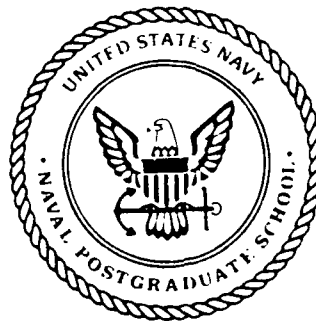


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NAVAL POSTGRADUATE SCHOOL Monterey, California



THESIS

IMPACT OF NEW DOD DIRECTIVES ON MARINE
CORPS ACQUISITION POLICY AT MILESTONE IV

by

Vernon T. Sapp

March 1991

Thesis Advisor:

D. V. Lamm

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Impact of New DoD Directives on Marine Corps
Acquisition Policy at Milestone IV

by

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Major, United States Marine Corps
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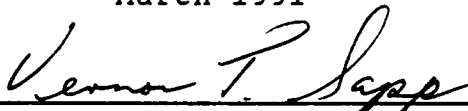
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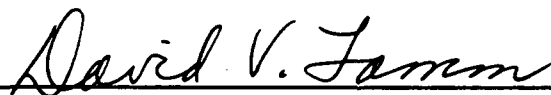
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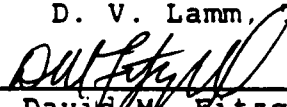
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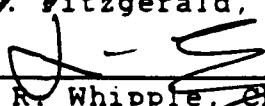
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ABSTRACT

This thesis is an investigation of the new DoD directives concerning acquisition policy and procedures at Milestone IV.

This thesis begins with background material concerning the Marine Corps acquisition process and the organizational structure of the Marine Corps Research Acquisition and Development Command. An analysis of how other Services view the activities at milestone IV is presented to provide a basis to evaluate the Marine Corps' procedural approach to a logistic review of fielded systems. Adequate evidence is cited to establish the difference between a Principal End Item Management Transfer and a Milestone IV Review. An examination of the nature, characteristics and requirements for a Fielded System Logistics Review and a Major Modification Review are presented. Procedures are developed accordingly, based on this study, and are recommended for implementation by the Marine Corps for Fielded Systems Logistics Review and for a Major Modification Review and its subsequent approval.

A-1

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I. INTRODUCTION

A. PURPOSE

Over much of the last two decades, the Department of Defense (DoD) has placed a growing emphasis on the logistics support costs of fielded systems. This effort is directly tied to the realization that initial development and acquisition costs constitute only a portion of the life cycle costs of such weapon systems. In fact, the post-fielding costs of maintenance, supply, training, facilities support, and other similar activities, are often substantially greater than the initial acquisition costs. "About 60 percent of the total life-cycle costs of a system are committed to operations and support." [Ref. 1:p. 1-2] Consequently, a progression of policy and procedural directives has been issued to enhance control and improvement in DoD's management in this area. Nevertheless, recent DoD directives have downplayed the requirement for logistics reviews of fielded systems. Even though logistics supportability analysis and planning is still entwined through the acquisition process which precedes actual system fielding, new guidance simply calls for a review of the modification alternatives to upgrade fielded systems.

B. RESEARCH QUESTIONS

This thesis poses the question: What impact will the new DoD Directives concerning Acquisition Policy and Procedures at Milestone IV have on current Marine Corps logistics support

planning? In addressing this question, this paper reviews how the Marine Corps has implemented policy and procedures reacting to the new DoD guidelines and goes on to propose recommendations for addressing current problems.

In addressing the primary thesis question, the following subsidiary thesis questions were considered:

1. What is the Marine Corps' policy regarding Milestone IV processes?
2. What is the Marine Corps' organizational structure to address the acquisition process?
3. How do other Services administer Principal End Item transfer?
4. What post-fielding procedures are required to address current problem areas?

C. APPROACH

Current regulations and acquisition documents were reviewed to establish the historic rationale and present implementation expectations regarding logistics supportability.

This documentation research was augmented with a review of recent organizational changes within the Marine Corps to examine the structure available to support logistics reviews. A list of questions (Appendix A) were prepared and presented to key individuals in the Marine Corps Research, Development and Acquisition Command (MCRDAC) to solicit insight regarding problems from those personally involved. These questions were the basis of personal interviews with selected MCRDAC managers who are directly

involved in the acquisition and logistics planning for systems. The insights gained from this work identified a baseline for how the Marine Corps presently addresses post-fielding reviews.

Procedures used by other DoD Service components were evaluated to determine if some problem resolution has already been addressed for logistics supportability. Besides exploring the availability of solutions from other sources, this effort was particularly relevant to the problem since much of the equipment ultimately fielded by the Marine Corps is initially developed and procured through other Service acquisition processes.

An examination of both DoD policies and regulations and the Marine Corps baseline provides the foundation for comparing the two and identifying discrepancies requiring resolution. These are presented in the concluding portions of this paper with associated recommendations.

D. ASSUMPTIONS AND SCOPE

Research for this paper concentrated on the Marine Corps conduct of logistics supportability assessments and the associated structure established for such analysis. Only Marine Corps systems processes were examined in the conduct of the research herein presented. The formal regulatory nature of these systems as they progress from cradle to grave provides a definable, controlled environment for analysis. Such a focus also concentrates attention on those systems with the largest potential for cost impacts resulting from poor procedures or improving changes.

It is assumed that DoD's focus on the area of Logistics Supportability is a valid and essential aspect of weapon system life cycle management. In addition, it is assumed that such an emphasis will not change in the near future. Traditionally, the costs associated with post production are simply too substantial to escape the regulatory oversight of those charged with the efficient expenditure of Federal resources.

This paper uses terminology and definitions based on the latest DoD directives. Although DoD updated Directive (DoDD) 5000.1 and DoD Instruction (DoDI) 5000.2 are in draft form, they are already having an impact as the Marine Corps presumes they will be approved and is conducting the acquisition process accordingly. Consequently, in the interest of presenting timely and current analysis, this paper draws on the draft versions of DoDD 5000.1 and DoDI 5000.2.

E. ORGANIZATION

Chapter II provides an overview of the acquisition process and related logistics support requirements as stipulated in the latest pertinent directives. This background information presents the structured processes which serves as a backdrop leading to the final phases which are the primary focus for this paper. A discussion of the applicable Marine Corps organizations then follows in Chapter III. These are the management and implementation structures which must address the Marine Corps requirements of the acquisition and logistics processes.

Chapter IV presents an overview of Army, Navy and Air Force Principal End Item (PEI) transfer procedures in order to evaluate potential alternate methods for transferring the responsibility for weapon systems follow on support. In essence, these were reviewed as a basis for comparison with the Marine Corps policies regarding Principal End Item Transfer.

Special focus is then applied to Milestone IV in Chapter V as it is central to the primary thesis question. After reviewing the particular intent of the Milestone IV decision, and the Marine Corps' implementation to fulfill it, a discussion of the resulting impacts is presented. This chapter will also address problems incurred in addressing fielded systems logistics reviews and in administering weapon modification requirements. To address these problems, proposed procedures are presented for adoption by the Marine Corps.

Chapter VI provides conclusions and recommendations regarding this study.

II. BACKGROUND

A. EVOLUTION OF DEPARTMENT OF DEFENSE REQUIREMENTS

During the course of researching this paper, publications were reviewed and principal participants were interviewed. The general picture portrayed was that logistics supportability has been a nagging problem since the inception of modern weapons. It has never been sufficient to simply field an item and then expect that item to be self-sufficient without any further investment. Nevertheless, the cost efficiencies and post production impacts have not always been a matter of significant attention. Budget planning tended to focus on the initial development and procurement costs with only a cursory consideration of the remaining life cycle costs related to training, maintenance, parts replenishment and resulting system availability. As stated in 1964 by E. G. Fouch, Deputy Assistant Secretary of Defense (Installations and Logistics):

Heretofore we have given major attention to the cost of acquiring weapon systems ... in terms of development and investment. We have now come to realize that the maintenance and operating costs over the life span, for the most part, far exceed development and investment costs. We are therefore thinking in terms of total cost of effective use and ownership. [Ref. 1:p. 197]

The decades following Mr. Fouch's statement have seen the Department of Defense grapple with a more holistic approach to all its major systems. The extreme costs, or even the technical feasibility, of fielding items which are truly 100% failure free,

have caused a trade-off between an acceptable Mean Time Between Failure (MTBF) and its associated life cycle support costs. Hence, the "operational availability" reflected by MTBF becomes directly related to the repair/maintenance support capabilities fielded with the item and the personnel trained to use them. New weapon systems continue to be marked with greater sophistication and resulting complexity with a direct impact on growing post production costs. Figure 2-1 demonstrates the distribution of life cycle costs over typical acquisition and post production phases [Ref. 2:p. 1-2]. The Office of Management and Budget defines "life cycle costs" as:

...the sum total of the direct, indirect, recurring costs, and other related costs incurred or estimated to be incurred, in the design, development, operation, maintenance and support of a major system over its anticipated useful life.[Ref. 3:p. 3]

DoD and Department of Navy (DON) directives have attempted to address this "logistic supportability" by making it a principal design parameter co-equal with "cost, schedule and performance in specifications, requirements documents, source selection plans, and budget formulation".[Ref. 3:p. 2] To address this concern, Marine Corps Order (MCO) P4105.3 requires the establishment of logistic supportability early in the acquisition program.

As an excerpt from that order states, this is to be attained:

...in the form of readiness goals and related design requirements and activities, early in the acquisition program. Those requirements are to be considered when formulating the acquisition strategy and to receive emphasis comparable to that accorded to cost, schedule,

LIFE-CYCLE COSTING IN SYSTEM ACQUISITION

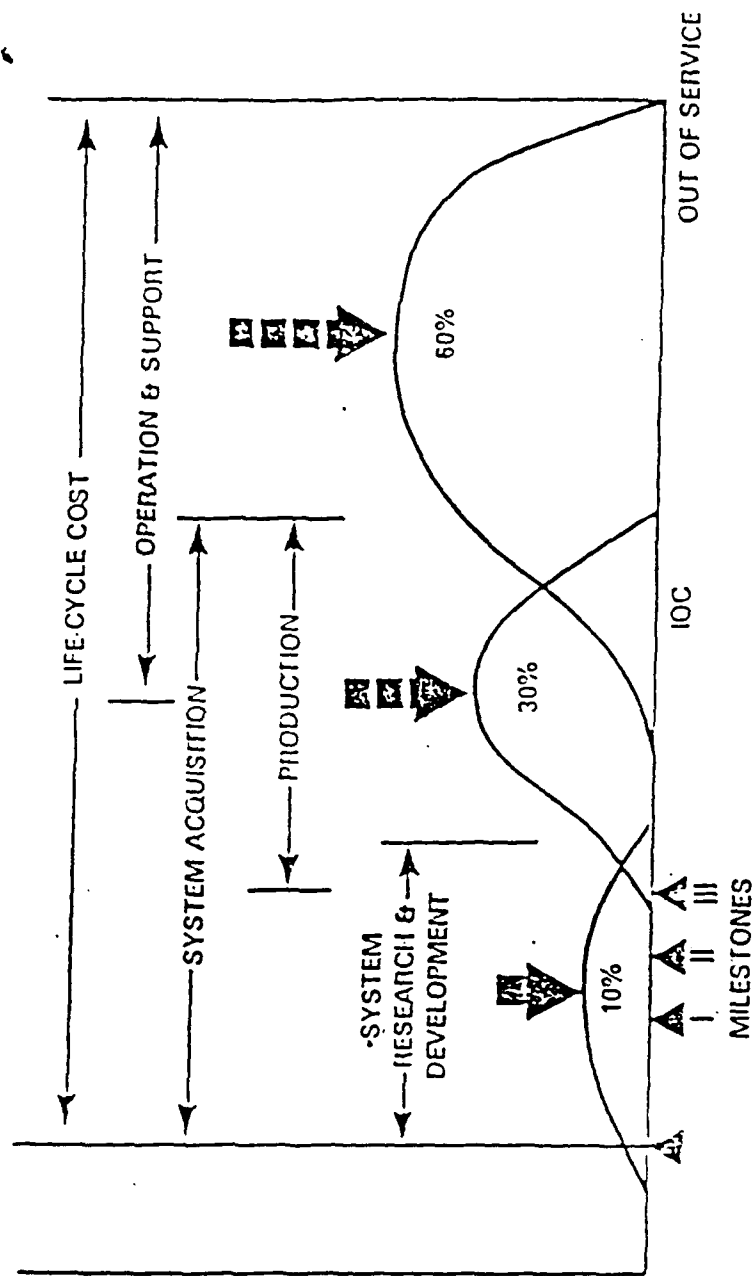


Figure 2-1 [Ref. 2:p 2-1]

and performance objectives and requirements. To assist in establishing the supportability requirements, and to affect the planning and execution necessary to meet those requirements, the Secretary of Defense (SECDEF) requires that every acquisition include an ILS program that begins at program initiation. [Ref. 5:p. 1-3]

The concept of Integrated Logistic Support (ILS), came into being in 1964. Table 2.1 provides the ten ILS elements and the eight related ILS disciplines which are involved in the ILS process [Ref. 5:p. 2-4]. ILS is intended to address the readiness and availability requirements of a fielded system by ensuring that adequate logistics planning is incorporated into the life cycle of a system starting in the early stages of development and design. The progression of ILS oriented directives which have been issued over the last two decades has reemphasized the life cycle cost considerations of viewing a weapon system in its totality - to include post production costs.

The sheer number of revised Department of Defense Directives (DoDDs) and Instructions (DoDIs) being issued is a stark indication of the impetus felt within DoD in gaining the required weapon system availability in the most cost effective manner. DoDD 5000.1 and DoDI 5000.2 are currently being rewritten and will effect major changes to the acquisition process. They establish acquisition policy and procedures for major and non-major equipment systems, including the post-production logistics support needed to ensure availability, with attention to concerns of fielding the right equipment while also addressing the most cost effective method of doing so. The Services further amplify DoD requirements through the implementation of policies and regulations such as the

TABLE 2.1

Integrated Logistics Support Elements

- | | |
|---|----------------------------------|
| 1. Technical Data | 6. Training and Training Support |
| 2. Supply Support | 7. Support Equipment |
| 3. Facilities | 8. Computer Resources Support |
| 4. Manpower and Personnel | 9. Maintenance Planning |
| 5. Packaging, Handling, Storage, and Transportability | 10. Design Interface |

Integrated Logistics Support Related Disciplines

1. Computer Aided Acquisition and Logistic Support
2. Logistic Funding
3. Configuration Management
4. Post Production Support
5. Ammunition
6. Warranties
7. Standardization
8. Logistic Support Analysis

Source: [Ref. 5:p. 2-4]

Secretary of the Navy Instructions (SECNAVINST) 5000.1, 5000.2 and 4210.6. The Marine Corps further expounds on this guidance in Marine Corps Orders (MCO) P5000.15 and P5000.10C [Ref. 6:p. 1-3]. Appendix C lists the Marine Corps system acquisition directives which are intended to complement DoD and DON instructions [Ref. 6:pp. b-1, b-14].

Life Cycle Cost Reduction Analysis is repeatedly conducted to identify the preferred course to pursue. This concern with resource expenditure is revisited throughout the acquisition process regardless of the method chosen to provide equipment for the Fleet Marine Force (FMF). Cost functions pertinent to each phase of the acquisition process deal with considerations involving planning, budgeting, and contracting. Analysis of these considerations support management decisions in the acquisition process. A decision to proceed into the next phase will largely be a result of factoring trade-offs made between cost, schedule, performance and, most relevant to this discussion, logistic supportability. At every step, logistics supportability should be recognized as a potentially significant cost factor. [Ref. 6:pp. 6-3, 6-4]

In short, a large, closely managed acquisition process structure has been established to gain efficiencies in identifying system requirements and seeing them through to fruition with a complementary analysis of full life cycle support requirements.

Each Program Management Office (PMO) contains certain individuals designated as "Integrated Logistics Support Manager"

(ILSM) and "Integrated Logistic Support Officer" (ILSO). They have the responsibility for planning and implementing the logistics program for a given weapon system. However, while the logistics supportability aspects have been improved over the years, they still have significant room for improvement, as witnessed by the recent draft release of DoDD 5000.1 and DoDI 5000.2. These require new perspectives on logistics review requirements during the post-production phases of the acquisition process previously established by Milestone IV and V reviews.

In order to evaluate the impact of these changes and evaluate resulting Marine Corps adjustments, it is necessary to review the overall acquisition and logistics processes and discuss their interrelated phases.

B. THE PROCESS: CRADLE TO GRAVE

DoD has established four Acquisition Categories (ACATs) based on the cost approval thresholds and presumed associated system complexity for each acquisition program. The acquisition and related logistics support process established for systems applies in varying degrees to each of these ACATs. Table 2.2 shows the ACATs with their dollar thresholds and review approval responsibilities [Ref. 6:pp 3-5, 3-6].

There are also three categories of non-ACAT programs: (1) Technology Base Programs, (2) programs which explore technology or conduct system integration without directly related procurement, and (3) programs for management and support. These programs require an abbreviated Development Plan (DP). Approval and

management for these programs is under the purview of the Director, Amphibious Warfare Technology (AWT), MCRDAC, and in coordination with the Marine Corps Combat Development Center (MCCDC) Director, Marine Air Ground Taskforce (MAGTF), Warfighting Centers discussed in Chapter III.[Ref. 6:p. 3-7]

Regardless of the level of the program, it goes through five phases of progressive planning, evaluation, and development, marked with four Milestone decision points. Figure 2-2 provides a graphic portrayal of this process [Ref. 7:p. 2-1]. It starts with a mission area analysis to determine if new equipment items are needed, progresses through phases to refine definition of prospective solutions, develops those solutions, fields them and, finally, reviews their continued support requirements and eventual need for replacement/modification. Throughout this process, a sizable analytic and management oversight effort is brought to bear. Program management documentation is produced to report the analytic results and support the Milestone decision points affecting whether to continue to subsequent phases. A list of Program Management Documentation is listed in Appendix C. [Ref. 6:pp. b-1, b-14]

1. Mission Area Analysis/Program Initiation

While not actually an acquisition phase, this is the point where analysis may indicate the requirement for an acquisition of some type to begin. This analysis may lead to a "Milestone 0" decision to proceed to the Concept Exploration and Definition (CE/D) Phase described below.

