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ANALYSIS AND IMPLEMENTATION
OF THE
LOGISTICS EQUIPMENT DIRECTORATE'S
PROJECT MANAGEMENT SYSTEM

TECHNICAL REPORT

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ANALYSIS AND IMPLEMENTATION
OF THE
LOGISTICS EQUIPMENT DIRECTORATE'S
PROJECT MANAGEMENT SYSTEM

TECHNICAL REPORT

July 13, 1988

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Prepared for:
US Army
Belvoir Research, Development and Engineering Center

Under
Contract Number DAAK70-84-D-0053
Task Order 0055

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FOREWORD AND ACKNOWLEDGEMENTS

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STUDY GIST - ANALYSIS AND IMPLEMENTATION OF THE LOGISTICS EQUIPMENT DIRECTORATE'S PROJECT MANAGEMENT SYSTEM

PRINCIPAL FINDINGS

1. Based on the results of the Validation Test of the previously developed Logistics Equipment Directorate's (LEDs) Project Management System (PMS), the conclusion was reached that PMS assists in the efficient management of the programs assigned to LED.

2. PMS was implemented within LED. Sixty-two projects are now included in PMS; more are anticipated as the system continues to mature.

3. Refinements made to PMS during the period of this task order made it more useful and usable by LED personnel. PMS appears to have gained much popularity since its introduction in 1986; further refinements will improve its acceptance.

MAIN ASSUMPTIONS AND PRINCIPAL LIMITATIONS None.

SCOPE OF EFFORT

SAIC designed and conducted a Validation Test on the previously conceptually designed PMS. Twenty-five acquisition projects were included in the test, 12 of which were projects included in the feasibility test previously conducted under separate task order. The results of the analysis of test results were briefed to the Director, LED, leading to a decision to implement PMS throughout the Directorate. Division Chiefs selected 62 projects they desired to be included in the system, 25 of which were included in the Validation Test. Implementation procedures developed during the Validation Test resulted in one update cycle of the 62 projects. The study effort concluded with the feedback to Division Chiefs and Project Engineers of the PMS database and project schedules.

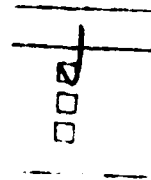
OBJECTIVE

To design and conduct a validation test of the LED PMS concept to determine if PMS will assist in the efficient management of programs assigned to LED. If the validation test proved successful, PMS was to be implemented within LED.

BASIC APPROACH

1. A Validation Test Plan was prepared and submitted to the Technical Point of Contact for approval on 9 November 1987. The plan included decision rules that clearly defined the conditions under which PMS would be validated. Acceptability was defined by comparison of results of a survey designed to quantitatively measure user perceptions against these pre-defined decision rules. The plan also generated cost data that was used with survey results to conduct a cost/benefit analysis.

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2. Following approval of the test plan, the test was conducted using updates of 12 projects associated with a previously run feasibility test. Thirteen additional projects were selected, bringing the total projects involved in the test to 25. The test was conducted from 1 December 1988 through 8 March 1988, culminating in a decision briefing to the Director, LED, on 10 March 1988. Following the briefing, the decision was made to implement PMS throughout the Directorate.

3. Implementation started before the validation test with an In-Process Review (IPR) given to the Division Chiefs by PMD on 27 October 1987. Division Chiefs were given their roles and responsibilities for operating the system. Division Chiefs and PMD personnel collaborated in the development of a mutually acceptable PMDS. This form was designed to provide the data necessary to develop HTPM-II milestone schedules and R:Base data files to efficiently manage projects assigned to LED. PMDS forms were distributed for projects included in the system. The PMDS forms, together with floppy disks containing PE produced HTPM-II schedules, were returned to PMD and 62 projects were scheduled, coded, and loaded into the database. Feedback to Division Chiefs and PEs resulted when modified HTPM schedules, R:Base generated PMDS and Division Chief Reports, and a floppy disk containing the Division's database were returned to the divisions. The implementation phase of this task will end with the distribution of the user's manual contained in this report.

REASON FOR PERFORMING THE STUDY

The need exists to develop an effective milestone management system that will be used by both project engineers and management to assist in managing LED's programs.

IMPACT OF THE STUDY

The study validates and implements a management system to direct, control, and monitor the key activities of assigned efforts.

SPONSOR

US Army Belvoir Research, Development and Engineering Center.

PRINCIPAL INVESTIGATOR

Mr. Bruce Halstead, Science Applications International Corporation

ADDRESS WHERE COMMENTS AND QUESTIONS CAN BE SENT

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ANALYSIS AND IMPLEMENTATION
OF THE
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PROJECT MANAGEMENT SYSTEM (PMS)

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ANALYSIS AND IMPLEMENTATION
OF THE
LOGISTICS EQUIPMENT DIRECTORATE'S
PROJECT MANAGEMENT SYSTEM (PMS)

SECTION I. INTRODUCTION

A. Background.

The Logistics Equipment Directorate (LED) is responsible for over 100 programs in various stages of the US Army's materiel acquisition cycle. Comprehensive milestone schedules have been developed for selected programs using Harvard Total Project Manager-II (HTPM-II) computer software to guide them through the Army's materiel acquisition process.

A Technical Report, "Development of Milestone Schedules for Selected Logistics Support Directorate Programs", published 15 September 1987, proposed a LED Project Management System (PMS) that conceptually gathers project data from Project Engineers (PEs) on a periodic basis, develops HTPM-II schedules from that data, and loads the data into the R:Base System V (R:Base) Data Base Management System. Theoretically, PMS would reduce the administrative burden on the Divisions within LED, provide timely information to managers, feedback to PEs, and guidance to the supporting staff. In summary, the PMS was designed to yield useful management information in program schedule and database format that would:

- o Provide the PEs with a useful tool to manage their programs.
- o Be acceptable to both LED management personnel and PEs.
- o Ensure all Army Acquisition Management Milestones are met.
- o Satisfy the informational needs of LED and all supporting staff activities within the US Army Belvoir Research, Development and Engineering Center (BELVOIR).
- o Encourage early coordination between PEs and LED management personnel on matters pertaining to acquisition project direction and tailoring.

- o Support the management philosophy of centralized planning at Directorate level and decentralized program execution at Division level and below.
- o Minimize the time required by PEs to report the status of their projects. The Program Management Division (PMD) would become the single focal point for all queries concerning the status of LED projects.

This effort involves the refinement of the proposed PMS and a validation test of the system to determine if it meets design objectives and is acceptable to LED personnel. This document also summarizes efforts taken toward full scale implementation of the system within LED.

B. Objective.

The objective of this effort was to design and conduct a validation test and analysis of the LED PMS concept to determine if PMS will assist in the efficient management of programs assigned to LED. If the validation test proved successful, PMS was to be implemented within LED.

C. Statement of the Problem.

To develop an effective program management system using HTPM-II and R:Base that will be used by both PEs and management to assist in administering LED's programs.

II. GENERAL APPROACH

A. Summary of the System to be Tested and Analyzed.

In general, PMS provides detailed HTPM-II project schedules developed by either PEs or PMD personnel that list activities, responsibilities, and suspense dates for each project 18 months into the future. The amount of detail in the schedules is determined by the PE and is based on those details deemed necessary to effectively manage the

project. The Director, LED, through the PMD, requires reporting on a minimum number of specified activities that he desires to be standardized across the Directorate. PMD ensures that the 18 month schedules are updated every 2 months and that projections are added every six months. In short, project information will never be more than 2 months old and will be projected from 18 months in the future.

These schedules are loaded by PMD personnel into a database designed with a capability of responding to queries at two different levels of specificity. Floppy disks containing the HTPM-II schedules and the Division's database are returned to Division Chiefs and PEs after updates for their use, as appropriate.

In addition, two reports are distributed to Division Chiefs. (1) The Program Management Data Sheet (PMDS), generated directly from the database and containing all the tasks/milestones that were reflected on the HTPM-II schedule, and (2) the Division Chief report which reflects pertinent information regarding upcoming and completed events. Both reports are available for use during the next update cycle.

B. Step 1: Development of the Validation Test Plan.

A Validation Test Plan was prepared and submitted to the Technical Point of Contact for approval on 9 November 1987. The plan included decision rules that clearly defined the conditions under which PMS would be validated. Acceptability was defined by comparison of results of a survey designed to quantitatively measure user perceptions against these pre-defined decision rules. The plan also generated cost data that was used with survey results to conduct a cost/benefit analysis. The plan was approved.

C. Step 2: Conduct of the Validation Test.

The test was conducted using updates of 12 projects associated with a previously run feasibility test. Thirteen additional projects were selected, for a total of 25 programs. The test was conducted from 1 December 1987 through 8 March 1988, culminating in PMS implementation by LED Director decision, on 10 March 1988.

D. Step 3: Implementation of PMS.

A number of sequential tasks were accomplished in order to implement PMS within the Directorate. Implementation started before the validation test with an In-Process Review (IPR) briefing to the Division Chiefs by PMD on 27 October 1987. PMS was explained and each Division Chief was given his role and responsibilities for operating the system. Following that briefing, Division Chiefs and PMD personnel collaborated in the development of a PMDS that was mutually acceptable to Division Chiefs and higher level LED management personnel. This sheet was designed to collect the data necessary to develop the HTPM-II program schedules.

At the conclusion of the validation test and before the decision briefing to the Director, LED, another IPR was held for Division/Team Chiefs to discuss the results of the test and solicit their final comments. Each Division Chief was given a full list of their Division's projects and was instructed to designate those projects to be included in PMS management. These lists were returned to PMD and full scale implementation began. PMDS sheets were distributed to PEs of projects included in the system. The PMDS sheets, together with floppy disks containing PE produced HTPM-II schedules, were returned to PMD and a total of 62 projects were scheduled, coded, and loaded into the database. Feedback to Division Chiefs and PEs resulted when modified HTPM schedules, R:Base generated PMDS and Division Chief Reports, and a floppy disk containing the Division's database were returned to the Divisions. The implementation phase of this task will end with the distribution of the User's Manual contained in this report.

E. The Refinement Process.

Efforts were taken to refine the PMS to make it more acceptable to its users. These refinements took place before, during, and after the validation test as issues and problems arose that needed prompt solutions. The result is a useful database management system. It is anticipated that refinements will continue to occur as acquisition policies evolve and people using PMS become more familiar with using the system.

III. DESCRIPTION OF THE PMS VALIDATION TEST PLAN

A. Objective of the Test.

The objective was to validate the conceptually designed PMS within the environment defined by the existing LED organization and operating procedures. The test was designed to result in conclusions regarding the capability of PMS to yield useful management information in milestone schedule and database format that would meet the design objectives listed on pages 2 of this document. PMS resources are portrayed at Figure 1.

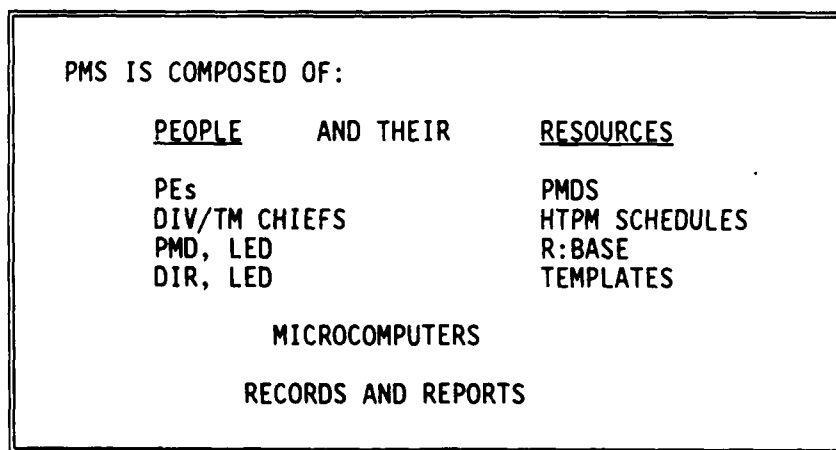


Figure 1. PMS is a Complex, Multifaceted Information Management System.

B. Description of Test Procedures. Figure 2 describes the seven phases of the PMS Validation Test. The cost of operating the system, measured in terms of direct labor and computer time costs, was to be computed from data received from the time sheets attached to the PMDS. The perceived benefit of the PMS to PEs and management personnel would be quantified and analyzed by means of a survey questionnaire to be distributed following feedback of the HTPM-II schedules and database to Division level personnel. See the Validation Test Report at Appendix B for detailed descriptions of events and tasks associated with each phase of the test plan.

IV. VALIDATION TEST RESULTS

The PMS Validation Test was conducted under strict controls in exact accordance with the previously approved test plan. Appendix B, the Validation Test Report, contains detailed information on the conduct of the test and the results obtained. The following is a summary of the results and the derived conclusions:

- o Responses to the survey at the conclusion of the test were compared to the preconceived decision rules established by the approval of the test plan. The survey indicated five positive responses demonstrating PMS should be implemented and three negative responses that suggested little would be gained by PMS implementation. Responses to the remaining 14 questions indicated ambivalence to either PMS or the management system currently in effect within each Division.
- o PMS showed significant improvement over existing systems in the following areas:
 - PE and management understanding of the Army's Management Milestone System (AMMS) and its relationship to project scheduling was improved.
 - Employee working knowledge of AR 70-1 was improved.
 - Knowledge of the activities of other Directorates and separate offices outside of BELVOIR was increased.

<u>PHASE</u>	<u>EVENT/TASK</u>	<u>SUSPENSE</u>
I	PMD Personnel Complete Section A & B of the PMDS and send out to Divisions. Time sheets are attached to the PMDS to be completed by participating personnel.	12 - NOV - 1987
II	Division level personnel complete the PMDS by filling out Sections C, D, & E. Personnel then return the PMDS to PMD. PEs may opt to develop their own HTPM schedule instead of filling out the PMDS.	01 - DEC - 1987
III	PMD, in coordination with PEs, develop HTPM schedules and load these schedules into R:Base System V data base. Floppies and hard copies of the schedules are returned to the PEs in R:Base System V format.	09 - DEC - 1987 23 - DEC - 1987
IV	Phases I, II, and III are repeated to update the project status.	13 - JAN - 1988
V	Division level personnel are surveyed by a questionnaire sent out by PMD.	13 - JAN - 1988
VI	Analysis and development of the Test Report. The time sheets determine the cost effectiveness of the system and the questionnaires are used to determine the system's utility.	11 - FEB - 1988
VII	DECISION BRIEF Decision is made to implement PMS for the Logistics Equipment Directorate Divisions at BELVOIR RD&E Center.	22 - FEB - 1988

Figure 2. Flow Chart, Feasibility Test

- Participants in the test perceived that administrative time at Division level and below was minimized relative to the status quo.
 - People perceived that the probability of missing a milestone suspense was lessened with PMS.
 - The responders' perception was clear that PMS provided a more complete, accurate and timely overview of project scheduling.
 - On the negative side, participants believed that working under PMS requires more extensive knowledge of the Army's system acquisition process.
 - PMS is perceived by the Division personnel to give better information about acquisition tasks and milestones.
 - The time needed by the PE to update project status under PMS is more acceptable.
 - Regardless of which management system is selected for future use, all participants believe that periodic training sessions on the Army's acquisition system are necessary. (This statement received the strongest positive support of all statements contained in the survey).
- o An analysis of the time sheets associated with the validation test indicates that the initial preparation of a HTPM-II schedule for inclusion in the database averages between five and six hours. About half that time is required by Division level personnel to prepare, review, and approve the schedule. The remainder of the time is spent by PMD personnel reviewing the Division's input, coding the schedule, and loading it into the database. (One of the refinements following the test was to code activities after the schedules were loaded into the database. This significantly reduced the time required for coding). Updates take less than half of that time, but the majority of work is done in the Division.
 - o Direct labor costs associated with initial schedule preparation averaged approximately \$118 per project, exclusive of overhead and administrative costs. The majority of the costs were attributable to efforts by PEs and PMD personnel. Updates appear to cost half that amount without significant reductions in the review and approval processes.
 - o In general, there was little statistical correlation between an employee's position, age, background, or experience and the degree of acceptance of the proposed PMS. In one instance, however, it is interesting to note the large degree of negative correlation indicating less acceptance of the PMS as one gains experience, position, or age. On the other hand, it appears that the more one uses the computer, the greater the acceptance.

