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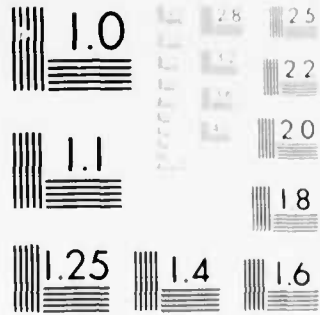
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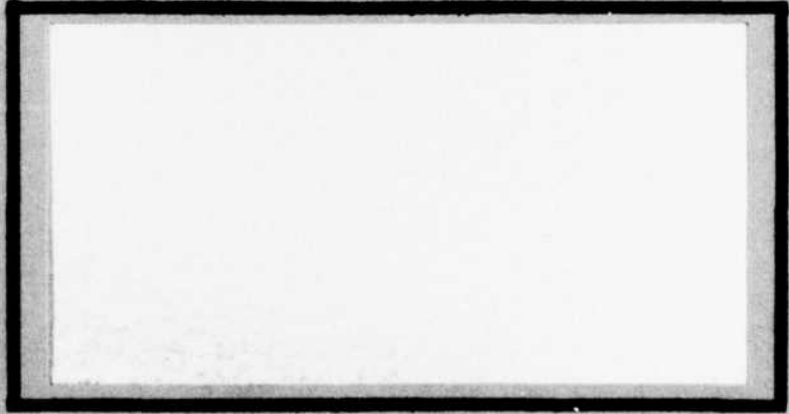
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Heinz D. Bertram, Captain, USAF
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→ The purpose of this research effort was to determine if current regulations, policies, and procedures are effective and efficient to fully realize the benefits intended to be gained by inclusion of warranty protection in military hardware. The scope of the research was limited to the use of supply and commercial warranties in the Air Force Logistics Command. Government regulations governing the procurement and administration of warranties were used to formulate a base line for comparison with actual practices observed at San Antonio ALC and Warner Robins ALC. Rationale for any procedural differences noted was determined through interviews with personnel responsible for each functional area. Analysis of the causes for deviations from prescribed procedures revealed that existing regulations do not provide for varying procurement and administrative techniques necessary for dissimilar-type warranties; therefore, the overall conclusion by the researchers was that current regulations, policies, and procedures do not provide for effective and efficient warranty management. Recommended changes to existing regulations are provided as appendices. ↑

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REALIZED VERSUS INTENDED BENEFITS OF
SUPPLY WARRANTIES

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

Heinz D. Bertram, BS
Captain, USAF

Merle R. Williams, BS
Major, USAF

September 1977

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Captain Heinz D. Bertram

and

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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
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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
LIST OF TABLES	vi
Chapter	
I. INTRODUCTION	1
Statement of the Problem	1
Background	2
Objective.	13
Research Question.	13
II. RESEARCH METHODOLOGY	15
General.	15
Specific Area of Research.	17
Selection of Research Locations.	18
Pilot Study.	19
Sample Plan.	20
Data Collection Plan	23
Information Content Analysis	24
III. DATA COLLECTION.	26
Procurement.	26
Contract Repair Services (CRS)	34
Supply/Distribution.	47
Item Manager	57
Custodian Representatives/Maintenance.	58

Chapter	Page
IV. ANSWERING THE RESEARCH QUESTION.	61
V. CONCLUSIONS AND RECOMMENDATIONS.	73
Conclusions.	73
Areas in Need of Further Study	77
Recommendations.	78
 APPENDICES	
A. INTERVIEW GUIDE.	81
B. RECOMMENDED ADDITION TO ASPR	92
C. RECOMMENDED ADDITION TO AFM 67-1	94
D. RECOMMENDED ADDITION TO AFR 70-4	96
SELECTED BIBLIOGRAPHY.	98
A. REFERENCES CITED	99
B. RELATED SOURCES.	104
AUTHOR BIOGRAPHICAL SKETCHES	106

LIST OF TABLES

Table	Page
1. Illustration of Maintenance Agreement Costs. . .	5

CHAPTER I

INTRODUCTION

Statement of the Problem

Current Government regulations and procedures for the procurement and administration of warranties do not provide for efficient and effective application and enforcement of warranty provisions.

Loss of warranty protection may be caused by prolonged storage, inadequate marking and identification of warranted supplies, and the lack of administrative management of warranty processes by Government personnel. Additionally, the Government may be incurring excessive transportation costs in returning defective supplies to manufacturers.

The usage and benefits of warranties in Government procurement have been the subject of periodic inspection reports and studies. One of the most recent studies, "Forward Look," an Assistant Secretary of Defense (I & L) report, reviewed warranties in relation to contract administration. It identified prevailing conditions which may have the effect of reducing or negating the benefits and remedies available to the Government with respect to warranties.

This research effort seeks to bridge the gap between formal regulatory documents and actual practices found to exist in the Air Force Logistics Command (AFLC) in the procurement and administration of warranties.

The researchers have drawn upon personal interviews and observations to determine existing practices in the field. An analysis and comparison of field operations with current official directives was made to determine the most practical methods to improve the efficiency and effectiveness of providing warranty protection to the Government within the constraints of the existing logistics network.

Resultant conclusions are included in the form of recommended changes to regulations and policies.

Background

The Department of Defense spends approximately 40 billion dollars a year on the procurement of defense systems, supplies, and services (5:25). While this represents a substantially large annual expenditure, defense appropriations have become an increasingly smaller percentage of the total Federal Budget over the past years. In 1976 former Secretary of the Air Force, Thomas Reed, stated that the Air Force budget is down 40 percent in real purchasing power from 1964 (1:1). In light of this decreased purchasing power, today's defense acquisition manager must be more efficient and resourceful than ever before. The

modern manager is expected to look beyond the initial acquisition cost and be concerned with the life cycle cost or the ownership cost of a piece of hardware throughout the life of the item in the Air Force inventory (42:20-3). One method of addressing life cycle costs is through the use of supply warranties. When a warranty is in order, it is important that the acquisition manager use that type of warranty which is best suited for the particular commodity being purchased. Furthermore, when a warranty is obtained with the item purchased, maintenance and supply personnel should fully utilize all warranty benefits (50; 23:1).

Warranties in the private sector of our economy seem to be intended to foster sales of certain commodities and to create consumer interest and satisfaction (29:38-43). However, the principal purposes of a warranty in Government contracts are to delineate the rights and obligations of the contractor and the Government with respect to defective items and services and to foster quality performance (61:Section I:55).

During the planning phase of the procurement cycle, the Procuring Contracting Officer (PCO) must make a decision concerning the type of warranty to use in a contemplated contract (61:Section I:55). In making his determination the PCO performs what could be called an opportunity cost analysis, weighing the benefits of a warranty against the actual or implied costs. Important considerations affecting his

decision are the nature of the items and their intended use (61:Section 1:55). These considerations include various factors such as: the complexity and function of the item, the degree of technical development of the commodity and the present state of the art, the difficulty of detecting defects in the item prior to acceptance by the Government, and the potential harm to the Government which could result if the item were defective (61:Section 1:55).

When deciding if use of a warranty is advantageous to the Government, the benefits derived from the warranty must be related to the cost of the warranty (61:Section 1:55). Warranty costs arise from the contractor's charge within the contract price for accepting the deferred liability created by the warranty. It is usually very difficult to assess the actual costs added to a contract for inclusion of a warranty. Most contractors are unwilling to supply this kind of information since they consider such data a part of their bidding and proposal strategy (4:3-10). The difficulty of ascertaining warranty cost is borne out by a 1972 Government auditor's report in which the auditor stated:

It would be a difficult, if not impossible, task to determine the total Air Force dollars expended for warranty/COD [Correction of Deficiencies] clauses in Deputy for Subsystems Contracts. A rough order of magnitude estimate of the cost of warranty/COD clauses can be determined if we use the generally accepted estimate of the cost of a warranty as 2 percent of the total dollar value of the contract and assume that one half of the contracts have such clauses [2:11].

The cost to warrant commercial items is usually an integral part of the sales price, and any attempt to negotiate a reduced price through deletion of the warranty would usually be unsuccessful (4:10; 41:9-10). In the researchers' opinion, an indication of the value assigned to warranty service by a vendor is the additional maintenance protection sold by many commercial firms as an extension of the normal warranty duration.

The following prices, obtained from Sears Roebuck and Company, illustrate this point (38).

Table 1
Illustration of Maintenance Agreement Costs

Year	Additional Annual Cost Color TV	Additional Annual Cost Washer	Additional Annual Cost Freezer
1	None	None	None
2	\$64.95*	\$29.95	\$19.95
3	\$74.95*	\$34.95	\$19.95
4	\$84.95*	\$39.95	\$19.95
5	\$94.95*	\$44.95	\$19.95

*Prices are for home service. Deduct \$10.00 for shop service only.

In the case of color televisions, an extension of the yearly maintenance agreements becomes increasingly more expensive due to the increased likelihood of major

component (picture tube) failure as the sets get older. In the case of freezers where the critical component (compressor motor) is covered by a separate 5-year warranty, the likelihood of failure of the remaining parts is relatively constant as reflected by the non-escalating maintenance agreement price.

Considerations used by the manufacturer to generate these prices include: historical data on number of failures experienced, type of parts failed, number of service personnel and trucks required, amount of gasoline used in the service area, extended warranties on selected components (compressors--5 years, picture tubes--2 years), and other factors (38).

The purchaser's ability to enforce a warranty is essential to the effectiveness of any warranty protection, but, until recently, the seller had virtual autonomy in the interpretation and applicability of commercial warranties. The Federal Government has tried to remedy this situation by making warranties more uniform and equitable through the Magnuson-Moss Warranty-Federal Trade Commission Improvement Act (PL 93-637) dated 4 January 1975 (28:41).

Hearings before the Congressional Committee on Interstate and Foreign Commerce, 1971 through 1973, revealed that there was considerable room for improvement in the area of warranty provisions and in the willingness of business to respond to claims in a timely and effective

manner. A few of the major and most often repeated complaints to the committee were (28:43-44; 49:101):

1. Lack of access to the warranty prior to purchase--the warranty was sealed inside the package and copies were inaccessible to the buyer prior to purchase. For the purpose of sales promotion salesmen often made exaggerated claims as to the value of the warranty.

2. Obscurity of terms--warranties were couched in obscure legal jargon that made the real terms and conditions and rights of the buyer difficult to understand.

3. Misleading representations--the rights of claimants were pronounced bold and clear while restrictive conditions were obscured in the "fine print."

4. Unreasonableness of warranty provisions--an example is the requirement under a warranty to return the item to the manufacturer for repair, but items were too large to be economically shipped at buyer's expense (e.g. a stove or refrigerator).

In response to these hearings and to pressure brought to bear on the Congress by consumer advocate groups, the Magnuson-Moss Warranty Act provided stricter guidelines in the use and definition of warranties.

The objectives of the act were to ". . . reform questionable warranty practices while maintaining equity in the marketplace [28:45]." The act strengthens consumer recourse by holding the warrantor responsible for the

actions of his designated service representatives. It also indicates specific courses of action open to the consumer and to the Federal Trade Commission (FTC) when satisfaction from the manufacturers cannot be obtained. The act requires consumers to resort to informal settlement with the manufacturer prior to the pursuit of civil court action and encourages warrantors to establish informal dispute settlement procedures that meet FTC standards (28:44).

The private consumer can readily avail himself of these remedies because he is usually the only one involved in the purchase and use of a particular product. Because of this strong central control, he is able to send his warranty registration to the manufacturer and can easily follow up to the manufacturer or seller when the item malfunctions. However, accomplishment of these same procedures by the Department of Defense requires an elaborate administrative system of accounting and item tracking throughout the world (7:12). An adequate system must consider such factors as: the nature and complexity of the item, its location and proposed use, storage time for the item, distance of the using activity from the source of the item, difficulty in establishing the existence of defects, and difficulty in tracing responsibility for such defects (61:Section I:56).

One of the prime purposes of a warranty in Government Procurement is to assure delivery of quality products.

A vital consideration must be whether or not the Government inspection system would provide adequate protection and quality assurance without a product warranty (61:Section I:55). This criterion is closely related to the contractor's own internal quality program. If the Government usually receives high quality products from a vendor, any additional expense for a non-commercial warranty may be in excess of the small added quality margin realized. On the other hand, if products are manufactured in separate runs, a warranty may well insure that the contractor continues his high production standards (4:130).

Assuming the PCO has decided to use a warranty, he must concern himself with the detailed and clear delineation of the exact nature of the item and its components and characteristics that the contractor warrants. The extent of the contractor's warranty, including all of the contractor's obligations to the Government for breach of warranty, must also be considered (31:179).

