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AN HISTORICAL REVIEW OF THE INTEGRATED LOGISTIC SUPPORT CHARTER

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EXECUTIVE SUMMARY

Integrated Logistic Support (ILS) has been a part of the DOD weapons acquisition management philosophy for some time. Air Force implementation of the ILS concept included the creation of a new position within major System Program Offices (SPO) entitled Deputy Program Manager for Logistics (DPML). The role of the DPML was to implement ILS on behalf of the program manager.

The purpose of this study was to conduct a review of ILS history within DOD and the Air Force and determine if selected major Air Force programs have actually implemented the essential elements of the ILS concept. In addition, the purpose was to determine if there exists a need for improved Air Force policy guidance. As a result of a literature review, four tasks were described which must be accomplished to achieve the two basic objectives of ILS: (1) increased supportability of weapons through early consideration of logistics in design, and (2) more efficient logistics support through integrated management of the logistics elements during acquisition. It was determined that responsibility for the tasks associated with the first objective should be delegated by the program manager to the systems engineer and that responsibility for the tasks associated with the second objective should be delegated to the DPML.

Investigation of the roles and responsibilities of the systems engineer and the DPML on three current Air Force programs (F-15, A-10, and F-16) indicated that the systems engineer was, in fact, responsible for the tasks supporting the first objective. The DPML supported this objective as an AFLC liaison.

Responsibility for the second group of tasks, however, was not clear. The F-15 DPML was not responsible for integrated management of logistic element acquisition nor, for that matter, was any other agency within the F-15 SPO. The F-16 DPML, on the other hand, had been delegated these responsibilities.

As a result of these findings, it was concluded that Air Force policy concerning the objectives of ILS and the role and responsibilities of the DPML were inadequate. It was recommended that AFR 800-8 and AFSCR/AFLCR 400-10 be rewritten in order to correct this deficiency and that AFLC reevaluate the role of the DCS Acquisition Logistics with regard to the integrated management of the acquisition of logistics resources.

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CHAPTER I

INTRODUCTION

GENERAL

For more than a decade, Integrated Logistics Support has been a part of the weapons acquisition management philosophy within DOD. Since its creation in 1964 numerous study teams, working groups and ad hoc committees have attempted to understand, modify, redefine and implement it - some with greater success than others.

Despite this furor, the concept remains more or less intact. DODD 4100.35, October 1, 1970, defines ILS as follows:

> "Integrated Logistic Support is a composite of all the support considerations necessary to assure the effective and economical support of a system for its life cycle. It is an integral part of all other aspects of system acquisition and operation. Integrated logistic support is characterized by harmony and coherence among the logistics elements. The principle elements of integrated logistic support related to the overall system life cycle include:
>
> 1. The Maintenance Plan
> 2. Support and Test Equipment
> 3. Supply Support
> 4. Transportation and Handling
> 5. Technical Data
> 6. Facilities
> 7. Personnel and Training
> 8. Logistic Support Resource Funds
> 9. Logistic Support Management and Information" (10:2)

Air Force implementation of the ILS concept included the creation of a new position within major System Program Offices (SPO) entitled Deputy Program Manager for Logistics (DPML). The role of the DPML was to implement ILS on behalf of the program manager.

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[1]This notation will be used throughout the report for sources of quotations and major references. The first number is the source listed in the bibliography. The second number is the page in the reference.

PURPOSE OF STUDY

The purpose of this study was to conduct a review of ILS history within DOD and the Air Force and determine if selected major Air Force programs have actually implemented the essential elements of the ILS concept. In addition, the purpose was to determine if there exists a need for improved Air Force policy guidance.

SPECIFIC GOALS

This study was structured to answer three questions:

1. What are the major tasks that must be accomplished in a program office if the ILS concept is to be fully implemented and what should the role of the DPML be with regard to each of these tasks?

2. What is the role of the DPML on each of three current major Air Force programs?

3. Could the role of the DPML be better defined, thereby increasing the probability of successful implementation of ILS, if Air Force policy documents were rewritten?

SCOPE

The historical review of ILS policy in DOD included an examination of the final reports of various study groups. Although formal policy did not necessarily result from the recommendations of these groups, their viewpoints and attitudes constituted an important aspect of understanding the ILS concept.

Three major aircraft programs were selected for review: F-15, A-10, and F-16. Their selection was based on the author's previous knowledge of these programs, the availability of data, and the age of their ILS offices. The F-15 ILS Office, the oldest, was created in 1969. The F-16 ILS Office, the youngest,

was created in 1974.

Throughout this study the author carefully avoided making any judgements as to the overall effectiveness of each ILS office. Research was limited to determining the formal responsibilities assigned to each DPML. It was assumed that in the long run an accurate and clear statement of DPML objectives and responsibilities would lead to more effective implementation of ILS, but capable and aggressive managers are often effective in spite of formal policy.

ORGANIZATION OF THE REPORT

Chapter II discusses the history of ILS policy from its earliest beginnings to the present.

Chapter III describes four major ILS tasks and the hypothetical role of the DPML with regard to each.

Chapter IV compares the hypothetical role of the DPML with the actual role he plays on three Air Force programs.

Chapter V presents a summary, conclusions and recommendations.

CHAPTER II

THE HISTORY OF ILS POLICY IN DOD

EARLY DOD POLICY

On November 3, 1955 Department of Defense issued Directive 3232.1. Its subject was the "DOD Maintenance Engineering Program" and its stated objective was to contribute to the readiness of the Military Services by improving the effectiveness and economy of maintenance operations. In 1955, military managers were concerned about the rapidly growing complexity of hardware and the impact that complexity had on maintenance of equipment in a state of readiness. The following paragraph from DODD 3232.1 provides a useful insight into the problems of that time:

> "The Department of Defense is acquiring and utilizing progressively larger quantities of material of increasing complexity and cost. The highly developed maintenance activities of the Military Departments have recognized, to a large degree, the impact of these significant inventory changes upon their capabilities. However, in view of the extent to which effective maintenance of this material is generating continually increasing demand for resources (funds, skilled manpower, materials, facilities and tooling) even greater emphasis is necessary on the policy direction, technical supervision and management control of major maintenance programs and activities." (8:1)

Design development and production engineering activities were directed to stress "improved maintainability and reliability of operation, to reduce maintenance requirements." (8:2) Logistic acquisition functions were directed to review policies and procedures governing initial provisioning of support resources to "assure the timely availability of maintenance support items required during the initial phase of service use of material." (8:3) Finally, as a corollary objective, the Services were directed to bring about ".... integration of cost budgeting and accounting with fund

requirements and fiscal accounting, including a clear identification of all maintenance fund requirements (personnel, tooling, test equipment, ground handling equipment, technical data, spare and repair parts)." (8:4)

DODD 3232.1 did not establish ILS. In fact the word "logistics" was not used once. Its primary emphasis was on operational maintenance management, but four key elements were present:

(1) Military readiness through efficient, cost effective maintenance;

(2) Designed in reliability and maintainability;

(3) Timely availability of support resources needed for initial phase of operation; and

(4) Integrated development of funds requirements for logistics resources. Even though hidden in a directive not specifically aimed at the R&D community, these policy statements represent what appears to be the embryo of formal DOD integrated logistics support.