Based on the above results and conclusions, a recommendation was made to the Director, LED, to approve the proposed PMS and implement it across appropriate projects for which the Directorate has acquisition responsibility.

Based on the unanimous and strong positive response to the statement that periodic training sessions for LED personnel on the Army's acquisition process are necessary, it was also recommended that an Acquisition System Training Program be developed to periodically provide such training to pertinent Directorate personnel.

V. PMS REFINEMENTS

A. Coding.

Each milestone and event for each project in PMS is coded in accordance with a pre-established coding system to enable search and retrieval operations from R:Base. Each code entry consists of three fields. The first field designates a general category of effort, such as Programmatic Documentation, Integrated Logistic Support, Resource Management, and Requirement Documentation Activities. The second field describes milestone or event within the general category described in the first field. The third field describes the action undertaken by the activity described in the second field. For example, TSFATCMP would be the code representing the completion of the First Article Test (FAT) for a specific acquisition project. Using this code, PEs or management personnel could query all test events for a particular project or for all projects within the Directorate. They could also query for information concerning FATs or activity completion dates within a specified time period.

Codes were initially placed by PMD personnel in one of the fields contained in the HTPM-II software. The Validation Test indicated that this was confusing to PEs who saw no use for the codes (and in some cases, erased them or changed them for their convenience). In fact, there was evidence

that use of the codes in HTPM-II scheduling and in the PMDS sheets discouraged PEs from developing and using their own HTPM-II schedules. Consequently, the codes were removed from the HTPM-II field and placed directly in R:Base where code visibility to PEs was lost. At the same time, the codes were simplified and a program was developed that enabled PMD personnel to decrease coding times. Codes were also eliminated from Section D of the PMDS sheet, allowing PEs to free-label the events and milestones they reported in that section. PMD personnel were able to successfully translate PE event descriptions into R:Base codes. Appendix C contains the revised PMDS sheet.

B. Queries.

The changes made to the coding system enabled significant changes to the query system in R:Base. The menu-driven query system was enhanced to make it extremely user friendly and usable by the least experienced, non-computer oriented PE or manager. At the same time, refinements in the coding system expanded the range of potential ad hoc queries and, in some instances, decreased query times. The decreased response times were mainly attributable to changing the code for schedule names simply by adding the Team and Division office symbol to the Project Number for each schedule. This change eliminated the time previously needed by R:Base to merge tables within the database. The User's Manual at Appendix E has been upgraded to reflect these enhancements.

C. Automated Reports.

Coding refinements and reprogramming efforts improved the menu-driven query system and reduced the report formats from sixteen to four. More importantly, information feedback to Division Chiefs and PEs was enhanced. Survey results from the Validation Test indicated that Division level personnel could see little benefit from PMS relating to how they managed projects at their level. This perception was exacerbated by the fact that Division Chiefs, in general, had little experience using R:Base software, and, consequently, had difficulty using the R:Base query system.

Two automated reports were developed to improve feedback to the Divisions. The first, the Division Chief's Report, automatically prints information regarding the Division's projects in PMS, tasks and milestones accomplished since the last report and expected in the next period, activities which have slipped since the last period, tasks behind schedule, scheduled Milestone Decision Reviews and IPRs expected in the next three months, and documentation requirements in the next period. A sample Division Chief's Report included in the May feedback action is at Appendix D. A floppy disk containing the updated R:Base database for each Division accompanies the automated report permitting each Division Chief the opportunity to acquire more management information by the use of the ad hoc query system.

The PMDS form is used to develop the second automated feedback report. Information reported by the PE and coded by PMD personnel is transferred to this report and returned to the PE. If PMD personnel have erroneously coded project information, the PE has the opportunity to immediately report the errors. The report also lets the PE know the type and quantity of information management and supporting staff personnel have on his/her project. Lastly, the time needed to respond to the next update requirement is minimized because the PE is encouraged to make pen corrections to the report and return it through his/her supervisory chain to PMD. A sample automated PMDS sheet to be used for feedback and update actions is also at Appendix D.

VI. SUMMARY

The objective stated in the Statement of Work was accomplished. A Validation Test of the previously developed LED PMS concept was designed, approved, and conducted. A conclusion was reached that PMS assists in the efficient management of LED programs. PMS was implemented by extending the system to 62 acquisition projects within LED selected by Division Chiefs. One iteration of an update cycle was conducted to include the scheduling, coding, and loading into R:Base of 37 additional projects to the 25 projects involved in the Validation Test.

PMS was refined to make it more useful and usable by LED personnel. It is envisioned that more refinements will be made as PMS gains the acceptance and increased confidence of the people the system supports. PMS must be perceived to be beneficial to PEs and Division Chiefs to gain full acceptance. Early refinements have been directed toward this goal. Coding activities are now undertaken solely by PMD personnel and are not visible to other users, thus eliminating the major contributor to PE perceptions of system complexity. Queries can now be made of the database using either a user friendly menu-driven system or a more detailed ad hoc approach. Useful reports containing comprehensive and timely management information are available for use by Division Chiefs and PEs. Furthermore, the reports are generated automatically by R:Base, eliminating many hours of preparation time and the possibility of excessive human error. PMS appears to have gained much popularity since it was first introduced within LED in 1986; further refinements will improve its acceptance.

VII. RECOMMENDATIONS FOR FUTURE DEVELOPMENT

A. Training.

PMS, as it is currently structured and operated, reduces the need for the significant requirement for acquisition training that was derived by the survey used in the Validation Test. As long as PEs can describe in general terms the desired direction they wish their projects to take and knowledgeable personnel are available in PMD to transform these general terms into detailed HTPM-II schedules, the need for extensive training in acquisition procedures beyond that received in current training programs is minimized. There is a need to demonstrate the use of the PMS query system to each of the six Division Chiefs, allowing them the opportunity to use the system under supervision of a PMS-experienced person. This training should include instructions and practice in downloading PMS and retrieving information from it using both ad hoc and menu-driven queries. This training should take approximately 30 minutes to one hour and should be held near the Division Chief's work area on equipment he has the opportunity to use on a daily basis.

B. Determination of Manpower Requirements.

Specific PMD manpower requirements for operating PMS need to be determined and personnel accession action taken to fulfill those requirements. Validation Test results indicate that a person knowledgeable of Army acquisition processes, HTPM-II software, and R:Base could bring a new acquisition project into PMS in 2.64 hours, excluding the PMD review and approval process time. This same person could update the 62 projects currently in PMS in approximately 53 hours. This update time equates to approximately seven work days every two months, the recommended period between updates. In short, it does not appear, based on Validation Test results, that maintenance of PMS can justify a full time employee within PMD. Grade and experience factors also warrant consideration. A senior (GS13/14) engineer would be desirable to develop initial schedules of acquisition projects. Update actions could probably be accomplished with a middle grade (GS8/9) technically oriented analyst or computer operator with a working knowledge of HTPM-II and R:Base.

C. Continued Refinement.

Manpower and fiscal resources should be allotted to continually refine PMS. As the system matures and both PEs and managers gain confidence in the information provided by the system, it is anticipated that requests for new information, possibly in new formats, will occur. In addition, PMS has been designed with the flexibility to produce hard copy reports and electronic data submissions to meet higher headquarter's acquisition management reporting requirements when those requirements become more defined.

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APPENDIX A

This Appendix contains a copy of Task Order 0055, Contract Number DAAK70-84-D-0053, to include the Statement of Work to be accomplished.

STATEMENT OF WORK AND SERVICES

TASK ORDER TITLE: Analysis and Implementation of the Logistics Support Directorate Project Management System for the following fields of endeavor: Electric Power, Environmental Control, Supply Distribution, Fuels Handling, Water Supply, and Marine Craft.

TASK LOCATION: This task order will be accomplished primarily at the contractor's facilities and through visits to the US Army Belvoir Research, Development and Engineering Center.

CONTRACT LINE ITEMS: Sections B.1, CLINS 0004, 0005 and 0006, Sections C.2b, and C.3 of the basic contract.

CONTRACT END ITEMS: The primary deliverable end item will be a Study Gist (B011) and a Technical Report (B007). A draft of the Final Report (B007) and the Study Gist (B011) will be delivered no later than 30 days prior to the task order completion date for Government review and approval. The Final Report and Study Gist, incorporating Government comments will be delivered no later than six (6) months after task order award. In-progress briefings conducted every two months will be documented by Progress/Status Meeting Reports (B001) and delivered to the Government within seven days after each briefing. Cost and Performance Reports (B002) will be submitted no later than the tenth working day after the last billing date of the month. Short monthly letter progress reports (B010) will be prepared and delivered NLT ten (10) working days after the end of each month following the date of award. Distribution of above reports is:

a. Progress/Status Meeting Reports (B001) - one (1) copy each to STRBE-HP, STRBE-FP and AMSTR-PBCA.

b. Cost and Performance Reports (B002) - one (1) copy each to STRBE-HP and AMSTR-PBCA.

c. Monthly Letter Progress Report (B010) - one (1) copy each to STRBE-HP and STRBE-FP.

d. Draft Technical Report (B007) and Study Gist (B011) - five (5) copies to STRBE-FP and one (1) copy to STRBE-HP.

e. Technical Report (B007) -

- one (1) copy to Technical Library (STRBE-BT)
- two (2) copies to STRBE-HP accompanied by DD 250
- ten (10) copies to STRBE-FP

-two (2) copies mailed to:

Defense Technical Information Center
Cameron Station
ATTN: DTIC
Alexandria, Virginia 22314

f. Study Gist (B011) -

-one (1) copy to:

Commander TROSCOM
ATTN: AMSTR-CS
4300 Goodfellow Boulevard
St. Louis, Missouri 63120-1798

DESCRIPTION OF WORK:

Background: The Logistics Support Directorate (LSD) is responsible for over 100 developmental projects in various stages of the materiel acquisition cycle. Comprehensive milestone schedules have been developed for selected programs using Harvard Total Project Manager (HTPM) software to guide them through the army's materiel acquisition process. Using the data from these schedules, loaded into the R:Base System V Data Base Management System, project engineers (PEs) and LSD management personnel use microcomputers to effectively and efficiently manage the programs. Further, a LSD Project Management System has been proposed that conceptually gathers project data from PEs on a periodic basis, develops HTPM schedules from that data, loads the data into the computerized data base, and provides meaningful, timely project management information to both PEs and management. A logical and necessary follow-on to this effort is the refinement of the concept and the analysis. If the concept proves feasible and acceptable to LSD personnel, full scale implementation plans must be developed and approved.

Objective: The objective of this task order is to design and conduct an analysis of the LSD Project Management System concept developed under Task Order No. 0033 to determine if it will assist in the efficient and effective management of acquisition programs assigned LSD. If the analysis is successful, the second objective is to develop plans and procedures to fully implement the management system within LSD.

Program Approach: The results of Task Order No. 0033 will be provided to LSD Division Chiefs and the Commander, Belvoir RD&E Center, to include background identification of problem areas, status of actions thus far to provide solutions to those problems, and anticipated actions requiring their support and assistance. Division Chiefs would be asked to collaborate on the development of a data collection effort using the Program Management Data Sheet (PMDS) developed under Task Order No. 0033 as a starting point. The product of this effort will be used to collect data from Division Chiefs on 12 acquisition projects designated by the Program Management Division. The contractor will upload these data into milestone schedules using Harvard Total Project Manager software, transfer the data in these schedules to the data base developed under Task Order No. 0033 using R:Base System V software. The times required to accomplish all work will be documented for later analysis. Approximately one month later, an update on the 12 projects will be made using the same PMDS, revised as necessary to accommodate lessons learned from the initial use. Time measurements will again be taken. An evaluation report will be prepared to include a recommendation regarding full scale implementation within LSD. If a decision is made to implement the management system, operating procedures, system documentation, and training packages will be developed leading to full scale implementation.

Page No. 5 of 6
Task Order No. 0055
Contract No. DAAK70-84-D-0053

Task I: Update Key Personnel and Finalize Development of the PMDS. The contractor will update the Commander, Belvoir RD&E Center and LSD Division Chiefs on the results of Task Order No. 0033 and the proposed actions that follow from that task order. Using the PMDS proposed under Task Order No. 0033 as a starting point, the contractor will develop, in collaboration with LSD Division Chiefs, a PMDS mutually acceptable to Division Chiefs and higher level LSD management personnel that will provide the data necessary to develop and use HTPM milestone schedules and R:Base System V Data Base to efficiently and effectively manage acquisition projects assigned to LSD. (C.2c)

Task II: Analyze and Evaluate the Proposed Management System. The contractor will analyze and evaluate the proposed Project Management System developed under Task Order No. 0033 to efficiently and effectively use manage acquisition projects assigned LSD. Following approval of the evaluation design by the Director, LSD, the contractor will conduct the analysis. The analysis will include collecting information from PEs concerning 12 acquisition projects designated by the Chief, Program Management Division, developing HTPM milestone schedules from these data, transferring the HTPM data to the R:Base System V data base developed under Task Order No. 0033, and providing meaningful and timely management information to PEs and LSD management personnel. The evaluation will include an analysis of the time required to conduct these operations and a project update approximately one month later. A qualitative analysis of the effectiveness of the management system will be made in conjunction with the time study. (C.2c and C.2d)

Task III: Provide an Evaluation. The contractor will provide a report of the results of the analysis to the Director, LSD. The report will include conclusions and recommendations concerning the efficiency of the management system, such as direct labor hours and computer time required to operate the system; and the effectiveness of the support system in terms of an evaluation of its ability to provide timely, meaningful management information. This task ends with a decision by the Director, LSD, to proceed with full scale implementation of the LSD Project Management System or to cease further work. (C.2b and C.3)

Task IV: Provide an Implementation Plan for the Project Management System within LSD. If Task III results in a decision to proceed with full scale implementation of the management system within LSD, the contractor will develop implementing plans and procedures to include necessary documentation and implementation directives. (C.2c)

Task V: Technical Report and Study Gist. The contractor will document the results of the above tasks in a technical report. (C.2b and C.3)

CLASSIFICATION: UNCLASSIFIED.

GOVERNMENT FURNISHED EQUIPMENT: None.

PERFORMANCE PERIOD: From date of award through 13 July 1988.

POINTS OF CONTACT: Mr. Anthony P. Rabalais, 703-664-2095, is the Contracting Officer's Representative. Ms. Elizabeth Radoski, 703-664-5092, will be the Technical Point of Contact.

APPENDIX B

This Appendix contains a copy of the Validation Test Report originally submitted to the Government in draft form on 10 March 1988. Comments received on the draft report have been incorporated into this document.

LOGISTICS SUPPORT DIRECTORATE
PROJECT MANAGEMENT SYSTEM
VALIDATION TEST REPORT
DRAFT

By:

Bruce B. Halstead
Laura M. Feaheny

10 March 1988

Prepared For:

US ARMY
TROOP SUPPORT COMMAND

US ARMY
BELVOIR RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
FORT BELVOIR, VIRGINIA 22060-5606

"The views and findings contained in this report are those of the authors and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other documentation."

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1710 Goodridge Drive, T-7-2
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LOGISTICS SUPPORT DIRECTORATE
PROJECT MANAGEMENT SYSTEM
VALIDATION TEST REPORT

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LOGISTICS SUPPORT DIRECTORATE
PROJECT MANAGEMENT SYSTEM
VALIDATION TEST REPORT

I. INTRODUCTION

A. Background. A Technical Report, "Development of Milestone Schedules for Selected Logistics Support Directorate Programs", published 15 September 1987, concluded that the project management methods presently in use within the Logistics Support Directorate (LSD) of the US Army Belvoir Research, Development, and Engineering Center (BELVOIR) could be improved. The current system, centered around milestone schedules developed with Harvard Total Project Manager (HTPM) software, has been perceived as not very useful and consequently, is not being used effectively by either project engineers (PEs) or LSD management. The system is too cumbersome, presents a new way of doing business to some, and is not readily adaptable to the various acquisition projects for which LSD is responsible.

