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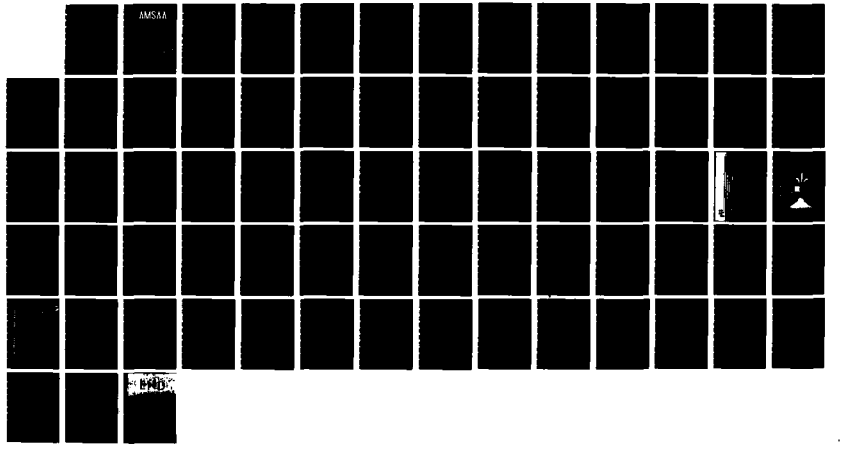

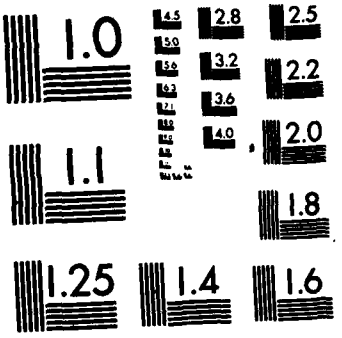

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LOGISTICS STUDIES OFFICE

PROJECT NUMBER 023

FINAL REPORT

APPLICATION OF LOGISTICS FEEDBACK TO TECHNOLOGY BASE

APRIL 1983

U. S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY
LOGISTICS STUDIES OFFICE
FORT LEE, VIRGINIA 23801

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The views, opinions, and/or findings contained in this report are those of the author 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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Logistics feedback; Technology Base; ILS Lessons Learned; Logistic Support Analysis (LSA); Logistic Support Analysis Record (LSAR); Sample Data Collection (SDC); Deficiency Reporting System (DRS); Equipment Improvement Recommendation (EIR); Quality Deficiency Report (QDR); Independent Research and Development (IR&D)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The study was initiated to determine whether current logistics data feedback systems are providing the necessary information and data to influence future weapon system development. The Army's technology base is defined as research (6.1), exploratory development (6.2), and some non-system advanced development (6.3A). Current logistics data feedback systems are identified and analyzed as regards the kinds of information generated and the recipients of this information. Regulations relative to this subject area were identified and

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APPLICATION OF LOGISTICS FEEDBACK TO TECHNOLOGY BASE

LOGISTICS STUDIES OFFICE
PROJECT NUMBER 023

FINAL REPORT
APRIL 1983

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ABSTRACT

The study was initiated to determine whether current logistics data feedback systems are providing the necessary information and data to influence future weapon system development. The Army's technology base is defined as research (6.1), exploratory development (6.2), and some non-system advance development (6.3A). Current logistics data feedback systems are identified and analyzed as regards the kinds of information generated and the recipients of this information. Regulations relative to this subject area were identified and carefully reviewed. Functional interfaces between DARCOM Laboratories and the TRADOC Schools technology base programs were examined. Finally, the study recommends changes and improvements to the current system.

Report Title: Application of Logistics Feedback Data to Technology Base

Study Number: LSO 023

Study Initiator and Sponsor: US Army Deputy Chief of Staff for Logistics (DCSLOG)
ATTN: DALO-SML
The Pentagon
Washington, DC 20310

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. Authority for the Study. The US Army Deputy Chief of Staff for Logistics (DCSLOG), ATTN: DALO-SML, is the sponsor of this study. Basic guidance received from the sponsor was augmented by a DD Form 1498 and the Study Directive.

2. Problem Statement. Although many logistics problems are surfaced via logistics data feedback systems, there is some question about their impact on future system developments.

3. Objectives.

a. To determine whether the logistics data feedback systems are accomplishing the desired purpose of influencing future weapon system development.

b. To identify the various logistics data feedback systems for fielded materiel now in existence.

c. To display functional interfaces with the DARCOM Laboratories/TRADOC Schools technology base programs.

d. Identify the various kinds of logistics problems fed back into the technology base and how this information is used.

4. Scope of Study. The study examines this problem from an overall DCSLOG perspective with specific emphasis on the role of DARCOM/TRADOC policies impacting on the subject area.

5. Methodology. The study involved a review of current regulations and other documentation related to the subject area. The primary means of data collection was through visits and interviews with key personnel in the commands and activities involved with feeding back logistics data into the technology base. The key activities visited during the course of this study and individuals contacted are identified in Appendix E.

6. Conclusions.

a. The so-called repository for ILS "lessons learned" information in HQ DARCOM is not centralized. There are repositories for ILS data within HQ DARCOM but this data is decentralized in various directorates and functional elements.

b. A focal point is needed in HQ DARCOM to pull together logistics data feedback information from the field. This office should have personnel with the full range of logistic/engineering skills to assure proper evaluation, compilation, and dissemination of such data.

c. HQ TRADOC, and particularly such subordinate commands as the Logistics Center and its proponent schools, should be in the direct chain to receive logistics data feedback information from fielded systems to determine and evaluate its impact on design, organization, doctrine, maintenance, and training.

d. Logistics data feedback is a very effective mechanism for influencing PIPs/MWOs.

e. LSA/LSAR, SDC, and EIR/QDR are systems which are particularly effective and important as logistics feedback mechanisms because of their potential influence on design. A Phase I effort should be initiated by HQ DARCOM to combine the common elements within these systems as a life cycle record and to present that data in a single, responsive, and flexible data system. A Phase II effort should follow in which all the systems identified in Appendix A of this study should be screened to accomplish the same purpose.

f. TRADOC does not feel that they influence hardware design to an appreciable degree.

g. Logistics data feedback into the Army R&D community is accomplished on an informal basis. The R&D community should be made a formal recipient of logistics data feedback to influence changes in design.

h. Logistics data feedback from fielded systems plays an important role in influencing hardware design. Of greater significance, however, is the role of industry in influencing hardware design.

i. Logistics R&D does not receive enough emphasis from industry. Industry in conjunction with the Army R&D community must expand its Independent Research and Development (IR&D) efforts to overcome this deficiency.

7. Recommendations.

a. That HQ DARCOM establish an office within HQ DARCOM as the focal point for logistics data feedback received either directly from the field or from summary reports received through MRSA or the MRCs. This office would be staffed with the full range of logistic/engineer skills to assure proper evaluation, compilation, and dissemination of such data to all interested parties.

b. That HQ DARCOM, the MRCs, and MRSA place USALEA and HQ TRADOC and its subordinate logistic oriented centers in a direct chain to receive logistics data feedback information from fielded systems.

c. That HQ DARCOM initiate steps to create a single life cycle record for major systems/end items by consolidating information from the various reports contained in Appendix A. The initial effort should be the consolidation of records from the LSA/LSAR, SDC, and EIR/QDR. A follow-on Phase II effort would incorporate into that file pertinent logistics data feedback from the other reporting systems identified in Appendix A.

d. HQ DARCOM, as the IR&D manager for the Army, further expand its plan to increase Logistics R&D with industry by providing the proper incentives for such effort.

e. That the MRCs/MDCs establish internally a formal system of reporting on pertinent logistic data feedback received directly from the field or through sources such as MRSA and HQ DARCOM elements.

MAIN REPORT

I. Background. Although many logistics problems are surfaced via logistics data feedback systems, there is some question about whether they are fed back into the system and receive proper consideration in future developments. For the purposes of this study the Army's technology base includes research (6.1), exploratory development (6.2), and some non-system advanced development (6.).

II. Objectives.

A. To determine whether the logistics data feedback systems are accomp ing the desired purpose of influencing future weapon system development.

B. To identify the various logistics data feedback systems for fielded materiel now in existence.

C. To display functional interfaces with the DARCOM Laboratories/TRADOC Schools technology base programs.

D. Identify the various kinds of logistics problems fed back into the technology base and how this information is used.

III. Limits and Scope. The study examines this problem from an overall DCSLOG perspective with specific emphasis on the role of DARCOM/TRADOC policies impacting on the subject area.

IV. Assumptions. None.

V. Methodology. The study involved a review of current regulations and other documentation related to the subject area. The primary means of data collection was through visits and interviews with key personnel in the commands and activities involved with feeding back logistics data into the technology base. Some of the key activities visited during the course of this study included the following:

A. HQ, US Army Materiel Development and Readiness Command (HQ DARCOM).

B. HQ, US Army Training and Doctine Command (HQ TRADOC).

C. USA DARCOM Materiel Readiness Support Activity (MRSA).

D. USA Missile Command (MICOM).

E. USA Mobility Equipment Research and Development Command (MERADCOM).

F. USA Logistics Center (LOGC).

G. USA Materiel Systems Analysis Activity (AMSAA).

See Appendix E for a detailed list of activities and key personnel visited.

VI. Discussion.

A. Introduction. The Army's technology base includes research (6.1), exploratory development (6.2), and some non-system advanced development (6.3A). Achieving required system capability within acceptable risk and cost is dependent on a strong and efficient technology base. The Assistant Secretary of the Army for Research, Development, and Acquisition (ASARDA) through the Deputy Chief of Staff for Research, Development, and Acquisition (DCSRDA) is responsible for assuring continued technology advancement. This includes product and manufacturing technology to support future system development.

1. Mid- to long-range research objectives are defined by science and technology objectives (STOs). STOs may be originated by any individual or command and are published in the Science and Technology Objectives Guide (STOG). The user proponent is usually a US Army Training and Doctrine Command (TRADOC) school. The STOG is updated annually by the Deputy Chief of Staff for Operations and Plans (DCSOPS) in coordination with DCSRDA. The STOG, when published by HQDA, becomes the principal Army guidance document for the science and technology base and provides:

a. The developer specific prioritized user STOs.

b. A synopsis of the concepts and background upon which the STOs have been formulated.

c. A point of departure for further review, discussion, and clarification between users and developers.

d. A baseline to measure the productivity of the technology program.

2. DARCOM responsibilities with regard to STOs include:

a. Establishing a responsive technology base program in response to the STOG.

b. Proposing new/revised STOs.

c. Identifying those STOs that are unfunded.

d. Requesting TRADOC to prepare appropriate and timely LOA/ROC/LR/TDR to allow smooth transition of technology base effort into development.

3. TRADOC responsibilities include:

a. Preparing draft STOs.

b. Prioritizing STOs within capability categories (CAPCATs).

c. Forwarding draft STOs/STOG to HQDA for approval.

4. The STOs and, in turn, the STOG must be reviewed and proposed changes, additions, and/or deletions coordinated and approved and forwarded to each successive higher headquarters so as to arrive at HQDA (DCSOPS) by 1 October of each year.

5. DA (DCSRDA) publishes the STOG, generally during the spring, for the next fiscal year beginning the following October. After issuing the STOG, the DARCOM proponent performs an assessment of the STOs contained therein with respect to cost, time, risk, and possible technological alternatives. The assessment is discussed with the proponent TRADOC school/center to assist the DARCOM proponent in incorporating responsive technology base programs into his planning and programming documentation. In some cases the DARCOM proponent may seek development of a requirement document (LOA/ROC/LR/TDR) in coordination with the

proponent TRADOC school/center to ensure a timely and smooth transition of high payoff technology to an advanced development program. Where funding limitations dictate, the DARCOM proponent identifies STO solutions that cannot be implemented and makes the facts known to the proponent TRADOC school/center. Suggestions for new or revised STOs can come from any source. Such suggestions are forwarded to the proponent TRADOC school/center no later than 1 July to make the 1 October suspense date to DA.