EARLY EFFORTS OF THE MILITARY SERVICES

Based strictly on the popular history of ILS, one might conclude that the ILS concept sprang forth in full bloom on June 19, 1964 as DODD 4100.35. Like many management programs, however, ILS appears to actually have evolved independently over several years within each of the Military Services. The issuing of DOD policy resulted from a need for consolidation, standardization and emphasis. The following paragraphs highlight the major activities of each Service prior to the publication of DODD 4100.35.

Navy. The Navy has developed a system called Integrated Maintenance Management (IMM) which was documented in WR-30, Weapons Requirement, Integrated

Maintenance Management for Aeronautical Weapons, Weapon Systems and Related Equipment, Bureau of Naval Weapons, 1 May 1963. The IMM concept was implemented on the A-7A Program. It required the contractor to establish a separate management organization under the program manager to control IMM. A Support System Team, reporting to the IMM Manager, developed Maintenance Engineering Analysis Records which identified maintenance requirements for individual pieces of hardware. The IMM Manager developed and periodically revised an Integrated Maintenance Management Plan (IMMP), which contained 7 sections: (1) management organization, (2) maintainability, (3) personnel and training, (4) technical publications, (5) augmented support, (6) government support, and (7) facilities. (19:23)

Two aspects of this effort were noteworthy. First,Maintenance Engineering Analysis Records (MEAR), in modified form, were later used by all the Services as a tool for determining support requirements. More recently, the MEAR concept was revised and reissued as Logistics Support Analysis (MIL-STD-1388). Second, the IMMP was very similar to the currently required Integrated Logistics Support Plan (ILSP) both in terms of the integrated elements of logistics and in terms of the evolutionary nature (periodic expansion) of the plan.

Air Force. The Air Force, as part of its emphasis on total weapon system management and systems engineering, implemented the concept of a Basic Data Pool (BDP) on the Tital II Program during the early 60s. The overall integration responsibility for the program rested with the contractor. The basic vehicles by which the Air Force conveyed this desire for integrated system management were Air Force Ballistic Missile Exhibit 60-26A, "Personnel Subsystems Analysis," and AFBM Exhibit 60-50A, "Maintenance Analysis." The stated objective of this program was twofold:

"a. Integrate all processes involved in developing and producing a total system.

b. Ensure that the three basic elements of hardware, personnel and support are compatible and facilitate achievement of specific operational requirements." (19:38)

Beginning as early as review of the Specific Operational Requirement (SOR), functional flow diagrams were developed to identify types, locations and frequencies of operations and maintenance. These broad requirements were input to specification requirements and qualification plans. Later, maintenance analysis was conducted on each task identified in the functional flow and specific requirements for logistic resources (technical manuals, spare and repair parts, maintenance ground equipment, etc) were developed. The results of this every expanding analysis were recorded in the Basic Data Pool and used in successive phases of the program as a baseline for operations and maintenance.

The Titan II Total Weapon System Management Program had many attributes in common with the Navy's Integrated Maintenance Management, particularly when comparing MEAR with AFBM 60-50A (Maintenance Analysis). The main difference was that the Navy program was a separately identifiable logistics subset of the overall program management whereas the Air Force program was an integral part of the overall systems engineering effort.

Army. On 6 May 1963, the Deputy Chief of Staff for Logistics, Department of Army, requested that the National Security Industrial Association's (NSIA) Maintenance Advisory Committee develop a plan and procedures for the implementation of an Early Support Concept. Some of the objectives of this effort were to:

"a. Achieve an Army-contractor centralized support project management.

b. Result in a plan for timely and adequate funding.

c. Establish effective coordination between all participating

support agencies.

d. Assure adequate and timely supply of logistics resources.

e. Achieve greater influence of support experience on design reviews and equipment changes as they affect the maintenance task.

f. Ensure economical and early attainment of material readiness.

g. Make maximum use of support cost effectiveness studies and tradeoff analysis." (16:1-1)

The implementation of this concept was based on the contractor development of a Total Support Plan which contained the following support elements:

"a. Maintenance Planning and Analysis

b. Maintainability

c. Contractor Maintenance

d. Personnel and Training

e. Technical Support

f. Repair Parts and Supply

g. Tools and Test Equipment

h. Technical Manuals

i. Facilities " (16:1-3)

Included in the Total Support Plan was the requirement for a maintenance analysis similar to that required by the Air Force and the Navy. Each support element was broken down into tasks, and schedules were developed for each task and and sub-task. The Army first implemented this concept on 27 March 1964 for the development of the XM561 1 1/4 Cargo Truck.

The most significant aspect of the Early Support Concept Program was that it was developed by the Maintenance Advisory Committee of NSIA. It will be pointed out in the following paragraphs that NSIA was deeply involved in the establishment of DOD ILS policy. Similarities between the Early Support Concept Implementation Plan and later DOD policy documents were striking,

both from the standpoint of content and format.

DODD 4100.35

The brief history just presented indicates that even prior to the establishment of formal ILS policy, there existed within the DOD community an appreciation of the impact of logistic management on material readiness, there was a recognized need for improved maintainability and reliability, and there were techniques developed by all three Services for accomplishing maintenance analysis of new systems to identify logistics resource requirements. But a number of problems still existed. Although there were examples of development programs effectively addressing logistics support, there were apparently many more which were not. There was little agreement on which management and technical disciplines should be included under the umbrella of "logistics." Finally, no policy existed which defined organizational responsibilities. DODD 4100.35, "Development of Integrated Logistics Support for Systems and Equipment," was published on 19 June 1964 and specifically addressed these issues. From page one:

> "This Directive defines integrated logistic support, establishes Department of Defense policies and objectives governing the systematic and orderly development of integrated logistic support for systems and major items of equipment, and assigns responsibilities for carrying out the program." (9:1)

From page two:

> "The primary objective of this Directive is to assure that the development of effective logistic support for systems and equipments is systematically planned, acquired and managed as a whole (by interlocking the elements of logistic support) to obtain maximum material readiness and optimum cost effectiveness." (9:2)

DODD 4100.35 was a product of the DOD Equipment Maintenance and Readiness Council, an activity of the Assistant Secretary of Defense (Installations and Logistics). This directive was somewhat unique in

that it was initiated by the Director of Logistics, Joint Staff, JCS and was developed through the coordinated efforts of the three Services, the Joint Staff and the defense industry. The National Security Industrial Association provided significant assistance in its preparation. (18:App G:3)

Implementation of DODD 4100.35. In its first regular meeting after the publication of DODD 4100.35, the DOD Equipment Maintenance and Readiness Council expressed concern over the implementation of the new directive.

