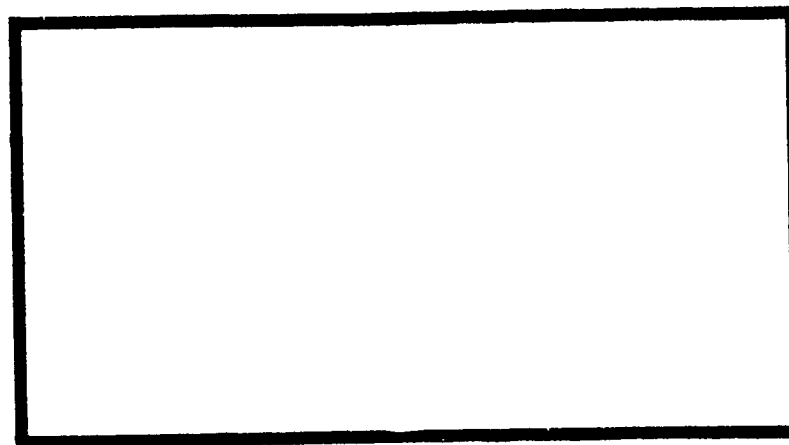


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NONSTANDARD SUPPORT CONCEPTS
IN USAF MANAGED SECURITY
ASSISTANCE PROGRAMS

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James D. / Picard Major, USA
Michael J. / Phalen Captain, USAF

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER LSSR 26-77A	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) NONSTANDARD SUPPORT CONCEPTS IN USAF MANAGED SECURITY ASSISTANCE PROGRAMS		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis
7. AUTHOR(s) James D. Picard, Major, US Army Michael J. Phalen, Captain, USAF		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Graduate Education Division School of Systems and Logistics Air Force Institute of Technology, WPAFB OH		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Department of Research and Administrative Management (LSGR) AFIT/LSGR WPAFB OH 45433		10. PROGRAM ELEMENT PROJECT TASK AREA & WORK UNIT NUMBERS
12. REPORT DATE June 1977		13. NUMBER OF PAGES 155
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES APPROVED FOR PUBLIC RELEASE AFR 190-17. JERRAL F. GUESS, CAPT, USAF Director of Information		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Security Assistance International Logistics Nonstandard Support Military Assistance Foreign Military Sales		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Thesis Chairman: Dr. Leslie M. Norton		

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An increasing number of FMS customers are purchasing items and subsystems which are not procured for USAF use. Current USAF policy dictates that these nonstandard items will be supported when directed by OSD. In the past, the USAF has provided this support on a case-by-case basis. Recently there have been significant efforts to improve and standardize this support. The authors have collected and analyzed the myriad of policies and procedures used by the USAF in providing this support. The objective of the research was to produce a short concise document which synthesized the development of nonstandard support theories and their applications. Reasons for nonstandard items and their support are analyzed and two historical cases involving non-standard support are discussed. USAF efforts aimed at improving this support are identified and analyzed in terms of their potential for influencing future nonstandard support concepts. The authors concluded that although the USAF has been involved with nonstandard support for many years, it has not yet fully defined the problem nor completely identified its impact.



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NONSTANDARD SUPPORT CONCEPTS
IN USAF MANAGED SECURITY
ASSISTANCE PROGRAMS

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

James D. Picard, BS
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Captain, USAF

June 1977

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This thesis, written by

Major James D. Picard

and

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and approved in an oral examination has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 15 June 1977


COMMITTEE CHAIRMAN

ACKNOWLEDGMENTS

The accomplishment of this research project would not have been possible without the expert guidance and advice provided by the many truly professional personnel contacted throughout the USAF. Unfortunately it is not possible to individually cite all who made contributions to this thesis; but to all those who assisted us, we wish to express our sincere gratitude for the helping hand they so willingly extended.

Particular gratitude is expressed to Mr. Thomas L. Seldon and Mr. David G. Lambert of the Acquisition Logistics Division, AFLC. Their professional expertise, encouragement, and dedication have made significant contributions to this thesis. Without their expert advice this thesis could not have been completed.

A very special note of thanks is extended to Dr. Leslie M. Norton, our thesis advisor, whose professional advice, constructive criticism, encouragement, personal concern, and restraining yet not confining guidance was a source of inspiration to the authors.

Special thanks also go to Ms. Joyce Clark for her truly impeccable and professional preparation of this thesis. Her many contributions were always graciously performed, sometimes under the most trying of circumstances.

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CHAPTER I

INTRODUCTION

BACKGROUND AND SCOPE

Assistance in the establishment and maintenance of adequate defense postures has been a basic tenet of United States foreign policy since World War II. The National Security Act of 1947 and the Mutual Defense Assistance Act of 1949 established the foundation for large scale US support. The Marshall Plan, enacted into law by Congress on 3 April 1948, in the form of the Economic Cooperation Act, although economic in nature, was also instrumental in setting the tone for military assistance programs. During this early period, US support was in the form of grant aid and the provision of military assistance was largely confined to loans or outright gifts of obsolete or surplus US equipment.

Initial programs of Security Assistance have undergone significant change since their enactment. These changes have been evolutionary in nature and reflect the changes in US foreign policy. From 1949 to 1968 legislation such as the Mutual Security Acts of 1951 and 1954, and the Foreign Assistance Act of 1961, reaffirmed the policy that US security was strengthened by assuring the security

of other free and independent countries and that this objective could best be accomplished through authorizations for common defense. The legislation of this period reflected the changing tone of military assistance programs in that Congress has continually asserted that implementation could be improved through changes in organization and program flexibility (126:1-10).

The changes brought about in military assistance legislation up to this time (1961) reflected the growing awareness that grant aid programs could not continue indefinitely. The trend toward arms sales continued and in 1964 foreign military sales replaced grant aid as the predominant form of US security assistance (31:2). The Foreign Military Sales Act of 1968 retained the intent of previous legislation; however, its primary purpose was to require the replacement of grant programs with sales agreements when the recipient nations achieved economic self-sufficiency.

The Foreign Military Sales Act of 1968 established the primary US policy for the conduct of military export sales of which there were two components: commercial sales and foreign military sales. Commercial sales were characterized by direct negotiations between the foreign country and US industry whereas Foreign Military Sales (FMS) were government-to-government transactions. Although it was the expressed preference of this act to use commercial channels as much as possible, two-thirds to three-fourths of all

US military exports continued to flow through government-to-government channels (123:D-3).

The extensive use of FMS as opposed to commercial sales has been a result of customer preference. FMS customers prefer to buy from the Department of Defense for a variety of reasons. FMS customers generally realize a cost savings by having the US Government manage the FMS procurement as part of its DoD procurement. Direct commercial sales require the customer to perform his own contracting and program management. FMS may also offer more favorable payment terms through government credit than could be obtained through commercial sources (47:48).

Whereas all of these advantages contribute to the attractiveness of FMS, it has been the DoD record for follow-on support that is primarily responsible for country preference for government-to-government sales (31:15). The continued availability and dependability of US international logistics support relieves the customer of the expense of designing his own system (47:43-65). This preference is an accurate reflection of the US commitment--both morally and as a matter of policy--to provide follow-on support and training to FMS customers (48:10).

The Foreign Assistance Act of 1961 and the Foreign Military Sales Act of 1968 were both substantially modified by the International Security Assistance and Arms Export Control Act of 1976. This law

made significant changes in US policy toward both grant aid and military export sales. Specifically, it took positive action to phase out grant aid and provided for increased congressional supervision and surveillance of all aspects of the foreign military sales program. This act not only deleted the expressed preference for commercial sales but further restricted the sale of major defense equipment (sales of \$25 million or more) to government-to-government transactions (55:729-69).

The United States Air Force involvement in FMS has increased significantly in recent years. FMS cases for which the USAF is responsible have increased from just over \$400 million in FY 1970 to over \$4 billion in FY 1976. Current projections indicate that the number of aircraft of US origin belonging to foreign air forces will exceed the US fleet (excluding Strategic Air Command) by 1,000 aircraft by 1980 (48:8-9).

This figure is noteworthy in itself; however, when considered in terms of follow-on support requirements it assumes even greater proportions. The Air Force Logistics Command (AFLC) reported in their International Logistics briefing of September 1976 that they had processed over 735,000 FMS and grant aid customer requisitions for follow-on support items in FY 1976.

The magnitude of this support effort is further compounded by the fact that increasing numbers of FMS customers are requesting

and purchasing items and subsystems which are not procured for USAF use. These nonstandard items range from minor configuration changes to weapon systems which are part of the DoD inventory to complete systems which are not part of the DoD inventory.

For the purpose of this thesis, the current Air Force Logistics Command definition of nonstandard will be used as follows (62):

Nonstandard Item: Any item, with or without NSN, which is neither managed nor used by a DoD activity.

Nonstandard Configured System/Subsystem:

Category 1: Any system/subsystem configured with a nonstandard item.

Category 2: Any system/subsystem configured with a standard item which renders it dissimilar in configuration to like systems/subsystems in DoD inventory.

Category 3: Any system/subsystem configured with less than the full complement of subsystems/components so as to render it dissimilar in configuration to like systems/subsystems in DoD inventory.

Current USAF policy regarding nonstandard support is stated in the proposed revision to AFM 400-3 which reads in part as follows:

" . . . when directed by OSD, nonstandard equipment may be purchased and follow-on support provided [125:1-5]. "

PURPOSE OF RESEARCH

The purpose of this research is to provide a single source of information which: (1) synthesizes the evolution of nonstandard item support concepts in the USAF; (2) identifies their applications; and (3) demonstrates their growing importance.

JUSTIFICATION FOR RESEARCH

There is a myriad of formal and informal policies and procedures used by the USAF to provide nonstandard item support on a case-by-case basis. In addition, another large body of information has been developed to standardize and improve this support. The resulting mass of material is complex and difficult to interpret. Unless program managers have been involved with the development of the nonstandard support concepts, they could spend a considerable amount of time searching for information on what has been used, what is currently in effect, and what new concepts are under development. International logistics represents a large and ever-growing portion of the USAF logistics effort. There is a continual influx of new personnel to this field. Significant time is consumed familiarizing new personnel with nonstandard support concepts and applications before they can become productive. The time spent familiarizing personnel with these concepts reduces the time available for managing security assistance pro .

The lack of familiarity with previously developed concepts can also result in a waste of valuable resources. Program managers might independently redevelop nonstandard support concepts or unknowingly perform parallel studies in these cases. This duplication of effort similarly reduces resources available to manage security assistance programs.

The product of this research will assist in reducing both training time and duplication of effort. It will synthesize the evolution of nonstandard support theories and applications into a relatively short, concise document containing all pertinent information.

OBJECTIVES

1. Identify the reasons why the USAF is providing nonstandard item support.
2. Provide an overview of USAF managed FMS cases which include nonstandard item support.
3. Provide an historical synthesis of nonstandard item support concepts.

RESEARCH QUESTIONS

1. Why has the USAF been required to provide nonstandard item support?
2. What is the extent of the USAF involvement with nonstandard item support?

3. How have the USAF concepts for providing nonstandard item support evolved?

METHODOLOGY

The subject of this thesis is a current operational problem and is therefore extremely dynamic. Since it is a contemporary issue, the majority of the documentation was found in operational files. Library research yielded little historical documentation which was directly applicable. In order to obtain the most current data available, two information gathering techniques were used: (1) research of documentary sources and (2) personal interviews.

Literature Research

Research of literature on logistics support of nonstandard items was conducted in two distinct areas. One area consisted of studies, theses, and research reports furnished by the Air University, the Defense Documentation Center and the Defense Logistics Studies Information Exchange. Also included in this research area were public laws, Department of Defense Directives and USAF regulations. Although these sources yielded no research material which specifically addressed the subject of nonstandard support, they provided information which defined many of the constraints within which international logistics systems must operate.

The other area of literature research consisted of letters, messages and recorded briefings originated by logisticians who deal with nonstandard support on a day-to-day basis. These documents provided extensive detail and were the primary sources of information for the research. There is a large volume of highly relevant material in this area.

In order to keep pace with developments in nonstandard support concepts and practices, it was vital that the researchers establish and maintain an open channel of communications with the proponent agency. This was accomplished with the Air Force Logistics Command. The researchers were granted access to the operational files of this agency and, on a continuing basis, pertinent documentation was reviewed and analyzed.

In finalizing this research, the relative worth of a particular source was judged by the influence that source had on shaping nonstandard support concepts in general or in applying nonstandard support concepts to particular situations. The experience of AFLC International Logistics personnel was also used to assist in evaluating nonstandard support material. Since many of them have been dealing with this subject on a continuing basis, they were intimately familiar with the content and implications of the documentation. They were therefore well qualified to judge the relative worth of this operational data.

Personal Interviews

The second major information gathering technique used in the research was personal interviews. Interviews with personnel of the Air Staff, Hq AFLC, the Acquisition Logistics Division (AFALD), the Air Force Systems Command (AFSC), and knowledgeable members on the AFIT staff and faculty were conducted. These interviews were the source of the most current data available. They also contributed meaning and insight which could not be derived from the written documentation. These interviews were conducted on an unstructured basis and focused primarily on the operational problems posed by the alternative nonstandard support concepts.

Research Design and Presentation

The initial approach to sorting and classifying data was to trace the development of the nonstandard support issue since its first documentation in the Security Assistance Impact Study (SAIS). The major documents were chronologically related and their contents summarized. The aim of this initial research was to establish continuity and provide a logical overview of the problem.

Subsequent research followed two channels, additional examination of literature and personal interviews. The literature examination consisted of reviewing important documents found during initial research for additional information and identification of areas

requiring further investigation. Specific security assistance cases were examined to provide typical examples of how nonstandard support concepts have been implemented. Additional literature was also examined to obtain the most current information on this topic. Through personal interviews, the researchers obtained information from people actually involved in nonstandard support on a day-to-day basis. Current data concerning the evolution of nonstandard support concepts, problems this support is causing, and current actions being taken to improve these concepts were obtained during these interviews. Data collected was current as of 1 May 1977.

The research will be presented in four chapters. Chapter II will be devoted to a development of the nonstandard support problem. The primary objective of this chapter will be to introduce the problem and its ramifications. The reasons for USAF involvement in nonstandard support will be examined. The functional areas impacted and the extent of support required will be identified and examined in an attempt to ascertain the magnitude of nonstandard support in USAF managed FMS cases. Historical approaches followed by AFLC in support of nonstandard FMS equipment will be identified and analyzed in terms of AFLC involvement and contractor support required.

In Chapter III, two specific FMS cases which typify previously used nonstandard support concepts will be presented and examined. Nonstandard item support cases involving the Saudi

Arabian Peace Hawk Program and the German F-104G Program were selected for this examination. Their selection was based upon the degree to which they represent a specific support concept currently being used by AFLC.

Chapter IV will present a summary of activities which have taken place in the USAF specifically directed at improving nonstandard item support. Three separate activities have been identified as having the most potential for influencing future nonstandard item support concepts. These activities will be examined to determine the effect they have had on the development of an improved support concept. The integration of nonstandard item support with other logistical system development efforts will also be analyzed.

Chapter V will contain answers to the research questions presented in Chapter I and conclusions of the researchers. It will also contain recommendations for further research on this subject.

CHAPTER II

DEFINING THE NONSTANDARD SUPPORT PROBLEM

REASONS FOR NONSTANDARD ITEMS AND NONSTANDARD ITEM SUPPORT

The increasing number of FMS cases involving the sale of nonstandard weapon systems and subsystems emphasizes the fact that foreign customers are actively participating as buyers in the international market place. In contrast to Grant Aid programs where final decisions are usually made by the United States and not by the receiving country, FMS programs are developed in response to both perceived security assistance requirements and the marketing efforts of weapon system manufacturers. These cases are negotiated in a true buyer-seller environment. The DoD has been forced to assume the role of supplier in these instances and has been given a great deal of authority, within the limits of national security objectives, to sell the military materiel and services to friendly foreign countries (46). Although FMS programs must, as a first condition, support US policy objectives, they must also be acceptable to the buyer. FMS customers are no longer willing to purchase from the United States under conditions which serve only the interests of the seller. As paying

customers, they expect that their interests and desires be given due consideration (28:22).

There are numerous reasons why a foreign customer may desire to purchase a nonstandard item or change the configuration of a standard DoD system (49:2). National pride is one. A unique configuration may provide the purchaser with a sense of prestige as a result of owning a particular piece of equipment. It may also provide the country an opportunity to incorporate into a proven weapon system equipment which it has itself manufactured.

Inability to secure a standard item is another. This could be caused by the item desired not being available in the time frame in which the buyer needs it. It could also be caused by restrictions placed on selling the item for security reasons.

Probably the most prevalent reason for a country buying nonstandard items, systems, or configurations is, however, based on their perception of a unique requirement which can best be satisfied by a different piece of equipment than is installed in the standard system. In some cases, the country may determine that it is necessary to add a capability to a weapon system that has never been associated with it before for the same reason.

Ease of maintenance may also be another reason. Standardization of systems and subsystems reduces the amount of different parts which must be kept in inventory. It also reduces the number of

different types of systems on which a technician must be trained, special tools and equipment which must be purchased and maintained, and specialized facilities which might need to be built. If a subsystem already exists in their inventory, therefore, a country may save by procuring the same subsystem in other weapon systems.

Another reason for the purchase of nonstandard items is the influence of manufacturer advertising efforts. In the opinion of one AFLC representative involved in FMS, this is one of the most significant causes for the proliferation of nonstandard items (53). A quick glance at practically any aviation trade magazine will further reinforce this notion. These periodicals, most of which are distributed internationally, are replete with evidence of weapon system advertising.

Another example of the arms marketing taking place in the world market can be found in the international air shows. These trade shows of the international aviation industry combine advertising, flight demonstrations, and sales of aircraft and aircraft systems, both military and civilian. The following excerpt gives some evidence of the benefits that are accrued by participants in these shows:

London--U.S. aerospace firms, half of whom were new to the Farnborough air show and the European/Mideast market influence it attracted, did a surprising \$18 million worth of business in floor sales during the week-long exhibition, U.S. Dept. of Commerce officials said here last week. In addition, the officials who interviewed representatives of all the 33 countries involved in the central U.S. exhibition,

said the outlook appears . . . for firm export orders worth another \$160 million within the next 12 months [122:23].

There is another aspect to the sale of nonstandard parts and systems, that is the intention of the United States Government. These may or may not coincide with previously mentioned customer reasons for buying these types of items.

One reason might be that the US wants a country to have a certain capability incorporated into a weapon system the country either currently possesses or is procuring. This could be to enable a country to cope with a threat perceived by the US but not able to be satisfied by a standard weapon system which the country has access to. Lack of standard items in the inventory or nonavailability of standard items during the required time period may also contribute to the US taking this position.