6. Major Army commands and the TRADOC schools/centers review the STOG and suggest new and revised STOs. The review assesses changes in threat, results of emerging mission area analyses (MAAs), identified gaps in the mission area capabilities, and emerging high payoff technologies that should be exploited. Implied in this task are good, continuous proponent TRADOC schools/centers and DARCOM proponent lateral communications. Major commands forward their recommended new or revised STOs to the proponent TRADOC school/center. In response to instructions and time tables published annually by HQ TRADOC, proponent TRADOC schools provide their updated or new STOs and other portions of the STOG for which they are responsible to the appropriate TRADOC integrating center (Combined Arms Center, Logistics Center or Personnel Center). The integrating centers combine and integrate the inputs from the schools into the appropriate CAPCATS in order of priority. In turn, each center forwards its input to HQ TRADOC (ATCD-SM) where the center inputs and HQ TRADOC inputs are combined into a single TRADOC proposed STOG update. When complete and approved by HQ TRADOC, the proposed STOG update is forwarded to HQDA (DCSOPS) no later than 1 October. DCSOPS, in coordination with DCSRDA and other Army elements, reviews, modifies if necessary, and approves the prioritization of the STOs within the CAPCATS, after which DCSRDA publishes the new STOG.

7. The maintenance of an adequate technology base is the responsibility of ASARDA through DCSRDA. This includes work accomplished in government laboratories, industry, educational institutions, other not-for-profit organizations, and allied countries. Army research and development activities coordinate with other government laboratories to prevent unwarranted duplication of effort. Major emphasis is placed on technology work outside of Army laboratories. Industry is the primary source for competitive Alternative System Design Concepts (ASDC).

8. DARCOM RDTE Lab Reviews are another means by which TRADOC can express its views on program preference. These reviews are conducted annually in the May-July time frame. Over the last several years, HQ TRADOC (DCSCD) personnel have attended these individual DARCOM Lab Reviews with the purpose of providing TRADOC "user influence" to shape, prioritize, and determine funding requirements for the overall R&D programs of the DARCOM labs. In preparation for these DARCOM Lab Reviews, HQ TRADOC has annually tasked the proponent schools to review the RDTE program elements/tasks for which they have proponency and provide comments on priority, funding requirements, etc., to HQ TRADOC. The Integrating Centers have been invited to represent their schools by attending a HQ TRADOC review. At this review, the TRADOC System Staff Officers (TRASSOs) and personnel from DCSCD Systems Management Office review the information provided by the schools and determine a TRADOC position on these RDTE programs/tasks. This information is then used by the HQ TRADOC representatives who attend the actual DARCOM Lab Reviews. While prior year efforts have encompassed 6.3 and 6.4 funded programs, the 1982 TRADOC review efforts were expanded to include all 6.2, 6.3A, 6.3B, and 6.4 RDTE funded programs.

9. The Army is now fielding more equipment than at any time in its history. Operational and support costs associated with modern weapon systems

have increased in dramatic fashion over the last few years. Most experts conservatively estimate that this logistic support burden costs in excess of 50% of the total life cycle cost of the equipment itself. Concern over these continuously escalating costs, as well as concern over the readiness rate of our combat forces, are now resulting in placing significant emphasis on supportability and sustainability in new hardware development programs.

10. Effective application and use of techniques such as Logistics Support Analysis (LSA), Sample Data Collection (SDC), and user feedback aid the integration of support considerations during early design efforts where the majority of design decisions which impact supportability and support resource requirements are made.

11. The latest issues of Department of Defense acquisition documents (5000 series) emphasize supportability as a primary consideration during acquisition and, additionally, direct the consideration and use of logistics data from fielded systems in establishing baselines, requirements, and goals. This logistics data must be used to define system requirements, used in system analysis including trade-off studies and assessment of design and support alternatives, and in the allocation and assignment of reliability and maintainability values. The following excerpts from the 5000 series documents emphasize the importance of supportability:

a. DODI 5000.2, Major System Acquisition Procedures.

Readiness problems and support cost drivers of current systems shall be analyzed to identify potential areas of improvement to be addressed during concept formulation.

b. DODD 5000.39, Acquisition and Management of Integrated Logistic Support for Systems and Equipment.

Contractors shall be provided appropriate Government data to use as a basis for ILS planning and LSA (such as baseline and operating scenario and maintenance concept, system readiness goals, schedules, maintenance and support cost data on current systems, and manpower/skills availability).

Maintain reporting systems and data bases, consistent with the provisions of DODD 500.19, for maintenance data, supply data, deployment, readiness and utilization data, and SA and O&S cost data on fielded systems. This data shall be made available to developers of new systems.

c. DODD 5000.40, Reliability and Maintainability.

Reliability and Maintainability (R&M)-related acquisition, operation and support experience shall be provided from predecessor items as input for R&M programs.

R&M improvement from one generation of items to the next shall be emphasized. Previous operational R&M deficiencies shall be analyzed to determine, insofar as possible, whether they were due to materiel (R&M design and manufacture) or to operating and support concepts (policies and planning factors). Corrective action shall be directed to the cause of the deficiency.

A measured baseline value shall be obtained from each system R&M parameter that applies to each alternative system concept, from operation and support experience with a similar system or systems.

12. The value to be derived from experiences from existing, operational systems is, to a great extent, dependent on the availability and utility of such data. The proper type of data can be a valuable tool to the designer, engineer, and support planner. It can make them aware of problems in fielded hardware comparable to the new requirement and conversely make them aware of comparable hardware with good performance and lower maintenance and supply demands. Such awareness promotes the consideration of support features, risks, and impacts as an inherent part of system analysis, design, and test.

13. There is a need to collect logistics data as a life cycle record and to present that data in a single, responsive, and flexible data system.

This feedback system must provide a single thread data base which combines information from the operational performance, maintenance, and cost collection systems as well as the logistics support analysis record (LSAR) and specific design, manufacturing, and test characteristics of the recorded hardware. The data base should be limited to data which is truly useful and the system design of the data base should provide accessibility by varying means of identification to satisfy all potential functional areas. A logistics data feedback system should:

a. Provide a link between the Army and industry.

b. Permit more accurate and timely analysis with less time and effort. Provide central availability of necessary data.

c. Provide a source of consistent, readily available data that can be used by all support planners to plan and provide consistent levels of support for all areas of logistics.

B. Logistics Data Feedback Systems. There are a variety of logistics data feedback systems now in existence. Some specifically are concerned with the readiness status of Army units in the field, while others are concerned with evaluating the adequacy of integrated logistics support or with providing data for use in determining materiel/weapon systems reliability, availability, maintainability, and durability (RAM-D). These reports serve a variety of needs and purposes; but all, to some degree, impact on supportability and sustainability of the system or item in the field and thus provide useful feedback to the equipment developer for follow-on systems. In this study, LSA, STO, newsletters, and digests are identified as logistics data feedback systems even though they are not necessarily related to fielded equipment. This liberty was taken since these documents contain valuable logistics information which is inextricably tied to the design of new weapon systems.

1. Logistics feedback is also provided through field liaison visits and by the placement of highly trained technicians in units in the field to assist in maintaining and supporting the system. These efforts conducted during early deployment aid in achieving mature operational suitability system goals at the earliest possible time.

2. Continued data gathering can improve logistics support and readiness by identifying or anticipating critical failure modes, spare shortages, and pipeline delays. Information derived from field data programs forms the core of future baseline comparison activities which aid in developing operational suitability requirements for follow-on systems. Another aspect of baseline comparison is the parallel evaluation of an existing operational system with the new system. Such operational evaluations have been conducted between such systems as the UH-60 and UH-1 helicopters. Appendix A identifies all the logistics feedback systems this writer was able to identify. Each of the systems is described fully, identifying the purpose of the system and the recipients of the feedback data.

3. Army materiel needs are generally satisfied through four alternative methods:

a. Product improvement which is the preferred method to satisfy requirements by exploiting the performance growth potential in systems already developed.

b. Purchase of existing domestic or foreign materiel systems which do not require any development work, can provide low cost, and provide a quick response to approved requirements.

c. Existing commercial, other services, or foreign developed systems which may require some modification to meet specific requirements.

d. New development programs which represent the most costly and longest time alternative means to satisfy a materiel need.

4. The logistics data feedback gathered from the various systems identified in Appendix A is particularly beneficial in influencing design changes which result in PIP/MWO. Logistics feedback from fielded systems has some influence on the technology base but primarily influences 6.4, Engineering Development. Logistics feedback, however, is essential to insure that we are not overlooking something or making a major mistake. In other words, logistics feedback data assures that no technologically related logistics surprises occur in new system design.

5. The primary influence on the technology base is derived from industry. Army labs do only a limited amount of 6.1 and 6.2 work. Their main efforts are directed to 6.3 and 6.4. The question then arises: Where do we receive feedback information on the technology base? The laboratories rely on industry contractors for the conduct of much of the actual development work. Only a limited percentage of the research and exploratory development efforts and total RDT&E effort are actually performed in-house. The labs support the technology base by serving as an Army interface with the technological community (See Appendix B).

6. We must rely on industry to provide us with advancements in the state-of-the-art. Although this cannot be categorized as feedback from fielded systems, it is the corollary to that supplied from the technological community. The Independent Research and Development (IR&D) program is a cooperative effort between the defense industry and the Department of Defense (DOD). Among its objectives, the IR&D program seeks to ensure the creation of an environment that encourages research and development of innovative concepts which complement and broaden the spectrum of concepts for DOD systems and equipment. As part of this

objective, the IR&D program must assume a more significant role in promoting research and development for improving system readiness and support.

7. In response to The Under Secretary of Defense for Research and Engineering memorandum to the services dated 1 March 1982, subject: Increased IR&D for Improved Weapon System Readiness and Support (See Appendix C), HQ DARCOM, as the Army IR&D manager, prepared an implementation plan for increased independent research and development for improved weapon system readiness and support. The Army's plan first defines logistic research and development and then establishes actions to assure increased logistic related (RAM) projects within the IR&D program. It must be emphasized here that the IR&D program is independent of the logistic R&D program, but it does provide a vehicle by which a portion of the overall logistic R&D program can be accomplished. Extracts from the Army's implementation plan are contained in Appendix D.

8. A follow-on memorandum from The Under Secretary of Defense for Research and Engineering, subject: Review of Service Funded Weapon Support and Logistics R&D, dated 7 September 1982, describes the need to examine funded programs to develop a long-range R&D plan for weapon support and logistics and ensure that the requisite funds are included in the Program Objective Memorandum (POM). This memorandum establishes a Logistic R&D Policy Group with senior representatives from each of the Services. The council is charged with developing recommendations for the scope, direction, content, and overall funding levels for the logistic R&D program. A first step will be to conduct a DOD review of current and proposed programs. Increased funding for R&D projects and initial support would result in meaningful payoffs in capability and overall readiness. Increased funding for logistic R&D will assure improving the support systems

behind the weapons. The Army will be assured of big payoffs in the readiness of our next generation systems if sufficient money is allocated in support of logistic R&D.

9. It appears that the DOD and the Army are taking the proper initiatives to establish logistics feedback into the technology base in a more definitive way. This effort coupled with logistics feedback from the user should assure that design of new equipment will take into consideration and advance the state-of-the-art in the logistic area.

10. The kinds of logistics problems fed back into the technology base can be categorized as those that:

a. Affect design/configuration changes.

b. Result in changes to technical publications.

c. Impact on maintenance, e.g., defective parts, changes in Maintenance Allocation Charts (MAC) which also result in changes to technical publications.

d. Impact on Rationalization, Standardization, and Interoperability (RSI).

e. Deal with safety related problems.

11. As a result of researching this subject area the writer feels that there is such a diversity of logistic feedback data generated from the user that it is difficult to assess its impact on the design of new systems. As stated earlier in this study, logistics feedback appears to be more effective in modifying existing weapon systems/items through PIP/MWO than on the development of new systems. Discussions with the R&D community indicate that the kinds of data and information needed for 6.2 and 6.3 cannot readily be obtained from the field. Furthermore, they feel that the feedback systems now in existence should not be formalized more than is the case at the present time. The R&D personnel gather

logistics intelligence through their counterparts in the materiel readiness side of the house and prefer to rely on this informal feedback system. It appears that the dominant communication path for the transfer of technological information has been informal, person to person contact. Further, the R&D community is of the opinion that logistics feedback really begins with 6.4, Engineering Development. However, they concede that as the workforce becomes less experienced as the result of personnel turbulence, etc., it would probably be appropriate to devise some formal channels of feedback into the R&D community from the logistics readiness side of the house.

