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Selective Systems Management

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**SELECTIVE SYSTEM MANAGEMENT**

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## FOREWORD

This report is a product of a research project conducted as a phase of the Advanced Logistics Course, School of Logistics, Institute of Technology. The purpose of the research is two-fold; first, to expand the students' knowledge of scientific research techniques through participation in applied research; second, to attempt to produce a solution to a current logistics problem.

The subject of this research is "Selective System Management." It is concerned with the philosophy and criteria used in connection with decisions to phase systems into the Air Force and later to phase them out of the systems management structure throughout the various organizational levels of the Air Force. This subject offers a significant challenge to a research group in that products stemming from the project will provide for more effective use of personnel, more effective support to selected priority systems and thus provide more Air Force per dollar.

The research group extends its appreciation to the individuals at the various headquarters, command, and Air Materiel Area offices who were interviewed during the collection of data for the study. In each case these individuals cooperated enthusiastically and the many ideas they contributed were invaluable in developing the findings of this report. However, the Team accepts full responsibility for the conclusions and recommendations contained in this report.



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## INTRODUCTION

Weapon System Management is a technique of management adopted by the United States Air Force to insure that specially selected high priority Weapon Systems, whether they be aircraft, missiles, or command and control systems, receive continuous attention over and above the specialized interest of any one functional organization.<sup>1</sup>

Prior to the organization of the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC) on 1 April 1961, the Air Research and Development Command (ARDC) had been responsible for research, development and testing. The Air Materiel Command (AMC) had been in charge of procurement, production and support. The USAF reorganized these responsibilities in order to concentrate all development and procurement of systems--space, aeronautical, electronic and ballistic--in a single new command. This new command is the Air Force Systems Command. The task of providing all system programs from development and test through production, installation and check out--delivery to the using command--will be up to the Air Force Systems Command.<sup>2</sup>

Despite the fact that the term "Weapon Systems Management" is defined officially, the meaning of the term continues to assume unofficial forms as reflected by the beholder's location in the management structure. In other words, those at the top have a slightly different picture of this concept of management than those at the lower levels. Both the official and unofficial versions of the definition are expressed in impressive sophisticated verbage, but when expressed in practical operating techniques there are certain characteristics which always seem to be present. These similarities appear as methods for insuring:

Expediting	Personal attention
Monitoring	Integrating
Follow-up	Close cooperation
Time phasing	Coordinating
	Focal Points

Therefore, construction of the weapon systems management organizations always makes use of special effort elements in the form of "Integrators", "Phasing Groups", "Task Groups", "Expeditors", etc.

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<sup>1</sup>Air Force Regulation 375-1, paragraph 3a.

<sup>2</sup>Witze, Claude: "Organizing for the Space Age", Air Force, April 1961, page 39.

It has been assumed in this study that, first, weapon systems management is necessary and, second, systems management costs the Air Force something either in terms of manpower, personnel, or other resources over and above the routine type support. It is not intended to question the validity of the systems management concept; however, the merits of its continued application after some point in time during the life cycle are questioned. Although the value of this special technique of management has never been precisely determined, one must still ask how much of the nation's resources are utilized? These two questions confront the manager with a significant decision — "What point in time during the life cycle of a particular system should it be phased out from under the systems management concept and transferred from this special support procedure to a routine type support?"

As a basis for the decision as to whether a system should be phased-out from the systems management concept, specific ground rules should be established. The Team has chosen as its objective the establishment of these ground rules or criteria for the phase-out of systems from the "System Management Concept".

Graphically the key to the problem is illustrated in Figure 1 — specifically, to determine the point in time at which the costs exceed the value and at this time the system should be phased-out from the systems management concept.

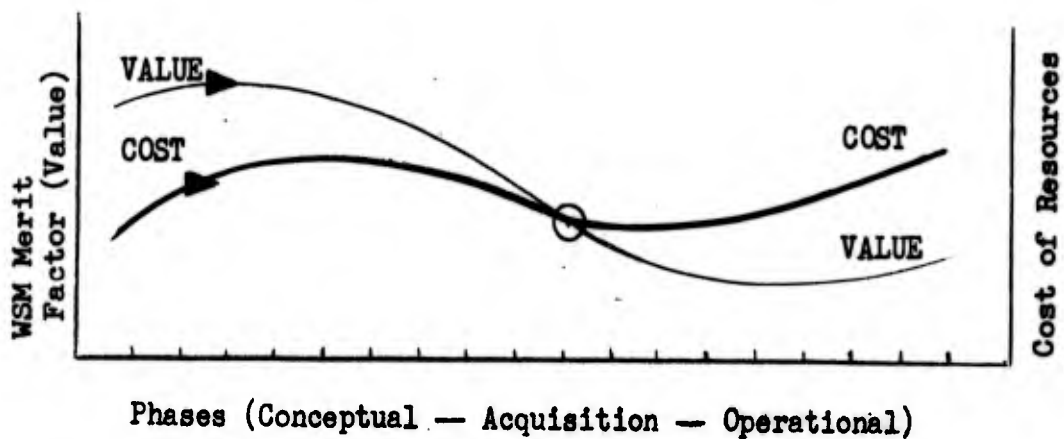


Figure 1

A summary of the research report follows.

