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AN ANALYSIS OF THE RESIDENT INTEGRATED LOGISTICS SUPPORT AGENCY CONCEPT

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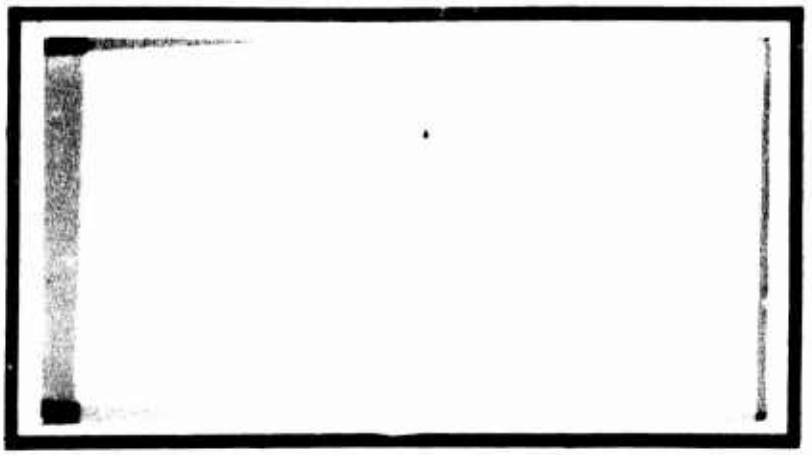
Air Force Institute of Technology
Wright-Patterson Air Force Base, Ohio

September 1975



UNITED STATES AIR FORCE

AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

AN ANALYSIS OF THE RESIDENT INTEGRATED LOGISTICS SUPPORT AGENCY CONCEPT

THESIS

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GSM/SM/75S-2

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A recent innovation in the weapon system acquisition process is the utilization of a Resident Integrated Logistics Support Agency (RILSA). To provide information to future logistics managers, this thesis analyzes current regulations, use of the RILSA on contemporary acquisition programs, and the results of interviews concerning the perceived usefulness of the RILSA.

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AN ANALYSIS OF THE RESIDENT INTEGRATED LOGISTICS SUPPORT AGENCY CONCEPT

THESIS

Presented to the Faculty of the School of Engineering

of the Air Force Institute of Technology

Air University

in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

by

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Graduate Systems Management

September 1975

Preface

The management of a weapon system acquisition program is a complex undertaking requiring an understanding of program objectives and management approaches available to achieve those objectives. One particular objective is the optimization of the life cycle cost and availability of the weapon system. This objective is pursued through implementation of Integrated Logistics Support (ILS) policy. An organizational approach that has been used to aid in implementing ILS policy is the Resident Integrated Logistics Support Agency (RILSA).

The objective of this thesis is to examine and analyze the use of a RILSA as an organizational approach to implementing ILS. Our intent is to provide managers information that will be useful when establishing their management approach to ILS on future acquisition programs. Where practical, terms are defined in the body of the thesis. Other terms are defined in the glossary included as Appendix A.

The idea of studying the RILSA evolved from discussions with the F-16 Deputy Program Manager for Logistics, who was considering the establishment of a RILSA when this research began.

We are indebted to the numerous individuals who generously gave of their time to answer our questions and provide their opinions. Their unfailing patience and cooperation are deeply appreciated. A particular acknowledgement is due to Major Edward J. Dunne, our advisor, for both his questions and his answers. His guidance was instrumental in the completion of this thesis.

We greatly appreciate the understanding and assistance given by our families during this study. Both Joan Hodges and Betty Rohrer

contributed by reading and commenting on our efforts and, more importantly, by accepting with good humor the disruption to our family lives.

We also extend our sincerest thanks to Mrs. Anna L. Lloyd for her diligent efforts in typing this final copy.

Ralph H. Rohrer, Jr.

Roy L. Hodges

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Abstract

The objective of this research is to examine and analyze the use of the Resident Integrated Logistics Support Agency (RILSA) as an organizational approach to assist in providing integrated logistics support to a new weapon system. The purpose of this study is to provide information to managers of future acquisition programs who are considering the use of a RILSA.

The official publications affecting the establishment and use of a RILSA were studied. The most definitive guidance is provided by the Standard Integrated Support Management System publication, primarily AFLCM/AFSCM 400-4. The establishment of a RILSA is a decision of the Program Manager.

The use of the RILSA on contemporary weapon acquisition programs was analyzed through documentation search and interviews with individuals associated with the B-1, AWACS, A-10, F-15 and F-16 programs. The RILSAs were found to be established in the full scale development phase to perform a variety of duties. Varying degrees of emphasis were placed on these duties by different programs. The number and skills of personnel were also found to differ between programs.

The judgements and perceptions of a wide range of personnel were collected through interviews and analyzed to establish a comprehensive view of the RILSA. It was the unanimous opinion of these individuals that a RILSA should be used on major weapon system acquisition programs. The RILSA was seen to play an important role in implementing Integrated Logistics Support policies through such activities as evaluation of weapon system design; analyses and planning of logistics support requirements; acting as an information interchange; and preprovisioning/

provisioning tasks. The primary problems envisioned in the use of a RILSA were in manning, authority relationships, and contractual provisions.

It was concluded that the RILSA should be used on major weapon system acquisition programs and recommended that early attention be given to contractual requirements, personnel selection, and formalized agreements.

AN ANALYSIS OF THE RESIDENT INTEGRATED LOGISTICS SUPPORT AGENCY CONCEPT

I. Introduction

Statement of the Problem

Each weapon system acquisition program undertaken by the United States Air Force requires a unique management effort. Differences in the type of weapon system, contractors involved, resources committed to the program and numerous other factors insure that no single management approach will be correct for all programs.

In recognition of this uniqueness, the Department of Defense (DoD) vests the responsibility and authority for conducting each weapon system acquisition program in a single individual, the Program Manager (PM).. It is his responsibility to devise the management approach necessary to accomplish program objectives. While it is true that no one management approach can be transferred totally from one program to another, there are often elements that find applicability in different programs.

One such element is found in the area of Integrated Logistics Support (ILS). This organizational element is the Resident Integrated Logistics Support Agency (RILSA). The decision as to whether to allocate a portion of program resources to establish a RILSA is made by the PM, advised by the Deputy Program Manager for Logistics (DPML). While either may have personal experience regarding the use of a RILSA, the experiences of previous programs and the knowledge of other informed individuals are also valuable sources of information. To make this information useful to the PM and DPML, it must be documented and readily available.

The specific problem addressed by this thesis is that no research has been conducted on the historical foundations and past operations of existing RILSAs, nor has any systematic effort been made to determine and document the perceptions and experiences of knowledgeable logistics personnel concerning the establishment and utilization of a RILSA. The PM and DPML are thus faced with making an organizational decision of potentially great impact on the program with little readily available pertinent information.

Background of the Problem

The process by which the Air Force organizes to develop and acquire a major weapon system is constantly evolving. The acquisition of each new weapon system is controlled by a System Program Office (SPO), an organization designed to be the management focal point for all Air Force and other Government agencies involved in the acquisition program. Each SPO organization is tailored to the needs of its program. These needs are determined by the PM based on the particular combination of such factors as the priority and complexity of the weapon system, the contractor involved, and available resources. This process encourages innovation and frequently new concepts are advanced with possible application in other programs.

An organizational approach which encourages innovation can offer great potential benefits, but can also exhaust or misdirect resources to the detriment of the program. To determine and assess both potential benefits and liabilities, acquisition managers must carefully consider all factors regarding available managerial or organizational approaches.

Both present and future costs are factors which must constantly be considered during all phases of the weapon system acquisition cycle. In the present environment of steadily increasing system costs and decreasing resources, the total ownership cost of each weapon system is a matter of vital concern. The Program Manager must carefully weigh ownership cost as a major element in all decisions regarding the acquisition program. Logistics support costs are a significant portion of the total cost of ownership, or life cycle cost (LCC), of a weapon system. The Department of Defense (DoD) has concluded that cost of ownership can be significantly reduced by early consideration of logistics support factors. The concept of Integrated Logistics Support (ILS) was established as DoD policy to insure consideration of logistics support in all phases of the weapon system life cycle. Integrated Logistics Support is defined as "a composite of all support considerations necessary to assure the effective and economical support of a system for its life cycle" (18:3).

The position of Deputy Program Manager for Logistics (DPML) has been established within each major SPO to insure the implementation of the ILS concept. The DPML serves as Chief of the Integrated Logistics Support Office (ILSO) and is responsible to the PM for insuring the accomplishment of all required logistics actions in support of the program. The DPML is also the SPO interface with Headquarters, Air Force Logistics Command (AFLC) and with the appropriate Air Logistics Center (ALC) for program logistics support management actions.

A recent organizational innovation is the Resident Integrated Logistics Support Agency (RILSA). The RILSA is established at or near

the contractor's facility and functions as an extension of the ILSO. The decision whether to establish a RILSA is the prerogative of the PM, aided by information provided by the DPML.

Objective of the Research

The objective of this thesis is to examine and analyze the RILSA as an organizational approach for applying ILS to the weapon system acquisition process. To achieve this objective, the following three questions are addressed during this research:

1. How is the role of the RILSA defined in current official publications?

2. How is the RILSA concept employed in current weapon system acquisition programs?

3. What are the views of knowledgeable participants in the weapon system acquisition process regarding the establishment and utilization of a RILSA?

The analysis and presentation of the answers to these questions provides valuable information needed by future PM/DPMLs to make more informed decisions concerning the establishment and utilization of a RILSA.

In addition to the primary objective specified above, a secondary objective of this thesis is to provide the writers' conclusions and recommendations regarding the RILSA.

Scope of the Research

This thesis is concerned with those aspects of the weapon system acquisition process which directly influence the decisions to be made

regarding the establishment and utilization of a RILSA. For this thesis, a RILSA is defined as an extension of the ILSO physically located in or near the contractor's facility and functionally responsible to the DPML. Due to the nature of the RILSA, the research was focused in the area of acquisition logistics support. This area excludes logistics activities associated with continuing operational and maintenance support of deployed weapon systems.

The weapon system acquisition programs examined during this research are those involving major Air Force systems. It is primarily on major programs that the resources necessary to establish a RILSA are available. It is assumed that, due to the cost of these system acquisitions and the complexity of the logistics support required, the greatest potential benefit from a RILSA would be realized on these programs.

The individuals contacted during this research were involved in the major programs examined or were concerned with establishing or implementing ILS policy. It is assumed that these individuals are the most knowledgeable concerning logistics support and would provide the most valuable information regarding a RILSA.

The decisions to be made concerning the RILSA are dependent on a number of factors. Preliminary research and analysis indicated that the following are the most important considerations:

1. The functions which are best performed by a RILSA.

2. The resources, in terms of skills and number of personnel, required to man a RILSA.

3. The time phasing involved in establishing and terminating a RILSA.

4. The advantages and disadvantages of a RILSA.
5. The proportion of ILSO resources to commit to a RILSA.
6. The experiences of managers in programs now using a RILSA.

These are the primary factors addressed by this thesis in answering the research questions.

Limitations of the Research

Due to time constraints, no contact was made with managers involved with acquisition programs of the other services. The RILSA concept, as outlined in a joint service manual, AFLCM/AFSCM 400-4, Standard Integrated Support Management System (3), is applicable to the Army and Navy but in the writers' judgement the objectives of this thesis could be accomplished through the study of Air Force programs. Contact was made with the Army Material Logistics Center, Fort Lee, Virginia, and the Naval Post Graduate School, Monterey, California, in search of any studies similar to this thesis.

Only selected Air Force programs that have considered the use of a RILSA were contacted so as to permit the most thorough examination of available data. Constraints of time and availability of personnel involved with other programs were limiting factors. It was the judgement of the writers that the selected programs provide a representative sample of major Air Force weapon system acquisition programs.

Department of Defense and United States Air Force Headquarters personnel concerned with establishing acquisition policy were not contacted. The establishment of a RILSA is a decision of the PM, as advised by the DPML, and is not required by DoD or USAF policy. It

is the judgement of the writers that the objectives of this thesis are best accomplished by focusing on personnel directly involved with tasks which could concern a RILSA.

II. The System Approach to Weapon Acquisition

As stated in the preceding chapter, the RILSA is an extension of the ILSO and therefore is also a part of the SPO. An understanding of the evolution and current operation of both of these organizations is essential in order to properly consider the RILSA. This chapter has been prepared to outline the Program Management and Integrated Logistics Support concepts. The first section traces the history of the Air Force approach to the management of weapon system acquisition programs and the current approach termed Program Management. The second section examines the evolution of the ILS concept and its application to the weapon system acquisition process through the ILSO. The concluding section shows the organizational relationship of the RILSA to the SPO and the ILSO.

Program Management

During the early 1950s, the Air Force approach to developing and acquiring new weapon systems was functionally oriented. Subsystem project managers in such disciplines as propulsion, airframe and electronics worked toward separate design and schedule objectives. This functional approach often led to overall deficiencies when the total system was assembled. Concern over these deficiencies led to adoption of the project management approach in the late 1950s. The first step in implementing this approach was the establishment of joint Air Research and Development Command (now Air Force Systems Command)-Air Materiel Command (now Air Force Logistics Command) organizations to manage new development programs. This joint command effort proved to

be unsatisfactory because of divided management responsibility and was abandoned in the early 1960s in favor of the System Management approach.

The System Management approach provided for a single organization, the System Program Office, to manage all aspects of the weapon system development and acquisition effort. An important part of this approach was the creation of a single manager, the System Program Director (SPD), with managerial responsibility for all facets of the program. The objective of this approach was to insure that the weapon system was designed and produced as a system, not a set of functional subsystems.

During the 1960s and 1970s, this basic approach to acquisition management has evolved with continuing refinements. The publication of the 800 series of Air Force regulations was one aspect of this evolution. The 800 series introduced the concept of Program Management and increased the responsibility and authority of the SPD, now known as the Program Manager (PM). The current concept of Program Management and the PM's role can be summarized as follows:

> The concept of program management is to provide centralized management authority over all of the technical and business aspects of a program. The program manager's role, then, is to tie together, to manage, to direct the development and production of a system meeting performance, schedule, and cost objectives which are defined by his Service and approved by the Secretary of Defense (SECDEF). The essence of the program manager's role is to be the agent of the Service in the management of the system acquisition process, to focus the authority and responsibility of the Service for running the program. He has the vantage of a large perspective of the program and the interrelationships among its elements. He must be the major motive force propelling the system through its evolution (24:4).

The PM thus has an extremely important and complex task with great responsibility. Coupled with these responsibilities is a wide latitude

in the employment of resources, organization, and managerial technique to complete program objectives. Evidence of the PM's responsibility and managerial flexibility is found in official publications governing weapon system acquisitions. For example, Air Force Regulation 800-2, Program Management, states:

> This regulation delegates maximum authority and responsibility to the implementing command and the designated Program Manager for the conduct of a program within approved performance, schedule, and funding parameters. Decentralized management principles will be used for program management and the single manager concept will be employed to the extent practicable. For any given program, appropriate review and approval actions must be reserved to higher headquarters; however, participation by all Air Force staff levels will be conducted with minimum interference to the Program Office and will be limited to that effort required to meet overall Air Force needs (8:1).

As another example, Air Force Systems Command Pamphlet 800-3, A Guide to Program Management, states:

> This pamphlet covers the general considerations during the management of a program which should be of interest to all program management personnel... It is a guide only, to be used as required by program or project and staff personnel. It depicts a path which a program or project may follow and not the prescribed path which all must follow... This document recognizes the program manager's responsibility to tailor the activities of his program to its objectives, characteristics and needs (11:1-1).

The PM is thus allowed to tailor his organization to best satisfy the particular combination of such factors as the contractor, type of contract, resources available and type of weapon system. Coupled with this latitude is the responsibility to complete the program within established time, performance, and cost parameters.

One of the PM's responsibilities which is assuming increasing importance is that of reducing the total cost of ownership of the weapon system. The escalation of total cost of ownership has been dramatic in recent years. One important facet of total or life cycle cost of a system is support costs. Support costs include such ownership costs as providing spare parts, test equipment, training and maintenance manpower. These costs have been rapidly rising due to such factors as increasing personnel costs and additional maintenance requirements caused by the complexity of new systems. The control of support costs is part of the ILS concept and the SPO element tasked with assuring logistics considerations are a part of the weapon system acquisition environment is the ILSO. The next section examines the ILS concept in general and the ILSO in particular.

Integrated Logistics Support (ILS)

The importance of Integrated Logistics Support (ILS) in all stages of the weapon system acquisition cycle is emphasized by AFP 800-7, Integrated Logistics Support Implementation Guide for DoD Systems and Equipments, which states:

> The principal test of effectiveness of a defense system or item of equipment is its capability and availability to perform a specified military requirement. Availability of a system or equipment is directly related to the reliability and maintainability and the effectiveness of its support system in the operational environment. A highly important consideration is the cost of ownership of the item through its entire life from conception through final disposition out of the inventory. The optimum balance between performance and life cycle cost of ownership can only be achieved by including logistics support considerations in all stages from the formulation and validation of the concept, through engineering design and development, test and evaluation, production, deployment and operation (7:I-1).

As the above quote on ILS illustrates, logistics considerations are an integral part of the development of any new weapon system. Integrated Logistics Support was formally introduced as DoD policy in 1964. This emphasis by the DoD resulted from recognition of two factors.

The first factor was the awareness that support problems limit the availability of a weapon system. Availability is a measure of the degree to which a system is in an operable and committable state at the start of a mission, when the mission is called for at a random point in time. Weapon system availability has become even more critical because of the comparatively small number of weapons procured in recent programs. Historically, a great deal of effort and money has been expended after a weapon system was deployed to reduce maintenance down-time, improve supply capability, reduce failures, and improve training effectiveness. However, given a system design, there are limits to the improvements to operational availability which are possible.

The second factor was the impact of logistics support costs on the life cycle cost of a weapon system. Increasingly austere budgets and escalating support expenditures focused attention on logistics support as one area where early, careful consideration could result in significant savings.

The Integrated Logistics Support (ILS) policy was then introduced as an effort to improve system availability and reduce cost of ownership. Department of Defense Directive 4100.35, Development of Integrated Logistics Support for Systems/Equipment, introduced and described Integrated Logistics Support as:

> ... a composite of all support considerations necessary to assure the effective and economical support of a system for its life cycle. It is an integral part of all aspects of system acquisition and operation. Integrated logistics support is characterized by harmony and cohesiveness among all logistics elements (18:3).

Integrated Logistics Support Objective. The objective of ILS is to minimize cost for a given level of equipment availability or to maximize equipment availability for a given cost. In either case, the objective cannot be met by superficial or routine attention to support considerations. Achieving the objective of ILS requires emphasis on two areas; the design of logistics considerations into the weapon system and planning for support of the system once it is produced and operational.

A detailed system engineering approach, including continual evaluation of equipment design and support characteristics, is necessary. This must include an iterative assessment of design impact upon specific technical and support requirements. If such an assessment is to be effective and have the desired influence on ultimate support costs, ILS must be an integral part of all phases of the acquisition process.

Planning for support of the system requires close coordination between logistics personnel and equipment designers. Support requirements must be defined and continually updated to provide the optimum support for the system. Support performance descriptors such as meantime to repair and reliability characteristics such as meantime to failure must be established as part of the planning effort. These support performance descriptors and projected support requirements are used to establish a plan in terms of required tasks and equipments.

Implementation of ILS Policy. To achieve the objective of ILS policy it is clear that logistics support considerations must be part of, and concurrent with, the development and acquisition of the weapon system. One initial problem in implementation of this policy was divided responsibility. System development was the duty of AFSC, while logistics support was the duty of AFLC. It was evident that in order to implement ILS some form of integrated effort was required at the SPO level.

In July 1968, the Commanders of AFLC and AFSC reached agreement on Command responsibilities for implementing DoD ILS policy. A major result of this agreement was the creation of a Deputy Program Manager for Logistics (DPML) to head an Integrated Logistics Support Office (ILSO) within each SPO. To assure an integrated, dual command effort, the ILSO was to be staffed with personnel from both AFSC and AFLC and headed by an experienced logistics expert from AFLC. As a member of the PM's staff, the DPML was to be responsible for managing the integration of all logistic elements of a weapon system development and acquisition program. In order to insure continuity in the accomplishment of logistics tasks, the DPML was recently designated the AFLC System Manager (SM) (Appendix D). The DPML leaves the SPO organization to assume the SM role at a time during the production stage mutually agreed to by the Air Logistics Center (ALC) Commander and the PM. As SM, he is responsible for continued implementation of the ILS plan and support of the operational weapon system. Achievement of the ILS objective requires the introduction of ILS into the weapon system engineering process so that logistics considerations are an integral part of the design, development, and production of the weapon

system. As described in AFP 800-7, Integrated Logistics Support Implementation Guide for DoD Systems and Equipment, four groups of tasks must be accomplished to insure the effective implementation of ILS policy.

Support Engineering. An important part of the logistics effort is the integration of the support system and the weapon system. The support engineering task involves the definition of support concepts and support system requirements as a technical baseline for ILS planning. Support concepts are defined initially through evaluation of alternatives such as optimum level of repair and repair versus discard. Support system requirements definition entails the identification of resources necessary under the support concepts. The initial support concepts and requirements are used as inputs to the weapon system design process. As the system design progresses, the initial support concepts and requirements are modified through trade off studies and changes in equipment design. This process leads to integration and optimization of weapon and support systems.

Integrated Logistics Support Planning. This activity results in an ILS Plan which identifies support actions, assigns responsibilities, and establishes schedules. The Plan accounts for the interaction of support and program activities; provides for the definition, integration, and acquisition of support equipment; and establishes requirements for logistics information reports. Initial planning establishes the scope of logistic activities for the first phase of the acquisition process, and is normally limited to consideration of specific problem areas. As the program evolves, the Plan is expanded in detail and scope to provide support for equipment utilized during that phase,

identify requirements for the next phase, and provide for orderly transition.

Integrated Logistics Support Plan Implementation. As the weapon system moves into the production/deployment phase, the ILS Plan becomes operational through the procurement and activation of support elements. It is essential that activation and implementation schedules established by the ILS Plan be met so that needed support equipment and services are provided when required.

Integrated Logistics Support Management. A key element in the successful employment of the ILS concept is the application of a systematic, orderly management process to identify and accomplish critical tasks in a timely manner. In keeping with the Program Manager concept, the DPML has flexibility in the employment of logistics resources and is expected to evolve the organizational approach that best accomplishes program objectives. Department of Defense Directive 4100.35, Development of Integrated Logistics Support for Systems and Equipment, states:

> It is the policy of the Department of Defense to encourage innovation, inventiveness, and exercise of technical and managerial judgement in designing and producing systems and their logistics support to meet operational requirements, with due consideration to the limitations that must be imposed because of the availability or non-availability of resources, operational environments, and military mission (18:6).

Program Managers and DPMLs have employed a wide variety of organizational techniques to manage the ILS activities of their program. One organizational technique employed is the RILSA.

The Resident Integrated Logistics Support Agency (RILSA)

The RILSA consists of logistics personnel working in the contractor's facility as an extension of the ILSO and the SPO. They are functionally responsible to the DPML, while administratively assigned to the Contract Administration Service (CAS) organization having plant cognizance. The RILSA concept is currently used on several acquisition programs but with differences in personnel, responsibility and emphasis.

The next chapter addresses the methodology used in conducting the research and analysis associated with this research effort. It details the sources of data, collection methods, and analysis approach used to achieve the objectives of this thesis.

III. Research Methodology

The preceding chapter presented a brief background of the Program Management approach to weapon system acquisition and the role of Integrated Logistics Support (ILS) in this approach. The organizational position of the RILSA was also identified. This chapter examines the sources of data, collection methods and analysis procedures used in this research.

Sources of Data

The data necessary for treatment of the subject were gathered from three primary sources. These sources were library reference material, formal documentation of existing RILSA operations and personal interviews with selected individuals currently involved in the weapon system acquisition process. The rationale for selection of these sources and an examination of their pertinence is included in this section.

Library Reference Material. Specific source material selected for study included the results of previous research efforts, official publications, and correspondence pertaining to the areas of Integrated Logistics Support, Program Management, and the RILSA. This material was necessary to familiarize the writers with the concepts, background, and objectives of Integrated Logistics Support in the framework of the System Program Office (SPO) and to answer the first research question concerning the role of the RILSA as defined in current official publications.

Formal Documentation of Current RILSA Operations. The second source of data utilized in the preparation of this thesis was formal documentation of current RILSA operations, collected as part of the

effort to answer the second research question. Specific documentation gathered in this phase included Memorandums of Agreement with the appropriate Contract Administration Service (CAS) agency, Operating Instructions published by the System Program Offices or the RILSA Chief, and DPML policy letters, all of which delineate responsibilities of the attendant RILSA.

The writers experienced minor nomenclature difficulties since some programs employ ILS personnel in residence at the contractor's facility but do not call the organizational element a RILSA. For example, the F-15 resident ILS group is called a Logistics Support Cadre and the Airborne Warning and Control System (AWACS) group is known as a Resident Integrated Logistics Support Detachment. To simplify this and subsequent discussions, the writers elected to use the acronym RILSA to encompass not only those ILS elements already so identified, but additionally any current ILS organizational element in residence at a contractor's facility and functionally responsive to the DPML and the PM.

Personal Interviews. The third category of data consisted of the opinions and perceptions of thirty individuals and was collected through the technique of the formal interview. It was decided to limit the interviews to those persons currently or recently occupying responsible positions requiring a direct and comprehensive knowledge of the logistics aspects of weapon system acquisition. The rationale underlying this decision was that only such persons would have a detailed knowledge of logistics and SPO considerations. The knowledge and opinions of these people would therefore be of the most benefit in achieving the objective of this thesis. Personnel were selected to be interviewed based on their meeting one or more of the following criteria:

1. Personnel currently or recently assigned to the ILSO of a major SPO.

2. Personnel currently or recently assigned to a headquarters unit having responsibility for establishing or implementing policy regarding acquisition logistics support activities.

3. Personnel currently or recently assigned to a logistics organization performing direct support of a major SPO.

Based on the above criteria, the writers selected the following as organizations/individuals from which interviewees were drawn:

1. The DPML and other personnel from current major weapon system ILSOs.

2. The Chief of existing RILSAs.

3. Senior managers from Directorates of Material Management at Air Logistics Centers who have been identified with a major weapon system acquisition program currently managed by a SPO.

4. Managers in the Directorates of Acquisition Logistics (AQ) and Material Management (MM) of Air Force Logistics Command.

5. Personnel from the Systems Management Directorates (SD) of Air Force Systems Command and Aeronautical Systems Division.

6. Air Force Plant Representative Office (AFPRO) personnel.

7. Senior contractor personnel involved in the logistics support of current major weapon system acquisition programs.

These personnel were selected because they met the criteria established for interviewees and offered a broad view of the total acquisition logistics effort and of the problem under study. A more

specific examination of the reasons for the selection of each is detailed below.

Integrated Logistics Support Office. The perceptions and experiences of Deputy Program Managers for Logistics (DPMLs) are important to this study as the DPML is the primary advisor to the Program Manager (PM) concerning the establishment of a RILSA and the individual responsible for its operation during the period of its existence. Most ILSOs employ individuals with extensive knowledge and experience of both ILS and SPO operation. A special effort was made to identify these individuals and utilize their expertise in the preparation of this thesis.

Resident Integrated Logistics Support Agency. The Chief of each RILSA involved in the major acquisition programs studied during this research was interviewed. These personnel are viewed as having unique, significant experience due to their actual participation in a RILSA operation. Their comments and recommendations are of obvious value in achieving the objective of this thesis.

Air Logistics Centers (MM). The Directorate of Material Management at the designated Air Logistics Center for a weapon system has a special interest in the logistics aspects of that system. The responsibility for logistics support of the system ultimately transitions to the Air Logistics Center. This interest, coupled with the fact that RILSAs are typically manned with personnel from the applicable Air Logistics Center, illustrates the involvement of this organization in the RILSA concept. It is felt that these individuals have valuable thoughts concerning the possible usefulness and functions of a RILSA.

Directorates of Acquisition Logistics and Material Management (AFLC). The selection of personnel from these two Directorates was based on the fact that both are directly involved in the logistics support of new weapon systems. The Directorate of Acquisition Logistics is the AFLC Office of Primary Responsibility (OPR) concerning ILS policy and is actively involved in the acquisition process. The Directorate of Material Management is responsible for policy regarding logistic support of the operating weapon system. As such, both are aware of the problems and difficulties involved in implementing the ILS concept. The insights provided by these personnel into the advisability of a RILSA and the functions it could best perform are very important.

Air Force Systems Command/Aeronautical Systems Division. Since the RILSA must operate as an extension of a Systems Program Office, an organization of Air Force Systems Command, this study includes the views of individuals in AFSC. The personnel selected are responsible for liaison with other organizations concerned with logistics support. These individuals have knowledge of the particular problems of implementing the ILS concept in a weapon system acquisition environment. An additional reason for interviewing respondents from these organizations was to obtain viewpoints from a perspective other than that of people with primarily an Air Force Logistics Command orientation.

Air Force Plant Representative Office. By Department of Defense directive, the contractual interface with any contractor is established through the Contract Administration Service, usually an Air Force Plant Representative Office for major Air Force programs. Individuals from these organizations were interviewed because of their experience in the difficulties involved in coordinating and accomplishing

tasks at a contractor's facility. Since many of these organizations are now actively dealing with a RILSA, their observations are pertinent to this study.

Contractor Logistics Personnel. Most major contractors employ an organizational unit to respond to contract requirements for logistic design, planning and analyses. Heads of these groups were selected to be interviewed because of their experience and knowledge in dealing with the Air Force on logistics matters. Each is currently involved with a RILSA. Another reason for selecting contractor personnel was in order to gain a point of view from individuals not a part of the DoD.