The desire to improve the maintenance capability of a country may be another reason. Through standardization, wide ranging inventories, training, equipment, and facilities may be able to be reduced. This simplification could in fact increase a country's operational capability.

Research, development, test, and evaluation (RDT&E) could also prompt the sale of nonstandard items. RDT&E are expensive operations. Funds for these purposes may be difficult to obtain. If the DoD believes that a currently nonstandard item may be of value

to the US in the future, the DoD may encourage a foreign country to obtain this type of item. In this case the US might benefit from the foreign country's experience with the item at reduced or no costs at all.

Another reason might be to restrict the capability of a country. In certain regions of the world, the balance of military power among nations is critical. In order to further its own national interests, the US, as a major supplier of military equipment, must weigh the capabilities countries have in a region to avoid the initiation of an arms race in an area. The introduction of nonstandard items may be one way of accomplishing this objective.

Somewhat related to the previous reason is that of politics. A country which procures a weapon system from the US, be it standard or not, becomes dependent on the US to a greater or lesser extent. In the case of nonstandard items, the dependency is very great because, by the very fact that an item is nonstandard, the ability of a country to obtain support from non-US companies or develop its own support capability for complex systems is very limited. The introduction of nonstandard items, therefore, can be a very effective political lever, for without support of key nonstandard items, critical portions of a country's military capability may be rendered useless.

While the previous reasons for the US supplying nonstandard items may be plausible, probably the most frequent, actual reason is

economic. Foreign countries are customers in FMS and as long as the US participates in the role of seller in a competitive market place, the possible sale of nonstandard items must be expected in order to satisfy customer desires. The sales of these items stimulate our economy, provide jobs, and help our balance of payment posture. In our current economic position, these factors are all significant.

In spite of the fact that the US official position is to strongly urge foreign countries to purchase only standard US weapon systems, the Departments of Defense and State may be expected to continue to approve, although sometimes reluctantly, the sales of nonstandard US weapon systems for a variety of reasons (49:2).

A logical question at this point may be, of what interest is nonstandard equipment to the USAF? Once it is sold, does it not become the responsibility of the buyer? Why should the USAF concern itself or commit resources to support weapon systems after they are sold? The answers to these questions are found in an examination of the basic objectives of the US FMS program. The basic objective of FMS as described in the Foreign Military Sales Act of 1968 and the International Security Assistance and Arms Export Control Act of 1976 is to assist our friends and allies in meeting their defense needs while reducing the direct burden on the US.

In support of that objective, the US sells not only weapon systems but also initial and follow-on support for these systems.

Support is bought and sold, generally through a separate FMS case, on a system basis. Regardless of whether the item is standard or nonstandard, the customer pays for and expects an adequate system support package. Once the sale of a nonstandard equipped or configured weapon system is approved, initial and follow-on support arrangements for the entire system must be adapted to the unique requirements posed by the nonstandard items sold.

Although the purchaser must agree to bear the full costs for this support, FMS customers are requesting and are willing to pay the price for USAF management of nonstandard items. For example, the Government of Switzerland included the following statement in its request for a letter of offer for F-5 aircraft:

All nonstandard items (support equipment and spare/repair parts) will be catalogued, assigned National Stock Numbers and incorporated in the USAF system in a manner similar to USAF items [69:1].

The reason for such a request by Switzerland might appear at first a little difficult to ascertain. Since all FMS to Switzerland must be conducted in a manner designed to maintain its neutrality, cases for both initial and follow-on support are negotiated on the basis of a one time buy. Generally 10 to 20 years of follow-on supplies and services are purchased at the outset. The primary reason for these unique cases is the fact that their neutral status does not permit them to "buy-in" to any system, such as a Supply Support Arrangement (SSA), which would have the effect of allying themselves to the US.

Subsequent negotiations with the Government of Switzerland deleted this requirement; however, the original request clearly shows at least a perceived need to interface with the USAF logistics system.

Requests such as these stem from two reasons: (1) a desire by the foreign customer for a standardized interface with the USAF logistics system and (2) the fact that some customers require the more professional and detailed program management capabilities of the USAF (69:1).

NONSTANDARD ITEM SUPPORT CONCEPTS

AFLC has identified three basic approaches which they have used in follow-on support of nonstandard FMS equipment. It must be recognized, however, that these are very general and that very few historical applications of these approaches have been used in their pure form. Each nonstandard support case has been unique in some aspect and has been handled in a slightly specialized manner. The three approaches together with an example of their applications are summarized below:

1. No AFLC involvement; all nonstandard support arranged between the country and the contractor. An example of this approach is found in the sale of Boeing 747 aircraft to the government of Iran for use as military transports (82). These aircraft were purchased by direct commercial sales with no USAF involvement. Consequently,

initial and follow-on support negotiations were conducted directly between Iran and the contractor (8:187; 56:24).

2. Limited AFLC involvement with maximum contractor support; AFLC to provide visibility and control only. This has been the most prevalent historic approach to providing follow-on nonstandard support (82). An example of this approach can be found in the Saudi Arabian Peace Hawk Program. This support concept provides, among other services, follow-on support for nonstandard items on the RSAF F-5s. This program is fully covered in Chapter III.

3. Normal AFLC organic logistics support for nonstandard items. The F-104G program is one example of this approach. This program had its origin under grant aid and normal AFLC organic support was provided. As the program evolved into an FMS case, AFLC continued to organically support this nonstandard weapon system (82). The F-104G program will be more fully discussed in Chapter III.

FUNCTIONAL AREAS INVOLVED

As mentioned previously, each nonstandard support case is unique and the services provided are tailored to the requirements of the customer. The functional areas involved in providing nonstandard item support vary from case to case. Although each case is different, each can be found to include one or more of the following services (82):

1. Provisioning
2. Cataloging
3. Supply/Maintenance
4. Technical Orders (Operations/Maintenance)
5. Materiel Deficiency Reporting
6. Configuration
7. Engineering Services
8. Requirements Computation

Each of the three support approaches described previously have the capability to provide each of these services. The primary difference lies in which if any, are provided organically by AFLC as opposed to those provided by a contractor.

To understand the relationship between nonstandard items and the eight services listed above, it is necessary to explain what each of these services involves. Provisioning includes the tasks of developing the appropriate provisioning documentation, assignment of source, maintenance, and recoverability (SMR) codes, maintenance factors, and computation of quantitative requirements, as well as prorating design change costs over the affected parts. The system manager air logistics center¹ (SM/ALC) does this for standard items. The SM/ALC could do this for nonstandard items also or a contractor could perform these functions under the surveillance of the SM/ALC (82).

Cataloging requires that an item be uniquely identified in some way. Various methods have been used for nonstandard items.

¹Air Materiel Areas (AMA) were officially redesignated Air Logistics Centers (ALC) on 1 April 1974.

These included the use of part numbers, ALC assigned control numbers, and national stock numbers. In some cases the contractor initiated this action and in other cases the Air Force initiated it. For a nonstandard item to be stocklisted in standard US publications, several things must take place. Items must be compared with Defense Logistics Services Center (DLSC) files to determine if the item is in fact nonstandard. If determined to be nonstandard, data must be submitted to DLSC so that a national stock number (NSN) can be assigned and its user identified. Once DLSC has taken this action, source of supply and unit price can be associated with the NSN and included by AFLC into Air Force cataloging records. This information is provided to the using country through the Stock Number User Directory (SNUD). This data also provides a means of interfacing with the International Logistics Program (ILP) Centralized Accounting and Reporting System for funding and reporting purposes. Some of the actions mentioned can be performed by either a contractor or a US government agency. Others can only be accomplished by one or the other (82).

Supply and maintenance includes storage, distribution, and repair. This service involves establishing a stockpile of parts, developing requisitioning and routing procedures, providing order and shipment status, monitoring finances, repairing and shipping parts, and obtaining reimbursement. There are many options in this area

with respect to how nonstandard items can be handled. For instance, parts may be stored at contractor facilities and never delivered to an Air Force warehouse. Standard systems such as the ILP Centralized Accounting and Reporting System (H051), the Foreign Military Grant Aid and Sales Program System (H028), and the Defense Automatic Addressing System (DAAS) could be used or special handling procedures could be established. Repair activities could be accomplished by USAF or accomplished only by contractors or vendors (82).

The Air Force Technical Order System has been used to support Foreign Military Sales cases for many years but nonstandard item data has never been authorized for inclusion. As a result, there are several areas which apply to nonstandard items which must be addressed. These include designation of an organization to manage these technical orders (T.O.), development of procedures for the administration of this program, identification of writers and publishers, establishment of T.O. indexes, assignment of responsibility for validation and verification, methods for instituting Time Compliance Technical Orders (TCTO) for nonstandard items, and procedures for incorporating corrections of deficiencies into existing T.O.s. As in the case of the other services, several of the areas just cited allow for a wide variety of implementation methodology (82).

The areas concerned with materiel deficiency reporting for nonstandard items are similar to those concerned with this same

service for standard items. Procedures for collecting and reporting data, establishing a data bank, evaluating deficiency reports, taking corrective action, as well as assessing the effects of the interface of nonstandard and standard items must be addressed. In some cases, such as those involving AFSC, the tasking is very clear. In others, there is much latitude for assigning responsibility (82).

Configuration control is important in all aircraft systems. The introduction of nonstandard items makes it all the more critical. Collection and reporting this information is the major area of concern. The choice narrows to using standard USAF procedures or developing specialized ones. Once this choice is made, the decision must be made regarding who will administer the system (82).

Engineering support for nonstandard items presents a unique situation. Because an item is nonstandard, the original manufacturer may be the only one who has design data on it. Assigning responsibility for engineering, determining the types of engineering services to be provided, establishing a data collection and analysis system to support these engineering efforts are some of the factors to be considered in providing this service. As in the case of materiel deficiency reporting, some of these responsibilities are already established. Others, however, could be performed by either USAF or a contractor. Because of inherent difficulties in this area, engineering support of nonstandard items has frequently been neglected (82).

Requirement computations for nonstandard items require the assignment of responsibility for these computations as well as the determination of those factors which are associated with the storage, issue, and maintenance of this equipment. Provisions must also be made for incorporating nonstandard items into standard weapon systems during production as well as concurrently incorporating design changes into both spares and installed nonstandard items. Methods of assuring a stable source of supply and firm or not-to-exceed prices must also be developed. There is much latitude for assignment of responsibility in this area (82).

The requirement to consider these services and make provisions for them from the initiation of an FMS program to purchase nonstandard items cannot be overemphasized. Failure to do so could cause problems with fit, interface with other components and circuitry, electromagnetic compatibility, heat buildup, weight and balance to name only a few. One change compounds another (49:4).

Even after services have been identified and provisions for them have been incorporated into a support plan, costing procedures must be developed and manpower must be obtained to support their accomplishment. Since the costs of FMS must be borne by the customer, the costs of not only the materiel and services but also of operations and maintenance must be accounted for. These include such costs as travel, personnel, pro-rata payroll, supplies,

equipment, and overhead. In addition, both billing and reimbursement procedures must be established (82).

Manpower will be required to perform these services. The exact amount is difficult to determine and must be based on who is assigned what responsibilities. Some services may be able to be absorbed by existing USAF personnel, others may require obtaining additional manpower or transfer to a contractor. Even transfer to a contractor would impact USAF since USAF would have to maintain surveillance over contractors as long as USAF was charged with overall management responsibility for the FMS program (82).

Throughout this chapter references have been made to the use of standard US data systems and support facilities. The impact various methods of nonstandard support would have in these areas must also be considered.

MAGNITUDE OF NONSTANDARD ITEM SUPPORT

As an example of the magnitude of nonstandard equipment presently being sold under FMS cases, one author surmises that perhaps the most nonstandard weapon system in the inventory of foreign customers today is the RF-4E aircraft (49:11). A review of the nonstandard items/systems presently being installed serves to substantiate this statement. A list of these items is detailed below (58:1):

1. Low Smoke Engine
2. Inertial Navigation System
3. Digital Computer
4. TACAN
5. Signal Data Converter
6. Interference Blanker
7. UHF Radio
8. Forward Looking Radar
9. Air Data Computer
10. Data Display Set
11. Headset Microphone Adapter
12. Identification Friend/Foe
13. Infrared Reconnaissance System
14. Radar Altimeter
15. Automatic Direction Finder
16. Radar Receiver Set

Many of the items listed above have many associated line items which are standard USAF items and therefore can be supported by normal USAF methods. Most of these items, however, contain some nonstandard line items for which no like item exists in the USAF or DoD inventories. For example, the Litton LN 33 Inertial Navigation System (INS) used in the Iranian F-5E and F-5F aircraft has 5,908 associated line items of which 1,200 are estimated to be non-standard (73:1).

The following list of FMS cases involving nonstandard support gives evidence of the proliferation of nonstandard weapon systems which AFLC is currently supporting (66:11-12). The figures in parentheses indicate the estimated case value (49:11):

1. Iran F-5 and F-4 (\$30 million/3 year period)
2. Saudi Arabia F-5 (\$10 million/3 year period)

3. Switzerland F-5 (\$1.9 million/3 year period)

4. Egypt C-130 (\$4 million/3 year period)

In addition to these cases, air forces of several other countries, such as Germany, have expressed interest in obtaining nonstandard support through FMS. Weapon systems other than aircraft, such as the AN/FPS-113 radars are also becoming involved (49:11).

The present pace of nonstandard item/system/configuration sales can be expected to steadily increase in the future. As the following periodical excerpts indicate, aerospace industry developmental efforts aimed at the FMS market may result in a greatly expanded "shopping list" of nonstandard items.

. . . Northrop Corp. has passed a major milestone in its F-5/T-38 fighter/trainer program with delivery of the 3000th aircraft to the U.S. Air Force, and is projecting continued production of advanced versions of the design through 1987 . . . Several advanced F-5 models with improved air-to-air and air-to-ground weapons systems are under development . . . Projected [production] rate beyond 1979 is 12 aircraft a month. . . the F-5 program . . . is based almost entirely on sales through the U.S. government to foreign nations . . . [45:18].

SUMMARY

This chapter has served as an introduction to the ramifications of the nonstandard support issue in USAF managed FMS programs. An increasing number of USAF weapon systems are being

modified and tailored to foreign customers' desires, creating non-standard systems. Introduction of nonstandard systems creates many unique problems which in the past have been handled on a case by case basis. Three general approaches to providing nonstandard support have been identified and examples of their application introduced. The next chapter is devoted to an in-depth examination of selected FMS cases which typify the two support concepts which involve the United States Air Force.

CHAPTER III

CONTEMPORARY NONSTANDARD SUPPORT CASES

GENERAL

The cases presented in this chapter show how nonstandard item support has actually been provided. The cases selected for examination do not by any means exhaust the list of cases involved with the non-standard issue. Their selection was based upon the degree to which they typified the historical methods used. Not all examples are pure in their representation of the basic concepts of nonstandard item support introduced in Chapter II. These examples do however, reflect the operational, political and practical experiences encountered and how they were handled.

SAUDI ARABIA

Peace Hawk Program

The Peace Hawk Program is one of the most extensive FMS programs ever managed by the USAF. It involves sales of materiel and services, both standard and nonstandard, which date back to 1971. The program is expected to continue well into the 1980's. Due to the extensive nature of the Peace Hawk program it is considered necessary

to present a brief overview of it in order to properly analyze the nonstandard item support concept used.

On 28 June 1971, the Saudi Arabian Minister of Defense and Aviation (MODA) signed a Letter of Offer (LOA) for 20 F-5B aircraft and support equipment. This purchase was called Peace Hawk I. On 29 September 1971, an LOA for 30 F-5E aircraft and support equipment was signed. This sale was designated Peace Hawk II (36:1-1). The Royal Saudi Arabian Air Force (RSAF) did not have an adequate maintenance capability, therefore a need existed to establish a technical and on-the-job training program along with facilities to support the F-5s they had purchased. In April 1972 therefore, they requested that the USAF establish a contract on their behalf with Northrop Aircraft Division (NAD) for these services. This program was called Peace Hawk III. Although this program was to end on 15 August 1975, it was extended to 15 February 1976. The total cost of Peace Hawk III with its extension was \$265.7 million (92). Peace Hawk IV, involving the sale of 20 F-5Fs, 40 F-5Es, two simulators, an extensive aircraft improvement program and support equipment, began with the signing of an LOA on 4 January 1975. The aircraft included in this phase were to be delivered in the 1977-1980 time frame (36:1-1). Peace Hawk V was a continuation of the Peace Hawk III extension for maintenance, training, and construction support. The services provided in this program would be applicable to Peace

Hawk IV aircraft also. The adjusted total price for this phase is estimated at \$2.007 billion (92). Peace Hawk VI, involving the sale and delivery of four F-5Fs configured in the same way as the Peace Hawk IV aircraft, was initiated on 30 January 1977 at a cost of \$23,325,817 (24:1).

Nonstandard Item Support Implications

The F-5B and E aircraft sold in Peace Hawk I and II had six nonstandard systems. These systems contained approximately 300 nonstandard stock items. The systems involved were (79:54,55):

1. Aerial refueling capability
2. Assisted take off system
3. LN-33 inertial navigation system
4. Reconnaissance nose with a KS-121A camera
5. ARN-58 instrument landing system localizer
6. Inboard fuel tank capability

In July 1972, the United States Military Training Mission (USMTM) of Dhahran, Saudi Arabia became concerned about follow-on logistical support for the RSAF aircraft. They requested the Director of Material Management at Kelly AFB, Texas to identify items which were to be categorized as FMS-peculiar and not to be supported by normal USAF support procedures. In addition, they requested information as to how these items were to be supported (130:1).

Prior to responding to this request, AFLC requested and received Air Staff guidance from CSAF/LGFX. They advised AFLC that the Government of Saudi Arabia had no purchasing mission in the

US and only very limited expedited-procurement capability in-country. For this reason it was determined to be in the best interests of the USAF to provide follow-on logistics support for peculiar items for the duration of Peace Hawk III unless Saudi Arabia established an expedited-procurement capability sooner. Air Staff acknowledged that support of nonstandard systems was not normal and stated that it would not continue indefinitely (15:1).

On 28 August 1972, Brigadier General Blake, Director of Military Assistance and Sales, DCS/S&L informed the Chief, USMTM of the decision to support nonstandard items for the duration of Phase III. He requested USMTM to brief the RSAF on this decision and further to urge RSAF to improve direct procurement capabilities by establishing a small purchasing mission in the U.S. This was seen as beneficial to both the military and commercial segments of their economy (19:1). This position was reiterated by Mr. W. B. Robinson, Deputy Under Secretary of Air Force (International Affairs) (124:1).

Request for Cost and Material Support Requirements

In response to this direction, AFLC/MMI directed San Antonio Air Materiel Area (SAAMA) to develop annual cost data for material and services for follow-on logistics support of nonstandard items under Phase III of the Peace Hawk Program. AFLC was to act

as Administrative Procurement Agent to provide logistics support through the establishment of direct communications between the RSAF and the contractor. Exclusive use of contractor resources were to be considered in the areas of technical engineering, technical data, modifications, repair and overhaul, and spare parts support for the non-standard items (77:1).