## SUMMARY

### I. BRIEF

The original problem assigned to this Team assumed a relatively frequent turn over of systems which confronted the Air Force with a management problem. The Team's findings revealed considerably more incoming than outgoing systems from Vol. XX/ARLS support procedures so the problem was redefined to:

"DETERMINE CRITERIA FOR THE PHASE-OUT OF SYSTEMS FROM THE 'SYSTEMS MANAGEMENT' CONCEPT."

or more simply, "When should the systems management concept no longer apply to a system?"

The objective is to develop the ground rules for a formulated, systematic withdrawal of special management effort from selected systems based upon a logically determined point in the life cycle of the weapon. Improved utilization of manpower and dollars would result from the transfer of management effort from lower priority (outgoing) systems to those systems accorded higher priority (incoming) under the AFR 375-series regulations. Since AFR 375-1 states that systems management will be applied to incoming systems selected by the Chief of Staff, it was reasoned that the reverse is valid and preferential management should be removed on a selective basis.

By interviews at Hq USAF, AFLC, AFSC, Hq SAC and OCAMA, the research Team found that Air Force management does use personal judgment evaluation of military value, manpower involved, facilities obligated, distribution, configuration and replacement program in assessing the management attention to be given a system. The findings in these respects were more revealing than conclusive. Manpower and facilities utilization reports are only relative. Reports reflecting in commission rates and equipment status are tinted by circumventing techniques which inject an element of distrust in their validity.<sup>1</sup>

There is no question of the benefits of "focal point" simplicity and reduced reaction time with which systems management satisfies operational demands, but the degree of satisfaction is only a matter of opinion. Most of the opinions, however, supported the system management concept.

Opinions of those interviewed as to those criteria which justified the application of the systems management concept were surprisingly alike.

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<sup>1</sup>Herbert E. Brose, Lt Col USAF; Frederick Collington, Major USAF; Franklin E. Howe, "The Criteria and System for Evaluating Logistics Effectiveness," 1 Nov 59, School of Logistics, IT, AU, page 39.

Elements mentioned were military value, cost, stability of configuration, planned replacement and deployment. No formal procedure exists for the evaluation and application of these factors. The weighing of their relative merits and use in the management process is dependent upon human judgment. Accepting these elements as valid criteria and in recognition of irregularities in the continuity of coordinated control which exist in the present system management operations, the Team applied remedial analysis based on its findings. The result is INTEGRATED SELECTIVE SYSTEMS MANAGEMENT, The functioning of which is illustrated in Figure 2. Integrating the "selective" process into the systems management procedures would provide selection of systems by the Chief of Staff, on the basis of specific criteria, to receive the full or partial package management treatment. During the Acquisition Phase the management effort may be changed in scope to be compatible with the national defense demands or the promising or pessimistic technological outlook for the system. Finally during the Operational Phase the systems would be selectively withdrawn, again under established criteria and with Chief of Staff approval, from the full systems management to a lesser degree of management thus permitting the transfer of management resources, freed, to systems more deserving.

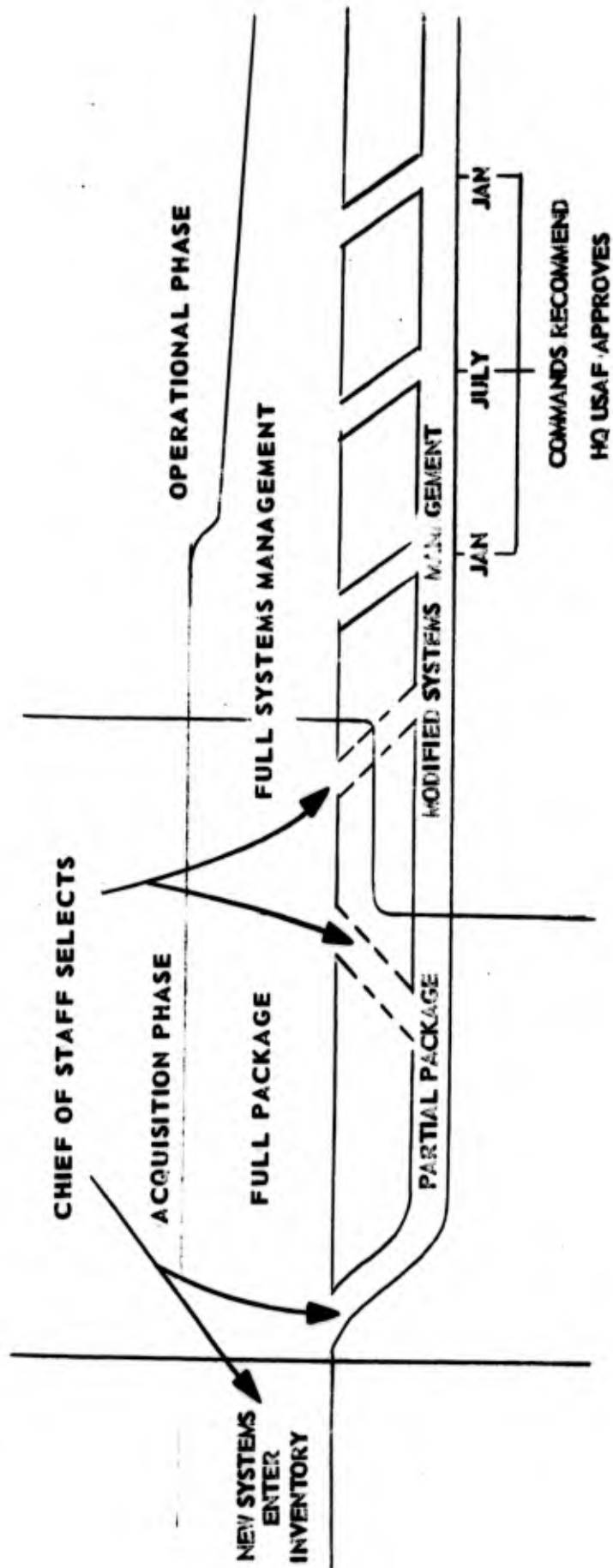
The timely, or untimely creation of AFSC and AFLC spotlighted the question of logistic continuity for systems management. The services may be consistently evading an optimum organization to satisfy "professional" and "management" prejudices stemming from incompatible philosophies aiming toward the same objective. Other testimony and studies notwithstanding, the logistical concept of systems decrees that Development, Production and Support (supply, maintenance, training, etc.) are inextricably bound together and that any attempt to separate these functions under different operating principles is inviting "managed confusion". Single command management is not the perfect solution but is a step which must be taken in all fairness to the Systems Management Concept.