Terms and conditions of warranties may vary with respect to the scope and duration of protection, the extent of the contractor's obligation, and the specific remedies available to the Government (61:Section I:57). When a warranty for an entire item is not advisable, a warranty may be desirable for a particular aspect of the item which may require special protection (61:Section I:55). Remedies normally provide, as a minimum, that the Government may

obtain an equitable price adjustment to the contract or may direct the contractor to repair or replace defective items at the contractor's expense (61:Section VII:144).

The duration of the warranty is an important factor to be determined through negotiation with the contractor. The warranty period must be long enough to insure protection considering such criteria as the estimated useful life of the item, including shelf life, the nature of the item, commercial trade practice, the various time frames for notification to the contractor regarding defects, and transportation time. The type of marking and information to be affixed to the item and its container is also extremely important to the successful administration and management of a warranty program (61:Section I:55).

Several Government agencies have concerned themselves at one time or another with attempting to identify and correct shortcomings, as they perceive them, in the warranty area (6; 30; 39). A Defense Contract Administration Services (DCAS) sponsored Management Intern Study, performed in late 1972, addressed this subject from a contract administration viewpoint (6:1-14). The DCAS project focused on four main points. First, procurement regulations dealing with warranties were reviewed for clarity and detail. Second, information was sought on the amount of warranty knowledge existing from the top levels of management to the item user. Identification and marking

were the third area of emphasis due to the importance of the then current problems in that area. Fourth, because of its prime concern to DCAS, attention was focused on the processing of warranted items and the administration of contract warranty clauses.

The Management Intern Study, besides discovering weaknesses in procurement regulations, also found that there existed a general lack of knowledge and information by Government personnel concerning warranties. The DCAS study concluded that this dearth of knowledge and information at all management levels may be responsible for the apparent flaws identified in the warranty administration system. In its findings, the study identified the absence of an effective educational program aimed at including warranties in contracts and establishing standardized procedures for processing warranted items and administering warranty actions.

The study further identified as a problem the lack of proper guidance and instructions for marking hardware and containers with appropriate warranty information. This shortcoming has since been addressed through the publication of MIL-STD-129F, Marking for Shipment and Storage (6). However, the lack of sufficient information about warranty terms affixed to the hardware itself continues to cause problems. For example, users still return items to the

manufacturer for repairs under warranty provisions when the items actually are no longer covered by warranty protection (39:Ch.2:98).

The 1972 study (6) further cited weaknesses in the following areas:

1. There are no specific provisions at depots and supply installations for issuing warranted items on a first-in, first-out basis so as to take full advantage of the warranty protection period.

2. Many warranties are voided because of unauthorized repairs or adjustments by the user. (Under most warranty terms, no repairs are authorized to be made by the users during the active warranty period.)

3. There are no published procedures at DCAS for the administration of warranty actions. This basic weakness was ascribed to the fact that there was no designated Office of Primary Responsibility for the administration of warranty actions.

A more recent study and examination of the DCAS organizations by the Office of the Assistant Secretary of Defense (Installation and Logistics) cited similar shortcomings in the overall warranty area (39:Ch.2:61-65,97-99). The study, entitled "Forward Look," listed specific discrepancies in the area of liability for transportation charges in the event of rejection of supplies at destination and cited an overabundance of Government Source Inspections

in lieu of more cost effective inspections at destination. Another important point brought out in this DoD report was the loss of warranty information because of improperly marked items and containers. It also identified the problem of shelf-life versus warranty expiration date wherein warranty protection often expires before the item is even removed from storage and issued to the user.

Objective

This research seeks to determine if efficient and effective methods exist for procuring, identifying, handling, storing, allocating transportation costs, and obtaining repair of warranted hardware items. On the basis of the research findings, recommendations are made for the improvement of policies, procedures, or other guidance to increase the efficiency and effectiveness of warranty administration in the Air Force Logistics Command (AFLC).

Research Question

The following principal research question is addressed:

Are current regulations, policies, and procedures effective and efficient to fully realize the benefits intended to be gained by inclusion of warranty protection in military hardware?

To answer this prime question adequately, the following specific supportive questions are addressed:

1. Are regulations, procedures, and policies for enforcing warranties consistent within AFLC?

2. Are efficient and effective coordination channels established between buying and using organizations to exercise all available legal remedies concerning warranty actions?

3. Are transportation costs for returning defective warranted items to the manufacturer allocated to the contractor as specified by the Armed Services Procurement Regulation (ASPR)?

4. Are both hardware and containers adequately marked to provide all necessary warranty information to the user?

5. Is warranty protection curtailed or negated through extended storage of warranted items prior to use?

Additional problem areas identified during this research effort are documented and reported in a separate portion of the thesis reserved for future study recommendations. No attempt has been made to judge the merits of warranties in general, to review Reliability Improvement Warranties (RIW), to select new candidates for warranty coverage, or to rewrite existing warranty clauses.

CHAPTER II

RESEARCH METHODOLOGY

General

The Armed Services Procurement Regulation (ASPR) defines a warranty as ". . . a promise or affirmation given by a seller to a purchaser regarding the nature, usefulness, or condition of the supplies or performance of services to be furnished [61:Section 1:55]." Five types of warranties authorized for use in Government contracts and procurements for hardware and services can be identified (50). These are:

1. Correction of Deficiencies Clause. Under this type of warranty, the contractor agrees to correct any design, material, or workmanship deficiencies which result in the specific item performing below specification and contract requirements.

2. Supply Warranty. The contractor is responsible to replace or rework contract items if defects or non-conformance in design (if applicable), material or workmanship are found by the buyer prior to the expiration of a specific period of time or before the occurrence of a specific event.

3. Service Warranty. Same as 2. above but with regard to service defects.

4. Commercial Warranty. This is similar to supply and service warranties except that the contractor determines (the extent of his) responsibility (concerning the types of defects he considers himself liable for, the method of correction, and the duration of the warranty period).

5. Reliability Improvement Warranty (RIW). During the warranty period and for a fixed price the contractor agrees to improve the reliability of his equipment and to reduce repair costs through no-cost engineering change proposals (ECP's).

Supply warranties are usually included in a Government contract at a specific cost. Commercial warranties are usually provided free of charge by suppliers as customary trade practice. Both types of warranties can be applied to anything from household appliances for military quarters to major weapons system components and can be tailored to meet the requirements and peculiarities of each particular piece of hardware, set of data or service contract (4:10).

Regardless of the type of warranty involved or the type of item to which the warranty applies, procedures and regulations must be provided to allow for the proper implementation of warranty remedies. One document which addresses the implementation of warranties in DoD Procurement is the Armed Services Procurement Regulation (ASPR). It states the basic philosophy and guidelines to be adhered to by each DoD component in matters of warranty application and

enforcement. Two other documents addressing the subject of warranty at the DoD level are MIL-STD-129G, Marking for Shipment and Storage (59) and MIL-STD-130D, Identification Markings of U.S. Military Property (60). These two Military Standards (MIL-STD) deal in part with the proper identification and marking of warranted items and their containers.

Each Service component transforms and amplifies the guidance and requirements of ASPR into its own set of regulations, manuals, and procedures to provide more detailed instructions to its personnel regarding particular subjects. The Air Force created pertinent sections of Air Force Manual (AFM) 67-1, Air Force Regulation (AFR) 70-4, AFR 85-1, and AFM 67-23 to address warranty procedures and remedies from the Supply, Base Procurement (Contract Repair Service), Civil Engineering, and customer viewpoint, respectively (50 ; 51 ; 52 ; 54).*

Specific Area of Research

This research focuses on those warranty implementation and administration procedures, policies, and regulations applicable to, and used by, the Air Force Logistics Command (AFLC) central and base procurement related functional areas. AFLC central procurement related functions

*Hq USAF has drafted a complete revision of AFR 70-4 and is in the process of obtaining comments from major commands. A final version is not expected for at least six months. This thesis is based on the current edition.

deal with the procurement, storage, and distribution of supplies for worldwide Air Force consumption and use and are concentrated at the five established Air Logistics Centers (ALCs) at San Antonio (TX), Warner Robins (GA), Oklahoma City (OK), Ogden (UT), and Sacramento (CA). Base procurement related functions primarily support local installations and operations and are being performed at most Air Force bases. Whereas most of the warranty related regulations and procedures apply to all types of warranties, this study is limited to an analysis of those warranty aspects concerning hardware and supplies, generally referred to as "Supply Warranty" and "Commercial Warranty."

Selection of Research Locations

For the purpose of this research, San Antonio ALC, TX and Warner Robins ALC, GA were selected to provide the desired information. The selection of the ALCs was made deliberately on the basis of available Government travel arrangements, accessibility of personnel to be interviewed, time available to the researchers for field study, and prior familiarity of the researchers with the mission and general layout of the ALCs. Assumptions behind this opportunistic selection were that any procedural difficulties present at any two of the five ALCs are representative of those which can be expected to exist at the other three.

No prior knowledge by the researchers could suggest that operations are not generally similar at all ALCs.

Uniformity is maintained among the ALCs through the Hq AFLC Inspection System, Hq AFLC Staff Assistance visits, and through the use of a self-inspection system by the individual ALCs. Source material for local ALC self-inspection checklists include USAF/AFLC Inspector General (IG) reports from other ALCs provided as crossfeed information as well as audit reports, applicable regulations, and higher headquarters' inspections (53). Both central and base procurement activities and related customer and support organizations were visited at each ALC.

Pilot Study

A pilot study was performed at the 2750th Air Base Wing (ABWg) located at Wright-Patterson AFB (WPAFB), to collect information and identify problem areas and deficiencies concerning the base warranty administration process. This knowledge was incorporated into the interview guide included as Appendix A. The pilot study was conducted through personal interviews with procurement, contract repair service, supply, and customer representatives assigned to the 2750th ABWg (8; 11). Findings from this pilot study were incorporated into Chapter III, Data Collection.

Hq AFLC was visited to gather command guidance and philosophy concerning supply warranties. Although a specific office has been assigned the responsibility of monitoring and developing AFLC policy concerning all types of warranties, the information obtained there led to a quick and firm conclusion that the current primary emphasis at Hq AFLC is on Reliability Improvement Warranties (RIWs) with minimum emphasis on supply or commercial warranties (9).

A visit to two Hq AFLC Logistics Operations Offices (LO) which have cognizance over the supply computer systems failed to identify a method of interrogating the Air Force supply computer systems for stock classes which are customarily procured with warranty protection. Discussions with personnel concerned with the J001 and J041 management information computer systems revealed that, at present, there is no information stored in these systems which could be used to identify warranted items or contracts for warranted supplies (10; 34). Due to this inability to gather pertinent and up-to-date information at the Hq AFLC level, reliance had to be placed on thorough interrogation of field personnel at the two ALCs to supply the data base for conclusions and recommendations.

Sample Plan

An opportunistic sampling plan was used for collection of information on this research topic. The following organizations were visited at each of the two selected ALCs.

<u>Base Support Organizations</u>	<u>Central (AF-wide) Support Organizations</u>
Procurement	Procurement
Contract Repair Service	Materiel
Supply	Maintenance
Custodian Representatives	Distribution

Rationale for visiting each of these functional areas was based on research of applicable regulations, information gained from the pilot study and on prior knowledge by the researchers of the involvement of each element in the warranty administration and enforcement process (8; 9; 11; 32; 33).

Each of these functional areas plays an important role in the determination, acquisition, and administration of warranties.

1. Procurement communicates to, and levies upon, the contractors or vendors the specific requirements of a supply warranty. The contract with the supplier is the only legal document binding on both parties. It must delineate in detail the obligations of, and remedies available to, both parties (63).

2. Contract Repair Service (CRS) is the organization assigned to enforce warranty provisions on base-level equipment and deals primarily with standard commercial warranties provided by the seller at no additional cost to the Government.

3. The Base Supply inspection section is required to inspect all incoming items for external warranty

identification and to record the applicable information on supply transaction documents (51).

4. The equipment custodian in a particular organization is responsible for maintaining accurate records on all warranted items under his jurisdiction and for informing the CRS of warranty coverage when an item requires repair (51).

5. Central procurement purchases items in support of worldwide logistics efforts and performs basically the same functions as base procurement with regard to contracts; however, warranties under consideration within central procurement are more likely to be tailored to meet specific operational or equipment requirements and are generally procured at some additional cost to the Government (63).

6. The Item Manager (IM) within the Directorate of Materiel Management usually initiates the purchase requests and specifies the type and terms of the warranty to be negotiated by the procuring contracting officer (PCO).

7. Using activities within the Directorate of Maintenance are the local customers utilizing military hardware and supplies and are directly involved in determining whether warranty repair should be requested through the IM and PCO.

