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A STUDY TO IDENTIFY THE OPERATIONAL OBJECTIVES AND RELATED PERFORMANCE INDICATORS OF THE BASE LEVEL PROCUREMENT FUNCTION

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

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A STUDY TO IDENTIFY THE OPERATIONAL OBJECTIVES AND RELATED PERFORMANCE INDICATORS OF THE BASE LEVEL PROCUREMENT FUNCTION

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

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In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

By

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II

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

CHAPTER I

INTRODUCTION

Overview

The United States Air Force (USAF) and the varied Commands which compose it collectively function in response to and within the limits set by the social system of society as manifested by the government of the United States. The end for which the social system strives can best be interpreted in terms of four basic national objectives which have been simply stated as: ". . . economic well-being, political stability, social and industrial progress, and security from attack" (92:36). National policies or courses of action, in response to these objectives, are set forth by the executive branch and are reinforced, expanded or restricted through legislative appropriations of the Congress. It is in response to these externally imposed objectives and internally translated policies that the Air Force reacts in the formulation of military strategy involving ". . . the employment of armed forces to secure the objectives of national policy through the application of force or the threat of force" (92:37).

Not only must strategy be formulated in response to

objectives, but it must be structured in terms of the weapon and support systems available or projected. Where a void in capabilities exists systems must be designed to insure adequate response. The degree of sophistication possible and the number of weapons procured are directly dependent upon ". . . the capacity of the American economy to support the burden of vast military requirements and upon the willingness of the American people . . ." to commit national resources to such a pursuit (92:1).

While national defense once enjoyed a position of unlimited funding, the early years of the 1970s witnessed an era of change in which a reorganization of national priorities resulted in a substantial diversion of appropriations to projects of domestic concern. Public and Congressional criticism of and opposition to the size, complexity and priority of defense spending was frequent and intense. Impetus for much of this criticism and opposition was the direct result of widespread publicity given to disclosures of deficiencies in defense procurement operations. The Department of Defense (DOD) found itself forced to compete for appropriations in light of national, social and economic ills.

Robert C. Seamans Jr., Secretary of the Air Force, set the challenge for the Air Force in his statement:

> We are entering a period of tremendous demands on our Country's resources. We have great needs in the areas of social welfare, housing, education and transportation. And at the same time we are faced with growing military threats and the necessity of modernizing our Armed Forces. As a result, we must make certain that we provide for our national security

needs at the lowest possible cost (96:1).

While the Air Force mission remained unchanged the means and methods of achieving its objectives required modification. Perhaps the greatest impact was in the area of logistics which employed approximately one-third of the military and civilian personnel in the Air Force and was responsible for the expenditure of approximately fifty percent of the annual Operations and Maintenance budget (86). The logistics system exists solely to provide responsive support to the operating forces. If this support was to remain responsive there would have to be a realization of increased efficiency and effectiveness in logistics management. Supporting material management systems would have to be designed and operated with this paramount fact in mind. In lieu of the existing and projected resource limitations there would have to be a demand for maximum efficiency, elimination of unnecessary duplication and common use of systems, facilities, services, functions and inventories wherever operationally acceptable and economically beneficial (61).

Lieutenant General Harry E. Goldsworthy, Deputy Chief of Staff, Systems and Logistics summarized the logistical challenges of the period by saying:

> We may face some lean years ahead in the seventies, but our responsibilities in the logistics area will not diminish. If anything, they will continue to increase in view of the pace of technological progress.
>
> The real challenge of the decade just starting will be to find better ways to apply effective management techniques to the solution of our problems. In

> short, we will just have to do a better job — and do it with less. That's a huge order. But I am confident that by using the new, improved management techniques and with our force of motivated, highly dedicated professional logisticians we can — and will — meet the logistics challenge of the seventies (23:10).

One effort directed to meet these responsibilities was the establishment in October, 1971, of a group under the Air Staff for the Study of the Automation of the Logistics System at Base Level (STALOG). The purpose of the group was to identify existing logistics functional systems, as well as programmed and planned improvements, to study and analyze interface and integration relationships with the intent of formulating recommendations to achieve more efficient and effective total logistics management at base level (87:3). The computer was envisioned as the tool of logistics management which held the key to the significant improvement of base level logistics processing and management functions. The ability of the hardware and associated software to process rapidly and accurately large volumes of data with a minimum of human intervention would contribute to an improvement in material control and support of operational requirements. "Computer usage [would permit] the reassignment of logistic personnel resources to functions requiring human judgment, thereby upgrading the effectiveness of the total logistic support organization" (33:3). It was within this context that an optimum Air Force base level logistics system capable of supporting the weapons systems and force structure for the 1975-1985 time frame was

envisioned.

Problem Statement

Procurement, maintenance, supply and transportation are generally accepted as the functional elements of the base level logistics system. The management of the base level procurement function within the existing operational environment is extremely complex due to the unique customer requirements and interface relationships. The volume of such demands make it virtually impossible for procurement managers to be aware of, or detect, all problems which develop. Preliminary findings indicated that the volume of performance data collected was in inverse proportion to the information needed (48:II-57). The proliferation of reports and management information had ". . . reached the point where the effort needed to manage the information concerning procurement is rapidly approaching the effort expended on the management of the procurement itself" (48:22). Standards of measure and indicators of potential problems did not exist. Time and resource constraints demanded the utilization of exception reporting to allow for immediate correction of performance variances detrimental to efficient and effective organizational functioning.

The operating demands of base level procurement necessitated the evolution of a management information and control system capable of comparing output with input criteria in an analysis of performance in relation to established objectives.

An important aspect of the problem involved the application of trend analysis to detect problems before they became critical. The procurement manager needed a control system devoid of redundant data. Such a system was not available at the time but was within current technological capability.

Background

The basic authority for military procurement derives from the United States Constitution as stated in Article I:

> Section 8. The Congress shall have power to lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defense and general Welfare of the United States (48:2).

The Congress then is the source of authority within the United States for military procurement. The Congress has given the executive branch of the government the necessary authority in Title 10 of the U.S. Code:

> Notwithstanding any other provision of the law, an office or agency of the Department of Defense may obligate funds for procuring, producing, warehousing or distributing supplies or for related functions of supply management, only under regulations prescribed by the Secretary of Defense (48:2)

The United States Constitution provided the military procurement authority to the Congress by a simple statement of delineation of power. Under Title 10 of the U.S. Code, Congress has been more specific in its delegation of authority and where deemed desirable has been very explicit relative to the specifics of military procurement.

The Secretary of Defense, pursuant to the authority

delegated to him by the Congress, has promulgated a detailed set of policies and procedures to accomplish his military procurement responsibilities.

Both the United States Constitution and Title 10 of the U.S. Code are fundamental documents of authorization to act. These two documents assign responsibility relative to such acts. However, the operative publication for military procurement is the Armed Services Procurement Regulation (ASPR).

The ASPR delineates the policy and guidance provided by the Congress in Title 10 of the U.S. Code and develops from it a detailed set of procedures for accomplishing military procurement. The introduction of the ASPR states its source authority and its applicability as follows:

> 1-101 Purpose of Regulation. This Regulation issued by the Assistant Secretary of Defense (Installation and Logistics) by direction of the Secretary of Defense and in coordination with the Secretaries of the Army, Navy, and Air Force and the Director of the Defense Supply Agency, establishes for the Department of Defense, uniform policies and procedures relating to the procurement of supplies and services under the authority of Chapter 137, title 10 of the United States code, or under other statutory authority.
>
> 1-102 Applicability of Regulation. The Regulation shall apply to all purchases and contracts made by the Department of Defense, within or without the United States (but see 1-109.4), for the procurement of supplies or services which obligate appropriate funds (including available contract authorizations), unless otherwise specified herein, except transportation services procured by transportation requests, transportation warrants, bills of lading and similar transportation forms. Procurement of these excepted transportation services shall be in accordance with specific regulations and instructions issued by the Military Traffic Management and Terminal Service (MTMTS), Military Sea Transportation Service (MSTS), Military Airlift

Command (MAC), and the Departments (5:101).

The "Departments" to which the preceding paragraph refers are the Army, Navy and Air Force. The preceding quote, then, is the legal foundation for procurement of services and supplies within the Department of the Air Force.

Military procurement is at once obviously unique in that it involves the expenditure of legislatively appropriated funds by procurement personnel to meet the needs of distant and scattered customers. Added to the already difficult situation is the problem of measuring the effectiveness and efficiency of the procurement activity. The achievement of base procurement effectiveness is important because it enables Air Force funds to go further in obtaining needed supplies and services. The Air Force environment of the early seventies demanded that each defense dollar be expended in an efficient manner.

An effective management information and control system is absolutely necessary for optimum management effectiveness in any organization. If the base procurement function is to serve as an effective element within an integrated logistics system, the procurement manager will have to have at his disposal a management control system wherein "information is the life-blood of control . . ." (21:19). The system will have tc be capable of identifying and analyzing statistical trends in critical areas of performance. In this manner the system will monitor oscillations in performance which, although

they do not exceed control limits, indicate the development of a problem which, if action is not initiated, will eventually exceed tolerance levels. Thus, the system must not only be able to identify the existence of problems (see figure 1) but also variations approaching established standards which would enable the manager to initiate action which would eliminate problems before they materialized (see figure 2) or adjust the system to compensate for them. Within the context of this research effort a management control system was defined as " 'a system to periodically examine various aspects of logistics operations at base level, detect deviations from previously determined standards, and output this information to mangers at various levels' " (68:1). Such a system would be geared to the concept of exception reporting in that the only output would be notification of an impending or existing system deviation.

Base level procurement is a ". . . vast, complex and farflung activity. The unique legal, control, measurement, . . . size [and interface] characteristics of this activity dictate a complex but responsive procurement management information system" (48:i). While existing and projected automated procurement systems addressed themselves to timely response to customer demands, they did not lend themselves to an effective information and control system. While mechanization and automation had already been functioning within procurement for over ten years the prime objective of its utilization had been a compilation of procurement actions

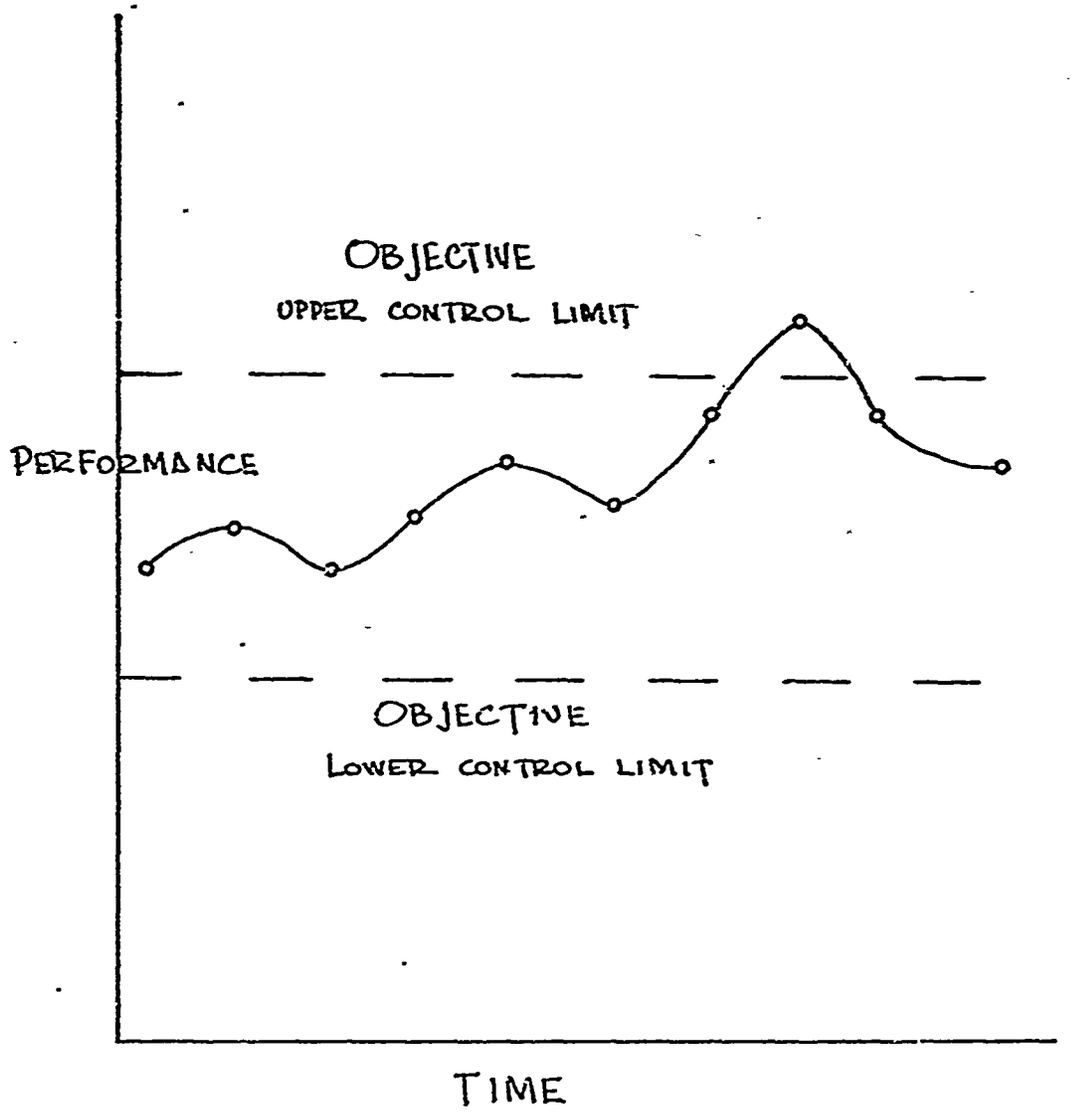

Figure 1.