> "Whereas, the publication of DODD 4100.35 is a major milestone for the DOD . . . the full potential of the directive will not be realized until it is implemented properly by the Military Departments." (18:5)

The Council, therefore, formed a working group to identify problems associated with implementation. The working group reported back to the Council in August 1964 with a recommendation that an Ad Hoc Committee be established to study nine problems it had identified. The new committee was known as the DODD 4100.35 Ad Hoc Committee; its members were drawn from the Military Departments, the National Security Industrial Association (NSIA), and Logistics Management Institute (LMI); and its purpose was to develop a ". . . package of selected, integrated, management tools to assist logisticians and other personnel in the Department of Defense to participate actively and efficiently in the life cycle of systems and equipment projects." (18:6) The task assignments were as follows:

Task 1 - Develop examples of how to document logistic support requirements during the conceptual phase. (Army)

Task 2 - Develop examples of contractor programs and functional organizations which satisfy DODD 4100.35. (Army)

Task 3 - Develop methods of predicting support costs. (Navy)

Task 4 - Develop a management reporting system to track ILS on a contract. (Navy)

Task 5 - Develop meaningful quantitative measures of logistic support requirements suitable for inclusion in contracts. (Air Force)

Task 6 - Identify quantitative scientific management tools suitable for making cost effectiveness tradeoffs in the area of logistics. (Air Force)

Task 7 - Develop logistic management training objectives for logisticians tasked with accomplishing ILS. (Air Force)

Task 8 - Recommend changes to funding policy to enhance the integration of logistic support. (NSIA)

Task 9 - Develop methods for measuring the overall effectiveness of major weapon system support programs. (LMI) (18:App D)

The reports prepared by the various task teams and presented to the Equipment Maintenance and Readiness Council on 2 August 1965 indicated that primary emphasis was placed on determining what techniques existed at that time. Very few innovative approaches appeared in these reports and most concluded with a recommendation for future study.

The report of the team responsible for Task 2 was, to some extent, an exception. Included in their final report was "Implementation Guidance for DODD 4100.35: Model Contractor Program for Integrated Logistic Support." (19:49) This part of the report was a specific attempt to prescribe actions necessary to implement ILS. It was organized around the various phases of program evolution beginning with concept and ending with operation. Discrete tasks were described for each phase and for each element of ILS. In addition to the seven elements of DODD 4100.35 the team added maintainability, packaging and transportation, field services, installation and checkout, and technical support. This guide was developed by four members of the original Early Support Concept Subcommittee, Maintenance Advisory Committee, NSIA and the

guide was, therefore, very similar to the Early Support Concept Implementation Plan developed by that group in 1963 for the Army. The guide was also very similar to DOD 4100.35G, "Integrated Logistics Support Planning Guide for DOD Systems and Equipment" issued three years later in 1968.

REVIEW OF PROGRESS

On July 28, 1967, the Integrated Logistic Support Task Group of the DOD/CODSIA Advisory Committee for Management System Control published a report concerning the status of ILS implementation. It concluded that:

> "Integrated Logistic Support should be given the same emphasis as is given to major management programs applicable to the process of acquisition and support.
>
> The Integrated Logistic Support pproach as set forth in DODD 4100.35 provides a concept to so direct this attention. Although the DOD Directive was issued three years ago, it has not been effectively implemented." (17:6)

The Task Group pointed out deficiencies and made recommendations in three areas: the identification, definition and integration of the elements of logistics; the management policies which direct and control the implementation of ILS; and the assignment of organizational responsibilities for carrying out ILS. The following excerpts highlight the feelings of the Task Group in each area.

With regard to the identification, definition and integration of the elements of logistics:

> "Implicit in the concept of DODD 4100.35 and in the very existence of this DOD Directive is the need for the support disciplines to be identified as having basically common goals and a high degree of interaction. Those program requirements that are normally considered as part of ILS are categorized as such because of unique characteristics that they share. Just as some disciplines are considered as part of manufacturing, design engineering and management, the elements of ILS can be grouped; 4100.35 does this." (17:24)

"Experience has revealed that when planning for logistic support is considered as part of Systems Engineering . . a better job of logistic planning is accomplished. Nevertheless, even under this concept, the documentation shows that logistics planning remains fragmented within the Services in the traditional vertical disciplines such as maintenance, supply, spares provisioning, transportation, packaging, the 'ilities, etc." (17:17)

Recommend that DODD 4100.35 be rewritten and "that the rewrite ..... include a definition which will state more clearly what is included in the Integrated Logistic Support concept and strengthen those areas which are now excluded or included only by implication." (17:18)

With regard to the management policies which direct and control the implementation of ILS:

"ILS must be part of the RFP, the program package, the original conception; it must be a major consideration in the original estimate of cost, schedule and performance requirements as a part of the program approval decision." (17:15)

"The primary objective of ILS must be to support the systems needed by the forces to perform their mission effectively. The support of these systems should be completely integrated in terms of conception, funding decision, planning, authority and particularly responsibility." (17:15)

"Procedures for implementation should include "a mechanism to insure that logistics are included in the whole sense, rather than fragmented during the design phase at the earliest point in time. Logistics, including life cycle considerations must be established as a recognized discipline, using systems engineering techniques as applicable to insure cohesive effort in the operational and support aspects of systems or equipment." (17:19)

With regard to the assignment of responsibilities for carrying out ILS:

"The concept of System/Project Management as explained in DODD 5010.14 and subsequent service directives, clearly separates the logistic support problem from the rest of the procurement problem. The motivation of the System/Project Manager then is clearly to concentrate on those technical and business management areas which affect RDT&E and Acquisition, and secondarily, to make sure that somebody else is doing something about logistics." (17:17)

> "The relegation of logistics into a separate and subordinate position during RDT&E and Acquisition has, in many cases, minimized the role of the logistician to that of liaison, rather than a full time senior member of program management on the staff of the System/Project Manager." (17:18)
>
> Recommend "that DODD 5010.14 . . . be rewritten to give the System/Project Manager direct responsibility for the preparation of comprehensive logistics plans." (17:18)
>
> Recommend ". . . the specific inclusion of a senior logistician with broad experience as an assistant system/project manager on each designated program. The Assistant PM for Logistics to have, within the Program Office, the responsibility for the preparation of a total logistics plan during the conceptual and contract definition phases and for execution of the plan during the acquisition and operations phases." (17:19)

This report either influenced DOD policy or, at the very least, reflected current DOD thinking with regard to ILS, because within a year DOD 4100.35G was published which provided much clearer definition of the elements of logistics and how they should be integrated into the total system management process. Two years after that, DODD 4100.35 was revised to include definitions of the ILS elements consistent with DOD 4100.45G and to include the management of ILS as an integral part of the program management. Significantly, the revised DODD 4100.35 was published jointly by ASD (I&L) and DDR&E. Finally, in 1971, DODD 5000.1 "Acquisition of Major Defense Systems" superseded DODD 5010.14 and identified ILS as a major consideration and responsibility of program management.