12. Although AR 700-127 talks about a DARCOM central repository for logistics intelligence, logistics feedback into HQ DARCOM is not truly centralized. Feedback, in fact, is decentralized in and among the various directorates and functional divisions within these directorates. It would be highly desirable to have one office within HQ DARCOM as the focal point for logistics feedback data. The office should be manned with a full complement of people with a logistics engineering capability. Such an office would be particularly helpful to USALEA, HQ TRADOC, the LOGC, and the TRADOC schools associated with the LOGC. It would allow these organizations to go to one source within DARCOM for information on logistics related problems.

13. TRADOC is not now the recipient of logistics data feedback from the field unless it is a gaining command for equipment. The gaining command has a responsibility to feed back ILS data following IOC; however, this data is fed back directly into DARCOM. Establishing a focal point within DARCOM would allow TRADOC to gain easy access to logistic data in the DARCOM repository. Also, this intelligence would enable TRADOC to evaluate logistic data and assess its impact on doctrine, organization, maintenance, and training as it applies to the Army in the field.

14. TRADOC additionally does not feel that they influence hardware design to an appreciable degree. From a logistics perspective this can be improved with proper emphasis being placed on logistics R&D. Fortified with intelligence emanating from this source, both DARCOM and TRADOC could approach the whole process of new equipment development, specifically logistics considerations, with greater knowledge and confidence in their needs.

VII. Conclusions.

A. The so-called repository for ILS "lessons learned" information in HQ DARCOM is not centralized. There are repositories for ILS data within HQ DARCOM, but this data is decentralized in various directorates and functional elements.

B. A focal point is needed in HQ DARCOM to pull together logistics data feedback information from the field. This office should have personnel with the full range of logistic/engineering skills to assure proper evaluation, compilation, and dissemination of such data.

C. HQ TRADOC, and particularly such subordinate commands as the Logistics Center and its proponent schools, should be in the direct chain to receive logistics data feedback information from fielded systems to determine and evaluate its impact on design, organization, doctrine, maintenance, and training.

D. Logistics data feedback is a very effective mechanism for influencing PIPs/MWOs.

E. LSA/LSAR, SDC, and EIR/QDR are systems which are particularly effective and important as logistics feedback mechanisms because of their potential influence on design. A Phase I effort should be initiated by HQ DARCOM to combine the common elements within these systems as a life cycle record and to present that data in a single, responsive, and flexible data system. A Phase II

effort should follow in which all the systems identified in Appendix A of this study should be screened to accomplish the same purpose.

F. TRADOC does not feel that they influence hardware design to an appreciable degree.

G. Logistics data feedback into the Army R&D community is accomplished on an informal basis. The R&D community should be made a formal recipient of logistics data feedback to influence changes in design.

H. Logistics data feedback from fielded systems has only a limited impact on influencing hardware design. Of greater significance is the role of industry in influencing logistics R&D.

I. Logistics R&D does not receive enough emphasis from industry. Industry in conjunction with the Army R&D community must expand its Independent Research and Development (IR&D) efforts to overcome this deficiency.

VIII. Recommendations.

A. That HQ DARCOM establish an office within HQ DARCOM as the focal point for logistics data feedback received either directly from the field or from summary reports received through MRSA or the MRCs. This office would be staffed with the full range of logistic/engineer skills to assure proper evaluation, compilation, and dissemination of such data to all interested parties.

B. That HQ DARCOM, the MRCs, and MRSA place USALEA, HQ TRADOC, and its subordinate logistic oriented centers in a direct chain to receive logistics data feedback information from fielded systems.

C. That HQ DARCOM initiate steps to create a single life cycle record for major systems/end items by consolidating information from the various reports contained in Appendix A. The initial effort should be the consolidation of records from the LSA/LSAR, SDC, and EIR/ODR. A follow-on Phase II effort would

incorporate into that file pertinent logistics data feedback from the other reporting systems identified in Appendix A.

D. HQ DARCOM, as the IR&D manager for the Army, further expand its plan to increase Logistics R&D with industry by providing the proper incentives for such effort.

E. That the MRCs/MDCs establish internally a formal system of reporting on pertinent logistics data feedback received directly from the field or through sources such as MRSA and HQ DARCOM elements.

APPENDIX A

LOGISTICS FEEDBACK SYSTEMS

1. Science and Technology Objective (STO) - A Science and Technology Objective (STO) is a broad, general statement of a user requirement for the mid- to long-range planning periods. It is used to guide research (6.1), exploratory development (6.2) and non-system advanced development (6.3A) conducted by DARCOM laboratories and R&D commands. The STOs are also available to industry as guidance for independent R&D effort. The STOs are, in effect, the "requirement documents" for technology base efforts. The STOs are grouped into capability categories (CAPCATs) (close combat, fire support, etc.) and prioritized only within those groupings. Each year the STOs are reviewed, updated, prioritized, and published in the Science and Technology Objectives Guide (STOG) for the upcoming fiscal year. The updating process begins at the TRADOC proponent schools or other proponent agency. The updated STOs are forwarded to each succeeding higher headquarters for review, consolidation, and approval. The STOG, when published by HQDA, becomes the principal Army guidance document for the science and technology base and provides:

a. The developer specific prioritized user STOs.

b. A synopsis of the concepts and background upon which the STOs have been formulated.

c. A point of departure for further review, discussion, and clarification between users and developers.

d. A baseline to measure the productivity of the technology base program. The STOs and, in turn, the STOG must be reviewed and proposed changes, additions, and/or deletions coordinated and approved, and forwarded to each successive higher headquarters so as to arrive at HQDA (DCSOPS) by 1 October of each year.

2. Sample Data Collection (SDC) - AR 750-37 sets forth objectives, responsibilities, and general policy for a SDC program. SDC is designed to provide essential data for the identification of RAM-D characteristics, computation of operating and support costs, and evaluation of materiel/weapons systems effectiveness for selected items of equipment. SDC is designed to collect, process, and analyze logistics management and equipment performance and maintenance performance data on specified percentages of the designated population, within specified time limits, and from specified units within designated geographical areas. The data collected by this method must be accurate and capable of representing, within specified confidence levels, the characteristics of the total population being sampled. Key objectives of SDC pertinent to this study include:

a. Evaluating the adequacy of integrated logistic support.

b. Providing data for use in determining materiel/weapon systems reliability, availability, maintainability, and durability (RAM-D) (AR 702-2).

c. Providing feedback to equipment developer for follow-on systems. The materiel developer is responsible for preparing and implementing the SDC plan. Any materiel manager, functional manager or other data user within DARCOM who desires to sponsor an SDC plan may recommend items to the materiel developer. The materiel developer will submit a request to implement an SDC plan to HQ DARCOM and the participating user command four (4) months prior to the implementation date. SDC plans will then be submitted to DA DCSLOG for approval. POC: The DARCOM Materiel Readiness Support Activity (MRSA) serves as executive agent for HQ DARCOM's SDC responsibilities.

3. Materiel Fielding Feedback - AR 700-127, Integrated Logistic Support, provides guidance for this program. Within thirty (30) days after First Unit Equipped Date (FUED), the gaining MACOM provides the materiel developer with an assessment

of the materiel fielding operation. Within one (1) year after FUED or Initial Operational Capability (IOC), the gaining MACOM provides the materiel developer with a complete assessment of the adequacy of the ILS program from the user's point of view. This assessment is incorporated into the so-called lessons learned central repository maintained at HQ DARCOM. This assessment includes a candid description of both the strengths and weaknesses of the manpower and logistics support provided for the materiel system and recommendations for improvements in later acquisition programs. One of the deficiencies existing in the current system is the failure to feed back logistic data to the combat developer which may well impact on doctrine, organization, maintenance, and training as it applies to the Army in the field.

4. Field Liaison Visits Conducted by USAMSAA -

a. The USAMSAA field liaison program is governed by DARCOM-R 70-7 and provides a positive interface with the users of Army materiel through periodic visits of AMSAA teams of engineers and scientists to soldiers in the field. Through these visits, the soldier's materiel problems and requirements are surfaced and exposed to the development and readiness community and, when possible, immediate solutions to the problems are provided.

b. Quick response to problems or requirements reported by the visiting team will be emphasized, as will feedback to the visited units to inform them of actions being taken. An initial report is forwarded to the visited unit within 90 days after completion of the trip. Two follow-up reports are published 9 months and 18 months after completion of the trip.

c. Cooperation between this program and the Logistics Assistance Program (LAP) is maximized to enhance the overall DARCOM materiel support mission. Appropriate information is freely exchanged at all levels and the Logistics

Assistance Office (LAO) representatives in field commands are the coordinators and points of entry for field liaison teams into field commands. LAO representatives are encouraged to accompany liaison teams on unit visits. Any findings within the LAO sphere of responsibility are turned over to the LAO for appropriate action.

d. AMSAA publishes a digest which contains statements of materiel problems identified by field personnel during field visits.

5. Logistics Assistance Program (LAP) -

a. AR 700-4 establishes the organizational framework and procedures for the LAP and is supplemented by DARCOM-R 700-100. The LAP aids Army units in the field by supplying them with highly trained, mostly civilian, workers known as Field Maintenance Technicians (FMTs) and Field Supply Technicians (FSTs). Each Major Subordinate Command (MSC) maintains its own workforce of FMTs/FSTs who are expert at maintaining and supporting the systems supplied by that MSC. At many installations, a Logistics Assistance Office (LAO) staffed by DARCOM personnel coordinates requests for FMT/FST assistance and acts as a liaison between the installation and the LAP.

b. The LAO Command Interest Flasher (CIF) is a report submitted by message on existing or potential problems that would impact on DARCOM or the readiness of units in the field. Flasher problems involving supply and/or maintenance of a specific commodity are submitted to the appropriate command responsible for the commodity. Flasher problems involving other facets of logistics are submitted to the appropriate responsible element for resolution.

c. All LAO CIF messages and replies thereto will include the following as information addressees:

(1) CDRDARCOM ALEX VA//DRCRE-FC//

(2) CDRDARCOM MRSA LEXINGTON KY//DRXMD-S//

(3) CDRUSALOGC FT LEE VA//ATCL-TG//

d. US Army Logistic Assistance Office Executive Digest (RCS DRCRE-313) is a vehicle by which the MACOM LAO communicates directly with HQ DARCOM reporting on activities affecting the customer in the field. The Executive Digest is the MACOM LAO's personal assessment of the month's activity and addresses those new or continuing problems/situations of concern which require action or assistance of HQ DARCOM.

e. Each MACOM LAO Executive Digest report is analyzed by the Director of Readiness and compiled into one consolidated report for distribution to the DARCOM headquarters elements, DARCOM depots and the major subordinate commands per established distribution list. The analysis of the Director of Readiness includes identification of open problem areas requiring action by HQ DARCOM and assignment to the element responsible for action.

f. Logistic Assistance Program Monthly Report - This is a uniform reporting system used by LAP personnel assigned or attached to geographic DARCOM LAO's. The major purposes of this report are to:

(1) Provide for uniform reporting.

(2) Portray individual, work group, and program work activity.

(3) Furnish pertinent information regarding weapon/equipment/logistics system performance.

(4) Feed other reporting systems and satisfy data requirements for review and analysis (R&A) at all levels.

6. ILS Lessons Learned Report (RCS DRCSM-1021) -

a. The purpose of this report is to share the collective experiences of logistic managers. This report is influential in avoiding "reinventing the wheel"

each time a new system is developed and fielded. The overall goals of the report are to enhance materiel supportability, to facilitate program management, to minimize support costs, to identify areas requiring additional study, and to avoid Integrated Logistic Support (ILS) problems.

b. The report summarizes many of the lessons learned by the Army in developing and fielding of materiel systems. It is prepared semiannually and covers the lessons identified during the last six months. The report is distributed throughout the Department of the Army to provide an overall awareness of the total ILS lessons learned program (AR 700-127, Integrated Logistic Support) and to encourage interactions/communications between commands and activities.

c. The proponent for this report is the US Army DARCOM Materiel Readiness Support Activity (MRSA), Lexington, Kentucky.

d. Information for this report is derived from many sources. The proponent contacts all Army organizations that are significantly involved in materiel acquisition, materiel development, user training, equipment testing, initial fielding, or logistic planning.