System Monitoring of Performance Identifying An Out of Tolerance Condition (28:21)

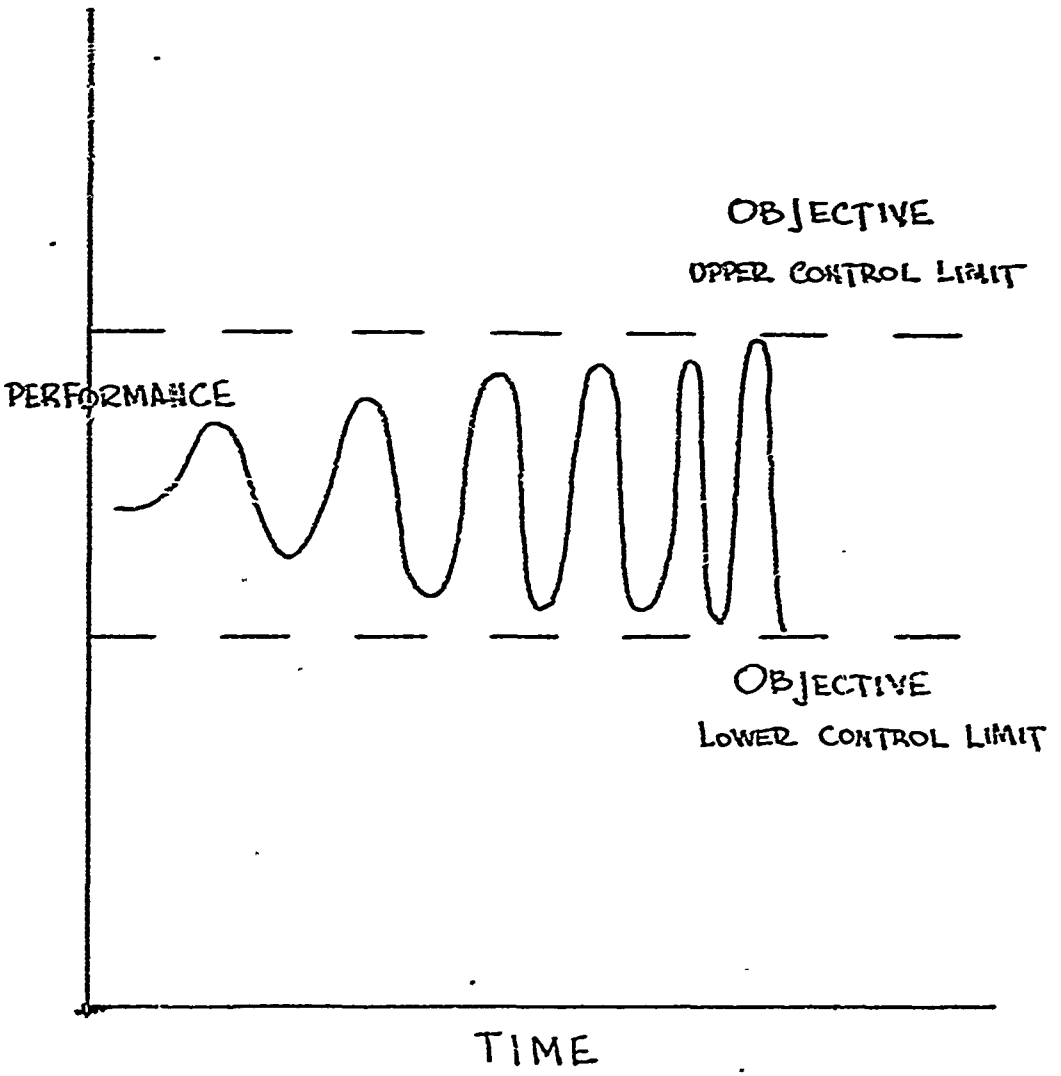

Figure 2.

System Monitoring of Performance Through Trend Analysis To Identify Oscillations Which Indicate Control Limits Will Soon Be Exceeded (28:21)

information into a system of registers and reports as required by higher headquarters, to include the dictates of the ASPR. ASPR 1-110 states that:

> Periodic and specific reports on purchases and contracts are prescribed by the Department of Defense. These reports are designed to meet statutory and other Congressional requirements of Federal agencies, and to provide all levels of management with data on which to formulate procurement policy as well as to determine the extent of adherence to prescribed policy (91:2-7).

Such systems ". . . emphasized the 'compliance syndrome' with its rules, regulations and policies, to the detriment of effective procurement performance" (48:i). Statistical data obtained from procurement reports often seemed aimed at making reports rather than initiating specific management action at base level.

Scheduled for field testing in October, 1972, was the Customer Integrated Procurement System (CIAPS). The orientation of the system was one of ". . . providing more timely support to those base activities having a requirement for local purchase of supplies and services" (90:2). Implementation of the system was projected into three phases with:

CIAPS I - concerned with the acquisition of supplies.

CIAPS II - concerned with adding those tasks in services procurement which were feasible to automate.

CIAPS III - concerned with conversion of the system to an on-line system if and when feasible (90:2).

The system appeared to concern itself rore with the establishment of procurement procedures and the automation of

"administrative nitty-gritty" than with the establishment of integrated control (14). While the system was projected to share its data base with customer systems, integration with all the systems was viewed as a long term objective (90:2).

The functional manager needs to carefully assess decisions for which he is responsible, and the type, quantity and format of information he must have to make such decisions in maintaining operational control in pursuit of objectives. "Computer systems with their demands for exact and precise programming . . . [required] management to fully define its objectives and accurately identify the input and output requirements of logistic systems to be processed on Automatic Data Processing Equipment" (33:4).

Improvement and advancement are neither automatic nor the result of a leisurely choice between alternatives. In attempting to identify areas within the logistics context which were in need of measurement and which could be adapted to an integrated automated mode of control, the STALOG group recognized that:

1. Continuing to develop separate management systems for each base logistics functional area with only minimal attention to interfaces between each was contrary to effective overall logistics control.

2. Some problems facing each of the functional areas could not be resolved independently but could best be resolved in terms of a total systems approach.

3. There was a need for improved management and utilization of logistics resources (88:5).

Before attempting to establish an integrated logistics management information and control system, it was first necessary to identify the objectives of each of the functional elements if they were to be judged useful. The nature of the objectives for each would have ". . . a significant impact on the design of the system" (28:15). In reality there is an operational interdependence among the varied functional objectives both within and external to the particular function such that the achievement of some of them presupposes the prior achievement of others. Objectives tend to form a hierarchy in which positions are determined by the extent to which an objective depends upon the achievement of or integration with other objectives within the overall system. At the head of the hierarchy is "the over-all Air Force management objective [which] is to complete assigned missions by maintaining maximum operational effectiveness" (84:2).

Scope

This research effort concerned itself with a study of the base level procurement function as it existed and was projected to exist in the following decade. The research effort was limited to the identification of organizational objectives and those areas of performance within the procurement function which necessitated the establishment of standards and the formulation of appropriate criteria for measurement if management effectiveness in the pursuit of objectives was to be achieved. Effective determination of

these factors necessitated the investigation of the interface and integration both internal and external to the functional areas.

This study was intended to establish a foundation upon which later research could build in terms of standards, frequency determination and formulation of levels of organizational detail in terms of an overall base level logistics management system. It was anticipated that the information collected and the analysis rendered would serve as the basis for the development of a central procurement data bank.

The constraints imposed by time precluded a detailed analysis of all identifiable areas of measurement within the procurement framework. During the course of this research many possible areas of measurement control were identified but only those commonly agreed upon by survey responders as being critical to effective management are discussed in detail.

Objective

As stated by one procurement official: "No one has ever dared or cared to define the objectives of the base procurement office" (1). The objective of this study was the identification of the base level procurement function objectives and those performance determinants critical to their successful achievement. This identification was accomplished within the context of the base level procurement organizational structure and operation; the integrated sys-

tems approach to logistics management; and the formulation of a total management information system as a vehicle for control.

Research Questions

In order to accomplish the stated objectives of this effort and with the intent of supplying data which would lend itself to the establishment of better procurement management control in an automated mode, this thesis addressed itself to answering the following questions:

1. With the intent of establishing reference points for organizational and coordinated effort, what are the objectives of the base level procurement function?

2. Given the present system, what operational and performance characteristics within the base level procurement function should be measured to insure the most efficient interface with other base functions and the achievement of organizational objectives?

Methodology

The formulation of this thesis was conducted in three phases: the first being a review of the literature. Literature resear h included:

1. A bibliographical survey conducted through the Defense Documentation Center.

2. A review of available texts, theses, technical reports and staff studies dealing with the areas of: base level procurement; management information systems; approaches

to integrated systems management; management by objectives; and management by exception.

3. A review and analysis of discrepancy trends in procurement operations as noted in the Inspector General Data Bank for the period 1970 through 1971. In addition, a review was also made of the observations rendered in the Inspector General Brief for the period 1960 through 1972.

The second phase consisted of the design and distribution of a questionnaire to Base and Deputy Base Procurement Officers in an attempt to solicit ideas from individuals, currently working at operational bases, as to what were the meaningful objectives of the base level procurement function. Subscribing to the belief that "an integrated management information [and control] system begins with management" an attempt was made to involve all procurement managers at base level operations (35:46). Other techniques of sampling were considered, such as the Delphi method, but were felt to be inappropriate.

The Delphi method attempts, through identification and interface with experts, to take full advantage of a committee approach to forecasting while avoiding some of the disadvantages of a brain-storming session. Delphi deals directly and individually with experts so as to avoid the negative factors associated with group action in which individuals perceive a necessity to "defend" their opinions. The investigation utilizing the Delphi method attempts to help ". . . the experts toward a consensus . . ." through

the utilization of a battery of questionnaires with each successive questionnaire being reworded in light of the responses encountered on the one preceding it (52:83). The intent is to help the experts to help themselves toward a consensus by rethinking the problem under consideration in the terms of divergent estimates.

The opinions of novice managers were felt to be important as that of the most experienced (see appendix A). To build a system strictly on the basis of expert opinion could run the risk of depriving the novice of information that was essential to his management efforts but very second-natured to an expert. Questionnaires were mailed under separate covers to the Base and Deputy Base Procurement Officers at 150 Air Force installations. The distribution of the questionnaires included 101 bases within the United States and 49 bases located at various locations overseas. The questionnaires were mailed on June 15, 1972, and July 31, 1972, was established as a closing date for receipt for inclusion into this research effort. Responses received after that date were retained but not utilized in formulating the data.

The questionnaires were sent out under the auspices of the STALOG group with a cover letter of explanation by Brigadier General William R. Hayes, Assistant for Logistics Planning, Deputy Chief of Staff, Systems and Logistics, Headquarters USAF. It was felt that the survey should be structured under the auspices of the Air Staff due to its

interest in the subject matter and its ability to help in achieving a more positive response rate. All responses were anonymous in nature and the only personal data requested of each responder was his or her rank, job title, experience at base level and Command of assignment. It was intended that this information provide an overview of the experience level of respondants to the survey (see appendix A).

The third and final phase of the effort was the pursuit of interviews with selected individuals who were familiar with base level procurement either through operational or academic involvement. These individuals were tasked for their professional opinions on matters of uncertainty which developed periodically during the course of the research.

CHAPTER II

THE BASE LEVEL PROCUREMENT FUNCTION

General

Procurement has come to mean different things to different people. The identification and understanding of base level procurement objectives can best be accomplished after a review of this part of the logistics process so as to place the operation in better perspective. The term "procurement" is defined by the ASPR as including:

> . . . purchasing, renting, leasing, or otherwise obtaining supplies or services. It also includes all functions that pertain to the obtaining of supplies and services, including description but not determination of requirements, selection and solicitation of sources, preparation and award of contract, and all phases of contract administration (34:3).

A vast and complex process, military procurement holds much in common with procurement in private enterprise, yet is unique in many respects that set it aside from the function in industry. The uniqueness of the operation stems in large part ". . . from the statutory authorizations and limitations under which it must be conducted . . ." (38:12). The policies, procedures and regulations within which procurement personnel must operate often force them to seemingly serve two masters.

They are tasked to protect the best interest of the government while at the same time protecting the interest of potential suppliers. All potential suppliers must be afforded equal opportunity to secure government business which is commensurate with their particular capabilities.

The Air Force base level procurement function can best be understood within the context of a service organization responding to the needs of varied customers. "Its function is the support of all base organizations requiring the local purchase of supplies and services" (91:1-3). In performing this function the procurement organization interfaces not only with base level customers but with the external business environment and varied governmental agencies. In so doing it serves as the installation's major logistics link with the civilian community.

". . . the number of items purchased by base procurement activities constitute about 90 percent of the total items purchased by the Air Force" (94:38). In accomplishing the purchase of these items the base procurement activity at each installation is responsible for obligating a portion of the funding allocated for Operation and Maintenance purposes. The base procurement activity is primarily responsive to the local procurement needs of six major supporting activities: base supply, base transportation, base civil engineering, base maintenance, base commissary, and base hospital or clinic (see figure 3).

The procurement workload generated by civil engineering

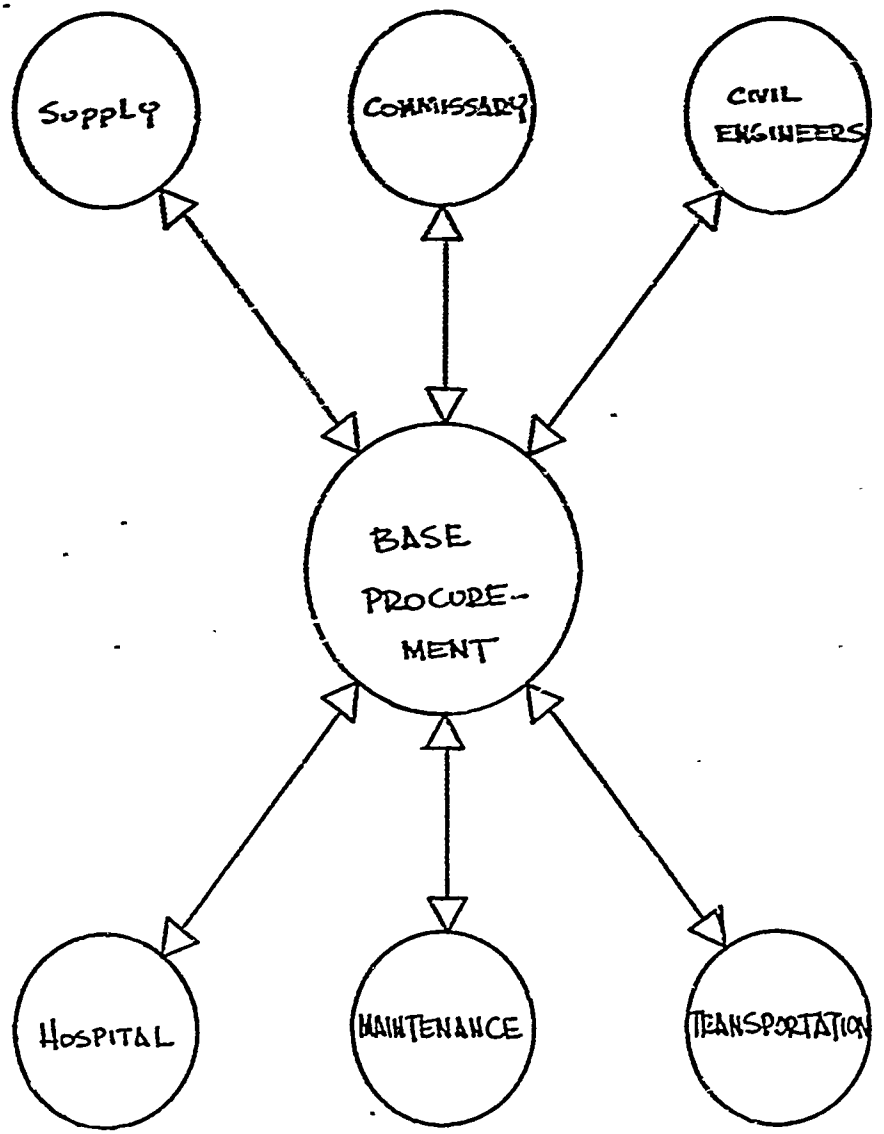

Figure 3.