Appendix E of the 15 September 1987 Technical Report developed a conceptual Program Management System (PMS) that potentially corrects the perceived deficiencies of the current system. PMS is conceptually designed to reduce the administrative burden on the Divisions within LSD, provide timely information to managers, feedback to PEs, and guidance to the supporting staff.

B. Objective of the Test. The objective of the test described in this report was to validate the operation of the conceptually designed PMS within the environment defined by the existing LSD organization and operating procedures. The test was designed to result in conclusions regarding the capability of PMS to yield useful management information in milestone schedule and database format that would:

- Be acceptable to both LSD management personnel and PEs.
- Ensure all Army Acquisition Management Milestones are met.

- Satisfy the informational needs of LSD and all supporting staff activities within BELVOIR.
- Encourage early coordination between PEs and LSD management personnel on matters pertaining to acquisition project direction and tailoring.
- Support the management philosophy of centralized planning at Directorate level and decentralized program execution at Division level and below.
- Minimize the time required by the PE to report the status of his/her project. The Program Management Division (PMD) would become the single focal point for all queries concerning the status of LSD projects.

II. DESCRIPTION OF THE SYSTEM TESTED

A. General. Figure 1 portrays the people and resources comprising the proposed PMS. This section describes the system in terms of the inter-relationships between these people and their resources.

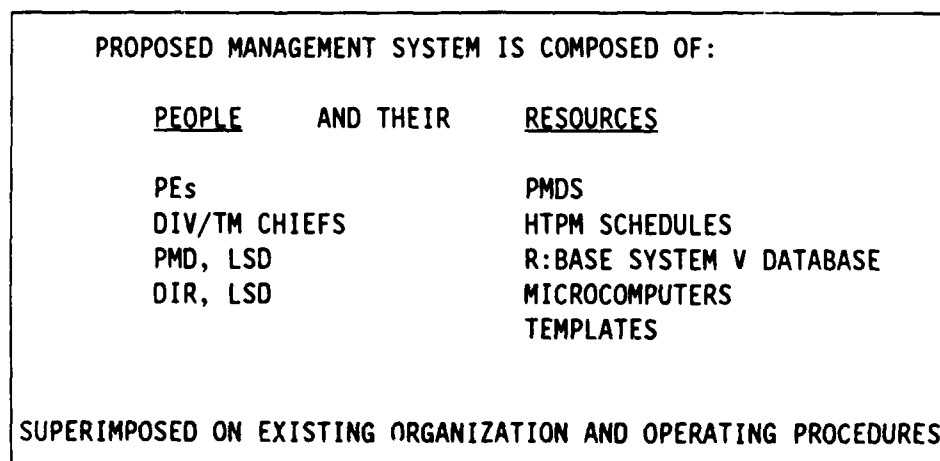


FIGURE 1. PROJECT MANAGEMENT SYSTEM

In general, PMS provides detailed project milestone schedules developed using HTPM-II software that lists activities, responsibilities, and suspense dates for each project for 18 months in the future. The amount of detail in the schedules is determined by the PE and is based on those details deemed necessary to effectively manage the project. The Director, LSD, through the PMD, requires reporting on a minimum number of specified activities that he desires to be standardized across the directorate. PMD ensures that the 18 month schedules are updated monthly and that six month projections are added every six months. In short, project management information shall never be more than 30 days old and will be projected from 12-18 months in the future, at any given time.

These schedules were input into a R:Base System V database capable of responding to ad hoc queries from both PEs and management personnel. This feature was designed to minimize the time spent by PEs responding to queries from management and the supporting staff. Floppy disks containing the HTPM-II schedules and database were returned to Division Chiefs and PEs after monthly updates for their use as appropriate.

B. Use of the Templates. Templates of the complex tasks and milestones associated with the traditional Research and Development (R&D), the Non-Developmental Item (NDI), and the Army Streamlined Acquisition Process (ASAP) have been developed and were available in PMD for use by PEs, as appropriate, in completing the Project Management Data Sheets (PMDSs). These templates define all the Army Milestone Management System (AMMS) suspense dates required by Army Regulation (AR) 700-26. Templates are excellent planning aides for use by PEs in laying out initial project schedules, but are not particularly useful in scheduling projects currently underway.

C. Use of the Project Management Data Sheets. The Project Management Data Sheet (PMDS) at Annex B was a primary building block upon which HTPM-II schedules were developed. The acquisition project description applicable to Sections A and B of the PMDS were completed by PMD personnel before distributing the sheets to the PEs. Sections C, D, and E were completed by

the PEs, followed by review of the PMDS by Team Chiefs and Division Chiefs, provided the information necessary for PMD personnel to develop HTPM-II milestone schedules for the projects. PMD action officers worked one-on-one with PEs to ensure that the HTPM-II schedules developed from the PMDS sheets were accurate.

D. Role of the Project Management Division. PMD became a key participant in project scheduling activities within LSD. PMD action officers used the information provided by the Divisions via the PMDS to formulate useful HTPM-II milestone schedules for both PEs and management. By removing the PE from the direct responsibility of producing HTPM-II schedules (unless the PE desires to develop his/her own schedule), the system was designed to allow the PE more time to spend on his/her individual project. PMS was also designed to allow PMD to effectively act as a point of contact for all queries originating outside LSD concerning acquisition projects for which LSD is responsible. Finally, the system forced close coordination between Directorate and Division level management early in the tailoring process of acquisition projects and routinely throughout the acquisition cycle. The PE gained early command support for his/her efforts and, at the same time, benefited from the experience and counsel of his/her superiors.

E. Role of Division Level Personnel. Within the Division, PMS involved the PE, the Team Chief, and the Division Chief. All of these people determined the project information contained in the final HTPM-II schedule. The Project Engineer and Team Chief developed a completed PMDS based on project information. The Division Chief reviewed and approved the PMDS, ensuring proper planning and execution of the project. The Division Chief, Team Chief, and Project Engineer were also provided with the completed schedule and had the opportunity to use it to measure project progress. Division personnel also filled out one monthly update of the PMDS. PMS did not alter the responsibilities presently held by Division level personnel to plan and execute acquisition actions for assigned projects. The PE remained responsible to his/her superiors for all actions concerning his/her project involving the expenditure of appropriate funds.

SECTION III: RESPONSIBILITIES

The Chief, PMD, was responsible for the overall conduct of the PMS Validation Test. This section describes his responsibilities and the responsibilities of personnel he directed to conduct the test.

A. PMD Chief.

1. Responsible for the proper conduct of the test.
2. Approved Sections A & B of the PMDS prior to delivery to the Divisions.
3. Reviewed and approved HTPM-II schedules after they were received from the contractor.
4. Ensured delivery of schedules to the Divisions after approval.
5. Recorded all time spent on the project and ensured all PMD personnel properly recorded times.
6. Future action: Prepare and deliver decision briefing to the Director, LSD, to determine whether to implement the PMS.

B. Division Chiefs.

1. Reviewed and approved the PMDS after completion by the Project Engineer and Team Chief.
2. Collected PMDSs for new projects and updates for the projects previously completed. Ensured timely forwarding of these projects to PMD.
3. Recorded time accurately on the time sheets attached to the PMDSs according to tasks performed (Complete, Review, Approve, Process, and Read).
4. Ensured accurate times were recorded by Team Chiefs and Project Engineers.
5. Accurately filled out the survey questionnaire when requested following the completion of the test.

C. Team Chiefs.

1. Assisted Project Engineers, as necessary, in collecting the data necessary to complete the PMDS (or HTPM-II schedule).
2. Reviewed and directed revisions of PMDS (or HTPM-II schedule) after it was initially completed by the Project Engineer.
3. Recorded times accurately and ensured Project Engineers recorded their times accurately and completely.
4. Accurately filled out the survey questionnaire when requested following the completion of the test.

D. Project Engineers.

1. Gathered information about project. Used PMDS to record information accurately or as a tool to develop own HTPM-II schedule.
2. Revised the PMDS (or HTPM-II schedule) according to Team Chief's instructions.
3. Alloted time in order to coordinate with contractor and ensure that an accurate HTPM-II schedule had been developed.
4. Recorded times accurately on the time sheets included with the PMDS.
5. Accurately filled out the survey questionnaire when requested following the completion of the test.

E. PMD Action Officers.

1. Gathered information necessary to fill out Sections A & B of PMDS.
2. Reviewed the PMDS for logic and standardization upon receipt from LSD Division Chiefs.
3. Ensured timely delivery of PMDS sheets and HTPM-II schedules to the contractor.
4. Recorded all time spent on the project during each different phase.
5. Accurately filled out survey questionnaire when requested following the completion of the test.

F. Administrative Personnel.

1. PMD administrators processed and delivered Sections A & B to the Divisions.
2. PMD administrators processed and delivered feedback to include hard copies and floppies of the schedules and database to the Divisions.
3. All administrators recorded times individually according to the tasks performed.

G. Contractor.

1. Designed Validation Test Plan. Obtained approval of plan from LSD Technical Point of Contact.
2. Upon receipt of completed PMDS sheets or HTPM-II schedules from PMD, coordinated with PEs, as necessary, to develop/finalize HTPM-II schedules. Loaded schedules into R:Base System V database.
3. Recorded times accurately on the time sheets included with the PMDS sheets.
4. Conducted cost and benefit analyses based on completed time sheets and responses to the survey questionnaire. Developed conclusions and recommendations to include in this report.
5. Assisted PMD in the preparation of a decision briefing to the Director, LSD.

IV. DESCRIPTION OF THE VALIDATION TEST

Figure 2 describes the seven phases of the PMS Validation Test. The cost of operating the system, measured in terms of direct labor costs, was computed from the data received from the time sheets attached to the PMDS. The perceived benefit of the PMS to PEs and management personnel was quantified and analyzed by means of a survey questionnaire distributed following feedback of the HTPM-II schedules and database to Division level personnel. See Annex B and C for benefit and cost analysis procedures.

<u>PHASE</u>	<u>EVENT/TASK</u>	<u>PLANNED COMPLETION DATE</u>	<u>ACTUAL COMPLETION DATE</u>
I	PMD Personnel completed Section A & B of the PMDS and sent out to Divisions. Time sheets were attached to the PMDS and completed by participating personnel.	12 NOV 1987	1 DEC 1987
II	Division level personnel completed the PMDS by filling out Sections C, D, & E. Personnel returned the PMDS to PMD. Several PEs developed their own HTPM schedule instead of filling out the PMDS.	1 DEC 1987	5 JAN 1988
III	PMD, in coordination with PEs, developed HTPM schedules and loaded these schedules into R:Base System V database. Floppies and hard copies of the schedules were returned to the PEs in both HTPM and R:Base System V format.	9 DEC 1987 23 DEC 1987	4 FEB 1988 10 FEB 1988
IV	Phases I, II, and III were repeated to update the project status.	13 JAN 1988	10 FEB 1988
V	Division level personnel were surveyed by a questionnaire sent out by PMD.	13 JAN 1988	24 FEB 1988
VI	Analysis and development of the Test Report. The time sheets determined the cost of the system and the questionnaires were used to determine the effectiveness of the system.	11 FEB 1988	8 MAR 1988
VII	DECISION BRIEF Decision to be made to implement or abandon the system for the Logistics Support Directorate Division at BELVOIR.	22 FEB 1988	10 MAR 1988

FIGURE 2. FLOW CHART, VALIDATION TEST

V. RESULTS AND CONCLUSIONS

A. General. The results and conclusions contained in this section are derived from the time sheets and survey questionnaires at Annexes E and F, respectively. The data contained in those appendices has been reduced to statistical information, the results of which are contained in Annex D along with all calculation sheets used in the analysis. This section brings those results forward in summary form and states conclusions that relate to the objectives and purpose of the test.

B. Should the System be Implemented Across All Projects for Which the Directorate is Responsible?

1. Benefits Analysis. The Summary of Benefits Analysis (Figure 3) summarizes the responses to the survey questionnaire completed at the conclusion of the test. Respondents offered opinions on project management procedures as they perceived existed prior to the test and opinions on management under the tested PMS. Acceptance of the PMS was indicated by preconceived decision rules relating to each question in the survey and to the total survey. As can be seen from the matrices, the survey indicated five positive responses indicating PMS should be implemented and three negative responses that perhaps suggest that nothing will be gained by implementing PMS. Responses to the remaining 14 questions indicated ambivalence to either system - PMS or the status quo.

SURVEY RESULTS VERSUS DECISION RULES

QUESTION	PERCENT	PRE-PMS AVERAGE	POST- PMS AVG	STATISTICALLY SIGNIFICANT?	DECISION RULE	POSITIVE RESPONSE	NEGATIVE RESPONSE
16. I have a working knowledge of the Army's AMMS system as described in AR 700 - 26 and use it when scheduling.	91.3%	4.38	4.86	n/a	1	x	
17. I have a working knowledge of the Army's systems acquisitions policy and procedures as described in AR 70 - 1.	86.9%	6.50	7.00	n/a	1	x	
18. I am knowledgeable of the activities of other Divisions within LSD and understand how the activities of my Division interact with those activities.	86.9%	5.05	5.40	n/a	1	x	
19. I am knowledgeable of the activities of other Directorates and separate offices within BELVOIR associated with systems acquisition activities impacting upon my Project/Division.	86.9%	5.75	5.95	n/a	1	x	
20. I am knowledgeable of the activities of other Directorates and separate offices outside of BELVOIR associated with systems acquisition (TROSCOM, HFEL, etc.) and how those activities impact upon my Project/Division.	86.9%	5.75	6.25	n/a	1	x	
21. Management (Im, Div, LSD) attention is directed to actions requiring attention in the near future and actions that need additional management attention.	73.9%	5.24	5.47	Yes	2		
22. Optimal use has been made of the support staff, (PMD, LSD, HFEL, Procurement, et al).	73.9%	3.71	3.94	Yes	2		
23. PEs can optimize the time spent on design, development, test and evaluation.	78.3%	3.67	4.00	Yes	2		
24. Administrative time at Division level and below is minimized.	69.6%	3.00	3.94	Yes	2		
25. There is only a remote possibility of missing a milestone suspense or not recognizing that a task needs to be accomplished	78.3%	3.00	4.06	Yes	2		
26. A complete accurate and timely overview of a project is possible.	78.3%	5.00	6.06	Yes	2		

Decision Rule Definitions: Rule 1 - "A" responses should be greater than or equal to "B" responses to be designated a positive response. "B" responses greater than "A" responses are not necessarily negative responses.

Rule 2 - A positive response is defined as a response with an "After Mean" > 6.5 and the difference between the "Before Mean" and "After Mean" is statistically significant with the "After Mean" having the higher value. A negative response occurs when the "After Mean" is < 3.5 or statistically lags the "Before Mean".

Rule 3 - A positive response occurs when the "After Mean" is less than or equal to the "Before Mean" "After Means" greater than "Before Means" are not necessarily negative responses.

FIGURE 3 SUMMARY OF BENEFITS ANALYSIS

SURVEY RESULTS VERSUS DECISION RULES

QUESTION	PERCENT	PRE-PMS AVERAGE	POST- PMS AVG	STATISTICALLY SIGNIFICANT?	DECISION RULE	POSITIVE RESPONSE	NEGATIVE RESPONSE
27. Managing acquisition projects in LSD requires extensive knowledge of the Army's system acquisition process.	82.6%	6.89	7.47	n/a	3		x
28. The acquisition project status information generated and used within LSD is consistent with the information used from other agencies and commands.	78.3%	5.22	5.56	Yes	2		
29. The scope of acquisition milestone management, e.g., total acquisition cycle a 18 month projections, and the frequency of updates provide useful management information.	78.3%	4.94	5.72	No	2		
30. The milestone management system gives necessary and sufficient information about acquisition tasks and milestones.	78.3%	4.50	5.61	Yes	2		
31. The method used to update project status is acceptable.	78.3%	4.61	5.28	Yes	2		
32. The time needed by the PE to update project status is acceptable.	78.3%	4.11	4.61	Yes	2		
33. Periodic training sessions for LSD personnel on the Army's acquisition process are necessary.	78.3%	8.17	8.50	n/a	3		x
34. Feedback from PMD will be timely and useful to me in project management activities.	82.6%	5.00	6.05	Yes	2		
35. The percentage of total project time spent scheduling is acceptable.	78.3%	4.72	5.11	Yes	2		
36. The procedures used in project scheduling do not conflict with procedures for other acquisition project activities.	78.3%	5.06	5.61	Yes	2		
37. The PMD and the Director, LSD, benefit more from the milestone management system than Division level personnel.	73.9%	6.59	6.71	n/a	3		x

Decision Rule Definitions: Rule 1 - "A" responses should be greater than or equal to "B" responses to be designated a positive response. "B" responses greater than "A" responses are not necessarily negative responses.