ACQUISITION MILESTONES & PHASES

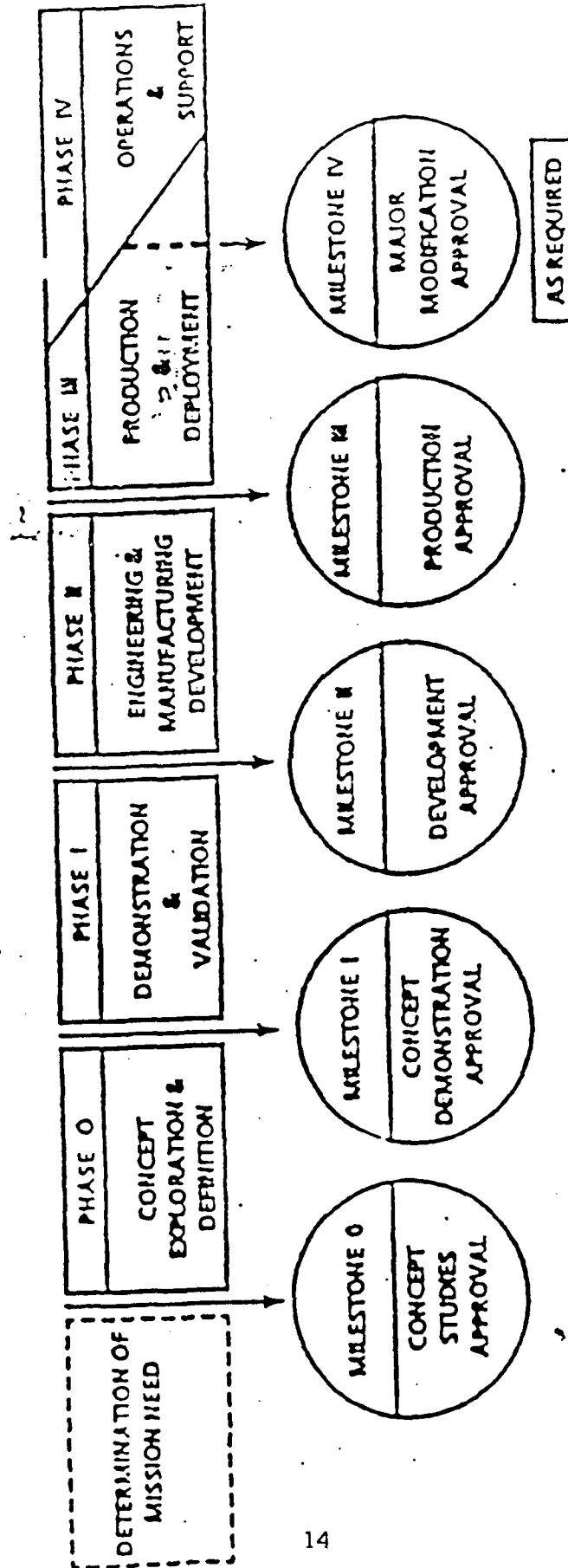


Figure 2-2 [Ref. 7:p 2-1]

TABLE 2.2

(Note: For purposes of clarity in reading this table, the reader's attention is directed to Appendix B)

<u>ACAT</u>	<u>RDT&E</u>	<u>PROCUREMENT, OPERATIONS, AND SUPPORT</u>	<u>REVIEW COMMITTEE</u>	<u>PROGRAM DECISION AUTHORITY</u>
I	Over \$200M *	Over \$1B *	DAB	SECDEF or SECNAV/NAE when delegated
II	Over \$50M	Over \$250M	MCPDM	SECNAV/NAE or ASN (RD&A) if delegated
III	**	**	MCPDM	ASN (RD&A) *****
IV	***	***	MCPDM	PEO

* Programs may also be designated as ACAT I due to urgency of need, developmental risk, joint funding, significant Congressional interest or other considerations.

** ACAT III programs do not have dollar thresholds. Programs are assigned this category if they directly affect Marine Corps combat capability or can be expected to interact with the enemy.

*** ACAT IV programs are those acquisition programs not designated as ACAT I, II, or III.

**** ASN is the PDA and chair for ACAT III shipbuilding at all milestones, but may delegate.

ASN (RE&S) is the PDA and chair for ACAT III, other than shipbuilding, from program initiation through Milestone IIIA. Low Rate Initial Production, but may delegate this function.

ASN (RD&A) will assume all responsibilities in the acquisition process for both the ASN (S&L) and ASN (RE&S).

Source: [Ref. 6:pp. 3-4, 3-6]

A Mission Area Analysis is conducted to determine mission need in response to an evaluation of the "threat" facing the nation with the associated requirement for the Marine Corps to counter this threat. If the Marine Corps determines that its current capability is lacking, the Marine Corps Combat Development Command (MCCDC) examines alternatives which do not require the acquisition of new equipment. These include potential changes in doctrine, tactics, techniques, training and force structure adjustments or any combination of these factors. [Ref. 8:p. 6]

If this review of alternatives does not identify feasible actions, then the Marine Corps begins to evaluate the potential for acquiring a new item to address the deficiency in countering the threat. A Milestone 0 decision to proceed starts Marine Corps actions to determine the initial impacts of such a direction. Even at this early stage, it is recognized that alternatives involving the modification of an existing system or the acquisition of a new system will often generate changes in related areas such as manpower and training.

ILS also formally begins at Milestone 0. This early analysis includes an evaluation of the logistics constraints that potentially influence the design of the system. Logistic influence of a system design is the result of evaluating system features and concepts which impact requirements for support resources. Much of this early evaluation is performed as part of the Logistics Support Analysis (LSA) process which is the principal interface between ILS and system design/development.

Table 2.3 lists representative ILS activities conducted during this phase.

TABLE 2.3

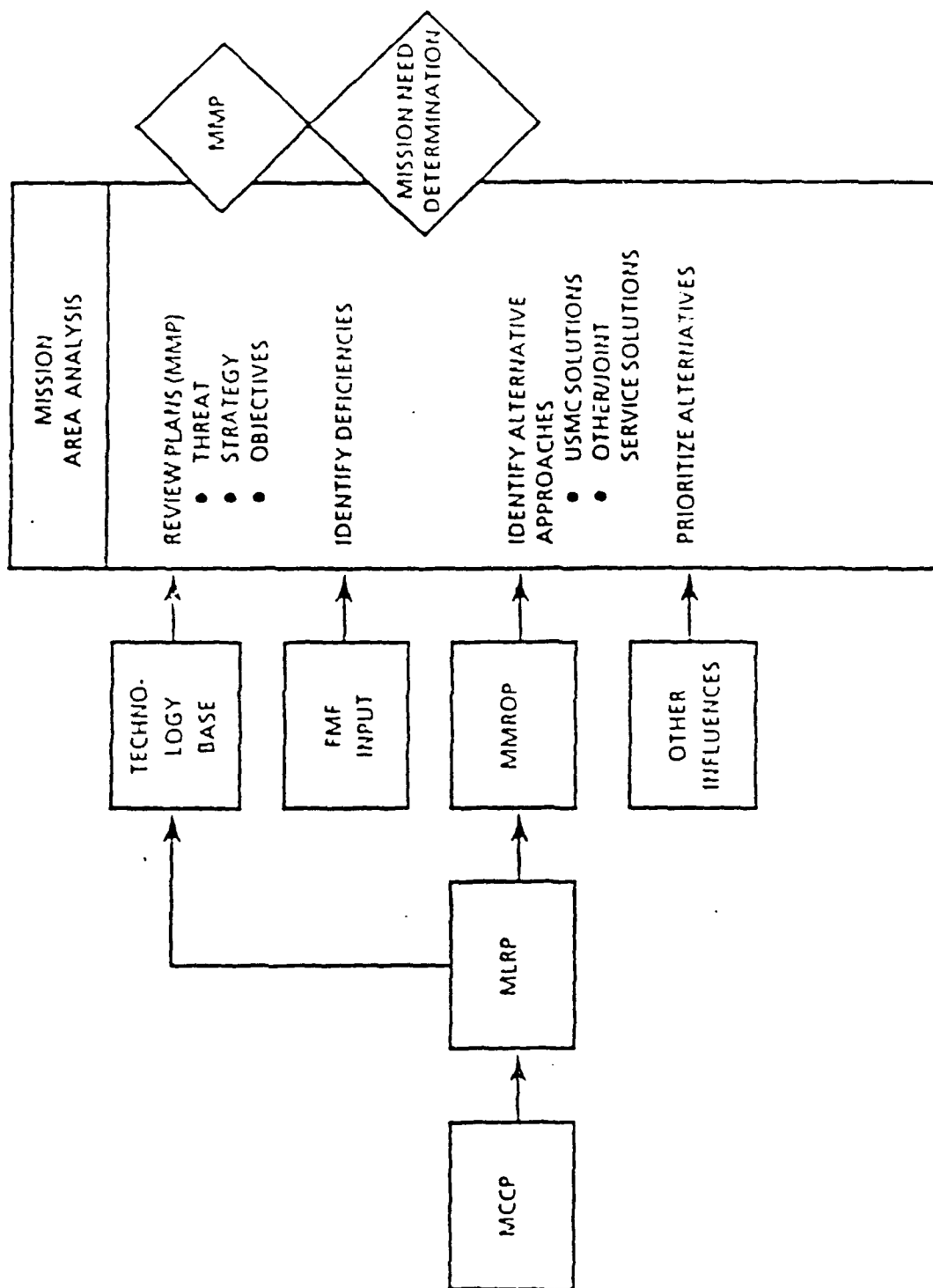
PROGRAM INITIATION INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Analyzing support costs and readiness drivers for current weapon systems and identifying targets for improvement.
2. Integrating readiness-related requirements into program documentation such as the Required Operational Capability (ROC) and the Master Acquisition Plan (MAP).
3. Estimating manpower, personnel, and training requirements by Military Occupational Specialty (MOS) numbers and grades.
4. Developing alternative operational and support concepts and their potential impact on existing support resources.
5. Assessing ILS program requirements, resources, and impacts for alternative acquisition strategies.

Source: [Ref. 5:pp. 2-13, 2-14].

2. Concept Exploration/Definition

The Combat Based Requirements System (CBRS) portrayed in Figure 2.3 is used in the process to review operational deficiencies and determine solutions. When it is determined that a material solution is the only way to correct the deficiency, the Marine Corps Combat Development Command (MCCDC), which is responsible for requirements determination relays a Required Operational Capability (ROC) to the Marine Corps Research Development and Acquisition Command (MCRDAC) describing the requirements to fill the mission need. The CE/D phase explores



Mission Need Determination (MND).

Figure 2-3 [Ref. 6:p 3-26]

inventory and industry capabilities to support an operational concept and defines the direction the Marine Corps should take toward addressing the threat. To fulfill an equipment solution, the Commanding General, MCRDAC selects an acquisition method. The Marine Corps may choose a Planned Improvement Program (PIP) to alter or upgrade an already existing system, or a Service Life Extension Program (SLEP), which will prolong the useful life of a current system. If these methods result in procurement of an existing system, it is referred to as a Nondevelopmental Item (NDI). Only after exhausting all other possibilities, is a decision made to develop a new system. [Ref. 6:p. 3-3]

The objective for the CE/D phase is identification of the most promising developmental concepts. Those selected will address functional and performance characteristics targeting mission needs, interoperability, and development of a Life Cycle Cost Estimate (LCCE). For systems using computers, this will involve the tentative selection of the system life cycle Software Support Activity (SSA) which then provides preliminary performance requirement, maintainability, and supportability expertise in this area.

During this phase, ILS processes examine characteristics unique to the system which indicate associated logistics support requirements. Other characteristics may indicate a requirement for further evaluation but the system is not yet at a stage to evaluate the impact of these and they are noted for future examination when system development has progressed sufficiently. [Ref. 5:p. 2-14]

The results of the ILS review must be communicated to the system developers during this phase since approximately 70 percent of the life cycle cost of that system will be established by the end of CE/D. The potential exists at this point to affect significant savings in the life cycle cost for a relatively small investment in Research and Development (R&D) funds.[Ref. 5:p. 2-15]

Table 2.4 lists representative ILS activities performed during the CE/D phase.

TABLE 2.4

CONCEPT EXPLORATION/DEMONSTRATION PHASE
INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Assigning an ILS manager (ILSM) or ILS officer (ILSO).
2. Establishing an ILS Management Team (ILSMT).
3. Establishing readiness objectives and tentative thresholds.
4. Identifying supportability related design constraints such as limitations on manpower, required maintenance echelons for specific repairs, and existing Test Measurement and Diagnostic Equipment (TMDE) and training devices to be used in support of the new weapon system.
5. Defining baseline operational and support scenario(s) for each alternative weapon system.
6. Analyzing current and projected requirements or capabilities to support the proposed weapon system and identifying alternatives.
7. Developing baseline support concept and integrating these concepts with the system design criteria.
8. Developing the LSA strategy and performing or updating initial LSA tasks.
9. Developing the Integrated Logistics Support Plan (ILSP) and identifying specific ILS tasks and activities to be performed during this phase and the subsequent acquisition phases.

10. Assessing ILS risks in terms of dollars and time.
11. Developing the Logistics Requirements and Funding Plan (LRFP).
12. Identifying reliability, maintainability, and supportability design parameters that are critical to attaining system readiness and sustainability.
13. Promulgating Part I of the Letter of Adoption and Procurement (LAP).
14. Integrating all ILS events into acquisition strategy(ies).
15. Identifying facilities requirements.
16. Identifying major items of support (hardware, software, and firmware) that will have to be developed.
17. Identifying transportability requirements and assessing them against existing capabilities.
18. Providing the contractor with detailed descriptions of current and planned manpower resources, skills, and training.
19. Including specific ILS requirements in solicitation documents, source selection criteria, and contracts for the CD&V phase.
20. Identifying supportability and readiness drivers (including cost drivers) of existing systems and establishing targets for improvement by the new system.
21. Developing the Computer Resource Life Cycle Management Plan (CRLCMP).

Source: [Ref. 5:pp. 2-14, 2-15]

After the completion of this phase, the results, with supporting cost analyses, are presented for Milestone I review. At this point, if indicators are positive, the Marine Corps will select one or more viable concepts and enter the Demonstration & Validation Phase.

3. Demonstration & Validation

The Demonstration & Validation (D&V) phase resolves questions regarding the technology available in support of later engineering development requirements. This phase focuses on mission and system performance requirements, to include interoperability and Reliability, Availability, and Maintainability (RAM) characteristics. The RAM factors have particular impact on post-production logistic supportability.

During D&V, mission requirements are refined and validated. Trade-offs between capabilities gained versus cost per gain are analyzed in support of selection decisions regarding the most promising concept(s) for Engineering & Manufacturing Development (E&MD). D&V activities are intended to eliminate concepts with low military value, when compared to the costs and risks of pursuing such concepts. Ideally, D&V processes will identify system concepts having the greatest potential for meeting the mission need in a cost-effective manner.

The D&V phase is key to the acquisition process. In comparison to subsequent phases, funding expenditures are relatively small. However, decisions resulting from D&V have a significant impact on the level of spending during the subsequent phases, to include the logistics supportability costs of Milestone IV reviews. This phase examines cost, risk, performance, and supportability trade-offs which directly affect Life Cycle Cost (LCC). [Ref. 7:p. 3-14]

Logistics Support Analysis (LSA) and ILS planning in this phase contributes to an assessment of how well each system concept fulfills the ROC requirements and the ILS and LCC implications. Poorly planned ILS requirements directly impact the LCC of the system. Among other analysis factors, Milestone IV reviews in particular would identify shortcomings in the D&V phase.

Table 2.5 lists representative ILS activities performed during the D&V phase.

TABLE 2.5

DEMONSTRATION & VALIDATION PHASE
INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Developing detailed ILS actions for an acquisition strategy.
2. Executing the D&V Phase ILS activities identified in the ILSP.
3. Conducting tradeoff analyses to determine the best balance among system characteristics, support concepts, and support resource requirements.
4. Establishing firm, realistic goals and thresholds for support and Reliability, Availability, and Maintainability (RAM) parameters.
5. Establishing the maintenance concept to be utilized under both peacetime and wartime conditions.
6. Performing and updating the LSA tasks and documenting the LSA record.
7. Revising the Computer Resources Life Cycle Management Plan (CRLCMP) for all systems utilizing developmental and nondevelopmental computer resources including the software support activity host.
8. Identifying standardization and interoperability requirements.
9. Identifying design requirements for facilities.
10. Including procedures to assess the achievement of support related thresholds in test and evaluation plans.

11. Developing provisioning strategy.
12. Analyzing the sensitivity of support resource requirements to changes in key design and support requirements (i.e., reliability, maintainability).
13. Providing the contractor with realistic manpower costs to be used in tradeoff analysis.
14. Revising the ILSP to reflect activities accomplished during this phase and the ILS activities to be performed during the succeeding phases.
15. Including specific ILS requirements in solicitation documents and source selection criteria for the E&MD phase.
16. Identifying transportability requirements and beginning transportability analysis.
17. Developing plans to ensure the maximum use of standard parts, components, and systems.
18. Identifying industrial preparedness planning requirements and constraints.
19. Performing a Level of Repair Analysis (LORA).

Source: [Ref. 5:pp. 2-16, 2-17]

At this point, the acquisition process calls for a Milestone II decision to approve development. An aspect of a Milestone II decision may be the approval for Low-Rate Initial Production (LRIP) of certain components and quantities which may have been recommended by the Program Manager to provide assurance of production capability. These may also be needed as test resources for interoperability or operational testing. LRIP may positively affect the production process by providing resources for additional production facilities and verifying the quality of the production system. LRIP may also be approved in the decision

process supporting Milestone III. The importance of Milestone II can be gauged by the fact that systems which enter the following Engineering and Manufacturing Development (E&MD) phase are almost always ultimately approved for production. [Ref. 7:pp. 3-14, 3-17]

Milestone II decisions may also provide authorization for long lead funding of production articles which will be considered for approval at Milestone III. Marine Corps Order P5000.10C states:

Decisions to commit funds for long lead items or LRIP must be supported by an operational assessment and authorized in the current edition of the Acquisition Plan. [Ref. 6:p. 2-6]

If all indicators are positive and a viable, cost effective concept is identified to address the threat requirement, then the acquisition enters the next phase, Engineering and Manufacturing Development (E&MD).

4. Engineering & Manufacturing Development

This phase is marked by a "detailed, extensive engineering effort" [Ref. 6:p. 2-6] leading to a production configuration design. E&MD has, as its primary objective, the development of a cost-effective, operationally suitable system meeting mission need and ready for production.

A decision to proceed into E&MD creates a steep rise in funding requirements. Also, flexibility to adjust system design becomes very constrained.

The E&MD phase calls in to play various engineering and design practices:

a. Engineering Development consists of "design-build-test-redesign iterations" which use Engineering Development Models (EDMs). EDMs are used in Developmental Test and Evaluation (DT&E) to "ensure that functional and technical objectives are achieved." [Ref. 6:p. 2-7]

b. Prototyping supports continuation of iterative engineering development efforts. It provides a "physical and functional equivalent, or prototype, of the system expected to be produced." [Ref. 6:p. 2-7] Final prototypes may be the test items used for Operational Testing (OT) to "demonstrate operational effectiveness, suitability, and supportability." [Ref. 6:p. 2-7] Prototypes used in operational testing during E&MD must be production representative items. The Technical Documentation Package (TDP) (also known as a "Tech Data Package") is a principal product of the E&MD phase. It must include "all information, level III drawings, specifications, and procedures needed for the manufacture of production units." [Ref. 6:p. 2-7]

c. Transition to Production occurs during the latter period of E&MD. The final objective is "to manufacture economical and standardized production units having both the required system performance and Reliability, Availability, Maintainability, and Durability (RAM-D) characteristics." [Ref. 6:p. 2-7]

d. Pilot Production is usually desirable in complex development programs although it may not always be affordable or feasible, depending on cost and schedule constraints. Pilot production requires that the system be fabricated using "production

quality tooling, processes, and test equipment to validate and/or adjust the production process." [Ref. 6:p. 2-7] Pilot production has features that make it synonymous with LRIP. The primary difference is that pilot production is usually for "a limited number of units for a specific purpose (e.g., OT)." [Ref. 6:p. 2-7]

Logistics activities during the E&MD phase focus on evaluating proposed support concepts. They also are intended to identify and validate the system support package and to demonstrate RAM requirements.

Table 2.6 lists representative ILS activities performed during the E&MD phase.

TABLE 2.6

ENGINEERING & MANUFACTURING DEVELOPMENT PHASE
INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Updating ILS actions within the acquisition strategy.
2. Revising the ILSP and executing the E&MD Phase ILS activities.
3. Updating maintenance planning and conducting a maintenance support demonstration to determine the degree to which the maintenance plan and contract objectives have been met.
4. Confirming the adequacy of training plans and ensuring the timely delivery of training devices.
5. Confirming affordability and funding for ILS products.
6. Monitoring/evaluating contractor LSA/LSAR efforts.
7. Submitting depot maintenance candidates in accordance with MCO P4790.10.