Base Level Procurement Base Level Interfaces

and maintenance is limited to requests for non-personal, organizational type, services. The procurement requirements of base civil engineers entail services for construction, alteration, repair, modification and maintenance. Maintenance requirements are primarily for breakdown and repair services for major components. The inputs generated by both civil engineers and maintenance usually represent the most complex type processed at most base procurement offices and normally require skillful and time-consuming contract administration efforts (40:13). These requests are either received directly from the respective areas or are processed through supply channels and translated into a requirement from supply.

The commissary operation is primarily supported through quarterly and yearly indefinite type contracts. These contracts normally cover food commodities such as bread and dairy product type items. Although these contracts are executed by the base procurement office, calls against the contracts are placed by commissary personnel. Inputs generated by the hospital are usually limited to requests for medications and a limited amount of supplies and equipment. The reason for such a restricted demand is primarily due to the fact that most medical supplies are purchased by a central DOD depot and issued directly to respective medical facilities. In addition, medical facilities are eligible to operate, under the monitorship of the base procurement office, their own Imprest Fund or petty cash system (40:13-14).

Organizational Structure and Responsibility

While Air Force directives provide general guidance for the organizational structure of the base procurement function there is no specifically designated or required organization. Structures will vary by degrees depending upon the particular Command and its operational requirements. Within the general base level context the procurement function is usually an element of the Combat Support Group, consisting of those activities directly responsible to the Base Commander (see figure 4 and 5). The function itself is composed of varied branches with specifically designated responsibilities. Operating along a horizontal plane and under the responsibility of the Base Procurement Officer are the:

1. Operations Branch. This branch is responsible for keeping registers, reports, publications and Armed Services Procurement Regulations on hand and up-to-date; the assigning of numbers to contracts, purchase orders and modifications; the establishment of a suspense system.

2. Supply Branch. This branch is responsible for contracting for all supply requirements and establishing indefinite delivery type contracts for supply items when appropriate.

3. Service Branch. This branch is responsible for contracting for all service and construction requirements; establishing indefinite delivery type contracts for services when appropriate.

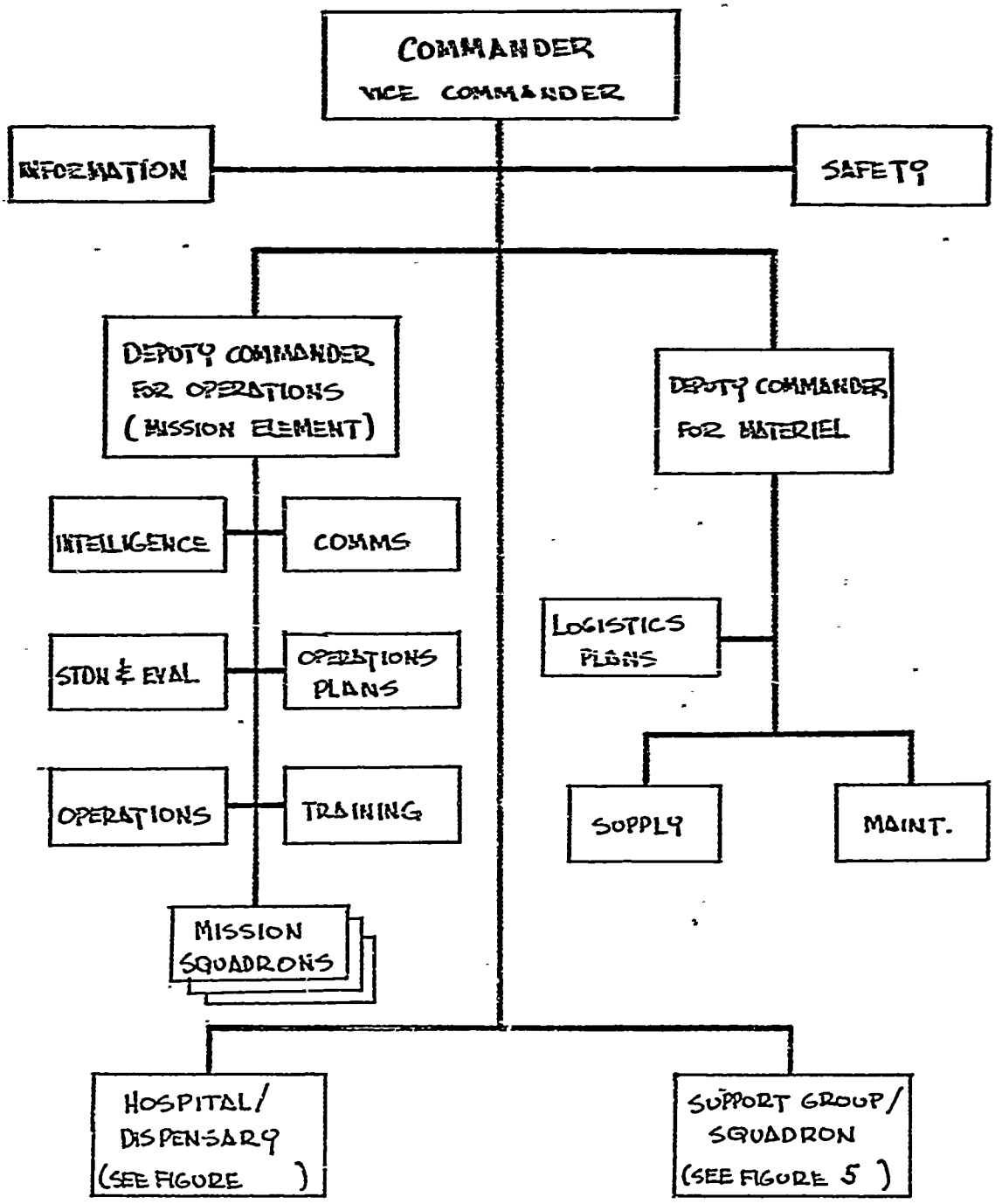

Figure 4.

Wing/Group Organization Structure
Single Wing/Group Base (82:4-6)

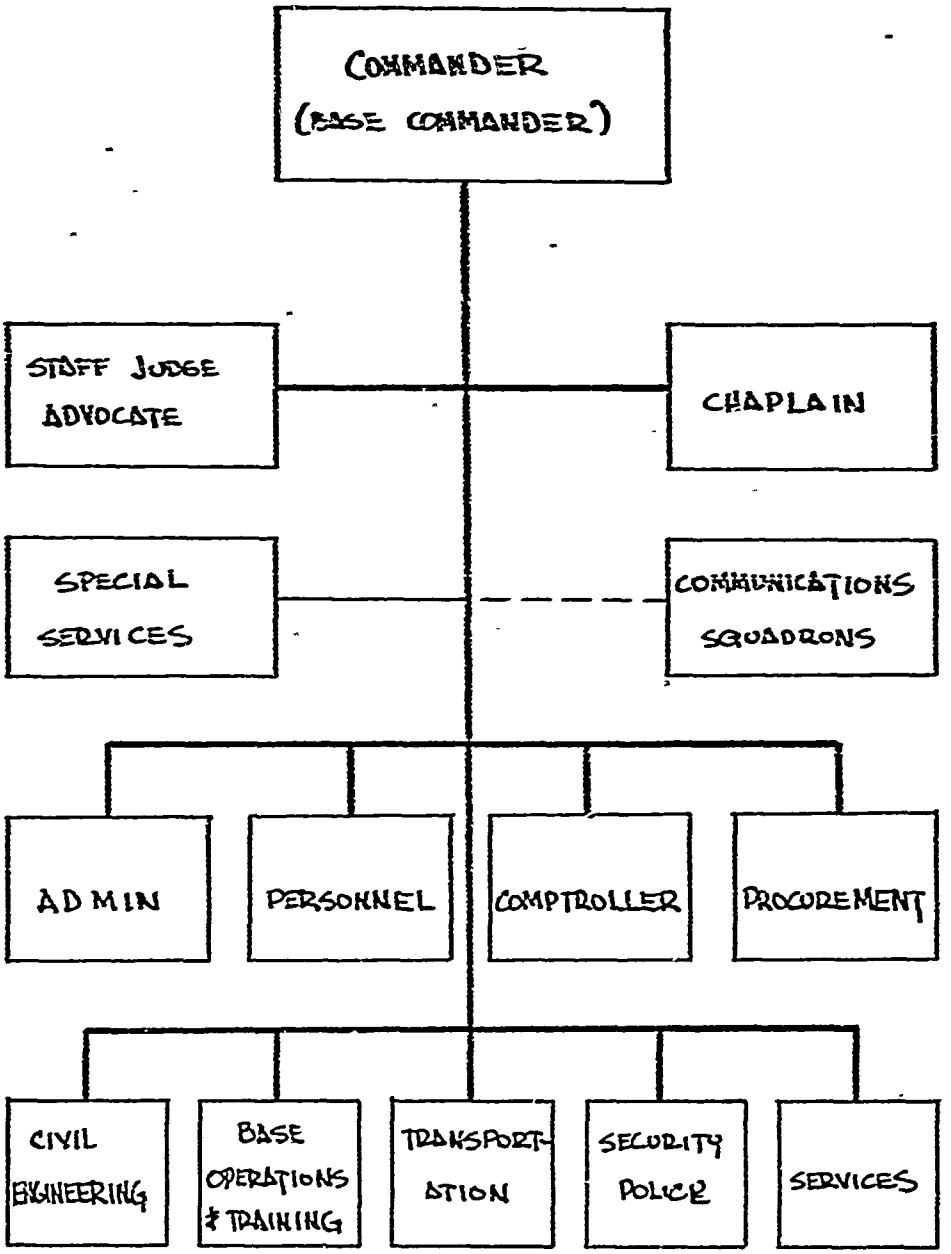

Figure 5.

Support Group/Squadron Organization Structure
Single Wing/Group Base (82:4-7)

4. Contract Maintenance Branch. This branch is responsible for the processing of certain items of equipment that have to be maintained by contractors.

5. Contract Administration Branch. This branch is responsible for the complete administration of contracts for the Supply and Services Branches to include: inspection, acceptance and delinquency actions. The existence of this branch is optional depending on the operation involved. When non-existent, its responsibilities are assumed by the respective branches involved (91:3-2).

The Base Procurement Officer

At the head of these diversified activities is the Base Procurement Officer who serves as the focal point for all operations and is ultimately responsible for the management of the entire activity (see figure 6). He is constrained in his actions by the provisions enunciated in over three thousand pages comprising the ASPR replete with instructions on things that must be done, that may be done, and that must not be done. He is further constrained by the specific guidelines set forth by higher headquarters and the local commander. Within the context of these constraints it is his job ". . . to translate requirements into goods and services of the highest available quality, at the lowest possible price, and in the shortest possible time" (38:12). In addition to being subject to discipline by his superiors, he is also

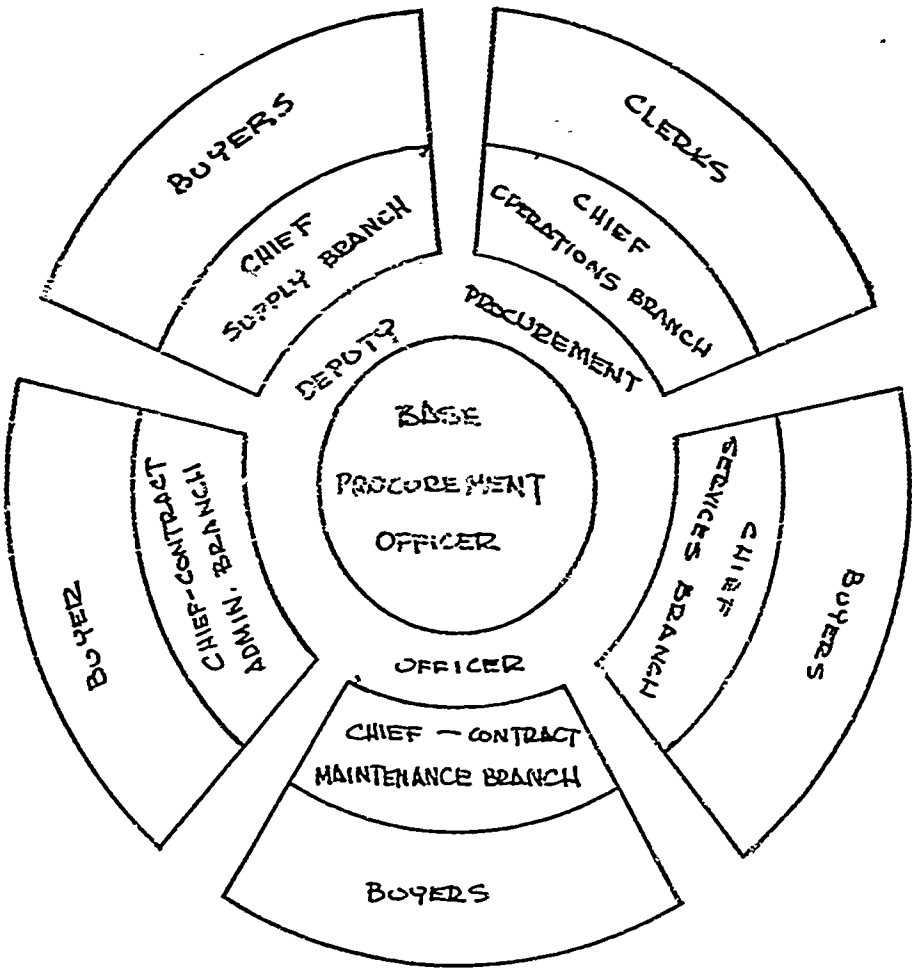

Figure 6.

Detailed View Of Convergence Of Procurement Responsibility (29)

subject to legal action for having broken the law. This is no trivial consideration and must, of necessity, loom large in his selection of an action when multiple courses of action are open to him. There are times when he must follow a course of action which he professionally feels would result in extra cost to the Air Force rather than a course of action which would perhaps be less expensive for the government but for which he feels less able to justify any deviations. The Base Procurement Officer then is continually tasked to:

1. Insure compliance with statutory and regulatory restraints of government procurement.
2. Obtain competition.
3. Justify exceptions.
4. Be prepared to defend his actions to Air Force Headquarters, the General Accounting Office, and Congress.
5. Stay up-to-date on policy and procedural changes.

Procurement Considerations

As alluded to in the foregoing presentation the procurement function, in the person of the Base Procurement Officer, ultimately concerns itself with satisfying requirements with items of the "highest quality available, at the lowest possible price, in the shortest possible time." To put it more concisely, procurement is governed by considerations of: performance, cost and schedule. Performance can

best be understood in that it relates to the extent to which an item successfully accomplishes the function for which it was procured. Cost relates to the total expenditure of funds in the acquisition, allocation and disposition of the item. Schedule relates to the time and rate of delivery of the item. All three of these factors, in fact, interact with one another as performance normally varies directly with cost and the two together often affect the delivery schedule. Often times the performance of an item can be improved if the delivery schedule can be prolonged. If a procurement management information system is to be effective it must recognize these interactions and provide the data essential to maintain timely control.

While these three factors are at the heart of procurement considerations in terms of the results of their interactions, their characteristics can be examined individually. If an item that has been procured does not satisfy or perform the function for which it was procured, the entire purchase has been a complete loss regardless of cost or delivery considerations. Performance is and must be a fundamental consideration. For most items it is a relatively simple matter to define the required standards and judge potential procurement items accordingly. In some instances, however, the required standards must be tempered with cost or delivery demands and the final product quality redefined.