8. Depot supply handles all incoming and outgoing shipments as well as the storage of assets for worldwide distribution and is in a position to negate warranties

which were valid at the time of Government acceptance of supplies but expire due to extended storage (50).

Functional areas 1 through 4, and 5 through 8 form the chain of warranty administration at the base and depot level, respectively. This chain is only as good as its weakest link.

An examination of functional responsibilities of each organization and the links which tie the warranty administration process together is necessary to determine if efficient and effective methods and procedures do in fact exist.

Data Collection Plan

Personal interviews were considered to be the most appropriate method to obtain the bulk of the information required for analysis and interpretation. An interview guide (Appendix A) was used to insure continuity and standardization of the interview process. Some overlapping topics were discussed at each functional area or organization to determine the degree of interaction and coordination that exists between each link in the chain. This was considered necessary since AFR 70-4, AFM 67-1, and ASPR are inconsistent in the assignment of specific responsibilities for warranty actions. Guidance from Hq USAF (55) reinforces this inconsistency by deferring to local commands interpretations of the above manuals and assignment of specific areas of responsibility.

The interview guide was developed on the basis of the pilot study at WPAFB, requirements set forth in the previously referred to regulations, AF Audit Agency Report findings, Hq USAF and Hq AFLC replies, and prior knowledge based on the researchers' job experience as contracting officers. Further, data were extracted from information contained in regulations and instructions dealing with the application, enforcement, and administration of supply or commercial warranties. Another input was provided through deficiencies discovered during the pilot study at WPAFB. Only those specific requirements contained in official documents and actual findings were used in the preparation of the interview guide.

Validation of the responses and findings were based on the fact that only organizations and personnel required by regulation, procedure, or job specialty to be familiar with warranty administration and processes were interviewed. No statistical inference was drawn from the responses obtained, and linking of the final conclusions to activities outside AFLC are left to the reader.

Information Content Analysis

The data gathered at the sample locations were not susceptible to computer analysis; however, it revealed whether or not a functional area followed prescribed procedures. This determination by the researchers of compliance/

non-compliance was based on a strict comparison between applicable regulation and actual practices. However, attempts were made during the interviews to establish the reasons or causes for compliance/non-compliance. Observations from each sample location were grouped by functional areas and examined for commonality and conformity to established regulations. Each research question was then evaluated in light of the grouped observations and answered after giving due consideration to governing directives, actual practice, and to the most practical compromise which could be applied. Recommendations were developed for the improvement of those conditions which in the opinion of the researchers were found to be contributors to the overall inefficiency of the warranty program.

The method of information collection is described in the next chapter--Data Collection. The data collected are presented by sample location as related to specific regulatory or procedural requirements to facilitate conclusions.

CHAPTER III

DATA COLLECTION

Data collection was performed at Warner Robins ALC and San Antonio ALC from 21 through 25 March 1977. Each researcher visited one of these installations and contacted each major organization involved in the warranty process. This chapter identifies each functional area and compares regulatory and policy requirements with actual practices observed. Information gained from the WPAFB pilot study is also included, where applicable, to broaden the basis for comparison and conclusions.

Procurement

Requirement: AFR 70-4, para 4-5(a).

The contracting officer will:

- (1) Endeavor to negotiate a price reduction for items rather than accepting a warranty or guarantee which is uneconomical to enforce.
- (2) Provide, where appropriate, that when a warranty or guaranteed item is procured, a copy of the warranty or guarantee will be furnished to the Government at the time of delivery.
- (3) Provide that the vendor marks the shipping documents and containers to readily identify each warranty or guarantee item on delivery.
- (4) For items provided through the base procurement office, notify the base supply office, where feasible, of the extent of the warranty or guarantee and the effective date (that is, the date the item is received in base supply or the date the item is installed) by a suitable annotation on the purchase or delivery order [51].

Practice: Warner Robins ALC. Four contracting personnel from Base Procurement (PPKC) were interviewed (27). None of them were aware of the above stated requirements of AFR 70-4. There were no specific operating instructions for buyers pertinent to warranty management. There was a Warner Robins ALC-RAFB Regulation 70-3 (45) which dealt with warranty management; however, it did not address the above cited requirement. It did include a paragraph on marking the face of the contract with "WARRANTY" if appropriate.

As a rule neither AFR 70-4 nor RAFBR 70-3 were being followed in day-to-day operations. Many purchases were made from GSA schedules or were processed through the CIAPS (Customer Integrated Automated Procurement System). The volume of purchases handled by each buyer made it impossible and impracticable to give each one the attention it might otherwise deserve with regard to warranties. Many buyers felt that too much research would be required to ascertain all necessary warranty information from GSA schedules to comply with AFR 70-4. With regard to the CIAPS, those people interviewed stated that certain "flags" could be programmed into the system to remind the buyer to get the required information from vendors prior to issuing the contract. Several contracts reviewed were in partial compliance with all warranty requirements including contract marking and filing of warranty information in the contract

file (43). Some of the persons interviewed suggested the establishment of a compliance threshold of \$10,000 for special warranty attention in lieu of across-the-board compliance (27).

Where strictly commercial-type warranties are being furnished by vendors, the buyers felt that it may be difficult to get contractors to change their order processing systems to provide the required purchase order, invoice, and container markings. None of the buyers interviewed felt that vendors would reduce their prices should the Government elect not to accept the vendor's standard warranties (27).

Overall, buying personnel felt that warranties were worth the limited effort now being expended on them but did not feel justified to go beyond this level. They believed that other functional areas in the warranty chain were doing their part to keep records and keep track of warranted items and warranty information (27).

Four people were also interviewed in Central Procurement (26). Although AFR 70-4 is not applicable to Central Procurement, contract negotiators were aware of RAFBR 70-3. No specific operating instruction existed for use by Central Procurement buyers. Four contracts were reviewed (44), all of which contained the required documentation and properly completed clauses. Two of the four had "Warranty" marked on the face of the contract. There was no continuity between

buyer and commodity which, in turn, forced increased reliance on file documentation for ascertaining previous warranty information. Those people contacted felt that warranties were beneficial but that a shotgun approach was inappropriate. The cost of warranties is usually amortized in the price of the hardware, although one particular company, International Telephone & Telegraph, reportedly quotes a standard 1 percent for warranty coverage. The interface between procurement, item management, and supply was difficult to define. People felt that the high volume of workload made it impossible to go out and look for extra work; therefore, interface was usually working only for the purpose of solving specific problems (26).

Practice: San Antonio ALC/Kelly AFB. As a result of an Air-Force audit which indicated inadequate management of the Base Warranty Program, San Antonio ALC established an Operating Instruction to improve compliance with AFR 70-4 (36; 55). The operating instruction emphasizes the requirements for Base Procurement contracting officers to attempt to negotiate price reductions in lieu of accepting uneconomical warranties and the inclusion of warranty documents with equipment delivered to the Air Force. The Branch Chief and five contract negotiators were interviewed to ascertain compliance with the operating instruction (23). In all cases it was revealed that warranties are not discussed in

negotiation with contractors. Reasons given for this lack of warranty consideration were:

1. Under the Customer Integrated Automated Procurement System (CIAPS), automated solicitations do not include provisions for warranty coverage; and warranties are therefore not considered in the award/selection process.

2. The volume of workload for each buyer does not allow sufficient time to compare the benefits that may be derived from warranties offered by one vendor over those provided by another supplier.

3. Many buyers felt that any attempt to request the contractor to provide warranty information or special marking of exterior containers in addition to his normal commercial practice could result in higher prices to the Government and constitutes requirements not specified in the solicitation (23). The requirement stated in AFR 70-4 for the Base Procurement Office to notify the Base Supply Office of the extent of a warranty and the effective date was not being accomplished. Compliance was not considered feasible since warranty coverage was not made a factor in negotiations or contract award.

The overall opinion of the Base Procurement supervisors and contracting officers was that the requirements under AFR 70-4 for contracting officers' responsibilities toward warranties are unrealistic and impractical to apply on a day-to-day basis (23). Since AFR 70-4 applies to

Base Procurement only, this requirement was not discussed with Central Procurement personnel.

Practice: Wright-Patterson AFB. Due to recent internal audits and inspections (55), Base Procurement personnel were aware of the warranty dilemma and were in the process of generating operating instructions. In general, they were aware of the requirements of AFR 70-4 but cited excessive workload as a prohibitive factor for compliance. Unless a specific warranty was requested by the purchase request (PR) initiator, the Government is usually unaware of the existence of a commercial warranty on a supply item until the item is received and unpacked by the user. Some procurement personnel interviewed felt strongly that requiring a vendor to provide markings of hardware and containers over and above those applied as standard commercial practice would result in additional costs to the Government, which would have to be specifically authorized by the PR. No test of this theory has actually been made by procurement personnel (11).

Requirement: ASPR 1-324.4(e).

Markings. The packaging and preservation provision of contracts containing a warranty shall require the contractor to stamp or mark items delivered under the contract in accordance with MIL-STD-129, "Marking of Shipments," or to otherwise furnish notice with the item of the existence of the warranty. . . . Markings required by the contract may be brief, but should include all data necessary to allow the user to determine whether the particular items are under warranty. . . .

For commercial items, the contractor's trade practice in warranty marking is acceptable if sufficient information is presented [61].

Practice: Warner Robins ALC. The above marking requirement is implemented for Base Procurement by AFR 70-4. As stated previously, no requirement is usually placed on the contractor to comply with these statements. From inspection of a variety of packages containing commercially warranted items it is concluded that sufficient information is not presented by the vendor to determine the existence of a warranty. Exceptions to this observation are evident with office machines whose packaging instructions usually caution the receiver that only an authorized manufacturer's representative shall unpack and set up the equipment (27).

Central Procurement personnel usually obtain non-commercial warranties and levy marking requirements on the contractor via AFLC Form 53, Item Identification Marking and Shelf Life Item Provisions, which implements MIL-STD-129 and MIL-STD-130 in contracts. The success of this approach hinges on proper completion of the form by the buyer and compliance by the contractor (26).

Practice: San Antonio ALC. The requirement to assure that the contractor provides notice of warranty information is stated in AFR 70-4 and iterated in Base Procurement operating instructions (36). There was no evidence that this practice was being accomplished at the Base Procurement office with

the exception of contracts for serialized office machines (electric typewriters, calculators, adding machines). There is no attempt by contracting officers to insure that warranty information be included or that exterior containers be marked by suppliers to indicate the existence of warranted items. During a five day survey of the base supply receiving division no items were received which had any exterior markings indicating warranted items. Base supply receiving personnel indicated that only two or three items per month were received with exterior warranty markings, other than office machines (13). Only the procurement, marking, and Government handling of serialized office machines is specifically managed to insure that warranty coverage is maintained. Machines are marked by vendors to notify receiving inspection and the user that unpacking and installation by the manufacturer is essential to prevent voiding warranty coverage.

Within Central Procurement there are no specific instructions for contracting officers with regard to warranty provisions other than the broad guidelines provided in ASPR Sections One and Seven (22).

Practice: Wright-Patterson AFB. As stated in AFM 67-1, receiving inspection personnel do not open incoming shipments for the sole purpose of ascertaining the existence of warranties. From discussions with inspectors it is

concluded that only office machines usually carry external markings of warranty (40). Trade practice of other contractors does generally not supply sufficient information on exterior containers to allow inspectors to establish the existence of warranty coverage on property contained therein. As stated previously, purchase orders do not require vendors to include additional markings concerning warranties.

Contract Repair Services (CRS)

Requirement: AFR 70-4, para 4-5(e).

Chief, Contract Repair Services activity will maintain an accurate record of all warranty or guaranteed items except equipment for which other organizations are required to maintain primary control by separate directive [51].

Practice: Warner Robins ALC. Contract Repair Services (PPKMA) utilizes AF Form 617 in establishing records on all warranted items under its jurisdiction. Information for these cards can come from the item custodian or DD Form 1348 from the Installation Equipment Management Office (IEMO); however, often the first time PPKMA becomes aware of the existence of a new item is at the time the custodian requests repair. No copies of the actual warranty document are kept at this office since the custodians are expected to keep these documents with the equipment. No list of custodians was maintained at the CRS office (24).

A separate file is maintained for active/inactive cards. The inactive file includes those items condemned, salvaged, shipped off base, etc., and most cards are kept indefinitely. If there is no card on file at the time repair of an item is requested, a purchase request (PR) is required from the customer to cover possible charges. This requirement was instituted to eliminate previous instances where personnel requested repair on personal property. Personnel interviewed recommended that PPKMA receive necessary information on new equipment at the time it passes through receiving inspection. This would facilitate accurate record keeping and preparation of AF Form 617, Maintenance/Repair Record Card (24).