8. Identifying requirements (i.e., facilities/equipment) to support depot rebuild/support under both peacetime and mobilization conditions.
9. Identifying long lead time requirements (both end item components and spare parts).
10. Updating manpower estimates and ensuring those resources will be available.
11. Developing the Post Production Support (PPS) plan.
12. Obtaining transportability approval.
13. Identifying spare parts to be acquired as part of the production buy (Spares Acquisition Integrated with Production (SAIP)).
14. Verifying the availability of existing support equipment or designing new support equipment when needed. (New support equipment is to be designed only after it has been determined that existing support equipment is inadequate.)
15. Incorporating ILS requirements into solicitation documents, source selection criteria, and contracts for the Full Rate Production (FRP) phase.
16. Beginning to plan for fielding and establishing a fielding team with representatives from the Fleet Marine Force (FMF), Marine Corps Logistics Base (MCLB) Albany, and MCRDAC.
17. Updating the level of repair analysis.
18. Developing the system transition plan.

Source: [Ref. 5:pp 2-17, 2-18]

Milestone III approval is then solicited which permits the program to proceed with production and initial deployment. Milestone III has, as its primary objective, approval of a system which is completely developed, meeting all technical and operational requirements. This system must also show a strong prospect for being logistically supportable before the production line can start up. The Milestone III Program Decision Meeting

provides the Program Decision Authority (PDA) giving the Program Manager "approval for Production & Deployment, approval for Low Rate Initial Production or denies approval for production". [Ref. 6:p. 2-8] If there were doubts at Milestone III, production start up would be delayed to avoid risk to production funds. This would cause the conduct of additional Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) at this point prior to a final production decision.

5. Production & Deployment

The Production & Deployment (P&D) phase is supported by expending the majority of the program funds identified for hardware. By implication, it also causes the obligation of significant future Operation and Maintenance, Marine Corps (O&M,MC) funding in support of the fielded system.

Having started P&D, the opportunity to influence equipment design is virtually nonexistent. ILS now begins to react to any supportability requirements which were designed into the equipment during earlier phases. During P&D, personnel are trained and equipment is procured which meet acquisition objectives. Distribution plans for this training and equipment are also established.

During this phase, certain previous and new documents are prepared for the Milestone IV decision process. The Life Cycle Cost Estimate (LCCE) is revised and a draft Acquisition Decision Memorandum (ADM) is prepared by the MCRDAC PM and the ROC is reviewed by MCCDC.

The logistics support effort now focuses on "the timely delivery of all initial support resources to using units and further seeks to ensure the capability to sustain this support." [Ref. 5:p. 2-18]

Table 2.7 lists representative ILS activities performed during the P&D phase.

TABLE 2.7

PRODUCTION & DEPLOYMENT PHASE
INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Executing the ILSP for the P&D Phase.
2. Updating LSAR and LSA documents to reflect system configuration and results of post-fielding ILS assessments.
3. Updating all ILS documentation to reflect the production configuration of the weapon system.
4. Executing the PPS plan.
5. Publishing the Materiel Fielding Plan (MFP).
6. Coordinating the acquisition of TMDE and training devices.

Source: [Ref. 5:p. 2-18]

Upon completion of P&D, the latest DoD directives only require a Milestone IV decision regarding a Major Modification Approval. This is an "as required" decision, scheduled during the P&D phase, and intended to preclude major modifications to fielded systems unless all reasonable alternatives are thoroughly evaluated. Chapter IV covers this Milestone in greater detail.

6. Operations & Support

As a result of recently revised DoD directives, the Operations & Support (O&S) phase now occurs after initial fielding of the system in consonance with the Phase IV, Production & Deployment. The O&S phase begins with either a declaration of operational capability or when the system management responsibility transitions from the developer to the maintainer and continues until the system leaves the inventory. After initial system fielding, ILS processes concentrate on "improving subsequent fielding, readiness, and sustainability and on reducing operations and support costs".[Ref. 5:p. 2-19]

Table 2.8 lists representative ILS activities performed during the O&S phase.

TABLE 2.8

OPERATIONS & SUPPORT PHASE
INTEGRATED LOGISTICS SUPPORT ACTIVITIES

1. Analyzing feedback data from the field and assessing the performance of the ILS planning and execution and the support system.
2. Identifying changes to the hardware, software, and support systems to improve readiness and life cycle costs.
3. Determining the logistic impact of Preplanned Product Improvements (P3I) and Product Improvement Programs (PIP's).
4. Updating the LSA documentation to reflect changes in the system or concepts of operation or support.

Source: [Ref. 5:p. 2-19]

C. SUMMARY

This chapter has provided an overview of the acquisition process with the related ILS concerns. Each of the five acquisition phases commences after a Milestone decision is made to proceed. Certain ILS activities are also required for each phase.

Next, it is necessary to understand the Marine Corps organizational structures which have been established to carry out these requirements.

III. MARINE CORPS ORGANIZATION

A. INTRODUCTION

Throughout the life cycle of a weapon system, a total of four different Marine Corps organizations become involved in progressive stages: the Marine Corps Combat Development Command (MCCDC), the Marine Corps Research, Acquisition and Development Command (MCRDAC), the Installations and Logistics (I&L) Department of Headquarters Marine Corps, and the Marine Corps Logistics Bases (COMMARCORLOGBASES).

The preceding chapter made occasional mention of the Marine Corps Combat Development Command and the Marine Corps Research, Acquisition and Development Command. The impetus for these new commands, and the substantial reorganization effort that accompanied their formation, was directly related to a recognition that the previous distribution of responsibilities over diverse commands was not satisfactory for the requirements of major systems acquisition and support. As stated by ALMAR 269-87:

The clear-cut intention is to speed up and streamline the acquisition process with gains being realized in the all-important cost, performance and schedule categories. MCRDAC will be organized to enable rapid development and production of combat systems exploiting timely technological advances, reducing business risk, and culminating with the fielding of equipment that has adequately demonstrated the stipulated reliability, availability, maintainability and durability characteristics and that can be effectively and efficiently supported over the course of its life cycle.... Requirements will be determined at MCCDC and passed to MCRDAC for speedy and economic satisfaction and for delivery to the user. [Ref. 9:p 10]

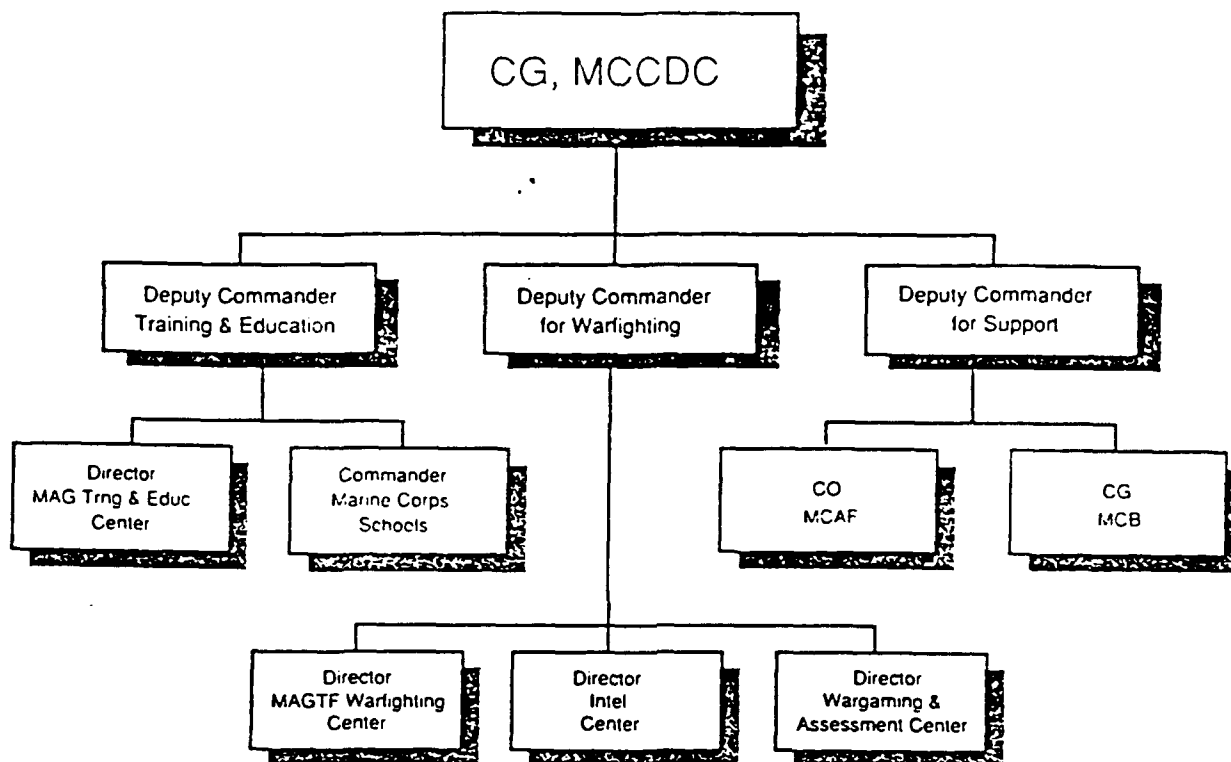
B. ORGANIZATION OVERVIEW

1. The Marine Corps Combat Development Command

The organizational structure for the Marine Corps acquisition process supports two major functions: requirements determination/validation, and acquisition. The Commandant of the Marine Corps has primary responsibility for requirements determination and has delegated that functional responsibility to the Commanding General, Marine Corps Combat Development Command (CG, MCCDC). MCCDC came into being during the fall of 1987 and is located at Quantico, Virginia. It was formed largely from elements of the former Marine Corps Development and Education Command (MCDEC). This central structure was altered when the former Development Center, which had the responsibilities for research and development of new items of equipment, became one of the principal elements of the newly formed MCRDAC. Figure 3-1 provides an organization chart showing the composition of MCCDC.

MCCDC is divided into three areas of responsibilities: the Training and Education Center, the Warfighting Center, and the Support Center. Two of these are directly involved in the requirements determination/validation and acquisition processes:

a. The Warfighting Center is considered the proponent for the Fleet Marine Force (FMF). As such, it is charged with requirements determination/validation and for developing the Marine Corps Mid-Range Objective Plan (MCMROP) and the Long Range Objective Plan (LROP). These plans ensure that new requirements



MCCDC Organization Chart

Figure 3-1 [Ref. 10:p 11]

are based on validated operational concepts. Requirements can be satisfied through one or a combination of the following:

- developing new doctrine;
- changing the force structure;
- modifying existing tactics/developing new tactics;
- developing new training; and
- developing new weaponry.

The Warfighting Center also integrates the planning process with the budgeting process. It develops the ROC, which defines the requirements and the operational capabilities that are needed, and it develops the Concept of Employment for new weapon systems.

b. The Training and Education Center concentrates on the development of related training requirements and plans in reaction to the evolution of tactical and equipment changes identified by the Warfighting Center. This includes creation of training packages, identification of formal schools and associated facility support, management and oversight of the schools and their courses of instruction, and development of the individual training standards.

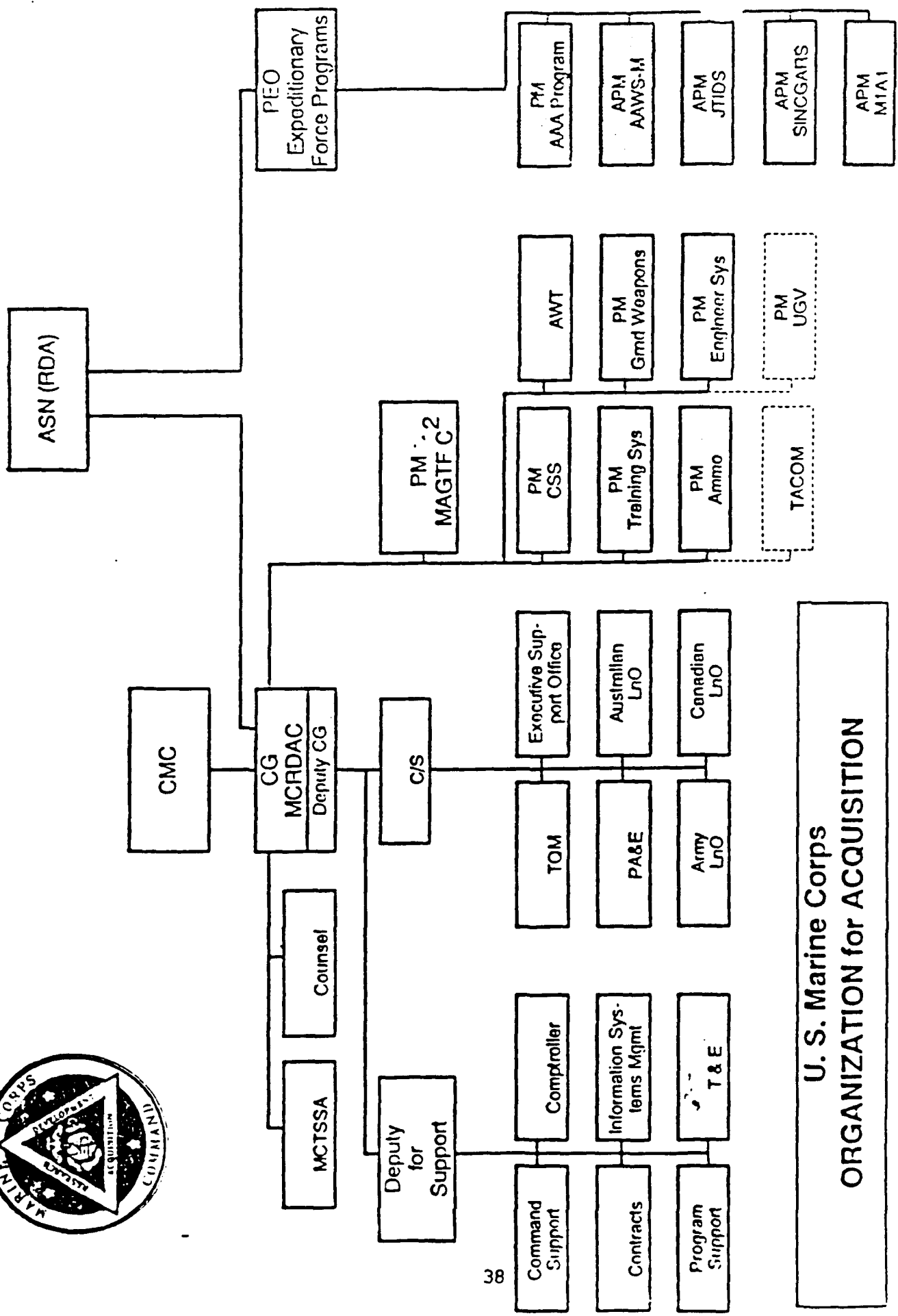
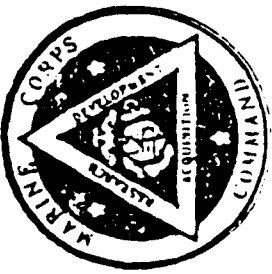
MCCDC is also charged with the base support requirements in administering the Marine Corps air facility and general Marine Corps base functions at Quantico. The Support Center exists to support these missions.[Ref. 10:pp. 10-11]

2. The Marine Corps Research, Development and Acquisition Command

The Marine Corps Research, Development and Acquisition Command (MCRDAC) is the organization chartered with taking the

MCCDC validated requirement and turning it into an actual weapon system and equipment. Figure 3-2 shows the structure of MCRDAC. [Ref. 11:p. 1-2] As can be seen, their Commanding General answers directly to the Commandant of the Marine Corps. CG MCRDAC also acts as the PEO for Marine Corps programs and answers to the Assistant Secretary of the Navy, Research, Development & Acquisition (ASN, RD&A) for all acquisition matters [Ref. 6:p. 3-13]. Among other organizational entities within MCRDAC, there exist a collection of Program Managers (PMs), each charged with the oversight of a particular acquisition program area. Each of these PMs are organized around the particular requirements of the acquisition program area within their purview. Figures 3-3 and 3-4 reflect representative structures for the PM Combat Service Support Systems and PM Ground Weapons programs.

MCRDAC oversees the contractual, analytic and planning requirements for system development, procurement and fielding. It coordinates with other Services which may have "lead Service" responsibilities for development of multi-Service systems. It also coordinates with the Marine Corps Logistics Base in Albany, Georgia to ensure that fielded systems receive adequate spares and other logistic support during the O&S phase. In general, MCRDAC has primary responsibility for oversight and management of the processes discussed in Chapter II until program management transfers to Albany.



U. S. Marine Corps ORGANIZATION for ACQUISITION

Figure 3-2 [Ref. 11:p 1-2]

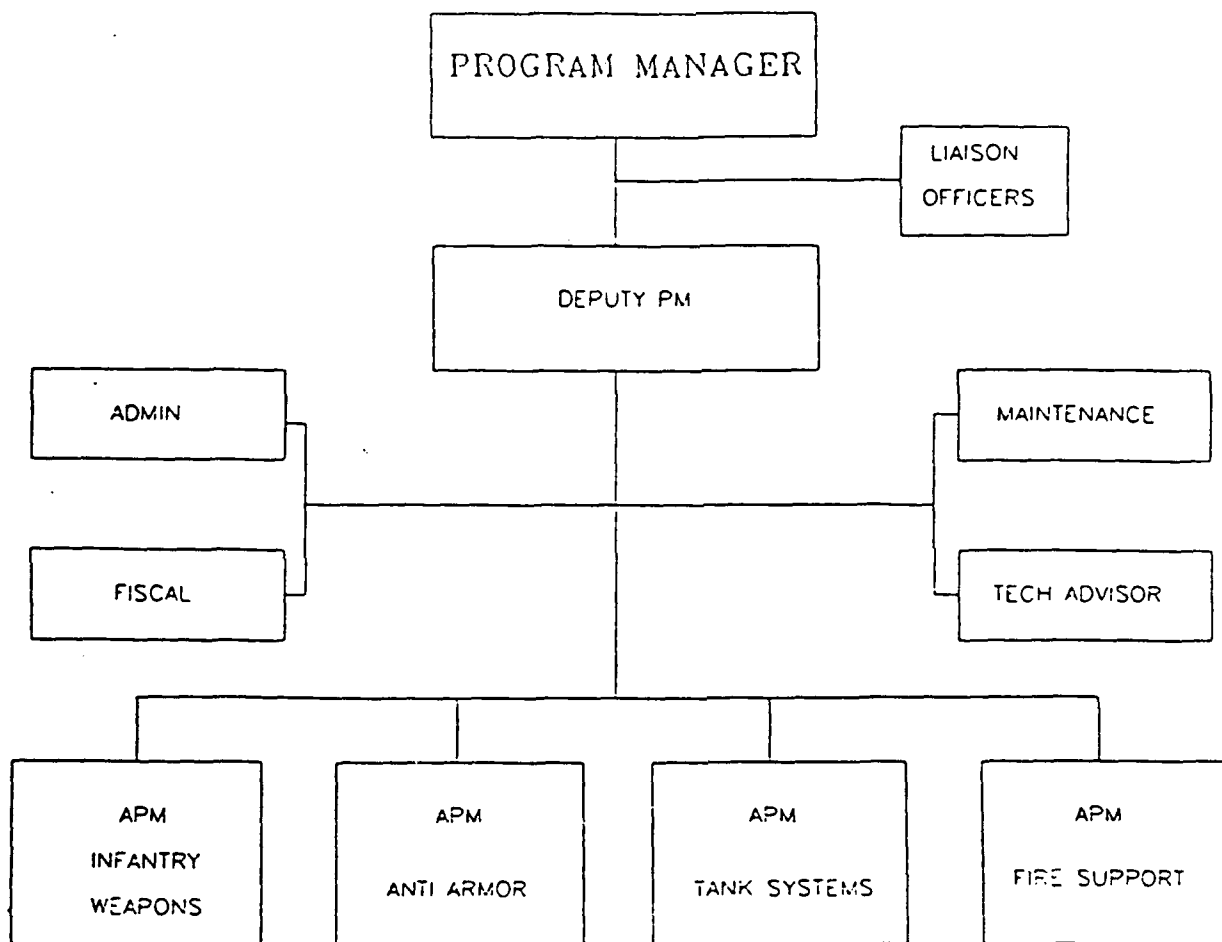


Figure 3-3 --Ground Weapons Program Management Office.
[Ref. 11:p 2-22]