One opinion is that cost usually receives more attention, both within and external to the procurement function, then all

other aspects of procurement combined and that the "compliance syndrome" is most evident in this area, particularly with contracting, in that procurement personnel attempt to insure many times over that all pertinent regulations, policies, and guidance have been complied with.

Depending on the mission requirements of a particular organization, the urgency of procuring an item may in fact cause schedule to override cost as a consideration in the particular action. "The effectiveness of the procurement activity in obtaining a lower price or improved performance is too often disregarded in the rush to insure compliance" (48:36). It is interesting to note that in an article entitled "Procurement Attitude for the 70s" appearing in the Technical Inspector General Brief of December 31, 1971, one of the principles enumerated was:

> Meeting of delivery scheduling and quality of the delivered material must be viewed as a single entity (75:15).

Purchase Request

The primary vehicle for interface between the procurement function and its customers is the purchase request (PR). When an organization generates a requirement for supplies or services that require action by the procurement office, that is for supplies and services not available through regular military sources, it must initiate a PR and forward it to the procurement activity. The PR becomes the Base Procurement Officer's order to procure. It serves the purpose of

providing:

> 1. A citation of the necessary authority and fund authorization, if no funds have been previously authorized.
>
> 2. A description of the required supplies or services.
>
> 3. Any other information that is needed, such as delivery points and dates (95:3).

Where a particular manufacturer's make or model is the only item that will suffice, a sole source or genuine replacement part justification must accompany the requisition in order to substantiate purchase without competition. The responsibility for accuracy and completeness of the PR rests with the initiating organization. Without a properly prepared PR, the buyer is at a loss to know specifically what an organization requires. Improper preparation of the PR is cause for its return to the initiator for correction as appropriate. The necessity for this action often entails a reduction in necessary procurement leadtime. "Inadequate leadtime impedes the meeting of Air Force acquisition and mission objectives; procurement effectiveness can only be measured after release of [the] purchase request" (72:22).

CHAPTER III

THE BASE PROCUREMENT FUNCTION AS AN ELEMENT OF AN INTEGRATED LOGISTICS MANAGEMENT SYSTEM

General

Although its operation is constrained by a requirement for strict adherence to legal directives, the procurement function depends upon, and closely supports, the other logistics functions. Base procurement does not exist as an entity of and to itself, rather it is an integral part of logistics. A prime example of procurement interface with other logistics functions is manifested in the purchase request. This document initiates a long series of linking activities starting with a need and then preparation of the PR by the requesting organization, and including: document processing by procurement; physical receipt of the goods; quality control check; paper work updating of inventory records; the establishment of accounts payable and eventual vendor payment. Within the context of such a transaction can be seen the progression of an "objective achievement flow" from a functional user initiating a demand to a functional processor which satisfies the requisition through an interface with the environment external to the base structure.

Final satisfaction of the demand is accomplished through a channel of distribution from the vendor through numerous functional elements, comprising the base delivery system, to the functional initiator of the demand. An integrated systems approach to logistics management recognizes rather than ignores these relationships. While "the system may begin with the automation of a specific function . . . [it can occur] only after the total picture is studied" (35:47). If a total base logistics system is to be achieved in the 1975-1985 time frame it must be recognized that in logistics:

> . . . there is a close interdependence of all activities engaged in reaching an objective. Specific activities are closely intertwined and interrelated; the carrying out of one activity influences or is influenced by other activities. The over-all management of any operation consists of dovetailing specific activities so that the drive for effectiveness in some does not hamper the achievement of effectiveness by others. In the management process the specific activities must be blended into . . . [a totally integrated system] in which individual parts function in the manner that best meets the needs of the whole. Subordinating parts to the whole, sometimes even at the expense of individual effectiveness, is an essential feature . . . [of such a system] (84:4)

Definitions

Before progressing further it would be in order to precisely define some of the terms to which reference has and will be made. Up to this point, discussion has been rendered with regard to the achievement of increased "effectiveness and efficiency in logistics" management if the challenge of the seventies, predicated by funding constraints, is to be met. Reference has been made to the desire of the

Air Staff to identify the optimal base level logistics "system" to accomodate management, organizational, and operational objectives in the period spanning 1975 through 1985 in terms of this challenge. An attempt will now be made then to define in as precise terms as possible what this research team feels is meant by: logistics, systems, effectiveness, and efficiency.

The term logistics is subject matter for a book in itself, therefore no attempt is made to present a historical derivation of the term along with its varied applications. A comprehensive effort in this area has been accomplished in a dissertation entitled, "An Exploration of the Concept of Logistics: A Constitutive Approach" (60). In its strictest sense, as applied to the military supply mission, logistics is viewed as a composite of a multitude of activities directed toward the effective implementation of strategic and tactical plans through the creation and support of combat forces and weapons. A concise definition of logistics would then entail:

> The provisions of support materials and services when and where required for use. Usually viewed as the activities of determining the requirements, acquisition, distribution of goods and services needed to sustain operations. In military missions it usually connotes functions of supply, maintenance, procurement, distribution, and similar related activities (50:143).

The terms "systems", "systems concept", and "systems approach" had become popular in recent years as a way of viewing organizational structure and operation. As the

seventies progressed association with and understanding of systems came to be perceived as the "now" thing. The definitions proposed for systems are as numerous as the authors on the subject, as each views his approach as unique. A system can best be understood as:

> A complex unit formed of many often diverse parts subject to a common plan or serving a common purpose (2:4).

The two essential ideas in this definition are: (1) the individual parts of a system are often diverse, and (2) the collection of parts forms a unity, either because the parts are "subject to a common plan" or because they "serve a common purpose." As all operations have some impact on other operations which have impacts on other operations, and so on, the systems approach could cause the examination of any operation to include the entire universe. Obviously this is impractical. From a realistic point of view, what the systems concept does imply is a consideration of the organization in as broad a context as possible with an understanding that "the optimization of an individual operation or department will not necessarily optimize the total organization" (46:17).

Effectiveness can best be viewed as "the degree to which the mission is accomplished or objectives are achieved" (50:134). Efficiency on the other hand connotes "the assessment of actual performance against optimum potential. [It] answers the questions, 'how economically were the objectives achieved' or 'How well were resources used or

conserved?' " (46:17).

Logistics As An Integrated System

With the interdependence and interrelationships of all elements of the logistics function, it is no longer feasible to think of logistics management in terms of separate functions such as supply, maintenance, procurement and transportation. All of these are in fact a single integrated logistics process for support. A better understanding of this concept can be had if one approaches logistics in terms of:

1. A statement of objectives and an evaluation of the problem.

2. A definition of the environmental set.

3. A definition of the system encompassing the basic transformation process associated with the problem.

4. A definition of the subsystems.

5. A linkage of the subsystems to form the system (28:41).

The objectives of logistics are rather inherent in its definition. In the most simple terms the goal for which logistics strives is the delivery of needed items to operational forces at the right time, in the right amount, at the right place, for the least cost. Not only are these objectives but they are in themselves problems. A finer delineation of the problem is brought forth with the qualification that logistics must accomplish these objectives in an efficient and effective manner. These qualifications often tend to

contradict one another.

In attaining these objectives the logistics system must act and react with elements of both the Air Force institution and the environment of which it is a part. While logistics comprises a system in its own right, as referenced by the definitions posited, it is a subsystem of larger systems which encompass it and which it serves (see figure 7). While figure 7 does not propose to present all of the elements of the environmental set of logistics, it does give an insight into the forces affecting logistics operations. Logistics must be responsive to the needs of its customers, in both the operations and support areas, while at the same time being cognizant of the direction and requirements levied by higher headquarters at the varied levels. Logistics is very much dependent upon the actions of Congress in the funding of appropriations necessary to provide for the needs of system customers. In the procurement of items required to fulfill the varied needs, it must interface with suppliers and be constrained by the forces of the community and labor as they influence the ability of suppliers to produce and Congress to appropriate. Logistics as a system can most properly be viewed as a transformation process and distribution channel (see figure 8). Inputs are received into the system in terms of customer demands and resources. These resources are transformed by the elements of the system into items which satisfy the demand levied. The system in turn outputs these items to the organization initiating

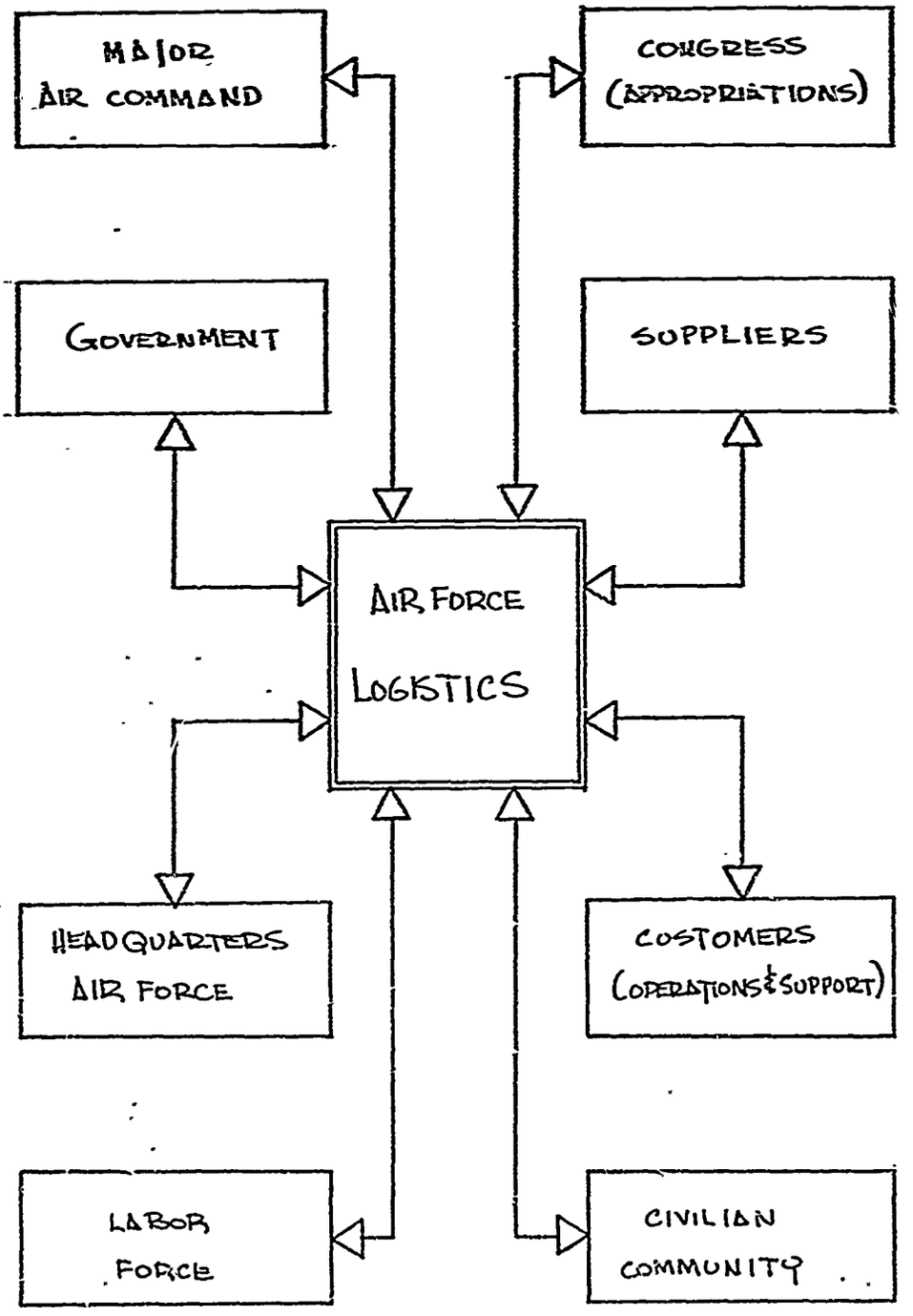

Figure 7.

The Environmental Set Of Logistics

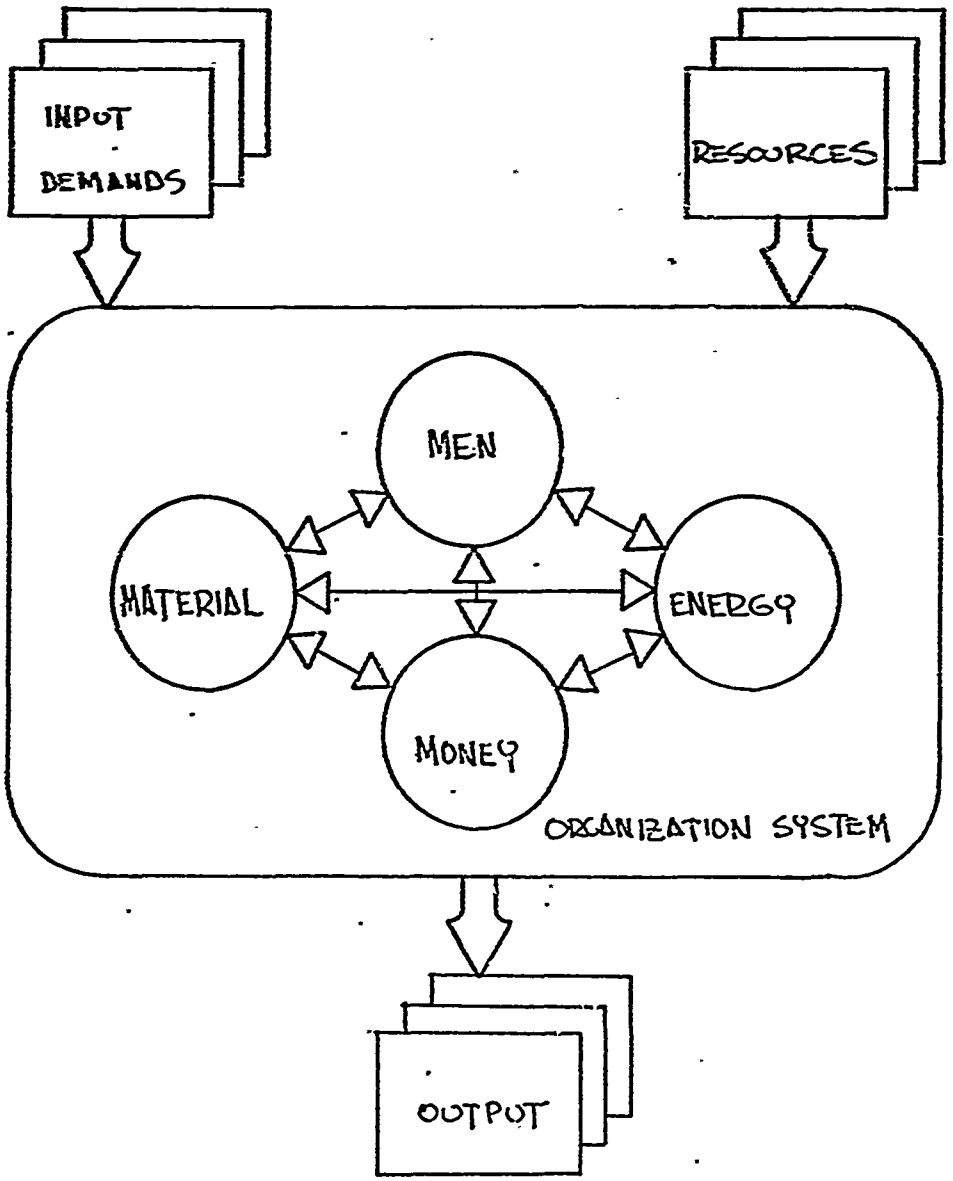

Figure 8.