AIR FORCE IMPLEMENTATION OF DOD POLICY

Simultaneous with the growth of ILS as a concept and policy in the early 1960s, the concept of systems engineering was evolving within the Air Force R&D community. The 1961 publication of the 375 series Air Force Regulations and the creation of Air Force Systems Command were milestones in this process. To many people in the Air Force, ILS was just another

aspect of the systems engineering process and to the extent that ILS meant establishing logistics requirements early in the system life cycle and performing tradeoffs between system effectiveness and life cycle cost, it was fair to say ILS was included in systems engineering. Since establishment of requirements and tradeoffs were certainly a most important aspect of ILS, it was quite logical that the Air Force would resist breaking out ILS as a separate discipline. This attitude was expressed in a paper by Colonel Edward Sperry for the Air War College.

> "One may well ask why AFR 375-12, "Integrated Logistic Support Program for Systems and Equipment" was published in 1970 when the basic DODD 4100.35 has existed since 1964. The answer is simply that the 1961 version of systems management policy encompassed the intent of ILS. Within the Air Force, systems engineering is considered the dominant of the two disciplines, i.e. ILS is essentially accomplished if a good job of systems engineering is done." (21:8)

It was pointed out earlier in this paper, though, that DOD policy makers also saw ILS as a method of integrating the management of a number of previously independent logistic functions (i.e. the elements of logistics). ILS not only included planning but also execution of the plan.

Subsequent to the DOD/CODSIA Report on ILS, the commanders of AFSC and AFLC issued AFSCC/AFLCR 400-10, 16 April 1969. This document delineated:

> ". . . command responsibilities for logistics functions to be accomplished in Air Force system programs and establishes a deputy system program director for logistics and an integrated logistics support division within the system program office (SPO) for systems destined to enter the operational inventory." (6:1)

Under this regulation, an AFLC logistician was appointed as the Deputy System Program Director for Logistics whose actual title in the SPO was to be Director, Integrated Logistic Support. This directorate had equal

status with other SPO directorates and was jointly manned by AFSC and AFLC. Although a number of responsibilities were identified for this organization, the first two are most significant:

> "(1) Serve as the focal point in the SPO for management of logistics support for the system from establishment of the SPO through the definition and acquisition phases.
>
> (2) Provide logistics technical guidance and assistance to the SPD and SPO in the areas of maintenance, supply, test equipment, transportation, packaging, materials handling, calibration and metrology, logistics facilities, data, and funding for logistics requirements." (6:2)

Serving as a "focal point" and providing "guidance and assistance" did not state ILS responsibilities in terms as strong as what may have been used by DOD policy makers. No place was there a statement such as "responsible to the SPD for management of all the elements of logistics throughout the entire acquisition cycle." The major portion of the regulation was taken up with an item by item description of tasks assigned to AFLC and AFSC for each element of logistics. Logically, one could assume that all of these tasks would be the responsibility of the newly created Director of Integrated Logistics Support since he headed a joint command office in the SPO, but the regulation contained no such instruction.

Another somewhat complicating fact was that no Air Force Regulation existed to translate DODD 4100.35 down to the level of the major commands. Air Force Regulation 375-12, "Integrated Logistics Support Program for Systems and Equipment" was not published until a year later in August 1970.

AFR 375-12 implemented DODD 4100.35 in the Air Force. It further defined the elements of logistics, spoke of the importance of ILS and of improved techniques, and followed through with the establishment of a Deputy System Program Director for Logistics, thereby supporting AFSCR/AFLCR 400-10.

What it did not do was better define the role and responsibilities of the Deputy SPD for Logistics. In fact the entire issue is mentioned only briefly in two short paragraphs:

> "The Deputy System Program Director for Logistics is the focal point for ILS implementation in the SPO. The DSP Director for Logistics is responsive to the System Program Director to relate the ILS Program to achievement of system program objectives.
>
> "Logistics budgeting, funding, and accounting are performed on a system and equipment basis, according to existing DOD and AF directives." (2:3)

The key action verbs in the DSP Director for Logistics charter were simply to be "responsive to the SPD and to relate" and further the key tool of an integrator (control of funds) was kept from his reach by stating that such policies remained unchanged by the establishment of integrated logistic support.

In July 1972, AFR 375-12 was superseded by AFR 800-8. This new directive changed the term Deputy System Program Director for Logistics to Deputy Program Manager for Logistics (DPML). But more importantly, for the first time in Air Force policy, an Integrated Logistics Support Plan (ILSP) was defined and required for all major programs. The ILSP was the detailed management plan, prepared by the DPML and approved by the PM, which spelled out tasks and schedules for each element of logistics for each phase of the program. In addition, an Integrated Support Plan (ISP) was defined which described the contractor's detailed approach to integrate logistics considerations and logistics planning into the engineering and design process.

AFR 800-8 strengthened the statement of responsibilities of the DPML. The Air Force charged the PM with the overall responsibility for accomplishing ILS (consistent with DOD policy) and established the DPML as the agent

of the PM for carrying out these duties. But the major emphasis was still on requirements determination and planning. No direction was given with regard to executing the plan.

One document did contain a clear cut statement of the responsibilities of the Director of Integrated Logistic Support. It was not normally considered an Air Force policy document but as a product of the Joint Logistics Commanders it was published within the Air Force as AFSCM/AFLCM 400-4, "Standard Integrated Support Management System (SISMS)." Its primary purpose was to establish common logistics procedures for use on joint service projects. In Part II, the responsibilities of the Logistics Manager in a joint program are described:

> "Be responsible to the S/PM for the development of quantitative and qualitative logistics support requirements.
>
> "Be responsible to the S/PM for the management of the total ILS Program and ensure the timely, economical and effective procurement and positioning of total support resources required to meet the operational requirements of all using services."

This joint manual is currently being rewritten. Parts of the document have been reissued, however, the new Part II is not yet available.

ILS POLICY WITHIN AFLC

When AFSCR/AFLCR 400-10 was first issued, it stated that the Deputy Program Manager for Logistics would be a senior logistician selected by the system management Air Logistics Center. The designation of the system management ALC was made as soon as Air Force designated a major program for management under the 375 series regulations. Implied, was the policy that the DPML would collocate with the SPO until sometime into the production phase at which point he would return to the ALC as the System Manager. The DPML became the ALC "man in the SPO." Although the SPD may have looked upon

him as a "director", the ALC's tended to see him as a liaison. Support for this contention can be found in a study done by Mr. Robert Price and Mr. Gene Deal for the Air Force Institute of Technology. In this study, the authors surveyed numerous people who worked with or supported DPML's. Data was collected from individuals working in the ALC's, the SPO's, Headquarters AFLC, and Headquarters AFSC. The purpose of the study was to determine if people working in various organizations had significantly different perceptions of the role of the DPML. The researchers posed the question "should the ILS office function primarily in a logistics liaison role?" DPML's and SPD's said "no." "It was obvious from the response that the DPML's felt they should not be there simply as a mail drop or parts expeditor." (20:38) The study also inferred "that the PM looks to the DPML for logistics inputs not to the AMA (ALC)." (20:39) Other deputies to the PM and personnel assigned to AFLC Headquarters were split: some feeling liaison was a proper role, others disagreeing. But branch level personnel assigned to the System Manager's Division at the ALC's ". . . strongly agree that the ILS office should be a liaison office. In addition, the AMA (ALC) engineering personnel agreed. This is one of the widest differences in perception found during the research effort." (20:39)

This difference of opinion over the role of the DPML led to complications in communications within AFLC and left many DPMLs unsure of their real responsibilities and reporting channels. In 1973, the AFLC Commander established a working group to look into these problems and to make recommendations for changes to the roles and reporting channels for the DPML within AFLC. The major recommendation of the group was that a separate agency should be established within AFLC Headquarters to assume responsibility for the management of ILS matters during the conceptual, validation and

full scale development phases of major programs. The DPML, under this concept, would report directly to the new agency and not through the chain of command at the ALC's. When the system entered the production phase, the DPML would assume his responsibilities as system manager and would then report to the ALC. This concept was adopted by AFLC and implemented in April 1974 with the creation of the Deputy Chief of Staff for Acquisition Logistics.