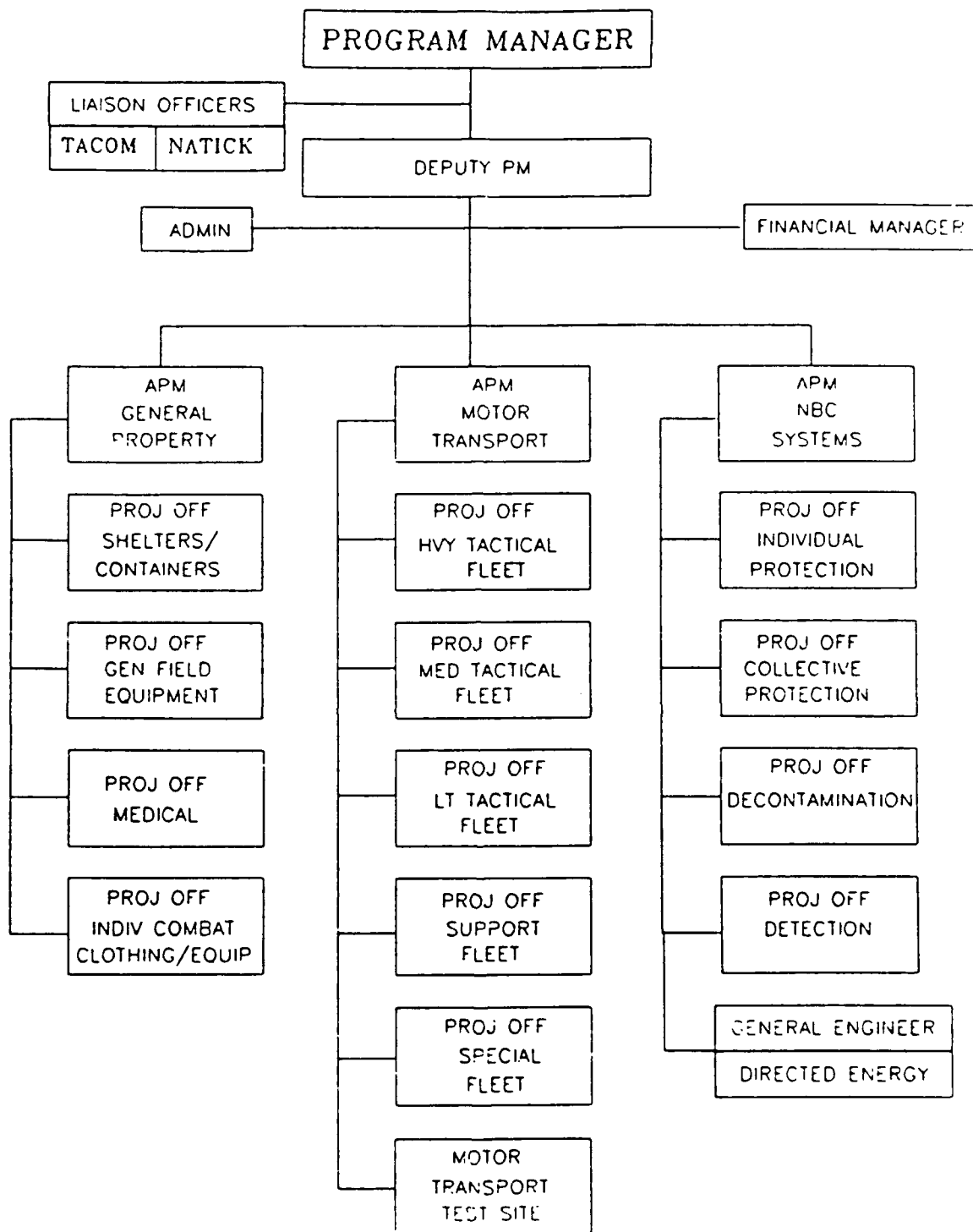


Figure 3-4. --Combat Service Support Systems Program Management.
[Ref. 11:p 2-23]

MCRDAC coordinates programming and budgeting for reprocurments through the production and analysis of the Materiel Management Programming Model (MMPM) which documents all items for which logistics responsibility has been assigned to the Commander, Marine Corps Logistics Bases (COMMARCORLOGBASES).

3. The Installations and Logistics Department

The Installations and Logistics Department (I&L) interacts with MCRDAC and MCCDC and later with COMMARCORLOGBASES as it provides general Headquarters Marine Corps sponsorship of logistics requirements. It uses analyses from all three in support of logistics management decisions.

I&L participates in the Marine Corps Program Objective Memorandum (POM) process as the primary sponsor of Procurement Marine Corps (PMC) funds. This requires coordination with MCCDC planning and Program Objectives Memorandum (POM) processes to prioritize and justify necessary funding. I&L is also the approving authority for the ROC provided from MCCDC to MCRDAC.

I&L maintains the Table of Equipment (TE) allowances for the Marine Corps. It also maintains the Table of Authorized Materiel (TAM) as determined by MCCDC for approved weapon systems. The Table of Authorized Materiel Control Numbers (TAMCN) associated with all Marine Corps equipment is maintained by I&L in the Logistics Management Information System (LMIS).

In its overall charter for logistics support, I&L oversees configuration management of weapon systems, which requires POM participation in Product Improvement Programs (PIPs) and

Service Life Extension Programs (SLEPs); manages the Marine Corps supply and general inventory in conjunction with COMMARCORLOGBASES; and provides policy and guidance regarding the priority of applying assets to requirements and the annual list of readiness reportable equipment. I&L also is the sponsor for the development, maintenance and functional support of Class I (Marine Corps-wide) standard logistics Automated Data Processing (ADP) systems and data base. [Ref. 6:pp 3-8, 3-9]

4. The Commander, Marine Corps Logistics Bases

COMMARCORLOGBASES oversees the actual inventory and assumes the post-production responsibility for weapon systems which have been acquired. At this time, logistics supportability with the associated provision of spares and other materials becomes the onus of the large supply depots at Albany, Georgia and Barstow, California. In response to the prior ILS planning, the COMMARCORLOGBASES monitors usage requirements, ensures inventory and processes to support these requirements and administers the issue and distribution of these items.

COMMARCORLOGBASES provides a staff officer to assist the MCRDAC PM with monitoring and implementing the full range of life cycle logistic support of a weapon system during the acquisition cycle and identifies provisioning funding requirements to MCRDAC for the POM development. In response to usage and other analysis, COMMARCORLOGBASES identifies Reliability, Availability and Maintainability (RAM) characteristics for weapon systems and other

equipment and forwards known RAM deficiencies to MCRDAC. Estimated support costs for systems are also provided to MCRDAC.

In general, after the production cycle is completed and fielding commences, COMMARCORLOGBASES assumes responsibility for the continued maintenance, rebuild and modification of weapon systems. This causes COMMARCORLOGBASES to frequently interact with MCCDC and MCRDAC in the early stages of the acquisition process as existing inventory is compared to threat requirements, alternatives regarding modifications to existing systems are considered in the threat assessment, and the life cycle supportability issues of systems are identified. Finally, COMMARCORLOGBASES provides for the phase out of old systems as replacement items enter the inventory. [Ref. 12:pp. 1, 9]

C. SUMMARY

This chapter has provided the organizational structure which exists to accommodate the requirements of the acquisition and ILS processes discussed in Chapter II. MCCDC addresses requirements definition; MCRDAC addresses development and acquisition of systems in response to the requirement from MCCDC; I&L provides coordinating policy and budgetary planning; COMMARCORLOGBASES addresses inventory management and provisioning. So far this research has examined the DoD mandated acquisition process and the Marine Corps structure established to administer it. The next chapter will provide a discussion of the recent changes implemented by DoD.

IV. MILITARY DEPARTMENTS' VIEW OF MILESTONE IV

A. INTRODUCTION

As established in the prior discussion, the Marine Corps policy for the acquisition of weapon systems and associated logistics support requires that Integrated Logistic Support (ILS) be an integral part of the systems acquisition process. ILS must be formally assessed and certified as part of the acquisition review process.

The policy concerning acquisition of weapon systems and equipment contained in Marine Corps Orders P5000.10 (Systems Acquisition Management Manual), P4105.4 (Integrated Logistic Support Manual), and P4105.1B (Weapons System Management Within the Marine Corps) requires that programs pass through established decision points or milestones. Each "milestone decision" is one that significantly limits the Marine Corps' range of options in satisfying a particular operational requirement or which commits a significantly increased level of resources to a specific acquisition phase. Decisions to proceed beyond these milestones are based on demonstrated achievement of approved program objectives as established in the requirements and management documentation required by the above Marine Corps acquisition policy. As can be seen in Appendix C, a great deal of this documentation is required throughout the process to ensure full compliance with requirements and to support decisions. (Appendix

C is provided for the reader's convenience as this paper makes frequent reference to these documents.) The increased level of resources committed to an acquisition program, as represented by the effort portrayed in Appendix C, is a major concern at all levels of Federal Government given the current economic environment. This chapter examines those actions the Marine Corps and other Services take to accomplish Milestone IV efforts. Because the Marine Corps focuses its activities on the transfer of Principal End Item Management as a key part of this milestone, an explanation of this process in the Marine Corps and the other Services will be presented.

B. DECLINING FUNDS, INCREASING COSTS

Operation and Maintenance, Marine Corps (O&MMC) expenditures have steadily increased from \$1.48 billion in fiscal year 1983 (FY 83) to \$1.81 billion in FY 90 and are projected to continue to increase to \$2.03 billion in FY 94. In contrast, Procurement, Marine Corps (PMC) funds necessary for procurement and manufacture of weapons, tracked combat vehicles, guided missiles and equipment, communications and electronics have declined over the same time frame from \$1.94 billion in FY 83 to \$1.16 in FY 90 and further declines are expected in FY 91 through FY 94.[Ref. 13:pp. 16-19]

The realization that support costs continue to increase in the face of declining procurement funds is a problem that must be addressed in the current military environment. It is important that the Marine Corps acquisition community closely examine fielded

systems to determine if the Program Managers (PMs) and Project Officers (POs) truly achieved logistically supportable weapon system goals.

All too often, equipment leaving the production line has been shipped to a using command only to be placed on administrative deadline for lack of proper support items which were missing at the time the weapon system was fielded [Ref. 14]. The omissions are numerous and varied, from the lack of manuals and spare parts, to missing support equipment and special test equipment.

The Position Location Reporting System (PLRS) is an example of a fielded program that has major shortfalls in the area of logistics supportability.[Ref. 15] It was procured with stable production funds during fiscal years 1986 through 1989. Deliveries commenced to the FMF during FY89, and fielded equipment was placed on administrative deadline. Spares, automatic test equipment, technical manuals, and ancillary hardware were some of the items not available. Frequent "in-service for training" exercises were conducted, but maintenance was difficult to accomplish - the spares were not released from the provisioning package. Follow-on spares procurements were still in process, and the last year of follow-on spares was not procured. PLRS went into service in January 1990 in the Second Marine Expeditionary Force (II MEF). I MEF, which was the host activity for Follow-On Operational Test and Evaluation, has not authorized in service use, and III MEF is still, at the time on this writing, in the materiel fielding process. Nevertheless, the PLRS system has been deployed in a real world

combat environment in support of Operation Desert Shield/Desert Storm without full logistic supportability. A complete logistic assessment was accomplished in August of 1990 upon turnover of the logistics officers in the Program Management Office. Current assessment shows a serious deficiency in most logistic elements. A rapid "catch-up" to achieve logistic supportability is being conducted, and will hopefully yield a supportable system during combat operations. [Ref: 15]

Current DoD, DON and Marine Corps orders and directives lead us to believe that the foundation of "logistics reality" is established during the design phase of a weapon system. However, as noted in Chapter I, actual experience indicates that some logistics requirements historically receive insufficient attention and funding during this critical period. In today's acquisition climate, decisions on how to spend funds almost invariably favor performance considerations over support [Ref. 14,17]

As one writer claimed in April 1990,

Adequately addressing supportability design requirements suggests a need for engineers and program managers who are sensitive to the impact of their design and funding decisions. Those sensitivities are poorly developed in both qualitative and quantitative terms in the current acquisition community, by both government and contractor. [Ref. 16:p. 34]

The Department of Defense has taken considerable notice in recent years of the fact that Operation and Maintenance (O&M) costs for weapons far exceed design and procurement costs. In light of this fact, a number of efforts have been initiated to design-in

supportability requirements with the goal of reducing O&M costs.

[Ref. 16:p. 34] These include:

1. Substantial rewrites to existing orders
2. The development and fielding of computer-aided acquisition and logistic support (CALS)
3. The development of reliability and maintainability 2000 by the Air Force
4. The MANPRINT system, developed by the ARMY
5. Restructured proposals and proposal evaluation criteria to include the use of award fee contracts
6. The development of undergraduate and graduate level education programs with an emphasis on logistic supportability.

Despite these efforts, logistics supportability problems persist and continue to plague systems. This situation will continue until the acquisition community realizes that supportability design requirements should not be the first things to cut when budget and schedule constraints dictate design compromises. [Ref. 16:pp. 34, 36]

The "budget crunch" has caused other problems which relate to the number of weapon systems being procured versus the procurement of support. One person interviewed during this study stated that, in the acquisition process, there are two types of procurements [Ref. 17]. The first is the weapon system itself which is procured with what are termed "above the line dollars". The second is the procurement of support with "below the line dollars". If there is a requirement to build thirteen tanks and the budget is

subsequently cut, the options are to procure thirteen tanks or to cut support requirements such as spares and test equipment. Traditionally, the decision is to buy the original number of tanks with above-the-line dollars and cut the support from the below-the-line dollars. The result is that thirteen unsupportable weapon systems are fielded.

An obvious alternative to this approach would be to procure twelve tanks that can be supported and acquire the last tank as additional funds become available. However, the current requirement to buy thirteen tanks is the major focus and Congress appears to be indifferent whether support is there or not. Congressional interest and oversight is oriented toward assurance that funds appropriated for the fielding of thirteen tanks has been applied accordingly. [Ref. 17]

A particular Army technique called Total Package Fielding seems to have direct benefit to the Marine Corps. The Army, in effect, "deadlines" equipment and does not field it until the complete spares package is also available.[Ref. 18:p. 10] This approach might help alleviate the current Marine Corps problems associated with fielding systems before they can be logistically supported.

The Program Objectives Memorandum (POM) is the primary funds planning document of the Federal Planning, Programming and Budgeting System. It often reflects the flawed approach to recognizing the totality of a system's cost.[Ref. 14] Instead of portraying this total requirement, the POM tends to focus on the

fund levels likely to be available and thus artificially constrains planning for actual total requirements. Resulting acquisition plans then are formed which attempt to address a requirement within a constrained ceiling. In effect, the preset funding profile in the POM "drives" the acquisition plan.[Ref. 14]

The outcome of these funding influences is a continued focus on procuring primary systems as end products, with a secondary level of attention to the follow-on costs of those end products.

C. MILESTONE IV ACTIONS

The current versions of DoDD 5000.1 and DoDI 5000.2 were intended to address the preceding problem. These documents institutionalize the expansion of the acquisition process to include a logistic supportability review at Milestone (MS) IV and thus enhance the status of logistic support for fielded systems. However, procedures to accomplish a MS IV review in the Marine Corps are virtually nonexistent.[Ref. 17] In general, the acquisition community seemed to believe that the new MS IV requirements would be replaced when there was a change in the oversight administration. Consequently, a "wait and see" approach was adopted and no implementing procedural directives were ever put in place [Ref. 17]. Unfortunately, when the expected change in administration occurred, it was not complemented with any relief of the MS IV requirements previously established. The acquisition community has never caught up with this shortcoming.[Ref. 17] At this point in time, the Department of the Navy (DON) acquisition community has still not acted on this problem.

Additionally, the new version of DoDI 5000.2, which is due for implementation in the near future, will align the acquisition process into four Milestone decision points instead of the current five. In reaction to this, Marine Corps procedures are being reoriented to support MS IV by including a modification review. [Ref. 17]

The current Marine Corps approach to the acquisition process is to transition from the P&D phase to the O&S Phase by accomplishing a MS IV review. This is also the point in the program's life-cycle when MCRDAC transfers program management responsibilities to CCOMMARCORLOGBASES in Albany known as Principal End Item Management Transfer. [Ref. 6:p. 9-19]

D. PRINCIPAL END ITEM MANAGEMENT TRANSFER

1. Background

The Weapon System/Equipment Manager (WS/EM) concept was introduced at Marine Corps Logistic Bases, Albany (MCLBA) (now called COMMARCORLOGBASES) during the 1981 to 1983 time frame. Concurrently, the topic of management responsibility transfer of principal end items (PEIs) was addressed by the Deputy Chief of Staff for Installations and Logistics (DC/S I&L) and a study group named Task Group Alpha. Task Group Alpha was formed in 1987 to determine which ILS responsibilities could be transferred to MCLBA. As a result of the Task Group Alpha study, an ad hoc working group was formed to develop the transfer process. The decision was that, upon process development, management responsibility for approximately 1000 PEI's would be transferred to MCLBA. A

checklist was developed as was a generic Memorandum of Agreement (MOA). Most of the PEI's transferred were low cost Stores Account Code (SAC) 1 items, i.e., inexpensive and normally "consumable" items which do not require central allowance control. PEI's transferred in this process were also identified with a Table of Authorized Materiel Control Number (TAMCN). TAMCN's are used for allowance control and consist of two types: Type I, which require central allowance control, and Type II, which are major subordinate command allowance control items.

In 1988, Task Group Bravo was established to address additional ILS management issues. A result of this study was the formation of COMMARCORLOGBASES, which now controls supply activities at both major Marine Corps supply depots at Albany, Georgia and Barstow, California.

In February 1990, DC/S I&L expressed a desire to clarify the roles and responsibilities of COMMARCORLOGBASES and MCRDAC. Inclusive to the issue was the need to clarify aspects of quality assurance, configuration management, provisioning, management of PEI's and reprourement of PEIs.

In May of 1990, the Commanding General of MCRDAC committed to a mandatory review process to determine when the transfer of ILS Management Team Chairmanship was feasible and could be effected for PEIs. At that time, aside from the original 1000 SAC 1 items, few other items had transitioned to COMMARCORLOGBASES. The working and ad hoc groups identified the following problems related to the lack of transfer [Ref. 19]:

- a. No management existed for the process;
- b. The PM and WS/EM were lacking guidance on when to transfer, i.e., there was no "trigger" event which cued process commencement;
- c. Traditionally, the WS/EM requested transfer and the PM denied the request;
- d. The management transfer process and definition were not clear;
- e. There existed a mental image of a PEI being sent exclusively to COMMARCORLOGBASES with total, immediate transfer of management responsibility, a concept which was too final for the complexity of the real requirements;
- f. MCOs P5000.10C, P4105.1A and P4105.3 were incomplete and, having been promulgated by differing agencies, were contradictory.

MCRDAC and COMMARCORLOGBASES efforts continued in an attempt to better define the procedures and tasks to effect a smooth, logical transfer. Policy was refined and updated. COMMARCORLOGBASES became proactive and identified, in October of 1990, the PEIs which had reached Initial Operating Capability (IOC) and were eligible for transfer. [Ref. 19]

2. The Process Recommended by MCRDAC

In order to address these problems, MCRDAC defined a PEIMT process. While this process has not been officially approved

and published, it represents the structure which is the apparent direction of the Marine Corps. [Ref.23]

The PEIMT is a process rather than an event. In establishing this process, the ad hoc working group noted [Ref. 19]:

- a. a need for definition of specific tasks associated with the transfer of management responsibility concerning individual logistic elements;
- b. recognition that individual tasks associated with individual logistic elements transfer at differing times, as required, and this timing is not defined;
- c. recognition that some tasks should not transfer for certain PEIs:
- d. the requirement to focus transfer toward individual management responsibilities rather than a large number at one time;
- e. a need for agreement at the lowest level possible with progressively senior involvement to resolve disagreements.