## II. COMMENTS ON PERIPHERAL FINDINGS

Chapter VI covers peripheral findings and comments of the research group. The information submitted in the chapter was collected in the hope that some clue might be found which would aid in identifying data upon which to determine criteria for the phase-out of systems from the systems management concept. These data are furnished for information purposes only. The following subjects are discussed:

1. Reorganization - In the discussion of the new organization of AFLC and AFSC an overlap of interest between these commands is shown as a "grey area". An organization to minimize this "grey area" is submitted.

2. Automatic Resupply Logistic System - During discussion of the problem, the machine procedures now in effect to support first line systems were reviewed and extreme criticism was expressed by the using command against this procedure. It was indicated that the theory and philosophy of the procedure were excellent, but the procedure just didn't provide the support necessary. The real problem may be with the personnel and not the



**INTEGRATED SELECTIVE SYSTEMS MANAGEMENT**

machine. This subject is extremely "ripe" for study.

3. Responsibilities of Air Materiel Areas for Logistic Support Management - This finding involves an apparently unnecessary duplication of effort on the part of the Inventory and Support managers. This area is worthy of further study.

### III. CONCLUSIONS

#### A. Pertaining to the project objective.

1. The Air Force needs a formal program to select systems which merit systems management.

2. The Air Force needs a procedure for periodically evaluating each systems' requirement for preferred management and for phasing-out those systems from the systems management concept where the requirement no longer exists.

3. Officially, criteria do not exist for the phase-out of systems from the systems management concept and such guidance should be established.

4. Until cost and management evaluation reports provide proper data (such as accurate AOCPP reports, complete costing informats), judgment decisions must be used in the selective management processes.

#### B. Pertaining to peripheral findings.

1. An extended area of common interest between the Air Force Systems Command (AFSC) and Air Force Logistics Command (AFLC) has been created by the organization of these two commands.

2. The Automatic Re-supply Logistic System is not being given fair consideration.

### IV. RECOMMENDATIONS

#### A. Pertaining to the project objective.

1. That selective systems management be given formal recognition by expanding AFR 375-1 to include the special materiel support procedures for selective systems management.

2. That a procedure for determining the need for systems management effort initially and at selected periods during a system life cycle be published and implemented.

3. That procedures be developed for measurement of the cost and effectiveness of systems management.

4. That criteria, on which to base decisions concerning the need for applying systems management techniques to a specific system, be established in terms of military value, cost, stable configuration, planned replacement, and deployment.

B. Pertaining to peripheral findings.

1. That the logistics continuity of systems management be solidified by the assignment of development, production, and support functions to one command.

2. That further study of the Automatic Re-supply Logistic System be made with the purpose of "de-bugging" the system.

3. That further study of the responsibilities of the Inventory and Support managers in Materiel Management organizations of AFLC AMA's be made to eliminate what appears to be assigned duplication of effort.

TEXT  
OF THE  
REPORT

## CHAPTER ONE

### THE PROBLEM

The Systems Plans Division, Directorate of Logistics Plans, Hq USAF (AFMLP) suggested that the School of Logistics study the organizational impact of the frequent entry and phase-out of systems and the changing number of different systems supported. Preliminary research revealed that relatively few systems phase-out of the inventory. A phase-in and phase-out chart for missiles and aircraft is included as Appendix 1 to illustrate this point.