This new organization actively pursued the development of new techniques especially in the areas of life cycle cost and contractor incentives. But aside from shortening the reporting channels, there was no formal policy forthcoming which would supplement, refine, or improve the definition of DPML responsibilities. In an article for the Air University Review, Major General Charles Buckingham, then DCS Acquisition Logistics, stated:

> "In short, my main job . . . is to see that appropriate actions are taken during the acquisition process that will reduce the cost of ownership without degrading support." (7:35)

This was certainly a well-stated overall objective and one consistent with DOD policy but in the remainder of the article, one gets the feeling that his primary interest was in systems engineering and requirements analysis. As in the rest of Air Force policy, the second half of the problem, overall management of the elements of logistics, went unmentioned.

SUMMARY OF ILS HISTORY

The concept of ILS was formulated by the Services and industry during the late 1950s and early 1960s. Formal DOD policy was first issued as DODD 4100.35 in 1964. The Services were directed to manage the previously independent elements of logistics as an integrated whole and to make logistics a primary consideration from the conceptual phase through the operations phase. Systems Engineering was developed as a discipline during

this same period of time and the prevailing attitude in the Air Force was that ILS was a part of Systems Engineering. As a result, no formal Air Force policy was published until 1970. Even then, the primary emphasis was on Systems Engineering. The responsibility for overall management integration of the elements of logistics was not clearly identified. Recent reorganizations within AFLC, although shortening communications channels and emphasixing new techniques, had done little to resolve this problem.

CHAPTER III

THE HYPOTHETICAL ROLE OF THE DEPUTY PROGRAM MANAGER FOR LOGISTICS

INTEGRATOR VS LIAISON

Prior to the establishment of ILS policy in the Air Force, AFLC provided a liaison officer to AFSC for each major program. The liaison officer worked in the SPO with the primary job of expediting communication and coordination between the SPO and the functional agencies of AFLC. Air Training Command and the various using commands also provided this sort of support to AFSC. But after the creation of ILS, the role of the AFLC liaison changed. He was no longer just the AFLC agent for matters affecting the command, he was the integrator responsible to the program manager for all logistics matters. Logistics matters were defined as ". . . a composite of all support considerations necessary to assure the effective and economical support of a system for its life cycle." (10:2) Logistics matters included training and training equipment, an area that the AFLC liaison had previously left to his counterpart from ATC. Logistics matters also included organizational maintenance planning and operational base facilities, areas previously left to the using command liaison. As DPML, the senior logistician was delegated authority from both the PM and AFLC. As a liaison, his authority had been delegated almost exclusively from AFLC.

Integrated Logistics Support, as the name implies, was founded on the principle that the management of the elements of logistics must be integrated. Integration requires an integrator. Air Force ILS policy implies, although it does not clearly state, that the DPML is that integrator.

The remainder of this chapter looks at various tasks associated with ILS and determines what the role of the DPML should be with respect to each task. In each case the central issue was to determine if the role of the DPML should be integrator or liaison.

TASK 1 - RELIABILITY AND MAINTAINABILITY MANAGEMENT AND SYSTEMS ENGINEERING

Systems engineering is the process by which military requirements are translated into hardware concepts. The military may need a lightweight, low cost, highly maneuverable, medium range, air superiority fighter aircraft. But from that description, the structures design group does not design a wing. Systems engineering must first translate the mission requirement into performance requirements - how light, what cost, how maneuverable, what range. The process involves tradeoffs since too much range may mean too much cost and too much weight may reduce maneuverability. The process is iterative and indentured. Once the overall system performance parameters are bracketed, then the baseline must be allocated to the subsystems. The end result is a set of "design-to" requirements which support the initiation of detailed design efforts.

In 1964, DODD 4100.35 established the policy that logistics support must be considered in the conceptual phase of all programs. To the system engineer this meant that in addition to how fast and how far the fighter would fly, he must now also be concerned whether it was supportable and how much the support would cost. The primary performance parameters associated with the supportability requirement were reliability and maintainability and the basic analytical tool for making these new tradeoffs was the life cycle cost model.

DODD 4100.35 did more than just complicate the analysis of the systems engineer, though. The new directive implied that a new agency should be established to manage ILS. The real dilemna was whether consideration of logistic support in the conceptual phase of a program was Systems Engineering or Integrated Logistic Support. The Air Force R&D community believed it was systems engineering and, therefore, resisted attempts to establish a separate agency. It made no sense at all to have the process dissected, with one group analyzing system capability and the other analyzing system availability.

The argument is as valid now as it was then. Systems engineering by its very nature requires an integrated look at the entire system. What then is the role of the DPML with respect to establishing overall system requirements and allocating these down to "design-to" requirements? Is he integrator or liaison?

He is a liaison and his responsibilities logically include the following:

a. Using the resources of AFLC, provides to the systems engineer data and models to help analyze the relationships between reliability, maintainability,and support costs.

b. Assists the systems engineer with support cost trade studies.

c. Recommends quantitative and qualitative reliability and maintainability requirements for inclusion in the RFP.

d. On behalf of AFLC, coordinates the draft RFP.

e. Assists in source selection.

f. Assists in design reviews.

g. Represents AFLC on the Configuration Control Board.

For this task, systems engineering of the mission equipment, the systems engineer is the integrator and the DPML is an AFLC liaison.

TASK 2 - LOGISTIC ELEMENT REQUIREMENTS ANALYSIS

A well worn cliche exists in the ILS business - "design for support and support the design." The first part of the phrase refers to the systems engineering effort described in the preceding paragraph. The second part of the phrase refers to the process of reviewing system, subsystem and component schematics and detail drawings to determine what support resources will be required in the operational environment. The former drives the design whereas the latter responds to the design.

Logistic requirements determination is based on the use of maintenance engineering analysis (MEA), or logistic support analysis (LSA). It is accomplished by the contractor for the primary purpose of identifying failure modes and inspection requirements, prescribing maintenance actions, and listing resources (spare parts, tools, test equipment, personnel and facilities) required to accomplish the maintenance action. This disciplined review of maintenance requirements often uncovers aspects of the mission hardware design which adversely impact logistics. When this happens, the contractor logistics engineer and design engineer attempt to find a mutually acceptable solution to the problem.