Practice: San Antonio ALC. The Contract Repair Services Branch (PPKMA) maintains warranty and service information on approximately 8000 office machines. This information is maintained on AF Form 617 Records, and no copies of the contract warranty are maintained in PPKM. Upon receipt of a new office machine, IEMO marks the exterior of the carton with notice to the user not to open the box and to notify PPKM of receipt. PPKM then notifies the manufacturer's representative who installs the machines and initiates the warranty period. Date of warranty initiation is maintained by PPKM on the AF Form 617. The file is purged every thirty days to eliminate expired warranty information (23).

A random sample of fifty data cards indicated that all records were up to date.

Non-serialized warranted items may pass through the Base Supply receiving section and be issued to the item custodian without having been identified as a warranted item. This is possible and likely since AFM 67-1 does not require 100 percent item inspection at Base Supply. These items are not identified to the Contract Repair Services branch, and therefore, no record of warranty is maintained on these items. When such an item is returned for repair, the CRS may be made aware of warranty coverage by several different means:

(1) The item custodian may have indicated on the AF Form 9, Request for Purchase, that the item is believed to be within a warranty period; or

(2) The supplier, upon receipt of the item, may notify the CRS of warranty coverage (23).

Control of warranty coverage by SAALC Base Civil Engineer (CE). Guidance for the control of warranted items is contained in AFR 85-1 and AFR 70-4. A CE operating instruction provides specific guidance and procedures for maintaining a viable warranty program (46). The program utilizes a \$300 item replacement value baseline, consideration of transportation costs, degree of warranty coverage and length of warranty terms as criteria for inclusion in the base CE

warranty program. Items carried in the program are initially entered into the system as a result of an issue warranty evaluation by CE and are tracked through the Base Engineers Automated Management System (BEAMS). This system supplies a computer listing of all active warranted items controlled by CE. The listing includes item description and location as well as warranty expiration date. The listing is purged through quarterly reviews which remove inactive items from the list. Full use of AF Form 1097, Warranty/Guaranty Item, is made to identify warranted items to maintenance/repair personnel. The system tracks both contractual and commercial warranties. This system was by far the most effective warranty administrative system encountered in the survey at SAALC and together with the CRS procedures for controlling warranty management of serialized office machines, comprised the only true warranty management systems at SAALC (3; 46).

Practice: Wright-Patterson AFB. The CRS chief interviewed felt that the weakest link in his involvement in the warranty process was the lack of notification by custodians of warranty information on newly received property. Although he has attempted to maintain a file on warranty documents, due to the lack of communication between CRS and item custodians the file was incomplete. The file contains copies of those warranties which were forwarded to CRS by item

custodians at the time of receipt of new items by the custodian. However, the Chief felt certain that many warranty documents were not being forwarded to his office by custodians. Upon receipt of an item for repair the CRS determines if the item is covered by warranty by (a) checking its file, (b) receiving notification from the custodian of warranty coverage, or (c) obtaining verification from the vendor that the item is still under warranty coverage. If none of these eventualities occur, the item may be repaired at cost to the Government when it is in fact covered by a valid warranty (8).

Requirement: ASPR 7-105.7(b)--Warranty of Supplies (d).

Except as the notification period may be extended by para (e) the Contractor shall be notified in writing of any breach of the warranty in para (b) above within

** _____ [number of days] [61].

Also: 1-324.4(d).

Practice: Warner Robins ALC. This requirement applies to procurements whereby the contractual document specifies warranty provisions stipulated by the Government. The statement constitutes an obligation by the Government to serve prompt notice to the contractor when defects in warranted items are discovered.

Within the base procurement organization notification of breach of warranty is accomplished by Contract Repair Services (CRS). Although the contracts usually do not specify a time period, the terms of the commercial

warranty and trade practice provide for a smooth and orderly warranty notification process. According to CRS personnel, much reliance is placed on vendor or contractor records with regard to determining the applicability of warranty time. Sometimes the contractor will reject a warranty claim as having expired, while at other times there will be no charge when the Government thought that the warranty had already lapsed (24).

Completion of this particular paragraph of the warranty clause is part of the overall requirement by Central Procurement personnel to properly complete all contract clauses. From the four sampled contracts one can conclude that proper attention and emphasis is being placed on completion of applicable warranty clauses (26).

Practice: San Antonio ALC. Within the Base Procurement organization, notification to the contractor of breach of warranty is accomplished by CRS. Warranty information for office machines is maintained on AF Form 617. Notification is generally made by telephone, and repair or maintenance is performed by the manufacturer's representative with the equipment in place. For equipment other than office machines, the CRS requires the item custodian to indicate if a valid warranty exists on the item to be repaired (43). Cost of repair can be covered by either a valid commercial warranty or a Government issued repair

services contract. Notification to the contractor is made on DD Form 1149, Requisition and Invoice/Shipping Document. In those cases where the existence of commercial warranties is unknown to either the item custodian or the CRS, the contractor may notify the CRS that a valid warranty exists and covers the cost of repair. However, the possibility exists that a warranted item may be repaired and charged to the Government even though it is still under warranty (23).

Within Central Procurement, notification is made to the contractor after coordination with the item manager on the nature of the defect and the disposition of the defective item. Written notification is generally issued to the contractor after initial telephone contact and after general agreement is reached between the contractor and the Government as to the return and repair of the item (22).

Practice: Wright-Patterson AFB. Notification of breach of warranty is provided by the user to CRS who in turn notifies the vendors. If the item in need of repair requires shipment off base, a buyer within CRS issues a no-cost contract to track the repair and to establish a due-in asset. On-base warranty-covered repairs are handled informally through telephone notification of contractor representatives who make repairs at the place the item is currently being used (8).

Requirement: ASPR 1-324.4(b).

When repair or replacement of defective item is required, the contractor shall generally be required by the warranty to bear the expense of transportation for returning the defective item from place of delivery specified in the contract (irrespective of the f.o.b. point or the point of acceptance) to the contractor's plant for repair or replacement and subsequent return of the corrected item [61].

Practice: Warner Robins ALC. It is current practice that transportation charges for off-base shipment of warranty-claim items are paid by the Government both ways. This action by CRS may in part be supported by the stipulations of most commercial warranties that all returned items be shipped prepaid and in part by a belief that the above ASPR requirement just is not applicable (24).

In Central Procurement, warranty claims are often a negotiable item, and transportation charges may be addressed in a final settlement. Unless outbound transportation or the supply accounting section is specifically notified to the contrary by procurement or the IM, the Government automatically pays for all outbound transportation. The impression gleaned from the interviews was that this is usually the case. Specific transportation costs are provided to PCOs only upon their request (15; 26).

Practice: San Antonio ALC. The repair of serialized machines managed by the Base Procurement office is generally accomplished at the point of installation by the

manufacturer's representative, in which case, no transportation charges are incurred. When items other than serialized machines are returned to the manufacturer, the Government generally pays transportation costs from the user to the vendor. In those cases where the commercial warranty specifies that the contractor will pay the transportation cost to return the item to the Government, this cost is absorbed by the vendor. From interviews with Base Procurement personnel, it was evident that there was no established procedure nor any emphasis on attempts to recover transportation expenses for the return of defective items to the contractor and that in most cases, the transportation costs to and from the contractor's plant were paid by the Government (23).

In Central Procurement there are also no specific instructions, other than the guidance provided in ASPR provisions, for the assessment of transportation costs for the return of defective items. When warranty claims are negotiated, attempts are made to insure contractor responsibility for transportation costs to and from the contractor's plant as per ASPR. Contracting officers interviewed had no way of determining how many actual returns of defective items were made and who paid the transportation charges. It was believed that in most cases the Government would end up paying the transportation charges at least one way to the contractor (22).

Requirement: AFR 70-4, para 4-6(a).

The CRS will complete and apply AF Form 1097 to repaired items when the contract provides for a guarantee of workmanship or material. The CRS will determine and assure assignment of the expiration date to all warranted items issued by the Base Supply office for which the CRS is responsible [51].

Practice: Warner Robins ALC. CRS is located a considerable distance from the receiving area and never sees any of the hardware returned to the base. They are therefore not in a position to prepare or attach AF Form 1097 to the property as required by AFR 70-4. They rely principally on repair contractors to determine if a previously repaired item is still under warranty when it breaks again. CRS felt that the integrity of most vendors made this approach a viable alternative (24).

Practice: San Antonio ALC. The first part of this requirement refers to items which are no longer covered by the supplier's original warranty but are repaired under CRS repair contracts. Items repaired under CRS-issued repair contracts are managed under the CIAPS. Control of these items is maintained through the use of DD Form 1149. All repaired items returned from the contractor after repair are received at a central warehouse and visually inspected by CRS. When the repair contractor has provided a warranty as workmanship guaranty, the CRS attaches the AF Form 1097 to the item. One man is assigned to this function on a permanent basis. All

items reviewed over a five day period were properly marked with correctly annotated AF Form 1097 (23).

The second part of this requirement refers to new items received at Base Supply. AFM 67-1, Vol. II, Part Two, para 3.1 states that warranty items can be identified by either container markings or by annotations on the purchase document (in the case of local purchase acceptance of warranty provisions). Base Procurement is not complying with the provisions of AFR 70-4, para 4-5a(3) to insure that the vendor marks shipping documents and containers with warranty notice (23). Therefore, warranted items may be received and pass through the Base Supply inspection section without identification and consequent documentation of the expiration date of the warranties.

Requirement: AFLC/AFSCR 57-7, Ch. 5, para 1.1(6)(K).

If warranty provisions are required, a statement will be included regarding the kind of warranty desired (see ASPR 1-324 and AFM 67-1, Vol. I, Part One) and AFLC Form 618 will be prepared [48].

Practice: Warner Robins ALC. Base Procurement usually receives PRs without any mention of warranties. This means that the only warranty which can or will be obtained by the buyer is a commercial one which the vendor normally furnishes to all customers (27).

In Central Procurement, desired warranties are specifically addressed in the PR and documented on an AFLC

Form 618, Warranty Clause Application. This form is prepared by the technician on the basis of his own knowledge of the history of the item in terms of problems, high cost, criticality, etc. No historical file was available to the technician interviewed to tell him which items were previously bought with warranties. The feeling was that a warranty should be included as insurance against premature failure and expensive repairs (18).

Practice: San Antonio ALC. The AFLC Form 618 used by Central Procurement is prepared by the engineering or technical staff assigned to the Item Management Division of Materiel Management Directorate. The Item Manager does not make the analysis or decision to include a warranty clause in the contract for an item but does coordinate on its inclusion as a routine function of the purchase request cycle. Decisions to use the warranty clause application are based on historical factors and the nature of the article being purchased. As a general practice this form is only used when the requisitioner desires to have a Government warranty included as a contractual clause in the purchase document (20).

In those cases where a commercial warranty is acceptable, as is the case in most base and centrally procured items, no warranty application form is used (20).

Requirement: ASPR 1-324.4(c).

In preparing warranty provisions, care must be taken to clearly specify the time period or duration of the warranty [61].

Practice: Warner Robins ALC. For Base Procurement this requirement is restated in AFR 70-4 and RAFBR 70-3. As described previously, terms and conditions of commercial warranties are usually not ascertained until delivery and unpacking of the item. Buyers felt justified in this non-compliance by the fact that commercial warranties are usually not requested by the customer and anything we get is frosting on the cake (27).

Central Procurement receives AFLC Form 618 from the item technician. This form, when properly completed, gives the required duration or time period of the desired warranty; however, no specific entry is required for specifying the start of the warranty protection. There is often a great time lag between Government acceptance of an item and actual installation or operation, and it is extremely important to complete all required entries in the actual ASPR warranty clause. The four sampled contracts all had properly completed clauses concerning warranty of supplies (26; 44).

Practice: San Antonio ALC. Warranty time periods in Government solicitations are generally expressed in terms of number of days from acceptance by the Government. Although this ASPR clause requires the contracting officer to take

into consideration the storage period before actual use, this factor is rarely considered. Most warranty clauses are written with major consideration given to the nature of the item and the trade practice warranty periods given for like commercial items. The general consensus of those contracting officers interviewed was that to increase the warranty period beyond that provided in the commercial trade would incur costs beyond the additional benefit to be derived by the Government (23; 22). It was also concluded that attempts to utilize warranties that provided coverage beginning with the time of initial usage through a stated coverage period were unsuccessful in that they were unacceptable to the contractor or would be uneconomical to purchase (23; 22).

Solicitations in Base Procurement do not specify warranty conditions except to the extent that the contractor will furnish to the Government warranty coverage equal to that provided by the contractor's most favorable commercial warranties (62). This practice of accepting commercial warranties does not allow the contracting officer any determination of the extent of the warranty coverage period (23).

Supply/Distribution

Requirement: AFR 70-4, para 4-5(b).