7. Government-Industry Data Exchange Program (GIDEP) - The GIDEP newsletter is prepared bimonthly by the GIDEP operations center, Corona, California. This newsletter may be of value in providing logistics data feedback to the Army.

8. Logistic Support Analysis/Logistic Support Analysis Record (LSA/LSAR) -

a. As the interface between hardware system design and support system design, LSA is the single logistic analytical effort for defining support system criteria and requirements. LSA actions identify, define, analyze, qualify, and quantify logistic requirements to achieve balance among materiel readiness and capability, reliability, maintainability, vulnerability, survivability, operating and support costs, hardware costs, and the system's logistic requirements.

b. A comprehensive LSA must be performed on all developmental, product improved, new commercial, and other nondevelopmental materiel systems in accordance with MIL-STD-1388-1.

c. LSA is required in all materiel acquisition ILS programs. LSA formally begins during the concept exploration phase and is performed in increasing detail throughout the materiel acquisition process. Detailed requirements for contractor planning, control, and implementation of the LSA is included in work statements and data item descriptions included in solicitation and contract documents. Contractor offers will specify detailed methods and techniques to be employed in implementing and controlling the LSA. An LSA plan prepared by the contractor in response to a contract requirement will be approved by the government prior to acceptance. The contractor is required to execute the approved LSA plan.

d. Before Milestone I, the combat developer is responsible for implementing LSA to include assuring the accuracy and validity of LSA data. After Milestone I or Project Manager designation, whichever comes first, the materiel developer is responsible for LSA implementation. When there is a development contractor, certain aspects of the LSA will be performed in-house by the Army, and other aspects will be performed by the development contractor under the terms of the contract. In Demonstration and Validation (D&V), Full Scale Development (FSD), and Production and Deployment (P&D) phases, the materiel developer is responsible for verifying the adequacy of the contractor's LSA effort and the accuracy of data prior to government acceptance.

e. The Logistic Support Analysis Record (LSAR) is a system of analysis worksheets, computer programs, and output reports which have been developed to document LSA. The LSAR provides a single logistic data base to input, store, computer process, and retrieve selected LSA data. All tasks required to operate

and maintain a materiel system are entered on the LSAR worksheets and analyzed to identify the required logistic resources, including manpower and personnel. These data are then filed in the computer memory and, through the computer programs, may be retrieved and printed in standard output reports. Some of these output reports may directly satisfy contract data requirements, such as provisioning lists and maintenance allocation charts, while others are summaries of support resource requirements. These summaries are used to make design decisions, project operational and support costs, and define the logistic support system. A government LSA review team regularly reviews the contractor's LSAR analysis worksheets and output reports to verify data accuracy and assure that support system development is adhering to the established maintenance plan.

f. References: AR 700-127, AR 1000-1, MIL-STD-1388-1, DARCOM-P 750-16, and DARCOM-R 700-15.

9. Deficiency Reporting System (DRS) - DRS is a data management system which serves as a repository for Equipment Improvement Recommendations (EIR) and Quality Deficiency Reports (QDR) data to support management functions, to provide for status accounting during EIR/QDR resolution, and to produce working level and management summary reports. The DRS will be supplemented by data stored in test files generated by the Common Test Data Collection System (CTDCS).

a. Equipment Improvement Recommendation (EIR) -

(1) DARCOM-R 750-3 covers the EIR program. It prescribes policies, responsibilities, and procedures for conducting the DA Equipment Improvement Recommendation Program and for preparing Department of the Army Technical Bulletin, "Equipment Improvement Report and Maintenance Digest." The Equipment Improvement Report and Maintenance Digest is published as a technical bulletin. It is an informational publication for the purpose of notifying maintenance and

user personnel of EIRs, MWOs, general failure data, publication changes, and other related information. Certain definitions apply to both EIR and QDR reporting. They are as follows:

(a) Deficiency - A materiel defect or malfunction that renders an item inoperable, results in an unsafe condition, causes unacceptable performance of equipment, will lead to further damage, or has an adverse effect on mission capability.

(b) Failure - A failure is defined as a malfunction of a part or assembly that prevents performance of the function for which it was designed.

(c) Category I deficiency - A deficiency/improvement recommendation which will or may affect life or limb of personnel or impair the combat capabilities of the using organization or individual. Deficiencies that affect operational capability to the extent that mission accomplishment is jeopardized also fall within this category.

(d) Category II deficiency - A deficiency/improvement recommendation which does not meet the criteria set forth in Category I.

(e) Equipment Improvement Recommendation (EIR) - The authorized means for users of Army equipment to report equipment faults in design, operation, and manufacture, or to propose improvements in materiel.

(2) The EIR is submitted in accordance with the provisions set forth in TM 38-750. Category I reports must be submitted by message to insure proper priority and will specifically identify those deficiencies which are considered to be related to safety, health, and combat capabilities. SF 368 (Quality Deficiency Report) is used for submission of Category II reports. This does not preclude reporting through other appropriate reporting systems. In particular, AMSAA field liaison findings (DARCOM-R 70-7) submitted to an MSC shall be processed as an EIR.

(3) MRSA output products for DARCOM (RCS DRCSM 320) include the following monthly reports:

(a) EIR Summary by Weapon System and End Item - The report is generated from the DRS data base to provide management and action officers with a product listed by Category I and II and Weapon System Code (WSC) for a specified timeframe. Category I identifies emergency or urgent EIRs and Category II identifies routine EIRs.

1. Category I: A summary of the status of Category I EIRs for each weapon system code (WSC) and sequenced by WSCs.

2. Category I EIR listing: All the Category I EIRs that are open at the end of the period, closed during the period, or transferred during the period and sequenced by NSN.

3. Category II: A summary of the status of Category II EIRs for each WSC and sequenced by WSC.

4. Category II EIR listing by quantity per NSN: Five NSNs with the greatest total number of EIRs that are open at the end of the period, closed during the period, or transferred during the period and sequenced by NSN.

5. Category II EIR listing by replacement value of reported NSN: Five NSNs with the highest unit price that are open at the end of the period or were closed during the period and sequenced by NSN.

(b) EIR Closure Summary - The report is generated out of the DRS data base providing management and action officers with a product showing a matrix of closed EIRs by type of EIR and classification codes for the specified timeframe.

(c) EIR Category Summary - The report is generated out of the DRS data base providing management with a product showing a summary of open, closed, and transferred EIRs for a designated reporting period by the two categories for EIRs.

Category I identifies emergency or urgent EIRs and Category II identifies routine EIRs.

(d) Processing Status - Open EIR (180 days and older) - This report is generated out of the DRS data base to provide management and action officers with a product showing all the EIRs currently open on the DRS data base. It will list only the ones which have a Received Date (REC-DT) equal to or less than the as-of-date specified. The report is sequenced by Action Point (ACT-PT), Action Officer (AC-OFR), and Days Received (DAYS REC) in descending order.

(e) DRS File Update Totals.

b. Quality Deficiency Reports (QDR) -

(1) AR 702-7, Reporting of Product Quality Deficiencies Across Component Lines, establishes policy for the reporting of product quality deficiency data across DOD component lines as part of the overall Quality Assurance Program required by DOD Directive 4155.1, Quality Program. This regulation establishes a system for feedback of product quality deficiency data in order to:

(a) Provide for the initial reporting and cause correction and status accounting of individual product quality deficiencies, as well as to identify problems, trends, and recurring deficiencies.

(b) Enable components to periodically exchange and review management data.

(2) HQ DLA acts as the DOD focal point on matters pertaining to this regulation. AR 702-7-1, Reporting of Product Quality Deficiencies within the US Army, sets forth policies and responsibilities for reporting Product Quality Deficiencies within the Army. It complements AR 702-7, the joint regulation on this subject, and is further supplemented by a DARCOM regulation.

(3) QDRs are submitted using the same procedures used for EIRs. QDR summary reports are submitted by Quality Assurance Field Activity (QAFA) to HQ DARCOM (DRCQA). Figures 1 through 3 graphically portray the flow of EIR/QDR through the system.

10. Logistics Performance Reports - The DA Form 2406 (Materiel Readiness Report) TM 38-750, TAMMS, is the source of report data. The Commander, MRSA, prepares the Equipment Historical Availability Trends (EHAT) Report, using DA Form 2406 received at MRSA, on or before the 50th calendar day subsequent to the end of each fiscal quarter. A discussion of the EHAT and other reports derived from this source follows:

a. Equipment Historical Availability Trends (EHAT) (DD-M (AR) 1155). The report proponent is HQDA, DCSLOG, Directorate for Supply and Maintenance, DALO-SMP-U. The authorizing directive is AR 11-14. The EHAT provides commanders and logistical managers at all levels with an overview of the readiness status of selected items of Army equipment in terms of capability for performance of assigned missions. Supply and maintenance problem indicators of excessive degree or of a long-term nature are highlighted by comparing actual readiness status with logistic readiness goals and historical averages. The EHAT is produced in two separate books, identical in format, depicting the Full Mission Capable (FMC) Rates attained by reporting Major Army Commands (MACOM). Two years of trend data are plotted by MACOM and Line Item Number (LIN) and are compared to a Total Army Historical Average.

b. Selected Command Unit Reviews (SCURS) (RCS DRCRE-302). The proponent for this report is HQ DARCOM, Directorate for Readiness, DRCRE-FS. The authorizing directive is DARCOM-R 700-29. This report is prepared in five (5) volumes (one each for CECOM, MICOM, AVSCOM, TROSCOM, AMCCOM, and TACOM). The report identifies