Program Managers were omitted from the list of interviewees contacted during this research. Program Managers are directly charged with the final decision on the formation and utilization of a RILSA, but their responsibilities cover a far wider field than that of logistics support. Therefore their knowledge of logistics in general and the RILSA in particular would not normally be as detailed as that of individuals primarily concerned with acquisition logistics support. It is felt that the PM bases his RILSA decision primarily on two considerations; his personal managerial and organizational philosophy and the advice of the DPML. Since the objective of this thesis is to examine and analyze the RILSA and thereby provide information, it was concluded that this objective could best be achieved by concentrating on those individuals expected to possess the most expertise in the specific area under study.

As each of the interviewees in the Integrated Logistics Support Office, the RILSA, and the Air Logistics Center are identified with a specific weapon system acquisition program, their responses to the

interview might be biased by their experiences on that program. Therefore interviews were conducted with individuals in similar positions on several programs with different contractors, different using commands, and varying managerial approaches. The particular programs selected for this study were the B-1, F-15, F-16, A-10, and AWACS. This selection gives a representative cross section of the problems and phases of major weapon system acquisitions and therefore results in representative and comprehensive data.

The broad cross section of individuals interviewed during this research is believed necessary to properly examine the impact of a RILSA on a weapon system acquisition program. It is felt that an analysis of the views expressed by these individuals provides the information required to answer the research questions and accomplish the objective of this thesis. A list of all personnel interviewed is included as Appendix C.

Data Collection

The data collection methods used during this research consisted of literature and RILSA documentation reviews and personal interviews. An examination of the approaches used to collect data from the literature review and a discussion of the interview procedure is presented in this section.

Literature and Documentation Review. The data collection method used in gathering material from these two sources consisted of library research, examination of SPO files, and collection of correspondence considered pertinent to the study area.

As part of the data collection phase, the writers instituted Defense Documentation Center (DDC) and Defense Logistics Studies Information Exchange (DLSIE) searches for data on logistics management, integrated logistics support, logistics planning and the RILSA. Additionally, the writers reviewed indices of previous research efforts to locate any other material which might aid the study. Facilities utilized in this phase included the Air Force Institute of Technology School of Engineering and School of Systems and Logistics Libraries and the Air Force Logistics Command Master Regulations Library.

The result of these efforts was a bibliography of source material in two major categories. The first category included research papers dealing with the subjects of Program Management and Integrated Logistics Support. The second category consisted of Department of Defense, United States Air Force, Air Force Logistics Command, and Air Force Systems Command official publications and correspondence. A study of these source documents was then undertaken. The results of the background research are summarized in Chapter II of this thesis. Those official publications specifically relating to the RILSA concept are examined in the next chapter.

Personal Interviews. The primary method of collecting the data necessary to answer the last two research questions was the interview. The use of a survey questionnaire to gather data was considered and rejected. It was the judgement of the writers that some of the most valuable information pertaining to this problem would be the insights and perceptions of people experienced in acquisition logistics. One of the primary weaknesses of the questionnaire is that it must be rather rigidly structured and rely primarily on multiple choice or short

answers in order to obtain a reasonable number of responses. The interview was therefore chosen as the data collection technique which would allow the advantage of exploring the subject to the greatest depth. It was recognized that use of the interview technique, because of the comparatively small sample size, would not yield data which could realistically be subjected to rigorous statistical analysis. Given the objective of this thesis and the relatively small number of people with extensive knowledge of the subject area, the inability to quantify all of the results was not considered a disadvantage.

The interview was divided into three parts (see Appendix B). Part one was composed of questions devised to elicit information about the current utilization of the RILSA and was used as the initial portion of the interview with respondents directly involved with an established RILSA. Although primarily designed to gather factual information on numbers of personnel, skills, duties, and time phasing; questions were also included to obtain normative judgements on lessons learned from the present organization. The factual data gathered from this part of the interview, coupled with formal documentation concerning the established RILSAs, were utilized to answer research question two. The normative responses were included as part of the data used to answer research question three.

The second part of the interview was designed to solicit opinions and recommendations on the establishment and utilization of a RILSA. The purpose of this part was to gather the normative judgements of the respondents as to the need, time phasing, duties, number and skills of personnel, and advantages/disadvantages of a RILSA in a major weapon system acquisition. To determine the strength of opinion concerning

the need for a RILSA, the respondents were requested to state whether they strongly agreed, agreed, were neutral, disagreed, or strongly disagreed with the need for a RILSA. The interviewees were asked to base their responses to the questions on the situation posed by the acquisition of a major weapon system, in a procurement with a single prime contractor, which progresses through the stages of the acquisition process. There will be some variance from this scenario but a specific scenario is a necessary background from which to approach the RILSA as a concept. At the conclusion of this part of the interview, the respondents were asked if competitive prototyping would change any of their recommendations. This question was asked to determine if that major deviation from the background scenario would affect their view of the RILSA. This second part of the interview provided a structured approach to consideration of the RILSA concept as viewed by the interviewee, yet allowed them the maximum opportunity to express their own views. The data obtained from this section of the interview was used in answering the third research question.

The third part of the interview included a list of potential or proposed duties which might be performed by a RILSA. This list of functions was prepared by the writers based on data gathered during the library and documentation research phase. It was used to establish the degree of agreement among respondents regarding the RILSA involvement in specific logistics tasks. In order to insure that the RILSA duties proposed by this list did not influence the respondent during his own selection of recommended functions, it was not discussed until all other parts of the interview were completed. During this part of the interview the respondent was provided a rating sheet and requested

to identify, for each of the listed functions, his opinion of the appropriate involvement of the RILSA in accomplishing that function. A scale of one to five was provided to enable the interviewee to quantify the strength of his opinion. On this scale, five indicated the function could best be performed by the RILSA, three was neutral, and one indicated that the function was not to be performed by the RILSA. Two and four provided additional discrimination as to the strength of opinion.

Data Analysis and Treatment

The data gathered to answer the first research question was initially divided into categories by source. Department of Defense policy and instructions were analyzed first, followed by Air Force, subordinate Command and Joint publications. Summaries and excerpts from these publications were prepared and organized to present a logical sequence of official guidance concerning the RILSA concept. The different publications were then analyzed to determine areas of apparent ambiguity or conflict. In those cases where ambiguity or conflict were felt to exist, the Office of Primary Responsibility for the lower level publication was contacted to discuss the issue. In some cases, it was discovered that portions of documents were being revised. The current form of that revision was summarized and included in the analysis and presentation of findings in Chapter IV.

Data concerning the operation of existing RILSAs was then analyzed. Five categories of information considered most relevant to answering the second research question were established. These categories were (1) establishment and organization of the RILSA, (2) number of personnel assigned, (3) types of skills assigned, (4) duties assigned, and (5)

evolution of the RILSA. Each program was then analyzed in terms of these categories. A qualitative analysis of all programs was performed to develop a synthesized picture of the RILSA as it is currently employed. This development included the identification of similarities and differences between programs and the perceived reasons for those variations. A matrix presentation, by category, of the programs analyzed and the synthesized RILSA was then presented to summarize the section.

Whereas the formulation of answers to the first two research questions involved the analysis of considerable factual information, this was not the case for the third question. This question was concerned with determining the views of knowledgeable participants in the weapon system acquisition process regarding the establishment and utilization of a RILSA. The data gathered to answer this question consisted of the perceptions, opinions and experiences of all personnel interviewed. To determine the views of these individuals, seven areas considered pertinent to the establishment decision were established. These were: (1) need for a RILSA, (2) uniqueness of the ILS concept, (3) advantages of the RILSA, (4) disadvantages of the RILSA, (5) establishment-time phasing, (6) termination-time phasing, and (7) prototyping-effect on the RILSA. All interviews were analyzed to define the prevalent views in each area. Significant minority positions were discussed and the reasons for variations in viewpoint were determined and presented.

Following the above analysis concerning the establishment of the RILSA, the utilization of the RILSA was examined. Relevant categories were established and the analysis performed in terms of these categories. The first category analyzed was that of major RILSA functions. The

views and opinions of the respondents were analyzed and grouped to present a comprehensive picture of the major RILSA activities. In order to determine the degree of agreement among interviewees concerning specific functions, the ratings given the proposed RILSA functions provided by the writers were then analyzed. Each of the functions proposed was analyzed in terms of the mean rating given it by the respondents, significant variations, and perceived reasons for these variations. Histograms of the individual responses to each function were prepared and used in this analysis.

Continuing the examination of the responses to the proposed RILSA functions, the variation of viewpoint among individual respondents was analyzed. The range and distribution of individual mean rating scores for all functions was determined and a histogram presented. To summarize the individual responses of all interviewees, a table of all proposed functions, rank ordered by mean response, was prepared and analyzed. This table identifies the number of respondents giving the functions each possible rating and presents the mean response for each function.

Finally, the variation in perceptions regarding RILSA functions within an individual acquisition program was examined. This was accomplished by analyzing the responses of the DPML and the RILSA Chief of that program to each of the proposed functions.

Following the analysis of functions, the skills seen as necessary to perform the RILSA duties were analyzed. The views of the respondents concerning various specialties were analyzed and the functional area where each speciality was felt to be the most useful was determined.

The majority position, as well as significant minority positions, were established.

The interview responses were then analyzed to determine the perceived optimum number of personnel to assign to the RILSA and the distribution of personnel between the RILSA and the SPO ILSO location. This analysis established the range of opinions regarding the number of personnel to assign to the RILSA, the reasons for major differences of opinion, and the personnel resources seen as necessary to properly staff the ILSO.

In the preceding analysis, the number of interviewees expressing a similar viewpoint was included when that information was considered important to the discussion. In particular, the number or percent of respondents presenting a given opinion is included when examining the need for a RILSA, establishment-time phasing, and prototyping-effect on the RILSA. In these areas, the writers felt the number of respondents holding the various opinions could influence the decisions concerning the RILSA. The numbers or percentage of respondents holding a given opinion is not included with the categorization and analysis of answers to the remaining questions. The reason for this omission is that those questions relate heavily to the particular experience and perspective of the respondent. Absolute and relative numbers in those areas were judged to be less important than the information gained in that a particular observation may be important and noteworthy even though only one respondent advanced the proposition.

Finally, the results of this research were analyzed and summarized to provide an overview of the decisions facing the PM and DPML concerning

the RILSA and the contribution to the resolution of these decisions provided by this research.

To achieve the objective of this thesis, the methodology outlined in this chapter was used to collect and analyze data from the indicated sources. The next three chapters of this thesis analyze and present that data to answer each of the research questions. Chapter four presents the official publications pertaining to the RILSA. Chapter five describes the role of the RILSA in current weapon system acquisition programs. Chapter six analyzes and presents the normative judgements and perceptions of the RILSA concept as seen by the personnel interviewed.

IV. Official Publications

Any element of the Integrated Logistics Support Office (ILSO) based at a contractor's facility acts as a representative of the United States Air Force and the Department of Defense. Therefore, the RILSA must be established and utilized in congruence with official DoD and Air Force policy. In answer to the first research question, this chapter lists and analyzes those official publications pertinent to the establishment and utilization of a RILSA.

Department of Defense

Historically, a considerable amount of effort has been wasted and unnecessary costs incurred because of confusing or conflicting direction of contractor effort. A major cause of much of this waste has been attributed to more than one DoD agency having representatives empowered to administer the contract. To avoid this condition, the DoD instituted a policy whereby a single agency is established at or near each defense contractor's facility to act as the sole contractual interface between the Government and that firm. That agency is the Contract Administration Service (CAS). This policy is outlined in DoD Instruction 4105.59, Department of Defense Plant Cognizance Program, which states: "... all (CAS) functions shall be performed in a given plant by a single DoD component, and the head of such component shall be the sole DoD CAS representative with the contractor. ... a contractor shall not be required to deal with more than one DoD representative on CAS matters" (22:4). Specific duties of the CAS agencies are detailed in the Armed Services Procurement Regulation (ASPR) section 1-406. Minor contractors and subcontractors are under the jurisdiction of the Defense Contract

Administration Service (DCAS), a separate DoD organization. Firms with major contracts are normally the responsibility of the individual services, and the Air Force has established the Air Force Contract Management Division (AFCMD), which utilizes the Air Force Plant Representative Office (AFPRO) to accomplish assigned CAS duties in a contractor's plant.

The DoD is aware that it is frequently desirable to maintain a close liaison between the SPO and the contractor which goes beyond the chartered duties of the Contract Administration agency. Therefore, DoD Instruction 4105.64, Technical Representation at Contractor's Facilities, delineates several methods by which a program manager may exercise technical direction and control of a program at a contractor's plant. Program Managers are expected to make maximum use of the CAS agency and, when possible "delegate their technical functions requiring performance at the contractor's location to the cognizant CAS components" (23:3). However, if the PM determines that his technical requirements cannot be satisfied by relying solely on the resident CAS agency, he is authorized to "... attach TechReps to CAS components to perform their own technical functions, to perform liaison, and to provide guidance and assistance to CAS components" (23:3). If a SPO technical liaison, or TechRep, is used the detachment "should normally be co-located with the CAS component and shall operate within the local administrative procedures of the CAS component" (23:4). It is this DoD Instruction which authorizes PMs to establish a resident element of the ILSO, the RILSA.

The ASPR also recognizes that special circumstances or requirements can make desirable either the assignment of TechReps or delegation of

extraordinary tasks to the CAS component. This regulation urges maximum use of existing personnel and chartered duties "however, if special instructions pertaining to administration of a contract are to apply, they should be contained in a letter accompanying the contract when it is assigned for administration" (13:1-92). The programs examined as part of this thesis have formalized SPO-AFPRO duties in a Memorandum of Agreement (MOA). The MOA details only those responsibilities not designated in the ASPR as functions of an AFPRO and shows the functional relationship of the SPO and AFPRO. A further discussion of specific MOAs is contained in the next chapter.

United States Air Force

United States Air Force Regulation (AFR) 800-8, Integrated Logistic Support (ILS) Program for Systems and Equipment (July 1972), details specific tasks and considerations necessary to implement the ILS concept. The regulation stresses that ILS must be a part of every phase of weapon system acquisition. Emphasis is placed on the early stages of this acquisition process when "... tradeoffs to determine an optimum balance between total system effectiveness, cost, and schedule can influence hardware design" (9:2). While this regulation does not address tasks in terms of organizational elements, it does stress early application of the ILS concept while the weapon system is managed by a SPO.

The December 1972 AFLC supplement to AFR 800-8 details organizational relationships and outlines general duties of logistics elements. At the time this supplement was published, the RILSA was known as a Resident Integrated Logistics Support Detachment (RILSD) and was defined as "an extension of the DPML/System Manager (SM) collocated at the contractor's

facility. The RILSD is responsible for those designated functions of management that must be performed on location to insure timely, economical, and effective procurement and positioning of total logistic support resources" (6:1).

By DoD Instruction 4105.64, the decision to utilize a resident ILS organization is the prerogative of the PM and, if one is established, it must operate as an extension of the SPO. However, the AFLC supplement to AFR 800-8, as part of the definition of tasks, states "The SM/DPML will establish, if deemed necessary, a single, integrated organizational detachment (RILSD) as an extension of the SM collocated at the contractor's facility" (6:1). At the time this supplement was written, the SM (located at the Air Logistics Center) was the Air Force focal point for all logistics considerations pertaining to a particular weapon system from its inception through operation to retirement from the active inventory. Recent AFLC policy changes (see Appendix D) have made the DPML responsible for both SPO and ALC logistics activities while the system is in the development and early production phases. The DPML is thus the DPML/SM and, shortly before the weapon system transitions from AFSC to AFLC management, physically moves to the ALC as the SM. This AFLC supplement to AFR 800-8 references the SM under the old concept and is currently being revised to show the new relationship. At the time of this research, this revision was in the final stages of the coordination cycle. It specified that the RILSA decision is made by the PM based on information provided by the DPML, and the agency as operating under the cognizance of the PM as an extension of the ILSO. When this revision is approved and published, the conflict between the AFLC supplement and DoD policy will be resolved.

The present AFLC supplement to AFR 800-8 describes RILSA duties only in generalities. The agency is to perform a wide range of tasks to assure continuity as the weapon system progresses through development and into the deployment phase. The RILSA is to stress team effort and integration of technical decisions with all logistics elements. A key point emphasized throughout this supplement is that ILS objectives can only be achieved through effective technical teamwork by all organizational elements.

Thus, United States Air Force Regulation 800-8 and the AFLC supplement to that regulation provide a primary reference on RILSA activities for weapon system acquisition programs undertaken solely to satisfy Air Force requirements. There is, however, a second group of regulations which reference the RILSA concept.

Standard Integrated Support Management System

Logistics management difficulties arose when the Air Force began to acquire the F-4 aircraft, developed and managed by the Navy. Each service implemented ILS policy through different organizational techniques, data requirements, and analysis methods and the result was confusion on the part of the Services and the contractor. It was immediately apparent that in multi-service programs a standard set of logistics policies and procedures was necessary to avoid costly confusion and duplication of effort. The Joint Logistics Commanders (JLC) of the Services thus began a series of meetings to establish a unified support concept for multi-service aeronautical system procurements and the result was the Standard Integrated Support Management System (SISMS), originally published in 1969.

The Logistics Systems Policy Committee (LSPC) of the DoD recognized the potential advantages of SISMS on other types of systems/equipment, either single or multi-service, and it became part of the long range plans for improvement of the overall DoD logistics system in 1972. The JLC then began a program to expand the applicability of SISMS and implement the approach as a management principle for all services. The documentation is being revised and updated to facilitate this broader application. The original joint service regulation establishing SISMS is, in Air Force nomenclature, AFLCM/AFSCM 400-4, Standard Integrated Support Management System, published in 1969 as a set of 21 Joint Operating Agreements. As the concept is further defined and expanded, this regulation is being replaced, on a section by section basis, by AFLCR/AFSCR 800-24, also entitled Standard Integrated Support Management System. To date, only certain portions of AFLCM/AFSCM 400-4 pertaining to data requirements and certain analysis and planning tasks have been replaced by sections in AFLCR/AFSCR 800-24. Basic organizational relationships outlined in AFSCM/AFLCM 400-4 have not been redefined and remain in their original form. This discussion therefore focuses on the RILSA as currently defined in the original regulation.

Part 2 of AFLCM/AFSCM 400-4 establishes management relationships between organizations participating in logistic support of acquisition programs. Under the SISMS concept, the responsibility for developing a logistic support system for a new weapon system is assigned to a logistics manager (LM) who reports to the PM. Duties of the LM (the DPML in Air Force terminology) are detailed in paragraph 6b of this part and include:

1. Active participation in all phases of the program to insure timely, systematic planning and acquisition of ILS elements.

2. Review of contractor proposals relating to ILS program requirements and plans.

3. Responsibility for management of the total ILS program.

4. Establish criteria for Maintenance Engineering Analysis (MEA) program data developed by the contractor.

5. Monitor establishment of the Integrated Logistics Support Data File (ILSDF).

6. Prepare charter for, and direct the total logistics support effort of, the RILSA.

Establishing a RILSA is not a firm requirement under SISMS. As stated in AFLCM/AFSCM 400-4 "For selected systems being managed under SISMS, the executive service [service managing the weapon system acquisition program], as it determines necessary, may establish a RILSD at or near the prime or subsystem contractor's plant. The RILSD will augment and work through the existing on-site Contract Administration activity in general accordance with DODI 4105.59" (3:2-4).

Some RILSA duties are proposed by AFLCM/AFSCM 400-4 and include:

1. Ensuring that the contractor, through the MEA procedure, develops realistic, comprehensive, and economical logistics support concepts.

2. Coordinating and monitoring the development, acquisition, and positioning of logistics resources to support the system through the pre-operational phase.

3. Ensuring timely development and availability of total training requirements.

4. Ensuring adequacy of technical orders.

5. Monitoring progress and status of logistics actions and reporting to the DPML.

6. Maintaining surveillance of contractor logistics accomplishments and requirements, reporting deficiencies to the DPML.

7. Submitting authorized orders defining contract items through the appropriate contracting officer.

Certain organizational relationships of the RILSA are also delineated under the SISMS concept. These relationships are as follows:

1. RILSA-DPML. A charter is required to precisely define the scope of the RILSA authority and responsibility, those matters which remain the prerogative of the DPML, and the relationship of the RILSA with other organizations.

2. RILSA-CAS. The RILSA is to be attached to the CAS activity and under its administrative direction. The RILSA is to refer any contractual communication to the contractor by CAS signature authority.

3. RILSA-Contractor. The RILSA is authorized direct contact with the contractor's organization; however, any formal request for information must be submitted through the CAS activity.

AFLCR 800-9, Implementation and Application of the Standard Integrated Support Management System, was published in 1974 and states as policy "SISMS will be implemented by incorporating its requirements into the directive and contractual requirements and their related programs

which prescribe support policy and procedures for AFLC-managed systems and equipments. SISMS Joint Operating Agreements, contractual requirements, and data item disciplines will be applied in the development or acquisition of multi-service or single service programs" (4:2). SISMS is thus directed to be a part of all Air Force weapon system acquisition programs.

Summary

It is DoD policy that any organizational element established at a contractor's plant to act as a technical representative of the PM be attached administratively to the appropriate CAS agency. When established, any duties of this element which transcend the normal responsibilities of a CAS activity must be defined in a formal communication or MOA. While not specifically mentioning a RILSA, this DoD policy (DODI 4105.64) authorizes its establishment and defines the procedures to be used.

The Air Force guidance regarding the RILSA is contained in two sets of publications. United States Air Force Regulation 800-8 and its AFLC supplement describe and implement the Air Force ILS program. The supplement defines the RILSA and provides a general reference to its duties. The second set of publications concern the SISMS concept, as embodied in AFSCM/AFLCM 400-4 and AFLCR/AFSCR 800-24, and implemented by AFLCR 800-9. These publications provide the most definitive guidance on the RILSA concept. The RILSA is defined, its organizational relationships delineated, and specific duties proposed. These publications emphasize that the establishment decision is made by the executive service and that the duties of the RILSA are to be specified in a formal charter.

These are the official guidelines and policies which directly impact the establishment and utilization of a RILSA. A tabulation of the pertinent publications is contained in Table I. An examination of these publications reveals confirmation of the PM's basic authority to tailor his organization to the circumstances of his program. In the formal documentation RILSA guidance is general, with only broad descriptions of duties and relationships, and no mention of size, composition, or time phasing of the organization. The PM and DPML are thus faced with critical decisions concerning establishment and utilization of a RILSA with little official guidance on the concept. In order to provide further information as inputs to this decision, the succeeding two chapters examine and analyze the RILSA as it is currently employed and as it is currently viewed by knowledgeable participants in the weapon system acquisition process.

Identification	Title	Summary
DODI 4105.59	Department of Defense Plant Cognizance Program	Directs that all contract administration at a contractor's plant be performed by a single DoD component
DODI 4105.64	Technical Representation at Contractor's Facilities	Allows PMs to establish technical liaisons at a plant if they are administratively assigned to the CAS activity
ASPR 1-406	Armed Services Procurement Regulation	Defines duties of the CAS and requires a letter defining any extraordinary instructions
AFR 800-8 and AFLC Sup 1	Integrated Logistics Support (ILS) Program for Systems and Equipment	Describes tasks and considerations necessary to implement the ILS concept
AFLCM/AFSCM 400-4	Standard Integrated Support Management System	SISMS concept description; allows services to establish a RILSA; and describes proposed duties and organizational relationships of the RILSA
AFLCR 800-9	Implementation and Application of the Standard Integrated Support Management System	Implements SISMS and provides for use in single service programs
AFLCR/AFSCR 800-24	Standard Integrated Support Management System	Describes expanded SISMS concept; replacing AFLCM/AFSCM 400-4

TABLE I. Official Publications Affecting the RILSA

V. The Role of Existing RILSAs

The preceding chapter examined and analyzed published directives which affect the decisions on establishing and utilizing a RILSA. Research question two concerns the current employment of the RILSA and this chapter presents and analyzes the use of the agency in existing weapon system acquisition programs in answer to that question. The data presented was obtained from two sources: 1. formal and informal documentation of contemporary SPO operations and 2. interviews with personnel managing the logistics efforts in those programs.

Introduction

As described in the second chapter of this thesis, the PM has broad authority and flexibility to structure an acquisition program in the manner he feels will best achieve program objectives. The different organizational approaches used by various programs and PMs attest to the use of this authority. One example is the Directorate of Projects in the F-15 Program. This Directorate was established to exercise special control of selected subsystems and was given broad authority and responsibility to integrate the efforts of various functional disciplines. Another variation in managerial approach was used on the B-1 Program. The B-1 SPO was established with an emphasis on locating representatives of the various Directorates in the contractor's facility, including the DPML and a majority of the ILSO. The B-1 technique was particularly unique in that the head of the AFPRO is also a Deputy Program Manager. Another organizational approach applied with certain variations in the programs studied was the utilization of a RILSA at the contractor's facility.

This chapter examines the RILSA as it is structured and utilized on five major weapon system acquisition programs. The examination begins with a background sketch of each program, then continues with an analysis of each RILSA in the following areas:

1. Establishment and organizational relationships
2. Number of personnel assigned
3. Skills utilized
4. Duties
5. Evolution of the RILSA.

The first four categories provide information which portrays the RILSA operation in each program as of the time of this research. The fifth category traces these RILSAs from their inception through their plans for future operations and termination. A final section compares the various approaches, outlines the reasons for differences, and synthesizes the information presented.

Program Background

A brief background sketch of each program being examined is included to insure that the reader has a feeling for the type of weapon system, current status, and relative magnitude of each program. This synopsis includes a description of the weapon system, the present phase of the acquisition cycle, and the current funding requests for each program. The weapon system descriptions were obtained from Air Force Magazine (30). Program phase information was obtained from the SPO of each program being examined. Funding information was extracted from a February, 1975 presentation to the Committee on Armed Services, United

States Senate, by John L. McLucas, Secretary of the Air Force (10).

The B-1 Program. The B-1 is an advanced manned strategic bomber designed to replace the B-52. Its proposed capabilities include the ability to penetrate enemy defenses at very low levels and high subsonic speeds or at very high altitudes and supersonic speeds. The aircraft is designed to deliver airborne missiles and both nuclear and conventional munitions. At the time of this research, the program had been underway for four years and was in the full scale development phase. The first test aircraft was at Edwards AFB, undergoing flight testing, with two more aircraft in various stages of fabrication. The budget request for Fiscal Year (FY) 1976 was $672 million for research and development and $77 million for long lead production items. This budget included funds for a fourth test aircraft, the first to have a production configuration, including both offensive and defensive avionics equipment. Production decision for the B-1 is currently expected in November, 1976.

The AWACS Program. The AWACS (also known as the EC-137D/E-3A) is designed to provide a survivable airborne command and control center for the identification, surveillance, and tracking of airborne enemy forces, and for command and control of air superiority forces. Similar aircraft are to be used as airborne command and control centers for quick reaction deployment and tactical operations. The AWACS is based on an existing (Boeing 707-320) airframe, but incorporates an extensive range of specialized operational equipment including sensing, communications, display, and navigation systems. A Defense System Acquisition Review Council (DSARC) IIIA decision in December, 1974 authorized

limited production. The program is therefore in the production phase, with some research and development continuing. Production of six aircraft was authorized and funded in FY 1975 and the FY 1976 budget request included $431 million to procure six additional aircraft and $199 million to continue development and test.

The A-10 Program. The A-10 was selected as the winner of a competitive flyoff as a specialized close air support aircraft with unique survivability characteristics. The A-10 is designed for long loiter time, heavy ordinance load, and the capability to destroy heavy ground armor. Equipment includes a heads-up display, penetration aids, 30mm cannon, and Maverick missiles. The DSARC IIIA decision was announced in July, 1974 and the A-10 is also in a limited production phase, with some research and development efforts continuing. Twenty-two aircraft are being procured with FY 1975 funds and the FY 1976 budget request is for $361 million to procure an additional sixty-one aircraft.

The F-15 Program. The F-15 is a single-seat, fixed wing, all-weather fighter designed specifically for an air-superiority role, with an air-to-ground attack capability. Specialized equipment includes a lightweight radar system for long-range detection and tracking of small, high speed objects operating at all altitudes down to tree top level, a heads-up display for aerial combat, and an inertial navigation system. The aircraft is currently in the production phase, with the first operational aircraft delivered in November, 1974. The FY 1976 budget request includes $1438 million to procure 108 additional aircraft.

The F-16 Program. The F-16 is the winner of a competitive flyoff to develop an advanced, lightweight, low-cost, air-superiority fighter aircraft to complement the F-15. Essential features include a

fly-by-wire control system, an inclined pilot's seat to improve G-force tolerance, and an advanced aerodynamic design. It has been designed to be much smaller and less costly than the F-15, yet still be a technologically advanced aircraft. The program entered the full scale development phase after a DSARC II decision in April 1975. The F-16 has been selected for use by a consortium of North Atlantic Treaty Organization (NATO) allies. This selection will significantly increase the ultimate number of aircraft produced. The FY 1976 budget request was for $273 million for research, development, and further test of the aircraft.

Establishment and Organizational Relationships

The initial establishment of a RILSA is defined as the date when logistics personnel responsive to the DPML were first assigned to a contractor's facility. To more clearly show the relationship of this date to the weapon system acquisition process, RILSA establishment is specified by phase of the acquisition cycle and, more specifically, when during that phase in relation to common program milestones.

Organizational relationships of the RILSA to other agencies were determined by analysis of responses of RILSA and ILSO personnel to questions regarding working relationships and lines of authority. Organizational charts for the various programs are also presented to show the formal structure of the RILSA within each program.