It was also found by comparing the organizational charts for the Aeronautical Systems Center and the Ballistic Missile Center for a period of several years that phase-out of systems had relatively little impact on the organizational structure. This opinion is further substantiated in the following statement taken from the Kelly Air Force Base Historical Monograph on file in the Hq AFLC Records Archive:

"Between 1951 and 1955 SAAMA's biggest workload had been the support of the B-36, but now SAAMA was phasing down B-36 support and the storage of B-36 line items. During the first six months of 1958 specialized repair responsibility was relinquished by SAAMA for B-36 components. However, no impact for the loss of this responsibility was felt at Kelly Air Force Base, since the B-36 had been in process of phasing-out for sometime, and its place was being taken by the F-102, the B-47 and the B-52 in Kelly Maintenance Shops."<sup>1</sup>

#### I. THE PROBLEM RESTATED

In the course of looking up data on the original problem, correspondence from the Vice Chief of Staff<sup>2</sup> Hq USAF, directing the revision of Volume XX, AFM 67-1 by 31 December 1960 and the reply from the Commander, Headquarters Air Materiel Command<sup>3</sup> outlining reasons why such action was not feasible in such a short period of time, was reviewed.

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<sup>1</sup>Hq San Antonio Air Materiel Area, Historical Monograph Nr. 1, "Conclusion of B-36 Aircraft Phase-Out," July 1957-May 1959, RES AU-05. Kelly AFB, San Antonio, Texas.

<sup>2</sup>LeMay, Curtis E., General USAF, Vice Chief of Staff, Hq USAF, letter 19 Aug 60, "Management of USAF Assets," to General Anderson, Hq AMC.

<sup>3</sup>Anderson, Samuel E., General USAF, Commander Air Materiel Command, letter, 29 Aug 1960, "Management of Air Force Assets," to Hq USAF (AFCCS).

This correspondence indicated a need for an Air Force policy for the orderly phase-out of systems from special management procedures when the system no longer warrants the special emphasis of some of the "Systems Management" concepts. Therefore, the problem was restated as follows:

**"DETERMINE CRITERIA FOR THE PHASE-OUT OF SYSTEMS FROM THE 'SYSTEMS MANAGEMENT' CONCEPT."**

The idea of devoting varying degrees of management effort to a particular system based on priority or importance is not new to the Air Force. It has been practiced for sometime on items in the Hi-Valu and Lo-Valu programs. A vital factor in the Hi-Valu program is the periodic screening and transfer of these items to a lesser degree of control when this special management effort is no longer warranted. The same principle should be applied to systems designated for special "Systems Management" procedures. Systems which no longer warrant special management emphasis such as automatic resupply or centralized control of assets should be systematically phased-out to a lesser degree of management effort.

The information in Figure 3 reflects the number of systems (33) that were placed under Volume XX or ARLS support procedures from January 1956 until 1960, with none phasing-out. In October 1960 the Q-2 and Q-4 were phased-out from the systems management concept. It is interesting to note that no major efforts were made to phase-out systems from the "Systems Management Concept" until the receipt of the Vice Chief of Staff letter of 19 August 1960.

Air Force Regulation 375-1 states that "To insure the best possible operational results, selected systems are designated by the Chief of Staff for special management procedures - - ." Hq AFLC may designate which system gets the special management treatment for support under Volume XX or ARLS procedures. The Air Force has a formal policy in the AFR 375-1 series regulations, applicable within Hq USAF, for placing systems under the selected systems management concept, but there are no procedures in existence which state just how these systems will be phased-out of Vol. XX or ARLS into the normal supply procedures. Within Hq USAF there is lacking an integrated, selective systems management program as evidenced by the Chief of Staff letter, 19 August 1960, and USAF message AFMSS-86149, 15 February 1961.

As reflected in Appendix 2 and shown in Figure 4, Page 14, it is readily seen that 33 of systems under Volume XX/ARLS represents a fairly large portion of resources committed to systems under the weapon systems management concept.

Therefore, if the Air Force continues to place new systems under the selective systems management concept, arrangements should be made for the orderly withdrawal of these same systems from this special treatment if considered desirable during the life cycle of the system. If a policy does not exist and lower echelons are compelled to wait for guidance from

PHASE-IN/PHASE-OUT OF SYSTEMS  
 UNDER VOL. XX/ARLS (CUMULATIVE)