The Chief of Supply (Inspection Section) will:
(1) Insure that a copy of the warranty or guarantee, when received with the item(s), is provided to the

appropriate activity responsible for keeping the warranty records. Complete and attach to the property an AF Form 1097, Warranty/Guaranty Item Annotate the receiving document with the model, serial number, manufacturer's name and address, and other data received locally to assure adequate identification of the item(s) received on that document to the applicable warranty [51].

Practice: Warner Robins ALC. Personnel from Incoming Inspection (DSFPCD) were interviewed concerning this requirement. They perform verification of quantity, type, and general outward condition of property. AF Form 1097 is prepared and affixed to the box only if the box or purchase order contains visible information concerning warranty. Since the 1097 is glued to the outside of the containers, it cannot later be transferred to the unpacked equipment. The unopened boxes are forwarded to IEMO or storage.

Personnel interviewed stated that compliance with the above requirement could be significantly improved if the purchase orders or boxes were clearly annotated or marked with warranty information. DD Form 1348 is annotated only if boxes or purchase orders contain warranty data. It can be concluded that most warranted items received carry no external markings (15).

Practice: San Antonio ALC. There is no consideration given to identifying warranted items within the Central Receiving Section of the Directorate of Distribution (12). All requirements for the assignment of warranty inspection data

codes were deleted from AFM 67-1 with the introduction of the D033 Base Support Stock Control and Distribution System (12; 35).

The Installation Equipment Management Office (IEMO) receives and inspects items purchased through the Base Procurement Office. Serialized items received from contractors are marked on the exterior packing crate with a notice to the item custodian not to unpack the item and to notify the Base Procurement Office of receipt. All unpacking and installation is performed by the manufacturer's representative. Warranty documents are maintained by the item custodian, and warranty information is maintained by Base Procurement (13; 23).

IEMO does not generally perform a detailed inspection of items received. Inspection is limited to visual inspection of outer containers. In most cases where an item is covered by a commercial warranty, there are no markings on the outer container to indicate the existence of a warranty (13). Therefore, the requirements of AFR 70-4, para 4-5(b) are not complied with unless the item is visibly identified as a warranted item. In those cases where the item is identified as having some form of guaranty either by external markings on the container, on the contractor's invoice, or on the Government purchase document, the receiving section inspectors annotate an AF Form 1097 and place it and receiving documents in a plastic bag which

is then attached to the property in accordance with AFM 67-1, Part Two, para 3.1a. Warranty documents are not removed from containers. Receiving personnel stated that only two or three items per month were received with warranty identification. During the five day period that the receiving section was surveyed, no items were received that were identified as warranted (13).

Practice: Wright-Patterson AFB. As allowed by AFM 67-1, only an external visual inspection is performed by the receiving inspection section to verify quantity, type, transit damage, etc. If external markings, purchase order, or contractor invoice show the applicability of a warranty, an AF Form 1097 is completed and attached to the property in a plastic bag for later transfer to the item itself. No paperwork is removed from the packages themselves. Personnel appeared knowledgeable on the above functions (40).

Requirement: AFM 67-1, Vol. II, Part Two, para 3.1.

Items are identified upon receipt as warranty/guaranty by container markings, as required by MIL-STD-129F, or when local purchase acceptance is covered by warranty/guaranty provisions in the purchase document. All inbound receipts of property will not be opened or unpackaged for the sole purpose of identifying warranty/guaranty property [58].

Practice: Warner Robins ALC. Receiving inspection was in full compliance with the second sentence of the above paragraph; however, the first sentence makes the erroneous

assumption that warranty information can usually be obtained from external markings. Since Base Procurement practices do not require the vendors to apply additional warranty markings, and buyers do not annotate purchase documents as required, very little warranted property is identified as such during receiving inspection (15; 27).

Centrally procured items require marking in accordance with MIL-STD-129 and should be identifiable upon receipt (26).

Practice: San Antonio ALC. Base Procurement operating instructions do not require the contracting officer to annotate purchase documents with a warranty notice or have the contractor mark shipping documents or containers with warranty notice (36). There was no evidence that contracting officers were providing any notice of warranty on any documents or item containers (23). Therefore, most commercially warranted items received by the Base Supply Inspection Section were not identified as such to inspection personnel. Warranted items can be received, processed, and issued to user activities by Base Supply without compliance with the additional processing procedures required for warranted items (13).

Items procured under Government contractual warranties are marked in accordance with the provisions of the warranty clause and can be identified as a warranted item

by the markings provided on the exterior container and/or the equipment (13; 22).

Practice: Wright-Patterson AFB. Receiving inspectors do not open boxes for the sole purpose of looking for warranty information. With the exception of office machines, neither containers, purchase orders, nor invoices of commercially warranted items are identified as such, and are processed without further search for warranty information. Final determination of warranty coverage rests with the user or custodian (40).

Requirement: AFR 70-4, para 4-5(b).

(3) Insure that a copy of the warranty or guarantee, if not expired (and of the AF Form 617 for an office machine), accompanies each item turned in from an organization [51].

Practice: Warner Robins AFB. As can be determined from the interview, this requirement is not being accomplished. Copies of warranty documents are usually filed by the property custodian or equipment operator. All AF Form 617s are retained in the CRS office regardless of status of the items. The cards for property shipped off base are transferred to the inactive file and retained there indefinitely (3).

Practice: San Antonio ALC. Item custodians are not required by local policy to include a copy of the warranty

with the return of items for repair. Request for repair service is initiated by the custodian through completion of an AF Form 9. Each custodian is required to state on the Form 9 if an active warranty exists and the warranty expiration date. There was no information available in the Contract Repair Services Branch to determine the completeness or accuracy of this warranty notification process (13; 17; 37).

Requirement: AFM 67-1, Vol. II, Part Two, Section B, para 19d.

New custodians will report to EMO (IEMO) for a thorough briefing prior to assuming custodian responsibilities [58].

Practice: Warner Robins ALC. The last training for all custodians was held in August 1976. The list of current custodians was also maintained by IEMO and was dated 24 February 1977. The present training program does not remind the custodians of their responsibilities to interface with CRS at the time of receipt of new warranted items (14).

Practice: San Antonio ALC. The training of item custodians is accomplished by IEMO (47). Kelly AFB presently has 568 primary and 584 alternate item custodians. Each custodian is given four hours of training prior to assignment of custodian duties and four hours of refresher

training, each two years. A current roster of all assigned custodians is maintained by IEMO. All assigned custodians were identified on the roster as having received training for the current period. Instructions on warranty procedures are included in a training film, and each custodian is required to pass a written examination prior to assignment of custodial duties (13).

Practice: Wright-Patterson AFB. Training for property custodians concerning CRS matters is provided by the CRS office (PMBM) in a one hour supplement to training furnished by Base Supply. Subject matter includes instructions on preparation of Form 9 and a presentation of custodian responsibility as outlined in AFR 70-4. All newly assigned custodians and alternates are required to attend one session (8).

Requirement: AFM 67-1, Vol. II, Part Two, para 3.1.

c. Initiate action to assign issue exception code B to the item record of the item received [58].*

Practice: Warner Robins ALC. No one in receiving inspection was aware of this requirement or in compliance. As stated in the preceding paragraphs, the key again is identification of the property as being warranted (15).

*Note: An exception code B identifies an item as warranted on transmittal documents used within the procuring activity.

Practice: San Antonio ALC. Identification of warranted items on the DD Form 1348-1, Item Record, was not accomplished. Warranted items can be identified by the inclusion of an issue exception code "B" on the Item Record. There was no evidence of use of the code by Base Supply, and receiving personnel were not aware of the requirement to utilize the exception code (13).

Practice: Wright-Patterson AFB. Receiving inspection personnel were aware of the requirement to load issue exception code "B" into the Base Supply computer. Interviews indicated that this was being done on items which were externally identified as having warranty coverage. Personnel stated that either marking of boxes, purchase orders, or invoices would suffice as triggers for this action (40).

Requirement: AFM 67-1, Vol. I, Part One, para 136.

Items warranted for a given period of time from date of delivery will be issued from storage before non-warranted items. When items in storage have different warranty expiration dates, the items with the least remaining warranty time will be issued first [50].

Practice: Warner Robins ALC. Items procured through Base Procurement are usually ordered to fill a specific requirement and issued upon receipt. The quantity of warranted items stored is considered negligible, and a separate issue policy is not really required.

Personnel concerned with storage and distribution of centrally procured items indicated that they had no method of issuing warranted items before non-warranted ones. There is also no practical way to identify equipment with different warranty periods remaining. Indications are that items shipped under Foreign Military Sales (FMS) are usually the ones received last or with the longest remaining shelf life.

A new system is being installed which automatically goes to a selected storage location and picks the first item it finds there. This system could be programmed to select a warranted item in preference to a like non-warranted one if both are stored in separate locations. In this case, warranty information would have to be included on the DD Form 250, Shipping/Receiving Document, accompanying the hardware; however, the system still would not be able to pick the oldest item first (15).

Practice: San Antonio ALC. Items received, inspected, and stored by the Materiel Processing Division of the Directorate of Distribution (central receiving and storage) are neither stored nor issued with any consideration for warranty coverage. Central receiving management stated that with the advent of the D033 Support Stock Control and Distribution System all identification of warranted items and special handling of warranted items was discontinued.

Present practice is to store and retrieve items without regard to warranty expiration dates (13; 12).

Items received in IEMO are almost totally in a backorder status and are not held in storage. These items are issued to the requestor upon completion of receiving inspection. Therefore, priority of issue is not a factor within the IEMO section (13).

Item Manager

Requirement: AFM 67-1, Vol. I, Part One, para 134(b).

The SM/IM, upon receipt of request for disposition instructions from a base supply or base support activity, will:

- (1) Review the data received and advise:
 - (a) The PCO if the warranty is to be exercised and the contract was awarded by the SM/IM ALC.
 - (b) The production management branch, Directorate of Procurement and Production awarded by an activity other than the SM/IM ALC [50].

Practice: Warner Robins ALC. The IM initiates the PR package based on quarterly computer computations. The package is coordinated through various specialty areas including transportation, packaging, and warranty determination. The item technician makes the decision concerning warranty inclusion and prepares an AFLC Form 618, Warranty Clause Application (19; 18).

Until recently the IM was not involved in the warranty loop on defective items. The particular IM interviewed would prefer to continue not to be involved since

she feels that she lacks the technical expertise and acts only as a go-between. She passes any requests about warranty action to the technician, PCO, or Unsatisfactory Report (UR) monitor. There is no feedback from these offices unless there are questions (19).

Practice: San Antonio ALC. Communication of disposition instructions between the item manager, the contracting officers, and Base Supply appears to work well if an item is properly identified by the item custodian as being covered by a warranty. However, those defective items which are returned to Base Supply and are not specifically identified are susceptible to being repaired at Air Force expense through the normal repair cycle. There are no assurances that defective warranted items are properly identified or that item custodians are in fact aware of the proper procedures for their return (20; 22).

Custodian Representatives/Maintenance

Requirement: AFR 70-4, para 4-5(c).

Each responsible custodian . . . will:

- (1) Upon receipt of a warranty or guaranty document, examine it to determine if the warranty is of value in accordance with para 4-4.
- (2) Maintain an accurate file on all current warranties.
- (3) Provide notification to the vendor through CRS when the warranty/guarantee period begins at the time of installation.
- (4) Insure that the information on AF Form 1097, Warranty/Guaranty Item, is properly completed.
- (5) Advise CRS activity when an item is processed for contract repair if it is warranted or guaranteed.

(6) Ensure that the warranty/guaranty accompanies any warranted/guaranteed item processed for contract repair or turned in to Base Supply [51].

Practice: Warner Robins ALC. There are approximately 900 property custodians on Robins AFB. Training for new custodians is provided by IEMO within three weeks of an individual's assignment as custodian. The training, among other things, reminds people to keep warranty information in their equipment folders. No mention is made about contacting CRS when a new item is received to furnish the serial number or warranty information. Due to the number of custodians involved it was impossible to ascertain the degree of compliance with the above requirements (14).