Integrated Logistics System
Transformation Process

the demand. In the most simplistic and realistic sense, the resources transformed by logistics are manpower, material, money and energy (to include facilities and machinery). These resources are distributed among these elements of the system and upon receipt of a demand they are applied in appropriate proportions both within and between the system elements to yield the required item. In reality then these represent a flow which is in continual flux within the system continuum.

The subsystems of logistics, each a system in its own right, are the functions of supply, maintenance, transportation and procurement as previously defined. No single function could exist as an entity in as much as a customer-supplier relationship exists between all four in almost unlimited combinations. The type of linkage between these elements can best be understood in terms of the flow presented in figure 9. Operations performs the mission levied upon it by the accomplishment of a specified number of sorties. In the accomplishment of this mission an aircraft is disabled and a determination is made that maintenance is required. Maintenance accepts the aircraft and begins to perform the necessary repairs to render the aircraft operationally ready. In the process maintenance discovers the need to replace a specific part. For the sake of the illustration it may be supposed that the item is condemned and a demand is placed upon supply for a new asset. The supply function reacts and applies its available manpower to perform an inventory search for the item. A determination is made that the item is no longer in the inventory and is no

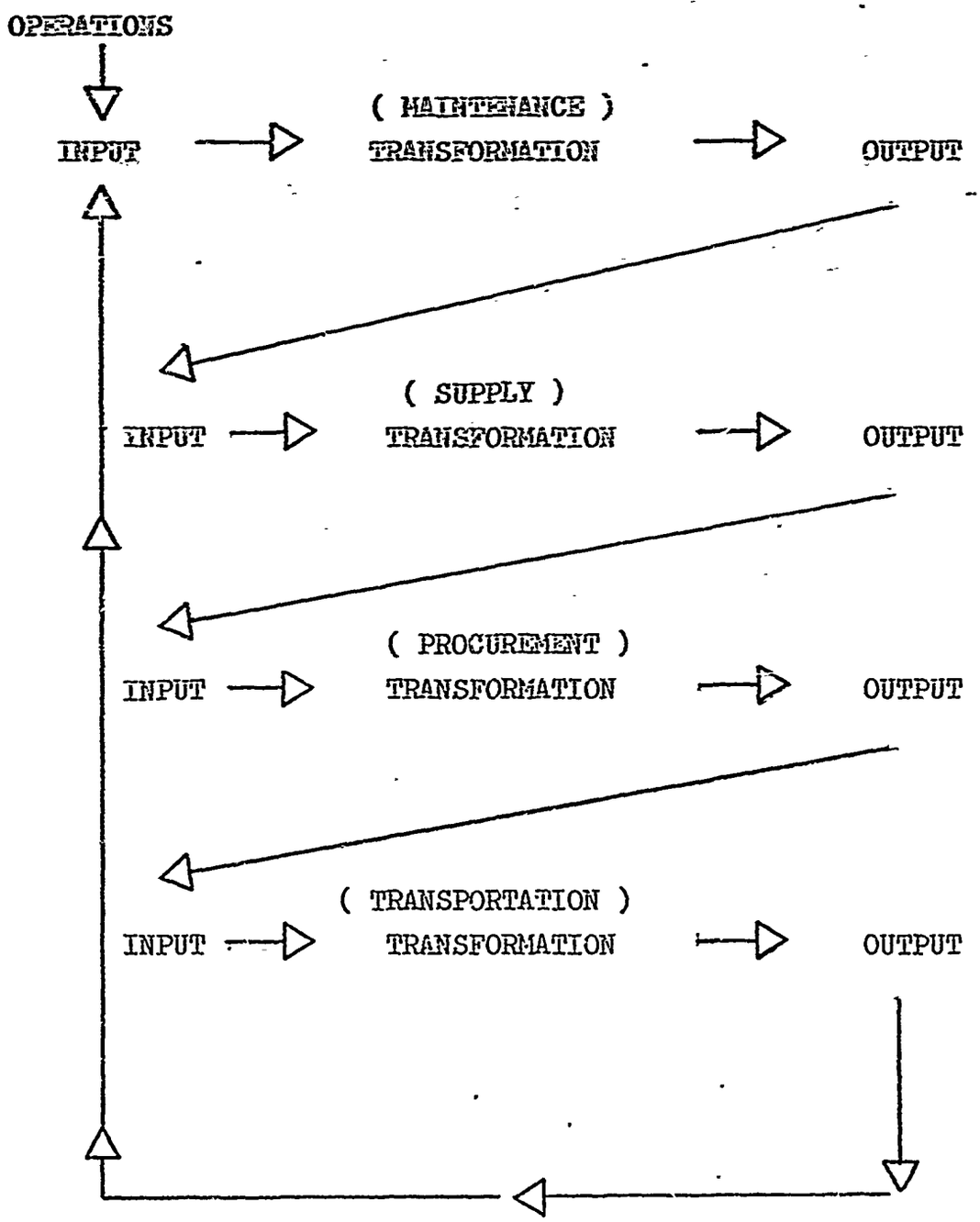

Figure 9.

Sequential Subsystem Linkages (28:17)

longer produced by the previous government supplier. Supply interfaces with procurement and generates a demand for local manufacture of the item by surrounding industry. Procurement processes the request and lets the necessary contract to have the item manufactured. The item is produced and is received by the base and delivered via transportation to the maintenance organization in need of the item. While it is readily admitted that this is a gross oversimplification of a case in point it does illustrate the linkages, interfaces and interdependence of the varied logistics subsystems. It should be remembered that these links can occur in a number of varied mixes. Also, in terms of an integrated system the example presented would have entailed presentation of only one input and one output. The intervening actions of the varied subsystems presented would be along a continuum, with a transference of the demand between each subsystem (see figure 10).

While the discussion presented has been in terms of logistics in general, it is equally applicable to base level logistics as the same processes and relationships are involved but on a smaller scale. Figure 11 presents the sequence of the base level logistics operation and is self-explanatory in nature.

Base Level Procurement System/Subsystem

Within the context of the systems theory, base level procurement can be viewed as a system in its own right composed of varied subsystems represented by each of its branches. It

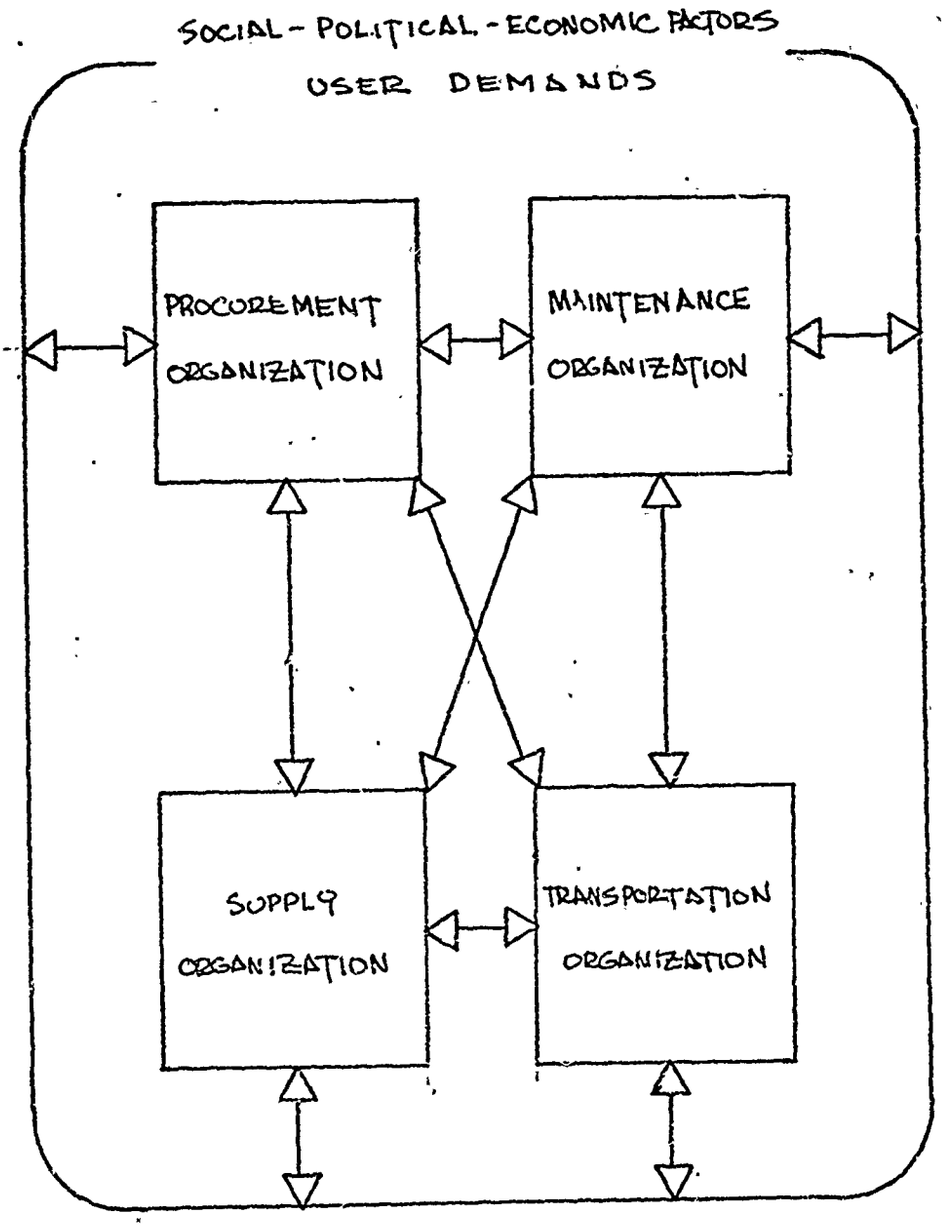

Figure 10.

Base Level Integrated Logistics System

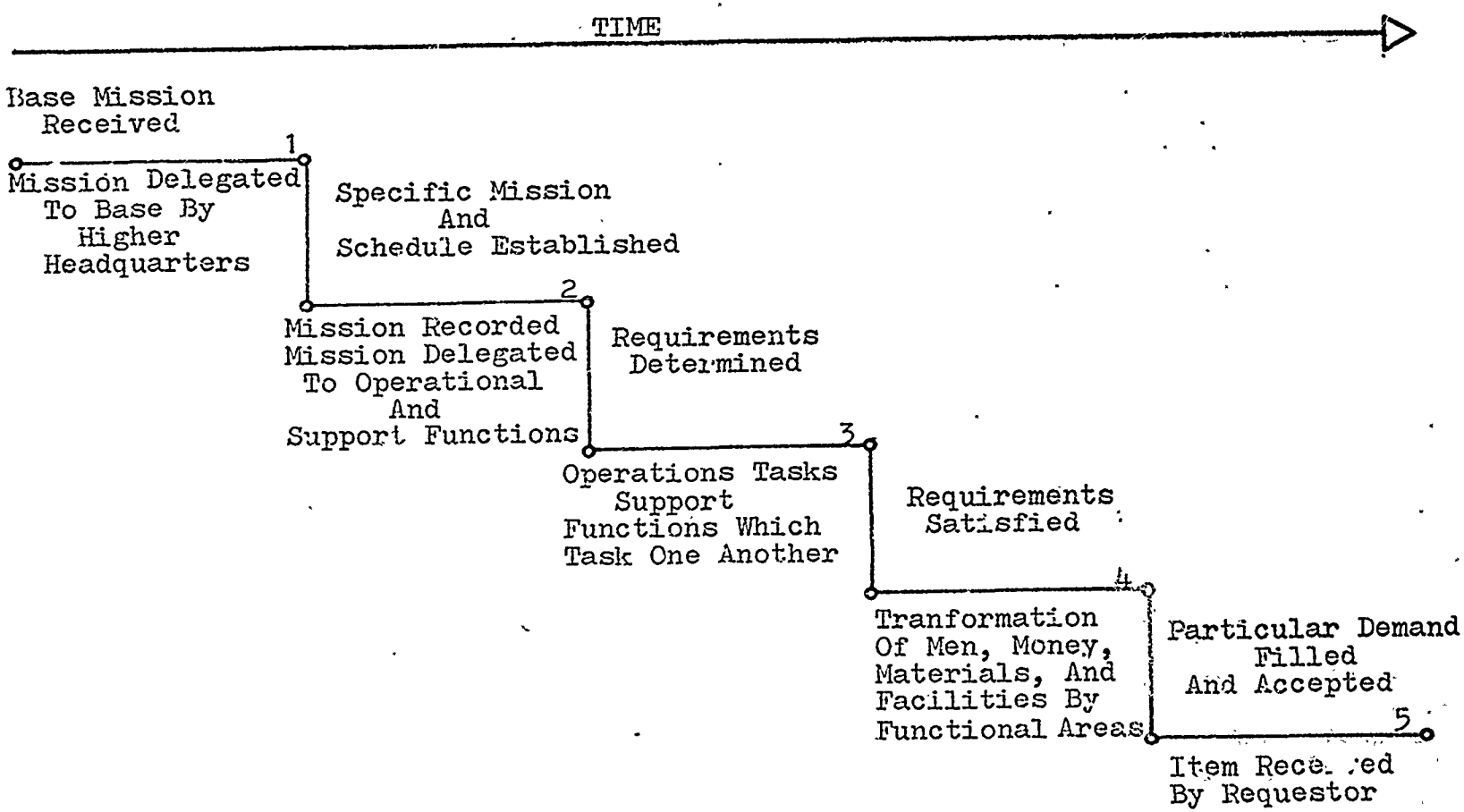

Figure 11.

Base Level Logistics Sequence (29)

exists on an equal but not independent plane with the other logistics functions. It in turn is relegated to the stature of a subsystem when considered within the operational context of the base level logistics system. The same rationale applies as one progresses up the ladder of system abstraction as each system inevitably becomes a subsystem of the larger system which encompasses it (see figure 12).

