (see Figure 7-3) is displayed. Use the up and down arrow keys to highlight the assembly to be exported. Press <Enter> to tag it for export. Move the highlight bar to the next assembly to be tagged for export and press <Enter>. Continue until all desired assemblies to be exported have been tagged. Alternatively, if all assemblies are to be exported, press <F9> to tag them. To start the export, press <F10>. To abort, press <F8> to untag those assemblies chosen and exit. When all the database files have been exported, the UTILITIES submenu is displayed.

---

**NOTE**

Before starting the export, be sure that the directory has been properly set to where the files will be exported. The path for the exported files must be set correctly in the SET DIRECTORY FILES (see Figure 7-4) option of the UTILITIES submenu.

---

## 7.6 SETTING THE DATA DIRECTORIES

7.6.1 Use the up and down arrow keys to place the highlight bar on the SET DATA DIRECTORY and press <Enter>. This option displays the screen shown in Figure 7-4. The SET DATA DIRECTORY screen can be used to view and/or modify the paths for the various types of files used by the RLA program.

7.6.2 The cursor defaults to the first disk designation of the first path on the screen. To change that designation, type in the correct disk letter. (If the computer is in the INSERT mode, delete the old disk letter) and press <Enter>. The cursor will move to the directory path. Make any necessary changes, or if none are required, press <Enter>. The cursor moves to the next path below.

---

**NOTE**

There must be a colon (:) and backslash (\) after each disk designation. The disk letter must be a DOS verifiable disk on the computer being used, otherwise the cursor will remain in place until a correct designation is inserted. When inserting directory/subdirectory (existing on the specified drive) changes, they as well, must be valid DOS directories/subdirectories, otherwise the cursor will return to the first letter of the path.

---

7.6.3 Upon completing the changes, press <Pg Dn> to save and exit back to the UTILITIES submenu. If no changes have been made at this time or you wish to abort the changes, press <ESC> to exit without saving.

**7.7 RE-LOG EQUIPMENT**

7.7.1 Use the up and down arrow keys to place the highlight bar on this selection and press <Enter>. Figure 7-5 will be displayed to allow the analyst to select another equipment for review.

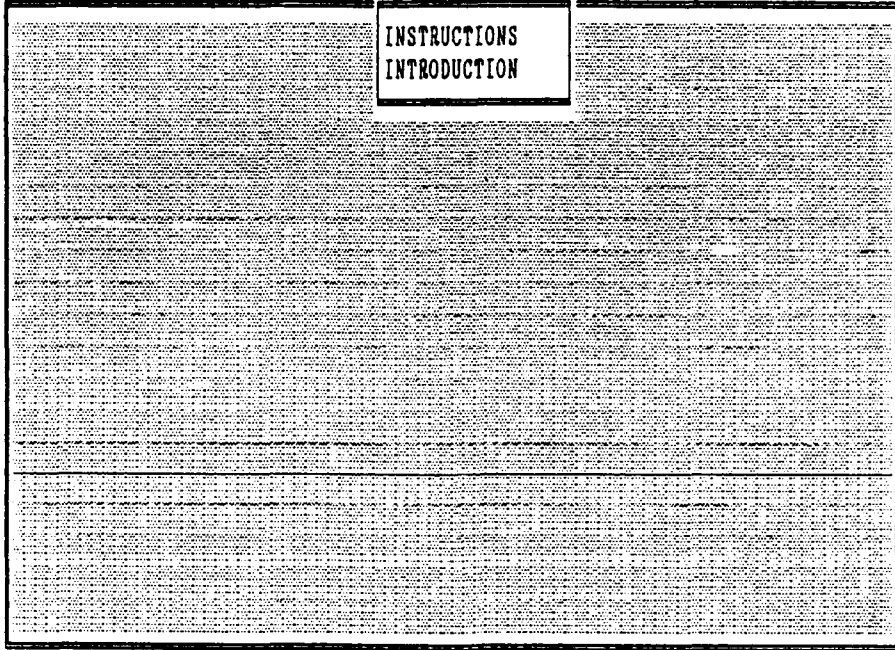
**7.8 EXITING THE PROGRAM**

7.8.1 Using the left and right arrow keys, place the highlight bar on the QUIT option of the Main Menu and press <Enter>. The QUIT submenu will be displayed. Press <Enter> and an exploding window containing two options is displayed as shown in Figure 7-6.

7.8.2 Use the up and down arrow keys to place the highlight bar on the option desired. The selection of the GO TO DOS option will exit the RLA program and return control to the Operating System.

7.8.3 The selection of the RETURN TO RLA option causes the exploding box to disappear and places the highlight bar back on the QUIT submenu.

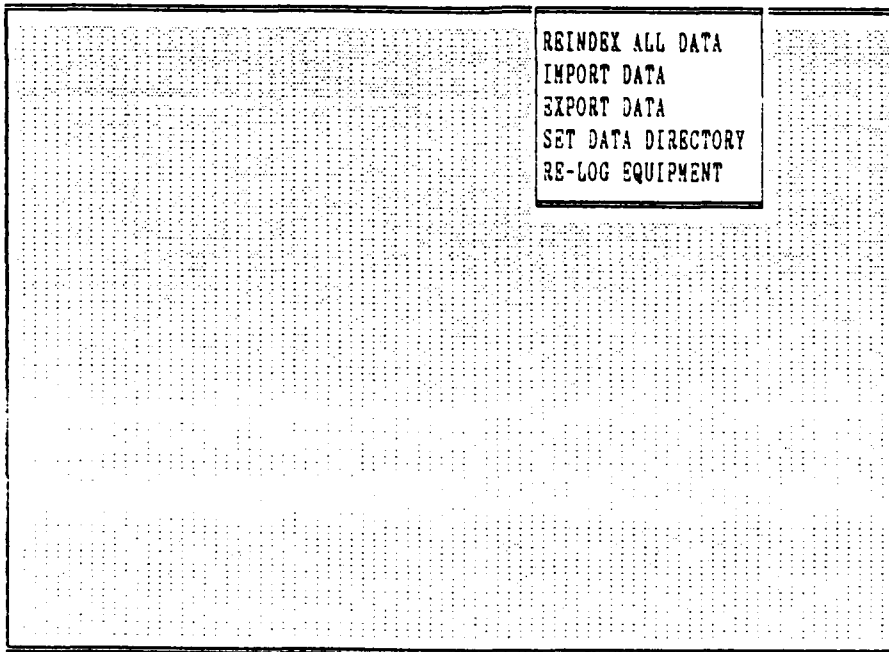
02/08/91 REPAIR LEVEL ANALYSIS: NEW 09:57:38  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT



RLA ASSISTANCE ON COMPUTER USAGE METHODOLOGY  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 7-1 ASSISTANCE SUBMENU

04/12/91 REPAIR LEVEL ANALYSIS EOD ROBOT 13:33:20  
OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT



REINDEX DATA FILES. ASSURES PROPER ORDERING OF INFORMATION  
Use Arrow Keys to Position Press Enter Key to Accept

FIGURE 7-2 UTILITIES SUBMENU

04/12/91 REPAIR LEVEL ANALYSIS EOD ROBOT 13:35:31  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