Rule 2 - A positive response is defined as a response with an "After Mean" > 6.5 and the difference between the "Before Mean" and "After Mean" is statistically significant with the "After Mean" having the higher value. A negative response occurs when the "After Mean" is < 3.5 or statistically lags the "Before Mean".

Rule 3 - A positive response occurs when the "After Mean" is less than or equal to the "Before Mean". "After Means" greater than "Before Means" are not necessarily negative responses.

FIGURE 3 (Cont.) SUMMARY OF BENEFIT ANALYSIS

Responses to all questions except one indicate that PMS is preferred over the status quo. PMS showed significant improvement over existing systems in the following areas:

- Improved PE's and management's understanding of the Army's AMMS system and its relationship to project scheduling.
- Improved employee's working knowledge of AR 70-1.
- Increased knowledge of the activities of other Directorates and separate offices outside of BELVOIR.
- Participants in the test perceived that administrative time at Division level and below was minimized relative to the status quo.
- People perceived that the probability of missing a milestone suspense were lessened with PMS.
- The respondents' perception was clear that PMS provided a more complete, accurate and timely overview of project scheduling.
- On the negative side, participants believed that working under PMS requires more extensive knowledge of the Army's system acquisition process.
- PMS is perceived by the Division personnel to give better information about acquisition tasks and milestones.
- The time needed by the PE to update project status under PMS is more acceptable.
- Regardless of which management system is selected for future use, all participants believe that periodic training sessions on the Army's acquisition system are necessary. (This statement received the strongest positive support of all statements contained in the survey).

2. Time and Cost Analysis. An analysis of the time sheets associated with the validation test summarized at Figure 4 indicates that the initial preparation of a schedule for inclusion in the database averages between five and six hours. About half that time is required by Division level personnel to prepare, review, and approve the schedule. The remainder of the time is spent by PMD personnel reviewing the Division's input, coding the HTPM-II schedule, and loading it into the database. Updates take less than half of that time, but the majority of work is done in the Division.

Averages per Project

ACTIVITY	TIME (Min)			COST (\$)		
	INITIAL	UPDATE	DIFFERENCE	INITIAL	UPDATE	DIFFERENCE
Preparation by Project Engineers	120	86	34	42	30	12
Review by Team Chiefs	40	14	26	17	7	10
Approval by Division Chiefs	15	11	4	8	5	3
Coding by Program Management Division	135	28	107	43	9	34
Review by Program Management Division	14	14	0	5	5	0
Preparation of Database by Program Management Div	9	9	0	3	3	0
Totals	333 or 5.6 hrs	162 or 2.7 hrs	171 or 2.9 hrs	\$118	\$59	\$59

FIGURE 4. TIME/COST STATISTICS

Direct labor costs associated with initial schedule preparation average approximately \$118 per project. The majority of the costs being attributable to efforts by PEs and PMD personnel. Updates appear to cost half that amount without significant reductions in the review and approval processes.

3. Correlation Analyses. During the planning of the validation test, the correlation between an employee's position, background, experience, etc., and the acceptance or nonacceptance of the proposed PMS became an item of interest. Demographic data collected with the questionnaire were used to compute correlation coefficients for "After PMS" responses to the following statements:

- Administrative time at Division level and below is minimized.
- A complete, accurate, and timely overview of a project is possible.
- The scope of acquisition milestone management, e.g., total acquisition cycle and 18 month projections, and the frequency of updates provide useful management information.
- Feedback from PMD will be timely and useful to me in project management activities.
- The percentage of total project time spent scheduling is acceptable.

Figure 5 provides a summary of correlation coefficient calculations. In general, there is little statistical correlation (or linear relationship) between an employee's position, age, background, or experience and the degree of acceptance of the proposed PMS. It is interesting to note, however, the large degree of negative correlation indicating less acceptance of the PMS as one gains experience, position, or age. On the other hand, it appears that the more one uses the computer in his/her work, the higher the acceptance evaluation.

Questions Indicative of the Acceptance/Utility of PMS System	Correlation Coefficient					
	Pos'n	Age	Govt Time	BRDEC Time	PE Time	Cmptr Trng Use
Administrative time at Division level and below is minimized.	-.89	-.19	+.62	+.43	-.13	+.79
A complete, accurate, and timely overview of a project is possible.	-.94	-.81	-.77	-.12	-.91	+.82
The scope of acquisition milestone management, e.g., total acquisition cycle and 18 month projections, and the frequency of updates provide useful management information.	-.83	-.77	-.55	-.21	-.48	+.73
Feedback from PMD will be timely and useful to me in project management activities.	-.54	-.56	-.34	-.56	-.54	+.81
The percentage of total project time spent scheduling is acceptable.	-.86	-.34	+.13	+.38	-.45	+.97

FIGURE 5. SUMMARY OF CORRELATION COEFFICIENT CALCULATIONS

VI. RECOMMENDATIONS

A. Based on the results of the benefit and time/cost analyses discussed in the last section, approve the proposed PMS and implement it across appropriate projects for which the Directorate has acquisition responsibility. (The Directorate has many programs, such as testing protocols, etc., that perhaps should be excluded from inclusion in the PMS).

B. Based on the unanimous and strong positive response to the statement that periodic training sessions for LSD personnel on the Army's acquisition process are necessary, develop an Acquisition System Training Program and periodically provide such training to pertinent Directorate personnel.

ANNEX A
APPROVED STATEMENT OF WORK

Please see Appendix A to Final Technical Report

ANNEX B

PROGRAM MANAGEMENT DATA SHEET

This Annex contains the PMDS used in the Validation Test. It has subsequently been revised. The revised version is at Appendix C of the Final Technical Report.

LOGISTICS SUPPORT DIRECTORATE
PROJECT MANAGEMENT DATA SHEET

GENERAL: The purpose of this document is to obtain data from Logistics Support Directorate (LSD) Division Chiefs, Team Chiefs, and Project Engineers (PEs) concerning new and on-going acquisition projects assigned to LSD. Data provided by this document will be used by Program Management Division (PMD) personnel to develop Harvard Total Project Manager (HTPM) milestone schedules for use by PEs, Team Chiefs, Division Chiefs, and LSD management personnel. Additionally, the data will be placed in a R:Base System V data base for use by all LSD project management personnel. This data sheet is designed to reduce the administrative burden on Division level personnel. The initial completion will require some time, but follow-on updates will require no more than 15 minutes every month or as significant changes occur in a project's status.

SECTION A (General Information)

Program Name _____ PMS# _____ Date _____

Project Engineer _____ Tele # _____

Team Chief _____ Tele # _____

Division Chief _____ Tele # _____

Type Report: New Project _____ (Complete entire report).
 Update _____ (Complete only areas that have
 changed since last report).
 Cancel Project _____ (No further entries necessary).

Proponent: _____

Program Type: Contract Support____ PIP____ Customer____ Prod. Support____
 Engineer Support____ Tech Base Research____ NDI____ VE____
 RTE____ ASAP____ MACI (NDI-A)____

Current FY Funding Level_____ Type of Funding (6.2,6.4,etc)_____

SECTION B (Brief Description of the Project)

SECTION C (Critical Milestone Data)

This section contains critical milestones necessary for a PE to manage a typical project. The milestones are not necessarily in the order of a tailored acquisition process. Fill in the estimated dates and actual dates (if known) for each milestone listed. If a milestone is not applicable to the project, enter "NA". The standard field descriptions and Army Codes have also been provided to assist in making your own HTPM schedule, if desired.

<u>Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Est. Date</u>	<u>Actual Date</u>
O&O Plan MARC	O&O PLN MARC	B0350		
O&O Plan Approved	O&O PLAN APR	AMMS1005		
Initial AS MARC	INIT AS MARC	B0450		
Acquisition Strategy Dev	AQ STRAT DEV	AMMS1006		
Market Investigation Complete	MAR INV COMP	AMMS1020		
Rqd. Operational Cap. MARC	ROC MARC	None		
ROC Aprv by HQ TRADOC	ROC APPROVED	AMMS1047		
MARB Convened MDR I	MARB MDR I	AMMS1087		
Initial Production Readiness	PRR COMP	AMMS1090		
IPR Milestone Decision Rev I	MILESTONE 1	AMMS1999		
IPR Milestone Decision Rev II	MILESTONE 2	AMMS2999		
D&V Contract Award	D&V AWARD	AMMS2015		
Technical Test I Start	TT I START	AMMS2130		
Technical Test I Complete	TT I COMP	AMMS2140		
User Test I Start	UT I START	AMMS2180		
User Test I Complete	UT I COMP	AMMS2190		
Full Scale Development Award	FSD AWARD	AMMS3001		
Technical Test II Start	TT II START	AMMS3240		
Technical Test II Complete	TT II COMP	AMMS3250		
User Test II Start	UT II START	AMMS3300		
User Test II Complete	UT II COMP	AMMS3310		
MARB Convened MDR III	MARB MDR III	AMMS3795		
IPR Milestone Dec Rev III	MILESTONE 3	AMMS3999		
Production Contract Award	PROD AWARD	AMMS4005		
First Unit Equipped Date	FUED	AMMS4620		
IPR Milestone Dec Rev I/II	MILESTONE 12	B1083		
Proof of Principle Award	POP AWARD	None		
IPR Milestone Dec Rev I/III	MILESTONE 13	None		
MARC for BELVOIR's IPR	PRE-IPR MARC	None		
Special IPR	SPECIAL IPR	None		
Proof of Principle Award	POP AWARD	None		
Proof of Principle Test Start	POPT START	None		
Proof of Principle Test Comp	POPT COMP	None		
Follow-on T&E Start	FOT&E START	None		
Follow-on T&E Complete	FOT&E COMP	None		
First Article Test Start	FAT START	None		
First Article Test Complete	FAT COMP	None		
Proc. Acquisition Plan MARC	PAP MARC	None		
Req. Oper. Capability MARC	ROC MARC	None		
Proveout Award	PROVOUT AWRD	None		

SECTION D (Milestones/Tasks Occurring in the Next 18 Months)

This section contains additional milestones and tasks that could occur during the course of an acquisition program. Below each major heading are tasks and milestones that must be considered if they are scheduled to occur within the next 18 months. Blanks are also provided under each major heading to permit you to enter any tasks/milestones that you desire to list in order to effectively manage your project. Standardized field descriptions and codes are provided for those PEs desiring to develop their own HTPM schedules. PEs who desire PMD personnel to develop a HTPM schedule for them should either (1) fill in the estimated start and finish dates for each milestone/task expected to occur in the next 18 months, or (2) enter the start date of each of the events you wish to schedule and provide estimated duration times (in work days) for all task/milestones you have added (Changes to the stated estimated durations are permitted). In the latter case, earliest and latest start dates will be computed automatically by HTPM software using estimated duration times provided. NOTE: Milestones listed in Section C are not repeated in this section.

<u>Task/Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Test and Evaluation Master Plan (TEMP):</u>					
TIWG Established	TIWG CHARTER	None	0	_____	_____
IEP Received From TRADOC	IEP TRADOC	None	60	_____	_____
IEP Received From TECOM	IEP TECOM	None	60	_____	_____
IEP Approved	IEP APPROVED	None	0	_____	_____
Prepare TEMP	PREPARE TEMP	None	22	_____	_____
Send out TEMP for Comment	SENDOUT TEMP	None	22	_____	_____
TIWG Meeting	TIWG MEETING	None	0	_____	_____
TEMP Developed	TEMP DEVELOP	AMMS1055	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Acquisition Strategy (AS):

TIWG Established	TIWG CHARTER	None	0	_____	_____
Write Acquisition Strategy	PREPARE AS	AMMS1006	20	_____	_____
Initial AS MARC	INIT AS MARC	B0450	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

(Section D Cont.)

<u>Task/Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Independent Evaluation (IE):</u>					
IEP Received From TRADOC	IEP TRADOC	None	60	_____	_____
IEP Received From TECOM	IEP TECOM	None	60	_____	_____
IEP Approved	IEP APPROVED	None	0	_____	_____
IER Received From TRADOC	IER TRADOC	None	60	_____	_____
IER Received From TECOM	IER TECOM	None	60	_____	_____
IER Approved	IER APPROVED	None	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

BOIP/QOPRI Events:

BOIP Feeder Data Submitted	BOIP FED DAT	AMMS2095	8	_____	_____
BOIP Approved	BOIP APPROVD	AMMS2250	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Integrated Logistic Support (ILS):

Prepare ILSP	PREPARE ILSP	None	30	_____	_____
TROSCOM ILSP	TROSCOM ILSP	None	90	_____	_____
ILS Mgt Team Meeting	ILSMTMEETING	AMMS1030	0	_____	_____
SUBCOM ILSP	SUBCOM ILSP	None	90	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Technical Data Package (TDP):

Starting & Completing Date	START COMP	None	0	_____	_____
Packaging of Data	PACKAGING	None	_____	_____	_____
Material	MATERIAL	None	_____	_____	_____
Safety	SAFETY	None	_____	_____	_____
Engine (When Used)	ENGINE	None	_____	_____	_____
Quality & Reliability	Q & R	None	_____	_____	_____
Initial Document Draft	DRAFT STDZN	None	_____	_____	_____
Type & Print Document	TYPE & PRINT	None	_____	_____	_____
Circulation of Document	CIRCUL DOC	None	_____	_____	_____
Res. & Prep. Final Draft	RESOLVE COMS	None	_____	_____	_____
Final Draft Standardized	FINAL DRAFT	AMMS3175	_____	_____	_____
Type, Aprv, Number, & Date	TYPE & APR	None	_____	_____	_____
Submit ECP	SUBMIT ECP	None	_____	_____	_____

(Section D Cont.)

<u>Task/Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Duration (Workday)</u>	<u>Est. Start Date</u>	<u>Finish Date</u>
<u>Technical Data Package (Cont.):</u>					
Approve ECP	APPROVE ECP	None	_____	_____	_____
Start CCB Approval	START CCB	None	_____	_____	_____
Complete CCB Approval	APPROVE CCB	None	_____	_____	_____
All DOC's to Data Bank	FINAL CUTOFF	None	_____	_____	_____
Comput., Micro., & Fwd TDP	MICO & SEND	None	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Mkt Investigation:

Mkt. Investigation Start	MAR INV INIT	None	0	_____	_____
Questionnaire Available	QUEST AVAIL	None	0	_____	_____
Industry Contacts Made	CONTACTS END	None	0	_____	_____
Mkt. Investigation Comp	MAR INV COMP	AMMS1020	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Procurement Acquisition Plan/Acquisition Plan (PAP/AP):

Proc. Acquis. Plan Start	PAP START	None	0	_____	_____
Proc. Acquis. Plan Comp	PAP COMP	AMMS2005	0	_____	_____
Adv. Acquis. Plan Submit	AP SUBMIT	AMMS3760	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Milestone Decision Review/In-Process Review (IPR):

Prepare IPR Package	PRE IPR PACK	None	5	_____	_____
Prepare IPR MARC	PRE-IPR MARC	None	0	_____	_____
Update IPR Package	UPDATE IPR	None	5	_____	_____
Send IPR to AMC	SEND IPR AMC	None	20	_____	_____
Update IPR	UPDATE IPR	None	10	_____	_____
Mail out IPR Package	MAIL IPR	None	5	_____	_____
IPR Review AMC, TRADOC, LEA	IPR REVIEW	None	30	_____	_____
Milestone xxx*	MILESTONExxx*	_____	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

* xxx = 1, 1/2, 2, 1/3, or 3 (See Section C)

(Section D Cont.)