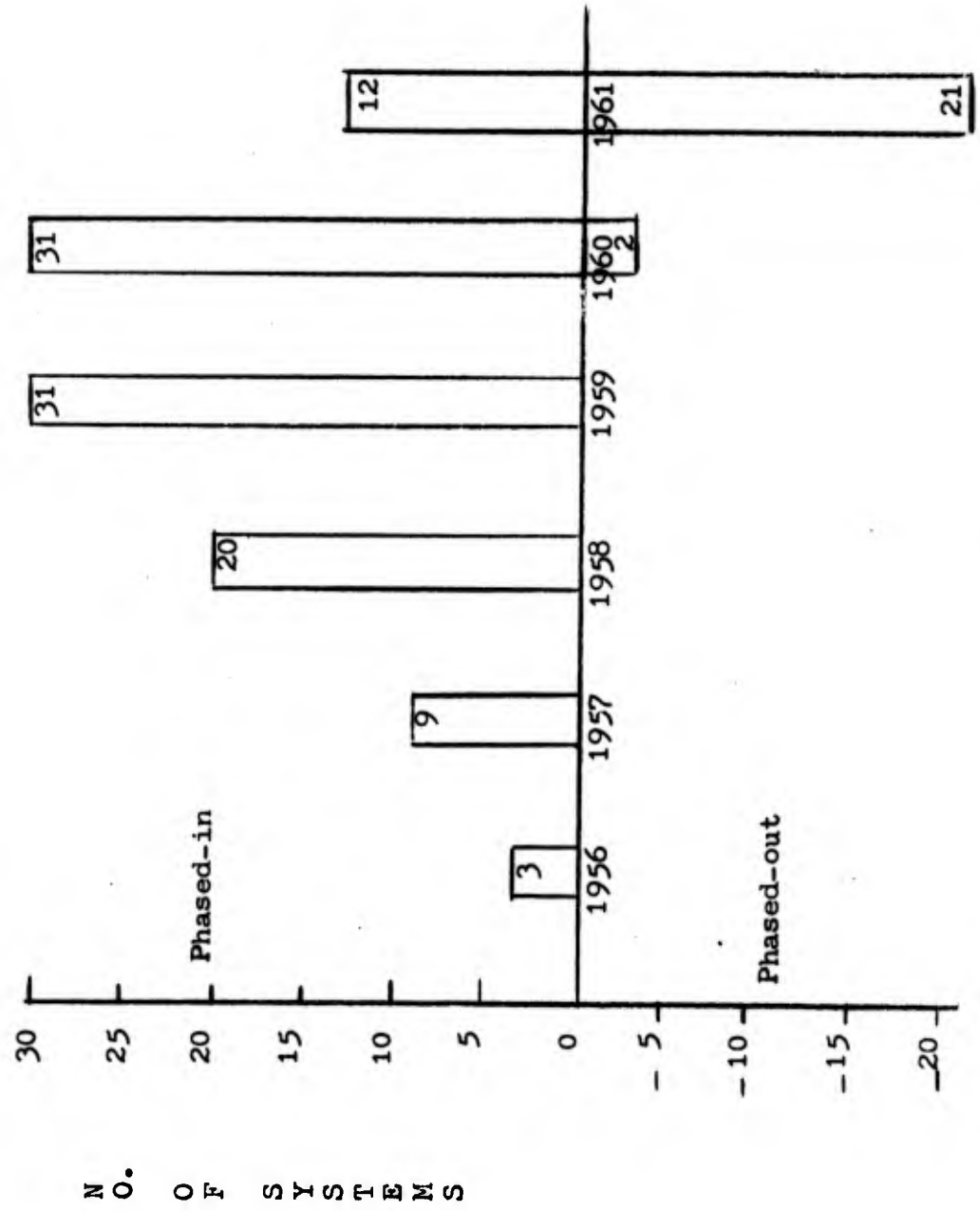


FIGURE 3

SPECIAL MANAGEMENT PROCEDURES  
HAVE APPLIED TO THE FOLLOWING SYSTEMS

VOLUME XX, AFM 67-1

*B-52	OCAMA	F-104	SMAMA	GAR-1	MAAMA	*GAM-77	OCAMA
B-57	WRAMA	*F-105	MOAMA	GAR-2	MAAMA	GAM-83	MAAMA
B-58	SAAMA	F-106	SAAMA	GAR-3	MAAMA	SM-62	OOAMA
B-66	MOAMA	C-118	WRAMA	GAR-4	MAAMA	*TM-61	WRAMA
F-100	SMAMA	C-130	WRAMA	GAR-8	MAAMA	*TM-76	WRAMA
F-101	OOAMA	C-133	SBAMA	GAM-63	OCAMA	Q-2	MOAMA
F-102	SAAMA	*KC-135	OCAMA	*GAM-72	OCAMA	Q-4	MOAMA

VOLUME XXIII (Modified)  
AFM 67-1

SM-78      MOAMA

AUTOMATIC RESUPPLY LOGISTICS SYSTEM (IOC-II)

IM-99	OOAMA	SM-65	SBAMA	SM-68	SBAMA	SM-75	SBAMA
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\* Denotes those systems remaining under Volume XX after Sept. 1961.

FIGURE 4

higher headquarters then it appears reasonable to expect sporadic management actions when systems are phased-out in wholesale numbers.

The lack of an integrated, selective system management program is obvious when one considers that:

1. Selected systems are designated by the Chief of Staff, USAF, for special management procedures.<sup>4</sup>
2. A subordinate command negotiates with the using commands for withdrawal of systems from special management procedures.
3. The Vice Chief of Staff directs that the special management procedures of Volume XX be rescinded and out of operation by 31 December 1960.<sup>5</sup>
4. AFMSS-86149, 15 February 1961, directs that when the Cargo Jet C-135 enters the inventory it will be supported by the Vol. XX procedures along with the KC-135.

The research Team is of the opinion that criteria should be established to permit the orderly withdrawal of systems from the "Systems Management Concept."

Failure to periodically purge the priority pipeline results in selective management becoming routine and eventually ineffective, because there is a natural tendency to let things run as they have in the past. Therefore, first priority systems may be permitted to suffer while resources continue to be utilized in the support of lower priority work. This condition was encountered early in the ballistic missile program as evidenced by the following paragraph from General Irvine to General Anderson:

"During the week of 23 March, I visited the Los Angeles area for the purpose of reviewing the ATLAS and THOR programs and was briefed by personnel at SBAMA. I am concerned about the difficulties being encountered by SBAMA in assigning manpower to the ballistic missile programs. A major effort is still being expended at SBAMA on various aircraft modifications and routine depot maintenance programs. It is imperative that SBAMA be directed to reduce nonessential effort to a minimum and that major emphasis be placed on supporting the ballistic missiles."<sup>6</sup>

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<sup>4</sup>AFR 375-1, para. 1.