The B-1 Program. The B-1 RILSA was established immediately after contract award, at the beginning of the full scale development phase of the acquisition cycle. As mentioned previously, the managerial approach used on this program called for the establishment of a large percentage of the initial SPO cadre on location at the contractor's plant. The DPML

and a majority of the ILSO were part of this cadre and were therefore acting as a RILSA, performing most of the initial ILS tasks from that location. The B-1 personnel interviewed viewed this as an efficient and effective approach to accomplishing the ILS objective. It was not possible to ascertain if the RILSA would have been established as early in the program had the resident SPO cadre approach not been utilized.

Later in the program, the DPML and a majority of the ILS personnel returned to the SPO at Wright-Patterson AFB, resulting in the present organizational structure. Under the current arrangement, the Chief of the AFPRO at the prime contractor site has the additional duty of Deputy Program Manager and as such acts in behalf of the PM on program matters delegated to him. As senior Air Force officer at the contractor site, he is also tasked to coordinate the activities of the collocated AFPRO/SPO personnel, including the RILSA. The RILSA is administratively assigned to the AFPRO, but is functionally responsible to the DPML. The current MOA (Appendix E) between the SPO and the AFPRO formalizes this arrangement in general but does not mention the RILSA specifically, nor does it refer to functions of the RILSA. The MOA details the relationship of all SPO cadre personnel to the AFPRO and the RILSA is considered to be a part of this cadre. Both the DPML and the Chief of the RILSA did not feel that this lack of precise definition was a disadvantage but rather allowed them the degree of flexibility necessary to perform their duties. Organizational relationships of the RILSA were extracted from a current B-1 organization chart and are included as Figure 1.

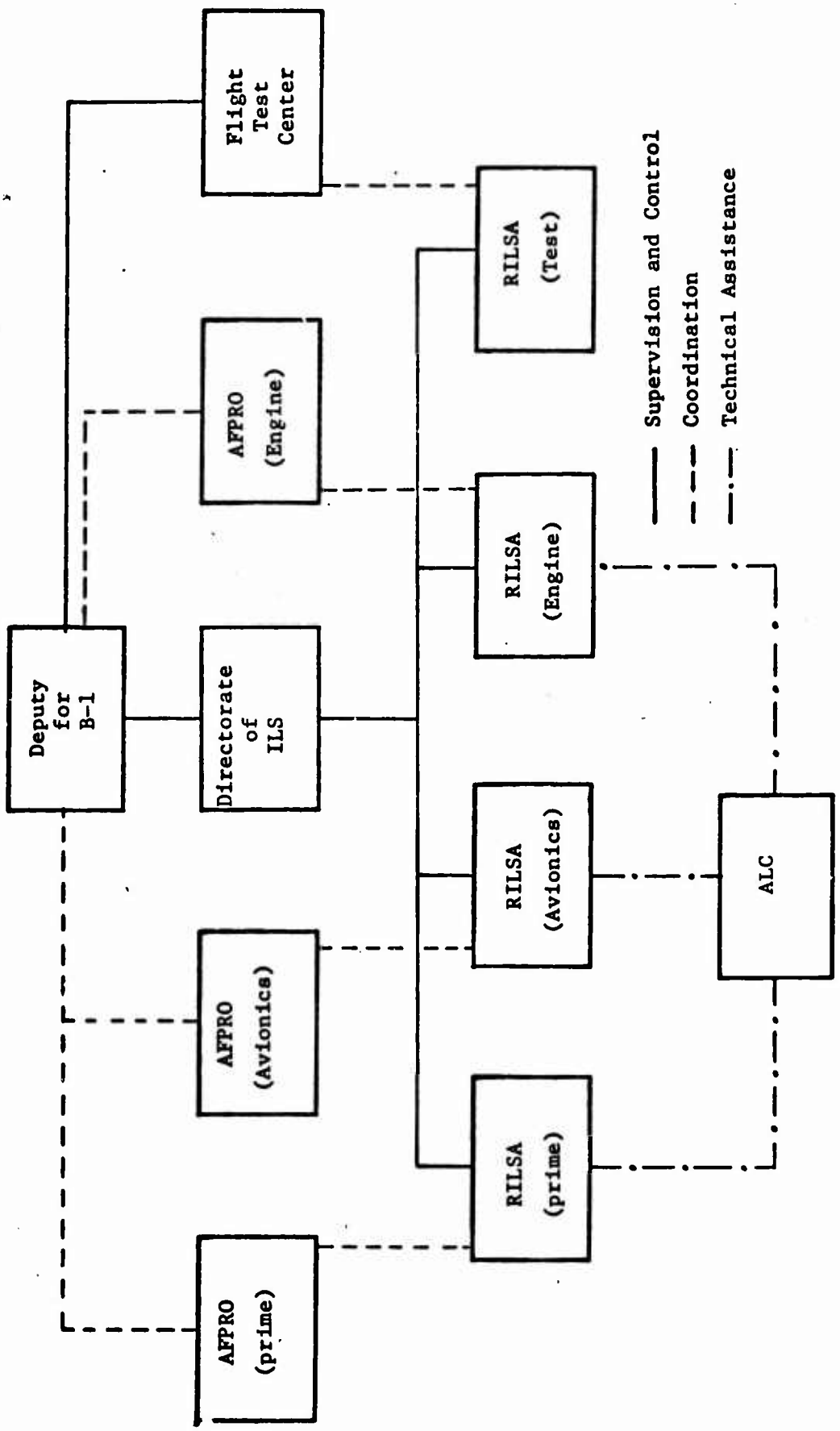


Figure 1. B-1 RILSA Organizational Relationships

The AWACS Program. The AWACS RILSA was established during the full scale development phase, approximately one year after the DSARC II ratification decision was made in December, 1972. The ILSO personnel associated with this program felt the RILSA should have been established earlier, with one respondent noting "the RILSA was a year late in getting started". The reason for the delay was difficulty in recruiting personnel to staff the RILSA operation.

The organizational relationships of the AWACS RILSA are defined in the MOA between the SPO and the prime contractor AFPRO. This MOA includes an annex which specifically addresses RILSA organization and duties (Appendix F). The RILSA is described as an extension of the Integrated Logistics Support Directorate, is collocated with the AFPRO, and operates within the management and administrative procedures of the latter organization. Organizational interfaces of the RILSA are diagrammed in Figure 2.

The A-10 Program. The A-10 RILSA was established in October, 1973 during the full scale development phase, approximately nine months before the DSARC IIIA production decision. The establishment of a RILSA on this program was the subject of a documented study prepared by the Sacramento Air Materiel Area in June, 1973. This study examined the A-10 program and concluded that a RILSA should be established by 1 September 1973. One problem encountered on the A-10 program was that contractual arrangements had not been made to deliver certain analysis data needed by the RILSA. The A-10 RILSA Chief felt that, given this condition, the time of establishment was appropriate; however, if the data had been available, the organization should have been established a year earlier.

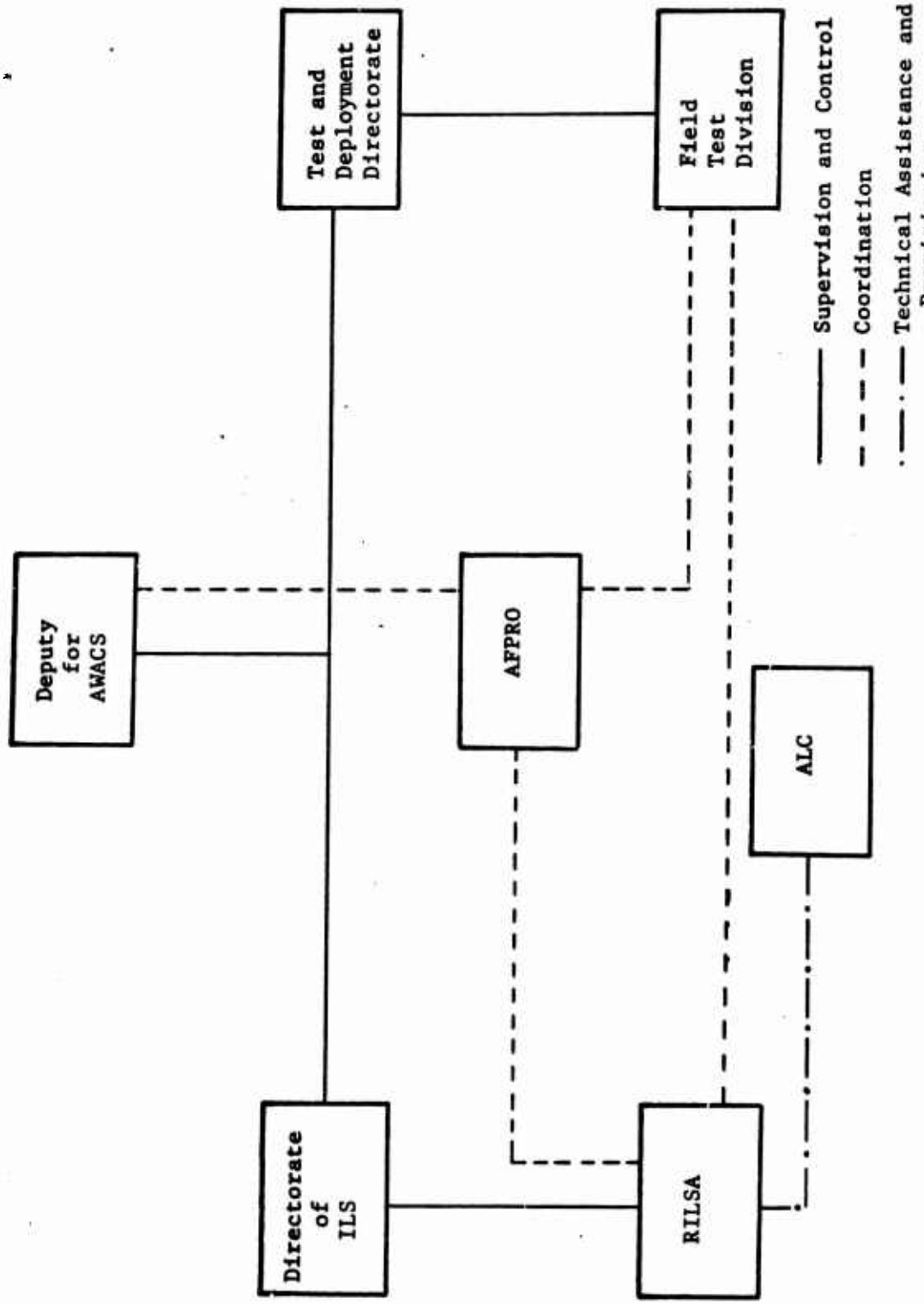


Figure 2. AWACS RILSA Organizational Relationships

A MOA has been drafted which details the RILSA operation but, at the time of this research, that MOA had not been put into effect. This draft MOA (Appendix G) details the relationship of the RILSA with the Sacramento Air Material Area, the prime contractor AFPRO, and the A-10 SPO. It specifies that the RILSA is an extension of both the ILSO and the Sacramento Air Materiel Area, but is functionally responsible to the DPML and administratively assigned to the AFPRO. These organizational relationships are diagrammed in Figure 3.

The draft MOA on this program includes the Air Materiel Area (AMA), which is now known as an Air Logistics Center (ALC), and defines the RILSA as an extension of the AMA. The relationship between the RILSA and the AMA is specified as that of a liaison; however, personnel associated with the RILSA view the AMA as having direct authority over them. This ambiguity in perceived and intended relationships could result in confusion and a resulting decrease in RILSA effectiveness. The potential for such a condition is a strong argument for well-defined, documented organizational relationships and responsibilities. It should be noted that this relationship was not the case in the first two programs examined.

The F-15 Program. Logistics personnel from the F-15 were assigned to the contractor's facility in March, 1970, approximately three months after contract award. This was during the initial portion of the full scale development phase. Specific personnel to be assigned to the RILSA were actually selected as much as ten months prior to the establishment date. Both ILSO and RILSA personnel interviewed stressed the necessity for establishing a resident logistics cadre as early as possible in the acquisition cycle.

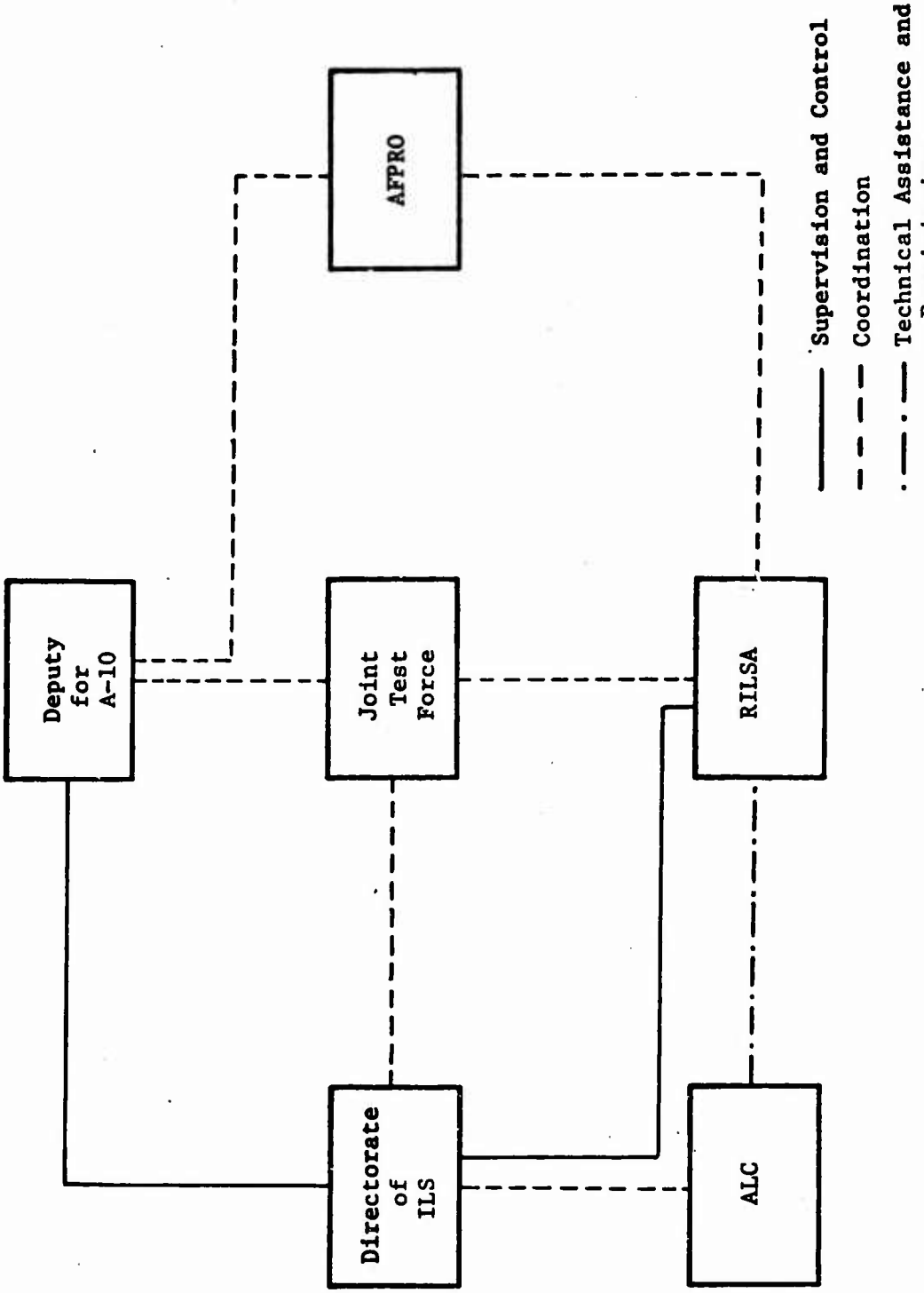


Figure 3. A-10 RILSA Organizational Relationships

The acronym, RILSA, has never been used on the F-15 program. The resident logistics element in this SPO is known as a Logistics Support Cadre (LSC). The functions performed by the F-15 LSC are, however, analogous to those performed by other RILSAs and the group will be referred to as a RILSA for purposes of simplification.

The organizational relationships of the F-15 RILSA are specified in a formal MOA between the SPO and the prime contractor AFPRO, with one annex devoted to the RILSA (Appendix H). This annex specifies the RILSA is an extension of the Directorate of Integrated Logistics Support (ILSO) and of the F-15 System Management Division of the Warner Robins Air Logistics Center, an approach identical to that used on the A-10 program. The DPML/SM for the F-15 program is presently operating from the SPO but, at the time of this research, was preparing for his move to the Air Logistics Center to assume SM responsibilities. The organizational relationships of the F-15 RILSA are diagrammed in Figure 4.

The F-16 Program. At the time of this research, the F-16 program had not established a RILSA. The PM had, however, given approval for a RILSA and this and subsequent discussions of the F-16 RILSA will detail present plans for that operation. The scheduled activation date for the activity is 1 September 1975. This is during the full scale development phase, approximately four months after the DSARC II decision made in April, 1975.

At the present time, no published information pertaining to organizational relationships is available. Discussions with ILSO personnel indicated the RILSA will be established as an extension of the SPO office, functionally responsible to the DPML and administratively assigned to the prime contractor AFPRO.

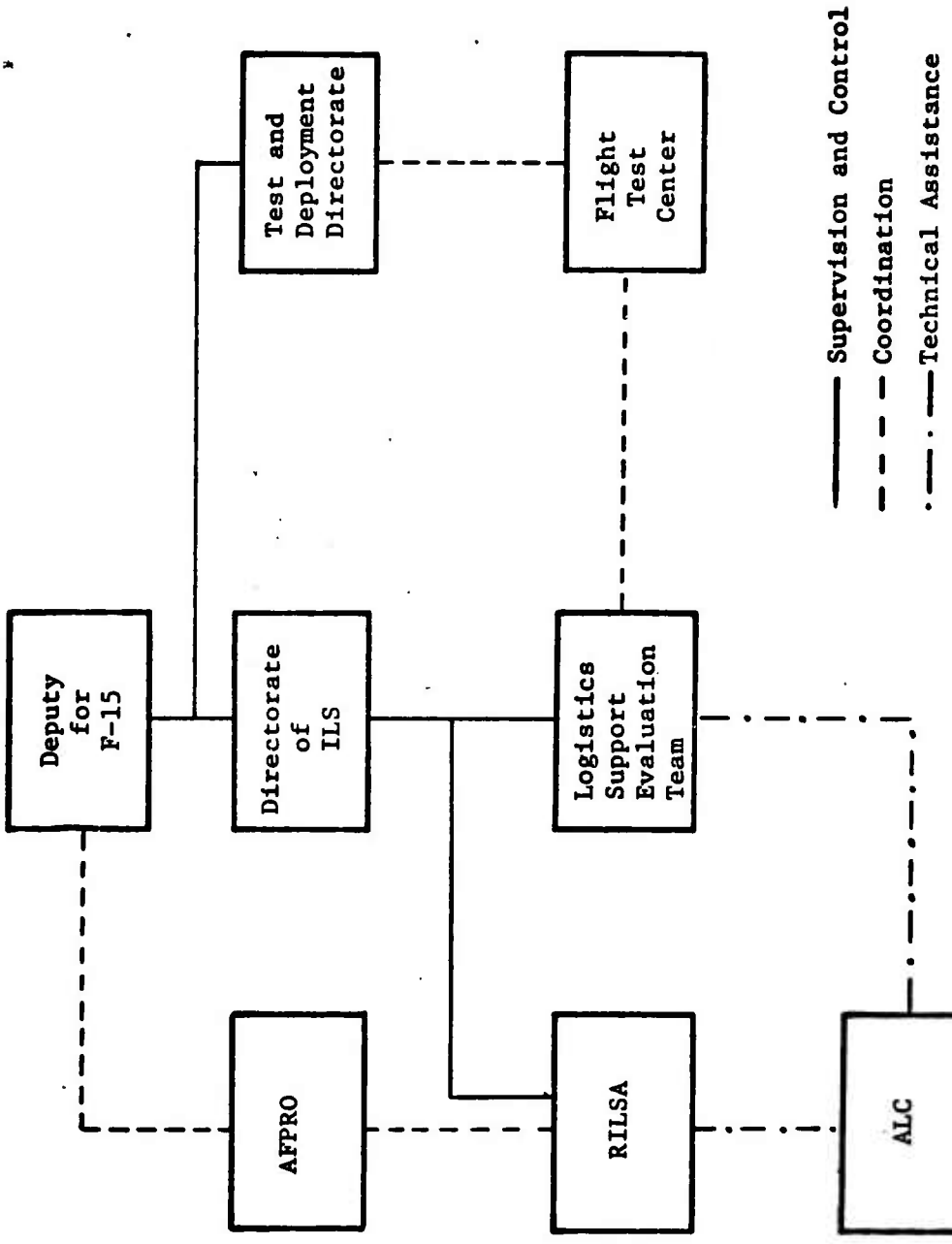


Figure 4. F-15 RILSA Organizational Relationships

Numbers of Personnel Assigned

The number of personnel employed in any organization is a function of many considerations, including capabilities of the individuals, managerial philosophy, and diversity of assigned responsibilities. Manning levels and apportionment of personnel between the SPO and RILSA operations are presented here as an indicator of both the scope and relative importance placed on the resident logistics effort. Also included are the judgments of logistics personnel concerning the adequacy of the current manning and distribution. The information presented in this section is as of the time of this research effort.

The B-1 Program. A total of sixteen logistics personnel are responsive to the DPML. Of this number, eight are located at the SPO and the remainder apportioned between the various contractors. Four personnel are resident at the prime contractor, one at the avionics contractor, one at the engine contractor, and two at the flight test center. The B-1 logistics personnel interviewed considered both the number and distribution of personnel appropriate for the current program phase.

The AWACS Program. A total of twenty-four personnel are assigned to the AWACS ILSO operation. Of this number, thirteen are located at the SPO, while eleven are authorized for the RILSA. All RILSA personnel are at the prime contractor's facility. The AWACS ILSO personnel interviewed felt that the current manning of the SPO office was adequate, but that additional personnel should have been committed to the RILSA because of the technical complexity of the electronic equipment utilized by the system.

The A-10 Program. The A-10 utilizes thirteen people in the SPO logistics organization and six in the RILSA. Because of personnel and

contractual problems, the RILSA chief felt his organization was overmanned. It was his recommendation that the RILSA be reduced to four authorized positions. The DPML on this program felt that additional personnel could be effectively utilized at the SPO.

The F-15 Program. A total of forty-eight personnel comprise the F-15 logistics organization. Of this number, thirty are assigned to the RILSA and the remaining eighteen are located at the SPO. The number and distribution of personnel was considered adequate for the current phase of the acquisition cycle. The reason for the large number of personnel assigned to the F-15 RILSA, as compared to other programs, is examined in succeeding sections of this chapter.

The F-16 Program. The F-16 SPO logistics office manning is twelve positions, three of which are currently vacant. The present plan calls for an initial RILSA cadre of nine personnel, which results in a total of twenty-one positions authorized for the ILSO. The F-16 DPML felt his current authorized SPO office and planned RILSA manning was adequate. The size of the RILSA is to be evaluated after it has been in operation and revised as necessary.

Skills Utilized

The job classifications of personnel assigned to a RILSA are to a large degree determined by the tasks assigned to the organization. Availability of personnel with a given skill is also a determinant of actual assignments. In addition, such qualities as personality, perceptiveness, and flexibility, not indicated by a specialty code, may be as important as formal training or experience. Formal skills utilized in current RILSA organizations are presented to illustrate types of

expertise found effective by each program for their particular circumstances and phase of the acquisition cycle.

The B-1 Program. The Chief of the B-1 prime contractor RILSA is a Lieutenant Colonel with AFPRO, SPO, and Systems Analysis experience and an engineering background. In addition to a secretary, the other individuals assigned are a System Program Management Officer and an Aircraft Maintenance Officer. The avionics contractor RILSA employs an Aircraft Maintenance Staff Officer and the engine contractor RILSA utilizes a Logistics Plans and Programs Officer. At the test center, the RILSA consists of a Logistics Plans and Programs Officer and an Inventory Management Supervisor. With the single exception of the Logistics Plans and Programs Officer at the engine contractor RILSA, all resident logistics personnel are military.

The AWACS Program. The AWACS RILSA Chief is a Major with an engineering background. In addition to two secretaries, the following skills are authorized:

3 Equipment Technicians

1 Inventory Manager

2 Airborne Radar Supervisors

1 Airborne Radar Technician

1 Electronics Engineer (presently vacant)

In addition to the permanent personnel, seven people are currently assigned on a temporary basis from the Oklahoma City Air Logistics Center. Both the number and skills of personnel utilized in this way vary with the particular problem or task encountered. It has been the approach on this program to use personnel temporarily assigned from the

ALC to augment the RILSA in specialized areas such as depot AGE and automatic test equipment.

The A-10 Program. The A-10 RILSA currently has six individuals permanently assigned. The Chief is a Lieutenant Colonel with test pilot experience and an engineering background. The remainder of the RILSA consists of a secretary and the following General Service employees:

3 Equipment Technicians

1 Inventory Manager

Air Logistics Center personnel have not been utilized to augment RILSA manning on a sustained basis, although there have been a number of short visits.

The F-15 Program. The F-15 program has employed the RILSA concept in a different manner than the other programs analyzed. The F-15 operation relies heavily on the Resident Provisioning Team (RPT) concept, assigning personnel permanently to the RILSA to accomplish initial provisioning. This extensive task accounts for the majority of personnel in the RILSA and its large size compared to other programs. The F-15 RILSA Chief is a Lieutenant Colonel with an engineering background and with extensive logistics experience, including service engineering at an ALC and logistics management of a major weapon system at a depot. The Deputy RILSA Chief is a GS-13 with extensive provisioning experience, including initial provisioning on the F-4 acquisition program. Other skills utilized are:

12 Equipment Technicians

5 Inventory Managers

7 Supply Clerks

2 Supply Catalogers

2 Secretaries

The large number and particular skills assigned to the F-15 RILSA enable initial provisioning tasks to be performed at the contractor's facility rather than at the ALC.

The F-16 Program. As noted previously, the F-16 RILSA operation was authorized but not in effect at the time of this research. Current plans call for the initial cadre to be composed of the following skills:

1 Logistics Specialist (Chief)

1 Secretary

1 Aerospace Engineer

3 Equipment Technicians

2 Inventory Managers

1 Depot Maintenance Technician

Specific RILSA personnel skills, as well as the number of personnel, will be evaluated after the program has been established.

Duties

The primary duties currently assigned to the RILSAs examined were determined from interviews with ILSO personnel and from written descriptions of their responsibilities, where available. The perceived primary duties of the RILSA are significant as an indicator of the importance placed on the various duties by personnel directly involved in the operation. These perceptions were judged more valuable as a measure of the more important RILSA functions than formal documentation. Where a detailed listing of formal responsibilities and authority was

available, it is included as an appendix to this thesis. Duties of the F-16 RILSA are still in the formative stages and are not included.

The B-1 Program. All B-1 logistics personnel interviewed agreed that influencing equipment design is a very important function of the RILSA. It was felt that the most effective method of insuring the early consideration of logistics support during equipment design was direct participation of logistics personnel from the early stages of the design effort. Several techniques were used by the B-1 ILSO to insure logistics concerns were a part of the design process. These techniques included examination of drawings and discussions with contractor design engineers, visits to subcontractors, and mockups to evaluate equipment maintainability.

Another RILSA effort judged very important by the B-1 respondents was the procurement of Government Furnished Property (GFP) and Equipment (GFE). This effort was cited as resulting in significant cost savings and as vital in the reduction of problems. The RILSA participation in this activity involved identification of GFP/GFE and coordination with the appropriate logistics activity to secure needed items.

A third important function of the RILSA was to increase the visibility of contractor activity. The ILSO personnel interviewed felt only a RILSA could provide the required insight into the status of logistics portions of the program and identify problem areas at the early stages when solutions result in minimum impact.

The head of the B-1 prime contractor's logistics group was interviewed to determine another perspective of that RILSA and its major functions. The major point stressed was that the RILSA made logistics personnel readily available on a daily basis, allowing a free interchange

of ideas and immediate discussion of problem areas. The RILSA's ability to quickly identify and contact cognizant Air Force personnel to help resolve problems and gather required information was cited as being of great help to the contractor.

As mentioned previously, no formal documentation of B-1 RILSA duties and authority is available.

The AWACS Program. The AWACS RILSA effort emphasized activities intended to influence design so as to improve weapon system maintainability. Another important activity was the injection of Air Force personnel into the Maintenance Engineering Analysis (MEA) and Optimum Repair Level Analysis (ORLA) activities conducted by the contractor. Logistics personnel interviewed felt constant, close interaction between the RILSA and the contractor had a favorable influence on design. It was their premise that many of the decisions made in preparing the analyses referenced above are not explicitly reviewed outside the contractor's facility. The RILSA is therefore in a position to participate in those decisions and influence them to reduce the ultimate cost of supporting the weapon system.

A second major area emphasized was that of providing assistance in identification and design of Aerospace Ground Equipment, utilization of standard DoD items, preparation of technical orders, and planning for initial provisioning. This assistance took the form of such activities as reviewing contractor AGE recommendations, aiding the AFPRO in requisitioning standard stock listed items, working with the ALC to establish Source, Maintenance and Recoverability (SMR) codes, and working with the contractor's Parts Control Board to insure the optimum use of standard items. Each of these activities requires a close

relationship with the contractor and the AFPRO, a relationship judged only possible through the use of a RILSA.