Planning for the PEIMT begins with planning in the Master Acquisition Plan. This is periodically reviewed by the MCRDAC Program Analysis and Evaluation (PA&E) office (an independent activity, directly responsible to the CG MCRDAC) during the regular Milestone Review process.

The PEIMT is "triggered" by the In-Service date of the system. When the First Marine Expeditionary Force (I MEF) is authorized in-service use of the system, a two year window is opened. The Project Officer (PO) of MCRDAC and the WS/EM begin to complete the PEIMT checklist and the decision process is invoked. Figure 4-1 graphically displays this decision process. If transfer agreement is reached, the PO and WS/EM recommend to the PM and PD that transfer be effected. The MOA is then completed, and signed by the PM and PD. This is considered the lowest level of decision, as each participant has "By direction" signature authority to sign correspondence for their respective Commanding Generals.

In the event that agreement between the PO and WS/EM cannot be attained, the party in disagreement takes action to elevate the decision process. There is strict adherence to the chain of command. An attempt is made to reach a mutually agreeable decision at the lowest possible level. The DC/S I&L has final authority. If agreement to transfer cannot be reached, the parties then attempt to reach agreement on when the system should be evaluated again.

While the trigger event is the IOC of I MEF, this may be adjusted depending on the fielding methodology. A system may be fielded vertically (completely to one MEF, then subsequently to the next MEF, etc.) and the IOC may be too early to commence the review process. MCRDAC's PA&E has a key role in evaluating the program milestones while the acquisition is in process.

1
O
C
=

PEI Program Management Transfer Trigger

1st MEET to go in Service

1

Pre-Transfer Assessment

POW/M Credit Off List

2

3

Submit Transfer Recommendation

PM yes
PD yes
PM no
PD no
PM yes
PD no
PM no
PD yes

Management Transferred MOA Signed

NOT Transferred Look later (?)

Management Transferred MOA back to PD/PM for Signature

PM forward to CG MCRDAC

CG MCRDAC

ACMC

Transferred MOA back to PD/PM for Signature

CG MCRDAC

CDR MAPCORLOBASES (EDLO)

CDR MAPCORLOBASES (EDLO)

ACMC

NOT Transferred Look later (?)

NOT Transferred Look later (?)

.....

The PEIMT process pertains to the original configuration of the system. This process may be useful as a guide for multiple configuration type items, though that is beyond its stated intent. Influential factors, including the complexity of the modification, engineering change proposal, or product improvement program, are events that would act as the "trigger". The use of the process logic, and the "ladder" principle for agreement at the lowest level make this a viable process.[Ref. 19] This decision to transition system management responsibility is made jointly by the PM within MCRDAC and the Director of the ILS Division at COMMARCORLOGBASES. The decision to transfer a PEI will be based, in part, on the completion of a PEI transfer "Check-Off List". The "Check-Off List" is initiated by the MCRDAC PM, with the command filling in as much of the list as possible. It then submits this checkoff list to COMMARCORLOGBASES for completion. When it is agreed that the responsibility for the weapon system will be transferred, the agreement and specific responsibilities of MCRDAC and COMMARCORLOGBASES are documented in a Memorandum of Agreement, signed by both MCRDAC and COMMARCORLOGBASES, similar to the one contained in Appendix D.[Ref. 5:p. J-1, J-2]

E. HOW OTHER SERVICES CONDUCT PRINCIPAL END ITEM TRANSFER

During the course of conducting research for this paper, current Army, Navy, and Air Force policy guidance for MS IV activities were reviewed to determine when they conducted PEIMT activities.

1. Department of the Army

The Army uses a concept of "PM System Transition" to describe the PEIMT process [Ref. 20:pp 2-4]. IOC is the life cycle event at which a system will be considered for transition to a Major Subordinate Command (MSC) functional management responsibility. As a general principle, PM-managed systems are transitioned to MSC functional management within 24 months of achieving IOC unless there are valid reasons to delay such action. If management responsibility will not be transferred to the MSC within 24 months of IOC, then the PM must forward a recommendation to this effect to Headquarters, Army Material Command (HQ,AMC), for approval. Following IOC, the PM and MSC Commander jointly determine the PM system transition criteria. The PM is responsible for ensuring that a system transition Planning and Tracking Group (PTG) is formed prior to, or at the time, that the PM-managed system achieves IOC. Once a transition date is established, the PTG will prepare the transition plan and monitor progress toward implementation. This plan provides a disciplined management tool for achieving a timely transition; provides visibility to participants in the transition process; establishes responsibilities; and identifies tasks and milestones for the activities involved in the transition.

A jointly prepared PM/MSC Commander system transition plan is submitted to HQ AMC nine months prior to plan implementation. HQ AMC then approves the system transition plan. For a major system, Secretary of the Army approval of the system

transition is also required. Key to the system transition process is the PM/MSD Commander joint determination on when the transition should occur after IOC and documentation of the transition process. The transition plan is maintained on a current basis until identified tasks are completed.[Ref. 20:pp. 2-4]

2. Department of the Air Force

In the Air Force, PEIMT is termed Program Management Responsibility Transfer (PMRT) [Ref. 21:pp 1-3]. This includes transfer of engineering responsibility and configuration management responsibility. A Transfer Working Group is established by the Program Manager for each program early in Engineering and Manufacturing Development (E&MD) and is later disestablished when residual tasks are completed. The transfer is pursued with the intent of accomplishing an orderly, timely, and efficient transfer of overall Program Management Responsibility at the earliest practical date during the production phase.

PMRT is planned to occur based upon a program milestone determined jointly by the implementing and supporting commands early in the E&MD phase. PMRT planning will be directed to a PMRT planning date based upon the scheduled occurrence of the PMRT milestone. The PMRT milestone is forwarded to HQ USAF for inclusion in the Program Management Directive.

The Transfer Working Group will develop the schedule for PMRT milestone validation at the same time that the PMRT milestone is established. Generally, the PMRT milestone should be validated no later than one year before the occurrence of the PMRT milestone.

Upon PMRT milestone validation, the final transfer plan is prepared and sent to HQ USAF to replace the previous milestones in the Program Management Directive.

A Transfer Agreement between the implementing and supporting commands is prepared listing all significant conditions, the residual tasks together with the responsible organizations, and a schedule for task completion.

PMRT planning for joint Service programs identifies the interrelationships and functional responsibilities of the executive and participating Services that will become effective on the transfer date. PMRT planning is accomplished far enough in advance to accommodate the Planning, Programming, and Budgeting System. This ensures that full consideration of funding requirements for all tasks has been addressed.

Progress toward achieving PMRT is briefed at appropriate program and system reviews to ensure program management emphasis. PMRT for modification programs required after IOC of the system, when the implementing command is other than the supporting command, will occur on or before the production decision.[Ref. 21:pp. 1-3]

3. Department of the Navy

Normally, the management of Navy items is assigned to the Navy Aviation Supply Office (ASO) or Navy Ships Parts Control Center (SPCC), which have extensive mechanized systems for performing repetitive inventory management functions such as purchasing, distribution, and requisition processing.[Ref. 22:pp.2-11] Transfer of inventory management functions from a Systems

Command (SYSCOM) to either ASO or SPCC does not abolish the SYSCOM's technical and design control responsibilities.

The transfer of cognizance for any item of supply must consider the impact on the material budget of both the transferring and receiving inventory manager. Both inventory managers must coordinate the transfer of appropriate requirements, assets, program and financing information to ensure that budgets reflect the proper funding requirements. POM/Budget issues for item transfers are prepared and submitted by the SYSCOM for current funding item procurements in the Appropriations Purchases Account (APA) (reimbursable issues) which are transferred to the National Stock Account (NSA) (free issues). This also transfers funding responsibility of the SYSCOM which will administer payment of procurements after the transfer.

Approximately 120 days before the Effective Transfer Date (ETD) assigned by Navy Supply Command (NAVSUP), the gaining Inventory Control Point (ICP) will coordinate the appropriate change notice and cataloging action necessary for the transfer with the losing inventory manager. NAVSUP also ensures that the gaining inventory manager, the Navy Fleet Material Support Office (FMSO) and the Defense Logistics Services Center (DLSC) files are compatible on the Effective Transfer Data Base.

The Hardware Systems Command (HSC) develops a uniform stock transfer program in accordance with applicable policies, plans and schedules and designates, in writing, a stock transfer representative to assist in determining appropriate material

management assignments. They also review all cognizant items on an annual basis for possible transfer; chair the annual stock transfer review meeting for cognizant material; and provide technical approval for transfer to include all necessary data required to make a financial evaluation. Based on established review dates, the HSC publishes the location and time of the stock transfer review meeting. Forty-five days prior to the scheduled meeting, they forward to the NAVSUP Inventory Control Point a stock numbered listing. They also forward a copy of the cover letter to NAVSUP. The HSC also maintains adequate documentation to justify material that they retain and ensures that items designated for retention at the SYSCOM are appropriately coded in the Navy Master Data List. Finally, they coordinate item transfer dates, technical data requirements and contract administration with the gaining manager.

Full consideration is given to the budget cycle to permit orderly assumption by the gaining manager of all budgetary responsibilities for items being transferred. Within 45 days after review, written documentation and rationale is provided to NAVSUP for unresolved item management assignments. Dissemination of program and customer POM submissions is coordinated to ensure that impacted appropriations are correctly realigned during the POM and budget process.[Ref. 22:pp. 2-11]

In synopsis, the researcher has observed that no other Service besides the Marine Corps effects PEIMT at Milestone IV. In addition, other Services have SYSCOMS which are responsible for the life cycle of all items in a system category. However, the Marine

Corps has no such structure. Instead, various system proponents provide input and coordinate/monitor system details. They do so through established acquisition and logistics organizations who centrally manage applicable requirements for all systems as they pass through the phases discussed in Chapter II. In order to identify formal responsibility for these systems as they progress, the Marine Corps has determined that a significant transfer point - the PEIMT - must be defined. This then establishes when the system "graduates" from an acquisition and procurement cycle managed by MCRDAC and enters the fielding and replenishment cycle managed by COMMARCORLOGBASES.

F. SUMMARY

This chapter reviewed the Milestone IV requirements and the Marine Corps establishment of the PEIMT process. In reviewing the other Service processes, it was noted that the Marine Corps has certain unique approaches to managing life cycle processes which differ from the Army, Navy and Air Force approaches.

It has also been noted that the Marine Corps, in adjusting to the coming versions of DoDI 5000.2, is establishing Milestone IV processes which will address modification review requirements. However, no such consideration is being directed to general logistics reviews.

The next chapter will discuss the impact and apparent problems associated with these Marine Corps methods.

V. MILESTONE IV PROBLEMS: PRINCIPAL END ITEM TRANSFER AND MODIFICATION CONTROL

A. INTRODUCTION

The Integrated Logistics Support Manual provides the following guidance:

After a weapon system has been successfully fielded, a decision concerning the transfer of management responsibility for PEIs from the CG MCRDAC to the COMMARCORLOGBASES must be made. This decision will be made jointly by the PM within MCRDAC and the Director of the ILS Division within COMMARCORLOGBASES. The decision to transfer a PEI will be based, in part, on the completion of the most current version of the "Check-Off List" The "Check-Off List" will be initiated by the PM within MCRDAC, with the command filling in as much of the list as possible, and submitting to COMMARCORLOGBASES for completion. When it is agreed that the responsibility for the weapon system will be transferred, the agreement and specific responsibilities of the MCRDAC and COMMARCORLOGBASES will be documented in a Memorandum of Agreement signed by MCRDAC and COMMARCORLOGBASES. [Ref. 5:p. 2-19]

Appendix E contains the "Check-Off List" mentioned in the above quote.

The Weapon System Management Order states reassignment of logistics responsibility will normally occur at MS IV. The review process will be accomplished by the PM and the WSM chairing a Logistics Review Group (LRG) to determine logistics supportability. The check-off list will validate that full logistics support is, or will be, in place at the time that management responsibility is transferred. [Ref. 12:p. 5]

The Marine Corps' Systems Acquisition Management Manual stipulates that transition from the P&D phase to the O&S phase will be accomplished with a MS IV review one to two years after IOC. This is also the point in the program's life cycle when the MCRDAC PM will consider transferring program management responsibilities to Albany.[Ref. 6:pp. 9-17, 9-19]

Taken together, these regulations have directed Marine Corps managers to accomplish Fielded Systems Logistics Reviews (FSLR) simultaneous with PEIMT. This has created questions regarding the timing and intent of the FSLR process.

In conjunction with these concerns, the new DoDI 5000.2 states a requirement to "Identify the need for major upgrades and modifications that require a Milestone IV, Major Modification Approval, review".[Ref. 7:p 3-26] This modification review was previously a central concern of the old Milestone V, which has now been eliminated. In effect, the Milestone V requirements have been moved to Milestone IV and no mention is made of logistics reviews. This situation has created an environment fostering an implication that modification management is the focus of MS IV while logistics review is no longer a requirement. [Ref. 17]

The net result of the realignment in the acquisition process has caused two significant problems: first, the Marine Corps does not have appropriate FSLR procedures, despite the obvious need for this type of review; second, the Marine Corps lacks appropriate procedures which adequately analyze requirements and identify

appropriate modification alternatives to address those requirements.

B. PRINCIPAL END ITEM MANAGEMENT TRANSFER VERSUS MILESTONE IV REVIEW

As stated above, PEIMT has been established as the point in the system life cycle to accommodate logistics review requirements for fielded systems. Unfortunately PEIMT does not appear to be appropriately timed to fulfill the intent of what might be called a fielded systems logistics review (FSLR). PEIMT is timed to occur one to two years after IOC. A FSLR should provide lessons learned [Ref. 17]. However, two years after IOC, there may not be enough usage data available from all system users in all environments. The systems are still relatively new and have only been provided to one or two MEFs. There is not yet an assurance that systems operating well in desert environments will do equally well in the Orient. The situation is exacerbated if systems have been "administratively deadlined" awaiting initial provisioning packages to deploy. The length of time the system remains on "deadline" further erodes an adequate performance period in the field. Prudent management concerns seem to indicate that FSLRs might be best scheduled after Full Operational Capability (FOC) when enough usage data is available from all users in all environments. If a system is used 20 hours a week for an entire year, then perhaps a review after a relatively short period, such as two years or less, would provide enough information. However, a lightly used system which is operated only a few hours a year may require several years

of accumulated usage data to attain a valid review. Also, if IOC is used as the review point, data may only be available from one or two MEFs, thereby neglecting any feedback unique to the excluded MEFs. [Ref. 15]

In attempting to gain a full logistics supportability view of systems prior to management transfer, the value of post-fielding feedback appears to have been overlooked [Ref. 14]. It is the researcher's observation that this may be an underlying reason why the other Services do not conduct PEIMT at Milestone IV.

In addition to the timing issues, consideration must be given to the fact that the intent of a FSLR differs from that related to the PEI management transfer review [Ref. 17]. The FSLR is not conducted to transfer management responsibility. Instead, it is meant to ensure that all of the logistic acquisition planning, and execution of those plans, are fulfilled by the PM. An FSLR should provide information concerning deficiencies and user satisfaction and the data to develop a database for lessons learned for all areas of logistics support for specific types of systems. The FSLR could also be used to provide a benchmark for design factors during subsequent new developments of like systems. By understanding the problems and shortfalls experienced, the PM can match fielded systems data against predictions during an ongoing development process. [Ref. 14]

A review of the PEIMT check-off list in Appendix E provides a broad picture of managerial concerns. The emphasis is toward prompting the reviewer to decide whether certain regulatory and

operational support requirements have been fulfilled. However, the researcher's analysis indicates that specific formulation of a review team and the focus of that team toward evaluating logistics feedback on the actual performance and supportability of the system are missing from the process. The Milestone IV intent is to establish this supportability feedback and does not involve the transfer of management responsibility.

To be an effective feedback vehicle, it would appear that FSLR should be an independent assessment of the system to evaluate the success in achieving logistic support for fielded systems. Policy implementers and managers who were interviewed for this paper have stated that such a review should be an independent audit to determine if the fielded system is logistically supportable [Ref. 17,23]. This goal would be best supported if it was conducted by technically experienced personnel who did not have a direct involvement during the course of the system development. If the system is classified ACAT I or II, or a specially designated program, an LRG is appropriate. However, the PM, PO or WSM should not be part of this voting group [Ref. 23]. The same objectivity should be maintained for ACAT III and IV programs. It appears to the researcher, to attain the necessary objectivity, a FLSR should be chaired by DC/S I&L with representatives from MCCDC, MCRDAC, COMMARCORLOGBASES, Fleet Marine Force Atlantic and Fleet Marine Force Pacific.

The MS IV review is meant to be an independent assessment of the fielded system to insure that all the logistic acquisition

planning, and the execution of those plans by the PM to field the system, were accomplished correctly with sound business practices.[Ref. 17]

Given these considerations, it would appear to the researcher that a requirement exists to establish procedures for FSLRs. Such regulations would require actual usage feedback during FSLR to identify operation and support adjustments that will resolve problems and ensure logistic supportability of fielded systems in the future [Ref. 7:p. 3-30]. Recommended Fielded Systems Logistic Review (FSLR) procedures can be found in Appendix H.

C. MODIFICATION CONTROL PROBLEMS

In addition to the lack of procedures and an appropriately timed FSLR, a second apparent shortcoming in the Marine Corps approach to Milestone IV has appeared due to the reorientation of the acquisition process. The new DoDD 5000.1 and DoDI 5000.2 now require a major modification review and approval at MS IV and provide very little guidance on how to accomplish this task.[Ref. 15] Consequently, system managers are now faced with a requirement, but lack direction on fulfilling the necessary expectations for that requirement. To fill this procedural void, development of a set of recommended modification control procedures appears to be in order and are presented in Appendix I. The new requirements that previously existed at MS V have been moved in place of the logistic review of fielded systems currently in MS IV.

The DoDI requires the PM to schedule and conduct a modification review and obtain approval prior to initiation of a modification program associated with a system. A problem has been created with transferring PEIs that have reached stable configuration to COMMARCORLOGBASES systems but which may require a substantial modification at some future point [Ref. 23]. These systems then reside outside the established organizations which are structured to manage the programs supporting such modifications.

There is concern over whether a logistics structure which is oriented to pure supply provision can accommodate the complexity of technological change in modern systems without an extensive change in its organizational composition. As noted during interviews, particularly with Colonel Saddler, Program Manager, AAV/AAAV and Colonel Falkenbach, Director, Program Support, technology is moving so rapidly that system configurations must be constantly changed to keep pace [Ref. 14, 23]. The supply system, in its existing form, has not kept pace with the trend. In fact with further research, a case could probably be made by logisticians that the supply system does not have this mandate. MCRDAC was formed and charged with managing the technological aspects of system developments [Ref. 11:p 1-3].

Modifications, to fielded equipment especially, may require a more thorough engineering and acquisition analysis than that which is currently accommodated by the logistics community. The implication may be that programs should be divided into two categories: initial configuration programs and modification

programs. This implies that, depending on the complexity of the modification to an initial configuration, there may be a need for a modification program separately administered similar to an initial system acquisition.[Ref. 23]

Tracking modifications with existing documentation is also a problem. The Marine Corps has never had control of Secondary Depot Repairables (SDR) configuration.[Ref. 24] Instead, configuration modifications are written against Principal End Items (PEI), rather than SDR's. When a technician is performing maintenance at the Force Service Support Group (General Support Maintenance Company), he must ensure that the item is up-to-date on modifications before sending it back to the maintenance float. A check of the SL-1-2/1-3 (Publication Indices) to identify any modification instructions should be accomplished. If the modification is not written against the SDR, it will not be known, unless the technician knows what PEI the SDR came from.[Ref. 14]

D. SUMMARY

As noted by the discussion of this chapter, the Marine Corps appears to consider the PEIMT process sufficient for what should be logistics review feedback. However, the PEIMT process seems to be a premature point for conducting such a review. This puts the Marine Corps at risk in not securing a full logistics supportability picture. Consequently, maturing systems may not receive the full mix of true logistics support tailored to their unique requirements.