<sup>5</sup>LeMay, op. cit.

<sup>6</sup>Irvine, C.S., Lt Gen USAF, Deputy Chief of Staff/Materiel, Hq USAF, letter 3 April 1960, to Gen. Samuel E. Anderson, Hq AMC.

General Irvine's letter and the subsequent correspondence between General Anderson and the Commander SBAMA resulted in the personnel spaces shown in Figure 5 being designated for realignment.

## II. SUMMARY

This chapter has pointed out the need for a formalized policy for the selection of systems to be managed under an integrated systems management program. The above examples show that lack of a formal integrated program for using the system management concept causes the application of management's effort to be sporadic and on a drastic action basis after the waste of effort has become obvious or a program has been impaired. It is true that there has been some form of selective systems management just as there always has been some form of selective item management. However, selective item management has been much more effective since the formal implementation of the Hi-Valu program. Similar action is necessary to formalize a program for the effective application of selective systems management.

Before continuing further with the discussion of the criteria for the systematic phase-out of systems from the systems management concept the next chapter will provide a brief history of the evolution of the systems management philosophy and a definition of the terms as used in this report. This brief history shows how systems management evolved along two distinct lines; one in development and procurement, the other in the operational area, and independent of each other. Existence of these separate channels illustrates why the two approaches must be combined to provide an integrated systems management program.

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<sup>7</sup>Anderson, Samuel E., General USAF, Commander AMC, letter, 16 April 1961, "Logistic Support of Ballistic Missiles," to Commander, San Bernardino AMA.

MANPOWER SPACES UTILIZED ON SBAMA MANAGEMENT  
 WORKLOADS OTHER THAN BALLISTIC MISSILE AND  
 MISSILE SUPPORT<sup>8</sup>

	<u>Graded</u>	<u>Wage Board</u>	<u>Total</u>
B-66	239	147	386
C-118	158	74	232
Q-2, Q-4	56	14	70
C-47, C-54, L-17	203	133	336
B-25, B-45, H-23	<u>27</u>	<u>20</u>	<u>47</u>
	683	388	1071

FIGURE 5

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<sup>8</sup>CG SBAMA, letter 17 April 1961, "Reprogramming to Support Ballistic Missiles," to CG, Hq AMC (MCF), and Hq AMC letter 30 April 1961, "Same," to SBAMA.

## CHAPTER TWO

### HISTORY AND DEFINITIONS

#### I. BACKGROUND

Management by weapon systems is a technique that has been with the Air Force in various forms, through the years. The weapon systems management concept has been refined, expanded and changed at various levels of command to give the Air Force an ever increasing capability to satisfy the defense needs.<sup>1</sup> This concept of management is a philosophy to design, produce, maintain and manage the system as an integrated unit instead of a series of loosely coordinated individual efforts. Figure 6 is a visual picture of the integration involved in this type of management.<sup>2</sup> This philosophy did not spring into being over night, it took time to develop an effective and efficient procedure to provide maximum logistics effectiveness.

To briefly trace the history of systems management, much of the information in the next six paragraphs has been summarized from Air War College Thesis No. 808 by Colonel Gerald F. Keeling, USAF. Actual quotations are indicated where applicable.

"Startling as it may seem, the first weapon system contract was with the Wright Brothers. It was a fixed price, sole source, performance type 'Fly before you buy' contract."<sup>3</sup> This first weapon system was crude but by World War II the weapon had grown from a "one-manned" aircraft to a "multi-manned" weapon. Also the weapons became more difficult to support through the years because of the technological advances being made.

From 1947 when the Air Force was officially established until May 1951, "the research and development agencies of the Air Force, as well as the procurement, production, and other logistics agencies, were an integral part of the Air Materiel Command structure."<sup>4</sup> The Korean conflict resulted in such a rapid growth in the Air Materiel Command that it became difficult to coordinate the efforts of the many different organizational elements. Therefore, "a 'Task Group' was formed for each airplane type, as well as for many major components and subsystems---.