DEFICIENCY REPORTING SYSTEM (DRS) RESPONSIBILITIES

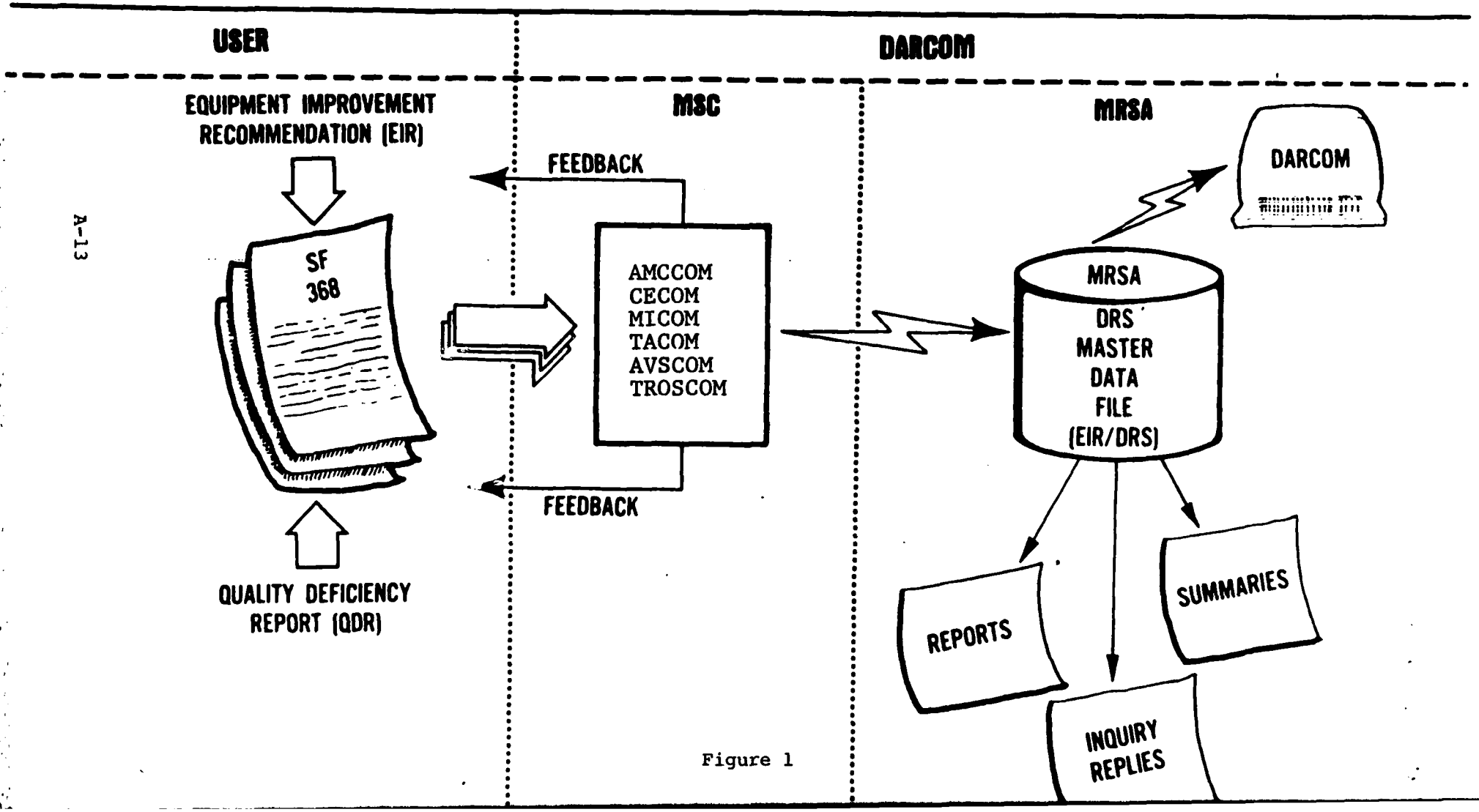
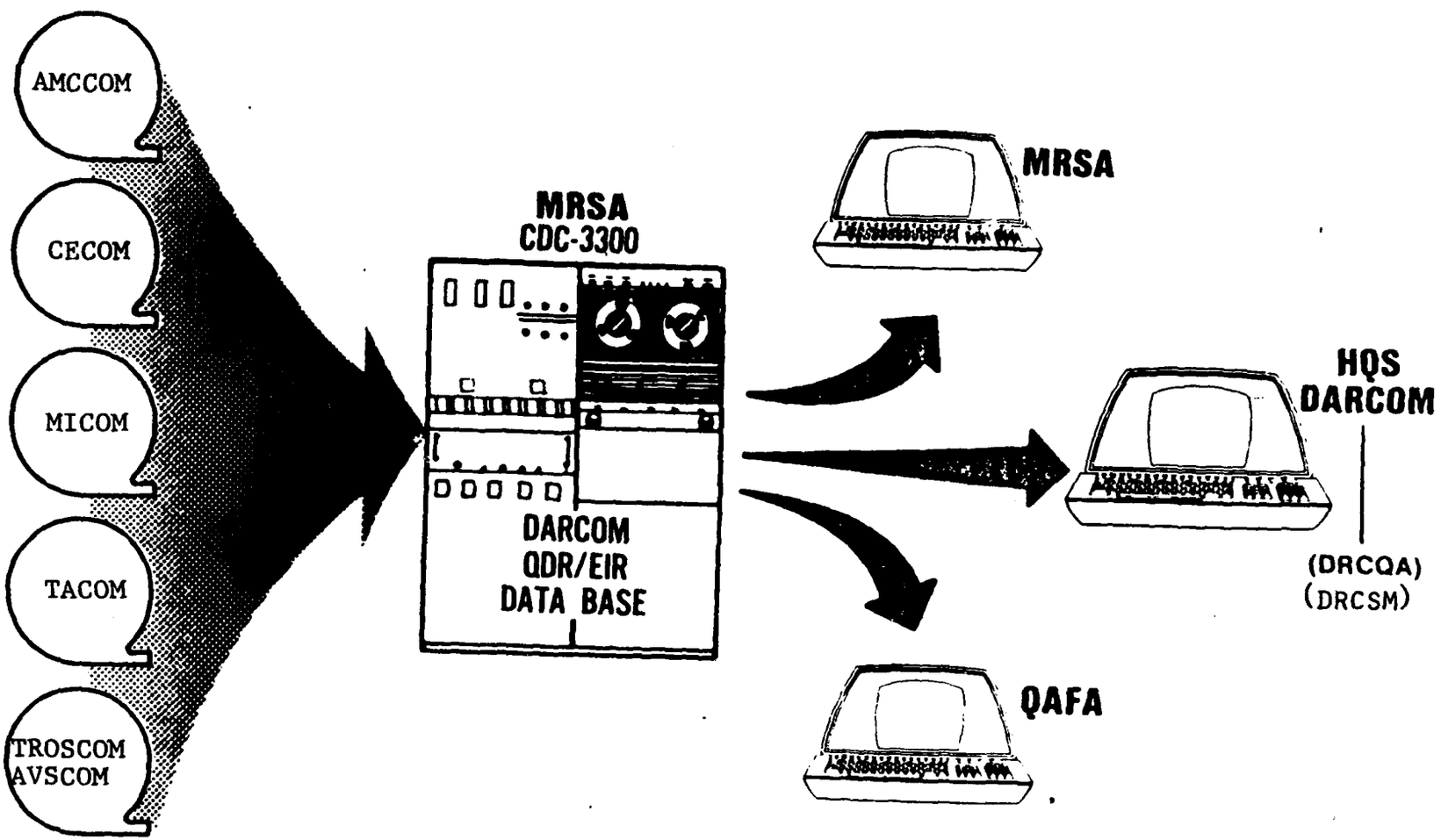


Figure 1

HQ DARCOM INTERFACE



*MONTHLY FILE UPDATE

Figure 2

DARCOM DEFICIENCY REPORTING SYSTEM

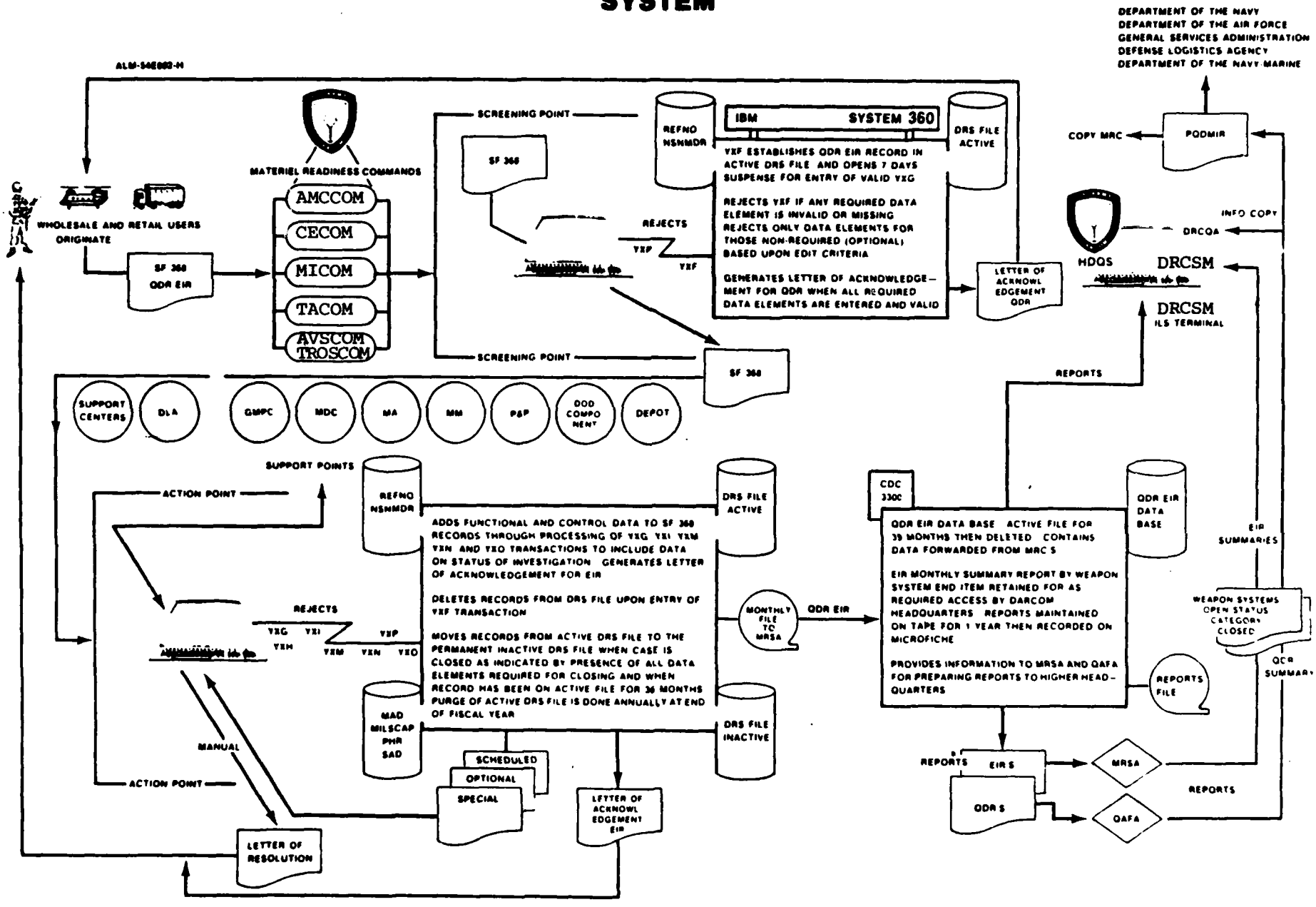


Figure 3

the specific units within a major command that contribute to the overall command having a 5% deviation from the historical average established as directed by the Department of the Army. The listing will be in unit identification code (UIC) sequence within each command. Active units are listed separately from Reserve Component units.

c. Unit Equipment Status and Serviceability Report (UESSR) (RCS-CSGLD-1237). The report proponent is HQDA, DCSLOG, Directorate for Supply and Maintenance, DALO-SMP-U. The authorizing directive is AR 11-14. This report reflects the quarterly status of equipment assigned to selected Army organizations or units. Separate volumes are prepared for Active Army divisions and selected nondivisional combat units. Part I consolidates the Full Mission Capable (FMC) status on all reportable equipment assigned to the major unit. Part II provides the same information for each individual subordinate unit. Separate volumes are also prepared for each State National Guard, National Guard Division, National Guard Early Mission Units, and US Army Reserve Units. Part III provides the quarterly status of operational readiness float items when reported.

11. Army Aircraft Inventory, Status, and Flying Time Reporting (RCS CSGLD-1837 (R1)) - AR 95-33 prescribes the specific inventory, status, and use reporting requirements for all aircraft, selected flight simulators, and trainers. It implements DODI 7730.25. The information collected is used to provide data for DA Form 1352 (Army Aircraft Inventory, Status, and Flying Time). Distribution requirements for these consolidated reports, or derivatives, are forwarded to Commander, TSARCOM, ATTN: DRSTS-SPMP91. Commander, TSARCOM, establishes and maintains technical documentation for the continuous identification and correction of all materiel problems. Specific records are maintained on high cost of repair, low reliability, and failures which adversely affect materiel condition status.

12. Army Missile Materiel Readiness Report -

a. AR 750-40, Army Missile Materiel Readiness Report, prescribes responsibilities and procedures for evaluating and reporting the materiel readiness of missile equipment. MICOM is the central agency for the collection, processing, and dissemination of materiel readiness data for missile systems and missile support systems identified in the above cited regulation. MICOM provides information on these missile systems/missile support systems to MRSA for inclusion in the Equipment Historical Availability Trends (EHAT), the Unit Equipment Status and Serviceability Report (UESSR), and other MRSA products.

b. DA Form 3266-1 (RCS CSGLD-1864(R1)) serves as the basis for the equipment status (ES) and equipment readiness (ER) ratings reported for missile systems on DA Form 2715 (Unit Status Report Worksheet) per AR 220-1.

c. Each month major commands, both active and reserve commands review and analyze data provided in Item 13 of DA Form 3266-1. This analysis is used as the basis for the major commander's readiness impact statement. The major commander's readiness impact statement provides essential information on logistical problems which need the assistance or attention of higher headquarters and which are beyond the capability of the command to correct. Reasons for items experiencing excessive downtime must be in sufficient detail so that corrective action can be taken. This report is sent to MICOM, ATTN: DRSMI-US, Redstone Arsenal, Alabama 35898. When other than MICOM-managed items are degrading system readiness, an information copy of the major commander's readiness impact statement is sent to the appropriate NICP, supply agency, or NMP. The Commander, MICOM, will be advised of assistance provided or be furnished an information copy of the reply to the initiating command. MICOM, in turn, informs HQ DARCOM of findings.