The third major responsibility was to provide and monitor data, both informal and formal. The logistics personnel interviewed held that in most areas of responsibility the RILSA was not expected to do all the work associated with each assigned activity. Instead it was their task to insure that all information provided to the SPO and the ALC was current and accurate, that the contractor had interpreted Air Force requirements and concepts correctly, and that all available information had been considered in arriving at decisions. Another important aspect of the information function was in providing a focal point between the contractor and the Air Force for informal information requests. Due to the RILSA's familiarity with both contractor and Air Force operations it was felt that this activity was important to avoid costly confusion and delay. In the opinion of the logistics personnel interviewed, this activity led to more informed decisions by both the contractor and the Air Force and therefore greatly reduced problems.

The use of a RILSA was also discussed with a logistics representative of the AWACS prime contractor. Two major areas were mentioned during the discussion as primary advantages of the RILSA. The first area was in introducing logistics into the early design phase. The contractor felt that this phase of the program was primarily managed by design personnel oriented toward performance and that a concentrated effort was required to influence the designers to improve maintainability. A second area emphasized was insuring that maintenance concepts were consistent with the operational scenario. This was found to be a problem, especially since the AWACS using command changed during the

acquisition cycle. The contractor representative interviewed felt that the Air Force should establish a RILSA on major weapon system acquisition programs.

The AWACS AFPRO felt the RILSA was a necessity. Particular functions classed as very important included affecting design to improve maintainability, identifying standard parts, and having direct channels to both Headquarters, Air Force Logistics Command and the Air Logistics Center to aid in solving problems.

Formal documentation of AWACS RILSA duties is a part of the MOA and is included as Appendix F to this thesis.

The A-10 Program. A primary activity of the A-10 RILSA at the time of this research was Source, Maintenance and Recoverability (SMR) coding. The draft MOA pertaining to the RILSA specifies that the organization is to provide Air Force preliminary approval of SMR coding decisions. Interviews with logistics personnel confirmed this was a major responsibility of the RILSA.

A second area mentioned as an important function of the RILSA was that of providing a logistics interface in the contractor's facility for the exchange of information. This on-site representative acts as a source and coordinator of information between the contractor/DPML and the contractor/ALC. The RILSA also assures that requests for information from either the contractor or the Air Force are directed to the correct agency. It was felt that this use of the RILSA as a communication channel was one of the most important duties of the organization.

Although it was the judgment of A-10 logistics personnel interviewed that the RILSA should be involved in the preparation of Maintenance Engineering and Optimum Repair Level Analyses, this function

was not noted as a prime duty of the RILSA. The primary reason for this was the inability, due to contractual arrangements, of the RILSA to secure MEA/ORLA data. This effectively negated the potential advantage of the RILSA in this area.

The AFPRO for the A-10 program felt that the RILSA was absolutely necessary to insure adequate stress on the logistics aspects of the program. The involvement of the RILSA in initial provisioning activities was seen as a primary function.

A draft MOA prepared for the A-10 RILSA describes the duties of the organization and is included as Appendix G.

The F-15 Program. Logistics personnel involved in the F-15 Program indicated a major function of the RILSA was to influence design to improve maintainability. This task entailed establishing close working relationships with the contractor and active participation in MEA/ORLA efforts. The personnel interviewed stressed that questioning of design was necessary both to identify problem areas and to convince the contractor of Air Force interest in integrating logistics considerations into the weapon system acquisition process.

Identification and use of standard parts in the equipment design was another important function. One respondent noted "the contractor would build a 100% peculiar weapon system if possible." It was felt that having logistics personnel on site enabled the Air Force to participate in the contractor's activities on a real time basis. This participation resulted in the RILSA being in a position to identify areas where standard parts could be used and influence the engineers to incorporate them in the equipment design from the earliest stages.

In terms of personnel and resources, the primary function of the F-15 RILSA was initial provisioning. Initial provisioning is the process of determining the range and quantity of items (spare items, repair parts, special tools, test equipment, and supporting equipment) required to support and maintain a weapon system for an initial period of service. In normal Air Force practice, the initial provisioning period is considered to be approximately eighteen months. The phases of initial provisioning include the identification of items of supply; computation of initial requirements; establishment of data for catalogs, technical manuals, and tables of allowances; and the preparation of instructions to assure delivery of necessary support items with related end items.

The AFPRO for the F-15 Program felt the RILSA could contribute substantially to eliminate problems. One specific contribution mentioned was the review of Class II changes. These minor changes are normally handled and approved by the AFPRO. The RILSA was tasked to review these changes and in a number of instances found significant logistics impacts which had not been properly assessed.

Formal documentation of F-15 RILSA duties is a part of the MOA and is included as Appendix H to this thesis.

Evolution of the RILSA

One observation common to all personnel interviewed was that the composition and duties of the RILSA change as the acquisition program progresses. Changes were noted in the current RILSA operations when compared with the original and all programs indicated their plans were for further change as the program continued. This section traces the

evolution of the various RILSA operations from their inception to the present, focusing on the changes in number and skills of personnel and in primary orientation of their duties. Plans for continued evolution are included to complete this section.

The B-1 Program. The B-1 RILSA was established in July, 1970, with the DPML and ten logistics personnel located at the contractor's facility. At that time the SPO office manning was three personnel, with the head of that office functioning as the Deputy DPML. As associate contractors were selected to develop the engine and avionics systems, RILSA operations were established in those plants. Manning for the associate contractor RILSAs was not as extensive as for the prime contractor operation; three personnel were resident at the avionics and one at the engine contractor's plant.

By August, 1973, the B-1 program was approaching the Critical Design Review (CDR), after which the design is relatively firm and changes more difficult and expensive. At that time, some B-1 logistics personnel were shifted from the prime contractor to the SPO and to the Flight Test Center at Edwards AFB. As mentioned previously, the current assignment of RILSA personnel shows four at the prime contractor, two at the test site, one at the engine contractor, and one at the avionics contractor.

The RILSA manning is scheduled to remain constant until approximately six months prior to the production decision, presently scheduled for November, 1976. At that time, manning is proposed to be increased in anticipation of a favorable production decision so that logistics personnel are in place to implement the ILS Plan. An

increase in RILSA manning is proposed regardless of the initial provisioning concept used, although the ultimate size of the increase is largely dependent on the role of the RILSA in that process. Termination of the B-1 RILSA has not been scheduled to date. It is anticipated that the phaseout will occur well into the production phase and the exact date will be largely dependent on the method of initial provisioning and remaining RILSA duties.

The skills utilized by the B-1 RILSAs to date are primarily technically oriented. The planned buildup prior to entering production will include personnel required to monitor the implementation of the ILS plan. Although the exact numbers and skills have not been established, the pre-production RILSA will emphasize skills such as Logistics Specialists and Inventory Managers. If the RILSA is assigned responsibility for initial provisioning, such skills as Catalogers and Provisioning Specialists would be added to the personnel already at the contractor's plant.

The AWACS Program. The initial AWACS RILSA contingent was six people, which was subsequently increased to the current eleven authorized positions. The original plan for this RILSA called for twenty people to be assigned and in place by August, 1975; however, this level of manning was not approved by the ALC. The current personnel plan calls for reducing RILSA manning to five or six personnel by November, 1976, and phasing out the operation entirely by June, 1977. This plan schedules RILSA termination approximately three years after the initial production decision. This termination date is based on the envisioned completion of primary RILSA tasks. System complexity and continuing

development activities were cited as reasons for maintaining a RILSA until this point in the acquisition cycle.

Skills utilized in the AWACS RILSA were oriented toward technical personnel capable of reviewing and influencing system design. These skills included Engineers, Equipment Technicians, and Maintenance Personnel. The RILSA skill orientation toward technical expertise has not changed and is expected to continue through the life of the organization.

The A-10 Program. The A-10 RILSA was established in October, 1973 and was initially manned with six personnel. This manning has remained constant to the time of this research. The current plan is to phase out two positions by June, 1976, and the remainder by September, 1976. This scheduled termination of RILSA activities is approximately two years after the initial production decision. At this time, primary RILSA activities were seen to be essentially complete and the personnel programmed for return to the ALC to prepare for system transition to AFLC management.

Skills utilized by the A-10 RILSA are divided between provisioning and technical expertise. The provisioning activity is scheduled to be phased out first with the technical skills remaining until the organization is disbanded.

Initial provisioning tasks are being accomplished at the ALC. The original A-10 provisioning concept was oriented toward the use of a computerized system based on Integrated Logistics Data File (ILDF) transmissions to the ALC. Problems have arisen in both the ILDF and the computerized system and initial provisioning is currently being done manually at the ALC. At the time of this research, there were no plans to accomplish initial provisioning at the contractor's facility.

The F-15 Program. The F-15 RILSA was established in March, 1970, with an initial cadre of five personnel. This number was soon increased to ten personnel and manning steadily increased throughout the 1971-1973 period to a maximum strength of thirty-two. It was the opinion of logistics personnel interviewed that the program would have benefited from a faster buildup in RILSA manning and from an increase in authorized positions. It was felt that on a program such as the F-15, up to forty personnel could have been effectively used during the maximum workload period of the RILSA. At the time of this research, the phasedown of RILSA personnel had begun, with the current strength at thirty and further reductions planned. The present plan is to retain provisioning personnel until the initial provisioning tasks are completed, and maintain a RILSA until sometime in the late 1970's.

The original skills of F-15 RILSA personnel were technically oriented. As the build-up of the organization progressed, the technical personnel were augmented and additional cataloging and supply skills added. This buildup was oriented toward providing the expertise necessary to accomplish the initial provisioning of the weapon system.

The F-15 Program is the only organization analyzed where initial provisioning tasks are the primary responsibility of an existing RILSA. This responsibility and the relationship of the RILSA and the ALC are illustrated in an F-15 briefing outlining the program's management philosophy: "The initial provisioning will be accomplished by an organization co-located at the contractor's facility [the RILSA] to make all logistics decisions and quantifications to insure complete and coordinated support. AMA [now ALC] changes to these decisions will be on a completely justified exception basis" (16).

This decision to give the RILSA authority and responsibility for initial provisioning actions resulted in a re-orientation of the organization's primary duties and greatly affected its size. The initial duties of the F-15 were primarily technical, including influencing design and insuring the optimum use of standard parts. The decision on initial provisioning led to emphasis on the preprovisioning and provisioning tasks as the primary duty of the RILSA.

The F-16 Program. While the F-16 Program has not yet established a RILSA, initial planning for the initiation and evolution of the organization has been accomplished. These plans call for an initial manning strength of nine personnel, who are to be assigned at the prime contractor's facility on 1 September 1975. The manning is to be increased and, by one year later, an additional twenty-one personnel are to be assigned to the RILSA. Ten of these personnel are to be funded by the NATO consortium countries who have elected to purchase the F-16. An additional four personnel, one from each of the consortium countries, are also considered as a possibility for addition to the RILSA manning. The maximum programmed RILSA strength is therefore thirty-four, with fourteen of this number dependent upon the decision of the NATO countries.

Skills envisioned for the F-16 RILSA initially include a Logistics Specialist as Chief, Equipment Technicians, Inventory Managers, and an Engineer. The forecast buildup includes additional Equipment Technicians, Inventory Managers, and Logistics Specialists; and adds Catalogers and Maintenance Technicians. Personnel from the consortium countries include additional specialists in the skills already in place, plus Maintenance Technicians from each of the countries.

The primary orientation of the RILSA will be toward the initial provisioning function. The current plan is to give the RILSA primary responsibility and authority for accomplishing these tasks, an approach resembling that currently used on the F-15 Program.

The SPO personnel interviewed considered the design to be basically firm due to competitive prototyping of the aircraft. Therefore the RILSA is not expected to be able to influence the design and this is not a task of the RILSA.

Synthesis of Existing RILSAs

The programs analyzed during this research varied in their use of a RILSA. This variance was expected, as each program has its own characteristics and peculiar requirements which affect the RILSA function. During the course of this research, certain common features and explainable differences in the current RILSA organizations were observed. This section addresses these points and synthesizes a RILSA based on an analysis of the current organizations. The synthesized RILSA is not intended to provide a recommended approach to utilizing the concept, but rather to provide a composite picture of the RILSA as employed in contemporary weapon system acquisition programs.

Establishment and Organizational Relationships. The RILSAs examined were established at times ranging from immediately after contract award for the full scale development phase to well into the full scale development phase. It was the opinion of individuals interviewed from the programs which established the resident activity later in the full scale development phase that the RILSA should have been in operation earlier and/or more manpower committed. It was their opinion

that the later establishment date did not allow as great an input to the equipment design and therefore did not fully inject logistics considerations into the hardware. A synthesis of the establishment of existing RILSAs is that the organization is currently initiated in the full scale development phase, with a tendency to be established later than the perceived optimum time.

In consonance with DoD policy, the RILSA is organized as an extension of the ILSO and is administratively attached to the AFPRO. In some programs, the RILSA is assigned as an extension of both the ILSO and the appropriate ALC. The synthesis RILSA is responsive to the DPML upon establishment and maintains liaison and close coordination with the ALC.

Numbers of Personnel Assigned

The number of personnel assigned to operate in residence at a contractor's facility varied from six to thirty. This large variance can be explained by the fact that the F-15 Program accomplished the initial provisioning tasks at the contractor's facility. Conversely, the programs with a comparatively small number of RILSA personnel either were not as yet beginning that task or it was being accomplished by the appropriate ALC. Interviews with F-15 logistics personnel resulted in an estimate of ten personnel as the appropriate RILSA strength had initial provisioning been accomplished by the ALC. Based on this information, two options are evident in synthesizing RILSA manning:

1. Initial provisioning is not done at the contractor's facility. In this case, the RILSA on a major weapon system acquisition program

is seen to consist of eight to ten personnel during the full scale development and early production phases.

2. Initial provisioning is done at the contractor's facility. In this case, the number of personnel committed to RILSA activities is approximately thirty people during the early production phase.

The percentage of total ILSO personnel assigned to the RILSA varied from 31% to 63%. If the F-15 RILSA personnel committed to the initial provisioning function are not included in this calculation, the percentages vary from 31% to 50%. The considerations which enter into the decision on total ILSO personnel and distribution of these personnel are complex. Based on an analysis of the interviews with logistics personnel from the programs studied, the more important considerations are as follows:

1. Technical complexity of the hardware was a major determinant of the number of personnel required to adequately man a RILSA. If the hardware is complex and technically advanced, more specialized expertise is required to adequately monitor the design effort, therefore resulting in a larger number of personnel in the RILSA than if more general technical expertise could be utilized.

2. The tasks available for the RILSA to perform also affect the number of personnel required. The extent to which the design of the weapon is perceived to be firm, the contractual arrangements of the program, and the initial provisioning concept are factors which influence required RILSA manning. A firm design reduces the requirement for technical personnel early in the program, while initial provisioning at

the ALC reduces the requirement for personnel in the later stages. If contractual arrangements have not been made to provide data to RILSA personnel, there is less requirement for their presence in the contractor's facility.

3. The management philosophy of the PM and DPML regarding the function of a RILSA is also important. This philosophy is a primary determinant of the responsibility and authority delegated to the RILSA. On some of the programs examined, the RILSA acts primarily as a liaison between the contractor, the ALC, and the ILSO. On other programs, the RILSA is extended greater authority and acts with autonomy in several areas. Under the former philosophy, the number of personnel required at the RILSA is both absolutely and relatively (compared to the ILSO) less than under the broader philosophy.

There are other factors which enter into the decision regarding the number of personnel to assign to the RILSA, including the question of approval of requested manning levels. However, the three factors specified above were seen as the major determinants of RILSA manning levels. In particular, the autonomy granted the RILSA in its exercise of the initial provisioning task was the primary determinant of overall RILSA strength and its relative numbers as compared to the SPO organization.

Skills Utilized. The skills of personnel assigned to current RILSAs varied widely. The most common expertise utilized was that of Equipment Technician. These individuals were felt by all respondents to be very important to the RILSA effort. As the programs examined were in phases ranging from early full scale development to deployment, inclusion of Equipment Technicians was not dependent on program phase.

The second most common skill utilized was that of engineer. Every program utilized engineers in their current RILSA operation and in all except one instance, the engineers were military officers.

The third most commonly utilized skill was that of Inventory Manager. This skill was stressed primarily on those programs where the RILSA was heavily involved in initial provisioning.

Other skills varied widely in their use. Included in current programs were such skills as Maintenance, Logistics Specialist, Cataloger, Supply Clerk, and Logistics Plans and Programs.

The specific skills utilized by current RILSAs were found to be a function of two factors. The first factor was the degree to which the weapon system design was seen as fixed. Where the design was firm, technical skills were not stressed as the RILSA was not felt to be able to influence hardware configuration. The second factor affecting the skills utilized was the method of initial provisioning. If initial provisioning was accomplished at the contractor's facility, the skills required to accomplish that task assumed a greater importance and personnel with that expertise were emphasized.

The synthesized RILSA includes Equipment Technician, Engineering, and Maintenance Skills. Depending upon the management philosophy and particularly the initial provisioning decision, such skills as Logistics Specialist, Cataloger, Inventory Manager, and Provisioning Specialist are also included.

Duties. As was the case with numbers of personnel and skills, duties of current RILSAs varied from program to program. Primary areas of responsibility are influencing equipment design and initial provisioning. Other important RILSA functions included assuring optimum

utilization of standard parts, identifying and procuring GFE, SMR coding, reviewing Class II changes, and overseeing MEA/ORLA activities. An informal responsibility was to act as a channel of communication between the Air Force and the contractor.

Factors having the greatest influence on the duties assigned to current RILSAs were as follows:

1. The status of the design affects the RILSA's ability to influence hardware configuration. Design status is closely tied to phase of the acquisition cycle and becomes progressively more firm and therefore more difficult and costly to change. As Critical Design Review (CDR) is the point at which design is considered fixed, a RILSA established near or after CDR would not be expected to have a great influence on hardware configuration. Similarly, competitive prototyping may result in a weapon system which enters the full scale development phase with a relatively fixed design. Therefore, programs using competitive prototyping would not expect the RILSA to have as great an influence on equipment design as in a conventional program at the same phase.

2. The management philosophy practiced on a particular program determines the autonomy of the RILSA. The degree of autonomy delegated to the RILSA is a factor, not of the general areas of responsibility, but of the specific authority to operate within those general areas.

3. The specific contract is a determinant of the duties available for the RILSA to perform. If the RILSA is to act as a review authority for contractor data or analyses, provisions must be made in the contract for delivery of that data.

4. The location of the initial provisioning activity is a significant determinant of the emphasis on the RILSA and of its duties. This decision is a primary determinant of the scope of RILSA activities. The initial provisioning function requires that the RILSA take an active role and expands the duties of the agency.

Specific functions of a RILSA are dependent on current program emphasis, and therefore of the current phase of the acquisition cycle. Primary duties of the synthesized RILSA are therefore detailed under the evolution portion of this section.

Evolution. The evolutionary pattern posed as a synthesis of the programs and RILSAs analyzed has the following characteristics:

1. The RILSA is initially established during the early to mid full scale development phase with an initial contingent of six to eight personnel. The initial skill orientation is toward technical personnel such as Equipment Technicians and Engineers. The primary duty of the RILSA in this phase is to influence the equipment design to improve maintainability. Another important function is to provide an information exchange interface between the contractor, the DPML, and the ALC. This latter function continues throughout the life of the RILSA.

2. As the full scale development phase progresses, the RILSA is built to a strength of ten personnel. After CDR, and as the program nears the production phase, provisioning skills may be added to aid in AMR coding, developing the provisioning data base, and other provisioning tasks. The RILSA orientation in this phase shifts from influencing design to such areas as AGE identification, assisting in procuring GFE, and detailed ILS planning activities.

3. As the program enters the production phase, the RILSA is reduced in manning and depending on the amount of development continuing, is terminated approximately three years into the production phase. If initial provisioning is done at the contractor's plant, the number of personnel is built to a level of approximately thirty to accomplish this task. In this case, termination of the RILSA will not occur until five or more years into the production phase.

It is clear that there are no sharply defined changes in activity, number of personnel or skills on any program. Many of the activities described above are performed concurrently and by the same personnel and continue longer on some programs than on others. The general evolution outlined above was followed or projected by the RILSAs studied.

Summary

This chapter portrayed the RILSA as it is currently utilized on five contemporary weapon system acquisition programs. The RILSA of each program was defined in terms of its establishment and organization, the numbers and skills of the personnel assigned, their duties, and the changes within the RILSA as the program progressed through the acquisition cycle. A summary of this information and the synthesized RILSA is presented as Table II. The next chapter presents and analyzes the normative judgements and perceptions of all personnel interviewed.

Category	Program B-1	AWACS	A-10	F-15	Synthesis
Establishment	Full scale development 11 personnel	Full scale development 6 personnel	Full scale development 6 personnel	Full scale development 5 personnel	Full scale development 7 personnel
Organization	Extension of ILSO	Extension of ILSO	Extension of ILSO and ALC	Extension of ILSO and ALC	Extension of ILSO
Personnel	8	11	6	30	10
Current Stage	Late full scale dev.	Early production/continue development	Early production	Mid production	Early production
Skills Emphasized	Technical ·Maintenance ·Engineering ·Logistics Plans	Technical ·Equipment Technician ·Maintenance ·Engineering	Technical/ Provisioning ·Equipment Technician ·Supply Spec.	Provisioning ·Equipment Technician ·Inventory Mgr ·Supply	Technical ·Equipment Technician ·Engineering ·Maintenance
Duties (Current)	·Influence design ·Handle GFP ·Increase contractor visibility	·Influence design ·Assist in AGE, standard items Information	·SMR coding ·Information	·Initial provisioning tasks	·Assist in AGE, standard parts, SMR coding. ·Information interface
Evolution	·Personnel 11--8--higher ·Duties Technical to provisioning oriented	·Personnel 6--11--6--0 ·Duties Technical	·Personnel 6--4--0 ·Duties Technical to provisioning oriented	·Personnel 5--10--32--lower ·Technical to initial provisioning	·Personnel 7--10--5--0 ·Duties Technical to provisioning oriented

TABLE II. Summary and Synthesis of Existing RILSAs

VI. The Perceived Role of the RILSA

The preceding chapter presented a view of the RILSA as employed at the time of this research. The interview data used in that chapter was essentially factual, showing current operations and plans, and was based on documentation and information from respondents currently employed in SPO and RILSA organizations. This chapter examines the RILSA from a normative viewpoint and describes the RILSA as the respondents perceived it should be employed. Data for this chapter was gathered from all interview respondents. The RILSA Chief and DPML of each program studied, other ILSO personnel, ALC managers associated with the programs, logistics representatives of AFSC and AFLC, AFPRO personnel assigned to the prime contractor plants, and logistics personnel of the prime contractors were interviewed. These individuals present a broad cross-section of logistics expertise, are familiar with the RILSA concept, and provide different perspectives regarding the RILSA.

The PM is faced with two basic decisions concerning the RILSA--should one be established and, if so, how should it be utilized. This chapter examines the RILSA concept by concentrating on those two decisions. As with most attempts at categorization, the result is not a clear division between establishment and utilization. For example, some of the advantages in establishing a RILSA lie in the functions it can perform and those functions are also appropriate to the utilization discussion. Therefore, some duplication is unavoidable in examining the two decisions, but has been held to a minimum consistent with a complete examination of the concept.

Establishment

The establishment question is the first considered by the PM. This section presents and analyzes considerations relevant to that question.

Need for a RILSA. The first consideration involves the need for a RILSA. The respondents were asked if they felt that an element of the Integrated Logistics Support Office should be established in residence at a contractor's facility. Of the thirty personnel interviewed, twenty-eight indicated strong agreement and two indicated agreement with the necessity of establishing a RILSA on a major weapon system acquisition program. Further discussion with the respondents resulted in the identification of certain provisos to their adjudged need for a RILSA. One major area of concern involved the contractual arrangement and centered on two facets of the contract, specification of data and type of contract.

Specification of Data. Timely and continuous access to contractor data was judged a necessity if a RILSA is to function effectively. To insure this access, attention must be given to the Contract Data Requirements List (CDRL), which specifies those data the contractor is required to prepare and publish. Data items to be used by the RILSA must be included on the CDRL and must include a time of delivery if the RILSA is to be effective.

Two types of problems can result if proper attention is not given to the CDRL. The first occurs when required data are not specified as deliverable to the RILSA. In this case, the data is not available for the RILSA to utilize in accomplishing assigned tasks. A point was made by some respondents that a close working relationship between the RILSA

and the contractor can overcome some difficulties, but the general feeling of the respondents is more accurately illustrated by the comments: "the contractor is in business to make money and he doesn't make money by giving you something" and "when the (non CDRL) data supports the contractor's decision it is readily available; when it doesn't, you will never see it."

The second problem occurs when the data is required by the CDRL, but is not available when needed. To insure that ILS planning is concurrent with the development of the weapon system, it may then become necessary to make critical decisions without necessary data. Data received after a decision is made is of historical interest only and is useless as an input to the decision process.

The necessity of specifying required data items on the CDRL was a particular concern of RILSA personnel interviewed. It was their experience that omitted data caused them considerable difficulty and even negated their usefulness in some areas. A specific example is the nonavailability of MEA/ORLA data. On one contract, this data was not a CDRL item and there was no specified time for the contractor to perform the analyses. Therefore the RILSA was unable to accomplish what was intended as one of its primary functions, review of the contractor's MEA/ORLA efforts. One reason for this failure to make contractual provisions is that the decision to establish a RILSA is delayed until the contract is finalized, and the expense of change to the contract greatly increased. It may be noted from the preceding chapter that the decision to establish a RILSA is generally made during the full scale development phase, after contract arrangements have been

formalized. This would indicate that, if a RILSA is to be established, at least certain preliminary steps should be taken prior to the contract finalization.

Type of Contract. The second facet of the contract proviso was the type of contract, an area mentioned by both RILSA and contractor personnel. The degree to which the RILSA can influence the support system is at least partially determined by specifics in the contractual arrangements. Some arrangements can cause the contractor to be less willing to work with the RILSA. A specific example mentioned concerned a contract where AGE was a fixed price item. This approach resulted in a condition where it was to the contractor's advantage to minimize the amount of contractor-furnished AGE, even if support costs could be reduced by developing new equipment. This advantage affected the contractor's willingness to be influenced by RILSA efforts in identification and design of AGE.

Other provisos to the need for a RILSA centered on such considerations as availability of personnel, available duties, and time of establishment. To avoid duplication, these considerations are discussed in other sections of this chapter. Overall, these stipulations were not seen to eliminate the need for a RILSA, but were items which should be carefully considered when weighing the establishment decision.

Uniqueness of the ILS Concept. The preceding section presented data indicating unanimity in the judged necessity of a contractor-based ILS detachment. However, it should be noted that other Directorates in most SPOs do not utilize a resident representative, but interface with the contractor through the AFPRO and periodic visits. The respondents were asked why they felt the accomplishment of ILS tasks was

so unique that it required a RILSA. A number of reasons were given for this requirement and are examined in order of their frequency of response:

1. The AFPRO is not oriented toward logistics tasks and is not manned with the expertise necessary to accomplish them.

The AFPRO was felt to have personnel skilled in disciplines relating to a number of SPO Directorates and to be capable of performing the interface with those Directorates. However, in the ILS area the AFPRO was not seen to possess the skills in logistics disciplines necessary to act as an interface between the contractor and the ILSO.

The primary function of the AFPRO is to insure that the contractor is performing in accordance with contract schedules and specifications. To perform this function, the AFPRO is concerned with production administration, quality assurance, engineering and contract administration. These areas are closely related to the development and production of a weapon system, but do not directly address the support of the system after it has been deployed. The personnel assigned to the AFPRO are skilled in the above areas, but are not oriented toward logistics considerations. For example, the use of one type of fastener on a part of an aircraft may meet contractual requirements and be acceptable from a design engineering point of view. However, the possibility that this type of fastener may greatly increase required maintenance time would not necessarily be detected by AFPRO personnel inexperienced in maintenance considerations. Such logistics concerns as determining the impact on maintainability of design features, reviewing and analyzing the contractor's recommendations for optimum repair levels,

participating in Maintenance Engineering Analysis (MEA) efforts, or initial provisioning are not assigned activities of the AFPRO, nor is it manned to accomplish them.

In general, the interviewees did not feel that AFPROs should be manned to accomplish ILS tasks. The use of logistics personnel from AFLC resources was judged more effective than establishing logistics skills in AFPROs. The primary reasons for this judgement included the difficulty in finding experienced personnel to assign to AFPROs and the changing logistics skills required. It should be noted that the above views were also expressed by AFPRO personnel interviewed.

2. The amount and location of data required to accomplish ILS tasks during the weapon system acquisition process makes a resident agency mandatory.

It was held that pertinent ILS data cannot be transferred from the contractor's plant in sufficient detail and with the necessary speed and accuracy to enable a remote location, such as the SPO or ALC, to efficiently and effectively accomplish all ILS tasks. This judgement implicitly indicated that the respondents felt AFPROs, as presently manned, were not capable of handling the logistics aspects of a major weapon system acquisition program.

The detailed data seen necessary to make informed ILS decisions was felt to be available primarily at the contractor's facility. Complete transfer of this data was not judged a realistic undertaking. In addition, it was noted that questions concerning data credibility, currency and background assumptions could only be answered at the contractor's plant. To attempt to transfer data to a remote location and then answer questions by contacting the contractor would lead to

delay and confusion. It was also stated that the response of distant organizations was too slow to effectively keep logistics planning activities concurrent with weapon system development.

A resident logistics agency was held necessary to utilize data at the contractor's plant and provide an interface concerning data transferred to the SPO and ALC. For other SPO Directorates, this function was seen to be performed to a large degree by the AFPRO.

3. The orientation of ILS tasks requires a resident agency.

Research and development is conducted to produce a weapon system which will satisfy a set of performance criteria, established by specification, and measured as part of the test effort. The ultimate objective of the SPO is to produce and deploy a weapon system, within certain cost and schedule parameters, which has the capability to perform a specified military mission. The cost-schedule-performance parameters are established and their attainment is measurable during the acquisition cycle.