	REINDEX ALL DATA	
	IMPORT DATA	
	EXPORT DATA	
	SET DATA DIRECTORY	
	RE-LOG EQUIPMENT	

SELBCT ASSEMBLY OF EOD ROBOT FOR EXPORTING	
ASSEMBLY	EXPORT/NO - PRESS RETURN TO 'TOGGLE'
ELECTRIC MOTOR ASSY	EXPORT
CAMERA ASSEMBLY	NO
TV ELECTRONICS	NO
GRAPPLING ARM, LBPT	NO

F8 - UnTag All    F9 - Tag All    F10 - Begin Export  
 Arrow Keys to Position    Press Enter Key to Accept

**FIGURE 7-3 TAGGING ASSEMBLIES**

04/16/91 REPAIR LEVEL ANALYSIS EOD ROBOT 10:06:59  
 OPERATIONS REPORTS PALMAN ASSISTANCE UTILITIES QUIT

DIRECTORIES FOR RLA PROGRAM FILES ACCESS

DATAGASES - DBF & DBT (MSMO) FILES  
 F:\RLA\DB  
 INDEXES - NTX FILES  
 F:\RLA\DB  
 REPORT FILES SENT TO DISK FILES  
 F:\RLA  
 RLA FILES TO BE IMPORTED INTO THIS SET OF RLA DATA  
 A:\  
 RLA FILES TO BE EXPORTED TO ANOTHER RLA PROGRAM  
 A:\  
 DIRECTORY WHERE THE PALMAN.EXE FILE RESIDES  
 F:\RLA\PALMAN  
 DIRECTORY FOR THE INDEX OF THE PALMAN PROGRAM  
 F:\RLA\PALMAN

EXAMPLE - D:\APJARD\DATA  
 Drive MUST be Valid    NO Trailing "\" on Path

SELECT THE DIRECTORY FOR DATA FILES TO BE STORED  
 Use Arrow Keys to Position    Press Enter Key to Accept

**FIGURE 7-4 SET DATA DIRECTORY**

USA Helper Version 1.0

Repair Level Analysis

EQUIPMENT LOG-ON

NEW  
EOD ROBOT

FIGURE 7-5 EQUIPMENT LOG-ON

03/15/91

REPAIR LEVEL ANALYSIS: EOD ROBOT

10:57:49

OPERATIONS REPORTS

PALMAN

ASSISTANCE UTILITIES

QUIT

QUIT TO DOS

Go To DOS  
Return To RLA

RETURN TO OPERATING SYSTEM

Use Arrow Keys to Position

Press Enter Key to Accept

FIGURE 7-6 QUIT

# **APPENDIX A**

---

## **RLA FUNCTION KEY DESCRIPTIONS**

KEYSHOW TO USE

- <F1> Place the cursor on a menu selection and press <F1> to display help for that selection.
- <F7> This key is used to navigate to, and display (ADD/EDIT) parts previously entered, or to allow the entry of new parts for an assembly (subsystem).
- <F8> This key is used to exit a screen entry form without saving the data.
- <F9> This key is used to save entries made in a scrolling region on a screen entry form.
- <F10> This key is used to save data and exit a screen entry form.
- <Enter> This key is used to select an option on a menu, submenu or screen entry form. It is also used to toggle between YES and NO entries on some forms.
- <ESC> This key is used to bring up the previous screen from the one being displayed. It can also be used to exit the RLA program when in the Main Menu. It exits the SET DATA DIRECTORY Screen without saving entries.
- ↑  
← →  
↓
- These keys are used to navigate in the direction of the arrow shown on the specific key used.
- The RLA scrolling regions generally accept word processing procedures.
- <Pg Up> This key is used to navigate upwards a page at a time in scrolling and on menu selection screens.
- <Pg Dn> This key is used to navigate downwards a page at a time in scrolling regions and on menu selection screens. It is also used to save and exit on the SET DATA DIRECTORY Screen.