<u>Task/Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Technical and User Testing (TT & UT):</u>					
Procure Test Articles	PROC TESTART	None	200		
Technical Test Developed	TT DEVELOP	None	30		
Troop Demo Convened	TROOP DEMO	AMMS2180	50		
Dev Trp Demo Report	TRP REP DEV	None	30		
Develop Test Plan	TEST PNG	None	10		
ICTP Updated	ICTP UPD	None	30		
Test Report, TT I	TEST REP TTI	None	20		
Test Report, UT I	TEST REP UTI	None	20		
<u>Production Engineering (PE):</u>					
Initial Product Eng. Plan	INIT PEP	None	10		
<u>Material Fielding Plan (MFP):</u>					
Start Material Fielding	START MFP	AMMS4040	0		
Material Fielding	MAT FIELDING	None	170		
Comp Material Fielding	COMP MFP	AMMS4490	0		
<u>Configuration Management Planning (PCA)/(FCA):</u>					
Functional Config. Audit	FCA COMP	AMMS3650	0		
Physical Config. Audit	PCA COMP	AMMS3660	0		

(Section D Cont.)

<u>Task/Milestone</u>	<u>Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Contracts:</u>					
Develop Contract Package	DEV CONT PAC	None	20	_____	_____
Submit Contract Package	SUB CONT PAC	None	0	_____	_____
Daisy Chain	DAISY CHAIN	None	40	_____	_____
Other Task Orders	TOxxxxxxxxx*	None	0	_____	_____
Other Contract Awards	AWDxxxxxxxxx*	None	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Safety Events:

Prepare Environ. Assess.	PREPARE EA	None	20	_____	_____
Prepare Health Hazard	PREPARE HHA	None	20	_____	_____
Prepare Safety Assess.	PREPARE SAR	None	20	_____	_____
Prep. Safety & Health Data and Sys. Safety Risk Ass.	SHDS & SSRQ	None	20	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Transportability Events:

Init. Transport. Report	INITIATE TR	None	20	_____	_____
Trans Plan to MTMC	TRNS REP	AMMS1070	0	_____	_____
Transport. Report Apvd	TRANS R APR	AMMS2320	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Type Classification (TC):

Prepare TC Documents	TC DOC PREP	None	25	_____	_____
Date TC Approved	TC APPROVED	AMMS3720	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

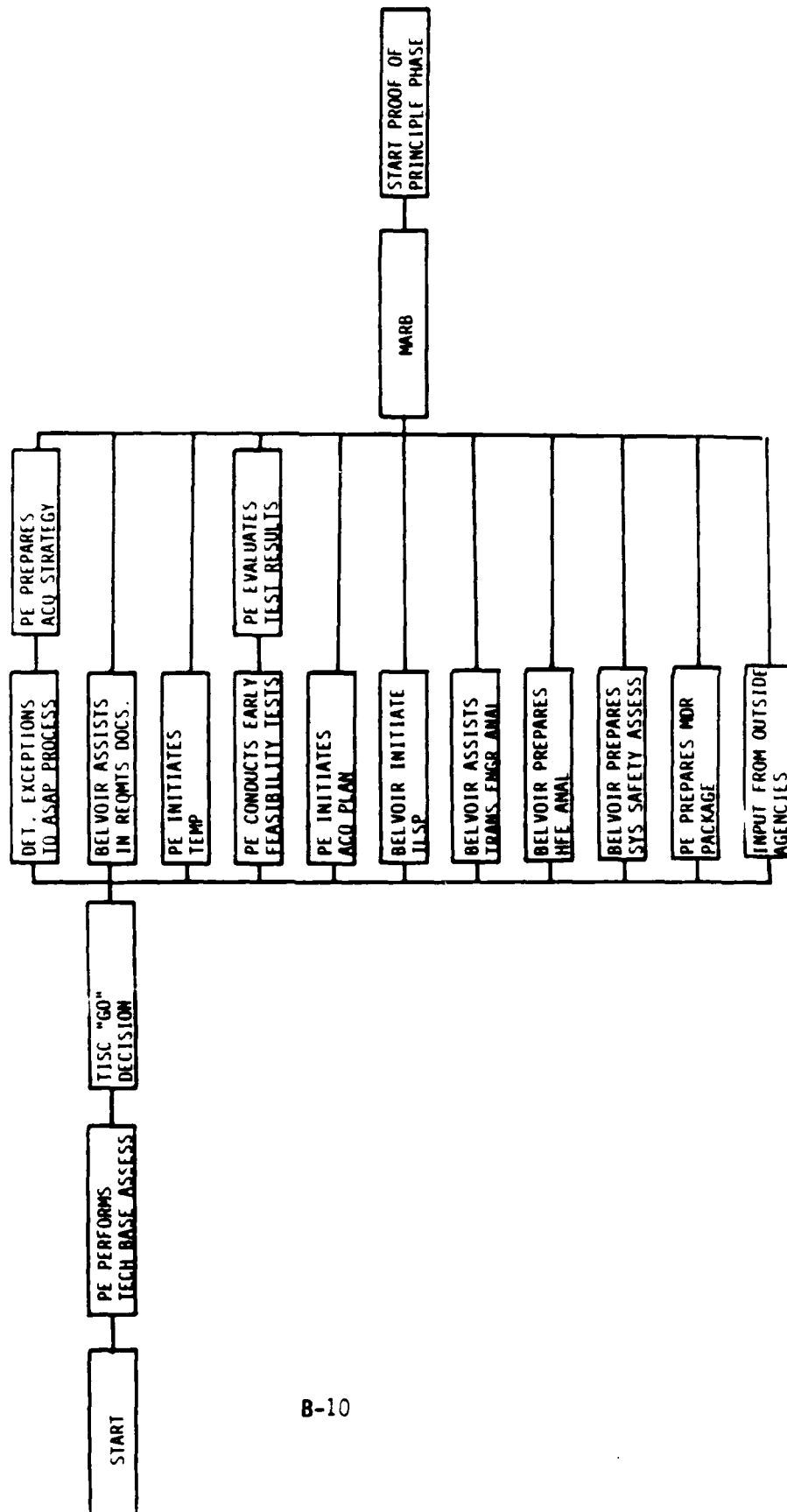
* = Project Engineer's Unique Code.

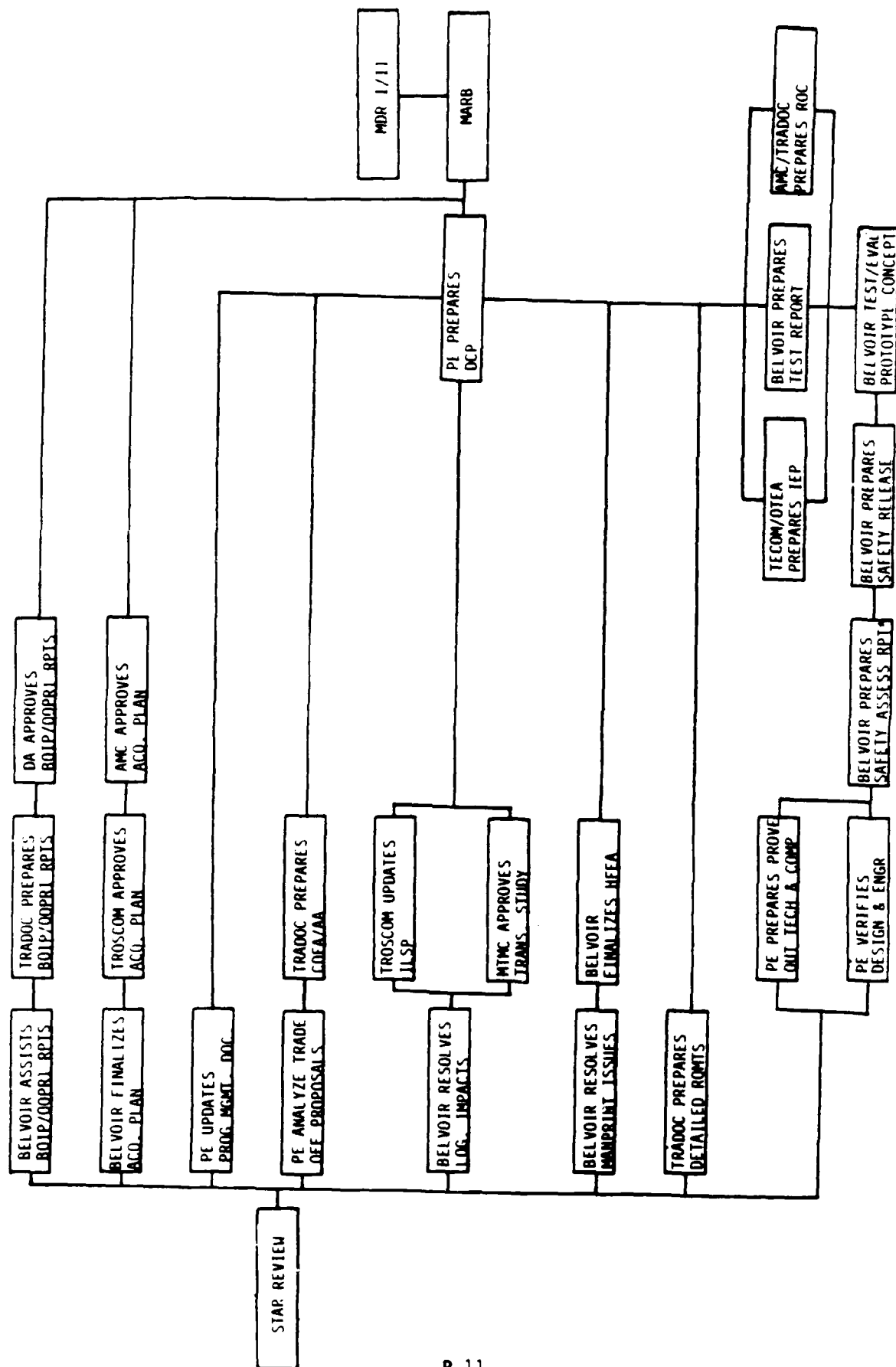
(Section D Cont.)

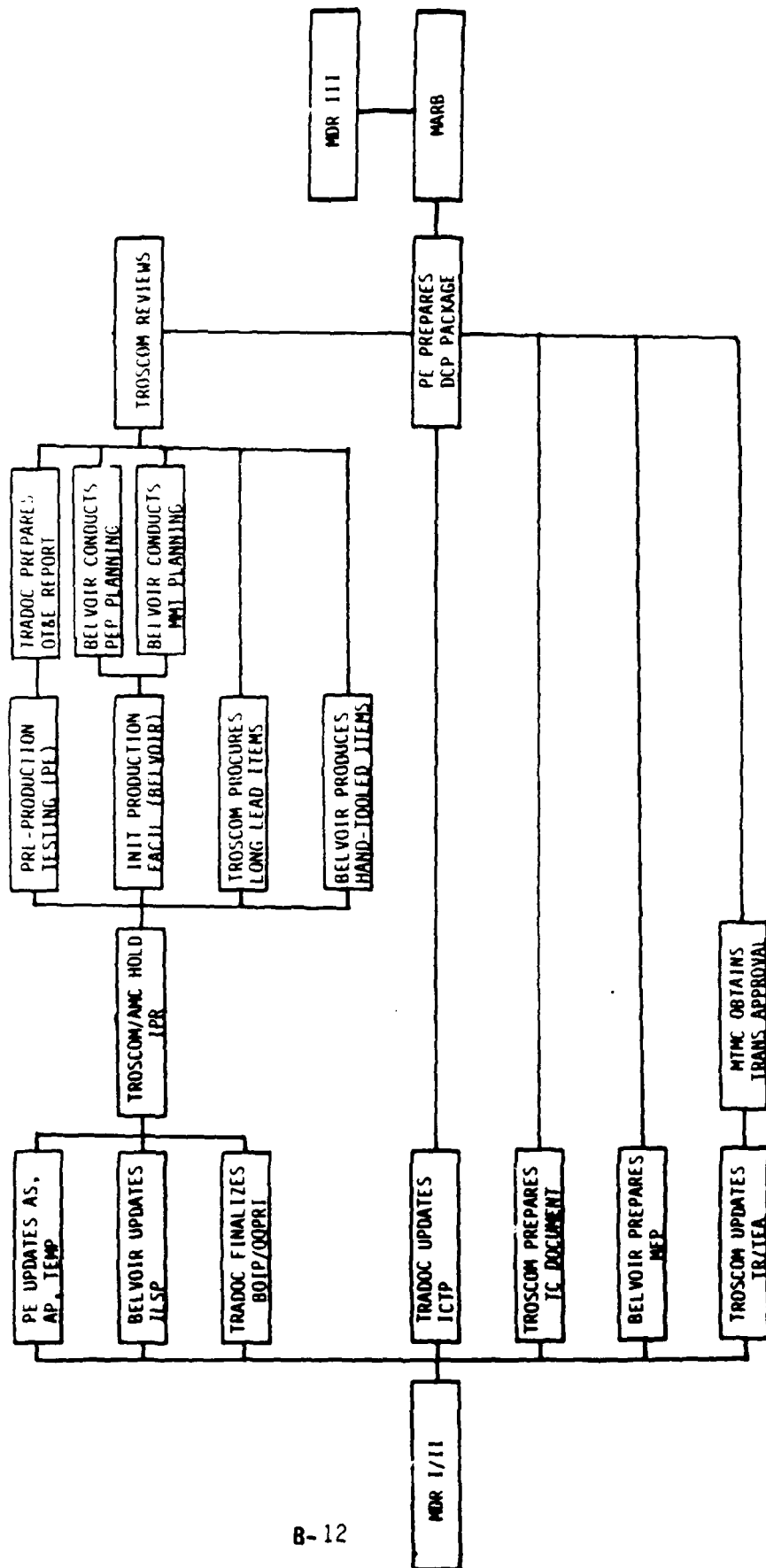
[illegible]

SECTION E (General Roadmap Location)

The following three pages provide a generic roadmap of an acquisition project. Use a red pencil and mark approximately where the project is right now. If you can project where it will be 18 months from now, so indicate. Indicate by a checkmark, those activities that have been completed. Events will probably be completed out of the sequence indicated in the roadmap, because of tailoring involved with each project. Updates to this section will only be required every six months. (Unexpected advances, delays, or project redirections may cause more frequent updates).







ANNEX C

DECISION RULES

A. General. This annex describes the decision rules used to evaluate the perceptions of LSD personnel to the tested Project Management System (PMS). These rules were approved in advance by the Chief, Program Management Division, or his delegated representative. The same rules are listed in Annex B to the Feasibility Test Plan.

B. Survey Questionnaire. All LSD personnel who participated in the feasibility test were given the survey questionnaire at Enclosure 1. A suspense of one week was given to complete the questionnaire and return it to PMD for evaluation.

Responses to questions 1-11 developed demographic data which was correlated with answers to system utility questions 16-37. In this manner, an evaluation of system utility to division chiefs versus PEs, computer users versus non-users, younger engineers versus older engineers, new project engineers versus experienced project engineers, and long time BELVOIR employees versus newly hired people was made. Responses to questions 16-37 were evaluated separately to measure perceptions to project management techniques available before the PMS was tested and the increased/decreased utility of the tested PMS. Questions 12-15 solicited ideas on software that might have greater utility than the software used in the feasibility test.

C. Analyses. The contractor computed the mean, standard deviation, and range of each "Before PMS" and "After PMS" response to questions 16-37. These statistics were compared to the decision rule values listed at Enclosure 2 to determine a measure of utility/disutility and acceptance or nonacceptance of the present system and the proposed system. In addition, statistics were computed for each response category contained in questions 1-12 (position, background, and experience) to determine if acceptance or nonacceptance and utility/disutility varies over LSD demographics. At Enclosure 3 are the computational formulae needed to conduct the analysis.

D. Recommendations. Comparison of the statistics derived from the data contained in the questionnaires with the approved decision rules has led to the recommendations contained in this report.

ENCLOSURE 1 TO ANNEX C
FEASIBILITY TEST QUESTIONNAIRE

A. GENERAL

The questions in this section attempt to define your position, background, experience and training in matters relating to the Program Management System recently tested for feasibility. Your answers to questions in this section will be correlated with your responses in other sections in the analysis of these test results.