Logistics parameters are more nebulous and the degree of their attainment cannot be determined with exactness during the acquisition process. It is only after the system has been in the field and operational for some time that accurate measurements of support system effectiveness, in terms of support cost and weapon system availability, can be made. This inability to accurately measure the degree of achievement of ILS goals as the acquisition program progresses was held to require Air Force participation at a very detailed level to assure adequate attention is given to logistics concerns. The ILS tasks are future oriented, and success of current efforts can only be fully determined in the future. Oversights, erroneous assumptions or errors

are not necessarily evident when they occur and test techniques may not determine that they have occurred until the system is deployed. Therefore, detailed attention to the contractor's activities is necessary to insure that all facets of the support system have been considered and as much error as possible eliminated. The respondents felt that the only way this detailed expert attention could be provided was through a resident ILS agency, operating at the contractor's facility.

Another aspect of the ILS tasks is that they are largely accomplished in reaction to the weapon system design and operational scenario. The support system is designed to sustain the weapon system in a given design configuration and operational environment. Even minor changes to either of these base conditions may necessitate extensive revision of maintenance concepts, optimum repair levels, or spares requirements. As examples, a change in a type of fastener may necessitate depot rather than field replacement, and the decision to base aircraft overseas may increase pipeline spares requirements. The need to continuously react and revise or reaccomplish logistics tasks requires not only immediate, detailed knowledge of design changes, but also the capability to rapidly assess impacts and react accordingly. The use of on-site logistics personnel was seen as the most effective way to stay abreast of program activities impacting logistics support and to react rapidly to those activities.

In summary, the ILS concept was not generally held to be unique from the point of view of requiring on-site representation. It was agreed that all sections of the SPO could accomplish their job better with on-site representation, but that this representation can be effectively supplied by the AFPRO for SPO activities other than ILS.

There was substantial agreement that the orientation of ILS tasks is unique. This uniqueness is a result of the fact that ILS tasks are future oriented and the degree of attainment of ILS objectives cannot be accurately measured until after deployment of the weapon system. The difficulty in measuring the success of the ILS effort during the acquisition cycle was held to require detailed, on-site participation in the contractor's activities by personnel specifically concerned with the logistics aspects of the weapon system.

Advantages of the RILSA. Another consideration in the establishment decision concerns advantages of the RILSA. A number of advantages in having logistics personnel assigned to the contractor's plant were cited by interviewees and are presented and examined in this section. The advantages noted are distinct from functions to be performed and are attributes of the continuous physical proximity of the RILSA and the contractor.

Access to Information. Information, in this context, was viewed not only as formal (CDRL) data relating to the acquisition program, but also as the informal information gained through continuous interaction with the contractor. As much of the data needed to make logistics support decisions are available only at the contractor's facility, the RILSA was judged to be in the best position to gain access to these data on a continuous basis. In addition, RILSA personnel were held to be knowledgeable of the contractor's organization and thus able to identify personnel to explain and clarify questioned areas. This familiarity was seen to place the RILSA in a unique position to keep abreast of the progress of ILS activities and insure the ILSO is informed of problem areas, trends, and current activities.

Another aspect of this advantage concerns the RILSA's knowledge of the Air Force system. Both Air Force and contractor personnel felt the familiarity of the RILSA with Air Force organization and procedures gave them a capability to assist the contractor. This capability was attributed to the RILSA's access to information and people. The RILSA was felt to be in a position to contact appropriate Air Force agencies or personnel and collect information or furnish data which might not be available through conventional channels.

Improved Reaction Time. The continuous availability of logistics personnel was cited as significantly improving the speed with which decisions were made. In part, the degree of improvement is a function of the authority of the RILSA to make decisions, but in any case the presence of a RILSA was held to improve ultimate reaction time. One contractor noted that, because of the time zone difference, they have an effective common work day with the SPO of five hours. Therefore, the availability of logistics personnel who can be contacted at any time during the contractor's work day was felt very beneficial to both parties. Another point made was that it is much easier to show a drawing or item of hardware and demonstrate a problem than to attempt to describe the problem over the telephone.

The second noted advantage of the improved reaction time was in early problem detection. One comment made was "we often find out about problems when they are in the rumor stage." This constant contact between the RILSA and the contractor offers the advantage of surfacing problems long before formal reporting or documentation would indicate any difficulty. Corrective action at the earliest stage was considered to be far easier and the RILSA was judged to allow early problem detection.

Emphasis on Logistics Considerations. The act of establishing a RILSA was seen to illustrate and emphasize an Air Force commitment to the ILS concept. This advantage is to a degree psychological, but was cited as being of great practical value. The permanent presence of logistics personnel was judged to affect the contractor's performance in that it indicated the Air Force "really meant it [ILS]." The existence of RILSA personnel in the plant to question design, contribute ideas, and interact with contractor personnel was seen to insure that designers remained aware of logistics considerations. It was held that this condition can only result if close working relations are established with contractor personnel and if RILSA personnel are continuously involved in on-site activities. One contractor noted: "There is no way to phase it [ILS] into the program unless you [the Air Force] have a good interface with the contractor."

These were the major advantages seen to be gained by employment of a RILSA. Certain disadvantages were also noted and are examined in the next section.

Disadvantages of the RILSA. Two classes of RILSA disadvantages were noted by the respondents. The first concerned personnel problems associated with the RILSA and the second involved functional problems centered around RILSA activities.

Personnel Problems. There was complete agreement among all respondents that personnel assigned to a RILSA must be extremely well qualified individuals. In addition to technical ability in their individual expertise, RILSA personnel were judged to require initiative and a capacity for independent, unstructured work. The ALC was judged a primary source of civilian logistics personnel for RILSA manning, and

it was noted that the ALC must be firmly committed to the concept and cooperate with the DPML in identifying and supplying skilled personnel for the activity. Even with this cooperation, a problem area was seen to exist in gaining the agreement of qualified civilian personnel to relocate for a comparatively short time. This problem was compounded when the contractor's facility is in an area where living costs are higher than at the ALC. Another problem is that many ALC employees see the RILSA assignment as resulting in loss of visibility in what they consider their permanent job at the ALC, a condition felt to be a disadvantage as promotion selections are made at the parent ALC. This hesitancy to move was viewed as a prime disadvantage in recruiting qualified personnel to man a RILSA. Some inducements used in current programs include promotion in the Civil Service ranks, protection from reduction in force (RIF) programs, and guaranteed return to the parent ALC after a specified tour was completed. Even with these inducements, difficulty is encountered in recruiting qualified personnel for RILSA assignment.

Some personnel problems, especially that of agreement to move, can be alleviated by manning RILSA operations with military personnel. There was considerable division of opinion as to the feasibility of this approach. Respondent positions ranged from the view that the RILSA should be manned predominately with military personnel, to the opposite, that no one except possibly the chief should be military. Individual positions were independent of whether the respondent was military or civilian, and centered on the question of whether military personnel had the necessary background and knowledge to accomplish RILSA tasks. In any case, the selection of personnel was seen as the

most critical decision and greatest potential problem in establishing a RILSA.

Functional Problems. The second class of problems noted concerned those difficulties arising as a result of the actual work of the RILSA or its relationships with other organizational units.

The presence of a RILSA was viewed by several respondents as increasing the possibility of constructive changes to the contract. A constructive change is, in effect, a "bill" presented for activities done at the direction of Air Force personnel which transcend the present contract. This possibility was cited because respondents felt personnel normally selected to man RILSAs have not been exposed to the techniques and procedures of working with a contractor. Although cited as a possible problem, the general opinion was that constructive changes could be circumvented by appropriate briefings and training of RILSA personnel.

A second potential problem cited was that the DPML could lose some control over the logistics aspects of the program. This condition could occur as a result of the RILSA making decisions which were not properly coordinated with the DPML. This potential problem was cited only by DPMLs or Deputy DPMLs and was posed as a hypothetical problem; no DPML stated that loss of control had actually occurred.

Another functional problem mentioned concerned the responsibility and authority of the RILSA. While it was generally agreed that the RILSA could not and should not actually accomplish all logistics tasks, the authority of the RILSA was subject to differing perceptions. One distinct attitude was that the RILSA should be basically a liaison between the ILSO, the ALC, and the contractor. These respondents held

the ability of the organization to make substantive decisions was limited by their location, a narrow view of the overall acquisition program, and a lack of sufficiently broad logistics knowledge. Typical comments of these respondents were: "The RILSA should be a liaison. It is too remote to make decisions." and "The focal point is the SPO. The RILSA is a satellite and cannot decide."

A diametrically opposed view was held by others. Under this concept, the RILSA should have a great deal of responsibility and authority in logistics activities. This attitude was demonstrated by comments such as: "The RILSA must act and decide. The data is at the contractor and no one else can respond fast enough." and "Give them [the RILSA] a strong hand. They must have responsibility and authority."

One point which was noted is that there is a difference of opinion as to which organizational element is at the "remote location." In general, the interviewees associated with programs felt the remote location was where they were not assigned. The primary point made by those who felt the RILSA central to logistics decisions was that of data availability and currency of information. This viewpoint was predicated on the idea that without complete information and knowledge of the situation, both decisions and reaction time may suffer. The opposing view was that the RILSA did not have the broad experience in logistics, technical knowledge, or wide perspective of the program necessary to make major decisions, regardless of their proximity to detailed information.

Thus there are two distinct viewpoints of the authority and responsibility which should be delegated to the RILSA. The first of these visualized the RILSA as having relatively little responsibility

or authority while the second saw the RILSA as having responsibility for the accomplishment of many ILS tasks and the authority to make substantial decisions. These differing viewpoints resulted from the respondents' opinion as to the centrality of the RILSA to the ILS decision-making process and its capability to make major decisions. This problem is further complicated by the ALC, which has power to affect RILSA operations. The ALC was seen by some respondents as having directive authority over the RILSA in all phases of the acquisition process.

Precise definition of responsibility and authority between the DPML, ALC, and RILSA was seen as a primary problem area affecting RILSA operation. Establishing and coordinating this definition was judged a major functional problem and disadvantage to the RILSA.

Establishment-Time Phasing. The next consideration in the establishment decision is the time when RILSA operations are to begin. The scenario posed for this interview question was that of a major weapon system acquisition program which progressed smoothly through each phase of the acquisition cycle without competitive prototyping. Respondents were asked to note when in this cycle a RILSA should be established.

The responses to this question were divided between "immediately at the start of full scale development" (55% of responses) to "the validation phase" (45% of responses). There was no clear division of opinion by category of respondent or by program.

Those individuals selecting the full scale development phase to begin RILSA operations felt this was the earliest time the agency could be effectively used. They felt initial efforts of the RILSA should be directed toward evaluating and influencing design but up to that point the design was so nebulous that effective evaluation could not

be performed. The respondents did specify that the RILSA should be in place as soon as the contract for full scale development was awarded. This would require the identification of personnel and other preliminary arrangements prior to source selection.

Those respondents indicating RILSA operations should begin in the validation phase felt inadequate attention is given to maintainability considerations in the early phases. It was their judgement that contractors either do not fully understand the Air Force desire to incorporate maintainability into weapon system design, or that they consider their time and resources are more productively directed toward improving performance. These respondents did not think the RILSA would completely alleviate this situation, but felt it could improve the ultimate system design. Recommended validation phase RILSA activities included participation in such activities as determining logistics data requirements, establishing logistics criteria for source selection, and defining logistics characteristics and requirements for the weapon system. It was felt that the cadre formed through participation in these activities would be an advantage in later program phases.

Termination-Time Phasing. The corollary to the question of RILSA establishment time is that of termination of the activity. Unlike the previous question, opinions of respondents were not clearly divided. There was unanimity that the operation should be retained into the production phase. There were widely divergent opinions as to how long into the production phase the RILSA should continue to operate. As noted in the previous chapter, the question of termination is closely tied to the initial provisioning concept used on the program. Those

respondents who felt this task should be accomplished at the contractor's plant recommended continuation of the operation until well into the deployment phase. If, however, the respondent thought initial provisioning should be accomplished at the ALC there were two approaches to the termination recommendation. The first approach was that the RILSA should be retained for one or two years into the production phase and then disbanded. Any remaining tasks were to be accomplished through visits to the contractor and periodic conferences. The other approach was that the RILSA should be retained as an organizational unit, perhaps with a lower level of manning, to function as a logistics interface between the contractor and both AFLC and the using command(s). In this capacity, the RILSA would aid in the resolution of problems arising during the operation of the weapon system. This latter approach would insure retention of on-site logistics personnel well into the deployment phase.

The wide divergence of responses to the termination question suggested this question as one which can only be answered on a program-by-program basis. It must then be answered by evaluating the initial provisioning concept used and the RILSA functions according to the philosophy of the managers involved.

Prototyping-Effect on the RILSA. A number of recent weapon system acquisition programs have involved final selection of a single contractor to proceed into full scale development on the basis of a competitive prototype flyoff. The programs analyzed who used this approach did not use a RILSA during the competitive phase. Since the emphasis on competitive prototyping appears to be increasing, its effect on the employment of a RILSA was explored. The personnel interviewed were asked

their perception of the effect of prototyping on the RILSA. The questions asked centered on two phases of the program, prior to source selection of the winning prototype and after source selection.

Prior to Source Selection. There was considerable interest among the respondents in using a RILSA at competing contractor's facilities. A significant number of respondents felt if logistics considerations were not introduced at this stage, the system design may become so firm that little change could be made without incurring major costs. These respondents viewed this phase as the ideal time to insure that logistics requirements are considered and included in equipment design.

Although RILSA activities were judged valuable during the pre-source selection phase, significant problems were envisioned in implementing this approach. A primary difficulty noted was whether satisfactory contractual arrangements for the RILSA could be made. It was felt that the contract must define the role of the RILSA in such a manner that it is useful, yet does not impinge on the contractor's authority and responsibility for the final product. Other problems cited were the possibility of protest by the loser of the competition alleging Air Force guidance as the cause of his loss and each contractor's fear that confidential information might be disseminated to his competitors. Another view of the RILSA in this phase was given by one respondent who thought the establishment would be a good idea in theory but would have no practical value "unless logistics considerations are given more weight in source selection."

It was the majority opinion that the establishment of a RILSA prior to source selection was of potential value to the Air Force, but the problems which might ensue were of sufficient magnitude to make the

idea not feasible. Nevertheless, a significant minority (35%) felt the possible gains outweighed the problems and that RILSAs should be established at each competing contractor's plant.

After Source Selection. All except one of the interviewees stated that a RILSA should be established immediately after final source selection. The dissenting respondent felt the design of the system was too firm after a prototype had been built, logistics personnel would not be able to influence equipment, and hence a RILSA should not be established.

The major effect of prototyping on the RILSA was seen to be the need for fewer personnel in the initial stages of the full scale development phase. Since the design was considered to be essentially firm by the majority of respondents, the requirement for engineering and maintenance skills was seen to be reduced.

There were a few individuals who agreed with the need for a RILSA after source selection and also voiced the opinion that the system design was actually not as firm as commonly supposed. They felt that even after a prototype is built many changes are made which affect maintainability and that those changes could be influenced by a RILSA. The degree to which the design is firm was seen as partially a function of the individual program, but the programs examined actually changed design more than was assumed by the majority of respondents. It was also noted that many changes, such as component placement and access, can have a significant affect on maintainability without being considered major design changes.

The concensus was that for a competitive prototype program a RILSA can be effective after source selection but that the initial cadre should

be smaller and the need for technically oriented personnel is lessened.

Utilization

The preceding section concerned the establishment of a RILSA, presenting and analyzing the perceptions of individuals interviewed during this research. The presentation and analysis was accomplished in terms of factors felt to play a major role in the establishment decision. These factors were: 1. the need for a RILSA, 2. uniqueness of the ILS concept, 3. advantages of the RILSA, 4. disadvantages of the RILSA, 5. establishment-time phasing, 6. termination-time phasing, and 7. prototyping-affect on the RILSA.

The utilization of a RILSA is the second question considered by the PM. This section examines the utilization of a RILSA by again examining and analyzing comments of personnel interviewed. This section focuses on elements considered most relevant in determining the role of the RILSA. These elements are: 1. RILSA functions, 2. required skills, and 3. number and distribution of personnel resources between the SPO and RILSA organizations. The last element is included to illustrate the relative distribution of ILS effort between the SPO and the RILSA.

RILSA Functions. The first utilization element considered is that of the functions to be performed by the organization. Functions are a key decision and have a significant impact on the remaining elements. To focus more sharply on this decision, two methods of gathering data were used. First respondents were asked to enumerate what they considered were the major duties of a RILSA and those duties were discussed

and recorded. The respondents were then given a list of ILS tasks prepared by the writers and asked to indicate their degree of agreement or disagreement that each was a duty which could best be performed by a RILSA. The result of this effort was two sets of data: a list of general RILSA duties and an evaluation of specific functions. Both sets of data are presented and analyzed in this portion of the utilization section.

General Functions. An analysis of the major functions of the RILSA, as visualized by the interviewees, reveals four categories of tasks. These four categories are: 1. influence design, 2. analysis and planning, 3. information interface, and 4. preprovisioning and provisioning. Each of these categories is examined in detail.

1. Influence Design. The initial function of a RILSA was seen to be that of influencing weapon system design to reduce future support problems. The effective accomplishment of this effort was judged a primary goal of the RILSA.

A number of factors were seen as affecting this emphasis on design activities. Primary among them was the opinion that logistics considerations do not play as important a part in such areas as the request for proposal, source selection, and design as is warranted by the magnitude of future support costs. The cause of this condition was seen to be an outgrowth of the emphasis placed on performance by the user, SPO, and therefore the contractor. A certain amount of this emphasis was felt to be appropriate; however, the engineering approach used on most programs was felt to be so oriented toward performance as to constrain compromises and tradeoffs necessary to improve the integration of support and weapon systems.

Another factor was difficulty in specifying the affect on support costs and/or system availability of different design approaches. Logistics support costs are primarily encountered late in the life of a weapon system. These costs are estimated and considered during the acquisition cycle; however, during those phases when the system design is evolving, pressures of achieving acquisition cost-schedule-performance parameters were seen to overshadow possible later savings in support costs or improvements in availability. This factor was seen to result in reduced emphasis on logistics activities which could adversely affect those parameters.

The RILSA was seen by respondents as an approach to insuring that logistics aspects are constantly considered and questioned as the design evolves. Mentioned RILSA design activities included examining drawings and hardware and recommending maintainability improvements in such areas as fasteners, component access, equipment placement, and connector location. Another effort seen as important was constant interaction with the contractor to insure the identification and optimum use of standard parts instead of more expensive newly designed components. A further area mentioned was providing assistance to the contractor and AFPRO in identifying and securing Government Furnished Equipment (GFE) to replace more expensive Contractor Furnished Equipment (CFE).

One example noted as a significant improvement to system maintainability was the redesign of a wing. The original design included a wingtip fastened with rivets, meaning damage to the wingtip required replacement of the entire wing. A change recommended by the RILSA resulted in the use of taper lock fasteners to replace the rivets. After this change, damage to the wingtip necessitated replacement of

only a small portion of the wing rather than the entire assembly. The significance of this example is that the potential problem was noted by a RILSA engineer in a routine examination of the drawings. After the improvement was suggested to the designer, he readily agreed and the change was made by the simple act of penciling out "rivet" and adding "taper lock" to the drawing parts list.

The importance of close interaction between designers and logistics personnel was stressed by the respondents. This importance has also been noted in other research concerning program management. For example, the Logistics Management Institute, in a document entitled Introduction to Military Program Management, states:

> The key seems to lie in putting these activities (design and logistics) together early in the design phases and encouraging logistics inputs before design decisions become frozen. If the logistician reviews only the finished design, changes he suggests are likely to have an unexpected impact on the designer's work...Experienced program managers are agreed that informal working arrangements and close physical proximity are essential if you are going to get the best out of both specialities (24:62).

The ability of the RILSA to play an effective role in influencing system design was seen as a primary duty of the RILSA up until the design is finalized at the Critical Design Review. After that point, the effectiveness of the RILSA in influencing design decreases and therefore emphasis on this activity diminishes.

2. Analysis and Planning. The second major functional area cited was participation in analysis and planning efforts. In most major programs, maintenance and equipment recommendations are made by the contractor and acted upon by the SPO. These recommendations are based on the results of various analyses and are used as inputs to logistics

planning performed by the contractor and the SPO. Such decisions as where equipment components are to be repaired, whether items are to be repaired or discarded, types and amounts of support equipment needed at various locations, and whether equipment must be newly designed for the weapon system or is currently available are based on these analyses. These decisions are critical components of logistics support plans and therefore of ultimate support cost and system availability. The RILSA effort in this area was described by the respondents as review, analyze, verify, recommend, and take action where authorized. A more detailed description of RILSA involvement in specific tasks is presented below to better illustrate the perceived role of the RILSA in this functional area.

The Maintenance Engineering Analysis (MEA) effort is one aspect of the logistics support analysis activity. The MEA procedures examine system design, establish logistics support requirements, and provide a basis for the system management approach to be followed after the weapon system transitions to the ALC. Using such measures as mean time between failure (MTBF) and mean time to repair (MTTR), this analysis effort is instrumental in defining support parameters and planning information such as maintenance task descriptions and support equipment, personnel, and facilities requirements. Recommendations for equipment design changes to improve maintainability also often result from MEA activities. Therefore, the MEA encompasses many of the most important support engineering tasks of the ILSO and is a key to proper ILS planning and implementation. One of the RILSA's major functions was seen to be participation in contractor activities to insure that MEA are based on current data and that the analytical methods used are appropriate. It was

felt that this attention was best accomplished by close, constant interaction with the contractor and that a resident activity could best perform the task.

Another important analysis effort is the Optimum Repair Level Analysis (ORLA). The ORLA is used to determine whether an item is to be repaired or discarded and, if repairable, at what maintenance level. These decisions impact such areas as support equipment, spare parts, maintenance personnel and SMR coding decisions. The results of ORLAs are dependent on the underlying assumptions, input data, and analytical approach. The RILSA was felt to be in a position to continuously interact with the contractor and participate in the analysis. This interaction allows assumptions to be verified, agreement between ORLA recommendations and the physical design of the equipment to be readily determined, and currency of data assured.

Another important planning and analysis effort concerns the Aerospace Ground Equipment (AGE) recommended to support the system. These recommendations are based on maintenance concepts evolved for the weapon system and results of such analysis efforts as ORLA The RILSA was seen to be in a key position to review contractor recommendations and, in turn, provide recommendations to the SPO, where the ultimate AGE decisions are made. It was felt that the RILSA could review ORLA and AGE recommendations for agreement and establish whether AGE recommendations are based on the most current data. These questions were judged more easily answered from the contractor's plant where the underlying data and assumptions are most readily available.

The analyses and planning efforts mentioned above are iterative procedures and participation of the RILSA was seen as important in

insuring the definition of a support system which provides an optimal combination of support cost and system availability.

3. Information Interface. A third key functional area noted was the RILSA's role as an information processor. There were many facets to this role. One was in the area of formal data. Such determinations as whether the Integrated Logistics Data File (ILDF) inputs are accurate and current; whether the Aerospace Ground Equipment Recommendation Data (AGERD) contains the necessary information for SPO and ALC evaluation; and formal reporting of program status to the ILSO were examples of specific RILSA efforts concerning formal data elements.

Another noted facet of this role involved providing assistance to the contractor in securing needed Air Force data. This duty could include providing failure data from tests and operational experience or studies of depot capacity and capability, data needed to prepare AGE recommendations.

In addition to verifying and supplying formal data, the value of the RILSA as a source of informal information was felt to be extremely important. Numerous interviewees cited as invaluable the existence of someone at the contractor's plant who was knowledgeable in logistics matters and trusted to provide accurate information. One respondent commented that "the [formal] reports are always outdated and, anyway, the contractor will not point out his problems." In particular, ILSO and ALC personnel felt the subjective and objective insights of the RILSA on program status and problem areas were extremely important. This information was seen to result from the RILSA's detailed knowledge of program activities and close contact with the contractor.

4. Preprovisioning and Provisioning Tasks. The accomplishment of preprovisioning and provisioning tasks was a fourth area where the RILSA was felt to have a major role. Initially, the most important tasks were seen as working with the contractor and ALC to establish the provisioning data base and explaining Air Force provisioning procedures to the contractor. Follow-on tasks mentioned were such duties as SMR coding and interim release of long lead time items. Long lead time items are those which, due to their lengthy production time, must be approved for production early in the program to insure they are available when needed.

The extent to which the RILSA is involved in initial provisioning activities is determined by the provisioning approach used. If performed at the contractor's plant, the RILSA can be manned with appropriate personnel and skills to accomplish the initial provisioning tasks. If provisioning is done elsewhere, the RILSA can be terminated or retained on a reduced manning basis.

Several respondents held a strong opinion that the RILSA should be retained until well into the production phase even if provisioning is done at the ALC. These respondents felt the RILSA should provide assistance by monitoring the provisioning data supplied to the ALC and by managing such areas as technical data and production/deployment problems.

This portion of the utilization section examined general RILSA functions and examples of those functions. The data analyzed was originated by the individuals interviewed. The next portion of this section presents specific RILSA functions and analyzes the respondents' assessment of those functions.

Specific Functions. To provide an indication of the degree of agreement among respondents concerning specific RILSA functions, a list of seventeen potential duties was given to each interviewee. The respondents were then asked to express their opinion of each potential duty based on the statement "the RILSA can best perform the function." A rating sheet was provided which allowed the interviewee to make five possible responses to each potential duty. These responses were coded to allow quantitative analysis. Possible responses and associated coding were as follows:

Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

A mean strength of opinion for each potential duty was determined by totaling the coded responses and dividing by the number of respondents. The following guidelines were established to indicate the mean strength of opinion:

Strongly Disagree	1.0 - 1.5
Disagree	1.5 - 2.5
Neutral	2.5 - 3.5
Agree	3.5 - 4.5
Strongly Agree	4.5 - 5.0

The mean responses to each function are examined, with analytical comments provided where appropriate (see Figures 5,6,7,8, and 9 for histograms of all responses).

1. Monitor and sample logistics data inputs to the Integrated Logistics Data File (ILDF) to determine accuracy against such factors as current configuration, projected reliabilities and costs.

The mean response to this function was 4.2, denoting substantial agreement that this was a duty best performed by a RILSA. The responses to this function included two of strong disagreement. Both of these respondents were associated with a program where the ILDF was in the planning stage and it was their opinion that the RILSA should not monitor input data. They felt the ALC, as recipient of the data, could judge its accuracy as it was received.

2. Review, analyze, and make recommendations regarding the contractor's Optimum Repair Level Analysis (ORLA) submissions.

The respondents strongly agreed this was a duty to be assigned to the RILSA, evidenced by the mean response of 4.7. This response is in congruence with the general functions proposed by the interviewees.

3. Act as the primary interface between the contractor and the Air Force for logistics data.

A mean response of 4.3 indicated agreement with this as a RILSA function. Several respondents stated their agreement would have been stronger had the writers not elected to use such a strong word as "primary". These individuals felt the SPO through the AFPRO should be the primary source of formal data.

4. Perform the initial review of the contractor's Aerospace Ground Equipment Recommendation Data (AGERD).

The mean response of 3.6 demonstrated agreement that this was a function of the RILSA. Examination of individual responses revealed one program where all respondents felt the RILSA should not be involved in what is ultimately a matter decided by that program's Engineering

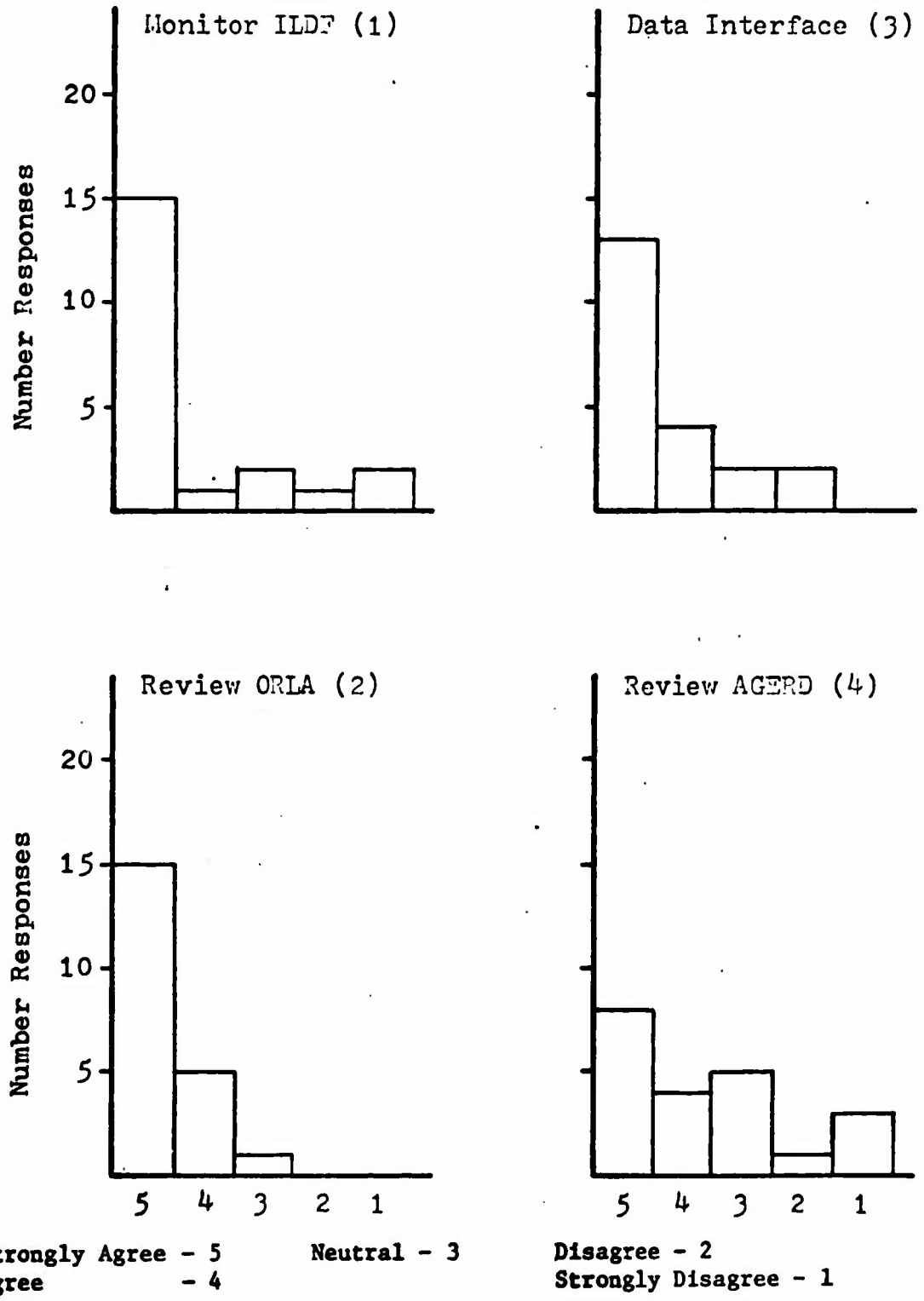


Fig.5 Histograms of Responses to Proposed Functions (1-4)

Directorate. The mean response from those respondents was 1.3, which significantly reduced the overall strength of agreement. One ALC representative also strongly disagreed with RILSA involvement in this function, specifying that this was an ALC duty.