## **APPENDIX B**

---

### **PROGRAM FLOW/MENU STRUCTURES**

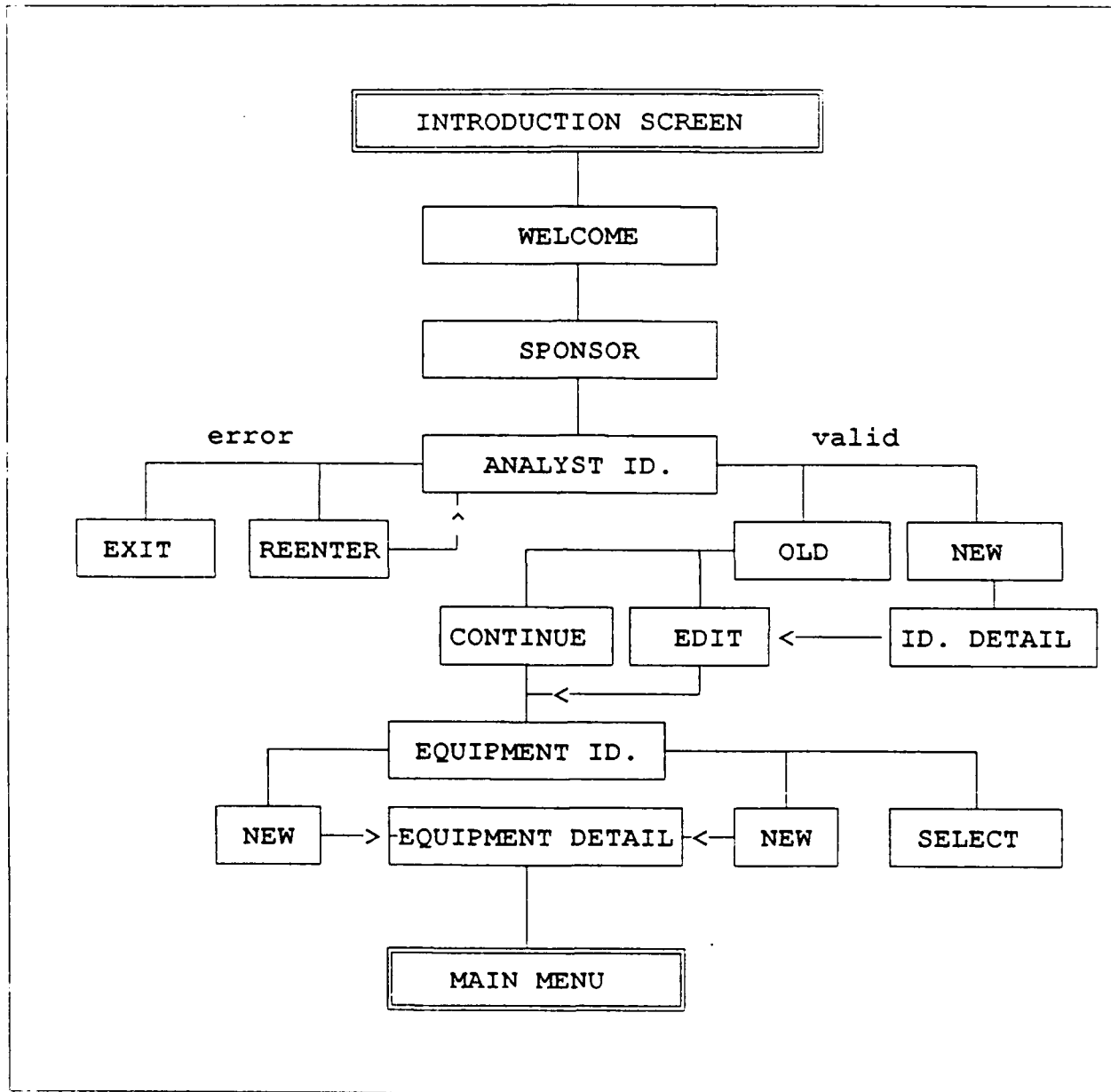


Figure B-1 Log-on Flow

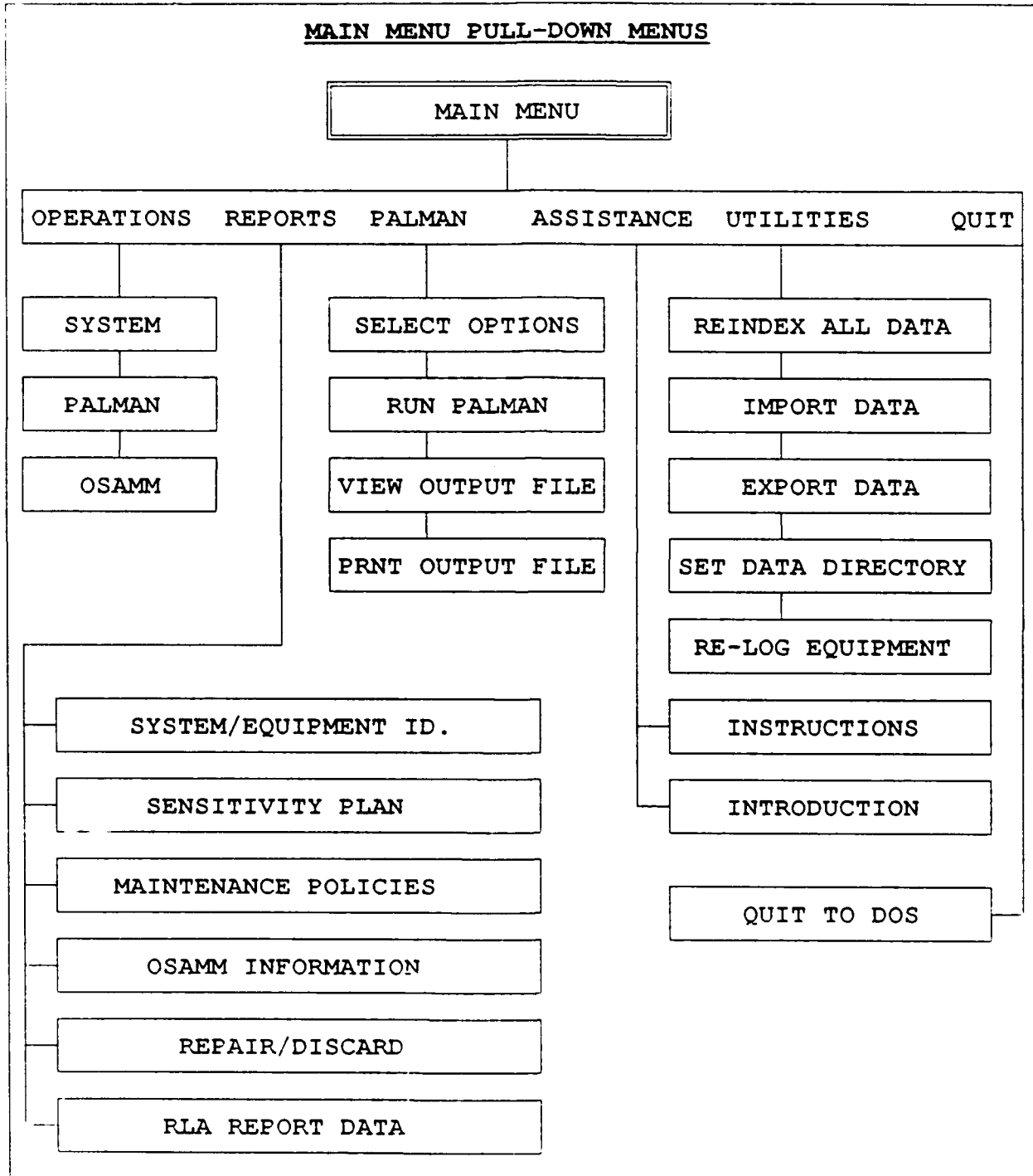