1. Position: a. Project Engineer _____
 b. Team Chief _____
- c. Division Chief _____
- d. Other _____
2. Age Group: a. 21-25____ c. 31-35____ e. 41-45____ g. 51-55____ i. 61-65____
- b. 26-30____ d. 36-40____ f. 46-50____ h. 56-60____ j. 66-70____
3. How long have you worked for the government?
 (Include military service)
- a. 0 - 1 year _____
- b. 1 - 5 years _____
- c. 5 - 10 years _____
- d. 10- 15 years _____
- e. 15- 20 years _____
- f. over 20 years _____
4. How long have you worked at BELVOIR?
- a. 0 - 1 year _____
- b. 1 - 5 years _____
- c. 5 - 10 years _____
- d. 10- 15 years _____
- e. 15- 20 years _____
- f. over 20 years _____
5. If you are currently a Project Engineer, how long have you worked on your
 current project?
- a. 1 - 6 months _____
- b. 7 - 12 months _____
- c. 13- 18 months _____
- d. 19- 24 months _____
- e. over 24 months _____

6. State your overall experience as a Project Engineer.

- a. 0 - 1 year _____
- b. 1 - 2 years _____
- c. 2 - 3 years _____
- d. 3 - 4 years _____
- e. over 4 years _____

7. Computer Application Education/Training:

- a. On-The-Job Training _____
- b. Formal Training _____
- c. Formal Education _____
- d. Other _____ Specify _____

8. Do you use computers to assist you in your work?

- a. ___no
- b. ___occasionally
- c. ___frequently
- d. ___daily

9. Assuming the data input to a computer is good, how much faith do you have in the output?

- a. ___none
- b. ___some
- c. ___much
- d. ___total

10. Select the choice that best describes your experience working with HTPM Software. Use the letters "B" to indicate your experience before the feasibility test and "A" to indicate your experience after the feasibility test.

- a. ___none
- b. ___unsuccessfully tried to use its output
- c. ___successfully used its output
- d. ___unsuccessfully tried to use it to develop milestone schedules
- e. ___successfully used its working knowledge

11. Select the choice that best describes your experience working with R:Base System V. Use the letter "B" to indicate your experience before the feasibility test and "A" to indicate your experience after the feasibility test.

- a. ___none
- b. ___unsuccessfully tried to use its output
- c. ___successfully used its output

- d. ☐ unsuccessfully tried to use it by creating tables, data, entries, etc.
- e. ☐ successfully used it. Have working knowledge of the system.

12. Are you familiar with other software packages for milestone scheduling that would be better suited for managing acquisition projects at BELVOIR?

- a. ☐ Yes Specify: _____
Reason: _____
- b. ☐ No

13. If your answer to Question 12 is Yes, select the choice that best describes your experience.

- a. ☐ Used output for acquisition milestone management.
- b. ☐ Used output for other reason. Specify: _____
- c. ☐ Used software to develop milestones. Have a working knowledge.

14. Are you familiar with other software packages for data base management that would be better suited for managing acquisition projects at BELVOIR?

- a. ☐ Yes Specify: _____
Reason: _____
- b. ☐ No

15. If your answer to Question 14 is Yes, select the choice that best describes your experience.

- a. ☐ Used output for acquisition milestone management.
- b. ☐ Used output for other reason. Specify: _____
- c. ☐ Used software to develop milestones. Have a working knowledge.

B. This section contains five statements designed to determine, in relative terms, your perceived knowledge of the Army's Acquisition Milestone Management System (AMMS) as described in AR 700 - 26, the Army's Systems Acquisition Policy and Procedures as described in AR 70 - 1, the activities other than your own conducted within the Logistics Support Directorate and the relationship of those activities to other Directorates at BELVOIR and other Army activities. Please indicate on the scale with the letters "B" (for before the feasibility test) and "A" (for after the feasibility test), your response to the questions.

16. I have a working knowledge of the Army's AMMS system as described in AR 700 - 26 and use it when scheduling.
17. I have a working knowledge of the Army's systems acquisitions policy and procedures as described in AR 70 - 1.
18. I am knowledgeable of the activities of other Divisions within LSD and understand how the activities of my Division interact with those activities.
19. I am knowledgeable of the activities of other Directorates and separate offices within BELVOIR associated with systems acquisition activities impacting upon my Project/Division.
20. I am knowledgeable of the activities of other Directorates and separate offices outside of BELVOIR associated with systems acquisition (TROSCOM, HFEL, etc.) and how those activities impact upon my Project/Division.

Totally disagree				Neutral				Totally agree			
0	1	2	3	4	5	6	7	8	9	10	

C. The statements below are designed to measure the effectiveness of the Project Management Systems recently tested. As before, indicate with a "B" or and "A" your response to each statement. Your responses can range from total disagreement to total agreement.

	Totally disagree				Neutral				Totally agree			
	0	1	2	3	4	5	6	7	8	9	10	
21. Management (PM, Div, LSD) attention is directed to actions requiring attention in the near future and actions that need additional management attention.												
22. Optimal use has been made of the support staff. (PMO, LSD, AFEL, Procurement, et al).												
23. PEs can optimize the time spent on design, development, test and evaluation.												
24. Administrative time at Division level and below is minimized.												
25. There is only a remote possibility of missing a milestone suspense or not recognizing that a task needs to be accomplished.												
26. A complete, accurate and timely overview of a project is possible.												
27. Managing acquisition projects in LSD requires extensive knowledge of the Army's system acquisition process.												
28. The acquisition project status information generated and used within LSD is consistent with the information used from other agencies and commands.												
29. The scope of acquisition milestone management, e.g., total acquisition cycle a 18 month projections, and the frequency of updates provide useful management information.												
30. The milestone management system gives necessary and sufficient information about acquisition tasks and milestones.												
31. The method used to update project status is acceptable.												
32. The time needed by the PE to update project status is acceptable.												
33. Periodic training sessions for LSD personnel on the Army's acquisition process are necessary.												

34. Feedback from PMO will be timely and useful to me in project management activities

35. The percentage of total project time spent scheduling is acceptable

36. The procedures used in project scheduling do not conflict with procedures for other acquisition project activities

37. The PMO and the Director, OSD, benefit more from the milestone management system than Division level personnel

Totally disagree				Neutral				Totally agree			
0	1	2	3	4	5	6	7	8	9	10	

ENCLOSURE 2 TO ANNEX C

DECISION RULE VALUES

A. General. The stated objective of the Project Management System (PMS) being tested is to provide useful project management information that:

- 01: Is formatted to be acceptable to both LSD management personnel and PEs.
- 02: Ensures all Army Acquisition Management Milestones are met.
- 03: Satisfies the management information needs of LSD and all staff support activities within the BELVOIR community.
- 04: Encourages early coordination between PEs, and LSD management personnel on matters pertaining to project direction (ASAP, NDI, etc.) and tailoring.
- 05: Supports the management philosophy of centralized planning at LSD level and decentralized program execution at Division level and below.
- 06: Minimizes the time required by the PE to report the status of his/her project.

The design criteria of the proposed PMS that support the above objective are:

- C1: Simplistic. In order to be used and useful to both PEs and LSD management personnel, the system must be easily understood and simple to operate.
- C2: Systematic. The MIS must be capable of being "proceduralized" in order to ensure consistent results from all users.
- C3: Useful, Timely Feedback. The PEs send raw data up through the system and must receive timely project management information, if projects are to be executed as planned.
- C4: Data transformed into information at LSD level. Necessary to support centralized planning, decentralized execution. Administrative time for PEs is optimized.
- C5: MIS must ensure agreement between Division Chiefs and Director, LSD, on program direction and tailoring at the earliest possible date.

The decision rules listed in this enclosure are designed to measure the degree to which the proposed PMS meets the objective and design criteria stated above.

B. Decision Rules.

1. The following matrix shows the relationship between the objective and design criteria of the PMS and the and the decision rules relating to the average (mean) response to the questions contained in the survey questionnaire.

<u>Obj./Design Crit.</u>	<u>Survey Question</u>	<u>Decision Rules</u>
NA	16-20	"A" responses should be greater than or equal to "B" responses for acceptance. "B" responses greater than "A" responses are not necessarily rejection criteria.
02,04,05,C5	21	Questions 21-26, 28-32, 34-36: 1. Positively accept the PMS if the mean response is > 6.5 and the difference between the "B" response and the "A" response is statistically different with "A" having the higher value. 2. Positively reject the PMS if the mean response is < 3.5 or the mean "A" response statistically lags the "B" response.
03,C2	22	
01,06,C1,C2,C4	23	
01,06,C1,C2,C4	24	
02,03	25	
03,C3	26	
01,03,C1,C2	28	
01,02,03,05,C1,C2	29	
02,03,05,C3,C5	30	
02,03,05,06,C1,C2,C3,C4	31	
06,C4	32	
01,06,C1,C4	34	
04,05,C2,C1,C5	35	
04,05,C2,C4,C5	36	
NA	27	"A" response should be less than or equal to the "B" response for acceptance. "A" responses greater than "B" responses are not necessarily rejection criteria.
	33	
	37	

2. For each question in the survey, the above decision rules result in either positive acceptance or rejection of the PMS or, in the gray areas, provide the opportunity for further subjective evaluation. The next step is to aggregate the results to determine the overall acceptance or rejection of the PMS. Assuming equal weight for each question, the following decision rules apply:

- There is an acceptable benefit to the proposed PMS if thirteen or more questions indicate positive acceptance of the system.
- There is no perceived benefit to the proposed PMS if thirteen or more questions indicate positive rejection of the system.
- Marginal perceived utility of the proposed PMS is indicated by an aggregate result falling between the above criteria.

ENCLOSURE 3 TO ANNEX C

COMPUTATIONAL FORMULAE AND DATA SHEETS

This enclosure contains the terms and formulae used to develop the statistics required to evaluate the perceived benefit of the proposed PMS.

Terms.

X_i (or Y_i):	Numerical value of the i^{th} response.
N :	Number of responses.
R :	Range. The highest and lowest values of the responses.
$\bar{X}$:	Mean (Indicates central tendency of the numerical values of the responses).
S_x :	Standard Deviation (Indicates dispersion of numerical values of the responses).
D :	The numerical difference between two different responses.
n :	The number of paired responses from two different responders.
z_x (or z_y):	The standardized numerical value of a given response.
r_{xy} :	The correlation coefficient; used to measure the relationship of two dependent measures. Perfect correlation is represented by $r_{xy} = 1.0$. Negligible correlation is present if r_{xy} approaches zero.

ENCLOSURE 3 (con't)

Formulae.

a. $\bar{X} = \frac{\sum X_i}{N}$

b. $s_x = \sqrt{\frac{\sum (X_i - \bar{X})^2}{N}}$

- c. The following formulae are used to compute the correlation coefficient to measure the relationship between two statistics.

(1) $z_x = \frac{(X - \bar{X})}{s_x}$ and $z_y = \frac{(Y - \bar{Y})}{s_y}$

(2) $r_{xy} = \frac{\sum (z_x z_y)}{N}$

- d. The following formulae are used to compute the t-statistic to test whether the difference between two means is statistically significant.

(1) $\sum D = \sum Y_i - \sum X_i$

(2) $t_{(n-1)} = \frac{\sqrt{n-1} \sum D}{\sqrt{n \sum D^2 - (\sum D)^2}}$: $n - 1 =$ degrees of freedom

ANNEXES D, E, AND F WERE SUBMITTED
WITH THE DRAFT TEST REPORT AND ARE ON FILE AT
PROGRAM MANAGEMENT DIVISION,
LOGISTICS EQUIPMENT DIRECTORATE

APPENDIX C

This Appendix contains the Project Management Data Sheet revised as a result of lessons learned during the Validation Test described in the report at Appendix B.

LOGISTICS EQUIPMENT DIRECTORATE
PROJECT MANAGEMENT DATA SHEET

GENERAL:

The purpose of this document is to obtain data from Logistics Equipment Directorate (LED) Division Chiefs, Team Chiefs, and Project Engineers (PEs) concerning new and on-going acquisition projects assigned to LSD. Data provided by this document will be used by Program Management Division (PMD) personnel to develop Harvard Total Project Manager (HTPM) milestone schedules for use by PEs, Team Chiefs, Division Chiefs, and LED management personnel. Additionally, the data will be placed in a R:Base System V data base for use by all LED project management personnel. This data sheet is designed to reduce the administrative burden on Division level personnel. The initial completion will require some time, but follow-on updates will require no more than 15 minutes every month or as significant changes occur in a project's status.

SECTION A (General Information)

Program Name _____ PMS# _____ Date _____

Project Engineer _____ Tele # _____

Team Chief _____ Tele # _____

Division Chief _____ Tele # _____

Type Report: New Project_____ (Complete entire report).
 Update _____ (Complete only areas that have
 changed since last report).
 Cancel Project_____ (No further entries necessary).

Proponent: _____

Program Type:

Contract Support	PIP	Customer	Prod. Support	
Engineer Support	Tech Base	Research	NDI	VE
RDTE	ASAP	MACI (NDI-A)		

Current FY Funding Level_____ Type of Funding (6.2,6.4,etc)_____

SECTION B (Brief Description of the Project)

SECTION C (Critical Milestone Data)

This section contains critical milestones necessary for a PE to manage a typical project. The milestones are not necessarily in the order of a tailored acquisition process. Fill in the estimated dates and actual dates (if known) for each milestone listed. If a milestone is not applicable to the project, enter "NA". The standard codes have been provided to assist in making your own HTPM schedule, if desired.

Milestone	Code	Task Name	Estimated Date	Actual Date
O&O Plan MARC	B0350			
O&O Plan Approved	A1005			
Acquisition Strategy Developed	A1006			
Initial Acquisition Strategy MARC	B0450			
Procurement Acquisition Plan MARC	L1005			
Market Investigation Complete	A1020			
ROC MARC	L1010			
ROC Approved by HQ TRADOC	A1047			
Initial Production Readiness Review	A1090			
MARC for BELVOIR's IPR I	L1015			
MARB Convened for MDR I	A1087			
Milestone Decision Review I	A1999			
D&V Contract Award	A2015			
Proof of Principle Award	L1020			
Technical Test I Start	A2130			
Technical Test I Complete	A2140			
User Test I Start	A2180			
User Test I Complete	A2190			
Proof of Principle Test Start	L1025			
Proof of Principle Test Complete	L1030			
MARC for BELVOIR's IPR II	L1035			
Milestone Decision Review II	A2999			
Milestone Decision Review I/II	B1083			
Full Scale Development Award	A3009			
Development Proveout Award	L1040			
Technical Test II Start	A3240			
Technical Test II Complete	A3250			
User Test II Start	A3300			
User Test II Complete	A3310			
MARC for BELVOIR's IPR III	L1045			
MARB Convened MDR III	A3795			
Milestone Decision Review III	A3999			
Milestone Decision Review I/III	L1050			
Production Contract Award	A4005			
First Article Test Start	L1055			
First Article Test Complete	L1060			
First Unit Equipped Date	A4620			
Follow-on T&E Start	L1065			
Follow-on T&E Complete	L1070			
Special IPR	L1075			

SECTION D (Milestones/Tasks Occurring in the Next 18 Months)

This section contains additional milestones and tasks that could occur during the course of an acquisition program. Below each major heading are tasks and milestones that must be considered if they are scheduled to occur within the next 18 months. Blanks are also provided under each major heading to permit you to enter any tasks/milestones that you desire to list in order to effectively manage your project. Suggested field descriptions and codes are provided for those PEs desiring to develop their own HTPM schedules. PEs who desire PMD personnel to develop a HTPM schedule for them should either (1) fill in the estimated start and finish dates for each milestone/task expected to occur in the next 18 months, or (2) enter the start date of each of the events you wish to schedule and provide estimated duration times (in work days) for all task/milestones you have added (Changes to the stated estimated durations are permitted). In the latter case, earliest and latest start dates will be computed automatically by HTPM software using estimated duration times provided. NOTE: Milestones listed in Section C are not repeated in this section.