Practice: San Antonio ALC. Nine item custodians were interviewed during this study: one from the Directorate of Procurement, one from the Directorate of Materiel Management, and seven from various organizations within the Directorate of Maintenance. None of the nine custodians interviewed maintain a warranty file. Those custodians responsible for office machines simply notify CRS when repair work is required. In one case, the item custodian notifies the manufacturer directly when repairs are required. At the time of installation of new serialized office machines, the CRS is notified by the manufacturer's representative of installation date and warranty expiration date. Warranty information is then maintained by the

CRS activity. Item custodians in the Directorate of Maintenance responsible for test and repair-type equipment generally had no knowledge of the use of AF Form 1097's to identify warranted items. Any equipment purchased by the repair shops generally had either no warranty information or the warranty information was stenciled on the equipment in accordance to Government warranty requirements (17; 22). A common complaint from these custodians was that warranties were generally out of date by the time the equipment was installed. For example, a set of three Universal Grinders received at the Engine Overhaul Facility were in place, awaiting installation, on 23 March 1977. Each of these machines, valued at over \$20,000, was warranted for 180 days from acceptance by the Government. Expiration of the warranty was 2 April 1977. The plant engineer did not anticipate installation completion until after the warranty expiration date. Delays in transportation, issuance, and installation were noted as the prime reasons for this general trend of expired warranty coverage. However, the plant engineer did point out that the majority of suppliers did correct deficiencies discovered in initial operation even though the warranty period may have already expired (16).

CHAPTER IV

ANSWERING THE RESEARCH QUESTION

Are regulations, procedures, and policies for enforcing warranties consistent within AFLC?

By definition, ASPR is applicable to both base and central procurement. AFM 67-1 is applicable (but not limited) to receiving and processing of all incoming supplies. AFR 70-4 is applicable to base procurement only. Due to the volume of information and requirements contained in these three basic documents personnel usually have only a working knowledge of these portions of the regulations directly applicable to their particular functions. They appear to take those directives pertinent to other functional areas in the warranty administration chain at face value and assume compliance as they interpret these portions. Those interviewed were often of the opinion that their non-compliance with certain portions pertaining to their functional areas was mitigated by the fact that surely everyone else was following the requirements and therefore any omissions on their part would be rectified at a subsequent processing stage.

Any local instructions seem to have been generated as a result of audit reports or periodic higher level interest in warranties and usually mirror the requirements and

policy statement contained in higher tier regulations (37; 54; 57; 56). Examples are RAFBR 70-3 and SAALC-PP OI 70-75. Due to this propagation, regulations and procedures may be consistent in philosophy but are not necessarily being followed or interpreted consistently.

With regard to commercial warranties a key factor in interpretation of ASPR and AFR 70-4 appears to be whether or not the buyer had been specifically requested by the purchase request initiator to include a warranty in the purchase. The contracting officers interviewed felt that commercial warranties are often offered by the vendors on their own volition without being expressly requested or paid for by the Government (27; 26). In these cases the PCOs did not feel obliged to comply with the evaluation criteria for warranties outlined in ASPR or the marking requirements called out in AFR 70-4, para 5a. This is understandable since the majority of base procurement buys are made on the basis of standard commercial prices for products packaged and marked consistent with the contractors' standard commercial practices. These practices do not involve the degree of marking required by the Government for warranty identification and recording. The only contractual stipulation that the Government makes in the case of small purchase orders (procurements less than \$10,000) is that the contractor agrees to provide to the

Government the most favorable commercial warranty that the contractor gives to any other customer (62).

Costs of commercial warranties are usually an integral part of a vendor's price structure, and any attempt to obtain a price reduction for non-acceptance of commercial warranties will be fruitless or be more costly than any possible savings realized.

Non-compliance with warranty identification and documentation requirements by supply receiving inspection personnel is a direct result of lack of warranty information available on containers, purchase documents, or invoices. Non-compliance with warranty notification requirements by custodians appears to be centered in the large volume of custodians assigned and lack of frequent and rigorous training by responsible personnel in their particular warranty responsibilities. Constant rotation of custodians makes this training a continuous requirement.

The central procurement activity operates directly under ASPR and, as such, guidance appears to be adequate and straightforward with regard to application of supply warranties. Feedback on warranty claims usually comes from the field through the IM who triggers a dialogue between procurement and the contractor.

Although regulations require issuance of warranted items prior to non-warranted items, and those with a short remaining period ahead of longer ones, no practical method

of compliance exists in the present storage system. There is presently no way to identify storage locations containing warranted items, or to identify warranted items without physical inspection of packages at the time of order picking. Limited personnel and high volume of transactions appear to make such an individualized process highly impractical. Previous requirements for coding warranted items in the D103 Central Material Locator System were deleted in late 1972 by Hq USAF (AF/LGP) as meaningless as a result of an audit (56). Marking of containers in accordance with MIL-STD-129 and implemented on contracts by AFLC Form 53 was substituted. Reverting back to visual identification of stored items would appear to be a step backwards in light of increasing volume of material being processed and the ever increasing use and need for automation in order filling.

Are efficient and effective coordination channels established between buying and using organizations to exercise all available legal remedies concerning warranty actions?

Due to the establishment of the CRS function within base procurement, which handles all customer/vendor interface concerning equipment repair, this coordination channel appears to be working effectively. All CRS personnel interviewed spoke highly of the integrity of most vendors concerning warranty claims and reported little abuse in this area. Through repeated contact with most vendors or contractor representatives, these organizations have

established excellent rapport and appear to function efficiently and effectively.

Coordination channels between central buying organizations and users in the field are less evident but are established by procedures. This coordination may be invoked more frequently through unsatisfactory reports (UR) procedures than strict warranty claims.

Both base and central procurement buyer/user coordination channels appear highly dependent upon user awareness of warranty applicability and knowledge of warranty processing procedures. Knowledge of warranty applicability depends on proper marking of equipment either by the vendor in accordance with MIL-STD-129G and MIL-STD-130 or receiving inspection/custodian through use of AF Form 1097. Absence of either of these markings severely limits any benefits which could be obtained from an existing warranty.

Are transportation costs for returning defective warranted items to the manufacturer borne by the contractor as specified by ASPR?

Commercial warranties are usually governed by the written warranty document established by the vendor and supplied with the shipment. Most stipulate prepaid return of property to the place of repair. Common practice at the ALCs seems to be to pay at least one-way transportation at Government expense. Since much repair is done on location by contractor representatives, transportation costs are

usually incurred only when an item is not repairable in place and must be returned to the vendor. Since ASPR warranty clauses are usually not included in purchase orders or contracts for items covered by a commercial warranty, no firm legal basis for charging contractors for transportation charges applies.

An interview with procurement and production personnel at the Defense Electronic Supply Center (DESC) in Dayton, OH revealed that DESC has an effective policy of returning all defective items to vendors on a collect basis and requires return of replacement items on a contractor prepaid basis. This policy is usually invoked regardless of the existence of a supply or commercial warranty on the assumption that the vendor was obliged by contract to furnish defect-free items and was paid his initial transportation charges on this premise (21; 25).

As can be determined, recoupment of transportation charges for returned defective items is a matter of individual negotiation of warranty claims between the PCO and the contractor. Success depends largely on the business acumen of the PCO and his awareness and invocation of this requirement. More often than not, the Government may be paying for all transportation charges for returned defective property.

Are both hardware and containers adequately marked to provide all necessary warranty information to the user?

Items procured through base procurement with which a vendor supplies his own commercial warranty are usually not adequately marked. Exceptions are office machines which require installation and set-up by a contractor representative. Subsequent marking of items by receiving inspection personnel via AF Form 1097 is hampered through lack of warranty information on containers, purchase orders, or invoices.

Centrally procured items carrying a supply warranty are required to be marked in accordance with MIL-STD-129G and MIL-STD-130 as implemented in the contract by AFLC Form 53. If a contractor follows this requirement and interprets it correctly, markings will be adequate. The hardware marking requirements of MIL-STD-130 are extremely vague. The only requirement is to provide some sort of warranty marking. AFLC Form 53 refers back to MIL-STD-130 and gives someone who has not closely examined this standard the erroneous impression that sufficient instructions are provided therein (60). Assuring compliance by the contractors is usually a function of the appropriate contract administration organization.

Is warranty protection curtailed or negated through extended storage of warranted items prior to use?

Items bought through base procurement are usually needed to fill an existing requirement and as such not

subject to extended storage or transfer to stock. Items returned as excess have usually been in use for an extended period and do not carry unexpired warranty protection. It appears, therefore, that the problem of expiration of warranty protection during storage is not significant here.

Centrally procured items often are bought as stock replenishment items and face varying storage periods prior to issuance or use. Even items bought for direct installation into higher assemblies often are not actually operated until some time later. Any warranty protection based on the time of Government acceptance and not on hours of operation may be significantly curtailed during storage or while awaiting installation or operation. The present supply system does not allow for identification and shipment of warranted items prior to non-warranted items. Only items shipped against an FMS case are selected by remaining shelf life, and freshest items are shipped to insure optimal utility by the recipient country. No computer loading is made to identify warranted items.

Under a new warehousing system (WICS--Warehouse Information Control System) the computer could be programmed to store warranted and non-warranted like items in different locations and, when picking an order, to select one location in preference to another.

Non-compliance with the issue policy stated in AFM 67-1 can therefore be attributed to unworkable procedures

for implementing this policy. Any modification of these procedures, however, hinges on proper marking of the DD Form 250 or other form which would be the source document for computer loading.

These responses to the above specific supportive questions lead to the answer to the principal research question:

Are current regulations, policies, and procedures effective and efficient to fully realize the benefits intended to be gained by inclusion of warranty protection in military hardware?

From an overall viewpoint this question must be answered with a qualified "no." To be more specific, one must break warranties down into supply warranties, specifically requested commercial warranties, and commercial warranties furnished by vendors as standard trade practice without specific request by the Government or additional cost.

Supply warranties are initiated through specific requests from the customer and covered by detailed guidance in ASPR. Due to present reduced emphasis at all levels of management on supply warranties, they are included on a limited and selective basis and as such do not saturate the system. However, the biggest hurdle in fully realizing all benefits is in the supply distribution and storage system. Since there is no present method of avoiding excessive storage time on warranted items, warranty coverage starting

at the time of acceptance of supplies by the Government may be significantly curtailed.

Specifically requested commercial warranties should also fall under the provisions of ASPR 1-324 and comply with all marking requirements. This type of warranty seems also to be applicable mostly to central procurement and suffers from the deficiencies pointed out above.

Commercial warranties furnished as common trade practice are intended to be covered by ASPR and AFR 70-4 but subject to conflicting interpretations. These warranties are commonly furnished without specific request or cost, and their implementation by the user can result in true benefits to the Government. It is in this area that more emphasis should be placed on implementation and workable definition of responsibilities by contracting officers, receiving inspection, and custodians. ASPR and AFR 70-4 do not distinguish between these two forms of commercial warranties when stating the responsibilities of the PCO.

The researchers feel that due to the fashion in which the trade practice warranties are supplied to the Government, the requirements to provide additional marking of hardware or containers by the vendors would be an added expense not envisioned in the establishment of their commercial prices. It is therefore impractical for the PCO to request contractors to apply sufficient warranty markings to packages to allow receiving inspection to ascertain

warranty coverage and in turn to prepare and attach AF Form 1097. In instances of this type of warranty a comparison of ASPR and AFR 70-4 requirements and actual practice results in an apparent finding of non-compliance where in reality the requirements of these two regulations should not be made applicable for the purpose of everyday base procurement actions. This conclusion was reached by the researchers after pondering the exact wording of ASPR 1-324, AFR 70-4, and AFM 67-1 as they apply to warranties. Each regulation talks in terms of decision processes and requirements after it has been determined that a warranty would be desirable or necessary. A commercial trade practice warranty given to the Government without specific request or determination by the user of its necessity should not fall under the restrictions and procedures of the above cited regulations.

Due to the extensive use of CIAPS in base procurement, any reduction in the number of exceptions to the automated processes will allow buyers to devote extra time to other matters requiring individualized attention. The success of an automated system depends on the percentage of time it is allowed to operate without manual intervention. Ascertaining warranty applicability and terms on all day-to-day transactions would significantly slow down the system and be very impractical.

Increased awareness and sense of warranty responsibility should be instilled in all property custodians through initial and periodic training. When the equipment reaches the user and is actually unpacked and placed into use is the ideal time for warranty discovery and documentation. Positive interface between custodians and CRS will result in increased accuracy of record keeping and reduced reliance on contractor records for warranty applicability. Here is where the payoff could come from the standard commercial trade practice warranties furnished with numerous equipment used throughout a base.

No reliance can or should be placed on the preparation and attachment of AF Form 1097 while property passes through receiving inspection since the present system is a hit and miss proposition and still does not assure custodian/CRS interface and record keeping.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In addressing the principal research question it has become evident that discrepancies exist in the interpretation of applicable regulations covering warranties. A cursory review of ASPR, AFR 70-4, and AFM 67-1 leads to the impression that all are applicable and must be fully complied with whenever a warranty is being obtained with a procured item. However, a more careful reading and contemplation of the written guidance caused a realization by the researchers that applicability should be governed by the existence of a specific request for warranty coverage by the user and not the mere acceptance of an unsolicited warranty.