Since PEIMT check lists are used, the Marine Corps currently appears to lack true logistics review procedures which can be applied at the appropriate post-fielding time frames.

Effecting PEIMT also transfers the system management, in total, from the developmental command to the logistics command structure. It appears to the researcher that, as the threat changes and technology advances, adequate modification programs may involve complexity which requires oversight similar to a total system development. The Marine Corps appears to lack procedures for modification control. The next chapter will discuss problems associated with logistics supportability of fielded systems.

VI. OTHER MILESTON IV PROBLEMS

A. INTRODUCTION

The realization that support costs continue to increase in the face of declining procurement funds is another issue the acquisition community must deal with on a daily basis.

It is important that the Marine Corps acquisition community closely examine fielded systems to determine if Program Managers (PMs) and Project Officers (POs) truly are achieving logistically supportable weapon system goals. All too often, equipment leaving the production line has been shipped to a using command only to be placed on administrative deadline for lack of proper support items which were missing at the time the weapon system was fielded. The omissions are numerous and varied, from the lack of manuals and spare parts, to missing support equipment and special test equipment. This chapter will identify problems areas that are associated with the acquisition process and could be areas to be considered during a MS IV logistics review.

B. RELATED LOGISTICS SUPPORT PROBLEMS

The intended result of the ILS process is to improve operational readiness of the Marine Corps in conjunction with the system acquisition process. In particular, system readiness and supportability is best evaluated in a "real world" environment. The underlying rationale for the ILS program, with defined

objectives for each system acquisition, is still valid for application to post-fielded systems. The ILS Appraisal Process evaluates the ILS program objectives and, ultimately, contributes to the success of the acquisition. Therefore, the basic requirement for ILS appraisals apply equally to fielded system logistics reviews.

The ILS Appraisal Process provides the Marine Corps' logistics community with a grasp of the system supportability before acquisition milestone decision reviews. In addition to the logistician, the appraisals are of value to the MCRDAC Program Manager, I&L, and the COMMARCORLOGBASES, all of whom share responsibility for the adequacy of one or more of the ILS program elements. During the course of this research the management personnel interviewed have identified the following problem areas:

1. Initial Spare Parts provisioning

The weakest link in the acquisition process appears to be the initial provisioning of spare parts. MCLBA uses a formula, based on input from the Logistics Support Analysis (LSA) process, to determine the optimum number of initial spares for a weapon system and the associated dollar value of those spares. The PM puts that number of spares into the contract under a line item called "spares" and adds the associated amount of funds to his POM. He then receives the funding for his program and the spares money is transferred to MCLBA and put into a an "account" referred to as

budget activity seven which MCLBA administers . Congress has mandated that there be a budget activity seven which is the spare parts budget [Ref. 24]. Assuming that the PM from MCRDAC and the WSM from MCLBA accurately estimated spares funding and the PM received all of the funds requested, the PM's production contract requires spare parts be delivered late in the third quarter or early forth quarter of that Fiscal Year (FY). The funds for spares would have been available for obligation by the comptroller, MCLBA, at the beginning of the FY. The comptroller must obligate a certain percentage of the available funds by the second quarter. Another PM has a requirement for spares in the second quarter and the money is spent with the anticipation of receiving more funds the following quarter to cover the first PM. This example is why funding shortages exist and is because the second PM may not have provided MCLBA with enough spares funds in the first place. The PM estimates that the hardware end item will cost \$1,000,000 a copy. MCLBA runs an algorithm to come up with a spare parts POM for 100 end items at a \$10,000 a copy. If the PM is allocated more money from reprogramming or gets a reduction in the estimated contract price, he may elect to increase the number of hardware end items. MCLBA will not be aware of the increase in end items. If the PM failed to tell MCLBA and allocated the necessary funding for additional spares, a deficit will occur. MCLBA is still required to buy the spare parts but must find another source of funding to overcome the deficit.[Ref. 24]

A second reason for a shortage of spares appears to be related to the fact that MCLBA's formula for spare parts and the proposed acquisition may not match as a normal program. If the proposed acquisition does not meet the norm, the formula can underestimate initial spares. There may be a number of high dollar repairables that were not anticipated.

A third example that appears to cause a shortage in spares funding appears when MCLBA determines the number of spares needed for a procurement and the program funds are cut during the budget process. The PM does not cut the number of end items, but rather provides MCLBA less funds to buy spares which again causes a shortage of spares funding.

This research has indicated that MCLBA is responsible for initial provisioning of spare parts but is not necessarily at fault for the Marine Corps fielding systems without spare parts support and placing them on administrative deadline. It appears to the researcher that an evaluation of initial provisioning would be an area that could provide lessons learned and corrective action during a FSLR.

2. Timing Problem

Placing fielded systems on administrative deadline appears to have caused a problem that deals more with timing than money. MCLBA is not involved in the provisioning effort until after a production contract has been awarded. If every thing proceded correctly, it

would take MCLBA 340 days from the time the production contract was awarded until spares could be placed on the shelf. This time frame could go as high as 700 to 800 days if provisioning documentation was administratively incorrect and was sent back to the contractor to be corrected and resubmitted for another review. The timing problem would become even more pronounced if an item in production or an NDI would be delivered in as short a time as six months after contract. The addition of a six to eighteen month delivery schedule would require the lead-time to reach 600 days. Given these types of situations, timing would appear to be more of a problem than funding, in acquiring organic spare parts by the time end items are delivered from the assembly line.[Ref. 14, 15, 17, 23, 24]

3. Maintenance Personnel

The timing of spare parts also effects maintenance personnel. The lack of spare parts to support the system will require the PM to publish a material fielding plan that places the system on administrative deadline until the spare parts are procured and placed in inventory. Placing systems in a deadline status would appear to the researcher to cause problems with operators and maintainers and could be another area for evaluation during a logistic review. If support personnel are trained and transferred to the using units where the systems they are required to operate and maintain are located without spare parts for an extended period of time, the training could very well be degraded. In some cases,

the system or equipment might be on administrative deadline for as long as two years. It is the Field Commanders decision to place the system into service without spares. This would appear to be necessary to insure that the trained personnel stay current. Communication between MCRDAC and MCLBA appears to be critical if the PM is to coordinate the training of support personnel with the delivery of spare parts and provide a fully supportable system for operators and maintainers. This could be accomplished by MCLBA providing to the PM a status report on spares which indicates the percentage of spares which will be on the shelf by a certain date, to include repairables and piece parts.[Ref. 23]

4. Performance Evaluation

Another major problem with the acquisition process in the Marine Corps is the fact that Program Managers and Project Officers are given fitness reports based on their program in terms of obligation rate. The PM and PO request program funding to manage their programs and their management performance appears to be based on how fast they can obligate those funds on contract.[Ref.15] Obligation on hardware contracts is the path of least resistance. It is far easier to obligate funds for equipment than to coordinate and integrate all the logistics elements which are as important as cost, schedule and performance. Supportability is only an important issue when the system is fielded and the support is not in place. The fitness report process would appear to serve the acquisition

process better if performance evaluations for PMs and POs were based on how well they obligated funds and not how quickly such funds were obligated.[Ref. 15]

5. Communication between Major Commands

There is a problem with the way MCCDC communicates a hardware solution to MCRDAC. The Required Operational Capability (ROC) is not being communicated as a requirement [Ref. 14]. It's a hardware specification without the benefit of the analytical acquisition process which has been mandated. For example, the Marine Corps has a requirement to carry water, not a requirement for a canteen. The Marine Corps has a requirement to proof a lane in a minefield, not for a mineplow. After a need is defined as a requirement, MCRDAC should seek a valid identification of materiel solution for the requirement [Ref. 14]. A Cost and Operational Effectiveness Analysis would then be accomplished, and finally selection of the optimum material solution. MCCDC should be involved in the Milestone IV review process. The PM should substantiate to MCCDC that MCRDAC has fulfilled the requirement, and validate that the system is designed for adequate supportability. It is also necessary to ensure the threat has not changed. Because MCCDC has not gone through continuous system threat assessment analysis, which is not required for smaller systems, MCRDAC must employ crisis management for a hardware solution that isn't supportable. In some cases the requirement and threat have been underestimated

for years[Ref. 14]. A constant, annual evaluation of PEI to ensure it does and will meet the threat appears to be a solution to alleviate this last minute reaction.

C. SUMMARY

This chapter has discussed a number of problems related to logistics support for fielded systems. The inability to provide a fully supportable weapon system to the field can be attributed to a number of causes: lack of spare parts and other support equipment, money, time or the lack of communication.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

The research in this paper was conducted to address the primary thesis question: "What impact will the new DoD Directives concerning Acquisition Policy and Procedures at Milestone IV have on current Marine Corps logistics support planning?" To explore this question, the acquisition process has been reviewed together with the established Marine Corps organizational structure for managing this process. Particular attention was then focused on the requirements of Milestone IV in light of impending DoD regulatory changes. Documentation was researched, personnel charged with oversight of the process were interviewed and an examination of the other Services' methods addressing PEIMT was conducted. During the course of this effort, a number significant problem areas have been identified regarding logistics reviews and the modification review processes. This leads to the conclusions and recommendations presented in this chapter.

B. CONCLUSIONS

1. The Marine Corps lacks a policy and the procedures to conduct logistic reviews required by Milestone IV. As discussed in Chapter IV, DoDD 5000.1 and DoDI 5000.2 have required supportability reviews at milestone IV to enhance the status of support for fielded systems. The review would be an independent

evaluation conducted by a review team composed of technical personnel who were not directly involved in the development of the system being evaluated. The review would identify deficiencies, recommend corrective action, and provide lessons learned. Given these considerations, and the fact that milestone IV procedures are not present in MCO P5000.10C, MCO P4105.3 and MCO 4104.1b, the major acquisition policy and procedures manuals for the Marine Corps, it would appear to the researcher that a requirement exists to establish procedures for a milestone IV review.

2. The Marine Corps continues to focus on the procurement of systems to the detriment of logistics supportability. As discussed in Chapter IV, the "budget crunch" has caused the major problems which relate to the number of weapon systems being procured versus the procurement of logistics support. When funding cuts in the program budget occur, a decision must be made by the PM to reduce the number of end items being procured or the PM runs the risk of fielding systems that are not fully supportable. Funding for support is often cut in anticipation of recovery in the near future. However this approach does not seem to be working as evidenced by the number of fielded systems being placed on administrative deadline.

3. The Principal End Item Management Transfer process does not sufficiently satisfy the logistics review requirements that must occur during Milestone IV. As discussed in Chapter IV, the Marine

Corps is currently using the Principal End Item Management Transfer (PEIMT) procedures to conduct a milestone IV review. The PM and the WSM review their program and agree that certain management responsibilities will move from MCRDAC to MCLBA. The PEIMT procedures are not adequate to meet all the requirements for a milestone IV review. The MS IV review was intended to be an independent assessment by an audit team to evaluate and determine if the logistics support planning and execution for a fielded system have been accomplished by the PM, correctly, with sound business practices. The review should identify deficiencies, corrective action required and provide the feedback necessary to develop the "lessons learned" that will improve the acquisition process.

4. The Marine Corps lacks a formal review team tasked with the responsibility of evaluating logistics feedback on the actual performance and supportability of fielded systems.

As discussed in Chapter IV, milestone IV requires an independent evaluation of supportability for a fielded system. The proposed review team would consist of technical experts from each logistic element area. They would review documentation and conduct interviews with the program office and the using units. The review team would report deficiencies per their respective areas of expertise, and identify corrective action based on established requirements and procedures. The review team would be selected from logistics element managers who did not have a direct involvement

during the course of the system development. No such team exists within the Marine Corps at the present time.

5. The Marine Corps lacks procedures to accomplish adequate modification control in the most cost effective manner.

As discussed in Chapter V, the new DoDI 5000.2 requires the PM to identify the need for a major upgrades and modifications through review and approval at milestone IV. However, there is very little guidance on how to accomplish this review process. The modification review was previously a central concern of the old Milestone V, which has now been eliminated. In effect, the Milestone V requirements have been moved to Milestone IV. The net result of the realignment in the acquisition process, has caused concern among system managers because the Marine Corps lacks appropriate procedures which adequately analyze requirements and identify appropriate modification alternatives to address those requirements. The researcher feels attention should be devoted to this modification review process.

C. RECOMMENDATIONS

1. The Marine Corps should establish a review process such as a Fielded System Logistics Review (FSLR). To maintain objectivity, the FLSR should be chaired by DC/S I&L with representatives from MCCDC, MCRDAC, COMMARCORLOGBASES, Fleet Marine Force Atlantic and Fleet Marine Force Pacific. The review team personnel from each of the above commands should possess the technical expertise in each

of the logistical element areas. They should also be personnel who have not directly supported or managed the acquisition program under review.

The FSLR differs from a review conducted to transfer PEI. The FSLR is not conducted to transfer management responsibility. Instead, it is meant to ensure that all of the logistic acquisition planning and execution of those plans, are fulfilled by the PM. A FSLR should provide information concerning deficiencies and user satisfaction and the data to develop a data base for lessons learned, for all areas of logistics support for specific types of systems. The FSLR also provides a benchmark for design factors during subsequent new developments of like systems. By understanding the problems and shortfalls experienced, the PM can match fielded systems data against predictions during an ongoing development process.

2. Review procedures should be developed to achieve the most cost effective solution for Major System Modifications.

Modifications, to fielded equipment especially, may require a more thorough engineering and acquisition analysis than that which is currently accommodated by the logistics community. The recommendation is that programs should be divided into two categories: initial configuration programs and modification programs. This implies that, depending on the complexity of the modification from an initial configuration, there may be a need for a modification program separately administered similar to an initial system acquisition.

To address the lack of modification review procedures, the author recommends the implementation of the processes contained in Appendix I with the accompanying matrix shown therein. These procedures will provide the PM and PO with a structured method to determine the most cost effective solution during the modification review process.

3. The Marine Corps should consolidate the three major directives affecting the material acquisition process into a single, streamlined, understandable directive. Incorporation of MCO P5000.10, MCO P4105.3, and MCO 4105.1 into a single streamlined document would eliminate the contradictions, establish clear defined responsibility, and afford linear implementation of acquisition and related logistic support policy. Another approach, would be a central "clearing house" for these directives. DC/S I&L could be chartered with overall policy oversight regarding all facets of the acquisition process and the related logistics issues. It would function as a headquarters element and insure comments from MCCDC, MCRDAC, MCLBA, concerning new and revised orders and directives are consolidated, incorporated and/or resolved prior to the publication of any other directives dealing with the acquisition process.

D. ANSWERS TO RESEARCH QUESTIONS

This thesis poses the question: What impact will the new DoD Directives concerning Acquisition Policy and Procedures at Milestone IV have on current Marine Corps logistics support

planning? The current DODD 5000.1 and DODI 5000.2 have directed the acquisition process to include a logistic review of fielded systems. However, the policy and procedures to accomplish this task are lacking in Marine Corps directives. In addition the new DoDD 5000.1 and DoDI 5000.2 have reoriented the acquisition process and direct a Major Modification Review and Approval be conducted at milestone IV. Again, procedures to conduct this review are lacking and must be developed. The impact of the new DoD directives will require the Marine Corps evaluate policy and provide procedures for the old as well as the new Milestone IV requirement.

The following subsidiary thesis questions were also considered:

1. What is the Marine Corps' policy regarding Milestone IV processes? The current policy requires the PM and the WSM conduct a Principal End Item Management transfer. During this process a review is conducted to insure logistics issues are resolved and responsibility for correcting deficiencies is identified.

2. What is the Marine Corps' organizational structure to address the acquisition process? MCCDC is responsible for evaluating the threat and determining after an analysis of doctrine, the tactics, techniques, training and force structure that a hardware requirement exists. MCCDC communicates that requirement to MCRDAC in the form of a ROC. MCRDAC determines the type of hardware solution that will fill the requirement and develop or in the case of NDI, procures and fields the system. Once

the system design is stable, program management responsibility transfers to MCLBA. MCLBA oversees the actual inventory and assumes the post-production responsibility for weapon systems which have been acquired. DC/S I&L oversees configuration management of weapon systems, which requires POM participation. I&L manages the Marine Corps supply and general inventory, in conjunction with MCLBA, and provides policy and guidance regarding the priority of applying assets to requirements, and the annual list of readiness reportable equipment.

3. How do other Services administer Principal End Item Transfer? The Principal Development Command in each Service will coordinate with the Major Subordinate Supply Support Command to determine the extent of management responsibility that must transfer with the principal end item. A review is conducted to determine logistics support deficiencies and an agreement is made as to which Command will be responsible to correct and fund existing deficiencies. Once the agreement is made responsibility will transfer.

4. What post-fielding procedures are required to address current problem areas? Procedures must be developed to conduct a fielded system review in the Marine Corps. In addition, procedures must also be developed to accomplish a Major Modification Review and Approval.

E. AREAS FOR FURTHER STUDY

During the course of this research, other areas which appear to merit additional study were identified. These were beyond the scope of this thesis, here are presented for further consideration and potential research.

1. This paper has recommended that I&L chair and administer the FSLR processes. At question is the formation and accommodation of this addition to the I&L charter. It would appear that the Fleet Supply Maintenance and Analysis Office (FSMAO) may already be better positioned to accommodate this review. This potential, together with other implementing solutions, should be further studied to identify organizational changes necessary for the FSLR effort.

2. Evaluate changes required by new DoD Directives and DoD Instructions. Another review of this subject matter will be necessary as the implementation of DoDD 5000.1 and DoDI 5000.2 take effect. A follow-on study should be conducted in 12 to 18 months.

APPENDIX A
INTERVIEW QUESTIONS

1. Please discuss, in your view, the relationship among MCCDC, MCRDAC, MCLBA, and DC/S I&L for evaluating systems which are currently fielded.
2. The WS/EM order establishes MCLBA as the responsible activity to conduct Milestone IV and V reviews. Are you aware of the procedures to accomplish these reviews? If you were required to conduct a Milestone IV review on one of your programs, what procedures would you use?
3. Please discuss the combination of Milestones IV and V in accordance with new draft DoDD 5000.1 and DoDI 5000.2.
4. At what point(s) during the acquisition process should Milestone IV and V reviews be conducted?
5. Please discuss your views on the Principal End Item Transfer (PEIT) process. Are you aware of any problems this procedure could cause? Are you aware of how other services accomplish PEIT? IN your opinion are there any alternatives to the PEIT process?
6. How would you ensure that all the plans, statistics and actions, taken by a program office during the acquisition process

to achieve procurement and eventual field of a system, were done correctly? How would you acquire the data to determine the supportability status of a fielded system?

7. Is logistics supportability as important as cost, schedule and performance? Are there logistic support problems associated with budget cuts?

8. What are the problems associated with fielding systems that are not logistically supportable?

9. Are there any problems associated with maintenance planning, because the Marine Corps doesn't baseline the design of a system early enough in the acquisition, and then hold the configuration management in check?

10. Do you believe there reasons for the Marine Corps to field systems before they are logistically supportable? What is your opinion of "In Service For Training" authorizations by the Fleet Commander?

11. Can new requirements be evaluated in a linear fashion, or should the evaluation be an independent look at a number of potential systems at once, evaluating the cost effectiveness through the trade-off process.