Figure B-2 Palman/OSAMM Submenu Selections

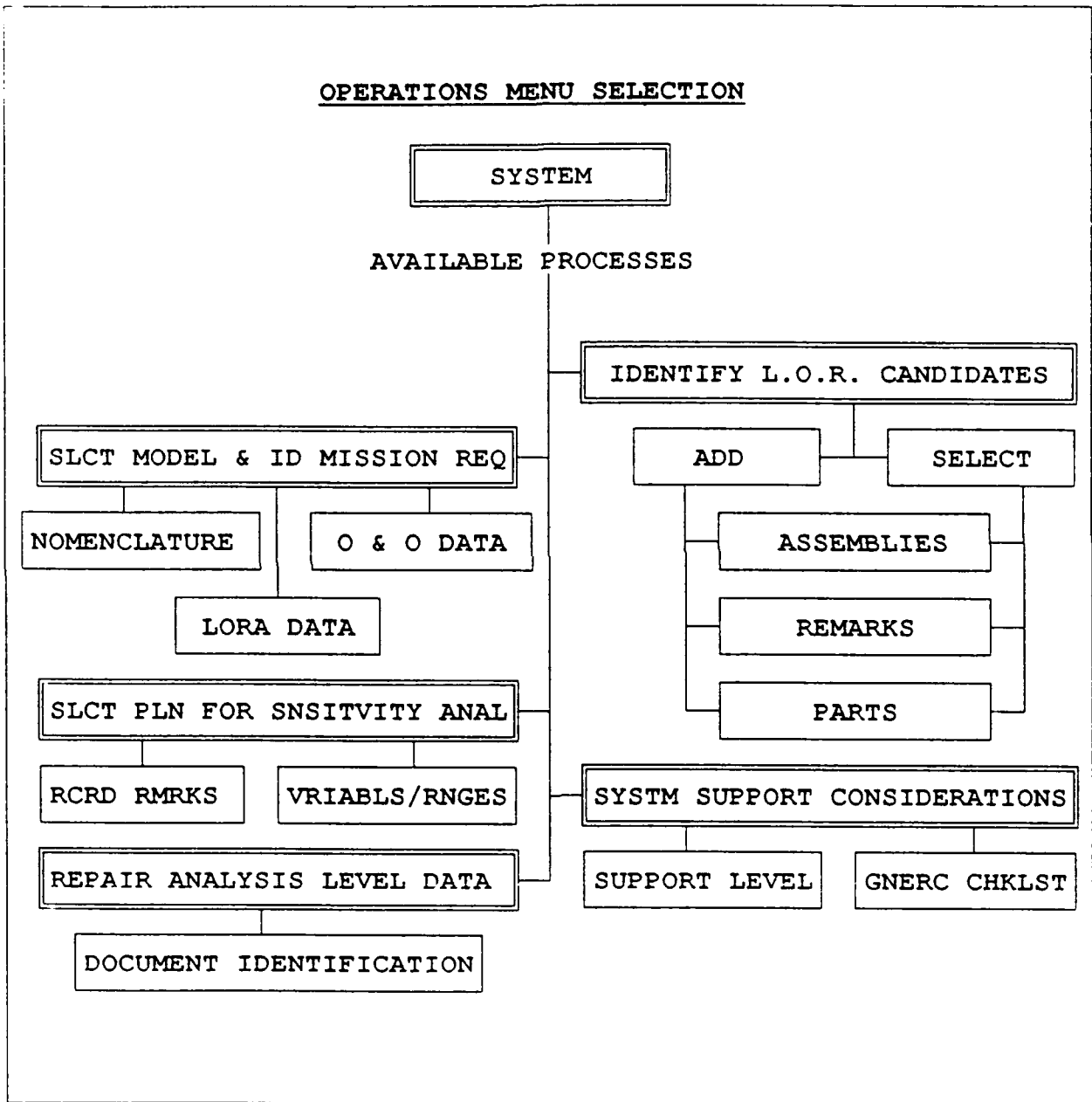


Figure B-3 System Submenu Selection

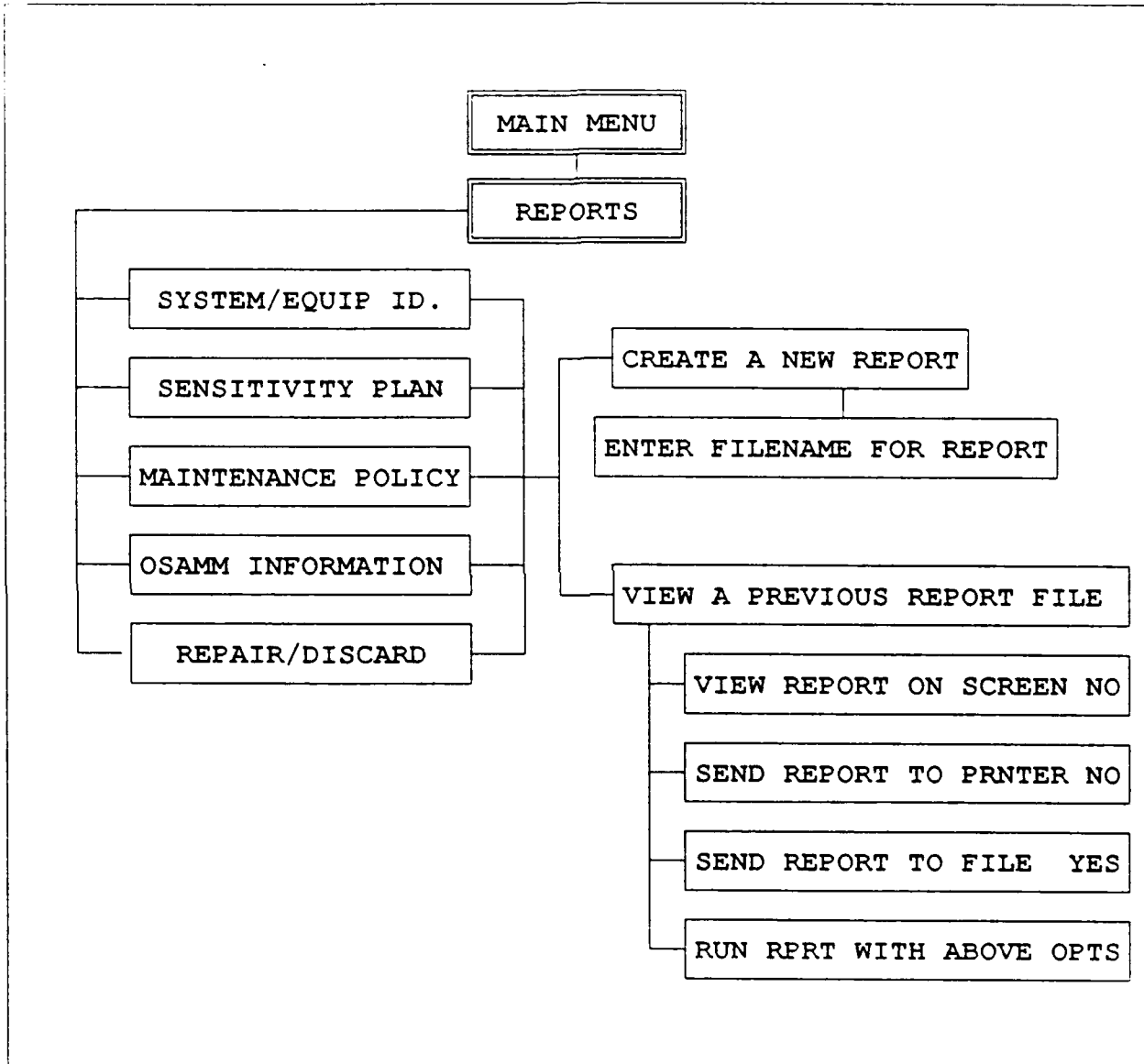
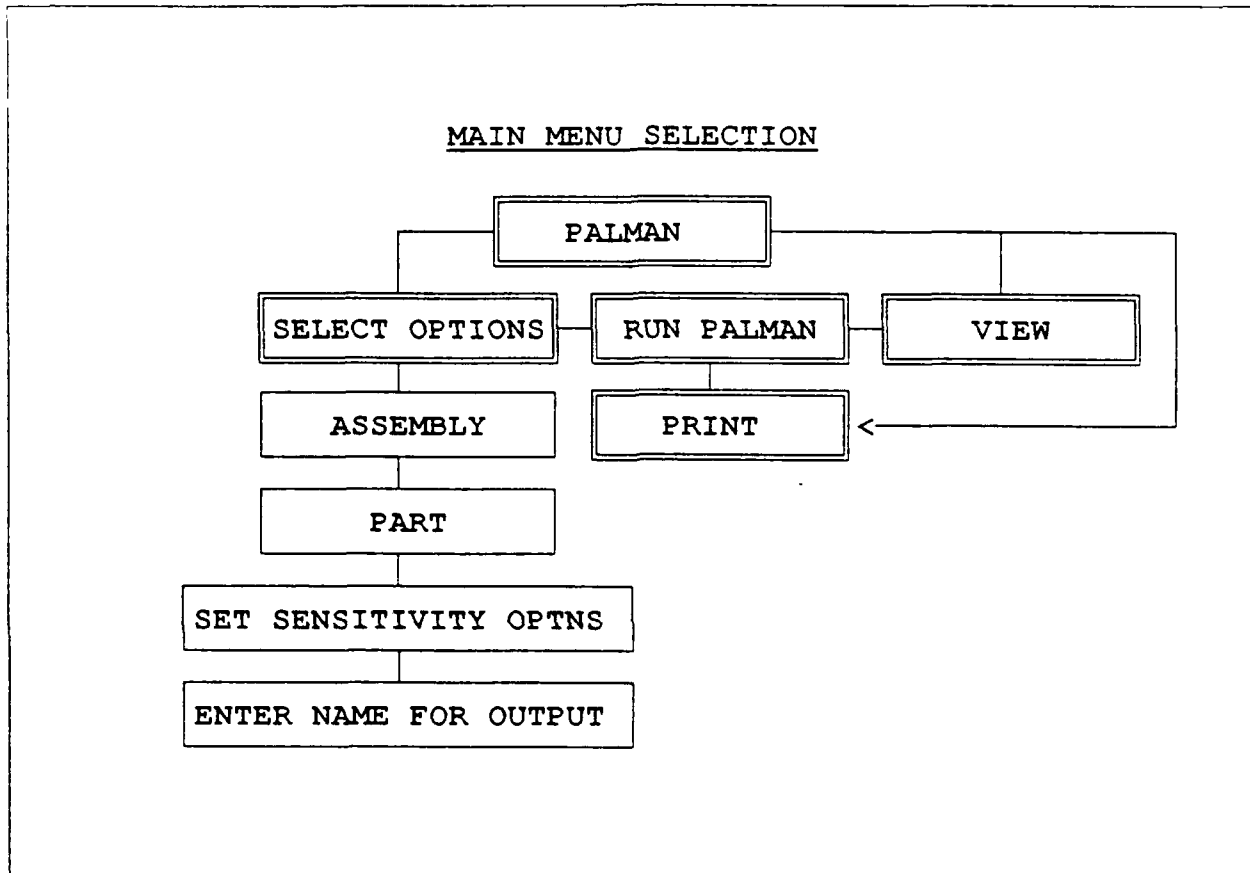