This problem is most vividly illustrated in the case of commercial warranties. In many cases a commercial warranty is furnished by a vendor as part of his common trade practice without having been specifically requested by the Government. Having been furnished without direct Government request or knowledge, the commercial warranty does not usually conform to the marking and identification requirements required by the Air Force for proper identification and recording during receiving inspection.

An ever increasing number of solicitations and procurements to which trade practice commercial warranties apply are made through the CIAPS. Since the value of such a system is based on automated processes, any special handling by contracting personnel required to identify warranted items and to require the vendors to supply special markings would severely curtail the efficiency of the automated system.

When an item is received which carries an unsolicited commercial warranty, there is usually no way to ascertain this coverage until the item is unpacked and installed by the user. Even then the associated paperwork may give no indication of the actual warranty period or extent. In many cases the only way to learn of an existing warranty may be at the time repair is accomplished by the vendor at no charge.

It can therefore be concluded that compliance with ASPR, AFR 70-4, and AFM 67-1 in the case of unsolicited commercial warranties is impracticable and may not have been contemplated by these regulations. In the opinion of the researchers, the costs and implications of forced compliance would far outweigh the increased benefits which might be realized from such an action.

It can also be concluded from this study that compliance with ASPR, AFR 70-4, and AFM 67-1 in the case of specifically requested warranties should be emphasized to

all users, procurement personnel, and supply people. Since the Government pays for these warranties directly or indirectly, it is extremely important to be highly selective and critical in their application. Requestors and procurement personnel must place great emphasis on the determination of enforceability prior to procurement. Complete agreement should be reached between Government and contractor regarding start of warranty, method of determining elapsed time, contemplated or anticipated storage period, responsibilities of both parties regarding maintenance, repair turnaround time, etc. Without careful consideration of all of these factors, the administration of warranties will surely experience areas of disagreements which could negate any benefits envisioned.

There is no current practical system to identify or issue warranted items in preference of non-warranted like items within the present supply system. The researchers feel that due to the current infrequent use of specific supply or commercial warranties on centrally procured items the modification of the current supply storage and identification system would be impractical and not cost effective. A special effort should be made by contracting officers to secure warranties based on hours of operation or time of installation, in lieu of being based on Government acceptance, where they have any reason to believe that the item

may spend an appreciable time in storage or awaiting installation or use.

It can also be concluded that the requirements to attach AF Form 1097 to property identified during receiving inspection as being warranted is impractical and gives a false impression of providing a positive method to identify warranted items to the user. The majority of base procurement items passing through receiving inspection are not susceptible to determination of warranty coverage due to absence of markings on containers or associated purchase documents.

Specifically requested warranties require marking of containers and property in accordance with MIL-STD-129G and MIL-STD-130D and as such are identifiable upon receipt; however, the requirements for marking of hardware as contained in MIL-STD-130D, para 4.10 is extremely vague and provides no guidance as to the type of warranty information to be furnished. Reliance must therefore be placed on AFLC Form 53 if incorporated into contracts or purchase orders. No items were available for review to judge the effectiveness of MIL-STD-130 markings. The researchers feel that a more positive approach to warranty markings in MIL-STD-130 (similar to MIL-STD-129G, 5.2.2.10 and 5.4.33) would enhance the identification of warranted property without risking misinterpretation of AFLC Form 53 due to conflicting guidance.

The overall conclusion reached by the researchers is that the benefits to be gained by forcing strict compliance with existing regulations are not sufficiently significant to warrant the additional cost. Therefore, selected portions of certain impractical or unmanageable requirements should be deleted, and increased emphasis should be placed on others. Recommended revisions to regulations are furnished under Appendix B through Appendix D.

Areas in Need of Further Study

Based on the research findings and the conclusions drawn thereon the researchers feel that at present there is no standard or uniformly applicable system in the Air Force to handle property furnished with supply type or commercial type warranties. Local or organizationally limited systems have been implemented with varying degrees of success to handle special types of warranted property. Prior to any attempt by the Government to place greater or renewed reliance on warranties either through their increased procurement or substitution for source inspection, several additional research efforts should be conducted to include:

1. Evaluation of manpower decreases due to decreased source inspection versus manpower increases due to increased warranty repair activity and claims at contractors' facilities.

2. Positive tracking of warranted items from receipt through storage, use, repair, and return.

3. Effect of requesting contractors to provide positive warranty markings on items, containers, and documents versus the concept of standard commercial prices.

4. Study the extent to which the criteria to be considered prior to warranty specification are understood and followed by personnel responsible for initiating AFLC Form 618, Warranty Clause Application.

Recommendations

Recommendation 1. Include a notice in ASPR to make ASPR 1-324 applicable only in those instances where a specific warranty (supply, commercial, etc.) is requested by the PR initiator or user prior to contract award and optional in those instances where a commercial warranty is supplied by the vendor on his own volition at the time of hardware delivery, without prior knowledge or contemplation by the PCO. Refer to Appendix B.

Justification. This clarification will provide a distinction between specifically contemplated and requested commercial warranties by the Government and voluntarily furnished ones by contractors. Trade practice warranties do not usually comply with the stringent marking and identification requirements established by the Government without

additional costs. When such an item is procured and passes through receiving inspection without identification of warranty coverage due to lack of marking, the buying activity, inspector, or vendor can be unfairly criticized for non-compliance with requirements which should not be directly applicable.

Recommendation 2. Include a notice in AFM 67-1, Vol. I, Part One, Section J, para 132, that commercial warranties supplied by a vendor without being specifically called for in a contract or purchase order do not have to conform to required marking and identification criteria applicable to specifically procured warranties. Refer to Appendix C.

Justification. This clarification will draw attention to the fact that a commercial warranty may be supplied without specifically being requested by the Government. As such, criticism for lack of marking and identification is inappropriate.

Recommendation 3. Make AFR 70-4, para 4-5 mandatory only in cases where a specific warranty was requested by the PR initiator or item user and optional in other cases. Refer to Appendix D.

Justification. The majority of warranties received with items bought in base procurement are standard commercial warranties offered as normal trade practice. Unless the

PR initiator or user specifically requests a warranty, the Government normally is not aware of the existence of one until the item is unpacked (exceptions are office machines and large purchases). Due to the extensive use of CIAPS, it is impractical to flag each procurement action to cause the PCO to inquire about the existence of a commercial warranty with an item. Most commercial items are also procured at the standard commercial price, and rigid enforcement of AFR 70-4, para 4-5(a) could result in severe curtailment of the advantages of an automated system.

Recommendation 4. Revise MIL-STD-130D to provide specific examples of warranty markings similar to those contained in MIL-STD-129G, para 5.2.2.10.

Justification. Once an item is removed from its container and installed, it becomes important to be able to readily identify the existence and duration of a warranty to avoid unauthorized tampering or processing. Inclusion of specific guidance in MIL-STD-130 will provide a more uniform warranty marking scheme for military hardware.

APPENDIX A
INTERVIEW GUIDE

SUPPLY

I. IDENTIFICATION OF WARRANTED ITEMS UPON RECEIPT FROM CONTRACTOR

- A. Are receiving documents (DD Form 250, DD Form 1348-1, purchase order, invoice) properly annotated by supply inspection personnel to assure identification of a warranted item? Minimum adequate identification data consists of: (AFR 70-4, 4-5b; AFM 67-1, Vol. II, Part 2, para 3.1.a)

Manufacturer's name and address
Model number or nomenclature
Item serial number
Warranty statement

1. Yes _____ No _____

2. Are copies of receiving documents forwarded to CRS?

- B. Are exteriors of incoming item containers properly marked by the contractor to identify the item as a warranted product? (MIL-STD-129G and MIL-STD-130D)

1. Yes _____ No _____

2. Reason:

- C. Is issue exception code "B" being used to identify the warranty on the Item Record of Item Received? (AFM 67-1, Vol. II, Part Two, para 3.1.c)

1. Do local supply procedures exist for the assignment of exception code "B"?

2. Are exception codes "B" assigned to the Item Record of Item Received by supply inspection section personnel?

3. Comments:

D. Is AF Form 1097 (Warranty/Guarantee Item) used to properly identify warranted items? (AFR 70-4, 4-5b; AFM 67-1, Vol. II, Part 2)

1. Is AF Form 1097 attached to the property by inspection personnel?

2. Yes _____ No _____

3. Comments:

4. In cases where application of the Form 1097 is impractical due to size, shape, or use of the item, is the item otherwise marked to indicate warranty coverage?

5. Is the AF Form 1097 (or appropriate marking method) annotated with the item description, serial number, and warranty inclusive period?

E. Is the item warranty document (or copy of the warranty) forwarded to the appropriate activity responsible for maintaining the warranty records?

1. To Base Civil Engineer for items maintained by Civil Engineers IAW AFR 85-1.

2. To Vehicle Maintenance Office for new motor vehicles IAW TO 36-1-42.

3. To Medical Supply Office IAW AFM 67-1, Vol. V.

4. To Contract Repair Services (CRS) for which CRS has serialized control and warranted items not designated in E 1, 2, and 3 above.

5. To users/custodians assigned with the responsibility for maintaining warranty records. Note: AFR 70-4 permits the development of local rules for disposition of warranty documentation to other than the CRS activity.

6. Comments:

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II. PROCESSING DEFECTIVE WARRANTED ITEMS
(AFM 67-1, Vol. I, Part One)

A. Are defective items received from maintenance and supply custodians properly identified for warranty coverage?

1. Is an indication of the existence of the warranty forwarded along with the defective item?
(AFR 70-4, 4-5b(3))

2. Comments:

B. Does supply notify the applicable SM/IM of the defective item and request disposition instructions? (AFM 67-1, Vol. I, Part One, 134a)

1. Yes _____ No _____

2. Are SM/IM disposition instructions received within seven calendar days of request for disposition instructions?

3. Is disposition of item made IAW IM/SM instructions?

III. ISSUE OF WARRANTED ITEMS FROM STORAGE
(AFM 67-1, Vol. I, Part One)

A. Are warranted items issued from storage before non-warranted like items?

B. When items in storage have different warranty expiration dates, are the items with the least remaining warranty time issued first?

C. Identify and describe the system used to accomplish A and/or B.

IV. TRANSPORTATION EXPENSES OF WARRANTED ITEMS
RETURNED TO CONTRACTOR FOR REPAIR (No Reference)

A. Are defective warranted items to be shipped at contractor's expense so designated by the contract?

- B. Are cost of transportation of returned warranted items communicated to the PCO?
- V. ARE LOCAL OI'S DEVELOPED FOR PROCESSING WARRANTED ITEM?

ITEM USER/ITEM CUSTODIAN

For the purpose of this research effort, the item user is defined as those organizations within the Air Logistics Center who purchase primarily through the central procurement function. Depot Level Maintenance is the prime user organization for the purpose of this study. Item custodians are defined as those base support organizations who purchase through the base procurement organization.

- I. ITEM CUSTODIAN (AFR 70-4, 4-5c; AFR 67-23)
- A. Does the custodian maintain an accurate file on all current warranties?
 - B. Are in-service warranted items properly identified with an AF Form 1097?
 - C. Are AF Forms 1097 properly annotated on in-service warranted items?
 - D. Are supply custodians aware of their responsibilities to advise CRS of a warranted item when it is processed for repair?
 - 1. Discussion item.

- E. Do supply custodians forward a copy of the warranty or similar notification with the item when it is processed for repair or turned in to base supply?
 - 1. Discussion item. Procedures and policies.

- F. Does the supply custodian provide notification to CRS when the warranty period begins, i.e. at time of item installation?
 - 1. Discussion item. Procedures and policies.

- G. Does the supply custodian coordinate with CRS to determine the economic value of enforceable warranties?
 - 1. Give details of how this policy is carried out.

- H. Does supply custodian receive regular briefings and/or written guidance pertaining to procedures affecting warranted equipment?
 - 1. When was last briefing and/or written guidance? Who is OPR for training?
 - 2. Discussion item.

- I. Is there a system in each office to insure that no request for repair or replacement is initiated without first ascertaining whether or not a current and valid warranty exists? (AFLC/PP Ltr 8 July 76)

II. ITEM USER (AFM 67-1, Vol. I, Part One)

- A. Are warranted items properly marked with AF Form 1097 or other means so as to be conspicuously identified as warranted items?
 - 1. Discussion item.

- B. Has the user attended any briefings or otherwise been made aware of the procedures for the return of defective warranted items?
 - 1. Discussion item.

- C. Are defective items flagged on the AFTO Form 350, Repairable Item Processing Tag, so as to identify the warranted item prior to turn-in to base supply?
 - 1. Discussion item.