5. Monitor equipment design activities to insure the optimum use of DoD standard items.

There was agreement that this is a duty of the RILSA. The mean response was 3.7, which was somewhat contradictory. Activity in this area was strongly stressed by numerous respondents as very important in their general functions, yet the mean response was only slightly above neutral. An analysis of responses revealed no discernible pattern of disagreement. At least one individual from each category of respondents was neutral or disagreed with the RILSA performing this function. The reasons given by those who disagreed was that this task should be accomplished by the AFPRO.

6. Monitor and coordinate the contractor's response on such items as unsatisfactory equipment reports, modifications, and flight safety reports.

The mean response to this function was 3.7, indicating the RILSA should participate in this area.

7. Monitor the contractor's Maintenance Engineering Analysis (MEA) efforts.

There was complete unanimity regarding this function. The mean response was 5.0, demonstrating that every respondent strongly agreed that this was a function of the RILSA.

8. Provide an informal interface between the DPML and the contractor.

There was strong agreement with this function, indicated by the mean response of 4.8.

9. Monitor the contractor's submissions of life cycle cost data.

The mean response of 3.9 showed agreement with this as a function of the RILSA. There was, however, a tendency toward neutrality regarding this duty (see Fig. 7). There were two stated reasons for this neutrality. The first was that "this data can be monitored anywhere" and the second was "as it [life cycle cost estimating] is done now, it's an academic exercise."

10. Monitor the contractor's development, acquisition, and positioning of logistics resources required to support the system from test through the pre-operational stage.

The mean response of 3.8 indicated agreement with this as a function of the RILSA. Where disagreement occurred, the reason given was that this task was done by the AFPRO and the SPO.

11. Assess the impact of design or design changes on maintainability.

It was strongly agreed that this should be a RILSA function. The mean response to this duty was 4.7. The respondents who did not strongly agree were associated with a program where influencing design was not seen as a major duty of their current RILSA.

12. Perform the high value spares breakout.

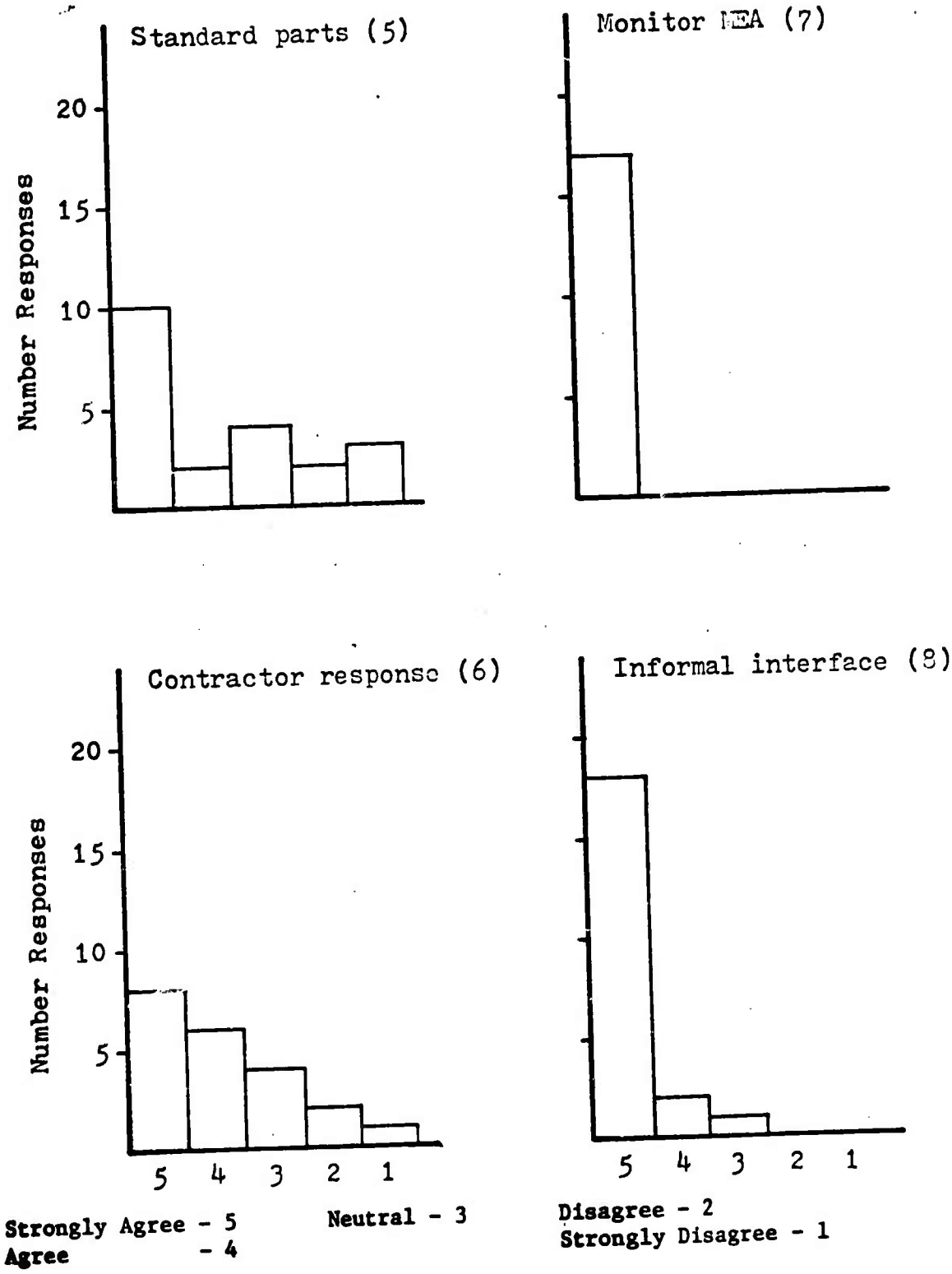


Fig.6 Histograms of Responses to Proposed Functions (5-8)

The mean response of 2.8 was neutral, tending toward disagreement. It was generally agreed that this was an ALC function.

13. Monitor the preparation of technical manuals.

The mean response to this question was 3.9, showing agreement with its assignment as a RILSA duty. One RILSA respondent stated they did not monitor preparation of technical manuals, but "made sure they were correct." Conversely, other respondents indicated disagreement with technical manuals being a RILSA function, indicating they were monitored at the SPO, the ALC, or "anywhere".

14. Manage the phased provisioning program.

The mean response of 3.1 indicated neutrality toward this as a RILSA function. This program is a specific provisioning task not presently used in some acquisition programs and lack of familiarity may have influenced some respondents to disagree with the task.

15. Monitor source, maintenance, and recoverability (SMR) code determination in conjunction with the System Manager and applicable Inventory Managers.

The mean response of 4.3 indicated that this was felt to be a definite function of the RILSA. The only strong disagreement was from Headquarters, AFLC respondents who saw this function as strictly reserved for the ALC.

16. Provide maintenance and supply technical assistance in requisitioning command and standard stock listed items.

This was seen as a RILSA duty with a mean response of 3.7. The primary area of disagreement centered about this being a specified

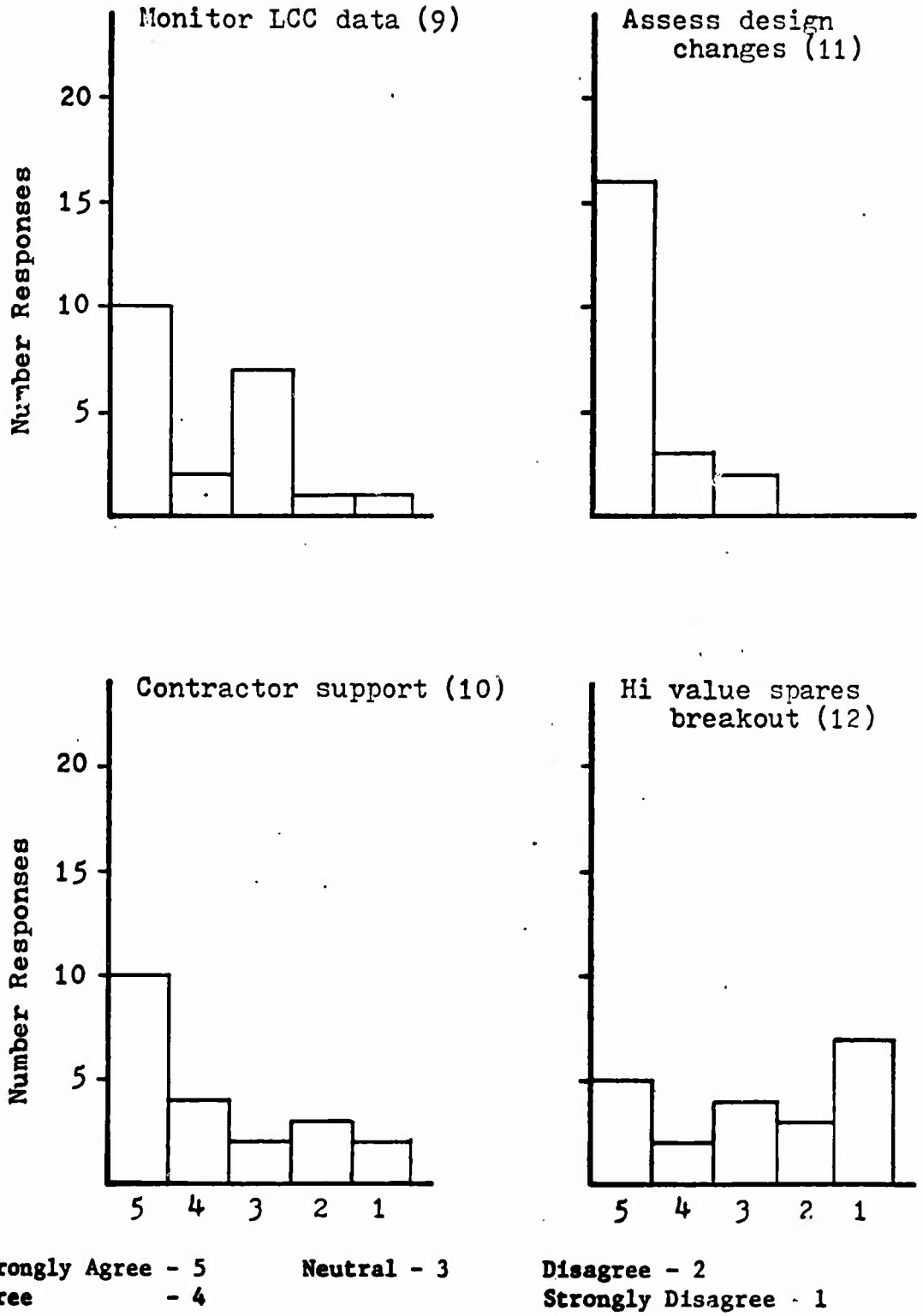


Fig. 7 Histograms of Responses to Proposed Functions (9-12)

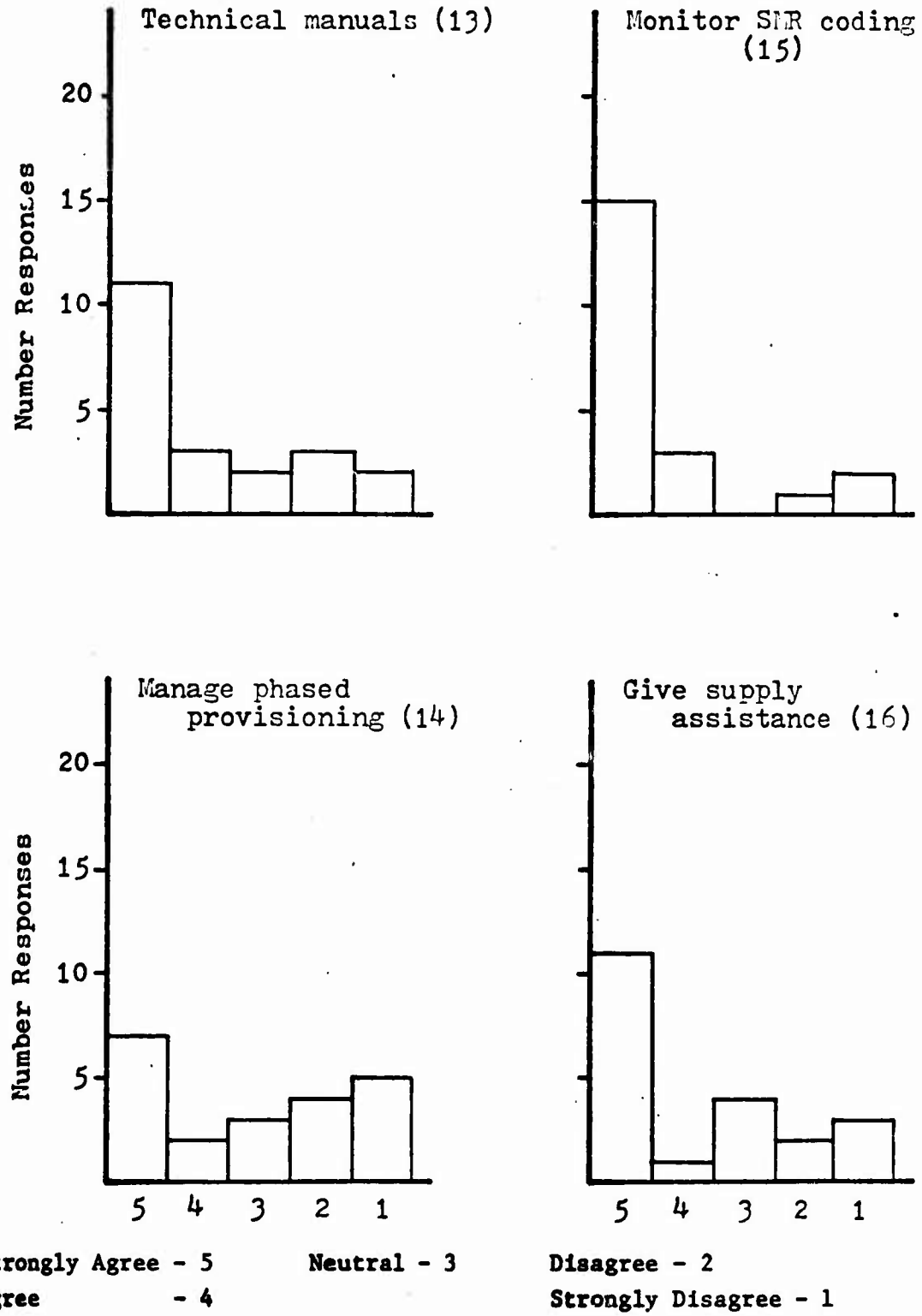


Fig. 8 Histograms of Responses to Proposed Functions (13-16)

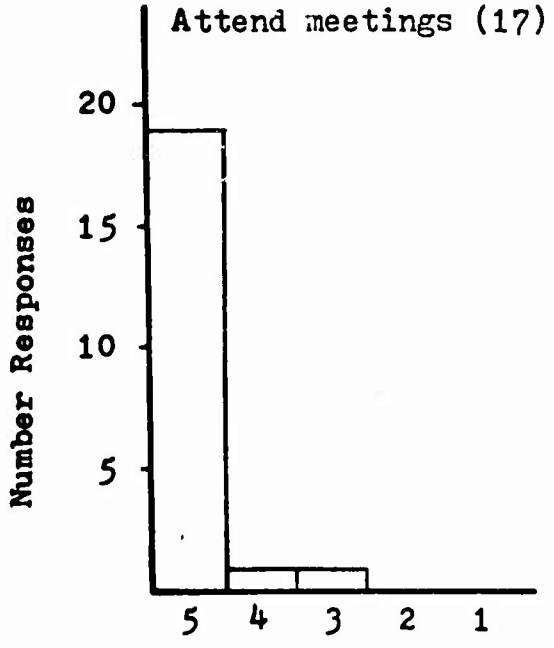
AFPRO task, although one respondent strongly disagreed with RILSA involvement, stating this was an ALC function.

17. Participate in meetings and demonstrations such as maintainability/reliability demonstrations, test and evaluation programs, and Preliminary and Critical Design Reviews.

The respondents strongly agreed with RILSA participation in meetings and demonstrations. The mean response to this question was 4.9, with no significant disagreement.

A rank-ordered summary of responses to the specific functions proposed is presented in Table III. This table shows the distribution of responses and the mean for each function. It should be noted that while thirty individuals were interviewed, only twenty-one responses to the specific functions are presented. Of the personnel interviewed, seven declined to provide opinions concerning RILSA involvement in the tasks presented. These individuals were primarily AFPRO and contractor personnel who professed a lack of familiarity with many of the tasks listed and preferred not to respond. Two other individuals from Air Force Logistics Command were consulted by the writers in the preparation of the list of functions and as a result made suggestions and inputs to the final wording and form of that part of the interview. It was felt that their responses could be biased by their involvement in the preparation of the interview and for that reason were not included in the data presented.

The specific functions posed did not encompass all ILS tasks; however, they were devised to include duties representative of all phases of the acquisition cycle and the spectrum of logistics responsibilities.



Strongly Agree - 5 Neutral - 3 Disagree - 2
Agree - 4 Strongly Disagree - 1

Fig. 9 Histogram of Responses to Proposed Function (17)

Function	Distribution of Responses					Mean Response
	5	4	3	2	1	
Monitor MEA (7)	21	0	0	0	0	5.0
Attend meetings (17)	19	1	1	0	0	4.9
Informal interface (8)	18	2	1	0	0	4.8
Assess design changes (11)	16	3	2	0	0	4.7
Review ORLA (2)	15	5	1	0	0	4.7
Data interface (3)	13	4	2	2	0	4.3
Monitor SMR coding (15)	15	3	0	1	2	4.3
Monitor ILDF (1)	15	1	2	1	2	4.2
Technical manuals (13)	11	3	2	3	2	3.9
Monitor LCC data (9)	10	2	7	1	1	3.9
Contractor support (10)	10	4	2	3	2	3.8
Contractor response (6)	7	6	4	3	1	3.7
Standard parts (5)	10	2	4	2	3	3.7
Give supply assistance (16)	11	1	4	2	3	3.7
Review AGERD (4)	8	4	5	1	3	3.6
Manage phased provisioning (14)	7	2	3	4	5	3.1
Hi value spares breakout (12)	5	2	4	3	7	2.8
Total	211	45	44	26	31	4.1

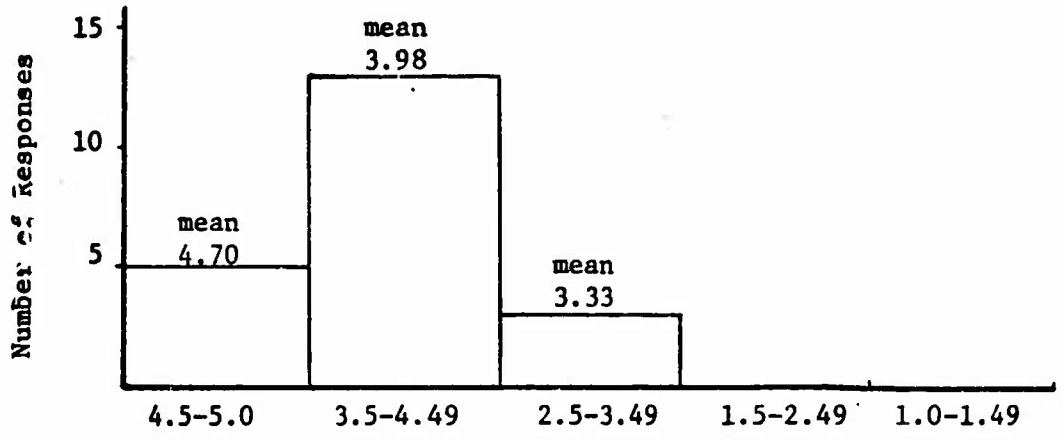
Strongly Agree - 5 Neutral - 3 Disagree - 2
Agree - 4 Strongly Disagree - 1

TABLE III. Summary of all Responses to Individual RILSA Functions

Of the seventeen potential RILSA duties posed to the interviewees, there was strong agreement on five, agreement on ten, and neutrality on two (Table III). The significance of this rating by the respondents is an affirmation of the overall need for a RILSA. The fact that only two of the functions received ratings in the neutrality range, and that of those functions one was seen as the present defined duty of another organization and the other was possibly influenced by authority delegation in an existing program, is noteworthy. The meaning of this information is that the RILSA is an organizational element which can play a significant role throughout the acquisition cycle in at least the first fifteen functional areas shown in Table III.

Another indication of a respondent's overall view of the RILSA is the mean of his responses to all functions posed. A high mean indicates the interviewee sees the RILSA as central to the accomplishment of the proposed duties. Conversely, a low mean indicates the respondent views the RILSA as less important in the integration of logistics support into the weapon system acquisition process. Therefore, individual means and their distribution is a meaningful index of overall RILSA involvement in that process.

The highest individual mean was 5.0, indicating that respondent felt the RILSA could best perform all functions posed. The lowest mean response was 3.2, indicating that respondent was neutral about the involvement of the RILSA. The distribution of individual responses was plotted against the same scale used to establish agreement or disagreement with individual functions and is shown as Figure 10. The distribution and mean within each class grouping reveals additional information about the respondents' view of the RILSA. Three individuals



Strongly Agree 4.5-5.00 Neutral 2.5-3.49 Disagree 1.5-2.49
Agree 3.5-4.49 Strongly Disagree 1.0-1.49

Figure 10. Distribution of Individual Mean Response to all Proposed Functions

fell in the neutral range, with the remainder having a mean falling in the agreement or strong agreement range. As the three individuals in the neutral range were grouped in their responses toward the upper, or agreement side of that category, the overall distribution is seen as yet another confirmation of the overall need for a RILSA.

It should be noted that a different set of functions might yield different responses. Even minor word changes, such as was noted in the analysis of function three, might result in a different set of data. Nevertheless, the functions and wording chosen did result in data affirming an overall need for the RILSA. The existence of a majority of highly rated functions indicates a useful role for the RILSA. Even if a different set of proposed functions had resulted in different responses

the presence of fewer highly rated functions would still indicate a useful, although more limited, role for the agency. The conclusion drawn from the specific function data is that the RILSA is an important organization, capable of contributions in a wide range of logistics tasks and important throughout the weapon system acquisition cycle.

For key personnel of individual programs, there existed variations in perception of the RILSA as the organizational element best able to perform the proposed functions. As an example, the responses of the DPML and RILSA Chief of one program to the set of seventeen proposed functions is shown in Figure 11. It can be seen that on three of the responses there is a maximum possible spread, while on three others there is a two point spread. This indicates that these respondents have a different view as to what functions can best be performed by a RILSA. These differences in opinion and perception can lead to overlaps and/or gaps in responsibility for ILS tasks and possibly adversely affect future support costs or availability of the weapon system. Particular attention must be paid to insuring that key personnel involved in individual programs agree on the functions to be performed by the RILSA.

Summary. The major functions of a RILSA, as proposed by the individuals interviewed during this research, can be divided into four categories. These categories are: (1) influence design, (2) analysis and planning, (3) information interface, and (4) preprovisioning and provisioning tasks. The RILSA was seen necessary in these areas to insure proper implementation of ILS policy on a major weapon system acquisition program.

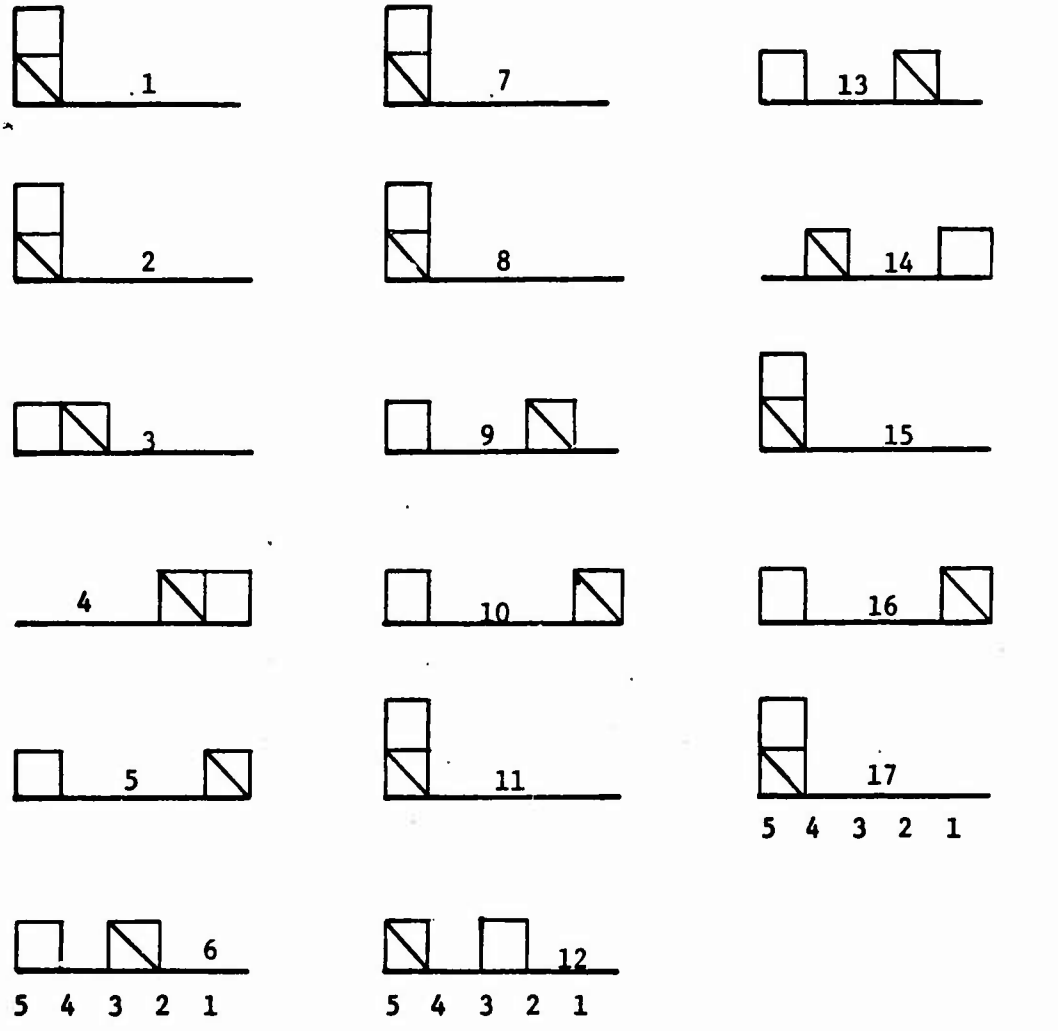


Fig. 11 Histogram of Responses to Individual Functions by the DPML and RILSA Chief of a Single Program

The respondents' evaluation of specific RILSA duties is in substantial agreement with the general functions independently identified. However, there were differing opinions on the proper functions of a RILSA and the degree of RILSA participation in certain areas. These differences are probably a result of the individual philosophy and experience of each respondent and could result in management difficulties within programs using a RILSA unless areas of responsibility and authority are clearly defined.

Required Skills. The preceding portion of the utilization section examined functional areas where the RILSA was seen to have an important role. This portion analyzes interview responses to determine which skills are felt necessary to effectively accomplish RILSA tasks. Specific skills proposed for RILSA manning are examined and analyzed.

Equipment Technician (GS-1670-XX). Individuals with this technical background were seen to be the core of the RILSA, regardless of program phase or functional category. The primary specialties seen necessary from within this field were those in airframe, electronics, and AGE. If initial provisioning was to be done at the contractor's plant, the number of Equipment Technicians was seen to increase.

Engineers (AFSC 28XX, GS-0861-XX). Engineers were considered necessary by a majority of respondents. Either military officers or civil servants were felt to be appropriate, particularly in the early stages of the program. Their primary efforts were seen as influencing design and analyzing the contractor's equipment and maintenance recommendations. The necessity for engineers after the Critical Design Review was held to be less imperative.