SAAMA contacted Northrop Aircraft Division (NAD) to obtain budget estimates. In addition to identifying the nonstandard items and stating what sustaining engineering services were required, materiel support requirements were also to be enumerated. Two options were presented to NAD as acceptable alternatives. The first option consisted of (1) stocking and maintaining a base supply function at Taif and Dhahran Saudi Arabia; (2) computing stock levels and laying in replenishment stock for supply after exhaustion of the one year initial lay-in of direct operating and maintenance parts for peculiar systems and AGE; (3) issue upon demand and replenish stock; (4) operate on an exchange basis with the country for recoverable components; (5) repair reparable and return to stock; (6) bill the country appropriately. The second option was to provide the same support as in the first option with the exception that the contractor would establish a single supply point in the U.S., receive requisitions directly from the country, and issue to a freight forwarder. Under this option, a U.S. dollar account was to have been established in a U.S. bank (38:passim; 103:1-4).

Northrop developed cost estimates and provided them to AFLC in October 1972 together with the following ground rules for their use (101:passim):

- . Contract: Between USAF and NAD
- . Financing: USAF financing with USAF obtaining reimbursement from RSAF.
- . Flow of Requisitions and Materiel: Directly between NAD and RSAF.
- . Division of Operations
 - (1) Engineering and technical support
 - (2) Material support
- . Scope: Limited to the extent feasible to parts, components, subsystems, and documents designated as nonstandard, i. e. used only by one or more countries being supported under FMS but not in any system operational in the USAF, Military Assistance Service Funded (MASF), or Grant Aid inventories. Components or detail parts of an assembly which itself is nonstandard may be common or may subsequently become common to the USAF inventory. In the engineering and technical area, it may be unavoidable that effort will be expended against FMS peculiar end items which could include FMS common items. In the material support area, if nonstandard items migrate into the common stock status, the item would continue to be supported by the contractor until a subsequent annual negotiation resulted in

realignment of the list of nonstandard items.

. Support Methodology: Parallel to FMS Depot Supply Support Program with contractor operations substituted for AFLC/AMA operations.

. Engineering/Technical Support:

(1) Respond to unsatisfactory reports, AFTO Form 22s, technical data deficiency reports, flight safety data analysis, failure data analysis, and investigation of incident/accident reports generated from other support systems for FMS peculiar items.

(2) Provide corrective actions, ECP, DCN, mod kit development, compatibility and configuration control as applied to the interface of nonstandard components with the standard configuration.

(3) Respond to production line changes as they affect the nonstandard configuration.

(4) In the case of manuals and data, the contractor would assume responsibility for only RSAF supplemental documentation not provided through normal USAF channels.

. Material Support:

(1) The contractor operated depot (CONDEPOT) would compute requirements covering operating stockage in-country, pipeline items, and CONDEPOT stock levels.

(2) Once the requirements have been approved by the F-5 SM, and USMTM/RSAF and financing had been provided through

a USAF/RSAF FMS case, the F-5 SM could place an order citing USAF funds to the CONDEPOT contract.

(3) CONDEPOT would obtain the material and store it, awaiting an RSAF demand.

(4) When in-country supply reached re-order level, RSAF would order by teletype or mail directly from CONDEPOT.

(5) CONDEPOT would ship material to the RSAF freight forwarder within 16 working hours for routine requisitions and four hours for priority and NORS requisitions.

(6) CONDEPOT would maintain surveillance of its stock position lead time from anticipated depletion or on a quarterly basis.

(7) CONDEPOT stock replenishment will be paid for on a quarterly basis as generated with no penalty for failure to supply if recommendations are altered or approval and financing are not accomplished in sufficient time by the RSAF.

(8) CONDEPOT operating expenses, burden, G&A, profit, and other costs would be a separate line item on a contract established on an annual basis and billed to the USAF on a monthly basis as expended in the form of a DD Form 250 showing delivery of services.

(9) For unprogrammed demands, CONDEPOT would initiate procurement for direct shipment of the material requested using contractor capital, compute forecast requirements for stockage,

initiate recommendations for stockage and funding for the requisitioned quantity and the stock level. For this contingency, CONDEPOT was to receive \$250,000 over and above the item stockage recommended. This operating cash balance was to be replenished each quarter.

(10) A specified list of items to be repaired was to be compiled.

(11) All issues from CONDEPOT were to be at new item price.

(12) RSAF would ship reparable items to the CONDEPOT repair point if beyond in-country capability. These reparables would be repaired and returned with charges. The DD 250 would reflect billing for the cost of repair.

(13) The contract was to be set up to cover the period through August 1975 with a one year actual contract and annual options to be exercised by the USAF at the direction of the RSAF and receipt of an FMS case to cover negotiated costs. Failure to exercise any annual options would result in close-out action. RSAF would pay for transportation packaging and handling for on-shelf assets to close out the account.

(14) An initial one year stock lay-in of parts and initial technical data publications would be provided under AFLC/FMS support procedures.

. Basis for Proposal: Support for

- (1) ECP 38, inertial navigation system
- (2) ECP 029/790, aerial refueling
- (3) ECP 023, assisted take off
- (4) ECP 024, reconnaissance pods
- (5) ECP 025, 275/150 gallon fuel tanks

. Facilities: CONDEPOT would be established in a building in California already in possession of NAD.

. Cost Estimates: (Table I) Subject to $\pm 25\%$ variation. Not a basis for an LOA.

Table I
CONDEPOT Cost Estimates

Element	FY 1*	FY 2	FY 3	FY 4	FY 5	Total
Engr/Tech	690	920	900	940	840	4290
Matl Spt						
Min	50	700	400	400	400	1950
Max	80	1200	700	700	700	3330
Oprtnng Exp	240	160	170	160	160	890
Total						
Min	980	1780	1470	1500	1400	7130
Max	1010	2280	1770	1800	1700	8560

*1 Jul 73 - 30 Jan 74

Note: Costs in thousands of dollars.

RSAF Five Year Plan

AFLC received NAD's estimates and forwarded them to Air Staff. In November 1972, an official Price and Availability Study was requested (83:1).

During the same period, the RSAF began to realize the need for the improved planning that the USAF and USMTM had been urging them to develop. The RSAF began preparation of a "Five Year Plan." In support of this planning effort, the Air Staff directed AFLC to prepare estimates for all costs associated with the USAF support of the Peace Hawk Program. These estimates were not to be limited to Phases I, II, III; but were to include Depot Supply Support Plan (DSSP) requisitions, PMEL, peculiar support, flying clothing, training munitions, other expenditures, and any other support anticipated (16:1).

NAD Budget Proposal

In January 1973, NAD provided the USAF a budget proposal and a Statement of Work (SOW) for nonstandard item support (37:1-4). NAD identified four basic cost areas:

1. Technical support
2. CONDEPOT operation
3. Spares pool (an estimated value of items that would be ordered and stocked in the CONDEPOT)
4. Repair pool (a reimbursed pool of money against which completed repairs could be billed).

NAD also stipulated six conditions and assumptions upon which their proposals were contingent. These were:

1. The price baseline was limited to the Engineering Change Proposals (ECP) contained in the SOW.
2. Initial one year lay-in requirements for peculiar support would be supported under the basic contract.
3. Initial publications and technical data for peculiar systems and spares/AGE would be provided through the basic production contract.
4. All receipts or shipments of either CONDEPOT repaired or stocked items would be F.O.B., Hawthorne, California.
5. The contract would contain appropriate ASPR clauses on taxes, Import/Export duties, Government Furnished Property, covering both domestic and foreign transactions and shipments.
6. Assumed go-ahead by 1 July 1973 with completion by 31 August 1975.

The NAD budget proposal was as follows: (values in thousands of dollars)

<u>Description</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>Total</u>
Tech Spt	210	440	420	1070
CONDEPOT OPO	<u>80</u>	<u>240</u>	<u>170</u>	<u>490</u>
	290	680	590	1560
Spares Pool	2000-2500			
Repair Pool	250			

NAD Statement of Work

The SOW submitted by NAD specified that follow-on engineering, technical and materiel support for the RSAF would be established on only those items designated by the USAF as nonstandard. The materiel support operation (CONDEPOT) to be used by the contractor was to function as an AFLC/ALC under guidelines of the USAF Depot Supply Support Program. The program objective was to provide post-production engineering, technical and materiel support of nonstandard elements of the RSAF F-5B/E weapon systems using the most cost effective method tailored to the scope of each task. The SOW was divided into five sections as follows: (40:passim)

Section 1: Systems and components supported

- a. LN-33 INS - ECP 047
- b. Aerial Refueling - ECP 029/790
- c. Basic E changes - ECP 023
- d. 275/150 gallon fuel tanks - ECP 025
- e. Reconnaissance nose camera - ECP 048
- f. F-5B program - ECP 785
- g. Instrument Landing System (ILS) - ECP CP47

Section 2: Contractor management plan

- a. Management and control vested in a program manager
- b. Divisional functional organizations to be used to provide necessary support.
- c. Additional contracts/subcontracts to be entered into as deemed necessary.

Section 3: Engineering and Technical Support

- a. Investigation of technical problems
- b. Technical publications support

- c. Configuration management
- d. Packaging and equipment handling
- e. Materials review
- f. ACG and MIS

Section 4: Materiel Support

- a. Requirements computation
- b. Warehousing and distribution
- c. Repairable processing
- d. Reporting

Section 5: Facilities

- a. Bonded facility for operations and stockage at Hawthorne, California
- b. Necessary furnishings to be provided by Northrop.

Figure 1 depicts the task interface envisioned by NAD for operation of the CONDEPOT program.

Following receipt of NAD's SOW, SAAMA responded to the Air Staff's and AFLC's earlier request for cost estimates in support of the RSAF "Five Year Plan" (102:1-6).

SR-BAR Case

On 17 April 1973, an LOA was prepared based on NAD's proposal and FMS case designator SR-BAR was assigned. The LOA was reviewed by the RSAF. Although additional nonstandard F-5 systems were identified for required support, they considered the proposal to be comprehensive and suitable. The RSAF recognized that a Saudi purchasing mission in the US was an alternative but they believed that the magnitude of the peculiar item support situation would require a

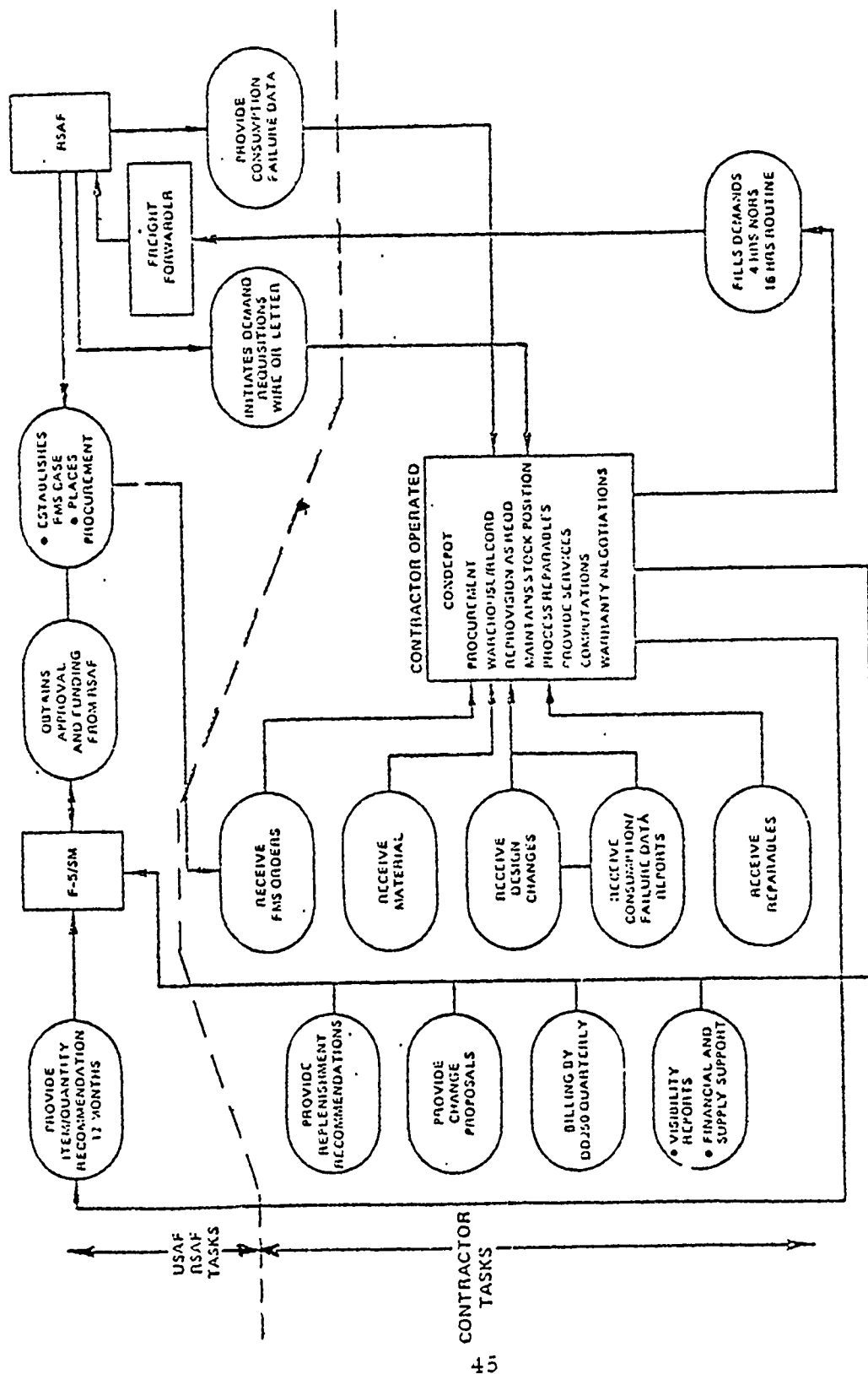


Figure 1. Task Interface Diagram--CONDEPOT Program (40:3)

capability that could only be achieved after years of development.

The RSAF position was that the only viable alternative to satisfy their requirements during the 1973-1975 time frame was CONDEPOT (128:1, 2).

The Chief, USMTM requested that the case be revised to include the F-5E ILS glide slope group B and resubmitted. He also recommended that action be taken to assist the RSAF in establishing a purchasing mission in the US. (128:2, 3).

Saudi Arabia accepted the LOA for nonstandard item support on 24 July 1973 and directed that \$5,798,700.00 be remitted in nine payments in accordance with the proposed payment schedule (129:1). The amount was to cover \$5,685,000.00 in materiel and services, and \$113,700 in administrative charges. Payments against the order were to be requested as needed. Statements of FMS transactions from the USAF were to show amounts and dates payments were due. The type of contract used was a letter contract (25:1).

On 4 October 1973, amendment 1 to the case was published which changed the financial code from 4 to 7. The significance of this code change was that it provided the means whereby nonstandard systems would be transitioned to normal USAF support when the systems were no longer considered country peculiar (17:1; 84:1).

CONDEPOT Initial Operation

After CONDEPOT began operation, NAD advised the USAF that significant cost savings could be achieved by use of standard repair items. Many components such as nuts, bolts, safety wire, diodes, transistors, rivets, and bearings required to accomplish depot level repair of RSAF nonstandard components were available in the USAF inventory. According to NAD, the RSAF could benefit significantly if NAD were able to use these standard items in repair of non-standard components. The benefits the contractor saw were lower costs of material due to volume purchases, shorter lead times, and lower contractor administrative and manpower costs. SAAMA requested that USMTM encourage RSAF to allow NAD to requisition available stock numbered items under FMS case SR-KBA (104:1, 2).

The SR-KBA case had been previously established as the Supply Support Arrangement (SSA) whereby standard USAF support was being provided to the RSAF. SAAMA proposed that NAD establish and maintain stock levels of these items and requisition items from the DoD supply system using a block of RSAF requisition numbers. The DoD system would ship parts to the RSAF freight forwarder who would accumulate and tranship to NAD. All items in stock would belong to RSAF and be available to them for requisition. All CONDEPOT requisitions would be internal to the USAF supply system. Inventory and consumption data were to be accumulated and published

in a monthly report. The RSAF accepted this proposal in late November 1973 (127:1).

This procedure was considered adequate, however, a significant problem area arose during its use. It seemed that nonstandard items were starting to be identified by federal stock number. Item managers (IM) in turn were coding these nonstandard items for disposal since they had no need for these parts on systems they supported. This issue came to the attention of the USMTM and in April 1974 they expressed concern over this practice. The USMTM further requested that a complete review of nonstandard items be conducted to determine the extent of the erroneous identification and to correct the problem (132:1, 2).

Nonstandard Item Support Extended

When the nonstandard item support issue for the RSAF was first faced in 1972, it had been the position of the United States Government that this support would be provided for only a limited period of time. In August 1974 however, extension of the support agreement was requested. The revised US position in response to this request was transmitted to AFLC by the Air Staff as:

The Government of Saudi Arabia, at the highest levels, has requested the US Government to extend peculiar spares support provided under SR-BAR for an additional three years. The US Government has agreed to do so [18:1].

The RSAF subsequently began negotiation on a third buy of F-5 aircraft. At the same time they requested that nonstandard item support be included in Phase V of the Peace Hawk Program. In June 1975 the RSAF recognized that there would be a period between 31 August 1975 when the CONDEPOT contract under Phase III would expire and February 1976 when Phase V began. During that period no nonstandard item support would be available. As a result the RSAF requested an extension of the CONDEPOT contract to cover this interim period until Phase V was implemented (131:1,2).

NAD estimated that the requested six month extension would cost \$545,000 (99:1). After a review of the financial status of FMS case SR-BAR, it was determined that there were enough uncommitted funds in the original case to provide nonstandard item support until the February 1976 implementation date for Phase V (98:1). As a result of these actions nonstandard item support continued under the Phase III contract.

Proliferation of Nonstandard Items

As mentioned previously the Peace Hawk IV Program covered the sales of 40 F-5E and 20 F-5F aircraft. These aircraft were to include the following nonstandard systems in addition to those already installed on Phase I and II aircraft:

1. Improved radar
2. Maverick missile capability

3. Improved egress
4. Laser guided bomb capability
5. APX-101 IFF
6. ARN-108 ILS/CPO-80 (MOD) Flight Director Computer
7. DC Power (13 Amp Battery)
8. ALR-46(V)-2 Radar Warning Receiver
9. ALE-40 Chaff/Flare
10. Laser Designator
11. Blanking Electronics
12. MOD ECS

In addition to the fact that F-5F aircraft itself had no counterpart in the USAF inventory, the above listed systems added approximately 7,000 nonstandard line items which required support (79).