Figure B-4 Reports Submenu Selections



**Figure B-5 Run Palman Model Submenu Selections**

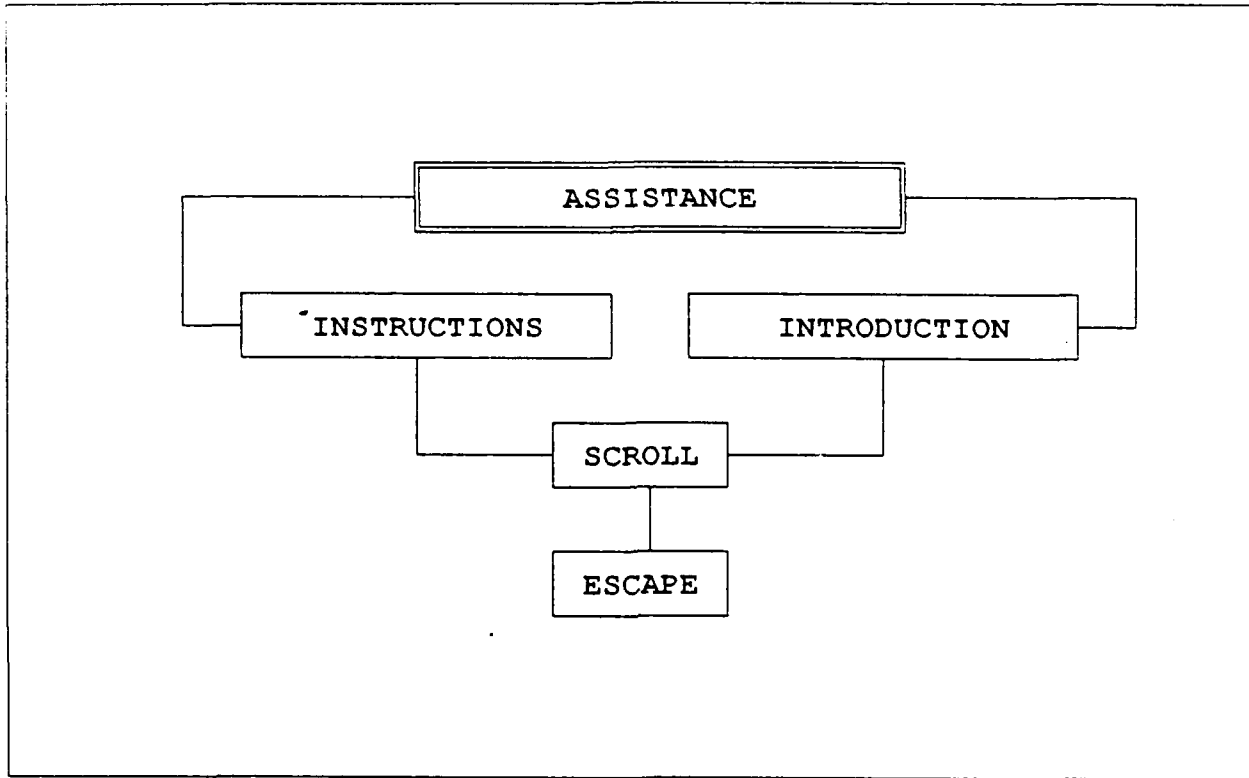


Figure B-6 Assistance Submenu

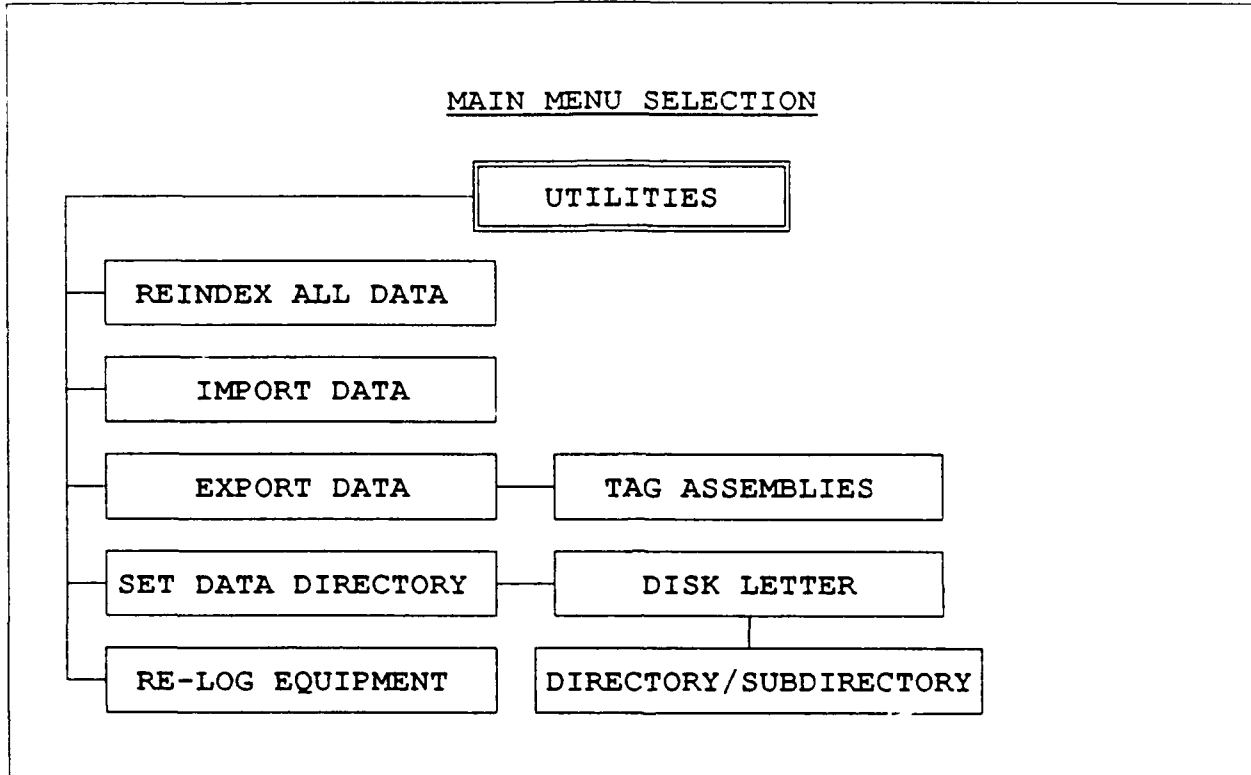


Figure B-7 Utilities Submenu Selection

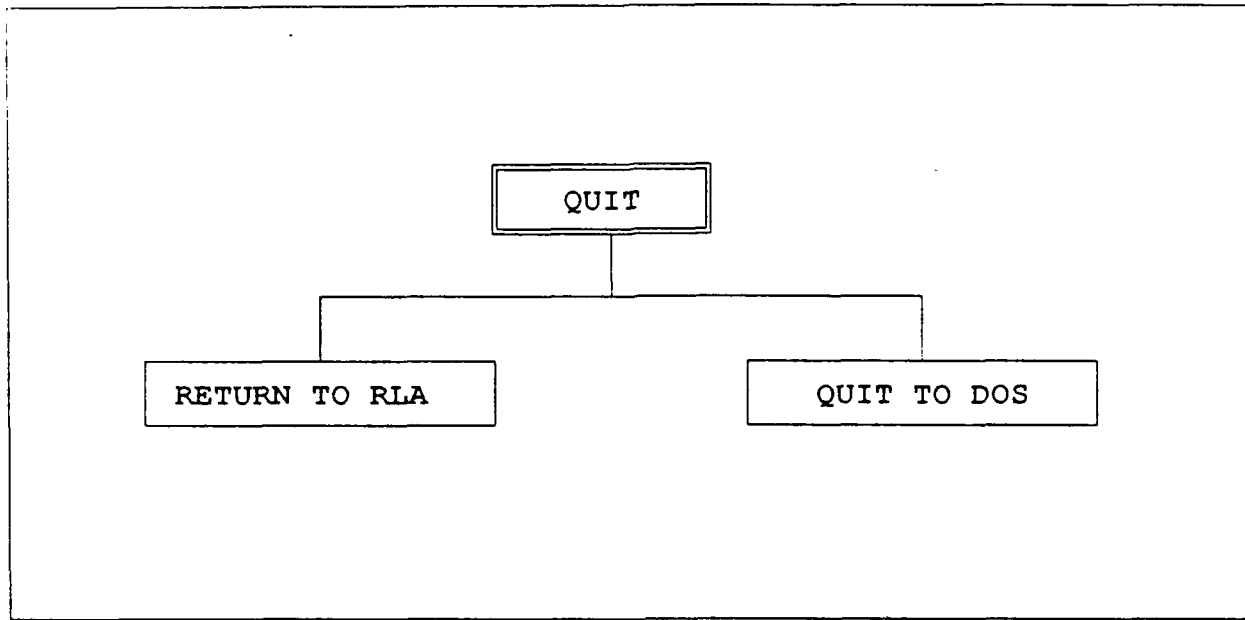


Figure B-8 Quit Submenu

## **APPENDIX C**

**---**

**RLA SAMPLE OUTPUT REPORTS**

## SYSTEM\EQUIPMENT IDENTIFICATION REPORT

05/23/91

## SYSTEM/EQUIPMENT IDENTIFICATION

Equipment Name: EOD ROBOT  
 Part Number : Nat'l Stk Num :

## MILESTONE INFORMATION

Program Phase :  
 AMMS Milestone:  
 Program Milstn:

## PROJECT MANAGER POINT OF CONTACT

Name :  
 Office Symbol :  
 Phone :  
 AV-Phone :

## ANALYST POINT OF CONTACT

Analyst Name : JACK TAUBER  
 Office Symbol : APJ-RIDGEFIELD  
 Phone : 201-945-8203  
 AV-Phone : 11111111

## OPERATIONAL AND ORGANIZATIONAL REQUIREMENTS DATA

	WARTIME	PEACETIME
Operational Availability.....	0.450	0.300
Annual Number of Missions.....	50	20
Annual Operating Days.....	150	30
Operating Hours Per Mission.....	60.00	12.00
Annual Operating Time.....	9000	360
Mean Mission Duration.....	45.00	8.00
Measurement Base for AOT + MMD.....	45.00	8.00
Operational Standby Time.....	2	2

SENSITIVITY ANALYSIS PLAN  
LSA SUBTASK 303.2.7Equipment: EOD ROBOT  
Part Num :Analyst :  
Nat'l Stk Num :

Page 1

Date 05/23/91