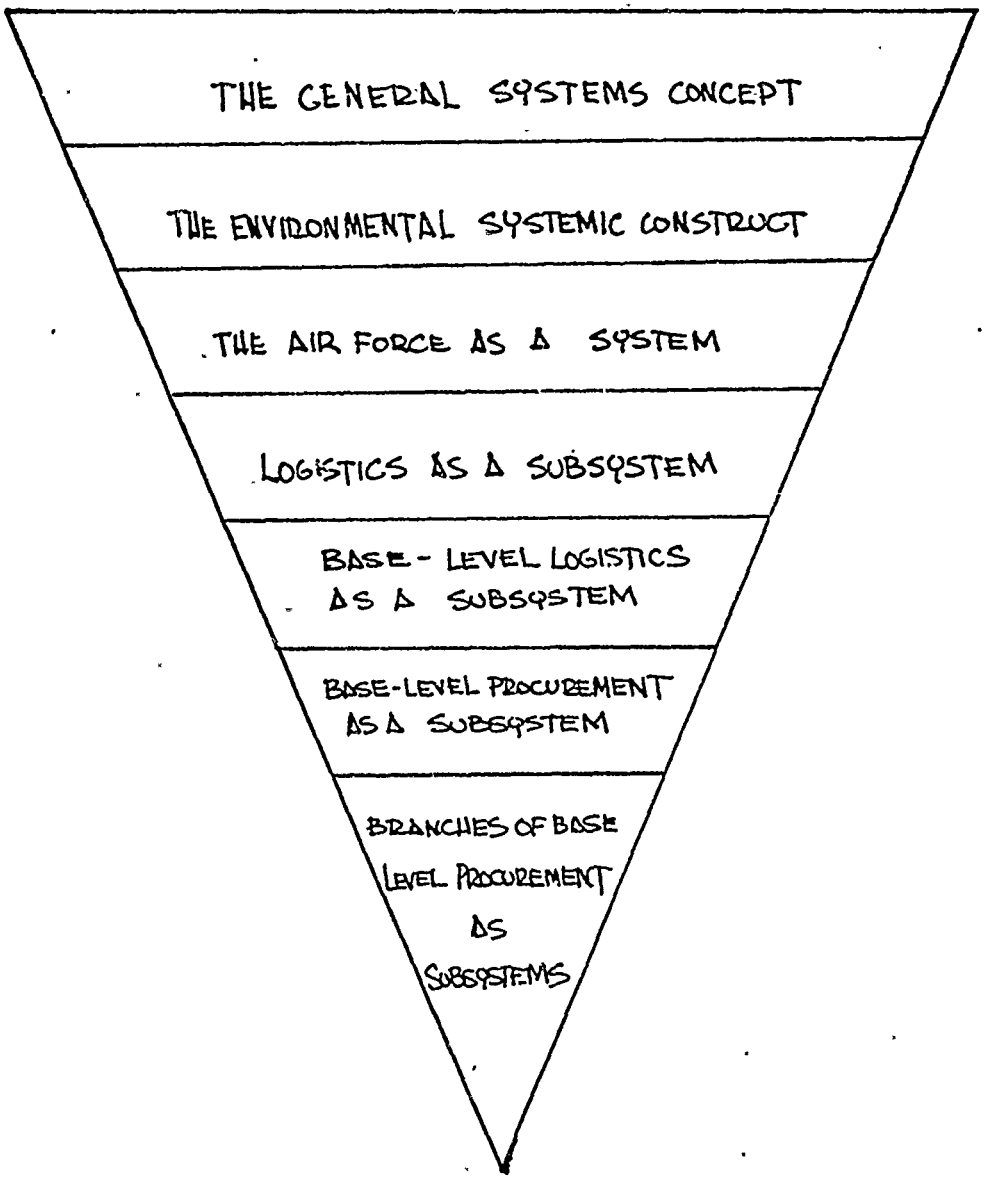

Figure 12.

Systems Theory Ladder Of Abstraction For Logistics (28:6)

CHAPTER IV

AN INTEGRATED BASE LEVEL MANAGEMENT INFORMATION SYSTEM

In order for the four subsystems (maintenance, supply, transportation and procurement) and four flows (men, money, material and facilities) of logistics to function effectively it is necessary to develop an integrated logistics management information system (see figure 13). Such a system of information does in fact create a separate flow itself which serves to integrate the functions of the individual subsystems. "One of the basic principles underlying the concept of management information in all organizations is the treatment of information as a basic resource of the organization" (46:8). Some form of information is absolutely necessary for optimal management of any complex endeavor. Managers at all organizational levels require information to assit them in planning and controlling performance.

The interrelationships of the subsystems of logistics require that each element perform satisfactorily within the confines of the system if the intended purpose of the total system is to be achieved. Consequently, analysis of the system's performance must take into consideration the inter-

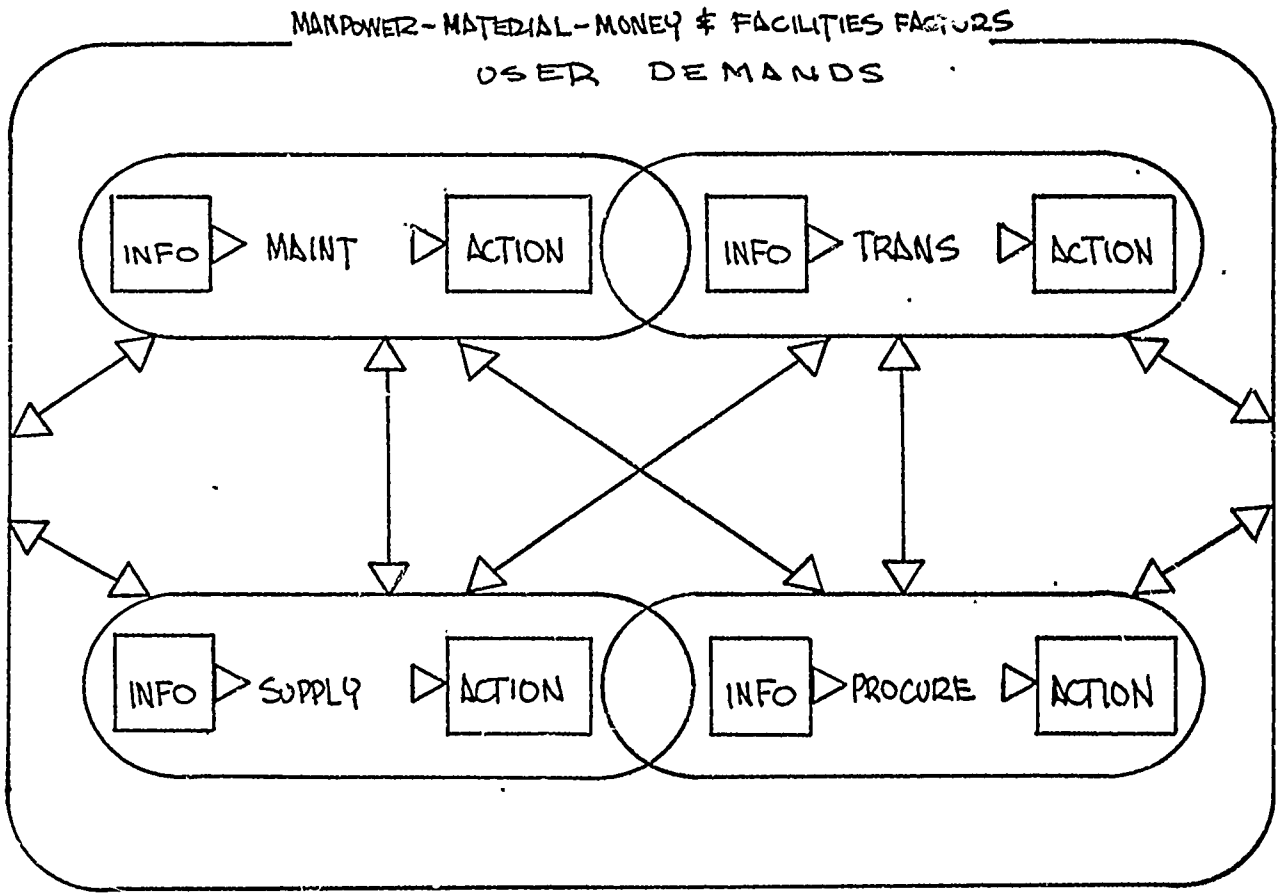

Figure 13.

Base Level Logistics Action/Information Integration And Flow

relationships between system elements.

The size and complexity of the logistics system make an analysis of all the interrelationships of elements within the system extremely complex. Therefore, system performance can best be measured by observing the performance of the major subsystems as they contribute to the overall system. Subsystem performance can in turn be evaluated by measuring the performance of the elements which contribute to subsystem operation. Such type of analysis permits concentration of effort on those subsystems where performance is unsatisfactory. A management information system provides the means for such analysis. It measures the key elements which make up the subsystems and provides a summary analysis and assessment of subsystem performance from which total system performance can be evaluated.

The information system must provide management with the data necessary to conduct effective decision-making and control. Such a system must be responsible for providing information regarding any one of the functional elements ". . . to the decision points of the other systems in a form where actions taken in one system could be reflected as they impact the others" (28:130). "The nature of an integrated management information system is such that it crosses functional boundaries . . ." (28:141). An action generated or contemplated by one function within the system, while beneficial to it, may have an adverse affect on the other elements of the system. This consideration harks back to the previous discussions regarding functional optimization versus system sub-optimization. Perhaps the

analogy of the human body would best serve to illustrate this point. If one hand of the body experienced a rash the main concern of that element, if viewed as operating within the context of an entity, would be the treatment of that rash. With modern medicine, however, treatment of this hand rash can only be viewed in a systems context. Was the rash local and without other subsystem implications such as liver malfunctioning? If it was determined that the rash was a manifestation of other malfunctioning subsystems, treatment was prescribed that would best optimize the entire body system. In this example a local problem was diagnosed to have broader system implications, as is often the case with procurement or other functional area problems. By using information gathered from the functioning of other body subsystems, the doctor was able to correctly diagnose the overall system malfunction, apply a cure, and predict the overall end result with reasonable accuracy.

The function of control includes the measurement of output and the comparison of output with some predetermined standard with adjustments as necessary to restore the system to its planned norm. "Control is not an end in itself; rather it is a means to an end — a way to add flexibility and effectiveness to the operation of the system" (46:71). In accomplishing the comparison of output with a standard, a determination must be made as to the degree of variation from the standard which is tolerable, as well as the duration of such a variation (see figure 14).

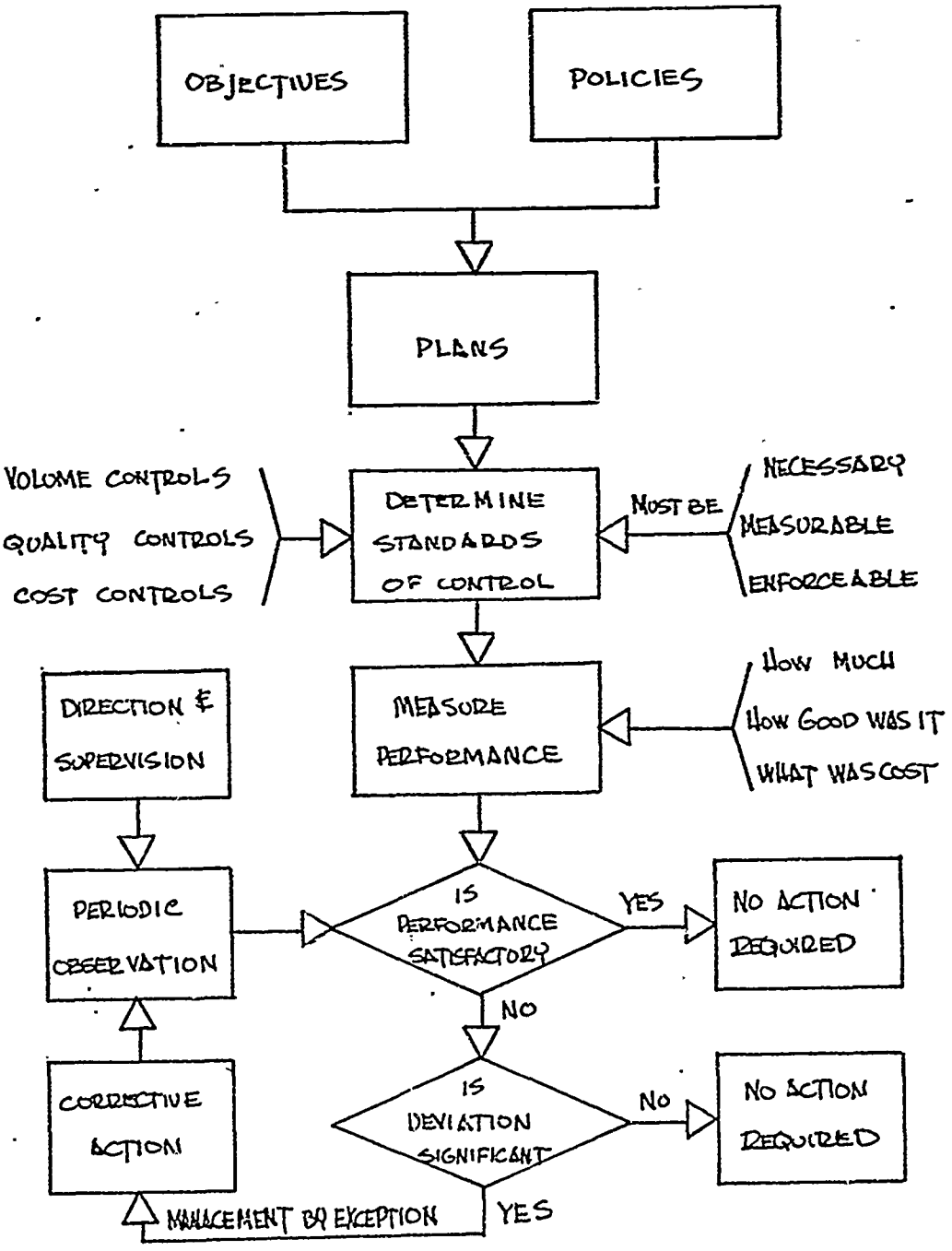

Figure 14.

The Management Control Process (32:44)

This concept of control lends itself to exception reporting wherein out-of-tolerance conditions in performance would be transmitted immediately without regard to the periodicity of the regular reporting system. In some cases it is necessary to take a total reading of the system status periodically to allow for analysis. On a day-to-day basis, however, exception reporting serves the needs of management best in that it does not burden the manager with volumes of information which must be deciphered and still calls his attention to problem areas only. Such an approach frees managers to become more intimately involved in the management of the system rather than the management of data. The data collected within the context of exception reporting would be purged on a periodic basis to allow for intensive analysis of the complete system status, as well as projection of developing trends.

If a management information system in logistics is to be effective and responsive it must:

1. Measure and evaluate logistics performance.
2. Make maximum use of common data.
3. Provide timely information and data.
4. Respond to the needs of the user.
5. Have an acceptable cost-benefit relationship.
6. Develop reliable information and data.
7. Provide for the application of procedures on a worldwide basis (33:23).

Whatever the area of responsibility to be controlled or whatever the type control system to be employed, the medium of control is the information system. The need for integrated logistics management generates the need for integrated logistics information. An uncontrolled proliferation of information systems within the functional areas cannot be allowed without some effort to integrate the capabilities of each into a single system.

CHAPTER V

QUESTIONNAIRE DESIGN AND DATA ANALYSIS

After a review of the literature and interviews with various individuals experienced in base level procurement, an initial design was established for the questionnaire. After a series of refinements predicated on advice from knowledgeable procurement personnel, a first draft was formulated for testing at the Wright-Patterson AFB, Procurement Office. Following a review and recommendations by the Base Procurement Officer, a rewrite and finaliztion was accomplished (see appendix B).