12. Are you aware of the capabilities of MCLBA's SubSystem 13?
What information is contained in this data base?

APPENDIX B

ABBREVIATIONS AND ACRONYMS

ACATs	Acquisition Categories
ADM	Acquisition Decision Memorandum
ADP	Automated Data Processing
ALMAR	All Marine Corps Bulletin
APA	Appropriations Purchases Account
ASN	Assistant Secretary of the Navy
ASO	Navy Aviation Supply Office
AWT	Amphibious Warfare Technology
CALS	Computer-Aided Acquisition and Logistic Support
CBRS	Combat Based Requirements System
CRLCMP	Computer Resource Life Cycle Management Plan
CE/D	Concept Exploration and Definition
COMMARCORLOGBASES	Department of Headquarters Marine Corps, and the Marine Corps Logistics Bases
DAB	Defense Acquisition Board
DC/SI&L	Deputy Chief of Staff for Installations and Logistics
DLSC	Defense Logistics Services Center
DOD	Department of Defense
DODD	DOD Updated Directive
DODI	DOD Instruction
DP	Development Plan
DT&E	Developmental Test and Evaluation
D&V	Demonstration and Evaluation
E&MD	Engineering and Manufacturing Development
ETD	Effective Transfer Date
FMF	Fleet Marine Force
FMSO	Navy Fleet Material Support Office
FRP	Full Rate Production
FSLR	Fielded Systems Logistics R
GPS	Global Positioning System
HQ,AMC	Headquarters, Army Material Command
HSC	Hardware Systems Command
ICP	Inventory Control Point
I&L	Installation and Logistics
ILS	Integrated Logistic Support
ILSM	Integrated Logistic Support Manager
ILSMT	ILS Management Team
ILSO	Integrated Logistics Support Officer
ILS-T&E	ILS Test and Evaluation
IOC	Initial Operating Capability
LAP	Letter of Adoption and Procurement
LCC	Life Cycle Cost
LCCE	Life Cycle Cost Estimate
LMIS	Logistics Management Information Systems

LORA	Level of Repair Analysis
LRFP	Logistics Requirements and Funding Plan
LRG	Logistics Review Group
LRIP	Low-Rate Initial Production
LROP	Long Range Objective Plan
LSA	Logistics Support Analysis
MAGTF	Marine Air Ground Taskforce
MAP	Master Acquisition Plan
MCCDC	Marine Corps Combat Development Center
MCLB	Marine Corps Logistics Base
MCLBA	Marine Corps Logistics Bases, Albany
MCPDM	Marine Corps Program Decision Meeting
MCO	Marine Corps Orders
MCRDAC	Marine Corps Research, Development and Acquisition Command
MFP	Material Fielding Plan
MKTINV	Market Investigations
MOA	Memorandum of Agreement
MOS	Military Occupational Specialty
MSC	Major Subordinate Command
MTBF	Mean Time Between Failure
NAE	Navy Acquisition Executive
NAVSUP	Navy Supply Command
NDI	Nondevelopmental Item
NSA	National Stock Account
O&MMC	Operation and Maintenance, Marine Corps
O&S	Operations and Support
OT&E	Operational Test and Evaluation
PA&E	Program Analysis and Evaluation
P&D	Production and Deployment
PEI	Principal End Item
PEO	Program Executive Officer
PIP	Planned Improvement Program
PLRS	Position Location Reporting System
PMs	Project Managers
PMC	Procurement Marine Corps
PMO	Program Management Office
PMRT	Program Management Responsibility Transfer
POM	Marine Corps Program Objective Memorandum
PPS	Post Production Support
PTG	Planning and Tracking Group
P3I	Preplanned Product Improvements
RAM	Reliability, Availability, and Maintainability
RAM-D	Reliability, Availability, Maintainability, and Durability
RD&A	Research, Development, and Acquisition
ROC	Required Operational Capability
SAC	Stores Account Code
SAIP	Spares Acquisition Integrated with Production
SDR	Secondary Depot Repairables

SECDEF	Secretary of Defense
SECNAVINST	Secretary of the Navy Instructions
SLEP	Service Life Extension Program
SPCC	Navy Ships Parts Control Center
SSA	Software Support Activity
SYSKOM	Systems Command
TAM	Table of Authorized Material
TAMCN	Table of Authorized Material Control Numbers
TE	Table of Equipment
TMDE	Test Measurement and Diagnostic Equipment
WS/EM	Weapon System/Equipment Manager

APPENDIX C Source: [Ref. 6:p. b-1 - b-14]
PROGRAM MANAGEMENT DOCUMENTS

1. Acquisition Decision Memorandum (ADM)

- a. Reference: MCO P5000.10_.
- b. Format: Appendix C.
- c. Responsibilities:
 - (1) Draft: PM.
 - (2) Coordinate: MCPDM Executive Secretary.
 - (3) Review: MCPDM Members.
 - (4) Approve: MCPDM PDA.
 - (5) Execution: PM.
 - (6) Publication: CG MCRDAC.
- d. Summary: The ADM documents the Milestone decision including: (1) approved goals and thresholds for cost, schedule, performance, readiness and supportability; (2) exceptions to the normal acquisition process; and (3) other appropriate direction of the PDA.
- e. Updates: Not applicable

2. Acquisition Plan (AP)

- a. References: FAR/DFARS/NARSUP 7.1
MCO P5000.10_.
- b. Format: DON Acquisition Planning Guide
- c. Responsibilities:
 - (1) Draft: Procurement Contracting Officer.
 - (2) Coordinate: PM.
 - (3) Review and Comment: PM.
 - (4) Approve: PEO/Service Procurement Executive (SPE)
- d. Summary: The AP describes the plans and milestones for contracting, provides estimated costs, and details source selection procedures. Approval process normally takes six to twelve weeks.
- e. Updates: The PM shall review the AP at least annually and update/revise it if there are significant changes. Each update requires approval.

12. Integrated Logistic Support Plan (ILSP)

- a. References: DoDDir 5000.39.
MCO P4105.XX.
- b. Format: MCO P4105.XX.
- c. Responsibilities:
 - (1) Draft: PM/ILSMT.
 - (2) Coordinate: CG MCRDAC.
 - (3) Review and Comment: ILSMT.
 - (4) Validate: PM.
 - (5) Approve: CG MCRDAC.
 - (6) Promulgate: CG MCRDAC.

d. Summary: The ILSP is a detailed functional plan which describes and documents the ILS program. It is the principal logistics document for an acquisition program and serves as a source document for summary and consolidated information required in other program management documents. It is a detailed supporting plan to the MAP.

- e. Updates: Prior to every Milestone and as required.

13. Interoperability Certification

- a. Reference: MCO 3093.1.
- b. Format: Marine Corps Interoperability Management Plan.
- c. Responsibilities:
 - (1) Draft: CMC (C4I2)
 - (2) Coordinate: CMC (C4I2)
 - (3) Review and Comment: CG MCRDAC, CG MCCDC, MCTSSA, MCOTEA
 - (4) Validate: CMC.
 - (5) Approve: CMC.
 - (6) Promulgate: CMC.

d. Summary: Interoperability Certification is required at each program decision milestone for all C4I systems.

- e. Updates: Prior to every milestone.

14. Joint Service Operational Requirement (JSOR)

a. Reference: MCO 3900.4.

b. Format: Determined by designated lead Service.

c. Responsibilities:

(1) Draft: CG MCCDC.

(2) Coordinate: CG MCCDC.

(3) Review and Comment: HQMC, CG MCRDAC, FMF, MCOTEA.

(4) Validate: CG MCCDC.

(5) Approve: CMC

(6) Publish: CG MCCDC.

d. Summary: The basic document describing the required operational capability to fulfill needs of two or more Services. The JSOR normally follows the format of a ROC, or the requirements document of the lead Service, in a joint program.

e. Updates: As required during the development process if the threat, operational concept, or cited deficiency changes.

15. Initial Statement of Requirement (ISOR)

a. References: MCO 3900.4.

b. Format: MCO 3900.4.

c. Responsibilities:

(1) Draft: CG MCCDC.

(2) Coordinate: CG MCCDC.

(3) Review and Comment: HQMC, CG MCRDAC, FMF.

(4) Validate: CG MCCDC.

(5) Approve: CMC.

(6) Publish: CG MCCDC.

d. Summary: The ISOR is the program initiation document for all Marine Corps programs other than ACAT I.

e. Updates: N/A.

16. Letter of Adoption & Procurement (LAP)

- a. Reference: MCO P4105.XX.
- b. Format: MCO P4105.XX.
- c. Responsibilities:
 - (1) Draft: PM.
 - (2) Coordinate: PM.
 - (3) Review and Comment: ILSMT, FMF.
 - (4) Validate: N/A.
 - (5) Approve: PM.
 - (6) Publish: CG MCRDAC.

d. **Summary:** The LAP is a statement of the system's planned procurement, logistics support, and acceptance into the inventory. Its purpose is to inform field activities. LAP part I presents planning data for entry into the table of authorized materiel (TAM). It is also the source document by which items are identified for inclusion in the Logistics Management Information System (LMIS).

- e. Updates: As required.

17. Life Cycle Cost Estimate

- a. Reference: MCO 39000.4.
- b. Format: MIL-HDBK-276, SVLCCM User's Guide.
- c. Responsibilities:
 - (1) Draft: PM, (With assistance from MCRDAC, Code PSA, if required).
 - (2) Coordinate: PM.
 - (3) Review and Comment: CG MCCDC, CG MCRDAC.
 - (4) Validate: CG MCRDAC.
 - (5) Approve: CMC.
 - (6) Publish: CG MCCDC.

d. **Summary:** The LCCE provides a critical input to decisions regarding the acquisition of weapon and major automated information systems. The LCCE consists of the funding profile (FP) and the cost estimate (EST). The initial LCCE is performed to support program initiation (MS 0) and development of the ROC.

- e. Updates: As required.

18. Master Acquisition Plan (MAP)

a. Reference: MCO P5000.10.

b. Format: Appendix C.

c. Responsibilities:

(1) Draft: PM.

(2) Coordinate: PM.

(3) Review and Comment: CG MCCDC, MCOTEA.

(4) Validate: CG MCRDAC.

(5) Approve: PDA.

(6) Promulgate: N/A.

d. Summary: The MAP is the key overall program guidance document after Milestone I and is complemented by the detailed supporting plans. The MAP, along with the ROC, is approved at Milestone I. See appendix A.

e. Updates: As required and at each Milestone.

19. Materiel Fielding Plan (MFP)

a. Reference: MCO 4105.XX.

b. Format: MCO 4105.XX

c. Responsibilities:

(1) Draft: PM.

(2) Coordinate: PM.

(3) Review and Comment: HQMC, CG MCCDC, ILSMT, FMF.

(4) Validate: CG MCRDAC.

(5) Approve: CG MCRDAC.

(6) Promulgate: CG MCRDAC.

d. Summary: Describes schedule for delivery of the system to the Marine Corps. It is affected by operational needs, status of currently fielded systems, and integrated logistics support readiness consideration. It can be adversely impacted by budget cuts, production slippages, and failure to meet support requirements listed by the reference.

e. Updates: As required.

Mission Need Statement (MNS)

- a. References: DoDInst 5000.2.
MCO 3900.4.
- b. Format: MCO 3900.4.
- c. Responsibilities:
 - (1) Draft: CG MCCDC.
 - (2) Coordinate: CG MCCDC.
 - (3) Review and Comment: HQMC, CG MCRDAC, FMFs.
 - (4) Validate: CG MCCDC.
 - (5) Approve: CMC.
 - (6) Promulgate: CMC.
- d. Summary: The MNS is the program initiation document required for ACAT I programs.
- e. Updates: None, except for FP.

Operational Requirement (OR)

- a. References: SECNAVINST 5000.1
MCO 3900.4.
- b. Format: MCO 3900.4.
- c. Responsibilities:
 - (1) Draft: CG MCCDC, if initiated by USMC;
OPNAV SPONSOR, if initiated by USN.
 - (2) Coordinate: CG MCCDC.
 - (3) Review and Comment: HQMC staff, CG MCRDAC, FMF.
 - (4) Validate: CG MCCDC.
 - (5) Approve: CMC (ACAT II-IV).
 - (6) Publish: CMC.

d. Summary: An OR is the third step in a process in which a tentative operational requirement (TOR) is first used to describe a perceived need in general terms and a development options paper (DOP) identifies several potentially suitable systems covering a spectrum of capabilities. In essence, an OR reflects selection of the DOP option which best matches desired capabilities with affordability considerations and defines major characteristics of this system. Navy initiated ORs in which the Marine Corps wishes to express an interest will be validated by CG MCCDC as appropriate before they are forwarded to OPNAV.

- e. Updates: Prior to Milestone decisions.

22. OT Detailed Test Plan (DTP)

a. Reference: MCO 5000.11.

b. Format: MCO 5000.11.

c. Responsibilities:

(1) Draft: Dir MCOTEA.

(2) Coordinate: Dir MCOTEA.

(3) Review and Comment: CG, MCRDAC, FMF.

(4) Validate: N/A.

(5) Approve: Dir MCOTEA.

(6) Publish: Dir MCOTEA.

d. Summary: The OT DTP provides explicit instructions for the conduct of a test, particularly test issues and criteria, schedules, and data collection procedures. The approved plan is forwarded by the Dir MCOTEA to the appropriate CG FMF.

e. Updates: As required by Dir MCOTEA.

23. OT Test Report

a. Reference: MCO 5000.11.

b. Format: MCO 5000.11.

c. Responsibilities:

(1) Draft: OT Director.

(2) Submitted to: Dir MCOTEA.

(3) Review and Comment: CG MCRDAC.

(4) Validate: N/A.

(5) Approve: N/A.

(6) Publish: N/A.

d. Summary: The OT Test Report is a detailed report of the results of an operational test. It includes a statement of the test limitations, a brief explanation of how testing was conducted, test results, data summary, and a discussion of findings and observations.

e. Updates: N/A.

24. Post-Production Support (PPS) Plan

a. Reference: MCO 4105.1

b. Format: MCO 4105.1

c. Responsibilities:

(1) Draft: PM/ILSMT.

(2) Coordinate: CG MCRDAC.

(3) Review and Comment: ILSMT.

(4) Validate: PM.

(5) Approve: CG MCRDAC.

(6) Publish: CG MCRDAC.

d. Summary: The PPS Plan ensures the continued attainment of system readiness after the cessation of production.

25. Required Operational Capability (ROC)

a. Reference: MCO 3900.4.

b. Format: MCO 3900.4.

c. Responsibilities:

(1) Draft: CG MCCDC.

(2) Coordinate: CG MCCDC.

(3) Review and Comment: HQMC, CG MCRDAC, FMF, MCOTEA.

(4) Validate: CG MCCDC.

(5) Approve: CMC

(6) Promulgate: CG MCCDC.

d. Summary: The ROC is the document that defines the requirement and provides detailed guidance or the acquisition of a system. It describes specific operational capabilities rather than design specifications.

e. Updates: Reviewed prior to each Milestone.

26. System Concept Paper (SCP)

- a. References: DoDInst 5000.2.
SECNAVINST 5000.1.
SECNAVINST 5000.2.
- b. Format: DoDInst 5000.2
- c. Responsibilities:
 - (1) Draft: PM.
 - (2) Coordinate: CG MCRDAC.
 - (3) Review and Comment: CG MCCDC, HQMC.
 - (4) Validate: N/A.
 - (5) Approve: DAE.
 - (6) Publish: CG MCRDAC.

d. Summary: The SCP is used to summarize the results of the CD/V phase up to Milestone I for ACAT I programs.

e. Updates: NA.

27. Test & Evaluation Master Plan (TEMP)

- a. References: DoDDir 5000.3
OPNAVINST 3960.10.
MCO 5000.11
- b. Format: MCO 5000.11
- c. Responsibilities:
 - (1) Draft: PM with Dir MCOTEA for OT&E portion.
 - (2) Coordinate: PM.
 - (3) Review and Comment: CG MCCDC, Dir MCOTEA, ILSMT.
 - (4) Validate: CG MCRDAC.
 - (5) Approve: PDA.
 - (6) Publish: CG MCRDAC.

d. Summary: The TEMP is the overall management document which integrates the entire T&E effort of an acquisition program.

e. Updates: Prior to each Milestone.

28. Test Planning Document

- a. Reference: MCO 5000.11.
- b. Format: MCO 5000.11.
- c. Responsibilities:
 - (1) Draft: PM for all DT, Dir MCOTEA for OT.
 - (2) Coordinate: PM.
 - (3) Review and Comment: CG MCCDC, FMF.
 - (4) Validate: N/A.
 - (5) Approve: CG MCRDAC or Dir MCOTEA.
 - (6) Publish: CG MCRDAC or Dir MCOTEA.

d. Summary: The TPD provides initial estimates of the resources required to conduct a test, including personnel, equipment, facilities and ranges. The TPD provides information for FMF schedule and resource planning to conduct and support the test and evaluation process. It is the basic source document for all T&E resources for system testing.

- e. Updates: Annually or as required.

29. Test Support Package (TSP)

- a. Reference: MCO 5000.11.
- b. Format: MCO 5000.11.
- c. Responsibilities:
 - (1) Draft: CG MCCDC.
 - (2) Coordinate: CG MCCDC and CG MCRDAC.
 - (3) Review and Comment: Dir MCOTEA/PM.
 - (4) Validate: N/A.
 - (5) Approve: CMC.
 - (6) Publish: CG MCCDC.

d. Summary: Critical elements of the TSP are an approved threat and scenario, a concept of employment, an organizational structure (T/Os and T/Es), a logistic support concept, and a training concept.

- e. Updates: None.

APPENDIX D Source: [Ref. 5:p. j-1 - j-2]

M E M O R A N D U M O F A G R E E M E N T

between

MARINE CORPS RESEARCH, DEVELOPMENT, AND ACQUISITION COMMAND
QUANTICO, VA 22134-5080

and

MARINE CORPS LOGISTICS BASE
ALBANY, GA 31704-5000

for

LIFE CYCLE MANAGEMENT RESPONSIBILITY TRANSFER

of

Equipment Nomenclature: _____

TAM No.: _____

NATIONAL STOCK NUMBER: _____

DEVELOPED BY:

Project Officer
MCRDAC, Code _____

Weapon System/Equipment
Manager, MCLB, Albany,
Code _____

Date:

Date:

APPROVED BY:

Program Manager
MCRDAC, Code _____

Director, ILS DIVISION
MCLB, Albany, Code _____

Date:

Date:

Appendix E Source: [Ref. 5:p. j-3 - j-9]

MARINE CORPS
PRINCIPAL END ITEMS
TRANSFER
CHECK-OFF LIST

INSTRUCTIONS FOR COMPLETING THE TRANSFER CHECK-OFF SHEET

1. All questions must be answered either "Yes" or "No."
2. All questions answered "No" will be supported by completing an ILS Deficiency Assessment Sheet and attaching the sheet(s) to the Check-Off List.
3. This "Check-Off List" is a guide for system life cycle management transfer and preparation of the Memorandum of Agreement (MOA). The checking of a specific question as "Yes" or "No" does not in itself constitute a rejection of management transfer. The CG MCLB, Albany, will maintain the baseline Check-Off List.