<u>Task/Milestone</u>	<u>Suggested Field Description</u>	<u>Code</u>	<u>Duration (Workday)</u>	<u>Est. Start Date</u>	<u>Finish Date</u>
<u>Test and Evaluation Master Plan (TEMP):</u>					
TIWG Established	TIWG CHARTER	None	0	_____	_____
IEP Received From TRADOC	IEP TRADOC	None	60	_____	_____
IEP Received From TECOM	IEP TECOM	None	60	_____	_____
IEP Approved	IEP APPROVED	None	0	_____	_____
Prepare TEMP	PREPARE TEMP	None	22	_____	_____
Send out TEMP for Comment	SENDOUT TEMP	None	22	_____	_____
TIWG Meeting	TIWG MEETING	None	0	_____	_____
TEMP Developed	TEMP DEVELOP	AMMS1055	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Acquisition Strategy (AS):

TIWG Established	TIWG CHARTER	None	0	_____	_____
Write Acquisition Strategy	PREPARE AS	AMMS1006	20	_____	_____
Initial AS MARC	INIT AS MARC	B0450	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

(Section D Cont.)					
Task/Milestone	Suggested	Code	Est. Duration (Workday)	Start Date	Finish Date
	Field Description				

Independent Evaluation (IE):

IEP Received From TRADOC	IEP TRADOC	None	60	_____	_____
IEP Received From TECOM	IEP TECOM	None	60	_____	_____
IEP Approved	IEP APPROVED	None	0	_____	_____
IER Received From TRADOC	IER TRADOC	None	60	_____	_____
IER Received From TECOM	IER TECOM	None	60	_____	_____
IER Approved	IER APPROVED	None	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

BOIP/QOPRI Events:

BOIP Feeder Data Submitted	BOIP FED DAT	AMMS2095	8	_____	_____
BOIP Approved	BOIP APPROVD	AMMS2250	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Integrated Logistic Support (ILS):

Prepare ILSP	PREPARE ILSP	None	30	_____	_____
TROSCOM ILSP	TROSCOM ILSP	None	90	_____	_____
ILS Mgt Team Meeting	ILSMTMEETING	AMMS1030	0	_____	_____
SUBCOM ILSP	SUBCOM ILSP	None	90	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Technical Data Package (TDP):

Starting & Completing Date	START COMP	None	0	_____	_____
Packaging of Data	PACKAGING	None	_____	_____	_____
Material	MATERIAL	None	_____	_____	_____
Safety	SAFETY	None	_____	_____	_____
Engine (When Used)	ENGINE	None	_____	_____	_____
Quality & Reliability	Q & R	None	_____	_____	_____
Initial Document Draft	DRAFT STDZN	None	_____	_____	_____
Type & Print Document	TYPE & PRINT	None	_____	_____	_____
Circulation of Document	CIRCUL DOC	None	_____	_____	_____
Res. & Prep. Final Draft	RESOLVE COMS	None	_____	_____	_____
Final Draft Standardized	FINAL DRAFT	AMMS3175	_____	_____	_____
Type, Aprv, Number, & Date	TYPE & APR	None	_____	_____	_____
Submit ECP	SUBMIT ECP	None	_____	_____	_____

(Section D Cont.)

<u>Task/Milestone</u>	<u>Suggested Field Description</u>	<u>Code</u>	<u>Duration (Workday)</u>	<u>Est. Start Date</u>	<u>Finish Date</u>
-----------------------	--	-------------	-------------------------------	--------------------------------	------------------------

Technical Data Package (Cont.):

Approve ECP	APPROVE ECP	None	_____	_____	_____
Start CCB Approval	START CCB	None	_____	_____	_____
Complete CCB Approval	APPROVE CCB	None	_____	_____	_____
All DOC's to Data Bank	FINAL CUTOFF	None	_____	_____	_____
Comput., Micro., & Fwd TDP	MICO & SEND	None	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Mkt Investigation:

Mkt. Investigation Start	MAR INV INIT	None	0	_____	_____
Questionnaire Available	QUEST AVAIL	None	0	_____	_____
Industry Contacts Made	CONTACTS END	None	0	_____	_____
Mkt. Investigation Comp	MAR INV COMP	AMMS1020	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Procurement Acquisition Plan/Acquisition Plan (PAP/AP):

Proc. Acquis. Plan Start	PAP START	None	0	_____	_____
Proc. Acquis. Plan Comp	PAP COMP	AMMS2005	0	_____	_____
Adv. Acquis. Plan Submit	AP SUBMIT	AMMS3760	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Milestone Decision Review/In-Process Review (IPR):

Prepare IPR Package	PRE IPR PACK	None	5	_____	_____
Prepare IPR MARC	PRE-IPR MARC	None	0	_____	_____
Update IPR Package	UPDATE IPR	None	5	_____	_____
Send IPR to AMC	SEND IPR AMC	None	20	_____	_____
Update IPR	UPDATE IPR	None	10	_____	_____
Mail out IPR Package	MAIL IPR	None	5	_____	_____
IPR Review AMC, TRADOC, LEA	IPR REVIEW	None	30	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

(Section D Cont.)

<u>Task/Milestone</u>	<u>Suggested Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Technical and User Testing (TT & UT):</u>					
Procure Test Articles	PROC TESTART	None	200	_____	_____
Technical Test Developed	TT DEVELOP	None	30	_____	_____
Troop Demo Convened	TROOP DEMO	AMMS2180	50	_____	_____
Dev Trp Demo Report	TRP REP DEV	None	30	_____	_____
Develop Test Plan	TEST PNG	None	10	_____	_____
ICTP Updated	ICTP UPD	None	30	_____	_____
Test Report, TT I	TEST REP TTI	None	20	_____	_____
Test Report, UT I	TEST REP UTI	None	20	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
<u>Production Engineering (PE):</u>					
Initial Product Eng. Plan	INIT PEP	None	10	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
<u>Material Fielding Plan (MFP):</u>					
Start Material Fielding	START MFP	AMMS4040	0	_____	_____
Material Fielding	MAT FIELDING	None	170	_____	_____
Comp Material Fielding	COMP MFP	AMMS4490	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
<u>Configuration Management Planning (PCA)/(FCA):</u>					
Functional Config. Audit	FCA COMP	AMMS3650	0	_____	_____
Physical Config. Audit	PCA COMP	AMMS3660	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

(Section D Cont.)

<u>Task/Milestone</u>	<u>Suggested Field Description</u>	<u>Code</u>	<u>Est. Duration (Workday)</u>	<u>Start Date</u>	<u>Finish Date</u>
<u>Contracts:</u>					
Develop Contract Package	DEV CONT PAC	None	20	_____	_____
Submit Contract Package	SUB CONT PAC	None	0	_____	_____
Daisy Chain	DAISY CHAIN	None	40	_____	_____
Other Task Orders	TOxxxxxxxx*	None	0	_____	_____
Other Contract Awards	AWDxxxxxxxx*	None	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Safety Events:

Prepare Environ. Assess.	PREPARE EA	None	20	_____	_____
Prepare Health Hazard	PREPARE HHA	None	20	_____	_____
Prepare Safety Assess.	PREPARE SAR	None	20	_____	_____
Prep. Safety & Health Data and Sys. Safety Risk Ass.	SHDS & SSRQ	None	20	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Transportability Events:

Init. Transport. Report	INITIATE TR	None	20	_____	_____
Trans Plan to MTMC	TRNS REP	AMMS1070	0	_____	_____
Transport. Report Apvd	TRANS R APR	AMMS2320	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Type Classification (TC):

Prepare TC Documents	TC DOC PREP	None	25	_____	_____
Date TC Approved	TC APPROVED	AMMS3720	0	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

* = Project Engineer's Unique Code.

(Section D Cont.)

[illegible]

APPENDIX D

This Appendix contains the automated reports developed from lessons learned during the Validation Test described at Appendix B and from requests of system users. The first report is the Division Chief's Report. The second is a version of the Project Management Data Sheet used to provide feedback to Project Engineers.

TO: CHIEF, MARINE DIVISION

DATE: 9 MAY 88

FROM: CHIEF, PROGRAM MANAGEMENT DIVISION

SUBJECT: PROJECT MANAGEMENT SYSTEM FEEDBACK REPORT

The following information has been generated from the Project Management System (PMS) based on information provided by you. The report provides information regarding your division's acquisition management milestones and tasks that should enable you to better manage your division's workload.

The report is intended to supplement the PMS data contained in the diskettes accompanying this report.

I. Projects in PMS

PMS Number	Project Name	Project Engineer
88	TRIDENT II BOXCAR	BOYNTON, M.
411	LANDING CRAFT UTILITY (LCU) - 2000 ENGRG SPT	WERSCHING, J.
412	LOGISTIC SUPPORT VESSEL	LEDBETTER, P.
413	RORO DISCHARGE PLATFORM ENGRG SPT	ANDERSON, J.
414	CAUSEWAY (FLOATING) ENGRG SPT	ANDERSON, J.
528	STABILIZATION OF SHIP/LIGHTER INTERFACE	DAVID, B.
727	3 PERSON PNEUMATIC BOAT/ENGRG SPT	DAVID, B.
838	SMALL TUG-ENGR SUPPORT	SHELKIN, M.
839	LARGE TUG-ENGR SUPPORT	SMITH, R.
840	CAUSEWAY FERRY ENGRG SPT	ANDERSON, J.
841	CANTILEVERED ELEVATED CAUSEWAY (R097)	ANDERSON, J.
844	BOAT, LANDING, INFLATABLE ASSAULT CRAFT (M238)	DAVID, B.
861	DIVING AIR CONTROL CONSOLE	REYLE, B.
20814	LCM - 8 SLEP (WATERCRAFT PROD IMPROVE PGM-OMA DIRECT(DISP CRAFT)	SMITH, R.

MARINE (FR) DIVISION

III. Tasks/Milestones Expected in the Next Period

Task Name	Description	AMMS/ BELVOIR Code	Start	Finish
88 TRIDENT II BOXCAR				
FAB UNITS	FABRICATE FIRST OPTION QUANTITY		03-20-87	12-08-88
FAB UNITS	FABRICATE SECOND OPTION QUANTITY CARS		03-24-88	04-18-90
TEST 1ST ART	TEST FIRST ARTICLE	L1055	05-18-88	06-24-88
ACCEPT CAR	ACCEPT CAR FROM GARD		06-24-88	06-24-88
TECH MANUAL	PREPARE/DRAFT TECHNICAL MANUAL		06-27-88	11-25-88
BACKFITISTUN	BACKFIT 1ST CAR TO PROTOTYPE MODS AS		06-27-88	07-01-88
1ST DES MOVE	FIRST DESTINATION MOVE TO MAGNA, UT		07-04-88	07-08-88
412 LOGISTIC SUPPORT VESSEL				
PREP TEST			05-16-88	06-17-88
UT I START	ALSO CALLED FOT&E BY PROJECT ENGINEER	A2180	06-17-88	06-17-88
TEST REP UTI			06-20-88	06-29-88
UT I TEST	ALSO CALLED FOT&E BY PROJECT ENGINEER		06-20-88	06-28-88
UT I COMP	ALSO CALLED FOT&E BY PROJECT ENGINEER	A2190	06-28-88	06-28-88
413 RORO DISCHARGE PLATFORM ENGRG SPT				
RECEIVE PROP	ISSUE RFP / RECEIPT OF PROPOSALS		05-04-88	06-14-88
PRE TECH EVA	PRELIMINARY TECHNICAL EVALUATION		06-15-88	06-21-88
CONDUCT AUDI	REQUEST AUDITS		06-15-88	07-26-88
EST CONSIDER	ESTABLISH INITIAL ZONE OF		06-22-88	06-23-88
TECH EVALS			06-24-88	07-14-88
AUDIT COMPL			07-26-88	07-26-88
COST/PRICE	COST/PRICE ANALYSIS		07-27-88	08-02-88
414 CAUSEWAY (FLOATING) ENGRG SPT				
PROC TESTART			03-01-88	12-05-88
528 STABILIZATION OF SHIP/LIGHTER INTERFACE				
SBIRII	SUBPROGRAM. SBIR PHASE II		09-30-87	10-10-89
BOLD EAGLE	BOLD EAGLE TEST/DEMO		05-24-88	06-20-88
727 3 PERSON PNEUMATIC BOAT/ENGRG SPT				
REV SAF SPEC	REVIEW SAFETY SPEC, PD, SET LIST, ETC		04-20-88	05-31-88
REV ENG SPEC	REVIEW ENGINE SEC, PD, SET LIST, ETC		04-20-88	05-31-88
PROD LOT #1	PRODUCE LOT #1, 3/7/15 PERSON BOATS		04-20-88	05-16-89
MARINE (FR) DIVISION				

Task Name	Description	AMMS/ BELVOIR Code	Start	Finish
20814	LCM - 8 SLEP [WATERCRAFT PROD IMPROVE PGM-OMA DIRECT(DISP CRAFT)			
MATERIEL FLD			04-01-88	06-30-88
UPDATE IPR			06-01-88	06-21-88
PRE-IPR MARC		L1045	06-01-88	06-01-88
RFPI			06-01-88	01-19-89
SEND IPR AMC			06-22-88	07-05-88
COMPL MFP		A4490	07-01-88	07-01-88
UPDATE IPR			07-06-88	07-12-88
MAIL IPR			07-13-88	07-19-88
IPR REVIEW			07-20-88	08-02-88

MARINE (FR) DIVISION

V. Tasks in the current schedules which are behind schedule.

Task Name	Description	Start	Percent Complete	Expected Percent Complete
88	TRIDENT II BOXCAR			
FAB UNITS	FABRICATE FIRST OPTION QUANTITY	03-20-87	20.%	55.%
DEL ADD HY80	DELIVER TO NOOTER ADDIT. HY-80 STEEL	09-30-87	25.%	63.%

MARINE (FR) DIVISION

VII. Documentation Requirements in the Next Period

A. Preparation

Task Name	Description	AMMS/ BELVOIR Code	Start	Finish
88	TRIDENT II BOXCAR			
TECH MANUAL	PREPARE/DRAFT TECHNICAL MANUAL		06-27-88	11-25-88
412	LOGISTIC SUPPORT VESSEL			
PREP TEST			05-16-88	06-17-88
413	RORO DISCHARGE PLATFORM ENGRG SPT			
EST CONSIDER	ESTABLISH INITIAL ZONE OF		06-22-88	06-23-88
727	3 PERSON PNEUMATIC BOAT/ENGRG SPT			
PREP ECP	PREPARE DRAFT ECP FOR TDPL UPDATE		06-15-88	07-12-88
SAFETY ASSES	PREPARE SAFETY ASSESSMENT REPORT FOR		07-13-88	09-06-88
839	LARGE TUG-ENGR SUPPORT			
MANUALS PREP			01-04-88	06-24-88
UPD TDP			05-16-88	10-28-88
UPD MFP			05-16-88	06-10-88
840	CAUSEWAY FERRY ENGRG SPT			
RFP			02-15-88	10-04-88
PRP TEST RPT	PE PREPARES AND COORDINATES TEST		05-09-88	07-01-88
PREP SPL IPR	PREPARE FOR IPR TO REVIEW D&V RESULTS		07-04-88	09-23-88
841	CANTILEVERED ELEVATED CAUSEWAY (R097)			
TEST REP TT1			06-01-88	07-26-88
TEST REP UT1			06-01-88	07-26-88
844	BOAT, LANDING, INFLATABLE ASSAULT CRAFT (M238)			
REV SAF SPEC	REVIEW SAFETY SPEC, PD, SET LIST, ETC		04-20-88	05-31-88
PREP ECP	PREPARE DRAFT ECP FOR TDPL UPDATE		06-15-88	07-12-88
SAFETY ASSES	PREPARE SAFETY ASSESSMENT REPORT FOR		07-13-88	09-06-88

MARINE (FR) DIVISION

VII. Documentation Requirements in the Next Period

B. Approval

Task Name	Description	AMMS/ BELVOIR Code	Start	Finish
88	TRIDENT II BOXCAR			
ACCEPT CAR	ACCEPT CAR FROM GARD		06-24-88	06-24-88
839	LARGE TUG-ENGR SUPPORT			
MANUALS APRV			06-27-88	08-19-88
840	Causeway Ferry ENGRG SPT			
TEST RPT APR			07-01-88	07-01-88

MARINE (FR) DIVISION

DATE: 06-10-88

LOGISTICS EQUIPMENT DIRECTORATE
PROJECT MANAGEMENT DATA SHEET

IMPORTANT: [PLEASE READ]

This document serves two purposes:

- o It informs the Division Chief, Team Chief, and Project Engineer of data reported previously by them that have been entered in the Project Management System (PMS). This data are being used to monitor the status of projects and are being reported to the Center, TROSCOM, and MRSA in response to queries for information from those organizations.
- o It provides the opportunity for Project Engineers and Division Level Management to add, subtract, or amend data.