The Peace Hawk V Program was then established to provide follow-on support for all 109 RCAF F-5s including their nonstandard items. It was a three year successor program to the Peace Hawk III extension running from 16 February 1976 through 15 February 1979. When all aspects of this phase were considered in aggregate, the total price of this support package amounted to \$2.007 billion. Of this, \$31.5 million was for procurement of spares and other materiel to support nonstandard items (92).

Nonstandard Item Support for Phase V

In response to a SA-ALC Request for Proposal, NAD submitted a SOW in October 1975 for follow-on engineering, technical and material support for the greatly expanded nonstandard item support system (42). As in the original CONDEPOT contract, this support

was to be limited to only RSAF peculiar pieces of equipment and systems which did not have a national stock number (NSN) assigned to them. In those cases where nonstandard items had been erroneously assigned NSNs, support of the items was to be resolved on a case-by-case basis.

The NAD proposed system as reflected in the SOW was to function essentially as an AFLC-Air Logistics Center, under the policy guidance of AFM 400-3 as amended by AFLC. The objective was to provide this support with minimum AFLC and maximum NAD involvement. A major difference between the original CONDEPOT operation and this SOW was that the intent was stated to assign NSNs to nonstandard items by the Defense Logistics Services Center (DLSC). This was considered desirable in order to permit RSAF peculiar system support transactions to enter the USAF H051 system and thus provide AFLC with the capability to monitor, guide, and otherwise control NAD's nonstandard support operations. The following section is devoted to a summary of NAD's support concept as reflected in their SOW (42:passim).

NAD Statement of Work

I. Program Approach

A. Controls and guidelines for operation would insure ease of transfer to USAF should the requirement arise.

B. Nonstandard Item Support System (NSIS) would include the following services which would operate in parallel with the USAF system:

1. Program management and control.
2. Provisioning procurement procedures.
3. Cataloging.
4. Requisitioning/Distribution.
5. Technical publications system.
6. Materiel deficiency reporting process.
7. Configuration management.
8. Engineering design maintenance.
9. Program requirements policy.

II. Concept

A. Support to be provided via a USAF managed FMS case contract.

B. NSIS assets to be warehoused in-country.

C. Excludes initial spares lay-in.

D. NAD to develop internal operating procedures compatible with applicable USAF FMS policies and procedures.

E. Implementation based on the assumption that AFM 400-3 would be amended to authorize these procedures.

III. Program Management and Control

A. Assigned to program manager reporting directly to the VP of Product Support.

B. Programmed Real Time Information Services for Management (PRISM) reporting system to be used and interface requirements with the USAF H051 system identified.

C. Figure 2 depicts the task interface envisioned in this system.

IV. Provisioning

A. NAD to assume total responsibility for nonstandard item provisioning and procurement.

B. Accomplished LAW MIL-STD-1552 and 1561.

C. Adapt standard USAF procedures to peculiarities of the RSAF policies and requirements.

D. Provide applicable technical documentation.

V. Cataloging

A. Screen and obtain NSNs for nonstandard items by direct action with DLSC.

B. The above to be accomplished only after AFLC had amended applicable USAF regulations and specifications to permit it.

VI. Requisitioning/Distribution

A. NAD to operate as an ALC with the exception that spares assets in CONDEPOT would be shipped to Saudi Arabia.

B. Two years of initial spares support to be identified and provided to the RSAF prior to delivery of Phase IV aircraft.

C. Distribution to involve shipment of procured/manufactured materiel, reparable, and periodic distribution of Country Peculiar Supplementary Manuals (CPSM) and Country Peculiar Accessory Manuals (CPAM).

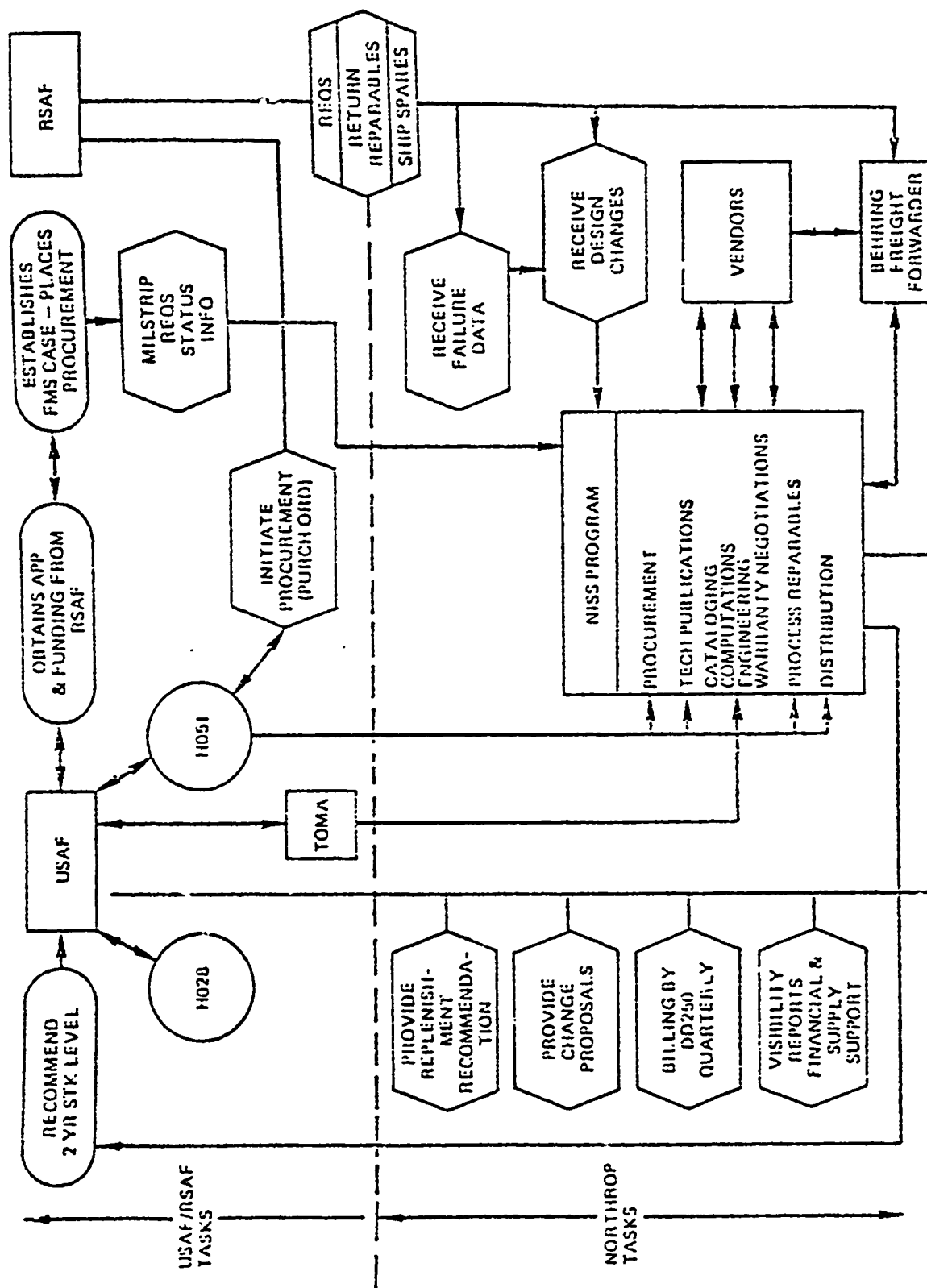


Figure 2. Task Interface Diagram (41:1-3)

D. Requisitioning

1. Initiated by DD Form 1348 through PRISM and H051 system to NAD.
2. NAD to requisition NSN components from US/ for repair of RSAF peculiar nonstandard higher assemblies.

VII. Technical Publications

A. Since country peculiar technical data has never been authorized for inclusion in the USAF T.O. System, NAD would provide CPSMs and CPAMs.

B. Some organic AFLC T.O. capability would be required to complement the NAD T.O. Publication Plan.

C. T.O. Publication Plan

1. NAD to be responsible for interfaces of this system with USAF, RSAF, and sub-contractors.

2. NAD to verify and validate NSI manuals.

D. NSIS Time Compliance Technical Orders (TCTO)

1. NAD to utilize USAF methodology for configuration changes and one time inspections.

2. NAD to kitproof TCTO kits.

3. NAD to acquire, store, and issue RSAF TCTO kits.

VIII. Materiel Deficiency Reporting

A. NAD to investigate materiel deficiency reports (MDR)

generated by technical deficiencies discovered in the nonstandard and standard systems of the F-5B/E/F aircraft.

B. In-country MDR reporting procedures to be similar to standard USAF procedures contained in T.O. 00-35D-54.

IX. Configuration Management

A. NAD to control and account for all NSI changes to the weapon system in accordance with the system negotiated by the USAF.

B. Feedback reports prepared by NAD would reflect, as a minimum, the configuration of each weapon system.

X. Engineering Design Maintenance

A. Investigate and resolve technical problems.

B. Review and maintain technical data and drawings.

C. Provide maintenance engineering to support the repair and overhaul of RSAF peculiar components/systems/AGE.

XI. Program Requirements Policy

A. RSAF to provide NAD the total funding necessary to operate the Nonstandard System Support Air Logistics Center through an FMS case.

B. NAD to collect costs by its internal cost accounting system and bill the USAF accordingly.

Presenting the Proposed Concept to the RSAF

The RSAF was briefed on the SOW on 22 October 1975 by

AFLC representatives (57:1). They were told how the proposed method differed from the CONDEPOT system they were currently using. It was explained that the new proposal still relied primarily on the use of contractor manpower but what was new was that standard USAF management systems were to be used to insure performance of the full range of follow-on logistics support functions. The objective of the proposed method was to have nonstandard items appear standard to the RSAF (79). The RSAF was informed that in order for cataloging to begin, it was necessary for them to enter into a codification agreement so that NSNs could be assigned to their NSIs (79). They were also told of the importance of having a management information system such as PRISM to provide adequate capability to support their weapon systems (79).

On 3 November 1975, the Air Staff directed that \$7 million in Peace Hawk funds be reallocated to the development of the automated data processing system described to the RSAF in the October briefing (13:1). On 4 November 1975, SA-ALC sent a Request for Proposal to NAD for contractual coverage of the RSAF automated data processing system, the tracking and reporting system, and the nonstandard support system (100:1). The SOW which NAD submitted in response to this RFP was essentially a restatement of the Program Management and Control and Cataloging Sections of their October 1975 SOW for

Follow-on Engineering, Technical and Materiel Support For Nonstandard Item System Support (44:passim).

Implementation of the Concept

On 31 January 1976, an LOA for Peace Hawk V was prepared by the Air Staff and sent to the RSAF. The LOA was based primarily on the Peace Hawk V Program Description of 10 November 1975 and contained significant NSIS provisions. The RSAF accepted the LOA in February 1976 at a NTE price of \$1,574,024,220.00 (23:1).

A Letter Contract between the USAF and NAD was subsequently established with an effective date of 16 February 1976 at a total obligated price of \$732,017,000.00. This basic contract accepted on 4 March 1976, covered FMS cases SR-GAB as amended, SR-GAN, SR-GAT, SR-GAW and SR-GAX. Portions of the NSIS provided through the contract were funded under FMS case SR-GAN and detailed in attachment 1, Section 6, Appendix A of the basic contract. The support to be provided was generally identified in contract line item number (CLIN) 0014 as follows (104:Part II):

Item 0014 The contractor shall provide and operate a Non-Standard Item Support System (NISS) in support of FMS peculiar systems on the Saudi Arabia F-5 Aircraft pursuant to Attachment 1 of Section 6 of Appendix "A" hereof. Supplies and services shall consist of Engineering technical support, depot level supply and repair/overhaul/modification for the RSAF F-5 non-standard (peculiar) systems.

- Item 0014AA Engineering/technical support.
ACRN: AA
- Item 0014AB Stockroom support function as required to accomplish repair/overhaul/modification and transfer to Saudi Arabia of NISS, as identified by the Contractor under CDRL AOOL, AOCQ, and AOOT and approved by the PCO. This line item does not include material costs for items provided under 0014AC or repair under 0014AD. ACRN: AA
- Item 0014AC Provide initial stockage for non-standard equipment in support of Peace Hawk IV aircraft and replenishment of non-stocklisted supplies. Exhibit Identifiers "H," "J," and "K" are assigned.
- Item 0014AD Repair/overhaul/modification of items shown under CDRL Item AOOJ and AOOT. Exhibit identifiers "L," "M," and "N" are assigned.

Amendments to the Contract

Since the original contract was entered into, there have been amendments to the basic document. Only those amendments which directly affected NSIS provisions will be presented here. It must be remembered however that many of the amendments were general in nature and thus had some indirect influence on NSIS.

Amendment 1 to the contract was put into effect on 15 April 1976. This amendment provided \$1 million for local purchases under CLIN 0006 and \$5 million for CLINs 0014AC and 0014AD, Nonstandard Item Stockage and Repair/Overhaul/Modification. This raised the

total obligated amount of the Phase V contract to \$738,017,000.

These additional funds were provided through an additional FMS case, SR-GAR (106:2).

On 3 June 1976, amendment 4 changed the scope of work provided under CLIN 0014AC. Originally this CLIN required the contractor to provide initial stockage for nonstandard equipment in support of Peace Hawk IV aircraft and replenishment of non-stock-listed supplies. The effect of amendment 4 was to delete the requirement to provide stockage for nonstandard equipment. In addition, all references to initial spares in the original Appendix A, Section 6, attachment 1 were deleted (107:2).

Amendment 8, dated 30 June 1976, deleted CLIN 0004AB; Automated Data Processing (ADP), Programmed Realtime Information Services for Management (PRISM) in its entirety. This change was the result of the inability of the USAF to convince the RSAF of the need for such a system. This amendment further restricted the Program Tracking and Reporting System to its 15 February 1976 level of effort (108:1-3).

Amendment 9, dated 1 July 1976, was initiated to clearly identify the relationships between CLINs and items on the original Peace Hawk V LOA. As a result of this amendment, CLINs 0014AA, 0014AB, 0014AC, and 0014AD were redesignated 0001AD, 0001AE, 0001AF and 0001AG respectively (109:1-3).

On 1 November 1976, Amendment 23 established CLIN 0001AH to provide for nonstandard item cataloging. \$731,884 were allotted for this purpose. This effort was to include rescreening items to ensure that all nonstandard items were properly identified, cataloging and inputting the data to SA-ALC, and maintaining surveillance and updating the identification and catalog management data as changes occur throughout the Peace Hawk V contract (110:1-14).

Summary-Nonstandard Item Support
for Peace Hawk

The purpose of this case presentation has been to trace the development of nonstandard item support for the Saudi Arabian Peace Hawk Program. Nonstandard items have been a part of this program since its origin in 1971. As the program progressed, nonstandard items proliferated and the USAF became increasingly aware of their implications for support.

The first concerted effort at providing the support resulted in the establishment of the Contractor Depot (CONDEPOT) system. This system was operational through Phase IV of the Peace Hawk Program.

The agreement by the US to extend NSIS beyond its initial period and the greatly expanded list of nonstandard items introduced in the Phase IV program necessitated a revision to the original CONDEPOT system. The concept which replaced it, the Nonstandard Item Support System (NISS), is not a radical departure from its

predecessor. Rather, it is evolutionary in nature which emphasizes an approach which will

. . . establish controls and guidelines for the non-standard item system support which are consistent with current USAF FMS Program support policies and procedures, thus easing possible eventual transition of responsibilities from Northrop to USAF. . . . [41:1-1].

The NISS recognizes that fundamental to logistics support under FMS is a tailored interface which assures that the foreign customer's logistic system will interface and function effectively with the USAF system. It further emphasizes the fact that implementation of these policies and procedures must have as its objective limited USAF involvement with maximum contractor support (41:passim).

GERMAN F-104G PROGRAM

F-104 Development Program

In order to place follow-on support for the German F-104G in proper perspective, it is necessary to examine the development of this aircraft and the initial German intentions when selecting this weapon system. With this basis, the evolution of the present USAF F-104 follow-on support position can be better understood.

F-104 development began in the US in 1951. Since then, 18 different versions of this aircraft have been developed. The initial version, the XF-104, first flew in February 1954. This was followed by a production version, the F-104A, a single-seat fighter, which

first flew in February 1956. One hundred seventy of these aircraft were built with deliveries to USAF Air Defense Command (ADC) beginning in January 1958. Twenty-six F-104B aircraft, a two-seat version of the F-104A, were also produced. Some of these were also used by ADC. A fighter-bomber version, the F-104C, was developed and delivered to the USAF Tactical Air Command (TAC) beginning in October 1958. A two-seat version of the F-104C, the F-104D, was also built (54:330-331).

In 1956, the Federal Republic of Germany (FRG) began an inquiry to determine the need for a new fighter for its air force (5:47). The German Air Force Staff and the Technical Department of the Federal Ministry of Defense made a two year study of aircraft produced by North Atlantic Treaty Organization (NATO) countries as well as the Swedish Draken supersonic fighter. In October 1958, Germany selected the F-104. From the outset, the Germans knew that the pure day-fighter design of the F-104 would not meet their requirements. They needed a single-seat multi-purpose combat aircraft, capable of interception, fighter-bomber and reconnaissance missions. To accomplish this, modifications to the basic F-104 airframe had to be made. These included reinforcing the tail units, fuselage, and store attachment points. In addition, extensive modification or replacement of standard equipment was necessary. These changes affected the

navigation system, fire control system, homing devices, flight data computer and ejection seat (9:483).

In December 1958, the FRG began discussions with Lockheed on configuration and contractual arrangements regarding the licensing of foreign countries to manufacture the US designed F-104. The agreement reached resulted in the design of a new F-104, the F-104G. In February 1959, Germany contracted with Lockheed for 96 US-manufactured aircraft to be delivered to Germany fully assembled. In March 1959, Germany purchased licensing rights to build its own aircraft in Germany. Under the licensing arrangement, the FRG was granted the right to use the manufacturing knowledge and data as long as the licensing agreement was in effect (5:47-48).

These two agreements represented a significant commitment on the part of the FRG, not only to the F-104G weapon system but also to establishing a capability to manufacture and support this aircraft in Europe. The 96 aircraft built in the US and delivered to Germany cost \$119,602,392. For the first 210 aircraft to be built in Germany under the licensing agreement, the FRG agreed to pay Lockheed an initial royalty of \$1,000,000 and additional royalties of \$15,000 on each airframe produced. In addition to this, a payment of \$3,000,000 was required for the first 295 General Electric J-79 engines provided and a separate charge of \$7,619.00 for each engine over that amount.

Germany had to bear the majority of the development and test costs for the F-104G also (9:483).