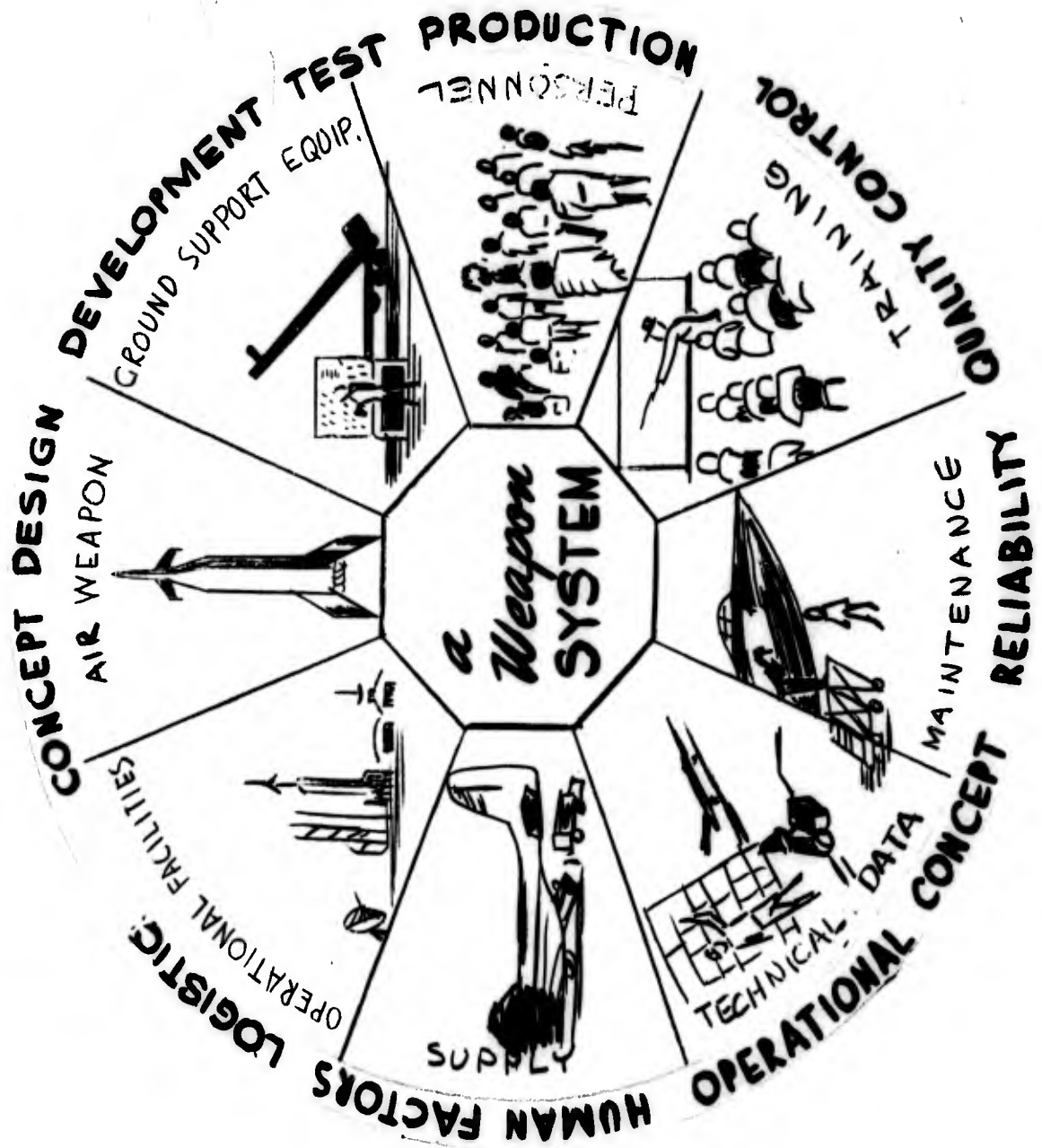
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<sup>1</sup>Cook. Orval R., Gen USAF (Ret.), President Aircraft Industries Assn. of America, Inc., "Concept of Weapon System Management," Proceedings of the Natl. Midwestern Mtg, Weapon System Management, N.Y., Institute of the Aeronautical Sciences, Nov 7-8, 1957.

<sup>2</sup>Your Guide to: Wright-Patterson AFB, Subject, "The Weapon System Concept," Unofficial publication, Office of Information, EWK, WPAFB, Ohio

<sup>3</sup>Ibid

<sup>4</sup>Keeling, Gerald F., Col USAF, "The Weapon Systems Concept & its Application to the USAF," (Air War College Thesis No. 808, Maxwell AFB, Ala., April 1954), p 6.



Each Task Group included working level representation from industry, Air Training Command, and the using agency in addition to pertinent elements of the Air Materiel Command."<sup>5</sup> These Task Groups directed the efforts of the many interdependent agencies directly involved in developing and producing an air weapon system for delivery to the using command.

"In May 1951 the Engineering Division of the Air Materiel Command, together with several laboratory, developmental, and testing agencies of the Air Force were reorganized and grouped under the Air Research and Development Command. A primary goal of the new command was the achievement of a better balance between the developmental and production functions, more simply stated as the balance between quality and quantity."<sup>6</sup>

The separation of the research and development functions from the Air Materiel Command pinpointed the need for a closely integrated connecting link between research, development and logistical functions. "Since the aircraft Project Offices of the two commands were the lowest level at which major components were evaluated and considered as a complete system, the attention of the two Commanders was directed at the formation of the connecting link at that level. The final result was that these offices were physically combined and integrated into what was initially called Joint Project Offices (JPO's) for the direct administration of and supervision over the development and production of each major air weapon system."<sup>7</sup>

"Approximately concurrent with the formation of the Joint Project Offices, the Task Groups were redesignated as Weapons System Phasing Groups, and the relationship of these groups to the JPO's became a source of controversy between the Commands."<sup>8</sup>

In an effort to obtain a more workable basis for the daily operation of the JPO's, action was taken to establish written directives to guide the administration and operation of the project offices. This resulted in the establishment of a "Team Captain" for each project office, for the general supervision of the office. The Command assignment of a "Team Captain" indicated which command was considered to have prime responsibilities particularly for the control of incorporation of changes and adherence to schedule.