PROCUREMENT

- I. DOES THE CONTRACTING OFFICER ASCERTAIN DURING CONTRACT NEGOTIATION THE EXTENT OF COMMERCIAL WARRANTY COVERAGE OFFERED (AFR 70-4, 4-5)
 - A. Do local procurement procedures include instructions to buyers to request warranty coverage information from suppliers?
 - B. Do these instructions include:
 - 1. Duration of warranty coverage.
 - 2. Limited or full liability coverage.

3. Transportation expense responsibility for return of defective items to the contractor and reshipment to the base supply activity.
4. Marking of shipping documents and containers by vendor to readily identify each warranted item on delivery.
5. Where warranty is uneconomical to enforce, does the buyer endeavor to negotiate a price reduction?

II. DOES THE CONTRACTING OFFICER PROVIDE THAT, WHEN A WARRANTED ITEM IS PROCURED, A COPY OF THE WARRANTY BE FURNISHED TO THE GOVERNMENT BY THE CONTRACTOR AT THE TIME OF SUPPLY DELIVERY? (AFR 70-4, 4-5a(2))

- A. Do contract files reflect provisions for contractor inclusion of warranty documents with equipment or item? (AFR 70-4, 4-5a(2))

III. DOES THE CONTRACTING OFFICER REQUIRE THAT THE VENDOR ADEQUATELY MARK SHIPPING DOCUMENTS AND CONTAINERS TO READILY IDENTIFY EACH WARRANTY ITEM AT TIME OF DELIVERY? (ASPR 1-324.4(e))

- A. Do contract files reflect marking provisions on AFLC Form 53? (MIL-STD-129G)

1. Number of purchase documents sampled. _____
2. Number which do not include marking provisions. _____
3. Comments:

IV. ARE PURCHASE DOCUMENTS ANNOTATED ON THE FACE OF THE DOCUMENT TO INDICATE THAT THE ITEM(S) THEREIN CARRY WARRANTY COVERAGE? (AFR 70-4, 4-5a(4))

- A. Number of purchase documents sampled. _____
- B. Number which are not marked. _____

V. DOES THE PURCHASE DOCUMENT INCLUDE PROVISIONS FOR DELINEATION OF TRANSPORTATION COST RESPONSIBILITY FOR RETURNING A DEFECTIVE ITEM TO THE CONTRACTOR'S PLANT FOR REPAIR AND SUBSEQUENT RETURN OF REPLENISHMENT ITEM? (ASPR 1-324.4(b))

A. Do Government specified contract warranties require the contractor to bear the expense of transportation of deficient items to and from the contractor's plant?

1. Number of contracts sampled. _____
2. Number not requiring contractor to pay two-way transportation expenses. _____

B. Do contracts containing the contractor's standard commercial warranty provide for transportation expense assignment in case property must be returned to contractor facility for repair?

VI. ARE ADEQUATE CONSIDERATIONS GIVEN TO SPECIFY THE TIME PERIOD OR DURATION OF THE WARRANTY COVERAGE? (ASPR 1-324.4(c))

A. Do Government specified contract warranties clearly delineate the duration of the warranty and the point in time at which the warranty period begins (receipt of item or initial use of item)?

1. Is consideration given to:
 - a. Estimated useful life of the item?
 - b. Forecast storage time?
2. Is a method identified of how elapsed time will be measured or computed?
3. Comments:

B. Does the contractor's standard commercial warranty clearly delineate the duration of the warranty and the point in time at which the warranty begins?

1. Does the warranty cover a useful time period considering the nature of the item and the forecast storage time?
2. Is the warranty period "competitive" with standard trade practice?
3. Remarks: Relative to the criteria established, give reasons for adequacy/inadequacy.

VII. DOES THE CONTRACTING OFFICER, UPON NOTIFICATION OF A DEFECTIVE ITEM UNDER VALID WARRANTY, PROMPTLY NOTIFY THE CONTRACTOR OF THE BREACH OF WARRANTY?
(ASPR 7-105.7(b))

- A. Do procurement procedures exist for contractor notification?
- B. Is written notice provided to the contractor?
- C. Is a suspense system used to track responses?
- D. How are transportation charges recouped?

CONTRACT REPAIR SERVICES (CRS)

I. FILE AND RECORD MAINTENANCE

- A. Does CRS maintain a current file and register of warranted items? (AFR 70-4, 4-5e)
 1. Does the file contain:
 - a. Actual warranty or duplicate copy?
 - b. Relevant information to identify terms and conditions of warranty, manufacturer's name and address, item nomenclature and serial number and point of contact at the contractor's facility?
 2. Does the register include (not required by AFR 70-4):
 - a. Manufacturer's name?
 - b. Item nomenclature and serial number?

- c. Beginning date of warranty and warranty duration?
- 3. Are files systematically purged of expired warranties?
- B. Does CRS screen incoming purchase requests for warranty coverage? (No reference)
 - 1. Is follow-up effort made to requesting organization who submit repair PR's without warranty information to ascertain whether or not the item is covered by a warranty?
- C. Does CRS promptly notify contractor of deficient item and request shipping instructions?
- D. How are transportation charges handled?

II. COORDINATION RESPONSIBILITIES (AFR 70-4)

- A. Does CRS participate in joint evaluation of conditions of warranties to determine if they are economical to enforce? (AFR 70-4, 4-4)
 - 1. Are meetings held on a regularly scheduled basis?
 - 2. List criteria established by CRS to defer application of warranty enforcement.
 - 3. Is written justification provided for deferred warranty enforcement?
- B. Does CRS maintain an updated file listing of supply custodians?
 - 1. Date of most current listing. _____
 - 2. Number of custodians on list. _____
 - 3. If CRS is not OPR, who is?
- C. Does CRS pursue an active program to keep custodians aware of warranty requirements? List details of CRS program.
- D. Do Purchase Requests received from users contain warranty information? (AFLC/PP Ltr 8 July 76)

APPENDIX B
RECOMMENDED ADDITION TO ASPR

Add the following statement to ASPR 1-324 Warranties:

1-324.1 General

(a) The requirements and considerations contained in the subsequent paragraphs shall be complied with when specifying or contemplating the inclusion of a warranty in contracts. These paragraphs are not applicable to procurements where commercial warranties are being furnished by the contractor without specific request or knowledge of the PCO.

(b) [Continue with present 1-324.1.]

APPENDIX C
RECOMMENDED ADDITION TO AFM 67-1

Add the following to AFM 67-1, Vol. I, Part One,
Section J, para 132:

132(e). Commercial warranties are often supplied by vendors on their own accord as trade practice and as such are not required to conform to the marking and identification requirements necessary for identification and recording during receiving inspection, storage, or use.

add the following to AFM 67-1, Vol. 1, Part 1, Section 1, para 105.

(10) Commercial warranties are often provided by vendors of their own accord as a matter of practice and as such are not subject to control by the contract and identification of such warranties is necessary for identification and recording during contract administration.

Storage of use.

APPENDIX D
RECOMMENDED ADDITION TO AFR 70-4

Revise AFR 70-4 as follows:

4-5. Warranty or Guarantee Responsibilities

a. When the purchase request contains a requirement for a warranty, the contracting officer will:

- (1) Provide, where appropriate, that a copy of the warranty or guarantee will be furnished to the Government at the time of delivery.
- (2) Provide that the vendor marks the shipping documents and containers to readily identify each warranty or guarantee item on delivery.
- (3) For items provided through the base procurement office, notify the base supply, where feasible, of the extent of the warranty or guarantee and the effective date (that is, the date the item is received in base supply, or preferably, the date the item is installed) by a suitable annotation on the purchase or delivery order.

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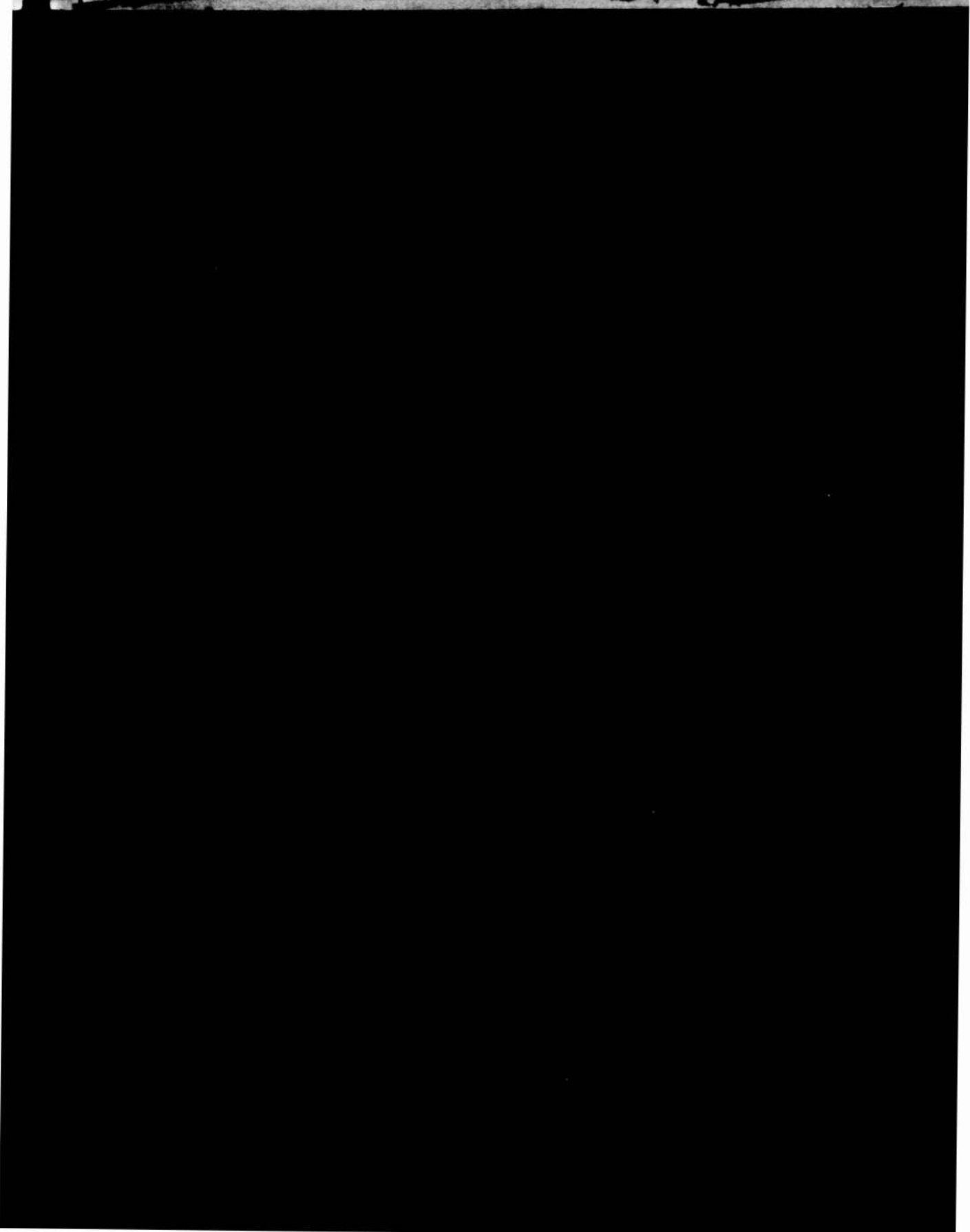
Captain Heinz Bertram was commissioned in 1967 through the Airman Education and Commissioning Program and holds a Bachelor of Science Degree in Mechanical Engineering from Arizona State University. His duties have included those of project manager with the Aeronautical Systems Division (ASD) Deputy for Reconnaissance; student in the Education with Industry Program at General Electric, Cincinnati, OH; contracting officer with the ASD Deputy for Recon/Strike/Electronic Warfare; and administrative contracting officer with the Air Force Contract Maintenance Center Detachment at Ping Tung, Taiwan. He received his Master's Degree in Logistics Management from the Air Force Institute of Technology in September 1977 and is presently assigned as contracting officer to the Systems Procurement Division, USAFE Procurement Center, Lindsey AB, Germany.

Major Merle Williams holds a Bachelor of Science Degree in Engineering from the United States Military Academy. His Air Force experience has included flying assignments as a B-52F, C-141, and AC-119K Gunship navigator and instructor navigator; Instructor, Navigator-Bombardier Training Squadron, Mather AFB; Student, Education with Industry, Aerojet Solid Propulsion Company, California; Procuring Contracting Officer and Chief, Automatic Test Equipment Section, Directorate of Procurement and Production, San Antonio Air Logistics Center, Kelly AFB. He completed the AFIT School of Systems and Logistics Master's program in September of 1977 and is presently assigned as Chief of Procurement, Advanced Tanker/Cargo Aircraft (ATCA), Systems Program Office, AFLC, Wright-Patterson AFB, Ohio.

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installed) by a suitable annotation on the purchase or delivery order.

Insured by a reliable source
also on the grounds of delivery



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