Four German companies formed a consortium to manufacture the first 210 aircraft. They were Dornier, Heinkel, Messerschmitt, and Siebel. These came to be known as the Southern Group.

By late 1959, Belgium and the Netherlands decided to integrate the F-104G into their aircraft inventories. They entered into an agreement with Germany to coproduce the F-104G in March 1960. The three countries agreed to produce 739 F-104Gs through this arrangement with 364 going to Germany, 200 going to the Netherlands and 175 going to Belgium. Companies in each of the three countries formed another consortium for this project and became known as the Northern Group. This group consisted of the Belgium companies of Fairey, SABCA, and Fabrique Nationale d'Armes de Guerre; the German companies of Hamburger Flugzeugbau, Weser Flugzeugbau, and Focke-Wulf; and the Netherlands companies of Fokker, Aviolanda, and Philips. An office was opened at Koblenz to coordinate the project and deal with all license and manufacturing problems. Members consisted of representatives from consortium countries, their national industries and Lockheed (9:483).

Italy joined the other three F-104 manufacturing countries later in 1960, thus forming the four-nation European Consortium. Three basic reasons appear to have motivated these countries to have

decided on this manufacturing arrangement. The first was a need to standardize European armament. The second was to gain an economic advantage through integrating production efforts rather than each country developing a complete manufacturing capability of its own. The third was to gain industrial development advantages for each of the participating countries (5:49).

The first F-104G built by Lockheed in the US flew on 5 October 1960 (54:330-331). On 17 December 1960, the details of the technical and financial assistance arrangements between the US and the European countries were finalized in a Memorandum of Agreement. Subsequently, additional licensing agreements between US companies other than Lockheed and Consortium countries were concluded where necessary to produce F-104Gs in Europe. All licensing arrangements followed the pattern initially established for the German manufacture of the F-104G. The Consortium agreements stated in general that the data and support to be provided to the licensees was that which US manufacturers had provided under the initial German development and production contract. In addition, the aircraft manufactured by Belgium, the Netherlands, and Italy had to be manufactured to the same configuration agreed to by Germany in the initial production agreement (5:49-50).

As a result of these licensing arrangements, Consortium countries received two categories of items. The first category

consisted of items US manufacturers did not sell to European countries nor for which the Consortium was to be charged. Examples of this category included technical data in the possession of the US Government or to which it had a right, and royalties or amortization for patents or inventions on which the US had a royalty-free license (5:51).

The second category of items, that for which the European Consortium paid, consisted of twelve groups (5:51-52):

1. Technical data furnished by US industry which did not fall in the first category.
2. Right to use manufacturing techniques, procedures, and methods developed by US industry which did not fall in the first category.
3. US industry furnished general management advice and information relating to manufacturing complex, high performance aircraft.
4. Right to use US trade names, trade marks, and proprietary designators.
5. Certain US warranties relating to the F-104G.
6. Up to \$1 million in patent indemnity to Germany for infringement on their patents.
7. Assistance in obtaining materials from third parties.
8. Right to use certain US inventions belonging to American industries in which the US Government had no interest.
9. US manufacturer-furnished technical assistance.
10. Reproduction of technical data.
11. Office space, equipment, and services for European representatives visiting and using US facilities.
12. Factory training of European personnel in US manufacturers' facilities.

In 1960, the Consortium countries recommended to the North Atlantic Council, a NATO organization, that the F-104G Consortium program be adopted as a NATO project and that the Consortium

controlling structure be adopted as a NATO organization. This was done in late 1961 and the NATO F-104G Starfighter Production Organization (NASPO) was established. This organization consisted of a board of directors and a permanent staff which was named the NATO F-104G Starfighter Management Office (NASMO). The board of directors consisted of a representative of each Consortium country, the US, the Secretary General's office of NATO, and later, the Supreme Headquarters, Allied Powers, Europe (SHAPE) and Canada (5:53-54). The staff consisted of a general manager, a deputy, and seven departments. These were:

1. Technical Liaison
2. Weapon System Planning, Configuration Control and Reporting
3. Price and Contracts
4. Airframe, Engine, General Equipment
5. Electronics, Ground Support Equipment
6. Inspection, Acceptance
7. Executive Secretary

In addition, a USAF officer was assigned to NASMO for two years to provide weapon systems management advice to the General Manager. This complemented the USAF Koblenze F-104 Office which had been established in January 1961 to lend advice and assistance in addition to maintaining liaison with the US F-104 Military Assistance Program. Canada also established a liaison office with NASMO since they were also manufacturing F-104G aircraft. Canada was also to provide F-104G simulators to the four countries of the European Consortium (134:23-24).

NASMO has served a very important function in F-104G production efforts. It effectively controlled the efforts of the Consortium producers. It reviewed and made recommendations on all design changes prior to final approval by the Board of Directors. This eliminated unauthorized modifications (5:54).

Three general principles of production were adopted by the Consortium which have had far reaching effects on both initial production and follow-on support. These were (29:371):

1. Two or three companies were designated a source of a particular component or system.
2. Each company would become sole source for one portion, but each would also carry out final assembly and testing of the whole system, using parts supplied by its partners.
3. A four phase production development plan would be followed:
 - a. European companies would receive complete equipment in crates. They would assemble and test it.
 - b. European companies would receive "break-down" systems requiring a more complete assembly operation.
 - c. Next, they would receive only individual components for full assembly.
 - d. Finally, European made basic components were to be used until the system was entirely indigenous.

The manufacture of the F-104G presented a very real challenge to the European companies. They encountered many problems,

incurred cost overruns, and suffered schedule slippages. Several American companies set up facilities in Europe to help with the production of the aircraft. Autonetics is an example of one such company. It established an wholly owned subsidiary at Turin Caselle Airport called North American Aviation SpA to coordinate and support all European work on the North American Search and Ranging Radar (NASARR), a very sophisticated radar and a primary system on the F-104G. This subsidiary provided training, maintenance and modification service, quality control and performance records, and an extensive network of field representatives. During the early period of production, one journal writer commented on the Autonetics operation as follows:

This is typical of the type of support being provided by all major US companies involved, in their determination to see the programme through to a successful conclusion; and it is to a great extent by their efforts that the various deficiencies and slippages of earlier days have been largely recouped [29:373].

Canadair began building aircraft similar to the F-104G for the Royal Canadian Air Force in 1960. In all, 200 were built with the first flying on 26 May 1961. This version was called the CF-104 (54:331).

Subsequent to the entry of Canadair into the F-104 production business, USAF contracted with them to manufacture 110 aircraft similar to the F-104G but for Military Assistance Program use. This version was designated the F-104G (MAP). The ones produced in

Canada together with 81 purchased from Lockheed were distributed to Norway, Nationalist China, Spain, Denmark, Greece and Turkey. The first Lockheed version of the F-104G (MAP) flew in July 1962 (54:330-331).

A TF-104G was also produced and first flew in October 1962. This version, which was a conversion trainer, was just like the F-104G but had two seats. Lockheed manufactured these aircraft in the US and produced 181 in all. One hundred thirty seven went to Germany, 14 went to the Netherlands, 29 went, under the Military Assistance Program, to Belgium, Italy, and Denmark, and one was used by Lockheed for demonstration (54:330-331).

By March 1963, the European Consortium was nearing the peak of its production efforts. Nearly 60,000 people were involved in F-104G production in the four Consortium countries. In addition, to the companies manufacturing airframes and engines, an extensive network of European companies evolved to manufacture and support subsystems. Table II gives an example of electronic subsystems production capability.

USAF Involvement

The US Government became involved with the funding of some of the F-104G aircraft. Since the FRG was economically stable, it purchased its share of these aircraft directly from the controlling body of the Consortium. The other three Consortium countries received US

Table II
F-104G Electronics Production (29:377)

System	Designer	European Source	Remarks
Radar fire-control Nasarr	NAA Autonetics, Downey, California	North American Aviation SpA, Turin	overall support, training, modifications.
		Manufacture Belge de Lampes et de Materiel Electronique (MBLE), * Brussels	indicator, low-voltage power supply, electronic control amplifier; sub- contract from HSA for computer.
Inertial system I.N-3	Litton Industries, Beverly Hills, California	Ateliers de Construc- tions Electriques de Charleroi (ACEC), Belgium	sub-contract from MBLE.
		Hollandes Signaalap- paraten* (HSA), Hengelo Telefunken, Ulm* Fabbrica Italiana Apparecchi Radio* (FIAR), Italy	aerial assembly and computer.
Inertial system I.N-3	Litton Industries, Beverly Hills, California	Cobelda, Belgium	synchronizer, receiver.
		Litton Industries GmbH, Hamburg C. Plath Hamburg* Standard Elektrik Lorenz (SEL), Germany	transmitter, waveguide coupler, radar set control, clearance-plane indicator.
Inertial system I.N-3	Litton Industries, Beverly Hills, California	Bell Telephone Manufac- turing Co., Belgium	test and check-out.
		Fritz Hellige & Co., Freiburg	overall co-ordination and liaison.
Inertial system I.N-3	Litton Italia, Rome	Litton Italia, Rome	manufacture and final assembly. navigation computer.
			navigation computer.
Inertial system I.N-3	Litton Italia, Rome		inertial gyros.
			sub-contract.

Table II (continued)

System	Designer	European Source	Remarks
Position and homing indicator IV B	Computing Devices of Canada, Toronto	Teldix, Heidelberg* Otto Meccanica Italiana (OMI), Italy	Telefunken/Bendix joint company.
Autopilot MH-97G	Minneapolis-Honeywell	Honeywell GmbH, Frankfurt-Dorligheim* Officine Toscane Elettromeccaniche (OTE), Florence	manufacture; also UG-1000 check-out system. sub-contract parts of APC and BG-158.
Optical sight and in-range computer	General Electric	OIP, Belgium Allgemeine Elektrizitäts Gesellschaft (AEG), Germany	
Infra-red sight	Lockheed Aircraft (Lockheed-California Co), Burbank, Cal	Eltro, Germany Optische Industrie de Oude-Delft, Holland	
Bombing computer M-2	Mergenthaler Linotype	Hollandse Signaalapparaten (HSA)	
Dual timer	Lear		
Air-data computer	AiResearch Divn, Garrett Corp	Interaero, Germany Microtecnica, Turin	subsidiary of Garrett Corp. also makes J57 engine accessories.
UHF radio AN/ARC-552	Collins Radio of Canada	van der Heem, Holland	
UHF 3-channel emergency radio	RCA	three companies; not yet decided	

Table II (continued)

System	Designer	European Source	Remarks
Tacan AN/ ARN-52	I. T. & T.	Standard Elektrik Lorenz, Germany	
IFF AN/APX- 46	Hazeltine Packard Bell Stewart Warner	Siemens & Halske, Germany	

* Final assembly, test and delivery of complete systems, as well as manufacture of certain portions of system.

assistance in the form of direct financial support, parts and services (5:55). The procurement of F-104G (MAP) aircraft for non-Consortium countries further involved the USAF in the F-104G weapon system.

Since it has been the policy of the US to support the materiel it provides under security assistance programs, a number of steps were taken to ensure that the weapon system was properly designed and supported.

On 4 January 1961, Headquarters, USAF assigned executive management responsibility for the MAP F-104 program and the role of world-wide F-104 weapon system coordinator to the Air Materiel Command. It also directed that Headquarters, Air Research and Development Command provide engineering and development support for the MAP F-104 program and to maintain liaison with all other F-104 programs. This is significant, since the F-104G was never intended to be incorporated into the USAF inventory (120:1-2).

As a result of these actions, USAF became involved with all areas of follow-on support listed in Chapter II. Some deviations to normal USAF policy were required at first because the F-104G was not originally designed as a USAF weapon system and also because some normal USAF procurement policies and directives were at variance with those of the Military Assistance Program. For example, provisioning of spare parts and ACE for the MAP aircraft was based

on that for similar items in the F-104G since there were only a few items for the MAP aircraft in the USAF inventory (120:3).

Follow-on supply and maintenance for the F-104G and the F-104G (MAP) were provided through the European Consortium described earlier and the USAF. A very important factor in providing this support was that F-104G and F-104G (MAP) parts and components were listed as NATO standard with US Federal Stock Numbers (30).

Although the USAF did not possess either the F-104G or the F-104G (MAP) aircraft in the active inventory, there was considered to be sufficient compatibility between these versions and the F-104A/B/C/D aircraft which it did have in its inventory to warrant the establishment of a joint group to address common problems. In September 1961, a technical support program was established between the USAF and the Chiefs of the Air Staffs of the Consortium countries. Funding for this program was established on a cost sharing basis whereby charges were to be allocated to a country proportionate to the number of F-104G aircraft possessed by that country. Funds were made available through FMS cases. The US was to be charged proportionate to the number of F-104A/B/C/D aircraft it possessed (116:1; 117:2). As more countries manufactured or otherwise received F-104 aircraft, the number of participants in the group, which came to be known as the Technical Coordination Program (TCP) increased (118:-8).

The TCP consisted of three major sections: Airframe, Engine, and Documentation. All participants were charged for these services on a cost sharing basis. For the European Consortium participants, four additional costs were charged. These were separate charges for General Electric Documentation Support, the USAF Logistics Specialist at the Logistics Working Group (LWG), an open-ended case for Lockheed California Company Engineering Design Proposals, and an open-ended case for General Electric Emergency Technical Support/Kit procurement (118:1). The number of supplemental programs associated with the Consortium portion of the TCP has varied from year-to-year based on the number of different supplemental programs undertaken. The TCP is still in existence.

The TCP provides maintenance engineering and technical data services. This includes analysis and configuration coordination. The System Manager (SM) for the F-104 is located at Sacramento Air Logistics Center (SM-ALC). Deficiency data is submitted to SM-ALC through established channels by participating countries. This information is merged with USAF world-wide deficiency data and statistically and technically analyzed to determine the required action. SM-ALC administratively controls this entire effort on all items except the engine. SM-ALC and Oklahoma City ALC (OC-ALC) share this responsibility on the engine (90:16-1).

If analysis of deficiency data shows that corrective action is necessary, it may be accomplished by AFLC through a Materiel Improvement Program (MIP) action or an Investigative Engineering Request (IER) may be sent to the prime aircraft or engine contractor for analysis and development of a corrective action proposal. All technical correspondence regarding implementation of corrective actions flows between SM-ALC and the US in-country representative or the Logistics Working Group for the Consortium countries. Administrative correspondence related to establishing or amending Grant Aid or FMS cases to accomplish the corrective action flows through other channels established for this purpose (90:16-1).

In executing its responsibility for implementing corrective action, SM-ALC authorizes Item Managers (IM) to obtain modification kits and technical data. In those cases when more than normal IM requirements are encountered, the SM or the engine IM can obtain contractor support (90:16-1).

If a technical documentation deficiency is identified, TCP countries submit a Publication Revision Request (PRR). PRRs are sent to OC-ALC for engine publications and to SM-ALC for all others. The ALCs determine the corrective action to be taken. In those cases in which a common USAF technical order is involved, the PRR is forwarded to the appropriate IM for action (90:16-1, 16-2).

German Pilot Training Program

A training program was instituted at Luke AFB, Arizona in 1963 to train German pilots in the F-104G. Lockheed-built TF-104Gs were flown to Luke AFB and the USAF provided facilities, personnel, training, aircraft maintenance, and other support functions (117:4). The maintenance portion of the agreement has been handled through an annual contract with Lockheed. The first contract for maintenance, modification, and storage of the training aircraft was signed on 13 June 1963 (115:2). The FRG reimburses the US for all expenditures connected with providing this support (114:5).

Under the contract, Lockheed Aircraft Services has performed complete field, organizational, and depot level aircraft maintenance. Items requiring depot level maintenance which could not be performed by the contractor at Luke AFB have been shipped to the manufacturer for repair. USAF has provided the necessary government furnished property (GFP) and facilities to the contractor. The contractor has provided personnel, general purpose vehicles, communications, nonavailable GFP, and the management required to provide these services (114:5). SM-ALC has provided normal AFLC support including final engineering authority on these aircraft in all other areas (116:1).

In addition to the aircraft for the Pilot Training Program, Germany agreed to provide at no cost to USAF, aircraft accessories

for training, for on and off-base maintenance, and for replacement of worn-out items. They also agreed to provide aerospace ground equipment (AGE), test equipment, technical data, and other items for direct support (10:3).

As a result of this agreement, two supply accounts were established at Luke AFB from which Lockheed could draw supplies to maintain the German aircraft. One account contained parts obtained by the USAF and paid for by Germany. The other account contained parts supplied by Germany for Lockheed to use in maintaining the German aircraft. The parts Germany supplied could be either manufactured outside the US or could be drawn from excesses of stocks provided by the USAF for German use in Europe. The procedures for determining who was to provide which parts were also contained in this agreement (10:19-26).

Current F-104 Program Status

F-104 aircraft are still being used by several nations of the world; there are none however in the active USAF inventory. Nevertheless, the USAF is still involved in the follow-on logistical support of this weapon system. Although the amount of support varies widely, Jordan, Taiwan, Japan, Germany, the Netherlands, Denmark, Norway, Turkey, Greece, and Italy still receive some. SM-ALC continues to have prime responsibility for the system. Requirements determination is performed according to standard USAF practices (33).

Parts are stocked, stored, and issued by SM-ALC and national stock numbers are assigned when necessary through the normal cataloging system (50). Each of the two supply accounts at Luke AFB used to support the German Pilot Training Program has approximately \$16 million worth of spare parts (1). As a participating member in the Technical Coordination Program, the USAF continues to be involved with engineering, configuration control, technical data, and materiel deficiency reporting. Since the European Consortium countries and Japan have developed the capability to support this aircraft themselves, the majority of USAF F-104 support efforts are directed toward the other countries possessing this weapon system and the German aircraft at Luke AFB (51). Nearly all reparable for USAF supported aircraft are repaired under contract by Lockheed (32).

Summary

The German F-104G is a good example of one nonstandard item support concept; that is, of AFLC organically supporting non-standard items. This was a whole system that was never in the USAF inventory. As F-104s were provided to other countries and the USAF began supporting the German Pilot Training Program, a full organic follow-on support capability was developed. In other words, the F-104 was for all practical purposes, supported as a standard USAF weapon system. Now that the F-104 is no longer in the active USAF inventory,

the support which USAF continues to provide for the weapon system must be classified as nonstandard item support.

CHAPTER IV

APPROACH TO AN IMPROVED CONCEPT

GENERAL

The purpose of this chapter is to present a summary of activities which have taken place in the USAF specifically directed at improving nonstandard item support. Three separate and distinct activities have been identified as having the most potential for influencing future nonstandard item support concepts. These are:

1. Project Pacer Gondola.
2. Nonstandard item support concepts for Iran.
3. AFLC ad hoc study group.

PROJECT PACER GONDOLA

Security Assistance Impact Study

In July 1974, the Air Staff initiated a study to examine all aspects of Security Assistance in the Air Force. The objective of the study was to recommend ways of improving management procedures, organization, and assignment of responsibilities.