Please review the information contained in this report for accuracy and completeness. If changes are necessary, please indicate those changes directly on the report and return it when the next update is requested. A blank page is provided at the end of the report to record new tasks and milestones. Changes to AMMS milestones require a brief explanation of the change.

SECTION A (General Information)

PROGRAM NAME: 6K#/6K# FRONT/SIDE LOADER

PMS#: 20791

ACRONYM: 6K F/S Ldr

DIVISION: FM

PROJECT ENGINEER: LEE, T.

Tele #: 44490

OFFICE SYMBOL: STRBE-FMW

TEAM CHIEF: ROSEN, I.

Tele #: 44490

DIVISION CHIEF: SMITH, H.

Tele #: 43471

PROGRAM TYPE: NDI

TYPE REPORT: U

PROponent: OMMCS

PROGRAM TYPES: ☐ Contract Support ☐ RDTE ☐ PIP ☐ NDI ☐ MACI (NDI-A) ☐ VE
☐ Engineer Support ☐ ASAP ☐ Tech Base Research ☐ Prod. Support

TYPE OF FUNDING (6.2, 6.4, etc.): UNKNOWN

CURRENT FY FUNDING LEVEL:

SECTION B (Brief Description of the Project)

This program will develop a diesel engine powered 6,000 pound capacity forklift which has the capability to operate as both a front carrying forklift and a side carrying or side loader forklift.

MEMO: THIS IS PROJECT PMS# 20791 OF THE MULTIPLE PROJECT PMS# 79.

PMS NUMBER: 20791

SECTION C (Critical Milestone Data)

This section contains critical milestones necessary for a PE to manage a typical project. The milestones are not necessarily in the order of a tailored acquisition process. Fill in the estimated dates and actual dates (if known) for each milestone listed. If a milestone is not applicable to the project, enter "NA". The standard codes have been provided to assist in making your own HTPM schedule, if desired.

Milestone	Code	Task Name	Estimated Date	Actual Date
O&O Plan MARC	B0350			
O&O Plan Approved	A1005	O&O PLAN APR	02-28-88	
Acquisition Strategy Developed	A1006	PMD AQS DEV	03-25-88	
Initial Acquisition Strategy MARC	B0450	PMD AQS MRC	04-19-89	
Procurement Acquisition Plan MARC	L1005			
Market Investigation Complete	A1020	MKT CMP	05-20-88	
ROC MARC	L1010			
ROC Approved by HQ TRADOC	A1047	ROC APPROVED	02-28-88	
Initial Production Readiness Review	A1090			
MARC for BELVOIR's IPR I	L1015			
MARB Convened for MDR I	A1087			
Milestone Decision Review I	A1999			
D&V Contract Award	A2015			
Proof of Principle Award	L1020			
Technical Test I Start	A2130			
Technical Test I Complete	A2140			
User Test I Start	A2180			
User Test I Complete	A2190			
Proof of Principle Test Start	L1025			
Proof of Principle Test Complete	L1030			
MARC for BELVOIR's IPR II	L1035			
Milestone Decision Review II	A2999			
Milestone Decision Review I/II	B1083			
Full Scale Development Award	A3009			
Development Proveout Award	L1040			
Technical Test II Start	A3240			
Technical Test II Complete	A3250			
User Test II Start	A3300			
User Test II Complete	A3310			
MARC for BELVOIR's IPR III	L1045			
MARB Convened MDR III	A3795			
Milestone Decision Review III	A3999			
Milestone Decision Review I/III	L1050	MILESTONE 13	12-13-89	
Production Contract Award	A4005	PROD AWARD	10-03-90	
First Article Test Start	L1055	FAT START	12-26-90	
First Article Test Complete	L1060	FAT COMP	02-06-91	
First Unit Equipped Date	A4620	FUED	06-10-92	
Follow-on T&E Start	L1065			
Follow-on T&E Complete	L1070			
Special IPR	L1075			

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SECTION D (Milestones/Tasks Occurring in the next 18 months)

This section contains additional milestones and tasks that could occur during the course of an acquisition program. Below each major heading are tasks and milestones previously reported for this project. Emphasis is placed on those activities occurring in the next 18 months. NOTE: Milestones listed in Section C are not repeated in this section.

Task/Milestone	Field Description	Duration and Percent Complete		Start Date	Finish Date
Test and Evaluation Master Plan (TEMP)					
PMD TMP PRP	THE TEMP IS PREPARED.	22./	0. %	05-27-88	06-27-88
PMD TMP PRP	THE TEMP IS PREPARED.	22./	0. %	05-27-88	06-27-88
PMD TMP DEV	TEMP DEVELOPED, COORDINATED, AND	0./	%	07-27-88	07-27-88
PMD TMP DIS	SEND OUT/DISTRIBUTE TEMP FOR	22./	0. %	06-28-88	07-27-88
PMD TMP DEV	TEMP DEVELOPED, COORDINATED, AND	0./	%	07-27-88	07-27-88
PMD TMP DIS	SEND OUT/DISTRIBUTE TEMP FOR	22./	0. %	06-28-88	07-27-88
Acquisition Strategy (AS)					
PMD AQS RDY	FINAL AS AND CRD AND APR TEMP	0./	%	04-05-89	04-05-89
PMD AQS MRC	ACQUISITION STRATEGY MARC HELD.	0./	%	04-19-89	04-19-89
PMD AQS CORD	COORDINATION OF FINAL ACQUISITION	22./	0. %	03-28-88	04-26-88
PMD AQS DEV	AQUISITION STRATEGY DEVELOPED.	0./	%	03-25-88	03-25-88
PMD AQS DEV	AQUISITION STRATEGY DEVELOPED.	0./	%	03-25-88	03-25-88
PMD AQS CORD	COORDINATION OF FINAL ACQUISITION	22./	0. %	03-28-88	04-26-88
PMD MARC PRP	PREPARE FOR AND CONDUCT AS MARC.	10./	0. %	04-06-89	04-19-89
PMD AQS MRC	ACQUISITION STRATEGY MARC HELD.	0./	%	04-19-89	04-19-89
PMD AQS PRP	WRITE/DRAFT ACQUISITION STRATEGY.	20./	0. %	02-29-88	03-25-88
PMD AQS PRP	WRITE/DRAFT ACQUISITION STRATEGY.	20./	0. %	02-29-88	03-25-88
PMD AQS RDY	FINAL AS AND CRD AND APR TEMP	0./	%	04-05-89	04-05-89
PMD MARC PRP	PREPARE FOR AND CONDUCT AS MARC.	10./	0. %	04-06-89	04-19-89
Independent Evaluation (IE)					
IEP/IER TRDC	IEP/IER Received from TRADOC	0./	%	05-26-88	05-26-88
IEP/IER PREP	IEP/IER is Prep/Submitted by	59./	0. %	03-07-88	05-26-88
IEP/IER TRDC	IEP/IER Received from TRADOC	0./	%	05-26-88	05-26-88
TES IEP APR	IEP APPROVED.	0./	%	05-27-88	05-27-88
TES IEP APR	IEP APPROVED.	0./	%	05-27-88	05-27-88
TES IER APR	IER APPROVED.	0./	%	05-27-88	05-27-88
IEP/IER PREP	IEP/IER is Prep/Submitted by	59./	0. %	03-07-88	05-26-88
RQST IEP/IER	Request IEP/IER be Prep by TRADOC	5./	0. %	02-29-88	03-04-88
IEP/IER TCOM	IEP/IER Received from TECOM	0./	%	05-26-88	05-26-88
RQST IEP/IER	Request IEP/IER be Prep by TRADOC	5./	0. %	02-29-88	03-04-88
IEP/IER TCOM	IEP/IER Received from TECOM	0./	%	05-26-88	05-26-88
TES IER APR	IER APPROVED.	0./	%	05-27-88	05-27-88

Task/Milestone	Field Description	Duration and Percent Complete	Start Date	Finish Date
BOIP/QQPRI Events				
ILS BOIP PRO	BOIP/QQPRI APPROVAL PROCESS.	90./ 0.0%	02-29-88	07-01-88
ILS BOIP PRO	BOIP/QQPRI APPROVAL PROCESS.	90./ 0.0%	02-29-88	07-01-88
ILS BOIP APR	HQDA RETURNS THE APPROVED	0./ %	07-01-88	07-01-88
ILS BOIPFD	BELVOIR SUBMITTS THE INITIAL	0./ %	02-28-88	02-28-88
ILS BOIPFD	BELVOIR SUBMITTS THE INITIAL	0./ %	02-28-88	02-28-88
ILS BOIP APR	HQDA RETURNS THE APPROVED	0./ %	07-01-88	07-01-88
Integrated Logistics Support (ILS)				
ILS PLN PRP	PREPARE ILSP.	30./ 0.0%	02-29-88	04-08-88
ILS PLN PRP	PREPARE ILSP.	30./ 0.0%	02-29-88	04-08-88
Technical Data Package (TDP)				
FINAL DRAFT	Final Draft Standardized	60./ 0.0%	09-21-89	12-13-89
COORDIN SPEC	Coordinate Specification for	60./ 0.0%	06-29-89	09-20-89
COMP TDP	Complete Tech. Data Package	0./ %	12-13-89	12-13-89
COMP TDP	Complete Tech. Data Package	0./ %	12-13-89	12-13-89
FINAL DRAFT	Final Draft Standardized	60./ 0.0%	09-21-89	12-13-89
Market Investigation				
MKT SRT	INITIATE MARKET INVESTIGATION.	0./ %	02-28-88	02-28-88
MKT SRT	INITIATE MARKET INVESTIGATION.	0./ %	02-28-88	02-28-88
MKT CND	CONDUCT MARKET INVESTIGATION.	60./ 0.0%	02-29-88	05-20-88
MKT CMP	Market Investigation Complete	0./ %	05-20-88	05-20-88
MKT CND	CONDUCT MARKET INVESTIGATION.	60./ 0.0%	02-29-88	05-20-88
MKT CMP	Market Investigation Complete	0./ %	05-20-88	05-20-88
Milestone Decision Review/In-Process Review (IPR)				
MILESTONE 13	Milestone 1/3	0./ %	12-13-89	12-13-89
COMP PKG	IPR Package is Complete	0./ %	12-13-89	12-13-89
IPR PACKAGE	Prepare and Coordinate IPR	0./ %	05-10-89	05-10-89
COMP PKG	IPR Package is Complete	0./ %	12-13-89	12-13-89
IPR PACKAGE	Prepare and Coordinate IPR	0./ %	05-10-89	05-10-89
MILESTONE 13	Milestone 1/3	0./ %	12-13-89	12-13-89
Contracting Events				
PREP SOLICIT	Prepare Procurement Solicitation	90./ 0.0%	12-14-89	04-18-90
ISSUE SOL.	Issue Solicitation Package	60./ 0.0%	04-19-90	07-11-90
DEVEL SPEC	Develop Procurement Specification	180./ 0.0%	10-20-88	06-28-89
FSD AWARD	Full Scale Development Award	0./ %	10-19-88	10-19-88
REVIEW BIDS	Review Bids and Award Contract	60./ 0.0%	07-12-90	10-03-90
SPEC COMP	Complete Procurement	0./ %	09-20-89	09-20-89
SPEC COMP	Complete Procurement	0./ %	09-20-89	09-20-89
ISSU FSD SOL	Issue FSD Solicitation	60./ 0.0%	07-28-88	10-19-88
DEVEL SPEC	Develop Procurement Specification	180./ 0.0%	10-20-88	06-28-89

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Task/Milestone	Field Description	Duration and Percent Complete	Start Date	Finish Date
ISSUE SOL.	Issue Solicitation Package	60./ 0.%	04-19-90	07-11-90
PREP SOLICIT	Prepare Procurement Solicitation	90./ 0.%	12-14-89	04-18-90
FSD AWARD	Full Scale Development Award	0./ %	10-19-88	10-19-88
ISSU FSD SOL	Issue FSD Solicitation	60./ 0.%	07-28-88	10-19-88
REVIEW BIDS	Review Bids and Award Contract	60./ 0.%	07-12-90	10-03-90

Type Classification (TC)

TC APPROVED	Date TC Approved	0./ %	12-13-89	12-13-89
TC APPROVED	Date TC Approved	0./ %	12-13-89	12-13-89

Other Test and Evaluation Events

PREP DCP	Develop the DCP and Prepare for	15./ 0.%	04-20-89	05-10-89
PROD AWARD	Production Contract Award	0./ %	10-03-90	10-03-90
FSD TESTING	Full Scale Development Testing	120./ 0.%	10-20-88	04-05-89
FAT START	First Article Test Start	0./ %	12-26-90	12-26-90
COORDIN SPEC	Coordinate Specification for	60./ 0.%	06-29-89	09-20-89
MAT FIELDING	Material Fielding	170./ 0.%	10-17-91	06-10-92
FINAL PREP	Final Preparations Before	180./ 0.%	02-07-91	10-16-91
FAT COMP	First Article Test Complete	0./ %	02-06-91	02-06-91
FINAL PREP	Final Preparations Before	180./ 0.%	02-07-91	10-16-91
BEGIN PROD	Begin Production	0./ %	10-16-91	10-16-91
FAT COMP	First Article Test Complete	0./ %	02-06-91	02-06-91
FUED	First Unit Equipped Date	0./ %	06-10-92	06-10-92
PROD FAT UNT	Produce First Article Test Units	60./ 0.%	10-04-90	12-26-90
FAT START	First Article Test Start	0./ %	12-26-90	12-26-90
MAT FIELDING	Material Fielding	170./ 0.%	10-17-91	06-10-92
TES TWG MTG	TIWG MEETING.	0./ %	07-27-88	07-27-88
O&O PLAN APR	O&O Plan Approved	0./ %	02-28-88	02-28-88
FAT	First Article Test	30./ 0.%	12-27-90	02-06-91
PREP DCP	Develop the DCP and Prepare for	15./ 0.%	04-20-89	05-10-89
FSD TESTING	Full Scale Development Testing	120./ 0.%	10-20-88	04-05-89
PROD AWARD	Production Contract Award	0./ %	10-03-90	10-03-90
PROD FAT UNT	Produce First Article Test Units	60./ 0.%	10-04-90	12-26-90
FAT	First Article Test	30./ 0.%	12-27-90	02-06-91
ROC APPROVED	ROC Aprv by HQ TRADOC	0./ %	02-28-88	02-28-88
FUED	First Unit Equipped Date	0./ %	06-10-92	06-10-92
O&O PLAN APR	O&O Plan Approved	0./ %	02-28-88	02-28-88
ROC APPROVED	ROC Aprv by HQ TRADOC	0./ %	02-28-88	02-28-88
TES TWG CHT	DEVELOP TIWG CHARTER.	10./ 0.%	05-27-88	06-09-88
BEGIN PROD	Begin Production	0./ %	10-16-91	10-16-91
TES TWG CHT	DEVELOP TIWG CHARTER.	10./ 0.%	05-27-88	06-09-88
TES TWG MTG	TIWG MEETING.	0./ %	07-27-88	07-27-88

PMS NUMBER: 20791

Task/ Milestone	Field Description	Duration and Percent Complete	Start Date	Finish Date
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APPENDIX E

Appendix E, the Database User's Manual, is under separate cover due to its volume. Copies can be obtained from DTIC or the Program Management Division, Logistics Equipment Directorate, US Army Belvoir Research, Development and Engineering Center, Fort Belvoir, VA 22060-5606.

DATE
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