A significant minority of respondents did not feel engineering was a necessary RILSA discipline. The reason given for excluding engineers was that they were not seen to have sufficient knowledge of the logistics considerations to be effective in performing RILSA tasks. Personnel voicing this opinion felt many difficulties presently encountered in injecting logistics considerations into system design were because many contractor and government design engineers did not fully understand the affect of their designs on such logistics areas as maintenance and spare parts. They felt this lack of understanding led to emphasis on performance and neglect of logistics aspects. The attitude that technological achievement rather than total system optimization was a primary engineering goal was held common to engineers. This attitude did not preclude using logistics personnel with engineering training but did emphasize their experience should be primarily logistics rather than design engineering.

Maintenance Personnel. Maintenance personnel were seen as primarily non-commissioned officers recently engaged in flight-line maintenance activities and normally from the using command. There was a divergence of opinion concerning the use of maintenance personnel in the RILSA. Those respondents who felt maintenance personnel should be assigned to the RILSA stressed that these individuals comprise the only group of people having current experience working in an operational environment on actual hardware. As such, they were seen as familiar with maintenance problems, as understanding the use of support equipment, and as having the general knowledge necessary to effectively evaluate design and identify deficiencies in the proposed support system. One

respondent commented that "Everyone talks about maintainability and ends up buying parts. Maintenance must be stressed; it drives the system."

Those respondents who did not generally feel that maintenance personnel should be assigned to the RILSA felt they were neither comfortable nor effective in the environment encountered in a contractor's plant. This ineffectiveness was seen as the result of their experience in directing maintenance actions and a consequent difficulty in operating in a non-directive atmosphere. It was also mentioned that in general the experience of maintenance personnel was too limited for them to be effective in an acquisition environment. While they were judged experts in actual maintenance tasks, their ability to plan for maintainability or analyze the contractor's recommendations was seen to be bounded by lack of experience in these efforts.

It was noted that the majority of those respondents who did not recommend assigning "pure" maintenance personnel to the RILSA did feel some maintenance experience was a valuable asset.

Inventory Manager (GS-2010-XX). This provisioning skill was felt needed to accomplish both information interface and preprovisioning tasks. If initial provisioning was accomplished at the contractor's plant, the number of Inventory Managers required was seen to increase.

Provisioning Skills. Two provisioning skills, Cataloger (GS-2050-XX) and Procurement Clerk (GS-1106-XX) were cited. These skills were seen to be primarily useful in the provisioning tasks. The emphasis on these skills increased if the initial provisioning was done at the contractor's plant. If initial provisioning was not done by the RILSA, some respondents saw a need for minimal provisioning skills representation to act as an information interface with the ALC.

The RILSA Chief. While not a separate skill area, the perceptions of the interviewees regarding the qualifications of the RILSA Chief were of interest. All respondents indicated the Chief must be an individual of considerable initiative and independence. In addition, three attributes were cited as important to this position.

The first attribute was a background in maintenance. Preferred experience was in the type of weapon system being developed and involved actual maintenance supervision.

The second attribute was a technical education. An engineering degree was seen as a definite asset in interfacing with the contractor. Experience as an engineer was not noted as a requirement.

Finally, broad experience in logistics management was held to be mandatory for the Chief to effectively supervise and integrate RILSA activities.

The RILSA Chief was generally seen to be a military officer, although the use of a civilian Logistics Specialist (GS-0346-XX) was also seen as satisfactory.

Summary. The most necessary skill in a RILSA was seen to be that of Equipment Technician. In addition, representation from engineering and maintenance were considered valuable, particularly during the early stages of full scale development. Some differences of opinion concerning engineers and maintenance personnel were noted. Provisioning skills, particularly those of Inventory Manager, were considered useful in the RILSA operation. Provisioning skills were seen to require more emphasis if initial provisioning is done at the contractor's facility.

The next portion of this section examines the number of RILSA personnel and distribution of personnel between the SPO and RILSA logistics organizations.

Number and Distribution of Personnel. The many variables involved, including the changing nature of RILSA tasks, insured that no single number was seen as the optimum manning for a RILSA. However, the determination of a range of RILSA manning and its size relative to the SPO logistics organization was possible.

As discussed previously, a number of respondents viewed the RILSA as primarily a liaison between the DPML, ALC, and contractor. Individuals with this view saw the RILSA, at maximum strength, as being manned with 20% to 30% of the SPO logistics manning. There was agreement that the DPML's office should be manned with 15-20 people. This agreement was based on the ILS tasks accomplished by the SPO. One DPML commented "I have to report on ten ILS elements, so I need at least one person in each area. That's an irreducible minimum." Based on this information, the RILSA was seen to range from three to six personnel.

The second view of the RILSA, that it has considerable responsibility and authority, influenced the manning estimates of individuals holding that view. These respondents saw the maximum number of people assigned to the RILSA as being equal or greater than the number assigned to the SPO location. It was noted that the number of personnel felt to be required by the DPML's office did not decrease commensurately with increases in RILSA manning. The appropriate SPO manning was seen by these respondents to be approximately 10-15 personnel, with the RILSA strength ranging from 10-20. Therefore manpower resources required to

staff the combined logistics organization when the RILSA was seen to have responsibility for task accomplishment was greater than when the RILSA was viewed as purely a liaison element.

The above discussion does not consider the requirements for personnel to accomplish initial provisioning at the contractor's facility, an activity which requires a large commitment of personnel. As an indication of approximate manning, estimates from the only program currently doing initial provisioning at the contractor's plant were that 40 people are needed to accomplish all required RILSA tasks.

The RILSA Decisions

The PM and DPML contemplating the establishment and utilization of a RILSA are faced with many decisions. The preceding analysis identified a number of factors and areas of concern that are useful inputs to the decision-making process. This section presents a framework for the consideration of the most important RILSA decisions and proposes actions that can aid in reducing the problems that may be encountered.

It is clear that the cross section of knowledgeable personnel interviewed during this research unanimously agreed that a RILSA should be established on a major weapon system acquisition program. The basis for this adjudged need centers on two key considerations. The first of these is the inherent nature of the ILS tasks. These tasks are oriented toward the future, and the difficulty in measuring the success of the ILS effort during the acquisition of the weapon system necessitates detailed participation of Air Force logistics personnel in contractor activities. The second basic consideration follows from this need for detailed participation. It is felt that all SPO Directorates

can better function with representatives at the contractor's plant, but that the AFPRO can effectively supply this representation for all but the ILSO. Therefore, since the orientation of the ILS tasks requires very detailed participation in contractor activities and since no other organizational element can supply this participation, a RILSA is seen as necessary.

Given this philosophical basis for a RILSA, the PM/DPML must make a number of decisions. As has been previously demonstrated, the RILSA can be viewed as primarily a liaison or as an organization central to ILS task accomplishment. The decision concerning the type of organization is a major one. This determination by the PM/DPML largely establishes the functions of the RILSA, the number of personnel required, and their skills. As a liaison, the RILSA is tasked with fewer functions and requires fewer, less specialized personnel. Conversely, if the RILSA is to be given a larger degree of responsibility for accomplishment of ILS tasks, more highly skilled and specialized personnel are needed. This requirement for additional skilled personnel is further increased if the RILSA is to accomplish initial provisioning at the contractor's facility.

After the organizational basis and managerial philosophy of the RILSA are decided, action must be taken to insure the RILSA is properly integrated into the program. Early planning, including insuring data availability, formally defining the authority and responsibility of the agency, and selecting and recruiting personnel are vital to the ultimate success of the RILSA.

With early and proper planning, the RILSA can provide significant assistance in the implementation of ILS policy and a resulting improvement in the balance of support cost and weapon system availability.

Summary

This chapter presented and analyzed the perceptions, judgements and experiences of knowledgeable individuals concerning the RILSA. The factors bearing on the decisions necessary to establish and utilize a RILSA were determined and analyzed in terms of the information gathered from these individuals. A framework for the consideration of the major RILSA decisions was then presented and actions proposed that can aid in reducing common RILSA problems.

The next chapter presents the conclusions and recommendations of the writers.

VII. Conclusions and Recommendations

The approach used to integrate logistics support into a weapon system acquisition program is a key decision. This decision can have a major impact on the availability and life cycle cost of the weapon system. Information regarding management options, access to experience in the application of those options, and advice of informed individuals are valuable inputs to this decision process. This thesis examined and analyzed one such option, the Resident Integrated Logistics Support Agency (RILSA).

The preceding three chapters examined official guidance pertaining to the RILSA, analyzed its use on current weapon system acquisition programs, and analyzed the perceptions of knowledgeable individuals. The following conclusions and recommendations are offered in the hope that they, along with the preceding research, will be of assistance to future PMs and DPMLs weighing the RILSA decisions.

Conclusions

A RILSA should be established on major weapon system acquisition programs. The factual and subjective data gathered during this research supports this conclusion. The use of a RILSA provides the Air Force the opportunity to more fully inject logistics considerations into the weapon system design process. The RILSA personnel can become originators of maintainability improvements, as well as evaluators of the contractor's efforts. Detailed participation of a RILSA in the contractor's analysis activities permits the utilization of Air Force logistics expertise in identifying and solving support problems while the weapon system is

evolving, rather than after its deployment. The increased program visibility and enhanced communication provided by the use of a RILSA can also make the other logistics organizational elements more effective in accomplishing their tasks. The RILSA, if properly planned and established, is an effective organizational approach to implementing Integrated Logistics Support (ILS) policy and thereby favorably influencing support costs and weapon system availability.

If the RILSA is to be effective, it must be properly manned. The RILSA concept requires outstanding personnel in sufficient numbers to accomplish all assigned tasks effectively. These personnel must be skilled in their fields and possess the initiative to work independently. To insure this manning is available, the PM and DPML must be committed to the use of a RILSA, as must the ALC to which the weapon system is assigned. The commitment of the ALC is very important. As a primary source of personnel, the ALC must endorse the use of a RILSA and see it as an important part of the total logistics effort. Without ALC support, skilled personnel are difficult to identify and secure.

The specific role of the RILSA must be defined. The RILSA responsibility and authority must be clear and relationships with the DPML, AFPRO, and ALC clearly understood by all agencies. This understanding is necessary to avoid both overlapping or lack of responsibility for logistics tasks. The RILSA can provide valuable assistance to the AFPRO in such areas as GFP/GFE and Class II changes, but the degree of participation of the RILSA must be delineated. The question of who has directive authority over the RILSA must also be clear. The RILSA is an extension of the SPO logistics organization and the DPML must have

authority to direct all RILSA actions. Without a clear definition of the RILSA's position, this distinction can become blurred through constant contact between the RILSA and the ALC, leading to possible confusion and conflict.

A RILSA should be used during the competitive phase of a competitive prototype acquisition program. The data gathered and analyzed during this research emphasized the value of participation by Air Force logistics personnel in the weapon system design process. While the contractual arrangements differ, the physical process of designing a weapon system is the same on a competitively prototyped program and on a conventional program. Therefore, Air Force logistics participation should be of comparable value on either type of program. In the programs examined, RILSA and certain other logistics support activities were deferred for reasons of cost and potential contractual problems. This deferral has resulted in programs where portions of the design have progressed to a point where managers feel that the RILSA can no longer influence weapon system design. To emphasize that close attention of the Air Force is necessary to fully integrate the support and weapon systems and yet not participate in the design stage is contradictory. With proper contractual arrangements, the RILSA could be effective in injecting Air Force logistics expertise into the competitive phase of competitive prototype acquisition programs.

Recommendations

To improve the effectiveness of a RILSA, the writers propose the following recommendations.

During the validation phase, the PM and DPML should make the decision as to whether a RILSA is to be established. This decision should

not be delayed until after the start of full scale development if the RILSA is to be effective in design activities. If the decision is made to utilize a RILSA, the Chief and key subordinates should be selected immediately and should participate in logistics activities during the validation phase. This procedure has the advantage of insuring a fully informed initial RILSA cadre and of eliminating delay in establishing the agency at the contractor's facility.

The DPML and RILSA Chief must pay particular attention to insuring that the contract contains provisions to provide the RILSA with appropriate analyses and data on a timely basis. The RILSA cannot accomplish many tasks envisioned for it unless access to the necessary data is available at the correct time. Dependence on the contractor to make data available without contractual arrangements for that data is not an effective approach.

Relationships between the DPML, AFPRO, and ALC should be formalized in a Memorandum of Agreement. This agreement should be either an annex to the SPO-AFPRO MOA or a separate agreement. The document should specify areas of RILSA responsibility, organizational relationships, and administrative procedures to be followed. Consideration should also be given to defining those AFPRO tasks where the RILSA may provide significant assistance and the RILSA's part in those tasks.

Training requirements for RILSA personnel should be established. As a minimum, briefings should be provided covering such areas as avoiding constructive changes to the contract.

Personnel for the RILSA should be evaluated and selected on an individual basis by the RILSA Chief. Air Logistics Center, Air Force

Logistics Command, and Air Force Systems Command cooperation should be enlisted to identify qualified personnel and, within appropriate guidelines, provide incentives for them to accept a RILSA assignment.

Assignment of logistics personnel to the contractor's plant during competitive prototyping should be carefully studied. It would seem feasible and useful to assign personnel to the AFPRO to monitor and, as appropriate, advise concerning logistics considerations. A study of this area, including anticipated problems, is recommended.

Currently two sets of directives address logistics support and the RILSA. The studies conducted as part of this research did not reveal any inconsistencies in these directives; however, they should be studied to determine whether they can be consolidated. Both the publications outlining the SISMS and ILS concepts should be examined to establish the feasibility of combining them into a single source of management policy and guidance.

Finally, it is recommended that the assignment of qualified logistics personnel to AFCMD (AFPRO) be studied. There are advantages to having AFPRO personnel with the required skills rather than assigning personnel from the ALC to the contractor's plant. Personnel assigned to the AFPRO would not feel separated from their parent organization, would build experience through participation in a number of acquisition programs and would eliminate pressure on the ALC to provide personnel to man a RILSA while they are preparing to support a new weapon system. The feasibility of this approach should be examined and all ramifications explored.

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Appendix A

Glossary

Acquisition. The process of planning, designing, producing, and distributing a weapon system.

Aerospace Ground Equipment (AGE). All equipment required on the ground to make a weapon system, command and control system, support system, subsystem, or end-item of equipment operational in its intended environment.

Aerospace Ground Equipment Recommendation Data (AGERD). The firm recommendations of the contractor for the development or procurement of AGE items to satisfy each function in the AGE plan. These data include engineering detail of the item to be supported and the AGE item being recommended.

Air Logistics Center. An organizational element of the Air Force Logistics Command responsible for the support of specified weapon systems/equipments.

Availability. A measure of the degree to which a system is in an operable and committable state at the start of a mission, when the mission is called for at a random point in time.

Competitive Prototyping. A weapon system acquisition approach which features the fabrication and test of prototype systems, produced by competing contractors, as part of the validation phase.

Defense System Acquisition Review Council (DSARC). The formal body of Department of Defense officials who review major programs to ensure they are ready for transition to the next acquisition phase. They advise the Secretary of Defense on program decisions. A DSARC I Program Decision allows the program to enter the validation phase; a DSARC II Ratification Decision approves entry into the full scale development phase; and a DSARC III Production Decision authorizes production of the weapon system.

Government Furnished Property/Equipment (GFP/GFE). Property/equipment in the possession of or acquired directly by the Government and subsequently delivered or otherwise made available to the contractor.

Integrated Logistics Data File (ILDF). A depository of complete end item and related support data. It contains the identification data, personnel subsystem data, support data, and reliability/maintainability data required to manage the end item.

Life Cycle Cost. The total cost of an item or system over its full life. It includes the cost of development, acquisition, operation, support, and, where applicable, disposal.

Logistics. The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations which deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation and disposition of facilities; and d. acquisition or furnishing of services.

Maintainability. A characteristic of design and installation which describes the inherent ability of equipment to be repaired. It can be expressed as quantitative figures of merit defining such maintenance requirements as maintenance man-hours per operating hour, mean time to repair, and mean downtime.

Major Weapon System. One of a limited number of systems or subsystems which, for reasons of military urgency, criticality, or resource requirements, is determined by DoD as being vital to the national interest.

Phased Provisioning. A management refinement to the provisioning process whereby quantity procurement of selected items is phased by time interval into the later stages of production, thereby enhancing the ability of the provisioning activity to select the most favorable mix of requirements.

Reliability. The probability that a system, subsystem, or equipment will perform a required function under specified conditions without failure, for a specified period of time.

Resident Provision Team. An Air Force team located at the contractor's facility for the purpose of accomplishing initial spare parts support and related functions.

Source, Maintenance, and Recoverability (SMR) Code. A code which indicates the parts selected to satisfy maintenance or repair requirements; the most efficient and practical source or method of supply for the selected repair parts; the lowest echelon of maintenance capable of installing or manufacturing the repair part; and the recoverability aspects of the repair part.

Standard Items. Items that the military services have authorized for general use, which are either a. listed as such in official military service allowance documents, specifications, standards, military supply standards, or stock lists; or b. standardized or undergoing classification.

Support System. A composite of equipment, skills and techniques which, while not an instrument of combat, is capable of performing a clearly defined function in support of an Air Force mission.

Weapon System. A composite of equipment, skills, and techniques that form an entity capable of performing specific operational tasks in support of an identifiable defense objective.

Appendix B

Interview Questions

INTERVIEW QUESTIONS

Part I RILSA Operation in Current Acquisition Programs

1. When was the RILSA established?

2. How many personnel are assigned to the RILSA?

3. How many personnel are assigned to the SPO ILS organization?

4. What types of skills are utilized in the RILSA?

5. What are the primary duties of the RILSA?

6. Which of these duties are the most important?

7. Has the role/composition of the RILSA changed since its inception?

8. Do you envision changes as the program progresses?

9. What are the primary lessons learned from the current RILSA operation?

Part II Establishment and Utilization of the RILSA

1. Do you feel that an element of the Integrated Logistics Support Office should be established in residence at the contractor's facility?

2. What would you consider to be the major advantages of a resident ILS or RILSA approach?

3. The major disadvantages?

4. In which phase of the weapon system acquisition process should a RILSA be established?

5. Terminated?

6. During the _____ phase of a major weapon system acquistion:

   a. Which of the ILS functions could best be accomplished by a RILSA?

   b. What types of skills could be most effectively employed in a RILSA?

   c. Approximately how many personnel should be assigned to the RILSA?

d. Approximately what percentage of the people assigned to the ILS function would be most effectively employed in a RILSA?

7. Would competitive prototyping have any effect on the requirement or desirability of a resident ILS group prior to source selection?

8. After source selection?

9. Most System Program Offices do not employ a resident SPO organization but handle contractor interface through the AFPRO and periodic visits. What do you feel is unique about the ILS concept which requires a direct contractor interface through a resident representative?

Part III Specific RILSA Functions

1. Monitor and sample logistics data inputs to the Integrated Logistics Data File (ILDF) to determine accuracy against such factors as current configuration, projected reliabilities, and costs.

2. Review, analyze, and make recommendations regarding the contractor's Optimum Repair Level Analysis (ORLA) submissions.

3. Act as the primary interface between the contractor and the Air Force for logistics data.

4. Perform the initial review of the contractor's Aerospace Ground Equipment Recommendation Data (AGERD).

5. Monitor equipment design activities to insure the optimum use of DOD standard items.

6. Monitor and coordinate the contractor's response on such items as unsatisfactory equipment reports, modifications, and flight safety reports.

7. Monitor the contractor's Maintenance Engineering Analysis (MEA) efforts.

8. Provide an informal interface between the DPML and the contractor.

9. Monitor the contractor's submissions of life cycle cost data.

10. Monitor the contractor's development, acquisition, and positioning of logistics resources required to support the system from test through the preoperational stage.

11. Assess the impact of design or design changes on maintainability.

12. Perform the high value spares breakout.

13. Monitor the preparation of technical manuals.

14. Manage the phased provisioning program.

15. Monitor source, maintenance, and recoverability (SMR) code determination in conjunction with the System Manager and applicable Inventory Managers.

16. Provide maintenance and supply technical assistance in requisitioning command and standard stock listed items.

17. Participate in meetings and demonstrations such as maintainability/reliability demonstrations, test and evaluation programs, and Preliminary and Critical Design Reviews.

Proposed RILSA Functions

The RILSA can best perform this function.

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17. ———————————————

5 4 3 2 1

Strongly Agree -5 Neutral -3 Disagree -2
Agree -4 Strongly Disagree -1

Appendix C

List of Persons Interviewed

Major G. Babbitt, B-1 ILSO (formerly B-1 RILSA).

Major T. Berle, AWACS DPML.

Lt Col J. Bristow, Chief of F-16 Office, Directorate of Materiel Management, Ogden Air Logistics Center.

Mr. J. Burchett, F-16 Deputy DPML.

Mrs. A. Cardinal, A-10 Office, Directorate of Materiel Management, Sacramento Air Logistics Center.

Lt Col W. E. Countryman, Chief, A-10 RILSA.

Captain J. L. Erwin, Headquarters AFLC (AQMP).

Lt Col J. Fiscus, System Manager, AWACS, Oklahoma City Air Logistics Center.

Lt Col G. R. Hennigan, B-1 DPML.

Mr. F. Huegele, Headquarters AFSC (SD).

Mr. J. Hyson, Air Force Systems Command, Aeronautical Systems Division (SDM).

Major M. P. Katz, B-1 Deputy DPML.

Lt Col E. C. Koppen, F-16 DPML.

Lt Col S. L. Kowalewski, A-10 AFPRO.

Mr. L. A. Laverdure, A-10 Deputy DPML.

Mr. F. Leathley, Boeing (AWACS) Logistics Support Group.

Lt Col W. Lyle, Chief, F-15 RILSA.

Mr. C. McArthur, F-16 ILSO (formerly F-15 RILSA)

Mr. B. Owens, Headquarters AFLC, Deputy Director AQM.

Mr. J. Owens, Fairchild Republic (A-10) Logistics Support Group.

Lt Col T. D. Quinn, Headquarters AFLC, Chief AQML.

Lt Col J. A. Stempson, Headquarters AFLC, Chief AQMP.

Major W. Stiles, Chief, AWACS RILSA.

Lt Col J. J. Stratford, Chief, B-1 RILSA.

Mr. J. Swanson, Rockwell International (B-1) Logistics Support Group.

Colonel H. Terry, F-15 DPML.

Mr. K. M. White, F-15 ILSO.

Lt Col R. B. Wiese, F-15 AFPRO.

Lt Col S. L. Zawoysky, AWACS AFPRO.

Lt Col R. Zimmerman, A-10 DPML.

Appendix D

Letter-AFLC DPML/SM Policy

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LOGISTICS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

REPLY TO ATTN OF: CC

26 March 1975

SUBJECT: Clarification of Deputy Program Manager for Logistics/System Manager Relationship

TO: Warner Robins ALC/CC Sacramento ALC/CC San Antonio ALC/CC
Ogden ALC/CC Oklahoma City ALC/CC

1. The establishment of the DCS/Acquisition Logistics has led to many significant changes and improvements to AFLC participation in system or equipment development and acquisition. I expect continued active involvement of AFLC personnel in the systems acquisition process and regard this principally as the responsibility of ALC commanders and the DCS/Acquisition Logistics.

2. There must be only one official AFLC spokesman for AFLC logistics management participation in each development and acquisition program. While located in a system program office (SPO), this spokesman will be identified as the Deputy Program Manager for Logistics/System Manager (DPML/SM). Following relocation to the management ALC, the SM will be the official AFLC spokesman.

3. For major development and acquisition programs (those identified for Defense Systems Acquisition Review Council (DSARC) Review), I will select and appoint a DPML/SM by name. This selection will follow a review of potential candidates by the Deputy Chiefs of Staff for Acquisition Logistics, Materiel Management, and Personnel. The recommendation of this panel will be coordinated with the management ALC commander, where applicable, and the system program director prior to my approval. Normally, the DPML/SM will be selected during the validation phase of the acquisition process. However, in the near future, I plan to designate a DPML/SM for each of the current active major programs, including those for which you have management responsibilities. Therefore, I would like to have your comments as soon as possible regarding the DPMLs and SMs already in place.

4. The DPML/SM will be located initially in the SPO. The SM function will be relocated to the management ALC during the production phase. Specific timing of a relocation after a production decision will be as determined appropriate by the management ALC commander in coordination with the system program director.

5. Prior to transfer of AFLC logistics management responsibility from DCS/Acquisition Logistics to the management ALC and HQ AFLC/MM, the DPML/SM will report directly to the DCS/Acquisition Logistics. After

the transfer of logistics management responsibility, reporting will follow established ALC command channels. Notwithstanding formal command channels, the DPML/SM must work for and support three supervisory elements, i.e., the ALC commander, the system program director, and the appropriate HQ AFLC DCS. The DPML/SM is responsible for planning, coordinating, and directing all AFLC integrated logistics support and logistics management activities required to insure support of a program. He is expected to use all AFLC resources to accomplish his mission. ALC commanders, the system program director, and the Deputy Chiefs of Staff for Acquisition Logistics and Materiel Management will assure that the DPML/SM has the necessary authority to carry out his responsibilities.

6. A civilian assistant SM will be authorized/designated at the ALC for major development and acquisition programs. An assistant DPML should be located in the system program office. Both assistants will work for and report to the DPML/SM.

7. Implementation of this letter shall be accomplished in accordance with the attached milestone/implementation schedule. Undue disruption of employees is to be avoided and, wherever possible, manpower and personnel actions should be tied to employee attrition or the ALC SM/IM reorganization implementation schedule. Appropriate regulatory documentation of this guidance will be issued in the near future.

WILLIAM V. McBRIDE
General, USAF
Commander

1 Atch
Implementation Schedule, w/atch

Cy to: HQ USAF/LG/RD
AFSC/SD
ESD/CC
ASD/CC
SAMSO/CC

Appendix E

B-1 Memorandum of Agreement (Annex A)

Memorandum of Agreement
between Deputy for B-1 and AFPRO,
Rockwell International, B-1 Division

DEPUTY FOR B-1

AND

AFPRO, ROCKWELL INTERNATIONAL, B-1 DIVISION

ANNEX A

ADMINISTRATION

1. Purpose: The purpose of this agreement is to define the functional responsibilities of the Air Force Plant Representative's Office (AFPRO) at Rockwell International, B-1 Division in support of the B-1 System Program Office (SPO). The agreement also defines the portion of the ASPR requirements that shall be fulfilled by the B-1 SPO in support of the AFPRO. These responsibilities are either an addition to or an expansion of the standard Contract Administration functions outlined in ASPR 1-406.

2. Scope: The extent of the additional support to be provided for the B-1 contract, F33657-70-C-0800, is defined in Annex B through Annex K.

3. Administrative Functions: Administrative functions for B-1 SPO/Los Angeles will be a joint effort by Management Operations, Los Angeles and AFPRO Management Support Division in coordination with Management Operations Office, B-1 SPO, Wright-Patterson AFB, Ohio.

4. Visits to Plant Facilities: B-1 SPO personnel will comply with AFR 11-2, ASPR 20-802 and the B-1 Operating Instruction 11-5, "Visits to Contractor Facilities." SPO personnel will ensure that their AFPRO counterparts are advised on matters of mutual responsibility prior to contacting contractor personnel.

5. Security:

a. Clearances.

(1) Military. AFPRO/SPO/LA, to be processed by SAMSO CBPO.

(2) Civilian.

(a) AFPRO. Processed by Hq AFCMD/SP.

(b) SPO/LA.

1. Engineers and other high grade employees. Processed by Hq ASD.

2. Secretaries/Clerical personnel. Processed by Hq AFCMD/SP.

b. Security Program. B-1 SPO/LA personnel will comply with AFCMD/AFPRO security directives.

6. Policy:

a. As a point of general policy, in areas of program management (performance measurement, technical direction) the Deputy for B-1 has prime responsibility and will interface with the contractor on these matters. The prime responsibility for ensuring contract compliance, together with associated plant surveillance tasks (plant cognizance), will be with the AFPR. However, the AFPRO has the additional duty of Deputy System Program Director and, as such, will act in behalf of the Deputy for B-1 on those program management matters delegated to him.

b. Both the AFPRO and the SPO should emphasize a coordinated interface with the contractor; every effort will be made to minimize the levying of duplicate work or data requests. While this agreement assigns responsibility to either the AFPRO or the SPO, it is understood that one may have a supporting input to the other. The important distinction is that the group assigned the responsibility for a task will be accountable for its successful accomplishment, will work directly with the contractor on that task, and coordinate its efforts with the other group.

c. All B-1 SPO management and collocated engineering personnel assigned to the B-1 Office (Los Angeles) will be accounted for on the ASD Unit Detail Listing (UDL). SPO Directors/Office Chiefs/Director of Engineering and Engineering Division Chiefs have OER reporting/indorsing responsibility for their personnel located at Los Angeles. The AFPR will prepare a letter of evaluation on all SPO management personnel as well as the Deputy Engineer, and will act as reporting official for his executive officer.

d. In addition to his normal contract administration responsibilities, the Air Force Plant Representative (AFPR) will be Deputy System Program Director (DSPD) for B-1. He will be the official host for briefings and tours at Rockwell, B-1 Division for visiting dignitaries unless the Deputy for B-1 or a designated representative is present. He will also act in behalf of the Deputy for B-1 on those program management matters delegated to him.

As the senior Air Force Officer present at Rockwell B-1 Division, and as DSPD, he will provide leadership over the joint AFPRO/SPO organizational structure to coordinate the activities of the collocated AFPRO/SPO personnel.

7. Terms of Agreement:

a. This agreement is effective upon signing by the Deputy for B-1 (YH) and the Commander, Air Force Contract Management Division.

b. This agreement will be reviewed at least annually. Any additions, deletions, or changes to this document will be by mutual consent only. The Director of Program Control (YHP) will be the OPR for the MOA within the Deputy for B-1; the Management Support Division (XP) will be OPR for the MOA within the AFPRO.

c. Any change in delegation anticipated as a result of revisions to publications referenced in this MOA will be coordinated between the affected activities prior to assignment of responsibility.