The final report of the Steering Committee, entitled the Security Assistance Impact Study (SAIS) was the first major document

which officially recognized that the requirement to provide nonstandard support was creating a significant impact on USAF resources. Not only was a separate category devoted to nonstandard support but five other report categories identified this subject as a key factor.

The SAIS was approved by the Air Force Vice Chief of Staff on 12 April 1975. The Air Staff was directed to place top priority on resolving the SAIS issues and the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC) were requested to resolve logistical support and technical order problems related to support of nonstandard items (6:1).

Immediate Actions Resulting from SAIS

A number of immediate actions resulted from this tasking. Changes to AFM 400-3, Foreign Military Sales, were developed at a Pentagon rewrite conference on 23 July 1975 (85:1). AFLC/MMI developed interim procedures for country-peculiar Technical Orders applicable to the Saudi Arabia Peace Hawk case on 22 August 1975 (86:1). AFLC also began to hold a series of meetings dealing with nonstandard support requirements in general. The first meeting was held on 25 August 1975. Subjects discussed during this and subsequent meetings included AFM 400-3, Technical Orders, configuration, provisioning/cataloging, requisitioning/distribution, requirements policy, maintenance, engineering, funding/billing, manpower and procurement policy (85:passim). On 27 August 1975, AFLC/MMI assumed overall

responsibility for the project. Specific staff agencies were directed to prepare recommendations for each of the major subjects within their area of responsibility (86:passim).

Development of Nonstandard Support Concepts

The concepts developed as a result of these meetings were finalized by AFLC during September 1975, and presented to the Air Staff on 2 October 1975. The documentation of this briefing identified three general approaches which AFLC had previously followed in supporting nonstandard FMS equipment. The essential features of these approaches were (78):

1. No AFLC involvement. All nonstandard support was arranged between the FMS customer and the contractor.
2. Normal AFLC organic logistics support for nonstandard items originally provided under grant aid programs and subsequently included in FMS cases.
3. Limited AFLC involvement after initial delivery with maximum reliance on the contractor to provide follow-on support.

AFLC recommended to the Air Staff that the third approach, modified to provide follow-on support, be adopted. This approach relied primarily on the use of contractor manpower and standard USAF management systems. In essence, AFLC envisioned contractors functioning as a Mini-Air Logistics Center for nonstandard items.

FMS customers desiring follow-on support for nonstandard items would be required to pay for all costs associated with the provision of these services, including costs of operating the mini-ALCs, through three year duration FMS cases (79).

AFLC identified several areas which would be affected by implementing its proposed concept. Areas identified as requiring more detailed investigation and procedures were AFM 400-3 and other manuals and regulations, program management plans and directives and letters of offer and acceptance. Specific procedures would have to be developed for provisioning, cataloging, requisitioning/distribution, technical orders, materiel deficiency reporting, configuration control, engineering, requirements policy and costing. AFLC further proposed that the Saudi Arabia Peace Hawk IV program be used as the pilot implementation test for the support concept (79).

The Air Staff approved the support concept and test proposal on 6 October 1975. Authority to use the concept in support of other nonstandard support cases was withheld pending development and approval of detailed procedures. AFLC was directed to develop the detailed procedures by 15 December 1975 (11:1).

Development of Nonstandard Support Procedures

AFLC directed San Antonio Air Logistics Center (SA-ALC/MM) to take the lead in developing the nonstandard support procedures (81:1). SA-ALC's selection as lead developer was based on their

experience in managing both the F-5 weapon system and the Saudi Arabia Peace Hawk Program.

On 22 October 1975, AFLC/MMI representatives briefed Saudi Arabian Air Force (RSAF) officials on the proposal to use the Peace Hawk Program for pilot implementation of the proposed non-standard support procedures (57:1). Although this proposal relied heavily on the use of contractor manpower, the RSAF was informed that the primary feature of the proposal was the use of standard USAF management systems to provide the full range of logistic support functions. In addition, the RSAF was told that its approval of a codification agreement for national stock numbers as well as the installation of an improved management information system was essential for the successful implementation of this support concept (79:passim).

On 3 November 1975, the Air Staff directed that \$7 million in Peace Hawk funds be reallocated to the development of the automated data processing system described to the RSAF in the October briefing (13:1). On 4 November 1975, SA-ALC developed a Request For Proposal to Northrop for contractual coverage of the Saudi automated data processing system, the tracking and reporting system and the non-standard support system (100:1).

Concurrently with SA-ALC's development of the detailed procedures, AFLC/MMO formulated a cataloging policy for support of nonstandard items. The essential feature of this policy was a

standard codification agreement between the US and the FMS customer. This agreement would provide for the cataloging services of Defense Logistics Services Center (DLSC) on a reimbursable basis. Where bilateral agreements did not exist, AFLC would initiate action to establish one (63:1).

Expansion of Nonstandard Support Cases

While SA-ALC was developing the detailed procedures for use in support of nonstandard items associated with the F-5 system in Saudi Arabia, AFLC received another FMS case involving nonstandard support. This case required the provision of nonstandard AGE (support equipment) and spares directly from McDonnell-Douglas Corporation in support of the Iranian Peace Roll F/RF-4E aircraft program (14:1).

During the same period AFSC expressed concern that the AFLC nonstandard support concept would conflict with procedures they had developed for support of the F-16 system. The F-16 procedures had been jointly developed and agreed to in the F-16 Multi-national Memorandum of Understanding (MOU) with the European Participating Governments (EPGs). The following questions were of specific concern to AFSC (121:1):

1. What should AFSC's role be with regard to procurement of peculiar follow-on spares and support equipment?

2. How should peculiar engineering drawings and other peculiar data be handled?

3. How should software support for peculiar items be provided?

In response to these new nonstandard support requirements AFLC requested the following (80:3):

1. Identification of USAF nonstandard items on the Iranian F/RF-4Es and EPG F-16s.

2. Identification of the requirement to develop nonstandard support procedures for the EPG.

3. Identification of areas of duplication between the F-4 Technical Coordination Group (TCG) and AFLC/MMI nonstandard support procedures.

In anticipation of the expansion of nonstandard support programs, AFLC sent copies of the nonstandard support briefings to all ALCs for their comments and recommendations (89:1). In response to this request the F-16 system manager furnished a copy of a previous response to the AFSC F-16 system project office. The essential comment in this response was: "It is our firm position that the MMI proposal should not be applied to the EPG . . . consider the EPG F-16 program as a logical exception to his briefing recommendation . . . [95:1]."

In view of the expansion of the nonstandard support concept scope, SA-ALC considered a more comprehensive analysis warranted. SA-ALC also recommended the following (95:1-2):

1. All nonstandard items be brought into the Air Force inventory and receive the same logistics support and management as standard items; or

2. AFLC Headquarters develop the detailed procedures for nonstandard support with input from all ALCs.

Based upon their preliminary analysis, SA-ALC considered the impact of nonstandard support implementation to be of significantly greater magnitude than originally envisioned. Due to the magnitude of the effort required and the expanded scope of the nonstandard support concept, SA-ALC could not develop the necessary procedures by 15 December 1975 as originally requested (70:1-2).

Neither of the recommendations made by SA-ALC was acceptable to AFLC Headquarters. AFLC/MI continued to insist that SA-ALC develop the detailed nonstandard support procedures for the Peace Hawk program. AFLC emphasized that CSAF approval of these procedures was required prior to extending the nonstandard concept to other countries. Similar nonstandard support cases for the Iranian F-4 and F-5 programs could not be implemented until the SA-ALC developed procedures were approved (96:1).

Consequently SA-ALC resumed its efforts to develop non-standard support procedures for the Peace Hawk program and anticipated completion of the task by March 1976 (67:1). Code name Pacer Gondola was assigned to the project (95:1). On 27 January 1976, representatives from SA-ALC began a series of meetings with staff agencies of AFLC Headquarters to coordinate the development of the Pacer Gondola project (91:1). These meetings culminated in a set of draft nonstandard item support (NSIS) instructions.

Draft NSIS Instructions

On 31 March 1976, SA-ALC provided the draft NSIS instructions to AFLC. These draft instructions were specifically applicable to Pacer Gondola (81:1). The draft instructions reflected the AFLC proposed and Air Staff approved concept calling for maximum contractor effort with limited USAF participation/involvement. In essence the draft instructions provide that the USAF would negotiate contractually with private industry those logistical services associated with maintaining visibility, surveillance and control of materiel from acquisition through the delivery and follow-on support phases.

The draft instructions prescribed minimum services that the FMS customer was required to accept. Minimum required services were: item identification processes related to cataloging/stock listing FMS nonstandard materiel in the Federal Catalog System and

MILSTRIP requisitioning and distribution procedures for accommodation of the AFLC logistic data systems.

In addition to these required services, the FMS customer would have available, on an optional basis, services to support technical, engineering, configuration control and materiel deficiency reporting. The FMS customer would be required to agree to bear the cost of these optional support services (97:2).

Northrop Statement of Work (SOW)

On 26 January 1976, Northrop Corporation furnished their SOW proposal for accomplishment of nonstandard item support. The SOW was tailored to the specific requirements of the Pacer Gondola project and was therefore not generally applicable to all FMS country peculiar support programs (43:1).

During reviews of the Northrop proposal, it became evident that there was duplication of work already performed under the contractor depot (CONDEPOT) Peace Hawk III contract. In addition the proposed cataloging procedures were found to be incompatible with the draft NSIS instructions. Based on the results of these reviews, SA-ALC was directed to revise its cataloging Request For Proposal (RFP) and to develop an RFP, consistent with the draft NSIS instructions, for the remaining NSIS functions. SA-ALC sent revised RFPs to Northrop and on 13 July 1976, Northrop responded with a proposal

and SOW for the cataloging effort. The proposal for the balance of NSIS functions was received on 13 September 1976 (64:passim).

Present Status

The complexity of the nonstandard support concept is evidenced by the slippage of the Pacer Gondola implementation date. Although originally scheduled for completion in June 1976, project Pacer Gondola has not yet been implemented (68:1). SA-AIC is continuing its efforts on this project, however constant delays have been experienced due to difficulties in contracting for functions normally performed within AFLC (60:1).

NONSTANDARD ITEM SUPPORT CONCEPTS FOR IRAN

General

Initially efforts to improve nonstandard support were limited to one aircraft type and one country. The addition of other countries, notably Iran, together with the expansion of the nonstandard support program to other weapon systems, has greatly increased the scope and complexity of the program.

FMS Programs to Iran

FMS cases with Iran have increased almost ten times from 1970 to 1975 (35:39). Table III shows the wide scope of weapon systems being purchased by the Imperial Iranian Air Force (IIAF).

Table III
IIAF Weapon Systems Purchases (7:37)

F/RF-4 Fighter/Reconnaissance
F/RF-5 Fighter/Reconnaissance
F-14 Fighter
C-130 Transport
P-3 ASW Patrol
T/RT-33 Trainer/Reconnaissance
707 Tankers
747 Transport
CH-47 Helicopters
HH-43 Helicopters
AB-206 Helicopters

All of the weapon systems shown in Table III, with the exception of the 747 transports, are being purchased through FMS cases being managed by the USAF. The 747 transport aircraft were purchased via direct commercial sales channels from Trans World Airlines. These 747s were converted to cargo/passenger configuration and TWA has directly negotiated with Iran for training, provisioning, and other support contracts (8:187; 56:24).

The F/RF-4 and F/RF-5 FMS cases are considered by AFLC personnel to be the most significant IIAF programs from the standpoint of nonstandard support. Since it is these two programs upon which AFLC is basing its nonstandard support concept for Iran, a brief overview of their contents is considered necessary in order to analyze the nonstandard support implications.

Peace Roll

The Peace Roll Program covers the sale of F/RF-4E aircraft. The prime contractor is McDonnell Douglas Aircraft Corporation and the System Manager is Ogden Air Logistics Center. Table IV shows the scope of this program along with the nonstandard item support implications.

Table IV
Peace Roll Program Summary (59:1)

Program	Type A/C	No. A/C	Nonstandard Systems
Peace Roll I	F-4E	73	Low smoke engine
Peace Roll II	F-4E	36	Low smoke engine
Peace Roll III	RF-4E	12	Low smoke engine/INS/digital computer/TACAN/signal data converter/interference blanker/VHF radio/forward looking radar/air data computer/data display set/headset microphone adapter/IFF* infrared recon set**/camera/radar altimeter/auto direction finder / radar receiver set.
Peace Roll IV	F-4E	36	Low smoke engine/radar receiver/IFF*

*nonstandard configuration--found in USAF F-15

**to be retrofitted in USAF RF-4Cs

Peace Rush

The Peace Rush Program covers the sale of F-5 aircraft. The prime contractor is Northrop Aircraft Division and the System Manager is San Antonio Air Logistics Center. Table V shows the scope of this program and its nonstandard support implications.

Table V
Peace Rush Program Summary (26:passim)

Program	Type A/C	No. A/C	Nonstandard Systems
Peace Rush I	F-5E	36	Martin-Baker seats*/ TACAN/INS
Peace Rush II	F-5E	105	Martin-Baker seats*/ TACAN/INS
Peace Rush III	F-5F	28	Martin-Baker seats*/ TACAN/INS laser target designator/Northrop Improved ECS

*nonstandard configuration--found in USAF F-4.

Evolution of Nonstandard Support Concepts

The sale of F-4 and F-5 aircraft to Iran has resulted in a number of unique nonstandard support aspects. Some AFLC personnel believe that the whole issue of USAF support for nonstandard systems was brought to the surface with the sale of F-5F aircraft to Iran (133).

In 1972 the Vietnamese Air Force (VNAF) expressed a desire for a two seater version of the F-5. The USAF responded to this

requirement and started development of the F-5F. During development, the IIAF indicated that they would also be interested in purchasing such an aircraft and agreed to share the development costs. The initial quantity approved by DoD was 56 aircraft, 28 each for South Vietnam and Iran. Before production started, our involvement in the Vietnam War ended and production of the F-5F was reduced to 28 aircraft for Iran plus 2 test aircraft, which were to remain in the USAF inventory. In addition to purchasing the 28 aircraft, Iran absorbed all R&D costs and also purchased follow-on support for them.

This sale resulted in USAF involvement in the support of a complete weapon system which was not part of the current inventory, nor was it ever planned for USAF use. Faced with the prospect of supporting a system for which no USAF organic support existed, non-standard support became an extremely debatable issue. While it was recognized that the USAF was not authorized or capable of supporting systems not in their own inventory, both a moral commitment and a legal obligation prevented the USAF from ignoring the issue. The ultimate solution to the problem was found in the two test aircraft which had been retained. It was successfully argued that since these aircraft were in the USAF inventory, the F-5F was no longer a non-standard system and thus could be supported by normal means. While this action did little to provide a long range solution to the problem of

nonstandard item support, the IIAF F-5F program brought a significant amount of publicity to this potentially serious issue (133).

Another program which played a significant role in focusing attention on nonstandard item support was also the result of an IIAF FMS case, which involved the sale of Martin-Baker seats. As a result of the sale of F-4 aircraft these seats became desirable to the IIAF. They therefore insisted upon the installation of the Martin-Baker seat in all aircraft purchased. Although they were informed that this would result in a nonstandard configuration of the F-5 which would subsequently increase support costs, the IIAF continued their insistence upon and agreed to pay the additional costs of the F-5 with Martin-Baker seats (133).

This program serves as a good example of another facet of nonstandard support. Although the Martin-Baker seat is a standard USAF item, its installation in an aircraft not similarly configured in the USAF results in a nonstandard configuration which necessitates other than normal support.

It was originally thought that this particular nonstandard configuration would cause only minimal support problems since both systems were standard USAF systems. In 1974 however, another implication of nonstandard item support surfaced and gained widespread attention. In February 1974, Northrop Corporation issued a design change notice for the F-5E aircraft. It was however,

applicable only to IIAF F-5Es since it was the result of the F-5E/Martin-Baker seat configuration (39:1). The design change notice was to be incorporated into a Safety Time Compliance Technical Order (TCTO) and distributed to the IIAF.

It was soon realized however, that USAF regulations prohibited the introduction of technical orders pertaining to nonstandard configured systems into the USAF T.O. system. The situation confronting the USAF was unique and apparently without precedent. After much deliberation, one time authority was granted to use the USAF T.O. system to publish and distribute the TCTO. The episode however was significant in that it focused attention on the many potential ramifications inherent in accepting responsibility for support of non-standard items, systems or configurations (133).

Nonstandard Support Cases

An initial attempt at providing nonstandard item support to the IIAF was represented by FMS case AF-IR-BAS (later changed to GGS). The Letter of Offer and Acceptance covering this case was signed on 16 September 1975. Its purpose was " . . . to provide non-standard AGE and spares directly from McDonnell Douglas Corporation in support of Peace Roll F/RF-4E aircraft [20:1]." It was to be an annual case at a yearly cost of \$5,100,000 which included the standard 2% administrative charge.

In December 1975, AFLC briefed the IIAF on the proposed nonstandard support concept. It was essentially the same concept proposed for use in the Saudi Arabia Peace Hawk Program. In January 1976, the case designator was changed from a "B" spares case to a "G"-technical services case. In May 1976, AFLC requested McDonnell Douglas develop a Statement of Work (SOW) for nonstandard support of the F/RF-4E aircraft. In July 1976, a joint team from AFLC and OO-ALC visited McDonnell Douglas Corporation to review the requirements with the contractor. During this meeting, for reasons unknown, the requirement for nonstandard support of the F-4E aircraft was deleted. The contractor therefore prepared a proposal for nonstandard support of 12 RF-4E aircraft (Peace Roll III) (61:1). The special support categories and price breakdown summary of the McDonnell Douglas SOW is shown in Table VI.

The SOW was for a three year duration case for all services with the exception of "Repair of Reparables." This service was to be provided for only 18 months since at the end of this period the Iranian Electronics Depot was scheduled to become operational and should assume responsibility for the repair-of-reparables program. The SOW further stipulated that the budgetary proposal was conditioned upon receipt of a firm authorization by 31 October 1976 with start-up in January 1977 (119:1).

Table VI
McDonnell Douglas SOW for Nonstandard
Support of RF-4E (34:1-3)

Special Support Categories	Budgetary Price
A. Product Support	\$2,200,000
1. T.O. preparation and review	
2. Configuration control	
3. In-country technical coordination (MTO)	
B. Supply Support	350,000
1. Spares and AGE provisioning and cataloging	
2. Technical data	
3. In-country coordination (NSN)	
C. Engineering	800,000
1. Maintenance engineering	
2. Technical problem investigation/ resolution	
3. MDR investigation	
4. ECP preparation	
5. Software modification	
D. Quality Assurance	200,000
E. Training*	2,600,000
F. Repair of Reparables	7,000,000
1. Initial hardware lay-in	
2. Special support spares	
3. AGE spares and LRUs	

*Training later deleted

Total	\$13,150,000
Less training	<u>2,600,000</u>
101	<u>\$10,550,000</u>

During September 1976, it was determined that since the Letter of Offer and Acceptance included both the F and RF-4E, the SOW should have included the F-4E. Action was then taken to have the contractor revise his proposal in accordance with this determination. This was to have been completed in November 1976 (61:3).