The role of the DPML with regard to this task is complicated by the fact that it is not specifically addressed in most policy documents. One could argue that, since this task is performed partially to determine the suitability of the evolving design, it should be a part of the systems engineering function. But the primary purpose of this task is to establish requirements for logistics resources and it is, therefore, the first step in the acquisition of the elements of logistics. The overall management of the

acquisition of all elements of logistic support should most definitely be a responsibility of the DPML. As was shown in chapter 2, the failure of the Services to establish this type of management structure caused DOD on several occasions to consider implementation of ILS unsatisfactory.

With regard to the determination of logistic resource requirements, the DPML should be an integrator, not a liaison. His responsibilities should include the following:

a. Responsible for preparation and coordination of a government plan for Logistic Support Analysis (LSA).

b. Based on the approved LSA plan, prepares and coordinates LSA requirements for full scale development RFP.

c. Prepares and coordinates government maintenance concept.

d. Conducts periodic system and sub-system maintenance reviews during full scale development to insure satisfactory LSA progress.

e. Reviews and approves baseline requirements for logistic resources.

f. Monitors contractor cost and schedule progress for LSA during FSD.

g. Reports status to the program manager.

TASK 3 - ACQUISITION OF THE LOGISTIC ELEMENTS

Like other elements of the weapon system, most of the logistic elements must go through a well established acquisition cycle involving requirements determination, design, development, test, and production. The issue of requirements determination and the role of the DPML in that process were just discussed. Attention is now turned to the process of designing, developing, testing, and producing the various pieces of hardware and data which make up the logistic system.

In chapter 2, it was pointed out that management processes have existed for more than 20 years for the acquisition of the various logisti elements. Three of the most significant of these elements are support equipment, technical orders, and training. One of the primary purposes of 4100.35 was to integrate the management of these elements.

For a complex weapon system, this is a very difficult management problem. Changes to baseline requirements must be controlled. As the requirements baseline expands during FSD, the development and test of newly identified items of support hardware must be added to the contract (development and test of support hardware and data are usually left unpriced during negotiation of FSD contracts. This effort is added piece-meal to the contract through the use of a provisioning item order.) Test plans must be developed and integrated to demonstrate both the technical adequacy of individual items of hardware and the effectiveness of the overall support system. Contingencies for interim contractor maintenance must be planned and coordinated.

There is no shortage of complex management problems in this area. The DPML should be delegated the responsibility by the program manager for the overall management integration of the acquisition of logistics resources. Not only would that be consistent with DOD policy, but it would be hard to imagine who else besides the DPML would have the capability to achieve this management task. For this task the DPML should be an integrator not a liaison and his responsibilities should include:

a. Developing and maintaining cost estimates for development and testing of logistics resources.

b. Establishing schedule requirements.

c. Selecting and tailoring standard management systems for logistics resource acquisition.

d. Developing, coordinating and obtaining PM approval of the Integrated Logistic Support Plan for each phase of the contract.

e. Developing and coordinating ILS requirements for the full scale development RFP.

f. Establishing and maintaining control over the logistics requirements baseline.

g. Approval of all provisioning item orders and maintenance of a cost track.

h. Development and approval of logistic test plans.

TASK 4 - INITIAL DEPLOYMENT OF SUPPORT ELEMENTS

Once the planning, development and testing of the individual items of support hardware is complete and prodcution has been contracted, the ILS manager must turn his attention to initial deployment. This is the first time the results of integrated management can truly be evaluated. Even if 80% of the support items arrive on schedule and function properly, the lack of 20% may cause the overall support system performance to be unsatisfactory. The requirement for an integrator for this task seems obvious.

Even though the responsibilities of the using and supporting commands increase during this period, the responsibility for the management of the weapon system program (including logistic deployment) remains with the AFSC program manager until Program Management Responsibility Transfer (PMRT). If the program manager is to delegate this responsibility, it would seem logical to delegate it to the DPML. With regard to this task, the DPML is definitely an integrator, not a liaison. His responsibilities should include:

a. Development and coordination of a site activation plan.

b. Chairmanship of a site activation team.

c. Continuous review of support item production and delivery schedules including facilities.

d. Maintenance of a site activation status information system.

e. Exercising of contractor maintenance contingencies to remedy production slips and technical failures.

f. Management of all "on-site" maintenance contracts.

g. Monitoring training program status.

h. Providing cost, schedule and performance status to the program manager.

SUMMARY.

The tasks described above represent a synthesis of logistics responsibilities. ILS documentation does not specifically prescribe them; however, the sub-elements of each task are described in various DOD and Air Force policy documents (DOD 4100.35; AFSCP 800-21, AFSCM/AFLCM 400-10.) It will be assumed in the remainder of this paper that successful accomplishment of ILS requires successful accomplishment of each of these four tasks.

DOD and Air Force policy places the responsibility for the implementation of ILS on the program manager. At issue is how the PM delegates this responsibility and how much is actually delegated to the DPML.

Based on the history of ILS and the logical role of the DPML, it is suggested that the PM delegate responsibility for Task 1 to the systems engineer and for Tasks 2, 3 and 4 to the DPML.

Because of the separation of AFLC and AFSC and because of the historical role of the DPML as a liaison, there is a question as to whether this delegation of responsibility to the DPML actually takes place.

The next chapter looks at the formally delegated roles of the F-15, A-10, and F-16 DPML's in an attempt to shed light on this issue.

CHAPTER IV

RESPONSIBILITIES OF THE DPML ON THREE CURRENT AIR FORCE PROGRAMS

GENERAL

This chapter is devoted to a brief examination of the responsibilities that have been delegated to the DPML's of three current aircraft programs. In each case, responsibilities are evaluated in terms of the four tasks described in chapter 3.

Formal written delegation of organizational responsibilities within the Aeronautical Systems Division (ASD) at Wright-Patterson AFB, is documented in ASDR 23-1. For each program, information contained in this regulation was used to assess, for each ILS task, whether the role of the DPML was either integrator or liaison. Subsequent to this analysis, each of the three ILS offices was contacted to determine if their appraisal of the role of the DPML corresponded to the appraisal derived from ASDR 23-1.

F-15

The F-15 Program is currently in the production phase. One squadron of aircraft have already been delivered to the first operational base.

There has been an ILS office in the F-15 SPO since its inception. In fact, the F-15 was one of the very first programs to implement AFSCR/AFLCR 400-10 which created the position of DPML. For this reason, the job of changing the image of the ILS office from that of AFLC liaison (the traditional role) to SPO Director fell heavily on the F-15 program.