The questionnaire detailed four tentative objectives for the base procurement function, along with varied performance indicators for each. The performance indicators listed presumed the existence of future adequate data bank facilities and relative ease of inputting/outputting computer information. It is acknowledged that with the existing computer facilities most performance indicators would require excessive data preparation and any output delays would negate the value of most indicators.

The questionnaire was designed as a vehicle to primarily solicit opinions, therefore no sophisticated quantitative

analysis was deemed appropriate. Of the 126 questionnaires returned, for a useable return rate of 42 percent, many evidenced the fact that the responder had thoughtfully: modified objectives; added performance indicators; and proposed additional objectives. For those that did not answer, or answered with "no comment", for a particular objective, it was impossible to determine whether the responder agreed with the objective or did not have the time to reflect on the questionnaire. Hence, an attempt at refined statistical analysis of the questionnaire would perhaps be misleading.

The method utilized to take advantage of the questionnaire data was to first sort the questionnaires by additonally proposed objectives. Based on this sort and the rationale supporting the new objectives, two additional objectives were added. Next, all questionnaires were read to determine the appropriateness of the original questionnaire proposed objectives. On the basis of this analysis one of the originally proposed objectives was deleted as being not absolutely essential to the operation of an effective base procurement function. The remaining objectives were modified to overcome semantical deficiencies detailed by some responders. Finally, performance indicators were reviewed to determine their validity under the previously stated assumptions of an increased data base and improved computer input/output capability. In some instances there was a consensus among the responders as to the value of an indicator, however, all questionnaire responses were closely reviewed for possible inclusion.

One of the premises underlying the performance indicators was that they would be printed out by exception. That is, the Base Procurement Officer or his Deputy would have their attention called to a potential problem area only if the situation or trend was outside a tolerance range. A periodic data purge would be performed for review to analyze the data. This, however, would not be performed by the Base or Deputy Procurement Officer as part of his day-to-day managerial responsibility or duty.

An element of the questionnaire was a question dealing with the suitability and usefulness of the present reports. Since it was envisioned that all reports generated by the indicators identified would be by exception, it was felt pertinent to this research effort to gather opinions on the existing report structure.

CHAPTER VI

OBJECTIVES AND PERFORMANCE INDICATORS OF THE BASE LEVEL PROCUREMENT FUNCTION

General

". . . in order to practice decision making it is necessary to consider the framework within which the decision will be made. The most important element in the framework is the objective of the system" (28:25). Defining the objectives of the base procurement function was a necessary prerequisit to determining performance indicators. A performance indicator that accurately measures a procurement activity is useless if that activity does not support the effectiveness of the base procurement function.

In the review of the literature no presentation was discovered as to the performance indicators of a procurement function. In only three instances was any delineation of procurement objectives made. The objectives of procurement as manifested in the purchasing function of a corporation were stated as being:

1. To protect the best interest of the company.
2. To develop adequate and trained personnel.
3. To purchase materials of the right quality,

> in the right quantities, from the right source, at the right time, at the right price.
>
> 4. To promote fair and friendly relations with all concerned (9:17).

The only mention of procurement objectives within the military, whether in the Air Force or the other service departments, was reflected in a statement by the Joint Logistics Review Board in its findings in a report on procurement which stated:

> It is the objective of procurement to buy what is needed at reasonable prices for delivery when and where it is needed (34:3).

Also the comment was made in the Technical Inspector General Brief that:

> The objective of procurement management is prompt mission support.
>
> The procurement office is accomplishing its mission when delivery of a supply item or performance of a service is made at the right place, at the right time, and at a reasonable price (79.1).

This chapter is devoted to answering the research questions originally posited at the beginning of this thesis. The objectives and performance indicators presented are the result of an analysis of the responses rendered to the questionnaires utilized in this study. This analysis was accomplished within an academic context and interpretations rendered where necessary based upon the literary review and interviews accomplished.

Objectives And Indicators

Objective: Provide timely support to all

base organizations that require purchase of supplies and services.

Performance indicators which measure the effectiveness of meeting this objective are:

1. Time to process Purchase Request (PR) and receive goods or services. There is a need to establish a realistic table of normal lead-times for commodities and services. Such a table would be available to all base organizations and would replace the use of MILSTRIP priorities for non-depot purchasing by procurement. The table would include variations in lead-time criteria for different dollar amounts, namely under or over $2500, along with method of procurement, namely two-step advertising and different groups of goods or services. Whenever established lead-times were exceeded a report would be generated for the Base Procurement Officer. Although the lead-times would vary for each category, the table would normally contain most of the following intervals:

a.) Date PR received by procurement from the date PR prepared. This would provide information that external circumstances were delaying procurement.

b.) Date PR received by appropriate branch chief from the date PR received by procurement.

c.) Date PR received by buyer from the date PR received by branch chief.

d.) Time required for contract review and approval by legal officer or higher headquarters.

e.) Date funds obligated from the date contract approved.

f.) Date vendor quotes delivery to be made by compared to the date the goods or services are actually delivered. Consistently falling outside a prescribed range of values might indicate good vendor performance (delivery prior to specified date) or unsatisfactory vendor performance (exceeding specified date). The report would list by vendor those that delivered early or late and would be printed daily in order to monitor delinquencies.

g.) Date for other lead-times depending on type of contract.

2. Number of PRs returned for reaccomplishment to each requesting organization. Exceeding a preset level would indicate a potential buyer or requestor problem that requires resolution.

3. Number of times a particular PR is returned to a requesting organization. This might indicate a problem exists with a particular request or the request may be complicated and the buyer would rather delay the purchase by returning the PR.

4. Number of PRs processed by: major categories of goods or services; buyer; and requesting organization. This information should be printed monthly if it demonstrates a deviation for the particular month in question. This information could be used for determining workload changes and/or manpower change requirements.

5. Number of PRs received, by organization, requesting priority or off-duty emergency action. A high number would perhaps indicate inadequate planning by the requesting organization.

6. Number of times that items purchased did not meet the requestor's requirements. A monthly printout over or under a preset level would provide information which would indicate whether specifications in contracts are clear or definitive enough.

7. Evaluation of construction progress by a comparison of the scheduled progess to actual progress. The comparison would be specified at different time intervals depending on the length of the contract.

8. Number of substantive Invitation for Bid Modifications by contract type and buyer. This would include those that change specifications, plans, basis of award statement, or bid opening date. A high number of changes could be caused by inadequate planning by requestors or poor buyer performance.

Objective: To assure that the procurement office is buying goods and services at a fair and reasonable price.

Performance indicators which measure the effectiveness of meeting this objective are:

1. Number of buys that fall outside a percentage of the amount paid for a particular quantity

of similar goods or services from the previous year. This would involve a quarterly comparison to indicate whether price increases or decreases are reasonable.

2. Number of buys that fall outside a percentage of the last price paid for the same goods or services. This would identify a sudden change in prices.

3. Number of times a Federal Stock Number is requisitioned. A high number might indicate non-systematic grouping by the requestor or too low stock levels. Comparison would be to a tolerance level on a monthly basis.

4. Number of buys that fall outside a percentage of the price paid by other DOD components in the same geographic region for the same item or service. Comparison would involve a quarterly matching to indicate any price differentials which have no apparent cause.

5. Amount that bidder list has expanded or contracted. A quarterly printout of expansion or contraction outside a predetermined acceptable range would possibly indicate the degree to which buyers are seeking new sources and thereby possibly obtain better results.

6. Based upon a determination of the best season to purchase seasonal goods, the number of times goods were purchased outside the optimal time-span.

7. Percent increase or decrease of bidder response to invitations, by commodity and service classification. This would involve a quarterly comparison with the preceding quarter. If bidder response is falling off there might be a problem in:

making information available to the vendors; too small orders; late payments to the vendors; unrealistic buyer or specification demands; or too low profit.

8. Number of bids that fall disproportionately close, above or below the government estimate. Bids that consistently range extremely close to the government estimate might indicate an information leak from the procurement activity. Very high or low bids might indicate a poor definition of what is required.

9. Date invoices received compared with date payment made. This would indirectly affect the number of bidders as late government payment could possibly discourage vendors.

Objective: To support the socio-economic policies as posited and directed by the President and the Congress.

Performance indicators which measure the effectiveness of meeting this objective are:

1. Percentage of dollars awarded to small business.
2. Percentage of awards made to small business.
3. Percentage of small business set-asides.
4. Percentage of contracts that are subject to the Equal Employment Opportunity Act.
5. Percentage of competitive buys compared to non-competitive buys.

Areas where the Procurement Officer presently has no procurement control, namely brand name items for resale, could be included or deleted from the total amount on which the percentages are applied. The tolerance level would then be adjusted accordingly to determine significant deviations.

Summary

It must be stressed that the performance indicators under each objective would not be printed out as a mass of data in any recurring report. The information would be printed only if a given indicator exceeded a previously determined level or range of values. It is necessary to recognize that performance indicators might indicate a problem over which the Base Procurement Officer has no control but which affects his operation. This is a major rationale for the establishment of a systems point of view in the efficient and effective accomplishment of the overall base mission.

Some suggestions were presented by questionnaire responders which had considerable merit but did not lend themselves to quantifiable data. Three major suggestions were:

1. Increase awareness of the base procurement function in the civilian community by making more information available on: anticipated contracts; laws regulating procurement; amount of dollars available for small business awards and other pertinent programs of base procurement which impact on the community.

2. Use questionnaires to evaluate vendor treatment by the base. Questions could be related to the treatment accorded in the reception room and satisfactory receipt of payment and so on.

3. Plan a systematic training program for procurement personnel.

In the analysis of the questionnaires there was some disagreement noted on particular objectives and their performance indicators. A consensus was present for most objectives and indicators presented here. Some, however, were included as having particular validity after further research and discussion with knowledgeable procurement personnel, even though they were suggested by relatively few responders. Of the four objectives originally posited for responder consideration one, dealing with the timely and accurate submission of reports, was deleted. Comments tended to indicate that this objective was felt to be an inherent part of all the other objectives and need not be considered in isolation.

The objectives and performance indicators detailed in this chapter were not intended to be final or all-encompassing. It was felt that they would provide the basis for further refinement and study.

CHAPTER VII

PROCUREMENT REPORTS

General

Since it was envisioned that all reports generated by the performance indicators identified would be by exception, it was felt pertinent to solicit the opinions of procurement managers regarding the existing resport structure with which they operate. Collection of this data was accomplished by question number 23 of the survey questionnaire. In tallying the reports as to frequency of mention, two reports had a significant number of comments. These two, the HAF-55, Base Procurement Management Report, and Awards by Buyer appeared to have been perceived by operating managers as the least useful or requiring the most modification. A format copy of these reports appears in appendix C. A general comment on all reports, and representative comments concerning the Awards by Buyer and HAF-55, quoted from the responders follow:

General Comment:

> All procurement management reports generated by Base Procurement are required as of the 25th of each month. All related reports of other agencies (Base Supply, Comptroller and Commissary) have "cut off" dates of the end of the month. Pro-

curment receives or contributes information for these reports. In the case of Comptroller records of obligations of funds our reports or listings do not serve a purpose without us making supplementary inputs which is a duplication of effort. Recommend Procurement reports and monthly data listings and printouts be made compatable with related agencies and submitted or run as of the last day of each month.

This comment emphasizes that base procurement cannot be considered as operating in isolation from the other base functions.

Award by Buyers Report

Comment:

I would delete "Awards by Buyers" listing as it does not take into consideration such factors as: leave, extra duties, and type of commodity bought.

Comment:

. . . modify to allow for a meaningful comparison regarding the amount of work accomplished by each buyer.

Comment:

I do not know how this should be modified to be more useful. At present, I give it a careful persual, but have not been able to use it as a manger.

This report seems to contain the elements of what must be avoided in all present and future reports — data for data's sake. Apparently the number of actions, line items, and total dollars does not correlate with how busy or efficient a buyer is. The necessary variables, some of which are mentioned in the first comment, are

missing. To identify and input all the relevant varaiables for such a complex area as buyer performance would perhaps be an unwise expenditure of time and resources.

Data such as this is sometimes stated to be required for justifying manning increases or decreases. One responder states his position for deleting this report (and several others) by saying that he felt the data was useless; and so must higher headquarters because manning had not changed for ten years despite data amount changes.

Data and computer reports must continually be reviewed for relevance to the manager. In a dynamic environment data needs will change and reports must be modified, added, or deleted to keep pace.

HAF-N55 Base Procurement Management Report

Comment:

Currently all actions are lumped together. The report should be modified to break out type of actions.

Comment:

Modify the N-55 report to reflect Small Business awards against the possible awardable to Small Business concerns and not the percent of Small Business awards compared to total awarded. You can't buy Coca Cola from anyone but Coca Cola so why figure large business in Small Business computations.

Comment:

(1) Delete data pertaining to priced, unpriced, and priced percent actions.

(2) Add data to depict the number/dollar

value of formal contract actions, purchase/ delivery order actions and BPA calls.

(3) Change program to permit modification actions and dollars to be customer coded.

Comment:

I feel that this report should be modified to reflect a more accurate assessment of small business awards. This can be done by removing those commodities/services procured over which the Base Procurement Office has no control . . . .

Comment:

Delete HAF-N55. It has been ineffective since conception. No one has demonstrated a use for it. It appears from nowhere, goes somewhere and barely leaves a spoor.

Comment:

Recommend the Base Procurement Management Report, RCS-HAF-N55 be modified to specifically identify those items listed . . . below:

a. total dollars and actions base supply.

b. total dollars and actions contract maintenance.

c. total dollars and actions commissary, centralized and decentralized.

d. total dollars for utilities segregated by type i.e., electricity, gas.

e. total dollars and actions construction.

f. total dollars and actions medical.

Comment:

Separate delivery order and purchase order data.

Comment:

> Program should tally the line items processed and list them by customer code. Line items processed are a more realistic indication of work load . . . .

Summary

It can be seen that, even though there are diverse opinions, there is some common agreement as to data requirements.

The authors feel that this section best illustrates the need to continually seek the opinions and advice from as wide a range of managers as possible concerning what data is required. Although it is a strong possibility that the second and fourth comments, regarding the HAF-N55 report, are asking for the data because of higher authority pressure, the sixth comment appears to have excellent potential for good base level management data.

An interesting consideration was brought to light in discussing reports with various base level procurement managers. Some did not want useful management data in a printed format due to the fact that such data might indicate the existence of internal problem areas not only to themselves but to anyone else reading the report. Within the existing environment all base procurement reports were checked, re-checked and second-guessed by a variety of inspectors. A procurement official must justify, to many people, solutions applied to a variety of problems. In some cases the procurement manager can be held for pecuniary

liability if inspectors do not agree with a course of action he has pursued. Given this situation, it appeared that the collection of data designed to bring out the identification of problems would be hampered at every turn. The only possible solution to this problem might be to designate certain performance indicators — those that are specifically designated to identify possible internal problems — as being solely for the use of the Base Procurement Officer and his Deputy. These reports would then have to be protected by regulation from review by any other office.