On 21 February 1976, a Letter of Offer and Acceptance was negotiated and signed by the IIAF for "Support of nonstandard items installed in all current and future F-5 series aircraft [21:1]." It was to be a three year duration case at a cost of \$5,250,000. The cost included not only the 2% administrative charge but also a 3% charge for ". . . extraordinary procurement functions associated with non-standard support [65:1]."

In July 1976, a request for a Not-to-Exceed (NTE) proposal for nonstandard support for the F-5 aircraft procured under the Peace Rush Program was forwarded to Northrop Aircraft Division (NAD). The work specifications entailed all of the normal nonstandard support categories except requirements determination (72:passim).

In November 1976, the NAD budgetary proposal received in response to this request was disapproved. The disapproval was based on NAD's failure to delineate the "What and how" of supplies and services to be provided (113:1).

During the same time period, administrative actions were taken to consolidate the nonstandard support cases for both the F-4

and F-5 series aircraft. The result of these actions was an amendment to the AF-IR-GGT case. The amendment included direct citation of funds and was designed to ease administration of nonstandard support provided the IIAF (22:1).

The amended case was designated AF-IR-GGT-1 and not only consolidated the GGS and GGT cases but also eliminated weapon system restrictions. The purpose of GGT-1 was: "Support of nonstandard items installed in all current and future series aircraft in the Imperial Iranian Air Force (IIAF) [22:1]." (underlining added) The LOA was in the amount of \$10,500,000 which included the 2% administrative charge as well as a 3% charge for functions associated with nonstandard support. The total amount reflects a retroactive 3% charge not previously covered in the GGS case (22:1). A summary of the amended case resulting from the consolidation action is presented in Table VII.

Table VII
Price Breakdown Summary--Nonstandard
Support Cases for Iran

	GGG	GGT	GGT (Amended)
Estimated Cost	\$5,000,000	\$5,000,000	\$10,000,000
Administrative Charge	100,000	100,000	200,000
Nonstandard Support Costs		150,000	300,000
Total	\$5,100,000	\$5,250,000	\$10,500,000

The LOA for the consolidated case was signed on 30 July 1976, and nonstandard support was therefore funded for both the F-4 and F-5 aircraft. The IIAF however recognized that they were acquiring other nonstandard systems, particularly the GPS-11 radar, which would require similar support. They indicated therefore that they would be receptive to an additional FMS case in the amount of \$20,000,000 to fund nonstandard support requirements over and above the \$10,500,000 currently authorized by case GGT-1. The explanatory notes of the case were to assure that application would not be limited to any specific weapon system (2:1; 3:1).

In January 1977, the Military Assistance and Advisory Group (MAAG) passed on a formal request from the IIAF that nonstandard support for "Peace Owl" be established using the GGT-1 case. They further anticipated similar support requirements for the J-79 low smoke engine, GPS-11 radar and ADS-4 radar, hence the necessity for a general nonstandard support case. The specifics of such a case should include provisions for repair and return of reparable, unique requisitioning procedures and material management services to be provided (4:1).

In response to this request, Hq USAF informed the MAAG that such a case as requested by the IIAF had already been prepared and was mailed on 27 December 1976. This was designated FMS case AF-IR-GHN. It was for \$20,000,000 and was designed as an open

ended nonstandard support case. The LOA provided for nonstandard support of all major systems in the IIAF that are managed within the USAF, including those previously requested. Repair-of-reparables was specifically listed in the LOA (12:1).

The GHN case is currently awaiting IIAF signature to be finalized. Prior to signing the case however, the IIAF wants the USAF to identify the specific systems which can be included under this case and the extent to which they will be supported. Signature is expected in the near future (93).

Peace Log

Another significant FMS case with the IIAF is AF-IR-GFZ. This case covers the USAF management of a contract between the IIAF and a US contractor. Known as the Peace Log Program, this cas. .:

. . . a Foreign Military Sales (FMS) program concerned with the development and implementation of a comprehensive, long range plan to increase the logistics capability of the Imperial Iranian Air Force (IIAF). The plan which is time phased thru (sic) 1980, will develop maximum feasible logistics self-sufficiency, and, when developed, will provide the IIAF the capability to support wartime and peace time operations, with minimal reliance on foreign governments and contractors. Technical facilities must be expanded and the IIAF personnel trained in such functional areas as Material Management, Maintenance, Distribution, Procurement and Data Automation [35:3].

Implementation of the Peace Log Program is being carried out by Lockheed Air Services Incorporated (LASI) under a contract worth about \$150 million annually (27:9). It is significant to note that

no hardware is involved in this program. Lockheed is only responsible for reorganization, management, staffing, and training of the IIAF Air Logistics Command (35:3,84).

Although there are no direct nonstandard support implications in Project Peace Log, since there is no hardware involved, the objectives of this program must be considered in developing a nonstandard support concept. Due to the multitude of USAF activities as well as contractors participating in the many FMS programs to the IIAF, the objectives of the Peace Log Program occasionally may have been overlooked. An indication of this is found in the following excerpt from a Peace Log report:

. . . as is true in all Foreign Military Sales cases in Iran, the policies of the IIAF must also be considered. It is an IIAF policy that requisitioning procedures and return of reparable items be standardized. At present the IIAF must cope with numerous methods which are currently imposed on supply procedures as a result of earlier fractionated FMS and direct contract efforts. The IIAF policy is to model its supply procedures on those implemented by the AFLC Coop Log Program so that working level personnel can use a standard set of procedures regardless of the source of repair . . . We encourage AFLC to make every effort to assist us in this matter because standardization of supply procedures in the IIAF Logistics Command is essential if improvements in logistics management are to be accomplished . . . [112:2].

AFLC also recognized that the approaches to nonstandard support being taken for the Peace Rush and Peace Roll programs might not be supportive of the Peace Log objectives. In light of this possibility AFLC, in August 1976, recommended that all nonstandard

support requirements for the IIAF be consolidated and included in the Peace Log contract. This would enable the Peace Log contractor to deal with the IIAF using standard procedures, and with the various contractors involved using procedures in the respective nonstandard support contracts (71:1).

Although this recommendation appeared to have considerable merit, it did not receive favorable response. At the time it was proposed, the GGT-1 case was still under consideration by the IIAF and the GGT case previously signed had been recalled and was in the hands of the IIAF (111:1). Because of this, there appeared to be some reluctance to propose yet another nonstandard support concept to the IIAF when they were already considering two others.

This reluctance appears to be subsiding however and effort is now being directed at developing a nonstandard support system for the IIAF which would be compatible with the Peace Log Program. During the Peace Log Program Management Review (PMR) held in April 1977, SA-ALC Detachment 30 (Det 30) presented a briefing which outlined their nonstandard support concept. Since this detachment is the in-country manager of the Peace Log contract, it is significant that they have become involved in formulating plans for nonstandard support.

The nonstandard support concept proposed by Det 30 does not differ significantly from previous concepts although there is some shift in emphasis. Whereas previous concepts and proposals had

primarily emphasized the interface with the standard USAF system, Det 30's concept is basically concerned with nonstandard support interface procedures with the IIAF logistic system. The significant aspects of this proposal are outlined in Table VIII and Table IX (93).

It should be recognized that these procedures are only conceptual at this time. Det 30 has planned to finalize them however, but submit the procedures to the IIAF for coordination and approval by 4 May 1977. The results are scheduled to be transmitted to AFLC for their concurrence by 4 June 1977. If these steps are accomplished on schedule the concept could be implemented by 22 June 1977 (93).

F-4 Technical Configuration Group and Nonstandard Support

During the Peace Roll meeting held in April 1976, the IIAF was briefed on the AFLC nonstandard support concept. As a result of this briefing there developed some confusion and concern by the IIAF over the apparently overlapping areas of the Technical Coordination Group (TCG) and nonstandard support (94:44).

This was not the first time this potential duplication had surfaced. During the F-4 Iranian Program Review held in December 1975, a question was asked concerning this subject and an action item assigned to explain the differences in support provided by the TCG and those envisioned under the nonstandard support concept. The action item was replied to by a message to all concerned agencies which stated in part:

Table VIII
IIAF Interface Responsibilities--Nonstandard Support

Support Element	Contractor Responsibilities	IIAF/DET 30/LASI Responsibilities
Provisioning	Support listings: Spares/spare parts AGE NSN-common vs peculiar Recommended quantities 6 months-Base 18 months-Depot	Approval of nonstandard support concept Program guidance
Cataloging and Identification	Prescreen and submit to DLSC to obtain NSN Cataloging package; MDF printout Due-in asset cards Catalog jacket file	Approve provision lists Cataloging update
Replenishment Supply		Establish replenishment levels in ALS Submit replenishment requisitions in FMS format
Repair Capability (see Table VII)		Decide how items are to be repaired: 1. Life Cycle Repair by IIAF 2. Life Cycle Repair by contractor 3. Contract repair to transition to IIAF
Engineering and Reliability	Maintain all engineering data and tech manuals Submit ECPs/TCTOs Establish MIPs Configuration data Product support and improvement	Approve MIPs Provide failure data Systems integration
Engineering Data and Technical Manuals	Recommend technical manuals and engineering data with cost data	Review recommendations Purchase that deemed necessary

Table IX
Nonstandard Item Repair Concepts for IIAF

Repair Concept	Contractor Responsibilities	IIAF/DET 30/LASI Responsibilities
Life Cycle Repair by IIAF	Provision: Overhaul manuals Depot AGE/Peculiar & common Spares/spare parts Recommend quantities/ replacement factors Training requirements Submit IIAF approved items for cataloging and identification	Approve recommended provisioning Requisition items
Life Cycle Repair by Contractor	Establish priced contract for repair Establish price for repair of item	Fund contract Will not purchase any spares or equipment
Contractor Repair to Transition to IIAF	Provision: Overhaul manuals Depot AGE/Peculiar & common Spares/spare parts Recommend quantities/ replacement factors Training requirements Submit IIAF approved items for cataloging and identification Procure items to be maintained in a bonded warehouse Provide financial/asset accounting to IIAF	Approve recommended provisioning

. . . TCG will provide technical and engineering support to the FMS F-4 weapon system. It will not provide other logistics support. It will, however, provide the technical and engineering support on both USAF standard and FMS peculiar components . . . Functions common to both programs are only in the area of engineering and technical support for FMS peculiar components installed in F-4 aircraft. One available country option is to participate in TCG and purchase those nonstandard logistics services not covered by the TCG . . . [74:1].

The F-4 TCG was established in August 1975 as part of the F-4 System Management Support Division, Ogden Air Logistics Center (88:2). The purpose of the TCG is; "To provide a full range of AFLC technical support services to International Logistics Program (ILP) F-4 countries and to provide a free exchange of non-sensitive information between USAF and foreign military customers [87]."

The operational functions of the TCG are carried out by two units; the Engineering/Technical Services Unit and the Configuration/Documentation Unit. These units provide the following services (88:2-4):

1. Technical information and engineering analysis.
2. Quality deficiency report evaluation to include recommendation and coordination of solution.
3. Monitoring common USAF/ILP Class IV modifications to assure participating countries receive sufficient information in a timely manner to enable country decisions on approval/disapproval.
4. Monitoring and making recommendations pertaining to country peculiar Class IV modifications.

5. Interface of USAF and ILP country data systems.
6. Act as single point of contact for reporting of maintenance data.
7. Enter ILP country maintenance data into the USAF Product Performance Data System when possible; or if required, assist country to develop a separate reporting system tailored to country needs.
8. Assist ILP countries with technical order problems; acting as central point for TO deficiency reports.

The TCG is designed as an FMS funded group with costs to be borne on a pro-rata basis (% of F-4 inventory) by participating countries. The total first year cost of operation was estimated to be \$1,179,000 (87). The IIAF had received a Letter of Offer from the TCG. Due to the apparent duplication between the TCG and nonstandard support concepts however, they were unable to make a decision on it. As a result, AFLC/MMI and OO-ALC/MMFO were directed to resolve these differences. In addition, both the TCG and the nonstandard support concept were to be briefed at the July 1976 IIAF Program Management Review (94). This issue seems to be a continuing topic at every PMR and a resolution of this duplication does not appear imminent.

NONSTANDARD SUPPORT STUDY GROUP

General

Due to the proliferation of nonstandard items, AFLC is currently addressing nonstandard item support through two concurrent methods. As a nonstandard case is received, the system manager ALC is implementing it using procedures unique to each case. The IIAF cases serve as a good example of this method. AFLC Headquarters has also established a study group which is conducting an in-depth study of nonstandard item support across the entire logistics spectrum.

Background of the Study

Due to the slippage of the Pacer Gondola Program and subsequent inclusion of other FMS countries and weapon systems, the AFLC Chief of Staff directed, in May 1976, that AFLC develop a plan for addressing various types of FMS requests. In response to this tasking AFLC recommended the establishment of an AFLC ad hoc study group (76:1). The Chief of Staff agreed with this recommendation and the study commenced on 6 July 1976.

Study Group Guidelines (75:passim)

Problem: How should the USAF evaluate each FMS request to determine the optimum approach to support nonstandard configured systems?

Study Parameters:

1. All FMS requests to be addressed.
2. Logistics support on nonstandard items will be provided.
3. To be accomplished within existing AFLC framework.

Study Assumptions:

1. Foreign Military Sales required logistics support (Products) for procured end items.
 - a. Technical data.
 - b. Spares and repair parts.
 - c. Support equipment.
2. AFLC responsible for logistics support (Services).
 - a. Provisioning
 - b. Cataloging
 - c. Technical data management
 - d. Configuration management
 - e. Inventory management
 - f. Engineering/Technical services
 - g. Depot-level repair-of-reparables
 - h. Procurement

Nonstandard Defined

The first issue that the study group addressed was; What constitutes nonstandard? Throughout the history of the nonstandard item support issue there has been considerable disagreement and misunderstanding over exactly what was meant by the term "Nonstandard." The following is a brief synopsis of the evolution of the nonstandard definition.

1. Those items, equipment, subsystems, support and training items, which are not on or used to support USAF aircraft and/or are not provided for USAF use.

2. In the event USAF standard items are installed on other weapon/support/training systems resulting in an FMS country-peculiar configuration, then the peculiar installation kit and not the USAF standard item will be considered as nonstandard.

3. National stock numbered items, not used to support the USAF but which are FMS support items used by another DoD activity and/or which are available from an integrated manager, will be considered standard rather than nonstandard items.

4. This definition does not apply to configuration management and technical data, in which case nonstandard items are defined as those which are not installed on like USAF aircraft.

As additional knowledge was acquired on the scope and magnitude of the nonstandard item support issue, it became apparent that this definition was not explicit enough nor was it all-encompassing. The study group refined the initial definition and in an August 1976 briefing to the AFLC Chief of Staff proposed the following definition (75):

- a. Non-standard item: Any item without an NSN.
- b. Non-standard configured item/system: Any item/system configured with a non-standard item; or any item/system configured

with a standard item which renders it dissimilar in configuration to like items/systems in DoD inventory; or any item/system configured with less than the full complement of subsystem components so as to render it dissimilar in configuration to like items in DoD inventory.

During the course of the study, considerable disagreement arose on the National Stock Number (NSN) aspects of nonstandard items. The German F-104G case for example, had many nonstandard items that did in fact have an NSN assigned to it. As a result of this and other similar cases, the study group revised their definition. The primary change was to add the phrase " . . . with or without an NSN . . ." (The reader is referred back to Chapter I for the full definition.) This definition of nonstandard items was presented during an AFLC briefing in March 1977 and has received general support throughout the AFLC community (62).

Logistics Support Alternatives

Within the context of this revised definition the study group identified two basic alternatives available to the FMS customer for logistics support of nonstandard items. Although these options are generally the same as those previously reported, the study group has differentiated them according to the degree of USAF involvement. The revised nonstandard item support alternatives as envisioned by the study group are:

I. Direct country-to-contractor arrangement.

II. US Government (USAF).

A. AFLC organic.

B. Contractor support through AFLC logistics system.

C. Combination of A. and B. above.

The first alternative is viewed as very advantageous to the USAF since it completely eliminates any involvement, however, it is not considered to be in the best interests of the customer. Since his overall support is generally degraded when he deals for himself, he becomes dissatisfied with his system and eventually unhappy with the US Government. The primary causes of this degradation in support capability are (62):

1. Multiple support sources.
2. Requirement to negotiate with US contractors.
3. Limited configuration control.
4. Reduced quality control.

The country's second alternative is to obtain approval from higher authority for total logistics support. All options provide a single integrated logistics support source. Option IIA, which is probably the best method from the country's standpoint, is prohibited by current regulations, manpower ceilings and funding restrictions. The basic differences between options IIB and IIC is the degree of impact each would have on AFLC resources (62).

AFLC Support Responsibilities

The study group next directed its attention to identifying AFLC's responsibilities for logistics support in relation to the time period of an FMS case. They identified three distinct phases of support as follows (75):

Phase I: Precontract Award--This phase is characterized by the identification of data requirements (i.e. T.O.s, engineering, provisioning). Of primary concern is the identification of the range and types of data required to establish and maintain a logistics support posture.

Phase II: Initial Support--During this phase AFLC is generally participating with AFSC to establish initial in-country support.

A few of the specific actions required are:

1. Guidance on data preparation.
2. Provisioning.
3. Cataloging.
4. Technical data.
5. Engineering/Technical.

Phase III: Follow-on Support--AFLC is totally responsible for logistics support during this phase. Typical activities taking place during this phase are:

1. Inventory management.
2. Tech order management.
3. Configuration control/accounting.
4. Engineering/Technical services.
5. Repair of reparables.

While there is general agreement on nonstandard item support requirements and responsibilities, there has been considerable disagreement on which should be accomplished by AFLC organically and which should be contracted for. In the August 1976 briefing to the AFLC Chief of Staff, the study group concluded that nonstandard item support requirements and alternatives for their support could be viewed in the following manner (75):

*Provisioning, cataloging, and tech data management are primarily initial support actions (short term) which lend themselves to organic accomplishment.

*Inventory management, depot level repair of recoverables, and procurement of materials are primarily follow-on support actions (long term) which lend themselves to contract accomplishment.

*Engineering/Technical service support is primarily a follow-on action. Determination for accomplishment should be made on the basis of existing capability (i. e., F-4 TCG).