Task 1 had to do with reliability and maintainability in the systems engineering process. Based on Air Force policy and the logic of the task,

it was suggested in chapter 3 that the systems engineer should have overall responsibility and the DPML should be a liaison. ASDR 23-1 seemed to support that contention based on the responsibilities assigned to the DPML. This was reinforced by the fact that overall responsibility for reliability and maintainability was assigned to the chief systems engineer. (1:15-21) Discussions with Mr. K. White of the F-15 ILS Office further confirmed this finding. Although Mr. White hesitated to use the term liaison (it seemed to carry a negative connotation for him) he agreed that primary responsibility for Task 1 rests with the systems engineer. (22)

Task 2 was the process of defining logistic element requirements. It was characterized by the use of maintenance engineering analysis (MEA) or logistics support analysis (LSA). ASDR 23-1 was silent on this matter; the task was not assigned to either the systems engineer or the DPML. Mr. White stated, however, that the ILS Office had been the driving force behind this type of analysis and was looked to by the Program Manager for integration of this activity. This supported the contention in chapter 3.

Task 3 involved overall management of the acquisition of logistic elements. ASDR 23-1 stated that technical order acquisition would be managed by the F-15 Director of Configuration Management. (1:18-7) Support equipment and training equipment management were the responsibility of the F-15 Director of Projects. (1:18-2) Mr. White indicated that this was a correct interpretation of the assignment of responsibilities. He also stated that the Crew and AGE Division of the Directorate for Systems Engineering was actively involved in the management of support equipment and training equipment. Common support equipment, Mr. White stated, was the responsibility of the F-15 ILS Office.

No single agency within the F-15 Program Office was charged with the integrated management of the acquisition of logistics resources. Further, it appeared that the role of the DPML was that of liaison.

Task 4 was the management of the initial deployment of support elements. ASDR 23-1 assigned the responsibility to formulate and implement ". . . plans for the safe deployment and installation and checkout of systems on test and operational sites", to the F-15 Director of Test and Deployment. (1:18-3) The F-15 Director of Projects was assigned the responsibility for "... activation/deployment of the weapon system into the operational forces." (1:18-2) ASDR 23-1 did not specifically mention the responsibility for managing the deployment of just the support elements; however, Mr. White indicated that support elements were managed as part of the total weapon system. He also pointed out some changes that did not appear in ASDR 23-1. A Site Activation Task Force had been established to provide overall guidance for early deployment. The DPML was a member of this task force. He also stated that a new directorate had been established for Deployment and Operations. This agency provided intensive management on behalf of the program manager, in the area of site activation.

Within the F-15 Program Office, the DPML does not have overall management responsibility for the deployment of support elements. Again, his role seemed to be that of liaison.

A-10

The A-10 Program will soon enter the production phase. During the validation phase, the A-10 Program (then known as the AX) was competitively prototyped. Like the F-15, the A-10 has had a Directorate of Integrated

Logistics Support since its inception.

Task 1, reliability and maintainability management has been assigned to systems engineering in the A-10 SPO. ASDR 23-1 described this delegation of responsibility which was also confirmed by Mr. L. Laverdure of the A-10 ILS Office (15) Mr. Laverdure remarked that despite discussions in the past that reliability and maintainability management should be a responsibility of the DPML, the actual work was done in systems engineering.

Task 2, management of logistics requirements analysis, was the responsibility of the ILS Office. Although ASDR 23-1 was silent on this point, Mr. Laverdure confirmed that management of maintenance engineering analysis had always been the responsibility of the A-10 DPML.

Task 3, management of the acquisition of logistic elements was somewhat different for the A-10 than it was for the F-15. The A-10 ILS Office was originally structured in a similar fashion to the F-15. But several years ago, the A-10 recognized the need for integrated management and the Program Manager delegated responsibility for support equipment and training equipment management to the DPML. The A-10 Director of Configuration Management continued, however, to be responsible for the acquisition of technical orders. (1:17-2)

Task 4, initial deployment, was not delegated to the DPML. According to ASDR 23-1, the A-10 Director for Projects had overall responsibility for deployment and site activation. (1:17-7) Mr. Laverdure confirmed this arrangement.

F-16

The F-16 Program has been in full scale development for less than one year. Like the A-10, the F-16 was competitively prototyped during the validation phase. The F-16 is the newest major program at ASD to enter

full scale development.

Task 1 in the F-16 Program was the responsibility of systems engineering. The DPML provided significant assistance and input, but did not have overall management responsibility for reliability and maintainability. His role was liaison.

Task 2 was the responsibility of the DPML. The F-16 implemented the relatively new analysis procedure entitled Logistics Support Analysis (LSA). The DPML was the primary integrator for this activity.

Task 3 was delegated to the DPML and recorded in ASDR 23-1. The Directorate of Integrated Logistics Support:

> "Serves as the OPR in the SPO for acquisition management of all logistics support resources for the system. Responsibilities include: overall management of training requirements for maintenance and support personnel; AGE development and acquisition; parts standardization and control; and development of technical training and support manuals." (1:21-3)

LT COL Koppen, the F-16 DPML confirmed this arrangement. (14) He had specifically requested this responsibility from the Program Manager prior to the beginning of full scale development.

Task 4 responsibilities had not yet been established for the F-16. According to ASDR 23-1, management of deployment of operational sites was the responsibility of the Director of Development Test and Evaluation. According to LT COL Koppen, however, there had been no firm decision. Deployment of logistic resources may yet be assigned to the DPML.

SUMMARY OF RESPONSIBILITIES

In each of the three programs examined, the responsibility for management of reliability and maintainability (Task 1) had been delegated to the systems engineering function. The role of the DPML was one of liaison,

providing advice and assistance from AFLC. This was consistent with Air Force and ASD policy guidance.

Each program ILS Office had been delegated the responsibility for management of logistic resource requirements determination (Task 2). Although ASDR 23-1 was silent on this issue, there seemed to be no questions that the role of the DPML with regard to this task was one of integrator.

The three programs varied significantly concerning management of the acquisition of logistic resources (Task 3). In the F-15 Program, the oldest, the role of the DPML seemed to be primarily that of liaison. No single agency had been assigned the role of integrator. In the A-10 Program, the DPML was responsible for training and support equipment but not technical orders. In the F-16 Program, there seemed to be no question that the role of the DPML was integrator, not liaison.

Responsibility for the management of the deployment of logistic resources was handled differently in the F-15 and A-10 programs (Task 4). In the F-15, overall responsibility was shared by the Site Activation Team and a new Directorate of Deployment and Operations. The role of the DPML seemed to be primarily that of AFLC liaison. In the A-10, the Director of Projects was assigned overall responsibility. The role of the DPML appeared to be integrator of the logistics sub-tasks, responsible to Projects. Responsibility had not yet been clearly defined in the F-16 SPO.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

The ILS concept evolved during the late 1950's and early 1960's. Government and industry managers were concerned about the increasing demand for resources created by sophisticated military hardware. Two primary objectives were identified: (1) reduce the requirement for logistic resources through the systematic consideration of logistic support during the conceptual and early design phases of new programs, and (2) maximize the efficiency of the logistic support system through integrated management of the acquisition of the various elements of logistics.

DODD 4100.35 was published in 1964 and formalized the ILS concept. Although the Services were tasked with implementing the entire ILS concept, major emphasis was placed on the first objective and very little on the second.

Within the Air Force there was confusion created by the fact that the systematic consideration of logistics during design seemed to logically be a part of the systems engineering process. Because of this, no attempt was made to create a separate ILS agency within the SPO until 1968.