13. Unit Status Reporting -

a. This report is based on AR 220-1, Unit Status Reporting, which establishes a system for reporting the current status of selected Active and Reserve Component units. Objectives of this report are to provide a current status of US Army units to National Command Authorities (NCA); the Joint Chiefs of Staff (JCS); Headquarters, Department of the Army (HQDA); and all chain of command levels.

b. Data for computations in this report are derived from three possible sources. Data for equipment other than aircraft and some missiles are taken from DA Form 2406, Materiel Readiness Report (TM 38-750). Aircraft data are taken from the DA Form 1352, Army Aircraft Inventory, Status, and Flying Time (AR 95-33). Missile data covered by AR 750-40 are taken from DA Form 3266-1, Missile Materiel Readiness Report.

14. Logistics Intelligence File (LIF) - The US Army DARCOM Logistic Control Activity (LCA) provides timely responses to worldwide requests for various analyses of particular aspects of the Army Logistics System. The LCA can extract and analyze LIF data to show abnormal supply performance, reveal demand patterns, provide special project monitoring, and provide order-ship time comparisons. The LCA has the capability to provide feedback data to DARCOM commands by analyzing logistics system performance and recommending improvements. DARCOM-R 10-29, Mission and Major Functions of the US Army DARCOM Logistics Control Activity, covers the LIF data base.

15. Command Logistics Review Program (CLRP) -

a. AR 11-1 implements the CLRP within HQDA. The CLRP is an assessment and assistance program directed toward in-depth logistics reviews of unit and installation logistics operations to identify and resolve problems adversely affecting readiness and the command/installation logistics posture. There are two distinct

elements in this program. One is identified as the Command Logistics Review Team (CLRT). This consists of a team set up by each MACOM, including the National Guard Bureau (NGB), to implement the Command Logistics Review Program. Each team is composed of highly skilled technicians and specialists operating under a senior logistician, military or civilian, who serves as the team chief. The other element is identified as a Command Logistics Review Team-Expanded (CLRTX). This consists of a CLRT team augmented by HQDA and/or US Army Logistics Evaluation Agency (USALEA) representative as the assistant team chief. The objectives of the CLRP are to:

(1) Improve the logistics readiness and sustainability of the Army in the field.

(2) Enhance the logistics posture of command/installation support activities.

(3) Assist in all areas of logistic management and procedures.

(4) Foster command involvement in disciplining logistics operations.

(5) Provide logistics status to MACOM commanders and HQDA.

b. Selection of MACOM CLRT visits for expansion to CLRTX visits are governed by the degree of logistics problems at the installation or unit, the size and readiness posture of the major unit, resources available, and higher headquarters requirements.

c. Among other responsibilities the Commander, US Army Logistics Evaluation Agency (USALEA), reviews CLRT/CLRTX visit reports to identify problems beyond the scope of the MACOM and adverse or favorable trends, assigns logistics problems observed to responsible activities for resolution, and then monitors and evaluates these responses.

16. Supply and Maintenance Assessment Review Team (SMART) -

a. This program encourages suggestions from individual soldiers and civilians throughout the Army. Their ideas are forwarded to the SMART Coordination Office at the Logistics Center and selected suggestions are troop tested at the 24th Division. Also, DARCOM has designated the Materiel Readiness Support Activity (MRSA) as their action office for SMART and is working to increase support in the wholesale community. While SMART will examine all good ideas for improving logistics, the clear thrust of the program is to view all ideas as they might be viewed by soldiers at the unit level.

b. A draft DA circular is presently being staffed on this program.

17. System Assessment Program -

a. DARCOM-R 702-9, System Assessment Program, establishes the policies and procedures for this program. This program requires that DARCOM materiel/weapon systems satisfy user needs for mission performance and logistic support. Achievement of this commitment to user satisfaction requires that commanders know how DARCOM systems are performing in the field, and what problems the user has in operating and supporting the equipment. System assessments enable DARCOM to interface with the user; define problems affecting user satisfaction, operational readiness, and support cost; and to take timely corrective actions designed to enhance user satisfaction.

b. System assessments can take the form of either initial system assessments, update system assessments, or disciplined reviews. These assessments are performed only by the system proponent; however, in order to assure a complete weapon system approach, the system proponent with primary management responsibility for the system will obtain inputs from other system proponents who manage component items of the overall system.

c. System assessments furnish pertinent information to the DARCOM corporate staff on the field performance, problems, and corrective actions related to the fielded system. The initial and update system assessments and discipline reviews are submitted by the subordinate commanders and project managers reporting directly to HQ DARCOM, to the Deputy Commanding General for Materiel Readiness, DARCOM, in the form of a personal letter. The letter contains the subordinate commander's personal assessment of the fielded system. A system assessment report, RCS-DRCQA-303, which will be organized in the following format, is attached to the letter:

(1) Section I - Development History

(2) Section II - Field Performance

(3) Section III - Rebuilt/Storage Reliability

(4) Section IV - User Opinion

(5) Section V - Current Problems

(6) Section VI - Development Initiatives for Replacement (Improvement Action Underway)

(7) Section VII - Improvement Actions Required

(8) Section VIII - System Improvement Plan

(9) Section IX - Commander's Overall Assessment

d. The personal system assessment letters from the subordinate commanders are not distributed outside DARCOM. The system assessment report, which is attached to the subordinate commanders' personal letter, may receive wide distribution to those Army commands/agencies who have an interest in the performance of fielded systems. These reports may also be released locally to activities outside the Army after verbal notification to HQ DARCOM.

e. Maximum use is made of existing data on field performance of equipment. Existing data feedback channels are exploited to obtain additional or better data on field performance. Sample data collection programs, field visits and surveys, user questionnaires, and user conferences are means of obtaining field data and user opinions. DARCOM logistics assistance personnel and field maintenance technicians can also provide information on field performance. Field performance data is subjected to thorough, objective, and rational engineering analyses. The identification of problems and the justification of improvements must be substantiated by these analyses. The findings of AMSAA's R&D field liaison visits are used as a source of intelligence on field problems and provide input to the system assessment data base.

f. The System Assessment Report is prepared in narrative form and presents an objective evaluation of the fielded system.

18. TRADOC RAM Data Evaluation System (TRADES) -

a. TRADES is a program currently under development. The impetus for this program is derived from the fact that there is currently no recognized and organized system for making available to TRADOC RAM engineers, RAM test, field, and engineering data. Many of the RAM engineers in TRADOC have recognized this and have implemented primitive hard copy data systems on their own initiative from test incidents as they are received.

b. TRADES is a program which will provide the TRADOC combat development and testing communities with a responsive near real-time automated reliability, availability, and maintainability (RAM) data system, which will include test, field, and engineering RAM data and which can be used to support requirements determination and test analyses for materiel under development. This capability is needed to assist combat developers with baseline data to be used in modeling,

force structuring, logistics planning, and development of RAM criteria for requirements documentation. These data are also required to support cost and operational effectiveness analyses. Data which will be made available through this type of system will also be available to assist TRADOC test activities in the analysis of current tests.

c. The TRADES effort has been divided into three distinct phases. Phase I was an in-house study effort to define the problem. Phase II is a contract study effort under the provisions of AR 5-5 to document the requirements, alternatives, and proposed solution to the problem. Phase III will be the detailed justification, design, procurement, and implementation of the Phase II results under the provisions of AR 18-1.

19. Standard Army Maintenance System (SAMS) Retail/Wholesale Level.

a. SAMS is being developed to improve the maintenance management system and logistics support from the user level, vertically through the retail and wholesale levels to the national level. The current use of various command unique maintenance systems is evidence that the requirement exists for maintenance management systems. While some of these unique programs satisfy local requirements better than others, the disparity between them creates training difficulties and impedes the total information flow. Further, it has a detrimental effect on the accomplishment of the overall logistics mission.

b. SAMS is designed to provide a uniform, standard maintenance system that is responsive to each level of command, employing the principle that data should be made available for multiple purposes and not independently gathered for special reasons. Retail SAMS is subdivided into an operating level and three management

levels, i.e., User Operating Level (support unit), Maintenance Operations Management (MOM), Maintenance Program Operations Management (MPOM), and Maintenance Program Management (MPM), respectively. These are described in more detail below:

(1) The SAMS-1 system includes the management information requirements of both the user operating level and the Direct and General Support maintenance activity level because of their interdependence on each other. Therefore, the terms SAMS-1, MOM, or User may be used interchangeably in the context of meaning the same retail level of SAMS.

(2) Maintenance Program Operations Management (MPOM) is identified with the SAMS-2 system application. MPOM equates to the Division Support Command (DISCOM), Corps Support Command (COSCOM), Theater Army Area Command (TAACOM), or Director of Industrial Operations (DIO) and is the level that provides detailed program guidance to assigned maintenance activities, coordinates workloads, maintains overall control of expenditures, and insures availability of proper skills, facilities, and equipment.

(3) Maintenance Program Management (MPM) is the highest echelon of the retail level, usually at the MACOM or theater level. The system application will be designated as SAMS-3. It will develop command maintenance programs, provide policy direction, determine requirements, sub-allocate funds, and review performance.

c. Retail SAMS has been designed to provide an information data base which will satisfy not only its own need for historical data but also provide answers to inquiries from the wholesale and national levels of maintenance management.

d. SAMS-1, when fully implemented at the MOM level, will replace all command unique maintenance management systems and The Army Maintenance Management System (TAMMS) at the unit, DS/GS, and TDA activities.

e. One of the output products emanating from SAMS retail is derived from the Maintenance Reporting and Management (MRM) subsystem of the Combat Service Support System (CS3). This data consists primarily of work order information and is received by MRSA on a monthly basis from about 35 Data Processing Installations (DPIs). After some changes to the data, MRSA then submits the reports to the appropriate MRC for incorporation into the Commodity Command Standard System (CCSS).

f. The objective of the total SAMS project is to provide a standardized management information system that will tie the retail, wholesale, and national levels of management together in an integrated flow of data designed to support the recognized requirements of each level. The wholesale level processing of interim SAMS data is accommodated by the Equipment Maintenance and Performance Interim Reporting System (EMPIRES) which has been on-line since December 1981. It is with this field data linkage that the wholesale management levels of SAMS will be provided field information to accomplish its overall mission in the maintenance area. EMPIRES will permit wholesale SAMS development to continue prior to completion of retail SAMS and will minimize conversion efforts when retail SAMS is extended.

20. Operating and Support Cost Management Information System (O&SCMIS) -

a. O&SCMIS will be an automated management information system for the identification, collection, and dissemination of historical O&S costs for Army fielded major weapon systems. This system will be developed and implemented through a phased life-cycle approach for design, development, testing, and implementation. Implementing the system incrementally based on inherent commonalities between and among the commodity groups (aircraft, combat vehicles, armament, missiles, and electronics weapon systems) will provide early operational outputs and will

permit utilization of the initial reports prior to completion of the entire system. The proposed development and implementation schedule calls for an initial design which will satisfy the processing characteristics for the aircraft, combat vehicle, and armament systems. Creation of the actual data base will also be accomplished incrementally, with aircraft being the first implementation group and combat vehicles and armament forming the second implementation group. Following this development effort, the missile and electronics commodity groups will be implemented. This milestone will conclude the phased development of O&SCMIS.

b. O&SCMIS will draw information from multiple input sources. The initial data base will use 16 automated and 5 manual sources, process extracted data, and provide a variety of historical O&S cost output reports (currently configured for 28 unique report formats) by weapon system. Approximately forty weapon systems have been recommended for the initial coverage within O&SCMIS. Table 1 identifies the major data sources selected for O&SCMIS use and Table 2 identifies the weapon system list.

c. The Cost Analysis Division within the Office of the Comptroller, HQ DARCOM, has been designated the responsible agency for O&SCMIS development and operation by HQDA. The assignment not only places direct responsibility for technical development, implementation, and operation of O&SCMIS on HQ DARCOM but also implies responsibility for coordination between users, major commands, various HQDA and HQ DARCOM staffs.

d. The initial report from O&SCMIS is scheduled for May 1983. The overall development plan for O&SCMIS is shown as Figure 4.