Conversely, data affecting other base level managers should be made available to them. For example, an organization having a high number of procurement priority requests should be informed so that it might plan and organize future requirements in a more expeditious manner.

In general, most reports existing at the time of this study were designed to measure areas within base procurement as if those areas could operate in isolation from the rest of the base. The achievement of a goal, and hence a procurement report that "looks good", inevitably affects other base functions. Only when a procurement manager is given goals within the context of overall maintenance, supply, transportation and procurement efficiency can he make decisions which are consistent with the achievement of overall base level logistics objectives without optimizing the operation

of the procurement function at their expense. Reports which place emphasis on one functional area at the possible greater expense of efficiency and effectiveness of another should be deleted.

CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

Systems theory, coupled with advanced computer technology, presents a potential solution to the complex problem of logistics management. Procurement, as one of the integral parts of logistics, can only have its objectives defined within the context of a logistics system. Hence, the formulation of objectives and their performance indicators reflect management information relevant to procurement and its interfaces with the environment. Gathering, processing and interpreting much of this management information depends on computer technology giving minimum data presentation and output delays.

From a review of the data and reports that were presently available to the Base Procurement Officer, it was evident that reports by exception with minimum data delays were required in the future. In general, the existing reports required the manager to analyze the data with no indicators of significant trends. Reports by exception would flag possible problem areas and perform trend analysis within the computer program.

A significant problem existing within the observe base procurement function was the lack of experienced Base Procure-

ment Officers (see appendix A). Procurement is a complex and diverse activity which demands experienced trained managers. The implementation of a systems approach demands the same in the way of management personnel.

Before any attempt can be made to implement such a systems approach a change in attitude must be accomplished within the Air Force logistics management structure. This change must be realized at every level within the management hierarchy. The problem that persists in logistics is that functional managers fail to view themselves as part of an integrated system of support. While logistics is a complex process composed of diverse functional parts, all are subject to a common plan or serve a common purpose. Functional managers, however, tend to view their activity as an entity acting independently of other functions within the confines of a rigid organizational structure which had been designed to suit its particular needs. The concern within each function becomes not one of supporting a common purpose but rather one of conforming to the regulations and standards governing the operation o e activity. Optimization of functional operations becomes paramount and the contributions of the function to any type of logistics process is maintained in a position of secondary or non-existent importance.

In delineating the organization of the Wing/Group Base, Air Force Manual 26-2 states that:

> The concept of the standard wing/group base structure is based upon mission orientation and rapid decision making. Consistent with this,

> the commander has reporting to him, in addition to a minimum number of chiefs of special offices, only the chiefs of organizational elements which are essential to his primary mission . . . .
>
> Thus, the commander is relieved of direct supervision of other elements. Furthermore, the total functions of the wing/group base are aligned under the above individuals so that each one can exercise control over funtional or organizational segments which are important to the accomplishment of his mission (82:4-1).

In referencing figures 4 and 5 it can be seen that within a single wing/group base the logistical elements of supply and maintenance are directly responsible to the Deputy Commander for Materiel, while the elements of procurement and transportation come directly under the Base Commander. In a multiple wing/group base the function of supply is also placed under control of the Base Commander (82:4-10). Such a structuring and policy are not consistent with the pusuit of common logistics objectives within a base level logistics system.

The application of the systems approach may well, and probably will, indicate the need for organizational change in order to eliminate situations which generate built-in difficulties. As a result, dramatic changes may have to take place in relation to the role of the functional manager. First, and perhaps most important, would be a change in the way the manager conceptualizes his function.

While no spectacular predictions for logistcis management improvement will be made and while the systems approach

may not offer a panacea, its application must be attempted as a means to improving the performance and effectiveness of base level logistics support. While the tried and true functional approach may work, it must be realized that it is not necessarily the best way. Imagination, initiative and innovation are the keys to the survival of any organization. Change must not be avoided simply because it is disruptive from an organizational or personal point of view.

The analysis performed in this thesis and the resulting procurement objectives have been presented as a groundwork for future refinement and study. The authors believe that the functional interfaces within procurement and the logistics system can be defined and performance indicators develped to enable a more effective and efficient utilization of the resources available to the United States Air Force.

APPENDIX A

EXPERIENCE/RANK DISTRIBUTION TABLES FOR QUESTIONNAIRE RESPONDERS

RANK	YEARS EXPERIENCE IN BASE LEVEL PROCUREMENT											
	0 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19 20	OVER 20	TOTAL
Lieutenant Colonel	5	5	1			1		1		1		14
Major	7	6		1	1	1						16
Captain	9	12	6	1	1				1			30
Master Sorgeant								1				1
GS-13			1			1				1	1	4
GS-12					1		2	1	2	3	10	19
GS-11								1			1	2
TOTAL	21	23	8	2	3	3	2	4	3	5	12	86

Table 1.

Experience/Rank Distribution Of Procurement Officer Responders To Survey Questions (Not All Responders Supplied The Necessary Information)

RANK	YEARS EXPERIENCE IN BASE LEVEL PROCUREMENT											
	0 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19 20	OVER 20	TOTAL
Major										1		1
Captain			1									1
First Lieutenant	1											1
Chief/M. Sergeant									1			1
Senior/M. Sergeant									1			1
Master Sergeant						1	1					2
GS-13											1	1
GS-12				1		3	1	4	3		6	18
GS-11						1		1			1	3
TOTAL	1		1	1		5	2	5	5	1	8	29

Table 2.

Experience/Rank Distribution Of Deputy Base Procurement Officer Responders To Survey Questions (Not All Responders Supplied The Necessary Information)

APPENDIX B

SURVEY QUESTIONNAIRE PACKAGE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

REPLY TO ATTN OF: AF/LGX

19 May 1972

SUBJECT: STALOG Survey

TO:

1. Air University is currently conducting research to identify primary management control factors within the base level logistics environment. This research is part of the Study of the Automation of the Logistics System at Base Level (STALOG) sponsored by this office. You have been carefully selected as a participant, and as such, you will have the opportunity to contribute your knowledge and experience to an effort designed to improve the management of logistics at base level.

2. You will receive from one to four questionnaires. Where sequential questionnaires are employed, these will be sent to you at periodic intervals through August 1972. In every case your total cooperation is necessary to support the study and to meet the time constraints.

3. Please complete the attached questionnaire and return it within 14 days of your receipt of this letter. A preaddressed envelope is included for return of your completed questionnaire. Thank your for your support.

FOR THE CHIEF OF STAFF

William R Hayes

WILLIAM R. HAYES, Brigadier General, USAF
Assistant for Logistics Planning

FROM: STALOG Procurement Research Group 19 May 1972

SUBJECT: Questionnaire on Base Level Procurement Objectives

TO: Base Procurement Officer/Deputy Base Procurement Officer

1. Due to the increasing complexities of base level logistics management a future need appears to exist for the establishment of an integrated base level management information and control system. The purpose of such a system would be to provide base level logistics managers with the essential information needed to manage their diverse activities in a timely manner. Before any type of meaningful design can be proposed, a determination must be made as to exactly what information a manager needs in terms of operational objectives.

2. The purpose of this questionnaire is to reach out to base level procurement managers and solicit their experienced opinions on just what a procurement manager needs to know to manage his operation effectively.

3. It has generally been stated that the mission of the base procurement function is to be an installation's major link with the civilian community by procuring, at a fair and reasonable price, those supplies and services that meet specifications and schedules.

4. To fulfill that mission, the STALOG Procurement Research Group has tentatively proposed four objectives and appropriate items which would indicate whether the objectives were being met. It is anticipated that within the context of an integrated information and control system the base procurement officer would receive a concise computer printout once a week of those items approaching predetermined levels. This printout would enable the procurement officer or his deputy to determine those procurement areas that require managerial attention before they become problems.

5. It is requested that you respond to all questions having made the presumption that information collected in such a system would be solely for your managerial use. Please use additional paper as necessary to respond to questions.

6. A questionnaire and return envelope is enclosed. Do not place your name on either.

Headquarters USAF Survey Control No. 72-94 has been assigned.

AFLC-WPAFB-JUN 72 350

BASE LEVEL PROCUREMENT OBJECTIVES

QUESTIONNAIRE

s

I

ns: Please fill in the following information as indicated.

is your present rank or civil service grade? _____

y

is your government job title? _____

se indicate to the nearest year the amount of experience have had in base level procurement. _____

:o

Command are you currently assigned to? _____

II

ons: On the following pages are presented four objectives for base level procurement operations. Each objective is followed by appropriate supporting items. Please read each objective and its supporting items carefully before rendering any changes or comments as requested. Although setting proper levels to indicate problem areas is important, do not consider that particular aspect in your consideration of this questionnaire.

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OBJECTIVE #1:

To provide support to all base organizations and non-appropriated funds activities that require local purchase of supplies and services.

ITEMS THAT COULD PROVIDE AN INDICATION OF EFFECTIVENESS IN MEETING THIS OBJECTIVE:

a. Date purchase request (PR) received compared to the date PR is finalized on contract.

b. Date indicated on PR as to when goods or services delivery is desired compared to the delivery date indicated on the contract.

5. Indicate any modifications (or deletions) you would make to OBJECTIVE #1:

6. Indicate any modifications, additions or deletions you would make to the items that identify the effectiveness in meeting OBJECTIVE #1: (reference item by the appropriate letter)

7. Do you feel that once weekly is too often or not often enough for the base procurement officer to receive notice that an item listed for OBJECTIVE #1 is approaching or has exceeded its set interval?

8. Please indicate any items you feel should be printed out other then weekly and what the interval should be (daily, bi-weekly, monthly, etc.).

OBJECTIVE #2:

To insure that the procurement office is buying at a fair and reasonable price those goods and services which meet requirements and schedules.

ITEMS THAT COULD PROVIDE AN INDICATION OF EFFECTIVENESS IN MEETING THIS OBJECTIVE:

a. Percentage amounts that procurement cost has gone up for a particular commodity or service since the last procurement.

b. Percentage amount that procurement cost has gone up for a particular commodity or service over a one year period.

c. Number of recurring requirements for identical Federal Stock Class items over short time spans.

9. Indicate any modifications (or deletions) you would make to OBJECTIVE #2:

10. Indicate any modifications, additions or deletions you would make to the items that identify the effectiveness in meeting OBJECTIVE #2; (reference the item by the appropriate letter)

11. Do you feel that once weekly is too often or not often enough for the base procurement officer to receive notice that an item listed for OBJECTIVE #2 is approaching or has exceeded its set interval?

12. Please indicate any items you feel should be printed out other then weekly and what the interval should be (daily, bi-weekly, monthly, etc.).

OBJECTIVE #3:

To treat all vendors fairly and in accordance with laws and regulations.

ITEMS THAT COULD PROVIDE AN INDICATION OF EFFECTIVENESS IN MEETING THIS OBJECTIVE:

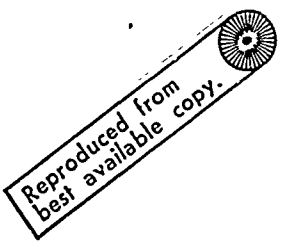
a. Number of protests from vendors which resulted in a reversal of the contracting officer's decision.

b. Percentage of competitive contracts compared to negotiated contracts.

13. Indicate any modifications (or deletions) you would make to OBJECTIVE #3:

14. Indicate any modifications, additions or deletions you would make to the items that identify the effectiveness in meeting OBJECTIVE #3: (reference item by the appropriate letter)

15. Do you feel that once weekly is too often or not often enough for the base procurement officer to receive notice that an item listed for OBJECTIVE #3 is approaching or has exceeded its set interval?



16. Please indicate any items you feel should be printed out other then weekly and what the interval should be (daily, bi-weekly, monthly, etc.).

OBJECTIVE #4:

To insure that information is correct and timely for reports to be used at base level, higher headquarters and Congress.

ITEMS THAT COULD PROVIDE AN INDICATION OF EFFECTIVENESS IN MEETING THIS OBJECTIVE:

a. Number of suspenses to data automation and higher headquarters which were not met.

b. Number of deficiencies found in periodic edit runs.

17. Indicate any modifications (or deletions) you would make to OBJECTIVE #4:

18. Indicate any modifications, additions or deletions you would make to the items that identify the effectiveness in meeting OBJECTIVE #4: (reference item by the appropriate letter)

19. Do you feel that once weekly is too often or not often enough for the base procurement officer to receive notice that an item listed for OBJECTIVE #4 is approaching or has exceeded its set interval?

20. Please indicate any items you feel should be printed out other than weekly and what the interval should be (daily, bi-weekly, monthly, etc.)

SECTION III

The four objectives which have been presented in this questionnaire represent an attempt to scratch the surface in identifying the objectives of a base procurement function. You are now asked to render the benefit of your experience in expanding the concept of procurement objectives.

21. Please list any base procurement objectives which you feel should be added and the items which could give an indication of effectiveness in meeting that objective.

22. Please list from the most important to the least important the objectives identified by the STALOG group and yourself in the course of this questionnaire.

23. Of the reports which you are presently responsible for are there any you would delete or modify to make base level procurement management more efficient? Please list the title of the report and indicate how you would modify (or delete) it.

24. Within the context of the proposed base level procurement management information system, to what extent do you feel that any information collected should be made available to individuals or agencies other than the base procurement officer and his deputy, if it is to serve as an effective base level management tool?

APPENDIX C

PROCUREMENT REPORTS

Prepared 72 sep 01 Procurement Awards By Buyer As of 72 AUG 25 PCN:N330502

Buyer Code	Type of Procurement	Number of Actions	Number of Line Items	Total Dollars
	Buyer Totals			
	Buyer Totals			
**	Final Totals			

Sample Report 1.

Procurement Awards By Buyer

Prepared 72 Sep 01 Base Procurement Management Report As of 72 Aug 25 RCS:HAF-N55

Command: Sub Command: Reporting Activity: Activity Number:

Section I: Procurement Workload

Custom Code	Line Items Received	Total Actions	Total Dollars	Central-ized Actions	Procure-ment Dollars	Decentral-ized Actions	Procure-ment Dollars	Priced Actions	Unpriced Actions	Priced %
Modifications										
Total										
Sales Transcations										

Sample Report 2.

Base Procurement Management Report
Section I

Prepared 72 Sep 01 Base Procurement Management Report As of 72 Aug 25 RCS:HAF-N55

Section II: Contract Administration Workload During Reporting Period

Customer Code	Total Active Actions	Active Contracts	Active Orders	Active Calls	Total Actions Delinquent	Delinquent Contracts	Delinquent Orders	Delinquent Calls
Total	____	____	____	____	____	____	____	____

Sample Report 3.

Base Procurement Management Report
Section II

Prepared 72 Sep 01 Base Procurement Management Report As of 72 Aug 25 RES:HAF-N55

Section III: Competition in Procurement Actions

Comp Code	Actions	Dollars
Comp Total	_____	_____
Non-Comp	_____	_____
Sub Total	_____	_____
Other	_____	_____
Grand Total	_____	_____

Section IV: Remarks

Name and Grade: Signature:

Sample Report 4.
Base Procurement Management Report
Section III

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