Another confounding factor within the Air Force was that the position of DPML was created from what had previously been the position of AFLC liaison. As a result, in many peoples minds, the DPML continued to be a liaison. The creation of Deputy Chief of Staff for Acquisition Logistics within AFLC failed to resolve this problem because the DPML now reported directly to the new DCS which made him appear even more as a liaison.

Based on the history of ILS and on DOD and Air Force policy documents, four tasks were discussed in chapter 3. These tasks cover the wide range of activities generally included within the ILS concept. Task 1 was related to the first ILS objective, influencing design. Tasks 2, 3 and 4 were related to the second ILS objective, integrated management of the acquisition of the logistics elements. It was suggested that Task 1 was rightfully a part of the systems engineering process and that the proper role of the DPML was AFLC liaison.

Tasks 2, 3 and 4 should be the responsibility of the DPML, however; for these tasks, the DPML would be delegated responsibility and authority from the program manager not from AFLC.

An examination of the role of the DPML in three current Air Force programs supported the hypothesis that Task 1 was the responsibility of systems engineering and that the role of the DPML was liaison. In each program, the role of DPML was that of integrator for Task 2. This was also consistent with the hypothesis of chapter 3.

The results were mixed on tasks 3 and 4. The F-15 DPML was not the integrator for these tasks nor, for that matter, was anyone else within the F-15 SPO. The A-10 DPML had been delegated certain key integrator responsibilities but in other cases, notably technical orders, he was not the integrator. The F-16 DPML was the only one of the three that seemed to have been totally delegated the responsibility to act as integrator.

CONCLUSIONS

This paper was prepared to answer three questions. The first question

was, "What are the major tasks that must be accomplished in a program office if the ILS concept is to be fully implemented and what should the role of the DPML be with regard to each of these tasks?"

An historical review of ILS policy both in DOD and Air Force revealed four fundamental tasks and suggested the role of the DPML for each:

Task 1 - Reliability and maintainability management and systems engineering. Hypothetical role of DPML: liaison.

Task 2 - Logistic element requirements analysis. Hypothetical role of the DPML: integrator.

Task 3 - Acquisition of the logistic elements. Hypothetical role of DPML: integrator.

Task 4 - Initial deployment of support elements. Hypothetical role of DPML: integrator.

Question two was "what is the role of the DPML on three current major Air Force programs?"

A review of ASDR 23-1 and telephone interviews with F-15, A-10 and F-16 ILS personnel revealed that the role of each DPML with regard to the four tasks was:

Task 1 - F-15, liaison; A-10, liaison; F-16, liaison.

Task 2 - F-15, integrator; A-10, integrator; F-16, integrator.

Task 3 - F-15, liaison; A-10, partial integrator; F-16, integrator.

Task 4 - F-15, liaison; A-10, partial integrator; F-16, undefined.

The actual roles for Tasks 3 and 4 do not match the roles hypothesized in the answer to question one.

Question three asked "Could the role of the DPML be better defined, thereby increasing the probability of successful implementation of ILS, if Air Force policy documents were rewritten?"

The answer to this question is "yes." AFR 800-8 and AFSCR/AFLCR 400-10 did not clearly state the objectives of ILS nor did they adequately define the role of the DPML. No AFLC policy existed which clearly defined the role of the DPML with respect to other AFLC agencies, particularly in the area of logistic element acquisition. Had adequate policy existed, the inconsistencies found in the apparent roles of the F-15, A-10, and F-16 DPML's might have been eliminated.

Two additional conclusions were drawn. The first was that historically, the ILS concept involved two basic objectives: (a) increased supportability of weapons through early consideration of logistics in design, and (b) more efficient logistic support through integrated management of the logistics element during acquisition. Only the first objective had been adequately addressed in Air Force policy.

The second was that based on the review of three programs, it appeared that only recently have DPML's begun to ask for and receive authority and responsibility to integrate the acquisition of logistic elements.

RECOMMENDATIONS

1. AFR 800-8 should be rewritten. It should clearly state the two primary objectives of ILS discussed in this paper and it should delineate the role of the DPML with respect to each ILS task. Since many people view the DPML as an AFLC liaison only, the regulation should be written to dispel that notion.

2. AFSCR/AFLCR 400-10 should be rewritten. Nineteen of its twenty-two pages are currently devoted to describing the separate logistics tasks of AFSC and AFLC. Rather than encouraging ILS, the document tends to further

the view of the DPML as a liaison responsible only for the AFLC tasks. A revised regulation should concentrate on the specific tasks to be assigned to the DPML and on his relationship to the program manager. Significant emphasis should be placed on defining tasks that will insure the integrated management of the acquisition of the elements of logistics. The revised joint regulation should be deleted from the 400 series and issued in the 800 series regulations.

3. AFLC must reevaluate the role of the DCS Acquisition Logistics with regard to the integrated management of the acquisition of logistic element. Present policy emphasized the role of the DPML as the agent of the DCS Acquisition Logistics with the primary objective of influencing the design of new weapons. This policy must be supplemented to emphasize the role of the DPML as integrator of logistics acquisition. Such a reevaluation will result in heated debate over the role of the DCS Material Management versus the role of the DCS Acquisition Logistics with respect to provisioning implementation, funding for spares and repair parts, support equipment review and acquisition, and technical order acquisition. Nevertheless, new policy is essential if the DPML is to truly act as an integrator.

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DEFENSE SYSTEMS MANAGEMENT SCHOOL

STUDY TITLE: AN HISTORICAL REVIEW OF THE INTEGRATED LOGISTIC SUPPORT CHARTER

STUDY PROJECT GOALS:

To conduct a review of ILS history within DOD and the Air Force and determine if selected major Air Force programs have actually implemented the essential elements of the ILS concept.

To determine if there exists a need for improved Air Force policy guidance.

STUDY REPORT ABSTRACT

The study examined the history of Integrated Logistic Support within DOD and the Air Force with particular attention given to the role of the Deputy Program Manager for Logistics (DPML). Four tasks were described which must be accomplished to achieve the two basic objectives of ILS: (1) increased supportability of weapons through early consideration of logistics in design; and (2) more efficient logistics support through integrated management of the logistics elements during acquisition. It was determined that the tasks associated with the first objective were the responsibility of systems engineering whereas the tasks associated with the second objective were the responsibility of the DPML.

Investigation of three current Air Force programs (F-15, A-10, and F-16) supported the contention that the first objective was the responsibility of systems engineering but did not support the contention that the DPML was responsible for integrated management of logistic resource acquisition.

It was concluded that Air Force policy concerning the objectives of ILS and the role and responsibilities of the DPML was inadequate and that AFR 800-8 and AFSCR/AFLCR 400-10 should be rewritten. It was also recommended that the role of the AFLC DCS/Acquisition Logistics be reevaluated with regard to the second objective of ILS.

KEY WORDS

MATERIEL ACQUISITON INTEGRATED LOGISTICS SUPPORT LIFE CYCLE MANAGEMENT MAINTAINABILITY

SUPPORT PLANNING

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