TABLE 1

MAJOR INPUT SOURCES

ACRONYM	SYSTEM NAME	O&SCMIS USE
AAISFT	ARMY AIRCRAFT INVENTORY STATUS AND FLYING TIME	POL USAGE AND PERFORMANCE DATA
• AFPCH	ARMY FORCE PLANNING COST HANDBOOK	INDIRECT SUPPORT COSTS
AMDF	ARMY MASTER DATA FILE	PARTS COSTS
CBS-X	CONTINUING BALANCE SYSTEM – EXTENDED	INVENTORY DATA
CCSS-PMR	COMMODITY COMMAND STANDARD SYSTEM PROVISIONING MASTER RECORD	PARTS DISTRIBUTION
• DFSCPB	DEFENSE FUEL SUPPLY CENTER PRICE BULLETIN	POL PRICES
DMCAPRS/ DMFM	UNIFORM DEPOT MAINTENANCE COST ACCOUNTING AND PRODUCTION REPORTING SYSTEM	MAINTENANCE AND MODIFICATION COSTS
DODAAC/UIC	DOD ACTIVITY ADDRESS CODE TO UNIT IDENTIFICATION CODE CROSS-REFERENCE	UNIT IDENTIFICATION
DS4	DIRECT SUPPORT UNIT STANDARD SUPPLY SYSTEM	PARTS REQUISITION DATA
EMF/OMF	ENLISTED/OFFICER MASTER FILE	MILITARY PERSONNEL DATA
IDB	INTEGRATED DATA BASE	POL USAGE AND PERFORMANCE DATA
JUMPS	JOINT UNIFORM MILITARY PAY SYSTEM	MILITARY PERSONNEL COSTS
LIF	LOGISTICS INTELLIGENCE FILE	PARTS REQUISITION DATA
MACRIT	MANPOWER AUTHORIZATION CRITERIA	MILITARY PERSONNEL DATA
MOSB	MILITARY OCCUPATIONAL SPECIALTY TRAINING COST HANDBOOK	INDIRECT TRAINING COSTS
• SB 700-20	ARMY ADOPTED/OTHER ITEMS SELECTED FOR AUTHORIZATION/LIST OF REPORTABLE ITEMS	SYSTEM AND PART IDENTIFICATION
• SB 710-2	COMBAT CONSUMPTION RATES FOR GROUND AND AVIATION TYPE PETROLEUM PRODUCTS	FUEL CONSUMPTION DATA
TAADS	THE ARMY AUTHORIZATION DOCUMENTS SYSTEM	UNIT SELECTION
TAMIS	TRAINING AMMUNITION MANAGEMENT INFORMATION SYSTEM	TRAINING AMMUNITION AND MISSILE COSTS
• WALC	WORLDWIDE AIRCRAFT LOGISTICS CONFERENCE	TRANSPORTATION COSTS
MOBMDR	MOBILIZATION MASTER DATA RECORD	AMMUNITION USAGE DATA

• MANUAL INPUT

TABLE 2

O&SCMIS WEAPON SYSTEM LIST

AIRCRAFT	COMBAT VEHICLES
ATTACK HELICOPTER AH-1S	CARRIER: CARGO M548 CP M577A1 PERS M113A1/A2 81mm MORT M125A1/A2 107mm MORT M106A1/A2
CARGO HELICOPTER CH-47B CH-47C CH-47D	GUN, 20mm (VULCAN) SP
OBSERVATION AIRPLANE OV-1D	HOWITZER 155mm M109A1/A2/A3
OBSERVATION HELICOPTER OH-58C	HOWITZER 8in M110A1/A2
UTILITY HELICOPTER UH-1H UH-60A	TANK; M60A1/A3 M1
	RECOVERY VEHICLE M88/M88A1
	IFV XM2
	CFV XM3
	DIVAD

MISSILES	ARMAMENT	ELECTRONICS
CHAPARRAL	GUN, 20mm (VULCAN)	TACFIRE
DRAGON	HOWITZER 155mm M198	FIREFINDER
LANCE		TACSATCOM (AN/TSC-85 & -93)
MLRS		AN/TSQ-111
PATRIOT		AN/TTC-39
PERSHING II		
ROLAND		
TOW (CARRIER MTD)		
TOW (TRUCK MTD)		

O&SCMIS DEVELOPMENT PLAN

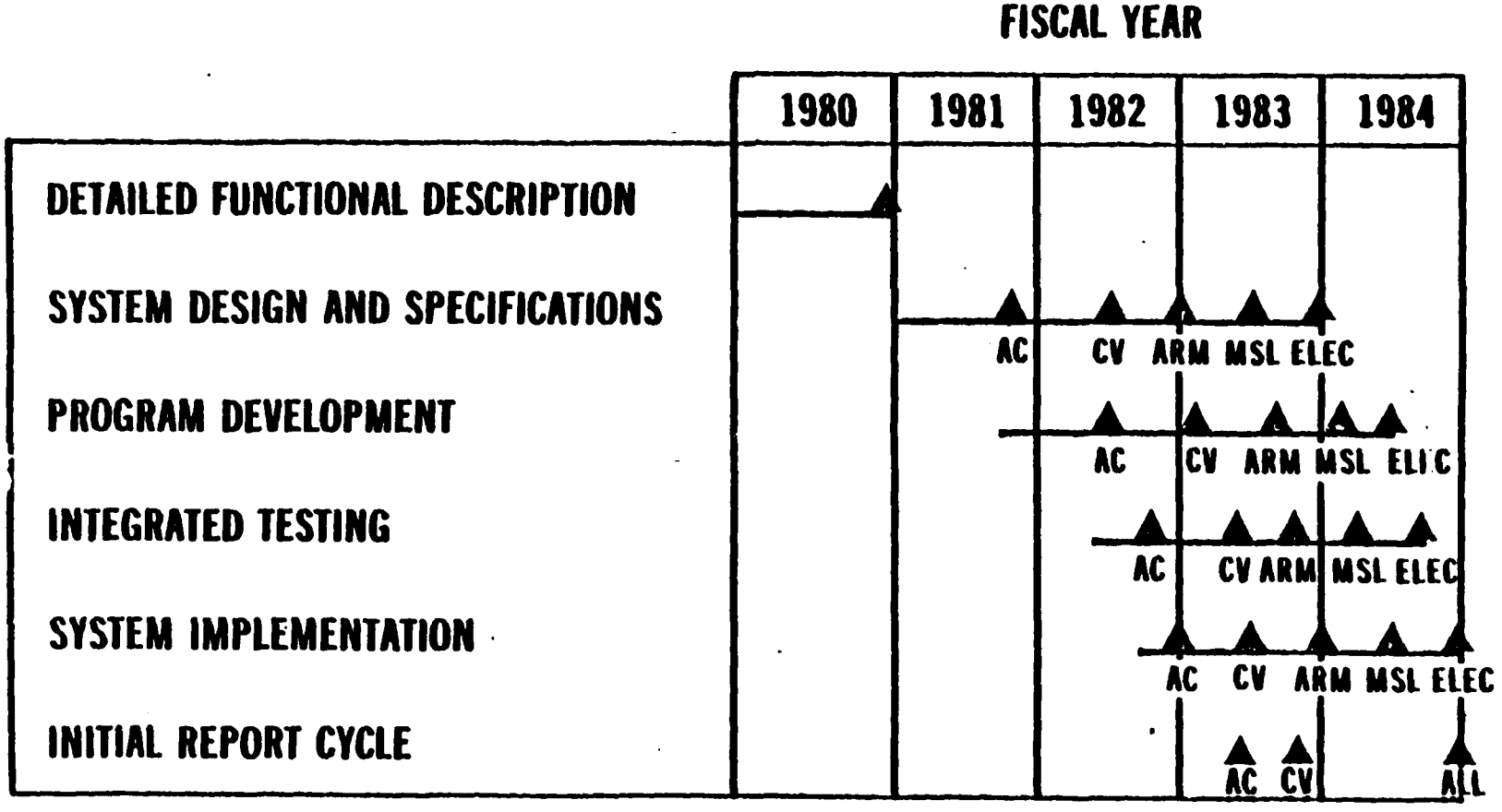


Figure 4

21. Standard Army Ammunition System (SAAS) - SAAS is a multi-command management information system which integrates Class V management and reporting functions from the Class V storage location to the Theater Army Materiel Management Center (TAMMC). Although thought of principally as a supply and inventory management tool for oversea forces, it does provide feedback to the technology base. This feedback is by serial number for large missiles and by manufacturers' lot numbers for other ammunition. Similar feedback is furnished by CONUS depots and installations to AMCCOM and MICOM; this data is processed concurrently with SAAS data so that worldwide reports can be derived.

a. The US Army Worldwide Ammunition Reporting System (WARS). This is a logistics management information system which provides ammunition managers data required for budget estimates, supply control studies, allocations, testing requirements, distribution planning, procurement initiation, scheduling, readiness assessment, stockpile reliability, and other various logistical factors applicable to conventional and chemical munitions.

(1) The principal characteristics of the WARS are common input and output format and a central DA data bank which receives basic data from the reporting activities worldwide.

(2) In USAREUR and the Pacific area, WAR's input is provided through the Standard Army Ammunition System (SAAS) Level I. FORSCOM and TRADOC provide input through the MACOM WARS system. The following reports are included in the WARS:

(a) Monthly Requirements and Assets Report.

(b) Quarterly Requirements and Assets Report.

(c) Ammunition Tonnage/Cost Data Report.

(d) Ammunition Maintenance Component and Packing Materiel Report.

(e) Ammunition Stock Status of Toxic Chemical Munitions and Bulk Agents Report.

(f) Dummy, Drill, and Inert Ammunition Report.

(g) Ammunition Training Authorization/Expenditures Report.

(h) Ammunition Maintenance Report.

(i) Demilitarization/Disposal Report.

(j) Inspection and Lot Number Report (WARS Part III).

(k) Ammunition Tests and Expenditures Report.

(3) The Lot Number Report provides serviceability status of the ammunition in storage worldwide. Included in this data are the quantity of ammunition by location, by stock number, lot number, year of manufacture, and up to four defect codes if assets are other than condition code A or K (like new or unclassified). Defect codes are assigned by surveillance personnel. The percentage of the lot subject to each defect is also included.

(4) Component parts or documented changes in the production process are found on the ammunition data card. Only small arms ammunition components are reported on Part III of the WARS.

(5) The lot number is formed in accordance with Mil Std 1168 A, the manufacturer being responsible for compliance.

(6) The WARS Part III is distributed to Department of the Army (ATTN: DALO-SMA), DARCOM (ATTN: DRCSM-WGM), US Army Security Agency (ATTN: DRSAC-OO), Depot Systems Command (ATTN: DRSDS-Q, DRSDS-MOAT, DRSDS-SM-SPA), Army Materiel Systems Analysis Agency (ATTN: DRXSY-RW), Executive Director for Conventional Ammunition, and AMCCOM (ATTN: DRSMC-QAC-D (A), DRSMC-SCA-AP (D), DRSMC-DSM (R), DRSMC-DSD (R), DRSMC-ASR (R)).

(7) The report is used by these agencies as well as quality assurance personnel for various reasons:

(a) Identify scope of work required to restore unserviceable assets to issuable condition using defects indicated by lot.

(b) Forecast components required for maintenance programs.

(c) Locate assets for work consolidation and cost analysis.

(d) Make decisions for restoring assets involved in malfunctions.

(e) Check lot numbers on Ammunition Condition Reports.

(f) Test sample availability/allocations.

(g) Prepare budget for Components for Renovation.

(h) Prepare the five-year maintenance plan.

(i) Support stockpile reliability program.

(j) Monitor stockpile trends and verify adequacy of depot ammunition maintenance workloading.

(8) This study addresses only the feedback aspects of WARS, which is a very small portion of the total usefulness of this system.

b. The Guided Missile/Large Rocket Report. The SAAS provides the feeder data necessary to automatically prepare the DARCOM 193 Report on guided missiles and large rockets for MICOM as required by AR 710-9. Automation of the preparation is especially significant because most missile items are reported by serial number and the report is very long. Use of SAAS data significantly reduces preparation time and assures more accuracy.

APPENDIX B

Notes from Army RD&A Magazine, July-August 1982, The Role of Army Labs in RDA

1. There are 34 formally recognized Army in-house laboratories, some large, some small, performing work in the physical, life, and personnel sciences in support of military and civil works programs of the Department of Defense. They constitute a large investment of dollars and manpower.