## VARIABLE NAME

## RANGE

WEATHER

-10 TO 110 DEGREES FAREN

SLOPE

0 - 35%

# OF UNITS

40 - 100

## SENSITIVITY ANALYSIS NOTES:

---

The sensitivity analyses will concentrate on weather, slope ranges and

MAINTENANCE POLICY CONSIDERATIONS  
LSA SUBTASK 303.2.7 - REPAIR LEVEL ANALYSIS

Equipment: EOD ROBOT  
Part Num :

Analyst :  
Nat'l Stk Num :

Page 1

Date 05/23/91

ALLOWABLE MAINTENANCE LEVELS

ORGANIZATIONAL :	YES
DIRECT SUPPORT :	NO
GENERAL SUPPORT:	YES
DEPOT :	YES

SYSTEM SUPPORT CONSIDERATIONS REQUIRED FOR REPAIR/DISCARD DECISIONS

RAM DATA	: NO
TRAINING	: YES
TECHNICAL PUBLICATIONS	: NO
PROVISIONING	: NO
SPARE PARTS	: YES
SAFETY	: YES
TMDE	: NO
SUPPORT EQUIPMENT	: NO
TRANSPORTATION	: NO

OPTIMUM SUPPLY AND MAINTENANCE MODEL (OSAMM) INFORMATION  
LSA SUBTASK 303.2.7 - REPAIR LEVEL ANALYSISEquipment: EOD ROBOT  
Part Num :Analyst :  
Nat'l Stk Num :

Page 1

Date 05/23/91

## OSAMM INPUT DATA REFERENCES

\_\_\_\_\_ SOURCE #1 \_\_\_\_\_  
Source of Palman Information:  
Office Symbol:  
Phone:  
Autovon:

Reference Document Title:  
Document Number:  
Document Date: / /  
Responsible Activity:

\_\_\_\_\_ SOURCE #2 \_\_\_\_\_  
Source of Palman Information:  
Office Symbol:  
Phone:  
Autovon:

Reference Document Title:  
Document Number:  
Document Date: / /  
Responsible Activity:

ADDITIONAL REFERENCE INFORMATION:

\_\_\_\_\_ SOURCE #1 \_\_\_\_\_  
No Additional Reference Information Available

\_\_\_\_\_ SOURCE #2 \_\_\_\_\_  
No Additional Reference Information Available

| NO OSAM SOURCE INFORMATION FOUND FOR EQUIPMENT EOD ROBOT |

| NO PREPROCESSOR OUTPUT FILE REFERENCE FOUND FOR EOD ROBOT |

NOTES ON PREPROCESSOR ERRORS, CORRECTIONS  
AND LESSONS LEARNED

No Notes Currently Available

NO OSAMM OUTPUT FILE REFERENCE FOUND FOR EOD ROBOT

REPAIR / DISCARD REPORT  
LSA SUBTASK 303.2.7 - Repair Level Analysis

Equipment: EOD ROBOT  
Part Num :

Analyst :  
Nat'l Stk Num :

Page 1

Date 05/23/91

WBSN #	ITEM NAME	COST	-	BREAKEVEN DECISION
CAMERA ASSEMBLY				
8A147D-10	B&W CAMERA	0.00	0.00	DISCARD
8A107D-10	CAMERA EXTENSION ASSEMBLY	0.00	0.00	DISCARD
8A152D-1	COLOR CAMERA	0.00	0.00	DISCARD
8A57C-1	EXTENSION TUBE-1	0.00	0.00	DISCARD
8A56C-10	EXTENSION TUBE-2	0.00	0.00	DISCARD
8A1054D-10	PAN & TILT UNIT	0.00	0.00	DISCARD
8A111C-10	TV CAMERA LENS	0.00	0.00	DISCARD
ELECTRIC MOTOR ASSEY				
8A115C-10	BELTING V	200.00	250.00	DISCARD
8A150D-1A-10	ELECTRIC MOTOR	300.00	180.00	REPAIR
75-200	VOLTMETER	10.00	10.00	DISCARD
TV ELECTRONIC				
ODM135	MICROPHONE	0.00	0.00	DISCARD
8A131D-10	TIME/CODE GENERATOR	0.00	0.00	DISCARD
8A127C-1	TV TRANSMITTER	0.00	0.00	DISCARD
75-200	VOLTMETER	0.00	0.00	DISCARD

REPAIR LEVEL ANALYSIS REPORT DATA  
LSA SUBTASK 303.2.7 - REPAIR LEVEL ANALYSIS

Equipment Name: EOD ROBOT                      Analyst:  
Part Number        :                              Nat'l Stk Num:

Page # 1

Date: 05/23/91

## REPAIR LEVEL ANALYSIS FINAL REPORT REFERENCE

Document Information: RLA TEST DOCUMENT  
Document Reference: 001  
Document Date: 05/22/91  
Revision: 01  
Location: APJ - RIDGEFIELD

Prepared By: JACK TAUBER  
Office Symbol: APJ-R  
Phone: 201-945-8203  
Autovon: 11111111

## ANALYSIS RESULTS\REPAIR LEVEL DECISIONS

The information captured through this testing will enable improvement of the

REPAIR VERSUS DISCARD ANALYSIS  
ON A  
EOD ROBOT

PALMAN PROGRAM VERSION 1.1

STANDARD VARIABLES

INVENTORY HOLDING COST (% OF PURCHASE COST)	COSTH =	.17
LABOR COST PER HOUR INCL O/H	COSTLH =	14.50
MAINT FACIL COST PER HOUR	COSTMF =	36.00
REPAIR PARTS REQUISITION COST	COSTR =	18.64
TRANSPORTATION AND HANDLING COST PER ASSY	COSTTH =	18.64
COST TO ENTER LINE ITEM NUMBER	FSNI =	648.00
YEARLY COST TO MANAGE NSN	FSNR =	648.00
ADMIN AND ENGINEERING COST PER NSN	PROCUR =	3196.00
TECH MANUAL PER PAGE COST	PAGESC =	550.00
ASSY ATTEMPTED UNSUCCESSFUL REPAIR PERCENT	REPNOT =	.10
ASSY RETURNED AND RECEIVED PERCENT	RETURN =	.90
PREPARING SQUAP COST PER NSN	SQUAP =	559.00
TE AND FACIL MAINT COST - % OF PROCUR	TFMAIN =	.10
YEARS OF LIFE/ANALYSIS	YEARS =	10.00

INITIAL PROVISIONING VARIABLES

ORDER AND SHIP (OST) DAYS DX TO EQUIP	OST(1) =	5.00
OST DX TO MAINT LEVEL SUPPLY (MLS)-DAYS	OST(2) =	5.00
OST MLS TO DEPOT SUPPLY -DAYS	OST(3) =	60.00
OST DEPOT TO FACTORY -DAYS	OST(4) =	700.00
OST PARTS FOR MAINT -DAYS	OST(5) =	500.00
TURN AROUND TIME FOR MAINT -DAYS	TAT =	45.00
SAFETY STOCK COEF (DECIMAL %)	CKK =	.85
NON-STANDARD PART REPAIR DECIMAL %	RPNSTD =	.95
ASSY INITIAL PROV MIN - DAYS	INIPA =	900.00
PARTS INITIAL PROV MIN - DAYS	INIPP =	600.00
NUMBER OF DX SUPPLY LOCATIONS	DXN =	40.00
NUMBER OF MAINT LEVEL SUPPLY LOCAT	MXN =	2.00

## OTHER INPUT VARIABLES

REPAIR TIME IN HOURS	REPHRS=	8.00
AVERAGE REPAIR PARTS COST	COSTRP=	60.00
NUMBER OF UNIQUE PARTS	UNIQUE=	6.00
TOTAL TEST EQUIPMENT & FACILITIES DEVELOPMENT C	COSTFD=\$	250.00
TOTAL TEST EQUIPMENT & FACILITIES PROCUREMENT C	COSTFP=\$	100.00
FAILURES PER MILLION HOURS OF OPERATION	FAILUR=	200.00
PERCENT OF NONOPERATIONAL FAILURES	PNFAIL=	.25
ADDITIONAL PUBLICATION PAGES	PAGES=	45.00
ADDITIONAL TRAINING TIME IN HOURS	HT=	20.00
ASSEMBLIES PER END ITEMS IN USE	Q=	2.00
DECIMAL % OF TIME OPERATED	FRACOP=	.30
PERSONNEL TRAINED PER YEAR	PT=	50.00
MINIMUM NUMBER OF END ITEMS IN USE	EN(1)=	50
MAXIMUM NUMBER OF END ITEMS IN USE	EN(11)=	75

## RESULTS OF EVALUATION

## NUMBER OF END ITEMS VS. BREAKEVEN COST

WHERE THE DIFFERENCE BETWEEN REPAIR &amp; THROWAWAY COSTS ARE EQUAL

NUMBER OF END ITEMS	BREAKEVEN COST
50	1112.07
52	1096.76
54	1078.23
56	1065.14
58	1051.55
60	1040.07
62	1026.85
64	1015.60
66	1006.10
68	993.91
75	963.43

THE INHERENT AVAILABILITY IS .94936710

\*\*NOTE: BREAKEVEN COST FIGURES REPRESENT THE BREAK-EVEN POINT  
i.e. FOR AN ACTUAL END ITEM COST ABOVE THE BREAKEVEN VALUE  
THE ITEM SHOULD BE REPAIRED. SIMILARLY ANY COST BELOW  
THE BREAKEVEN VALUE SHOULD BE THROWN AWAY