Appendix F

AWACS Memorandum of Agreement (Annex G)

Memorandum of Agreement
between Deputy for AWACS and AFPRO,
Boeing Company, AWACS Division

ANNEX G

INTEGRATED LOGISTICS SUPPOPT

1. The concept for Integrated Logistics Support (ILS) is defined in DOD Directive 4100.35 and implementing Air Force directives in the 800 series.

2. The AWACS Program Office has established a Resident Integrated Logistics Support Detachment (RILSD) under the SPO Directorate for Integrated Logistics Support to function as the Air Force integrated Logistics Support Detachment at The Boeing Company Seattle facility. The RILSD is established to provide day-to-day logistics management and on-site guidance and assistance in meeting the ILS concepts and to provide technical assistance to the Deputy AFPR for AWACS in the administration of AWACS Integrated Logistics Support. The functions and responsibilities of the AFPRO and RILSD are listed in Attachment 1.

3. FUNCTIONS AND RESPONSIBILITIES

a. AFPRO responsibilities.

(1) Perform contract administration functions relative to Integrated Logistics Support as assigned in ASPR 1-406.

(2) Perform contract packaging administration functions assigned to the packaging specialist by ASPR 1-1204 (c) and ASPR 3-801 (b)(1).

(3) Packaging, handling, and transportability (PHT) functions will include technical support to the Program Office; review of contractor procedures; surveillance of contractor performance; evaluation of cost proposals and man-hour estimates. This will be accomplished in accordance with AFR 71-1, AFR 71-4, AFR 71-7, AFM 71-4, and AFM 71-5, including applicable Air Force Systems Command (AFSC) and AFCMD supplements and MIL-P-9024, MIL-P-116, MIL-STD-794, and MIL-STD-129.

(4) To the extent considered necessary, participate in configuration management reviews, inspections, demonstrations, and audits for the purpose of monitoring and reviewing contractor development of package design, specialized containers, and special design protective equipment. Witness testing as required.

(5) Review ECPs affecting package design, transportation, or transportability and submit recommendations to the Program Office (PO).

(6) Maintain active liaison with SPO/YWU and ESD/RRM regarding all significant packaging, handling and transportability events. Advise the AWACS PO of any problems that cannot be effectively resolved or

eliminated at the AFPRO level. Notify the PO (Info ESD/RRM) when specific assistance or guidance is required in the PHT areas of endeavor.

b. SPO responsibilities:

(1) Provide the AFPRO with new direction or clarification pertaining to Integrated Logistics Support functions.

(2) Provide the AFPRO any changes to duties and responsibilities of RILSD. Advise the AFPRO at least 60 days in advance of any changes to RILSD manning or activity that will affect administrative support provided by the AFPRO.

4. SPECIFIC SPO FUNCTIONS DELEGATED TO THE AFPRO PACKAGING SPECIALIST:

a. Establish specific guidelines with the contractor to identify oversize, sensitive, or dangerous items in accordance with the concept of AFR 80-18 and MIL-P-9024. Prior to submission to the AWACS PO for approval, review contractor developed Transportability Reports for adequacy, completeness, and accuracy. Provide guidance to The Boeing Company in the area of PHT design as it pertains to configuration management of containers and package designs. All decisions will be predicated on the requirements of the contract. Significant PHT development effort will be communicated to the SPO/YWU.

b. Review and provide tentative approval for the transport and storage, transportability, and Section 5 requirements of all specifications developed by The Boeing Company, their subcontractors or vendors pertaining to the AWACS Program. Submit comments to YWU for consideration and action with Boeing

c. Monitor, review, and provide tentative approval for all PHT data, drawings, or specifications. Protection of items will be the minimum required consistent with the program requirements.

RESIDENT INTEGRATED LOGISTICS SUPPORT DETACHMENT (RILSD)

1. The RILSD is an extension of the Integrated Logistics Support Directorate (YWU). It will be manned with AFLC and AFSC personnel. It will be collocated with the AFPRO and will operate within the local management/administrative procedures of that organization. The organizational relationships of the RILSD are as shown in Figure 1. Contact with the contractor on day-to-day administrative matters that are within the AWACS contract pertaining to ILS is authorized. Change of contractor's scope of effort is not authorized. All correspondence between the contractor and the RILSD, initiated by either organization will be sent through the AFPRO. The ACO will sign RILSD originated correspondence to the contractor. Copies of all correspondence will be sent to the Program Office. A follow-up system will be maintained by the RILSD to insure complete coordination.

2. FUNCTIONS AND RESPONSIBILITIES:

a. AFPRO responsibilities:

(1) Provide administrative services such as office space, supplies, travel orders, mail room/message center, etc.

(2) Perform the AFPRO ILS tasks in conjunction with RILSD in support of technical manual validation, transportation and packaging negotiating spares/AGE delivery schedules.

b. RILSD responsibilities:

(1) Provide the contractor with failure data and other data from AFLC records as requested.

(2) Provide maintenance and supply technical assistance, in conjunction with the AFPRO, for requisitioning command and standard stock listed provisioning and support items. On those supply documents returned to the contractor on a "kill" basis, research the item from a technical availability viewpoint to determine status with the Inventory Manager.

(3) Provide for direct placement of initial spares orders on contract using spares orders and Administrative Commitment Documents (ACDs) provided by the Provisioning Procurement Contracting Officer (PPCO) at OCAMA. Advise OCAMA through the RILSD of status of funds on spares orders and requirements as necessary for increasing funds on individual orders.

(4) Review, analyze, and approve contractor's Optimum Repair Level Analysis (ORLA) submissions

(a) Determine source maintenance, and repair level (SMR) codes in conjunction with the System Manager (SM) and applicable Inventory Manager (IM).

(b) Determine maintenance factors, condemnation percentages, reparable generation rates, repair cycle time, etc.

(5) Request and perform studies on organic depot capability and capacity to provide the contractor with information for perparation of aerospace ground equipment (AGE) recommendations for ORLA studies and operational requirements. Insure that all Government organic capability (Air Force, Army, and Navy) is included in the study.

(6) Perform initial review of contractor's aerospace ground equipment recommendation data (AGERD) submitted under data items S-124-I/M. Insure that ORLA and AGERD data agree. Insure that AGERDs contain the necessary information for Inventory Manager, service engineering, and SPO engineering evaluation.

(7) Work with the Boeing Parts Control Board to insure optimum use of DOD standard items in design and assure the Defense Logistics Support Center (DLSC) screening is accomplished current with design (DID-L-111).

(8) Participate in meetings and demonstrations as directed by the SPO/YWU. These will include maintainability/reliability demonstrations, test and evaluation programs, preliminary and critical design reviews (PDR/CDR) validation, and kit proofing.

(9) Sample data input to the Integrated Logistics Data File (ILDF) and determine accuracy against latest configuration, projected reliability and cost data. Based on sampling, determine a confidence level for contractor submitted data especially in the Economic Order Quantity (EOQ) area. Make recommendations to the SPO/YWU on whether contractor data should be accepted or whether Government should recalculate spares requirements.

(10) Manage phased provisioning requirements.

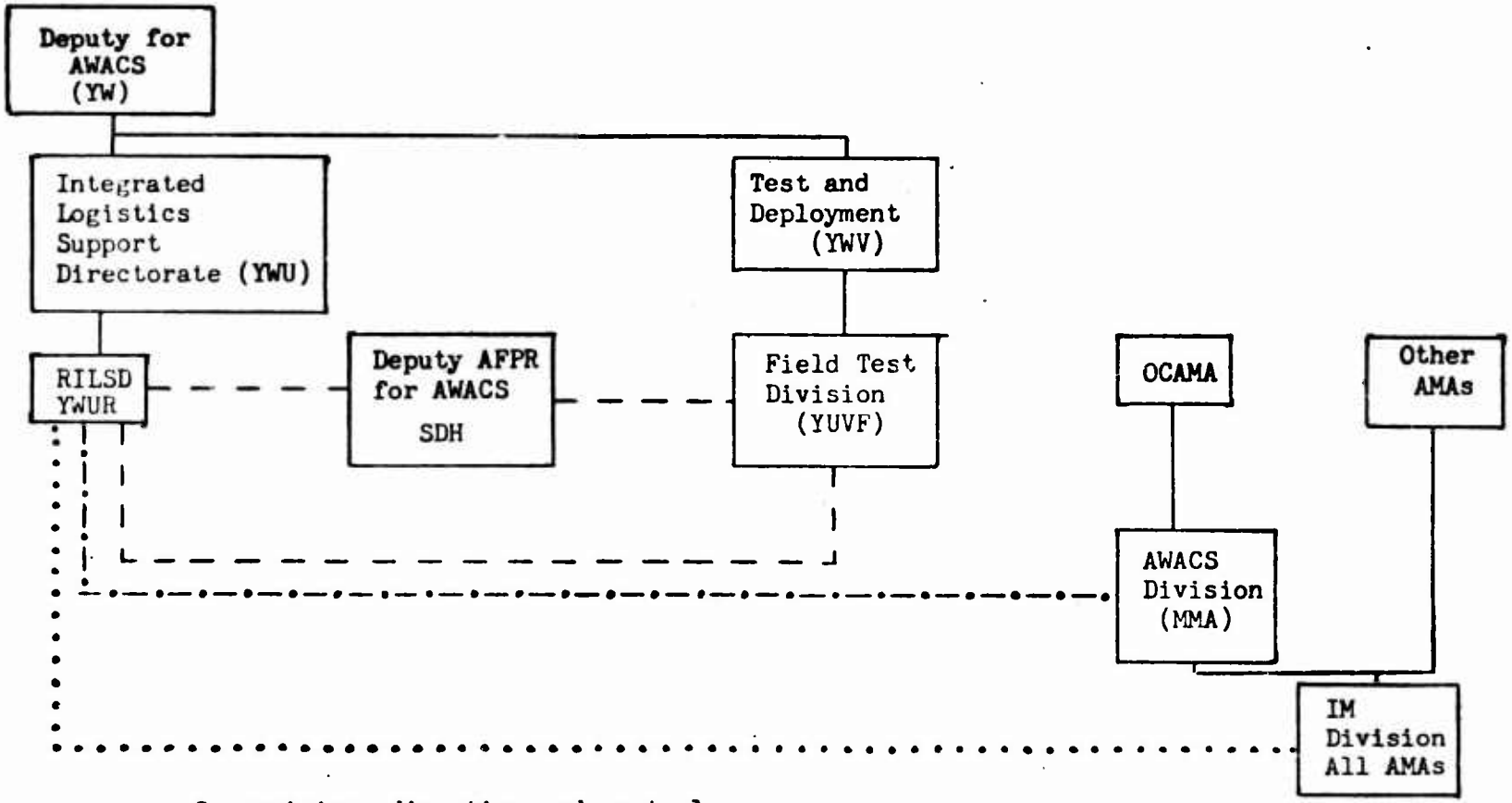
(11) Provide technical publication management support functions. Monitor CFAE/CFE Notice submittals (DID H-105) to verify that recommendations are consistent with the approved maintenance concept.

(12) Perform other Integrated Logistics Support duties as assigned by ESD/YWU.

(13) A weekly activity report on progress and activities with the contractor's Integrated Logistics Support area will be submitted to the AFPRO and SPO/YWU by the RILSD Chief, with an information copy to OCAMA/MMA.

Attachment 1, Figure 1

AWACS RILSD Organizational Relationships



A-10 Memorandum of Agreement (Draft)

Draft Memorandum of Agreement between
Sacramento Air Materiel Area,
Fairchild Republic AFPRO,
and Deputy for A-10

OVERVIEW

1. PURPOSE

This agreement defines the functions and responsibilities of the A-10 Resident Integrated Logistics Support Detachment (RILSD), located in residence at the Fairchild Republic Company, Farmingdale, New York facility.

2. OBJECTIVE. The primary purpose of the RILSD is to assure the A-10 system is designed to minimize downstream logistic support costs and to assure complete Integrated Logistic Support as required by DoD Directive 4100.35.

3. SCOPE. The RILSD is assigned as an extension of the A-10 Directorate, Integrated Logistic Support (Dir ILS) and Sacramento Air Materiel Area (SMAMA) to perform a wide range of logistic functions and tasks necessary to achieve continuity from development to deployment. The RILSD will operate within the scope of AFR 800-8, AFLC Supplement 1 and other AFLC policy guidance relating to RILSD functions as augmented by AFPRO management/administrative procedure.

4. COMMUNICATION. Direct communication between the contractor, SMAMA and/or the A-10 Dir ILS (including RILSD) personnel is encouraged and authorized. Information copies of correspondence between the contractor, SMAMA and/or the RILSD will be provided the A-10 Dir ILS. All contractual actions will be directed by

the PCO or the ACO, as appropriate. The A-10 Dir ILS, SMAMA, and RILSD personnel will ensure that their AFPRO counterparts are advised concerning matters of mutual responsibility.

5. VISITS TO PLANT FACILITIES. A-10 Dir ILS and SMAMA personnel shall comply with ASPR 20-802 and AFR 11-12.

6. MANAGEMENT

a. The A-10 SPD has prime responsibility for program management and will interface directly with the contractor. The AFPRO has prime responsibility for administering the contract, ensuring contract compliance, and the associated plant surveillance tasks (plant cognizance). RILSD will furnish to the Dir ILS bi-weekly status reports of activity in format to be furnished by the Dir ILS and provide the AFPRO a copy of these reports.

b. Emphasis will be placed by both the AFPRO and the Dir ILS on coordinated interface with the contractor; every effort will be made to minimize duplicate work or data requests. While this agreement assigns responsibility to either AFPRO or the Dir ILS, it is understood that one may have a supporting input to the other. The important distinction is that the office assigned the responsibility for a task will be accountable for its successful accomplishment and will interface with the contractor on that subject matter.

7. SUPPORT RESPONSIBILITIES. The AFPRO and RILSD will provide support indicated below:

a. The AFPRO will provide to the RILSD the following services:

(1) Administration. Provide technical assistance and records staging area support. Provide publications and forms distribution support. Provide incoming and outgoing mail service, including consolidated mailroom and postal locator support. Provide printing and duplicating services. Provide office space and publishes travel orders as required. Provide suitable facilities for control of classified material.

(2) Budget. Budget and funds for support provided by the AFPRO.

(3) Office Furnishings and Equipment. Provides furnishings (desks, chairs, office machines, etc.,) and equipment necessary to the function of the RILSD.

(4) Communications. Furnishes common-user communications services and facilities.

(5) Transportation. Provide personnel movement traffic management and related transportation services.

b. The RILSD will provide necessary information and requirements to the AFPRO for the fulfillment of the support responsibilities listed in para 7a (1) through (5).

3

c. SMAMA will provide:

(1) Manpower spaces for staffing the RILSD.

(2) Civilian personnel support for personnel assigned to the RILSD

(3) Budget and funding for:

(a) Civilian personnel payroll and any temporary duty funds requirement.

8. FUNCTIONS AND RESPONSIBILITIES:

a. The cognizant AFPRO's functions and responsibilities, relative to the ILS administration, are essentially as stated in ASPR 1-406, and this MOA. The AFPRO shall monitor the A-10 spares costing, to assure the potential data cost avoidance resulting from the implementation of UL-69-6A Integrated Logistics Data File (ILDF), is not included in the pricing of spares.

b. The A-10 PO (YXL) will:

(1) Be responsible for the acquisition logistics management.

(2) Provide day-to-day logistics management and on-site guidance and assistance to the contractor as outlined in para c below.

(3) Conduct spare/repair parts provisioning in accordance with data item UL-69-6, and AGE provisioning in accordance with AFAD 71-685.

4

c. The RILSD will furnish liaison between AFPRO, Dir ILS and AMA functional offices, in the administration of the A-10 ILS elements and accomplish the tasks related to A-10 provisioning and materiel improvements. The functions and responsibilities of the RILSD include:

(1) Attendance at contractor "Material Support Review Board" meetings.

(2) Furnish technical assistance by providing failure and other AFLC controlled data when requested by the contractor or AFPRO.

(3) Participate in Parts Control Meetings, providing maintenance and supply technical assistance to the contractor in the acquisition of common and standard stock listed items.

(4) Review, evaluate and initiate recommendations on the Maintenance Engineering Analysis (MEA), performed by the contractor, to ensure the development of realistic, comprehensive and economical logistics support concepts by system and sub-system.

(5) Participate in Maintainability and Reliability Reviews to assure that Maintainability and Reliability are design considerations.

(6) Participate in various demonstrations as directed by the A-10 Dir ILS.

5

(7) Review and evaluate program plans containing logistics considerations and provide recommended changes to the A-10 Dir ILS.

(8) Review Aerospace Ground Equipment Recommendation Data (AGERD) and furnish recommendations, as appropriate, to the A-10 Dir ILS.

(9) Participate in Preliminary/Critical Design Reviews to assess the impact of changes in the Optimum Repair Level Analysis (ORLA). Participate, with AFLC organizational elements, in Functional/Physical Configuration Audits to assure that logistic requirements are incorporated into system data, i.e., specifications and drawings.

(10) Serve as the Air Force focal point on all actions associated with the ORLA program in accordance with AFLCR 66-26. Provide Air Force preliminary approval of the Source Maintenance and Recoverability (SMR) coding decisions of SMAMA prime items resulting from ORLA reviews.

(11) Participate in the review and investigation of materiel improvement projects.

(12) Participate in AGE demonstrations, in conjunction with the A-10 PO (YXL) to aid in assuring AGE compatability with the equipment for which it was designed to function.

(13) Participate in, as required, the contractor's validation of technical manuals.

(14) Furnish guidance, as required, relative to spares selection methodology, as specified in AFLCR 57-27 and applicable data items contained in the Contract Data Requirements List (CDRL).

(15) Participate with the Dir ILS, and SMAMA, in a determination of the feasibility of implementing phased provisioning as specified in MIL-STD-1517 and AFLCR 57-27.

(16) At A-10 PO (YXL) direction, assist the contractor in preparation and distribution of routine and interim urgent action time compliance technical orders by providing AFLC required data (AFLC/AFSC REG 8-3).

(17) Participate in TCTO verification and kit proofing performed at the contractor's facility. Field level TCTO's will have field level representation (TO-00-5-15, SEC 6).

(18) Provide AF data to assist the contractor in the preparation of the Integrated Logistic Data File (UL-69-6A) for spare/repair parts provisioning.

(19) Accomplish, within the scope of the RILSD authority and available manpower, the required provisioning actions relative to SMAMA* prime initial spares, (DID UL-69-6A) and AGE, (AFAD 71-685), in support of the A-10 Contract F33657-73-C-0500.

(20) Monitor contractor progress and status of logistics actions throughout the Pre-Operational and Operational Program.

*The RILSD will assist the contractor in obtaining non prime data from supporting AMA's.

7

(21) Report known or suspected deficiencies in logistics requirements and logistics accomplishments to the Dir ILS, maintaining surveillance until the problem is resolved.

9. REVISION. The A-10 PO, SMAMA, RILSD or AFPRO may initiate revisions to this agreement at any time.

10. TERM OF AGREEMENT.

This agreement is effective when signed by the A-10 System Program Director, AFPRO, SMAMA and RILSD. An internal annual review of the MOA may be accomplished by the concerned command organizations with change recommendations submitted for review and adoption.

8

Appendix H

F-15 Memorandum of Agreement (Annex VII)

Memorandum of Agreement between
Deputy for F-15 and AFPRO, McDonnell Douglas

ANNEX VII

LOGISTICS

I. PURPOSE:

This Annex defines the functions and responsibilities of the Logistics Support Cadre (LSC) located in residence at the McDonnell Douglas, St Louis Plant.

II. SCOPE:

The Logistics Support Cadre (LSC), which includes a joint Resident Provisioning Team (RPT) and Material Improvement Team (MIT), is assigned as an extension of the Deputy for F-15, Directorate of Integrated Logistics Support (YFL) and the F-15 System Management Division, Warner Robins ALC to assist the Air Force Plant Representative Office (AFPRO) in carrying out F-15 program objectives pertaining to Integrated Logistics Support, to conduct provisioning of spares/repair parts and accomplish assigned MIT duties. The LSC is collocated with the appropriate element of the AFPRO and operate within the local management/administrative procedures of that organization, as augmented by AFLC Policy and other guidance governing the functions of the LSC.

III. FUNCTIONS AND RESPONSIBILITIES:

A. The AFPRO functions and responsibilities relative to Integrated Logistics Support are essentially as stated in ASPR 1-406.

B. The Logistics Support Cadre is established to provide technical assistance to the AFPRO in the administration of F-15 Integrated Logistics Support (Reference DOD Instruction 4105.59) and to accomplish the AFLC tasks related to provisioning and materiel improvement. The functions and

responsibilities of the LSC will include:

1. Accomplish provisioning of all CFE aircraft, AGE and training equipment procured on Contract F33657-70-C-0300 in accordance with AFPI 71-682 (as amended by the Statement of Provisioning Policy) and Contract F33657-73-C-0267.

2. Implement phased provisioning as specified in MIL-STD-1517 and AFLCR 57-27.

3. Review Aerospace Ground Equipment Recommendations and, as appropriate, make recommendations to the SPO (YFL).

4. Serve as the AF focal point on all actions associated with the F-15 ORLA program in accordance with AFLCR 66-26. Provide AF approval for all source, maintenance and recoverability coding decisions resulting from ORLA reviews.

5. Review, evaluate, and recommend changes to the SPO (YFL) on Configuration Item specifications to assure Maintainability/Reliability Considerations.

6. Evaluate program plans and contractual documents containing logistics support considerations and provide recommended changes to the SPO (YFL).

7. Assist in providing information on failure data and other ALC data when requested by the contractor.

8. Work in conjunction with the AFPRO in obtaining common and standard stock listed items.

9. Participate in Design Reviews and Physical Configuration Audits.

10. Participate in Aerospace Ground Equipment demonstrations in conjunction with the System Program Office to aid in assuring that the Aerospace Ground Equipment is compatible with the equipment it was designed to test.

11. Participate in the validation of DFMs/Technical Manuals.

12. Participate in the management and control of Materiel Improvement Projects in accordance with YF OI 66-6 and Memorandum of Agreement between the LSC and Warner Robins ALC F-15 System Management Division.

13. Participate in Maintainability/Reliability demonstrations as directed by the SPO (YFL).

14. Upon System Program Office (SPO) (YFL) direction, assist in preparation and distribution of routine and Interim Urgent Action Time Compliance Technical Orders in accordance with YF OI 66-1, AFLC/AFSCR 8-3 and other System Program Office Operating Instructions.

15. Participate in TCTO validation and kit proofing in accordance with YF OI 66-2.

16. Participate in Class I change processing IAW Annex III.

IV. COMMUNICATIONS:

A. Direct correspondence between the Logistics Support Cadre/RPT and the F-15 System Program Office (YFL), coordinated with the appropriate element of the cognizant Government Plant Representative's Office, is authorized.

B. Contact with the contractor on day to day administrative matters, that are within the scope of F-15 contract pertaining to Integrated Logistics Support is authorized. Change of contractor's scope of effort is not authorized by this appendix.

C. The Logistics Support Cadre/RPT shall keep the cognizant Government Plant Representative's Office fully informed on F-15 Logistics Support matters discussed with the contractor.

APPENDIX TO ANNEX VII (LOGISTICS)

Deputy for F-15/AFPRO McDonnell Douglas Corporation Memorandum of Agreement Packaging, Handling, Transportability, Transportation and Traffic Management.

1. Purpose. This Annex establishes the responsibilities of the AFPRO in supporting the F-15 System Program Office (YF) in packaging, handling, transportability and transportation functional areas. It further delineates the flow of related communications/documents.

2. Standard Contract Administration Functions. The AFPRO will perform standard contract packaging and transportation administration functions assigned by ASPR 1-406 (c) XXI, ASPR 1-1204 (c), AFSCR 23-16 para 4 (i) AFSC Supplement 1 to AFR 71-1, and Part 4 of ASPR XIX.

3. Applicable Functions and Procedures.

a. Packaging, Handling and Transportability (PHT) functions will be performed in the following areas:

(1) Technical support to F-15 SPO. MIL-STD-1521 (USAF) provides guidance for accomplishing and/or participating in actions that will ensure effectiveness of support.

(2) Review of contractors procedures for compatibility with contractual requirements.

(3) Surveillance of contractor performance.

(4) Identification and surveillance of all aspects of packaging cost charged directly and indirectly to F-15 contractual work, including evaluation of cost proposals and manhour estimates.

(5) Act as focal point for all Government/Contractor communications (documentation, telecons, etc.). All related communications in

these functional areas (SPO to contractor or contractor to SPO) will be routed through the appropriate AFPRO representative.

(6) Final approval authority for all contractual or technical changes remain the responsibility of the F-15 System Program Office.

b. The above PH&T functions encompassed by this Annex will be accomplished in accordance with the following policy and directives and those directives referenced therein:

(1) AFR 71-1/AFCMD Sup 1 - Packaging Management Objectives

(2) AFR 71-1 - Report of Packaging and Handling Deficiencies

(3) AFR 71-7 - Uncrated Shipment of Air Force Property Requiring Special Handling

(4) AFM 71-4 - Packaging and Handling of Dangerous Material for Transportation by Military Aircraft

(5) AFM 71-5 - Packaging Cost Manual

(6) MIL-P-9024 - Packaging, Handling and Transportability in System/Equipment Acquisition

(7) MIL-STD-794 - Parts & Equipment, Procedures for Packaging & Packing of

(8) MIL-STD-129 - Marking for Shipment and Storage

(9) MIL-P-116 - Methods of Preservation

(10) MIL-STD-1521 (USAF) - Technical Reviews and Audits for Systems Equipment & Computer Programs.

c. Traffic management/transportation support will be performed in the following areas:

(1) Technical support to the F-15 SPO

(2) Normal cognizant transportation officer functions required for the issuance of Government bills of lading and the control of their use by the contractor.

(3) Surveillance of the contractor's performance to assure that traffic management concepts are adequately exercised.

d. The above transportation functions will be accomplished in accordance with DOT and commercial carrier regulations and the following policy directives:

(1) AFM 75-1 - Transportation of Materiel

(2) AFM 75-2 - Military Traffic Management Regulation

(3) AFSCM 75-1 - System and Procurement Transportation

(4) AFCMDM 75-1 - Traffic Management in AF Contract Management

4. Specific SPO Functions Delegated to the AFPRO Packaging Specialist.

a. Insure that specific procedures to identify oversize, sensitive, or dangerous items in accordance with the concept and criteria of MIL-P-9024 are established and implemented by the contractor.

b. Provide guidance to McDonnell Douglas Corporation in the area of PHT design as it pertains to configuration management/control of containers and other special design protective equipment. All decisions will be predicated on the requirements of the contract SOW. Significant PHT development effort will be communicated to the SPO, 4950/LGT and WRALC (DSPC).

c. Review the transport and storage, transportability, and Section 5 requirement of all specifications developed by McDonnell Douglas Corporation, their major subcontractors and vendors. Submit comments to SPO for consideration and action with McDonnell Douglas Corporation.

d. Monitor and review all data, drawings or specifications that have a PHT implication and provide comments to the activities listed below in 4e.

e. Maintain liaison with SPO, 4950/LGT and WRALC (DSPC) regarding all significant PHT events.

f. Identify to the Deputy for F-15, packaging and transportability trade-offs which, if implemented, may result in reduced contract or program life cycle costs.

g. Participate with Deputy for F-15 representatives, or on behalf of the Deupty for F-15 meetings, program and design reviews, configuration review and tests on and involving/impacting F-15 packaging and transportability matters.

h. Maintain liaison with and be responsive to Resident Integrated Logistics Support (ILS) detachment to assure accomplishment of PHT events consistent with the Air Force objectives and contract SOW.

i. Receive, evaluate and provide comments (concurrence or non-concurrence with rationale) on all P-104 submissions to activities specified on the CDRL (DD Form 1423).

5. Specific Deputy for F-15 Responsibilities Delegated to the AFPRO Traffic Manager/Transportation Officer:

a. Movement surveillance of material, equipment, and subassemblies between the contractor's manufacturing and test facilities.

b. Obtaining airlift movement assistance through 4950/LGT.

Vita

Ralph Harold Rohrer, Jr. was born on 4 September 1938 in Jefferson City, Missouri. After graduating from Fatima High School in 1956, he attended the University of Missouri. In 1961 he received a Bachelor of Science Degree in Electrical Engineering and was commissioned a Lieutenant in the USAF. He has served as a Communications and Electronics Officer in the Air Defense Command and in a number of communications management positions in Air Force Communications Service. His most recent assignment prior to attending the Air Force Institute of Technology was as Communications Officer, Defense General Supply Center, Defense Supply Agency, Richmond, Virginia.

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Vita

Roy Lee Hodges was born on 8 October 1942 in Shawnee, Oklahoma. He graduated from high school in Gore, Oklahoma in 1960 and attended the University of Oklahoma from which he received the degree of Bachelor of Science and a commission in the USAF in 1965. After attending flying school, he received his wings in May, 1966. He served as a bomber pilot in the 69th Bombardment Squadron, Loring Air Force Base, Maine from 1966 until 1970, including two temporary duty assignments in Southeast Asia. In 1970 he attended Squadron Officers School and was selected for assignment to the 21st Special Operations Squadron, Nakhon Phanom Royal Thai Air Force Base, Thailand as a helicopter pilot. In 1972 he was assigned to Wright-Patterson Air Force Base and served as a Flight Instruments Engineer in the B-1 System Program Office until his entry into the Air Force Institute of Technology.

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