2. Army in-house laboratories have become increasingly important to DOD RDTE and procurement programs, and recent emphasis in these areas increases the importance of their performance. As major participants in the technology base and the systems development and acquisition process, the laboratories must achieve equipment improvements which reduce the impact of projected manpower constraints; obtain lower equipment production, operation, and support costs; and direct substantial R&D effort toward the longer term technological deficiencies and opportunities. Here, attention must be paid to the vitalization of our technology base, the stimulation of prototyping, the use of mature US and allied technology, and the reduction of intelligence asymmetry and "technological surprises" in the face of a determined and well-supported Soviet competition.

3. Army needs are generally satisfied through four alternative methods:

(1) product improvement - usually the preferred method to satisfy requirements by exploiting the performance growth potential in already developed systems/items; (2) purchase of existing domestic or foreign materiel systems/items which do not require any development work can provide low cost, quick response to approved requirements; (3) existing commercial, other services or foreign developed systems/items - may require some modification to meet specific requirements; and (4) new development programs - usually the most costly and longest alternative means to satisfy a materiel need.

4. The Army's policy on materiel design emphasizes simplicity, austerity, producibility, supportability and interoperability with systems of other services and allies and, when the additional cost can be justified, planned growth potential to accommodate future needs. Such provision for evolutionary development permits the later improvement of system capability through product improvement.

5. The Army recognizes that achieving required system capabilities within acceptable risk and cost is dependent on a strong and useful technology base. Government laboratories, federally funded research and development centers and other not-for-profit organizations are considered vital sources of new technology and new concepts. Major emphasis is placed on technical effort outside of the Army laboratories and encouragement to industry and educational institutions, regardless of size, to be the primary source for exploration of competitive system design concepts. Technology and concepts developed by the government or as a result of Army contracts are made available to the private sector for use in developing competitive system design concepts or to benefit the civilian community.

6. Laboratories are responsible for two broad classes of effort: development of the technology base and support to other Army agencies. The laboratories support the technology base by serving as an Army interface with the technological community and by conducting research, exploratory development, and advanced development programs. Support to other agencies is generally provided in the form of technical assistance. This includes assistance in solving technical problems encountered during weapons system acquisition by the MRCs and in the operational environment by the operational commands.

7. The bulk of the laboratory effort is devoted to supporting the technology base. The laboratories rely on industry contractors for the conduct of much of the actual development work.

APPENDIX C

EXTRACTS from The Under Secretary of Defense for Research and Engineering Memorandum to the Services dated 1 March 1982, subject: Increased IR&D for Improved Weapon System Readiness and Support

The following quotes are taken from the memorandum to emphasize the importance placed on logistic R&D and the role of industry in achieving the objectives delineated in this memorandum:

* * * * * * *

> As you know, we have undertaken a series of major initiatives to improve the acquisition process. As an integral part of this program, we have identified improvements in support and readiness as major objectives to be applied to both the weapon system and support technology areas.
>
> In this context, one of the crucial needs is increased emphasis on logistic R&D. Technical innovation is essential to improving the readiness of our next generation weapons and reducing their logistic and manpower burdens. Weapon support characteristics have reached such levels of importance that we can no longer let them "just happen" after performance objectives have been satisfied. Greater effort must be applied to make technology available which can be used to increase mission reliability, reduce dependence on support equipment, and reduce the support tail, spares and repair facilities, and, equally important, reduce the need for highly skilled personnel. The impetus to shorten acquisition time requires that much of the technology used be on-the-shelf.
>
> Industry must play a major role in achieving our objectives by emphasizing these technologies in their IR&D programs.
>
> A recent analysis of industry IR&D activities notes that only about 2% of IR&D man-years was directly allocated to logistics and logistic related activities. This excludes the efforts within subsystem design projects which could have a major effect on readiness and support but are apparently not being pursued with high priority. Considering that about 25% of the initial acquisition cost of a weapon is logistics oriented, and more than 50% of the cost over the life of the system, it seems to me that IR&D in these areas should be more in tune with the importance of the problem and should be actively supported by Service and DOD management. I believe that the needed increase would involve both logistics oriented technology efforts and a substantial increase in the effort allocated to front-end design of new systems to incorporate the required support characteristics.

Thus, I am asking each Service to emphasize these approaches with its IR&D contractors, and urge them to expand their activities in logistic R&D.

* * * * * * *

APPENDIX D

EXTRACT from The Department of the Army's Implementation Plan
for
Increased Independent Research and Development for
Improved Weapon System Readiness and Support

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LOGISTIC RESEARCH AND DEVELOPMENT DEFINED

Logistic R&D is that portion of the overall R&D effort which is performed specifically to improve the logistic supportability and readiness of Army materiel. As such, logistic R&D is not performed as part of a weapon system/equipment acquisition program but along generic lines for the advancement of state-of-the-art technologies and support concepts for general use. It should be stressed that logistic R&D is not restricted to classical R&D funding (i.e., 6-1, 6-2, 6-3, etc.). A significant portion of the effort could utilize other funds (e.g., Operations and Maintenance Army - O&MA) or be performed without government funds through independent R&D.

The logistic R&D effort can be stratified into three major areas of emphasis:

(1) Category I, Technology Improvements for Readiness and Support. Hardware and software oriented efforts directed towards the development or integration of new innovative or on-the-shelf technology for improved system readiness and support. Many of these efforts will improve system readiness and support through improved system reliability and maintainability. Besides providing a new technology base for system development, Category I efforts should be directed towards improving the readiness, RAM (reliability, availability, and maintainability), and life cycle costs of fielded systems by utilizing state-of-the-art technology to resolve known deficiencies. Examples of Category I efforts are basic research into use of very high speed integrated circuits (VHSIC) for diagnostic capabilities, higher reliability through improved component designs, improved engineering materials to improve durability and minimize breakage, component integration (i.e., avionics component consolidation), improved non-destructive testing technology, development of maintenance free components, and exploratory research into hardware approaches to simplify tank rearm or refuel actions.

(2) Category II, Logistic System Improvements. Efforts directed at improving the wholesale or retail logistic system through changes to the support resources (e.g., combat service support) or the procedures/concept of operation. Examples of Category II efforts are development of standard containers, improved packaging methods, improved supply system through new procedures or inventory control methods, new materiel handling concepts, new refueling procedures/methods, automated field manuals, and development of a two level maintenance concept.

(3) Category III, Logistic Methodologies for Analysis and Management. Efforts directed at improving the methodologies, procedures, techniques, documentation, and training programs available for logistic management, analysis, and the development of the products of the elements of Integrated Logistic Support. Examples of Category III efforts are development and simplification of life cycle cost prediction and tracking methodologies, improved decision risk analysis procedures, improved computer aided design (CAD) capabilities for optimizing reliability vs. maintainability, methods for comparative analysis, improved methodologies for supportability test and evaluation, use of computer generated graphics and word processing for technical manuals development, automatic generation of provisioning data from other Logistics Support Analysis Record (LSAR) data, improved RAM allocation/prediction methodologies, improved reliability growth analysis and management procedures, procedures for incentivizing ILS/RAM requirements in contracts, better test program set decision models, development of automated procedures for skill and task analysis and guidance on how to perform logistic support analysis.

The logistic R&D program provides new concepts, procedures, methodologies, and technology approaches that can be used by a PM (product, project, or program manager) for a specific acquisition program. However, it does not relieve the PM from the responsibility to have a comprehensive Integrated Logistic Support (ILS) and RAM (reliability, availability, and maintainability) program aimed at providing an affordable and supportable system. In executing an acquisition program, a PM may press or advance the state-of-the-art in any of the three categories above. However, this is done as part of the PM's responsibility for that acquisition program and not as part of the logistics R&D program.

PLAN FOR LOGISTIC RELATED IR&D EFFORTS

The IR&D program is a cooperative effort between the defense industry and the Department of Defense (DOD). Among its objectives, the IR&D program seeks to ensure the creation of an environment that encourages research and development of innovative concepts which complement and broaden the spectrum of concepts for DOD systems and equipment.

As part of this objective, the IR&D program must assume a more significant role in promoting research and development for improving system readiness and support. This requires the inclusion of logistic related projects, as defined in the section entitled "Logistic Research and Development Defined," into the technical programs of every IR&D participant. To meet this objective, Headquarters, US Army Materiel Development and Readiness Command (DARCOM), as the Army IR&D Manager, will take the following actions:

a. Distribute a letter from the Commanding General, US Army Materiel Development and Readiness Command (DARCOM) to all IR&D participants (for which the Army is designated the Technical Review Service) emphasizing the need for logistics related IR&D efforts. This letter will provide the DARCOM focal point for logistic R&D, summarize the actions as stated in this plan, and request industry's support and assistance in this endeavor.

b. Actively involve logistic (including RAM) personnel in the IR&D program. This will be accomplished by formally adding logistic personnel to the on-site review team and staffing all IR&D technical plans with the logistic community.

c. Make logistic related efforts a specific agenda item during the IR&D on-site review. This will require that these types of projects be evaluated separately, providing additional emphasis to the IR&D participants. This will be implemented once logistic personnel are assigned to the on-site review team.

d. Investigate the possibilities of using incentives to increase logistic related IR&D. This should involve evaluating different means available to incentivize contractors to increase their logistic related IR&D efforts, the legal/ethical ramifications of incentives, and the administrative costs vs. benefits.

e. Revise DARCOM-R 70-40, IR&D Program. This regulation will be revised to emphasize logistic related IR&D and institutionalize actions b and c above.

f. Keep the IR&D participants aware of all thrusts in the logistic R&D area. This will require the distribution of logistic R&D plans, focal points, and policy statements, as well as invitations to participate in logistic R&D symposia. This will be an on-going action.

* * * * * * *

APPENDIX E

VISITS AND TELEPHONIC DISCUSSIONS CONDUCTED ON LSO 023

1. Visits conducted:

a. DCSLOG on 1 March 1982 with study sponsor Mr. William Chlan and LTC A. T. Crumpton.

b. DCSLOG on 25 March 1982 with study sponsor Mr. William Chlan.

c. HQ DARCOM on 27 April 1982 with Mr. Frank Kozisek and others.

d. MRSA on 20 and 21 May 1982. Visits with all pertinent elements of this organization. Mr. Bud Stratton conducted entrance and exit briefings.

e. MICOM on 21-23 June 1982. Mr. Fred Cole, ILS, was the point of contact. All pertinent elements of MICOM contacted on this visit.

f. AMSAA on 4-6 August 1982. Visited Field Assessment (Mr. Herb Gage).

g. Quartermaster School on 10 August 1982.

h. LOGC on 11 August 1982. POC was Mr. Marvin Demers, ILS/RAM Division. Also talked to LTC D. Benka and others. Additional visits conducted during March 1983 with Mr. Dick Lindquist (TRADES), LTC Buckley (SAMS), and Mr. Jim Ruleford (SAAS).

i. MERADCOM on 18 August 1982. POC was Mr. Allan T. Sylvester, Special Assistant for Materiel Assessment and Mr. Willie G. Putnam, Director, ILS & Engineering Directorate.

j. Army Logistics Management Center (ALMC) on 23 August 1982. POC was Mr. Jim Walsh.

k. DCSLOG on 26 August 1982. IPR held with study sponsor.

l. HQ DARCOM on 27 September 1982 with Dr. K. Bastress and Mr. Cecil Umberger, Long Range Planning, Directorate for Technology Planning and Management. Additional visit on 25 March 1983 with Mr. Jimmy Thomas (O&SCMIS).

m. HQ TRADOC on 20 October 1982. COL Madigan, MAJ John Holmes, MAJ Smeltzer, and Mr. Jack Harris.

2. Telephone discussions with key personnel:

a. LEA, Mr. Terry Merritt, Mr. Jack Shields, and MAJ Pesano.

b. TRADOC, Mr. M. R. Johnson, Combat Development.

c. DARCOM, ILS, Mr. Bill Neal.

d. DARCOM, Mr. John Bowen.

e. DARCOM, Mr. Folk, Product Assurance.

f. MICOM, Mr. Fred Cole, ILS, and Mr. Ralph Collins, SAMS.

g. QMS, MAJ Altorfer, Directorate for Evaluation and Standardization.

h. MERADCOM, Mr. Allan Sylvester and Mr. Carl Steinbach.

i. MRSA, Mr. Paul Powell, on Standard Army Maintenance System (SAMS).

j. LOGC, Mr. Sam Lapkin, TRADOC RAM Data Evaluation System (TRADES).

APPENDIX F

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