	<u>Yes</u>	<u>No</u>
I. <u>MAINTENANCE PLANNING</u>		
A. Is The 5th echelon maintenance facility ready to perform repair functions?	—	—
B. Has the necessary contractual document for 5th echelon maintenance been finalized? (i.e., DMISA, BOA, etc.)	—	—
C. Has the necessary contract document been finalized for the required field engineering technical representative?	—	—
D. Does the current budget support maintenance of the PEI in the Fleet Marine Force and at the Depot Level?	—	—
E. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

SUPPLY SUPPORT

A. <u>Principal End Item (Initial)</u>		
1. Have all authorized Marine Corps table of equipment allowances been issued?	—	—
2. For Marine Corps PICS items, have all contract deliverables to other contract claimants been accepted?	—	—
3. Have all Marine Corps organizations placed their PEI's in service?	—	—
4. Has the post deployment hardware configuration management organization been identified?	—	—
5. Does the current budget fully support initial procurement of the PEI?	—	—
6. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

Yes No

B. Initial Spares (Provisioning)

- | | | | |
|--|---|---|--|
| 1. Have all initial issue repair parts packages for the PEI been released? | — | — | |
| 2. Has the initial issue repair parts package for all support equipment been released? (i.e., air conditioner, generator, TDME rolling stock, batteries, etc.) | — | — | |
| 3. Do current budgets fully support the initial spares requirements? | — | — | |
| 4. Has adequate current year funding been appropriated and allocated to the Marine Corps? | — | — | |

C. Replenishment (PEI)

- | | | | |
|---|---|---|--|
| 1. Has the PEI exit date been loaded to the appropriate file? (LMIS; SS03; SS08; SS09) | — | — | |
| 2. Has the PEI been included in the Depot Level Maintenance Program? | — | — | |
| 3. Will CG MCLB, Albany be responsible for procurement of the PEI? | — | — | |
| 4. Does the current budget fully support the PEI replenishment requirements? | — | — | |
| 5. Has adequate current year funding been appropriated and allocated to the Marine Corps? | — | — | |

D. Replenishment (Spares)

- | | | | |
|---|---|---|--|
| 1. Have the replenishment/PWR spares assets acquired during the provisioning process been transferred to the appropriate purpose code? (i.e., interpurpose code transfer) | — | — | |
| 2. Have SDRs been included in the Depot Level Maintenance Program? | — | — | |

	<u>Yes</u>	<u>No</u>
3. Has the first annual acquisition plan been developed?	—	—
4. Do the current budgets fully support the total replenishment spares requirements?	—	—
5. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

III. TECHNICAL DATA

A. Has all provisioning technical documentation been accepted? (i.e., parts list, illustration, supplemental provisioning technical documentation, screening data, item identification data)	—	—
B. Has all LSA documentation been accepted?	—	—
C. Has a product baseline been established and maintained?	—	—
D. Have reprourement engineering drawings been been accepted?	—	—
E. Has the reprourement information data been accepted? (i.e., procurement method coding, etc.)	—	—
F. Have all Technical Manuals, Instructional type publications and stock list publications been distributed to Marine Corps organizations? (i.e., Operator/Maintenance Manuals, TI's, MI's, LI's, SI's, SL-3/4 etc.) Drafts not considered completed action.	—	—
G. Have rebuild/Inspect or Repair Only As Necessary (IROAN) standards been accepted?	—	—
H. Has all automatic test program set data been accepted?	—	—
I. Does the current budget fully support all initial technical data requirements?	—	—
J. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

Yes No

IV. SUPPORT EQUIPMENT

- A. Have all general and special TMDE, special tools, and application program sets been issued? _____
- B. Has all support equipment been issued? (i.e., air conditioner, generators, rolling stock, collateral equipment, batteries, etc.) _____
- C. Does the current budget provide for all support equipment requirements? _____
- D. Has adequate current year funding been appropriated and allocated to the Marine Corps? _____

V. MANPOWER

- A. Are operator and maintenance personnel authorized by T/O on board? _____

VI. TRAINING

- A. Has initial operator training been completed? _____
- B. Has initial maintenance training been completed? _____
- C. Are formal follow-on training facilities on line? (i.e., training devices, training aids, correspondence course, etc.) _____
- D. Does the current budget fully support necessary training requirements? _____
- E. Has adequate current year funding been appropriated and allocated to the Marine Corps? _____

VII. COMPUTER RESOURCES

- A. Is the post deployment software/firmware support (PDSS) facility operational? _____
- B. Is the necessary contractual document for PDSS finalized/awarded? (i.e., ISSA, BOA, etc.) _____

	<u>Yes</u>	<u>No</u>
C. Does the current budget fully support all ADP requirements?	—	—
D. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

VIII. FACILITIES

A. Are all facilities available to perform required maintenance?	—	—
B. Have the necessary contractual documents for appropriate facilities been finalized? (i.e., ISSA, BOA, contracts, etc.)	—	—
C. Does the current budget fully support facilities requirements?	—	—
D. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

IX. PACKAGING, HANDLING, STORAGE, AND TRANSPORTABILITY

A. Has transportation certification been achieved? (i.e., helo-lift, air, sea, land, etc.)	—	—
B. Have all special handling requirements been achieved? (i.e., safety, security, NBC, electromagnetic, etc.)	—	—
C. Have all special storage requirements been achieved? (i.e., MPS, GEO, contractor bonded storage, other agencies)	—	—
D. Does the current budget support all packaging, handling, storage, and transportability requirements?	—	—
E. Has adequate current year funding been appropriated and allocated to the Marine Corps?	—	—

X. DESIGN INTERFACE

A. Have all outstanding deficiencies, request for deviations or waivers, or engineering change proposals been properly addressed?	—	—
---	---	---

	<u>Yes</u>	<u>No</u>
B. Does the Marine Corps maintain data for reliability, availability, maintainability?	—	—
C. Does the Marine Corps maintain data for Failure Modes/Effects Analysis?	—	—
D. Has a QA Program been established?	—	—
E. Does the Marine Corps maintain Maintenance Engineering Analysis data?	—	—

XI. WARRANTY

A. Are the required warranty procedures finalized?	—	—
--	---	---

PEI DEFICIENCY
ASSESSMENT SHEET

1. ILS Element: _____
2. Check-Off List Number _____
3. Deficiency/Problem: _____

4. Required Action: _____

5. Get Well Date: _____
6. Action Office: Command _____ Office Code _____
7. Point of Contact: Name _____ Telephone _____

APPENDIX F

LOGISTIC APPRAISAL DOCUMENTATION

1. The following requirements, planning, and contractual documentation will be prepared and made available for review.

- a. Decision Coordinating Paper.
- b. Required Operational Capability.
- c. Master Acquisition Plan.
- d. Test and Evaluation Master Plan.
- e. ILSP.
- f. Acquisition Plan.
- g. Maintenance Concept/Plan (for the end item and any related support equipment) (may be part of the ILSP).
- h. Manpower and training Plan (may be part of the ILSP).
- i. Computer Resources Life Cycle Management Plan.
- j. Reliability and Maintainability Plan (may be part of the ILSP).
- k. Logistic Support Analysis Plan (may be part of the ILSP).
- l. Level of Repair Analysis Plan (may be part of the ILSP).
- m. Configuration Management Plan.
- n. System Safety Plan.
- o. System Specification.
- p. Integrated Support Plan.
- q. Contractual Documents (SOW, CDRL's, RFP).
- r. Logistics Requirements and Funding Plan.
- s. Quality Assurance Plan.
- t. Post Production Support Plan.
- u. Facilities Management Plan (may be part of the ILSP).

- v. Letter of Adoption and Procurement.
 - Part I
 - Part II
- w. Materiel Fielding Plan (ALO).

APPENDIX G

LOGISTICS APPRAISAL ISSUES

1. LOGISTICS MANAGEMENT

Source Selection Criteria and Weighting

Contractor Incentives

Life Cycle Costs

ILSP/ISP

Requirements Documents

Solicitation Documents

Test and Evaluation Plans

Warranty Planning and Procedures

ICS Plans

2. LOGISTICS SUPPORT ANALYSIS

LSA Strategy

3. LOGISTICS FUNDING

POM

Transportation Costs

Provisioning Funds

Warranty Costs

4. MAINTENANCE PLANNING

Maintenance Concept

Maintenance Plan

Maintenance Facilities

Maintenance Organizations

Maintenance Tasks

Interservice Support Agreements

JDMAG Decision

Battlefield Damage Assessment and Repair

Built in Test

5. MANPOWER AND PERSONNEL

Manpower Constraints

Manpower Requirements (numbers, skills, and grades)

Special Skill Requirements

Human Factors Considerations

6. SUPPLY SUPPORT

Initial Provisioning

Replenishment Spare and Repair Parts

Supply Facilities (fixed and mobile)

Handling Equipment

SMR Coding

Interservice Support Agreements

Storage Requirements

Special Handling Requirements

Security Requirements

Decontamination Equipment Requirements

7. SUPPORT EQUIPMENT

TMDE Requirements

Special Tools and Test Equipment

Calibration Requirements and Equipment

General Support Equipment Requirements and Availability

Tools and Tool Kits

Test Program Sets

Depot Maintenance Equipment

8. TECHNICAL DATA

Technical Manuals

Engineering Drawings

Provisioning Data

Support Equipment Lists

Calibration Procedures

Specifications

Software Documentation

Test Results

LSAR

Depot Maintenance Work Requirements

ILS Planning Documentation

Contractor Deliverables

Demolition and Explosive Ordnance Disposal Procedures

9. TRAINING AND TRAINING SUPPORT

Training Requirements

Training Plan

Factory Training

New Equipment Training

Instructor and Key Personnel Training

Training Materials, Aids, and Devices

Training Equipment and it's Support

Depot Training

Training Instruction Materials

10. COMPUTER RESOURCES SUPPORT

Operational Software

ATE Software

CRLCMP

SSA Assignment

Software Storage and Security Procedures

Computer Hardware Support

11. FACILITIES

Training Facilities Requirements

Depot Maintenance Facilities Requirements

Mobile Maintenance Facilities

Testing Facilities

Operational Facilities

Physical Security Requirements

Facility Utilities

Facilities Design Requirements

Training Ranges, Targets, etc.

12. PHS&T

Transportability Engineering and Design Influence

Transportation Dimension Limitations

Width and Height Constraints

Weight Limitations

Customs Requirements

Helicopter Lift Requirements

Transportation Configuration

Unit Mobility Impacts

- Standard Container Compatibility
- Lifting/Tie Down Provisions
- Transportability Testing
- 13. DESIGN INTERFACE
 - Human Factors Engineering
 - System Safety
 - Reliability
 - Reliability Centered Maintenance
 - Maintainability
 - Durability
 - Nuclear Hardening Requirements
 - System Readiness Objectives
 - Test Planning, Feedback and Correction Process
 - Use of Hazardous or Critical Materials
- 14. INTEROPERABILITY
 - Interoperable with appropriate systems
 - NATO/ABCA Interoperability
- 15. STANDARDIZATION
 - Use of Standard Parts
 - Parts Control Program
 - Standardized Components, Subsystems
- 16. POST PRODUCTION SUPPORT
 - PPS Plan
 - Transition Plans
- 17. CONFIGURATION MANAGEMENT
- 18. QUALITY ASSURANCE

19. COMPUTER AIDED ACQUISITION AND LOGISTICS SUPPORT

Consideration of CALS Requirements

Compatibility with CALS Standards

Source: [Ref. 5:pp. I-1, I-5]

APPENDIX H

RECOMMENDED FIELDDED SYSTEMS REVIEW PROCEDURES

STEP 1: APPRAISAL SCHEDULING - The Program Manager (PM) responsible for executing each system acquisition program should provide DC/S I&L with the following information:

- o Program Title
- o ACAT
- o Date of FSLR

DC/S I&L should then prepare a quarterly schedule which identifies the programs to be reviewed in the next six month period, the PM involved and the date of the review. Any changes to the schedule would be coordinated by DC/S I&L with the PMs and PA&E. This schedule would be reviewed at least every 90 days and updated as required. The Director, PA&E should provide the FSLR Coordinator/team leader, responsible for preparing a list of all personnel required to participate as members of the review team. A letter is then prepared by PA&E two weeks prior to the FSLR informing the FSLR members of the appraisal's scope, schedule, and location. The FSLR Coordinator provided by PA&E, would work with the FSLR board secretary to ensure scheduling conflicts do not arise.

A recommended FSLR board would consist of the following members:

DC/S I&L would provide the chairperson

DC\S I&L would provide the secretary

Members provided by CG MCCDC, COMMARCORLOGBASES, FMFPAC and FMFLANT

STEP 2: CONDUCT PRE-BRIEF - Each FSLR should be preceded by a pre-brief. The purpose of the pre-brief is to present the review team with the history and status of the acquisition program and to provide the necessary review documentation.

The PA&E Team Leader would be responsible for the overall conduct of the pre-brief. At the pre-brief, the PM or designated representative would provide a history of the program to include the acquisition strategy, general description of the system, operational use and quantity of items to be procured and details/status of the ILS program. At this pre-brief, the PM should provide logistics and program documentation needed to perform the review. If applicable, the documentation may include (but is not limited to) that provided in Appendix C.

STEP 3: CONDUCT REVIEW - Following the pre-brief, the review team would perform the actual review. The review team would consist of personnel with technical (equipment related) and logistics experience. Detailed checklists being developed in conjunction with Marine Corps Order P4105.3 should be used to ensure that all logistically significant events, documents, and requirements were examined. The review team would individually and collectively analyze the documentation and other information provided by the PM to assess the ILS planning and execution. This assessment then determines whether the documentation is complete and correct and

whether the key ILS topics have been adequately planned and are being or will be appropriately executed. Review team members would review the documentation provided and interview program personnel and FMF using units, utilizing the respective logistics element checklists provided by the Director, Program Support (PS).

Any apparent risks, problems and issues discovered during the review would be documented by the individual review team members. During the review, the PM, or designated representative, should be available to answer questions and provide additional information as required by the review team. The review team members may contact their respective program office counter parts on an ad hoc basis for background, detail and clarification as necessary.

Upon completion of the review, the team members would provide individual findings to PA&E. These findings should include the following minimal information:

- o Finding;
- o Impact of the finding;
- o Action(s) required to resolve the finding;
- o Organization responsible for the action(s);

Each of the findings which indicate a deficiency in ILS planning, management or execution should also indicate the impact on supportability. Copies of these findings would be provided to the Team Leader in preparation for debriefing the PM.

STEP 4: CONDUCT FSLR DEBRIEF - The Team Leader and appraisers would meet upon completion of the review period to discuss, with the PM, or designated representative, any remaining questions from

the review process. Selected portions of the checklists should be reviewed (if necessary), and tentative findings may be discussed and formulated regarding their nature, scope and action agency concerned. By the conclusion of this appraisal session, the Team Leader and PM, or designated representative, should tentatively know the number of appraisal findings and their likely impact on certification.

STEP 5: PLAN OF ACTION AND MILESTONES (POA&M) - Following the debrief, the PM or designated representative, would provide a POA&M that addresses unresolved issues. The POA&M would be provided within two weeks and include data relative to the correction of the finding. Any discrepancy the PM does not believe to be valid would be immediately coordinated with the Team Leader.

STEP 6: DRAFT FSLR REPORT - The FSLR report would be drafted in the same period of time that the PM uses to prepare the POA&M. The Secretary would consolidate, with the Team Leader assistance, all appraisal findings and discrepancies. From these results, a draft FSLR report would be prepared and would include one of the four following recommendations:

- o The program is logistically supportable and meets the current threat.
- o There are existing discrepancies and the program does meet the current threat. Recommend the discrepancies be corrected in accordance with a POA&M.
- o There are existing discrepancies and the program does not meet the threat.

- o The program is not logistically supportable. Do not proceed to the next milestone until discrepancies are resolved.

STEP 7: FINAL LPR REPORT - The LRG Vice Chairperson, in coordination with the PA&E Team Leader, would review the POA&M to insure adequate resolution of deficiencies in both methodology and quality. The Team Leader, in coordination with the LRG Vice Chairperson, would prepare the final report based on the draft report and the results of the debriefing process. As in the draft report, an ILS supportability recommendation should be included. A copy of all outstanding discrepancies, the PM's POA&M and any request for waiver (including justification) should be included in the final report. The final LPR report would be forwarded by the LRG Chairperson to CG MCRDAC for concurrence and presentation to the Program Decision Authority. CG MCRDAC will act on any request for waiver to proceed to the next milestone, with supportability deficiencies in the program should a waiver be required.

SUMMARY

It would appear that the PEIMT point in a system life cycle is inappropriate for the conduct of a true FSLR that can fulfill the intent of this review. The author recommends consideration of the issues and factors which should compliment an FSLR. If these are taken into account, and the recommended FSLR procedures are followed, these objectives should be met:

1. Measurement of logistics and support-related design parameters of the new system in its operational environment.

2. Comparison of achieved logistic, support, reliability and maintainability, and other support-related design parameters, within the parameter the system was designed to fulfill.

3. Identification of deviations between projections, tests and operational results, and reasons for the deviations.

4. Recommendations of changes (design, support, operational, and procedural) to correct deficiencies or improve system readiness.

5. Establishment of a lessons-learned/intelligence file for the ILS manager to prevent recurrence of problems (operational, design support) in the acquisition and employment of follow-on systems and to refine the ILS program.

6. Determination of the adequacy of TMDE and support equipment, and initial procurements of spares/repair parts by comparing the quantities of those procurements against available test and consumption data.

7. Review of the adequacy of authorized support lists and prescribed load list allowances in terms of readiness.

APPENDIX I

MODIFICATION EVALUATION PROCEDURES

STEP 1: Update the threat requirement

- change tactics
- change doctrine
- change force structure

Responsible command: MCCDC

If it appears that the threat is still not met with the above changes:

STEP 2: Generate a new ROC in terms of operational requirements (vice hardware solutions)

Responsible command: MCCDC

STEP 3: Communicate the ROC to MCRDAC

Responsible command: MCCDC

STEP 4: Examine existing systems in production and determine deficiencies in light of the new requirement. Based on existing deficiencies, determine what Product Improvement will be necessary to modify the system in terms of technical performance and risk and associated life cycle cost to include all support factors involved. Marine Corps Operational Test and Evaluation (MCOTEA) would provide the basis to determine the extent of existing deficiencies based on current testing data.

Responsible command: MCRDAC

STEP 5: Perform a market survey on all NDI from within the Marine Corps inventory, other service inventories and developed systems in

industry. Review technical performance, risk and associated life cycle cost to include all support factors involved.

Responsible command: MCRDAC

STEP 6: Prepare a matrix that shows the following factors for each alternative system solution:

* Modifications to existing Marine Corps systems

- Advantages in terms of technical performance
- Technical risk and associated cost impacts
- Interoperability with other systems
- 10 year technology projections and advantages
- Preplanned Product Improvement (PPI)
- Hardware cost
- Support cost

* Modification potential of other service systems

- Advantages in terms of technical performance
- Technical risk and associated cost impacts
- Interoperability with other systems
- 10 year technology projections and advantages
- Preplanned Product Improvement (PPI)
- Hardware cost
- Support cost

* NDI from industry

- Advantages in terms of technical performance
- Technical risk and associated cost impacts
- Interoperability with other systems
- 10 year technology projections and advantages

- Preplanned Product Improvement (PPI)
- Hardware cost
- Support cost

* Development of a new design system

- Advantages in terms of technical performance
- Technical risk and associated cost impacts
- Interoperability with other systems
- 10 year technology projections and advantages
- Preplanned Product Improvement (PPI)
- Hardware cost
- Support cost

Responsible command: MCRDAC

STEP 7: Score the matrix with weighted factors to determine how each alternative best meets the threat in terms of:

- provides the best technical performance
- provides the least risk to the Marine Corps
- provides interoperability with other existing systems
- allows the Marine Corps to keep pace with future technological advancements
- provide Preplanned product Improvement
- provides cost effectiveness in terms of hardware
- provides cost effectiveness in terms of logistics supportability

Responsible command: MCRDAC

Factors	Weight	Existing Marine Corps Systems	Other Service Systems	NDI from Industry	Develop New Design System
Advantages in terms of technical performance	300	50	100	75	75
Technical risk and associated cost impacts	200	75	25	60	40
Interoperability with other systems	150	60	30	50	10
10 year technology projections and advantages	125	25	75	10	15
Preplanned Product Improvement	100	20	40	30	10
Hardware Cost	75	15	25	20	15
Support Cost	50	10	15	5	20
TOTAL	1000	255	310	250	185

This is a representative example of Matrix for a Major Modification Factors Analysis.

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