## ANALYSIS OF REPAIR POLICY COST PER FAILURE

CONSISTS OF	COST PER FAILURE	% CONTRIBUTION
REQUISITION COST	=\$ 17.	1.39
REPAIR TIME LABOR COST	=\$ 146.	12.08
REPAIR PARTS COST	=\$ 54.	4.46
TRANSPORTATION & HANDLING COST	=\$ 19.	1.54
COST OF REPLACEMENT ASSEMBLIES	=\$ 183.	115.13
COST OF MAINTENANCE FACILITIES	=\$ 259.	21.43
COST OF NSNS	=\$ 34.	2.83
DEV COST OF SP TEST EQ & FACIL	=\$ 0.	.02
PROC COST OF SP TEST EQ & FACIL	=\$ 0.	.01
MAINT COST OF SP TST EQ & FACIL	=\$ 0.	.01
COST OF TECHNICAL MANUALS	=\$ 24.	1.97
COST OF TRAINING	=\$ 163.	13.44
INVENTORY HOLDING COST	=\$ 0.	.00
SQUAP PREPARATION COST	=\$ 3.	.22
PROCUREMENT COST	=\$ 61.	5.08

THE FOLLOWING ARE THE RESULTS FOR THE STANDARD SENSITIVITY REQUESTED. THE RESULTS SHOW THE NUMBER OF UNITS AND OPTIMUM COST

SENSITIVITY ON	VARIABLE	RANGE	INITIAL VALUE
T.E. MAINT %	TFMAIN	25% TO 350%	.10

END ITEMS	VALUE .03	VALUE .05	VALUE .08	VALUE .10	VALUE .13
50	1111.96	1112.00	1112.03	1112.07	1112.11
52	1096.66	1096.70	1096.73	1096.76	1096.80
54	1078.13	1078.17	1078.20	1078.23	1078.27
56	1065.04	1065.08	1065.11	1065.14	1065.17
58	1051.46	1051.49	1051.52	1051.55	1051.58
60	1039.98	1040.01	1040.04	1040.07	1040.10
62	1026.77	1026.80	1026.82	1026.85	1026.88
64	1015.51	1015.54	1015.57	1015.60	1015.63
66	1006.02	1006.05	1006.08	1006.10	1006.13
68	993.83	993.85	993.88	993.91	993.93
75	963.35	963.38	963.40	963.43	963.45

END ITEMS	VALUE .15	VALUE .17	VALUE .20	VALUE .28	VALUE .35
50	1112.14	1112.18	1112.21	1112.32	1112.43
52	1096.83	1096.87	1096.90	1097.01	1097.11
54	1078.30	1078.33	1078.37	1078.47	1078.57
56	1065.20	1065.24	1065.27	1065.37	1065.46
58	1051.61	1051.64	1051.68	1051.77	1051.86
60	1040.13	1040.16	1040.19	1040.28	1040.37
62	1026.91	1026.94	1026.97	1027.06	1027.15
64	1015.66	1015.68	1015.71	1015.80	1015.88
66	1006.16	1006.19	1006.21	1006.30	1006.38
68	993.96	993.99	994.01	994.09	994.18
75	963.47	963.50	963.52	963.60	963.67

THE FOLLOWING ARE THE RESULTS FOR THE STANDARD SENSITIVITY REQUESTED. THE RESULTS SHOW THE NUMBER OF UNITS AND OPTIMUM COST

SENSITIVITY ON	VARIABLE	RANGE	INITIAL VALUE
FAILURE RATE	FAILUR	25% TO 350%	200.00

END ITEMS	VALUE 50.00	VALUE 100.00	VALUE 150.00	VALUE 200.00	VALUE 250.00
50	2552.67	1970.95	1254.12	1112.07	1023.66
52	2509.90	1536.62	1233.22	1096.76	1010.75
54	2418.65	1497.10	1215.95	1078.23	996.63
56	2358.25	1475.04	1193.68	1065.14	986.53
58	2290.73	1440.37	1176.77	1051.55	975.08
60	2248.84	1411.32	1160.80	1040.07	963.43
62	2179.68	1384.30	1145.87	1026.85	954.32
64	2124.66	1361.81	1128.42	1015.60	946.62
66	2073.20	1337.91	1115.17	1006.10	936.82
68	2041.57	1315.29	1104.28	993.91	928.45
75	1909.50	1254.12	1063.25	963.43	903.48

END ITEMS	VALUE 300.00	VALUE 350.00	VALUE 400.00	VALUE 550.00	VALUE 700.00
50	963.43	919.72	885.90	813.86	772.69
52	952.19	911.23	875.70	806.45	766.88
54	940.94	900.54	866.31	799.63	761.53
56	932.06	891.28	857.58	793.26	756.53
58	923.00	881.96	849.45	787.36	751.88
60	913.72	873.31	841.87	781.86	747.54
62	905.74	865.17	834.78	776.68	743.48
64	896.90	857.58	828.09	771.85	739.69
66	888.54	850.45	821.85	767.29	736.11
68	880.68	843.70	815.97	763.02	732.75
75	856.52	822.98	797.86	749.83	722.39

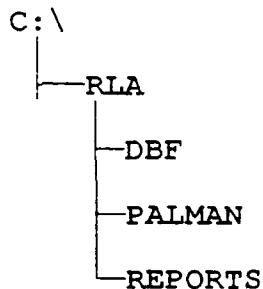
## **APPENDIX D**

---

**RLA DIRECTORY STRUCTURE  
AND SOFTWARE FILE NAMES**

## RLA DIRECTORY

The RLA directories should look like the figure set up below.



The RLA directory will contain the RLA.EXE and DIRS.DBF files.

The DBF subdirectory will contain the following 42 files.

LSA.DBF	SCC.DBT	STANDARD.DBF
X2A1B4.DBT	OS2.DBT	ANALYST.DBF
OS3RUNMO.DBF	OS6.DBT	CR2A1.DBF
X2A1B2.DBT	KEYNUMS.DBF	H2A.DBF
ASSEMBLY.DBK	ASSEMBLY.DBT	H2A.DBT
UNIQUE D.DBF	SCC.DBF	P23.DBF
DIRS.DBF	OS3.DBF	OS5.DBF
PROCLOOK.DBT	OTHER.DBF	OS5.DBT
PROCLOOK.DBF	OS4.DBF	UNIQUE S.DBF

### RLA DATABASE FILES

After entering the RLA program, the following 21 index files will be added to the DBF subdirectory.

CR2A1.NTX	OS7.NTX	OTHER.NTX
D21.NTX	F23.NTX	PROCLOOK.NTX
H2A.NTX	F24.NTX	STANDARD.NTX
OS3.NTX	SCC.NTX	UNIQUE S.NTX
OS4.NTX	ANALYST.NTX	ASSEMBLY.NTX
OS5.NTX	INITIAL.NTX	EQUIP.NTX
OS6.NTX	OS2.NTX	SUBPARTS.NTX

### RLA INDEX FILES

The Palman subdirectory will contain the PALMAN.EXE file. After the Palman Model is processed, it will contain the Palman output report.

The Reports subdirectory will contain those reports developed under the Reports submenu.

Import and Export files may be directed to any of the above, to a floppy drive, or to another subdirectory that has been created and entered into the SET DATA DIRECTORY Screen.