When considered in this manner, it becomes quite evident that nonstandard item support requirements and responsibilities can not be neatly fitted into one support concept. Not only are there differences in the nonstandard items, but there may be significant differences in the amount and type of support required. In addition there is more than one method by which a total integrated logistics support source can be provided.

As evidenced by the problem statement, this study group is not concerned with developing a "standard" nonstandard support concept. The primary objective of the study effort is the development of

evaluation criteria which can be used to determine the impact of non-standard configured items upon AFLC resources. This objective very accurately reflects the fact that each nonstandard case is unique in some respects and support alternatives must exist which can accommodate the peculiarities of each case.

The Decision Model

In order to achieve this objective, the study group proposed the decision model depicted in Figure 3 be used as a tool in evaluating each nonstandard item support requirement as well as in developing the support concept (75). The significant functions required in each action block of the decision model are envisioned as follows:

Evaluate Requirement--Upon receipt of the request for a Price and Availability (P&A) Study, AFLC should determine the end item configuration based upon system and/or capability requirement specified in the request.

Determine Impact of Nonstandard--Utilizing all available AFLC resources, the responsible ALC should determine the impact of the nonstandard configured item on AFLC. This impact statement should include cost and source data on products and/or services necessary to support the program.

Apply Criteria--Upon receipt of the impact statement, AFLC should apply impact factors against policy and the following determinants:

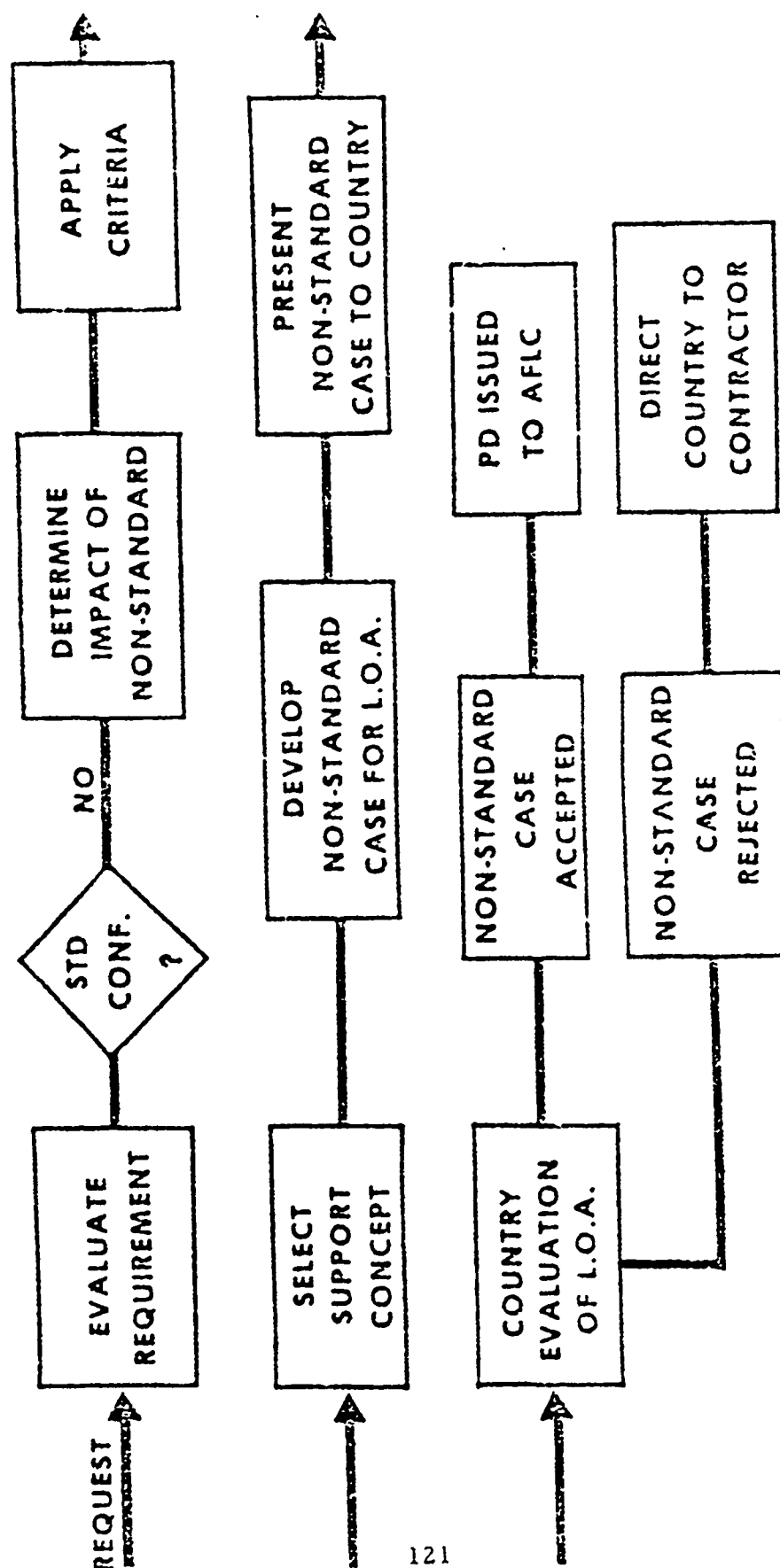


Figure 3. Nonstandard Support Decision Model (75)

1. Country wishes.
2. Program priority.
3. Time frame.
4. AFLC capability.
5. Country capability.
6. Identifiable costs.

Select Support Concept--Based upon the results of the application of impact data against policy/determinants, AFLC would select the optimum support concept.

Develop Nonstandard Support Case--After selection of the support concept, AFLC should develop the selected support concept into FMS case format for inclusion in the LOA.

Present Nonstandard Case to Country--During LOA negotiation with the country, USAF and AFLC should provide a clear understanding of both content and impact of the nonstandard case.

Country Evaluation of Nonstandard Case--Based upon evaluation of the nonstandard case as presented in the LOA, the country should accept or reject the proposed support concept. Rejection would require direct country-to-contractor support arrangements.

Preliminary Recommendations

On 17 August 1976, the study group chairman presented a briefing to the AFLC Chief of Staff concerning the initial findings and recommendations of the study group. Conclusions and recommendations which were submitted were (75):

1. That nonstandard be addressed during the Price and Availability Phase.

2. That the support concept be determined independently for each nonstandard configured system.
3. That some tasks might better be accomplished organically while others should always be contractual.

These recommendations were approved and additional manpower was allocated to accomplish the final evaluation and pre-implementation tasks of the study. A milestone schedule was also approved with a study completion date projected for 31 October 1977 (75).

SUMMARY

The intent of this chapter has been to acquaint the reader with current efforts directed at improving USAF management of non-standard item support cases. In researching and reviewing this material however, another theme has emerged which is perhaps a more important, though not explicit, objective. That is, the requirement that nonstandard item support issues must not be resolved in isolation of other FMS logistical support concepts.

The relatively brief history of nonstandard support for Iran serves as a good example of the interrelationships involved in establishing a logistic support system. There are so many USAF activities and commercial contractors involved in IIAF FMS cases that coordination has been extremely difficult and the tendency to suboptimize a particular segment has been clearly evident. The evolution of a non-standard support concept clearly shows however, that logistical

support can not be tailored for a specific system without impacting heavily on other facets of the country's overall logistical system.

The Pacer Gondola project for Saudi Arabia and the Iranian GGT-1 case give strong support to the AFLC study group position that nonstandard support concepts can and should be tailored by weapon system and country. Standardization is indeed desirable, however, in an FMS case, standard items and systems must be considered from the customer's point of view. As one IIAF officer remarked during a recent Program Management Review; ". . . these USAF non-standard systems are standard IIAF systems . . . [52]."

In finalizing a nonstandard support concept for Saudi Arabia or Iran or any other FMS customer the objectives of the efforts to establish a self-sufficient integrated logistical system must be fully considered. Programs such as Peace Hawk and Peace Log must be utilized to permit and insure a fully integrated system is provided with no duplication and no support gaps.

The current AFLC approach appears to be in this direction and significant advances have been made in integrating nonstandard item support into a total logistic effort. A good example of this is found in the following excerpt from a briefing given at the July 1976 IIAF Program Management Review:

. . . Our new proposal still relies primarily on the use of contractor manpower. What is new is that we will use standard Air Force Management Systems to insure

performance of the full range of follow-on logistics support functions. The system is structured so that non-standard items will appear standard to the IIAF. Either AFLC or Northrop will do the adaption required. Your people will follow the same system we taught them in our tech schools. They will not have to comply with procedures developed by each prime contractor involved . . . [26].

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

RESEARCH QUESTIONS ANSWERED

Why has the USAF been required to provide nonstandard item support?

It is an established fact that an increasing number of USAF weapon systems are being modified and tailored to the foreign customers desires, creating nonstandard systems. There is no single reason that can be offered for purchasing nonstandard items or systems; however the following have been identified as being the most probable causes:

1. National pride in owning a unique system.
2. Customer requirements for internal standardization.
3. Inability to secure the standard item.
4. Customer perception of a unique operational requirement not adequately met by the standard item.
5. International marketing efforts of US aerospace firms.
6. FMS are now taking place in a competitive market place which dictates that the US supply what the customer wants.

There are a variety of reasons why the US Government has, and will continue to approve these sales even though its official

position is to recommend the purchase of only standard weapon systems. Once these nonstandard systems are sold, the objectives of the FMS program dictate that the system be supported. Initial and follow-on support is generally purchased on a system basis. Regardless of whether the system is standard or nonstandard, the customer is purchasing a system support package.

There are two basic alternatives available to the FMS customer for support of nonstandard items, direct country-to-contractor or USAF involvement. Although the first alternative may at first glance appear very advantageous to the USAF, it is not generally in the best interests of the customer. Since his overall support is generally degraded when he deals for himself, he has a marked preference for buying support through the USAF.

This preference is an accurate reflection of the US commitment--both morally and as a matter of policy--to provide follow-on support to FMS customers. Whether the item is standard or nonstandard, the FMS customer continues to look to the USAF to provide him with a fully integrated logistical support system.

What is the extent of the USAF involvement with nonstandard item support?

USAF involvement with follow-on support for nonstandard items has varied widely. In the case of direct country-to-contractor agreements, USAF may not be involved at all. In other cases, USAF

has provided nonstandard item support through a combination of organic and contractor provided services. In still other cases, the USAF has provided full logistics support for these items from organic resources.

In those cases in which USAF has been involved, one or more of eight major functional services have been provided. These have been provisioning, cataloging, supply/maintenance, technical orders, materiel deficiency reporting, configuration, engineering services, and requirements computation. The extent to which the USAF or the contractor unilaterally or jointly provided any of these services has ranged from complete reliance on a contractor to complete performance by an organic USAF activity.

The number of nonstandard items being included in weapon systems sold to foreign countries has increased over the years. The number of instances in which the USAF has provided follow-on support for nonstandard items has also increased. In the Saudi Arabian F-5 program alone, the number of nonstandard items has increased more than 16 times since 1970. Since that time also, the number of countries receiving USAF nonstandard item support for their aircraft has increased to five.

The monetary value of nonstandard item support runs into the millions of dollars annually. The contract prices cited in this thesis provide some specific examples. Surprisingly enough, costs incurred

by the USAF for providing similar services organically or for administering nonstandard item support programs were not able to be found.

How have the USAF concepts for providing nonstandard item support evolved?

The dictionary defines evolution as " . . . a series of related changes in a certain direction . . . ". Within the context of this definition, there is little evidence to support the claim that nonstandard item support concepts have actually evolved. Based upon the research and interviews conducted, there appears to be no thread of commonality, consistency, or growth pattern in USAF concepts for support of nonstandard items.

A singular reason for this "consistent-inconsistency" is difficult to establish. A primary cause, however, appears to be in the uniqueness of each case. This uniqueness is shaped by many factors, many of which are not controllable within AFLC or the USAF. Each FMS case has some peculiarities associated with it and USAF nonstandard support policies and procedures are to a large extent reflective of these peculiarities.

The cases presented in Chapter III serve as good examples of widely varying approaches to providing nonstandard support. They cannot, however, be considered evolutionary. Each case is unique in many aspects such as; political environment, time frame, weapon systems, customer requirements and capabilities, as well as numerous

other logistical support considerations. The nonstandard item support concepts for Iran are also reflective of the unique aspects of FMS to that country.

Although nonstandard support concepts have not been evolutionary in nature, there is currently a growing awareness within AFLC of the need to identify previously used concepts. Cases such as the German F-104G program, CONDEPOT for Saudi Arabia, as well as proposed nonstandard support cases for Iran could well be precedent setting cases from which any number of future cases could draw. Hopefully this thesis will assist in this effort.

CONCLUSIONS

1. Sales of nonstandard items/systems/configurations have increased and can be expected to increase even further. Initial and follow-on support for these nonstandard items must be provided when directed by higher authority.

2. The USAF has been attempting to formulate a nonstandard item support policy since 1974. To date, this objective has not been accomplished. This is due, at least in part, to DSAA's failure to provide definitive guidance.

3. Based upon the research conducted, there appears to be little identifiable effort by DoD, USAF, or DSAA to reject or even actively discourage FMS customer requests for nonstandard items/

systems/configurations. There was no evidence found which would indicate that US Military Advisors seriously question the customer's request for these items. It appears that once a preference is expressed for a particular configuration it is passed through FMS channels as a non-negotiable position. These preferences may have originated as a "nice-to-have" configuration in response to some other influence (such as commercial marketing efforts) other than true mission requirements. A challenge to these influences does not appear to exist. In addition there does not appear to be adequate opportunity for AFLC to fully appraise the foreign customer of the many and costly ramifications of nonstandard items/systems/configurations prior to consummation of the sale.

4. There is no evidence to indicate that the additional workload generated by nonstandard item support is considered when the USAF is directed to provide this support. This appears to be due to one or more of the following:

- a. The USAF has not determined the total number of items/systems/configurations which are in fact nonstandard and which require other than standard support procedures.
- b. The USAF has not fully identified types and quantities of resources required to provide nonstandard support on an item-by-item basis.

c. The AFLC has not fully appraised Headquarters, USAF of the impact nonstandard item support has upon its resources in specific, quantifiable terms.

d. The USAF has not developed nor integrated with existing systems, a tracking system to identify, collect, and report all costs associated with providing nonstandard item support.

5. Coordination between AFSC and AFLC in the sale of a nonstandard system and the development of a nonstandard item support concept for it has been deficient in some cases and nonexistent in others.

6. There appears to be a great disparity in the handling of nonstandard support concepts. Although part of this disparity can be attributed to the uniqueness inherent in each FMS case, a significant portion must be directed at organizational and individual communication breakdowns. There is little exchange of information among personnel managing various programs involving nonstandard items. Throughout this research effort, in both documentary evidence and personal interviews, the authors encountered differences in opinion and interpretation of policies, procedures, and even basic facts. There appears to be little organizational or individual effort, at the operational level to benefit from "lessons-learned" by others. As a result, in some cases, concepts and procedures are redeveloped. In others, there is a failure to benefit from previously used successful programs.

7. The issue of nonstandard item support is not only a significant problem in itself but is also a symptom of a greater disorder. With the sale of modern sophisticated weapons systems to FMS customers, the USAF is being placed in a vendor relationship with the country and the contractor. The scope and magnitude of FMS is causing the USAF to depart from the concept of including FMS orders in its own procurement. DoD procurement policies and regulations are directed at guiding the USAF as a customer dealing with a contractor. The current pace and direction of FMS, as evidenced by the nonstandard issue, dictate that the USAF operate as a vendor or supplier who in turn must subcontract for the necessary supplies and services.

8. The uniqueness of each FMS case, compounded by the many different types of nonstandard items and support dictates the necessity for broad policy guidance within which flexibility can be exercised in response to the unique aspects of each case.

RECOMMENDATIONS FOR FURTHER RESEARCH

While performing research for this thesis, the authors found several aspects of the nonstandard item support issue which had not been investigated. Without information in these areas, the authors do not believe that the true ramifications of the nonstandard item support issue can be identified nor policy guidance formulated from which viable support alternatives can be developed.

Further study is required to identify the scope of nonstandard item support. To date, study efforts in this area have primarily concentrated on aircraft. Other commodities such as Communication/Electronics must also be examined. This research must identify the total number of nonstandard items/systems/configurations the USAF is required to support and the type and amount of USAF resources this support consumes.

Research is required to develop a system by which all costs associated with nonstandard item support can be identified, collected and reported. This system should enable the USAF to charge FMS customers for the actual costs of nonstandard item support as well as identify the amount of USAF resources this support consumes.

The impact of nonstandard item support on the USAF logistical base should be assessed. This information should enable the USAF to identify areas affected, quantify this impact, and develop justifiable requests to compensate for deficiencies created by nonstandard item support.

The structure for examining cases involving nonstandard items and nonstandard item support should be studied. This research should include not only the channels through which such cases flow, but also the types of information the Department of State and the Department of Defense have when they review the cases and the criteria upon which they base their decisions. This research should

specifically identify follow-on logistical support and force mix considerations.

Analyses of specific nonstandard item support cases and programs should be accomplished. These studies should identify the background of each case, the services and materiel supplied, who provided the support, the methods they used, the resources consumed, and the compensation received. These studies should show the channels through which each case flowed and the factors upon which the decision to provide nonstandard item support was based. Comparative analyses of these studies should provide a basis for identifying areas of commonality and dissimilarity, the rationale for providing support in each instance, and trends developing in this area of logistical support.

This thesis should be updated yearly so that it can be used as a handbook for training and reference by people involved in nonstandard item support. These updates should include the results of analyses of specific cases, comparisons of cases, identification of trends, and syntheses of developments in nonstandard item support since the last update.

Since the other services are also involved in FMS, it is very likely that they may be providing nonstandard item support also. Research should be done to determine the extent of their involvement in nonstandard item support, the types of items/systems/configurations they support, areas of commonality or duplication, and lessons they

have learned. The results of this type of research could provide valuable information for the formulation of future nonstandard item support concepts in all services.

The views of countries to whom the US is providing nonstandard item support should be considered. A survey of these countries could provide new insights into problems being encountered in this area as well as provide a source of additional ideas on how problems might be solved. This interchange of information could enhance nonstandard item support capabilities for all countries involved.

The USAF has been faced with the issue of nonstandard item support for FMS customers for many years. It has yet to fully define the problem, let alone solve it. The additional research recommended above is considered to be a minimum requirement prior to developing adequate policy guidance. To that end this thesis should be considered an initial effort only. The objective of this research was not to resolve the nonstandard support issue nor was it to uncover organizational/individual deficiencies. The primary goal was to collect, synthesize, and record, in one source document, significant nonstandard item support issues and cases which have confronted the USAF in the past and which can be expected to have implications in the future. It is the sincere hope of the authors that this thesis will in some small way assist in reaching optimum, workable solutions to the problems posed by nonstandard item support to FMS customers.

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