In October 1953 the functions of the Joint Project Office and the Weapons System Phasing Group were consolidated into the Weapon System Project Office (WSPO) jointly staffed by the two commands. Up to this point in time the emphasis on weapon systems management has been through the development and production phases.

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<sup>5</sup>Ibid, p. 7.

<sup>6</sup>Ibid, p. 25.

<sup>7</sup>Ibid, p. 29.

<sup>8</sup>Ibid, p. 32.

In March 1955 this technique of management by weapon systems expanded into the area of materiel support. The F-102 Spares Accumulation Area was established at San Antonio Air Materiel Area under the project name of "DELTA COVER" to support the F-102 Test Program, and to service-test Weapon System Support by a single depot.<sup>9</sup>

In April 1955 a new plan called "Volume XVI--Aerial Re-Supply" was service-tested and put into effect to provide direct support for unit rotations and temporary deployments.

In November 1955 the "DELTA COVER" Method of Supply was extended for support of tactical aircraft under the plan of establishing the F-102 Weapon System Support Center at SAAMA.<sup>10</sup>

## II. SUPPORT PLANS

A brief description of the different support techniques which have been developed as a result of emphasis on weapon systems management follows:

### A. Volume XVI, AFM 67-1 Support

The purpose of this procedure, as stated, is to provide direct support for unit rotations and temporary deployments. Rotational units deploy with their Flyaway Kits and live with them. All requisitions from the deployed unit for kit or replenishment (or other consumed material) are submitted to a specified Weapon System Manager (WSM) in the Continental United States. Material is airlifted to the unit from a Weapon System Storage Site (WSSS). The WSM who controls assets in the storage site, replenishes the storage site and issues shipping orders to various inventory manager depots for items not on hand at the WSSS.<sup>11</sup>

### B. Vol. XX, AFM 67-1 Support

Whenever first-line weapon systems are permanently deployed an Air Force Weapon (AFW) Account is established for these very special customers. Like the Volume XVI customers on short rotation overseas--the logistic system is intended to discriminate in favor of Vol. XX supported units. To insure that the essential items needed to maintain a maximum operationally ready rate for these weapon systems will be available when needed, weapon system storage sites (ZI only) have been established. Essential items associated with organizational and field maintenance are

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<sup>9</sup>History Narrative of San Antonio AMA, 1 Jan through 30 June 1955, pp. 34-35, and Hq AMC msg MCSYOM-11-74-E, 30 Nov 1955.

<sup>10</sup>Ibid.

<sup>11</sup>The Air Force Logistic System, Concepts Methods, Procedures, prepared by Hq AMC, WPAFB, Ohio, Oct 1960, Ch. 3, p. 7.

aggregated at a WSSS. The Weapon System Manager for the first-line weapon system (instead of the inventory manager) receives the demands from the user, and hopes to achieve a satisfactory fill rate. For the demands unfilled initially by the WSSS, the WSM issues shipping orders (and maintains constant, controlled follow-up) on the Inventory Managers (IM), the manufacturers, or other bases to fill the demand. The WSM is responsible to assure delivery, from whatever source in the logistic system. This procedure provides a "one-point" of contact for the user, more assurance of material availability to meet demands, and assurance that funds budgeted for first line weapons are spent for the weapon intended.<sup>12</sup>

### C. Automatic Resupply Logistic System (ARLS--IOC II)

This is the advanced logistic support for IRBM's and ICBM's which is the next step after Vol. XX discussed in paragraph IIB above. Under this procedure the base supply, instead of "asking" the WSM for whatever he needs, reports daily usage or receipt by submitting machine punch cards for those items used or received. The machine automatically reports the transactions by transceiver to the WSM who holds inventory control plus centralized accountability. The WSM receiving machine reproduces the cards and provides the input to the central computer which triggers automatic resupply when reorder points are reached. Shipments usually move from Air Force or contractor operated storage sites.<sup>13</sup>

Returning to the development and procurement phases, recent action emphasizing the importance of system management has been the publication of AFR 375-1 in August 1960, revised in January 1961, which changes the name of the "Weapon System Project Office" (WSPO) to the "System Program Office"<sup>14</sup> (SPO) and adds representation from the using command and the Training Command on a full time basis as members of the SPO. With this name change the term "Weapon Systems Management" also changed to "Systems Management" to provide a broad term for Weapon System, Support Systems or Command and Control Systems. It also establishes a System Staff Officer (SYSTO) in Hq USAF for the focal point of conducting system management. The reorganization and realignment of responsibilities of the old AMC and ARDC into the AFSC and the AFLC will require another revision to AFR 375-1. This revision will further emphasize the importance being placed on systems management.

This briefly outlines the growth and development of the philosophy for systems management. Figures 7a and 7b are visual pictures of the major steps showing progress in the development and procurement phases and the operational phase of the "systems management" by the Air Force.

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<sup>12</sup>Ibid, pp. Ch 3-7, Ch 3-8.

<sup>13</sup>Ibid, pp. Ch 3-7, Ch 3-8.

<sup>14</sup>AFR 375-1, para. 2i.

HISTORY OF SYSTEMS MANAGEMENT

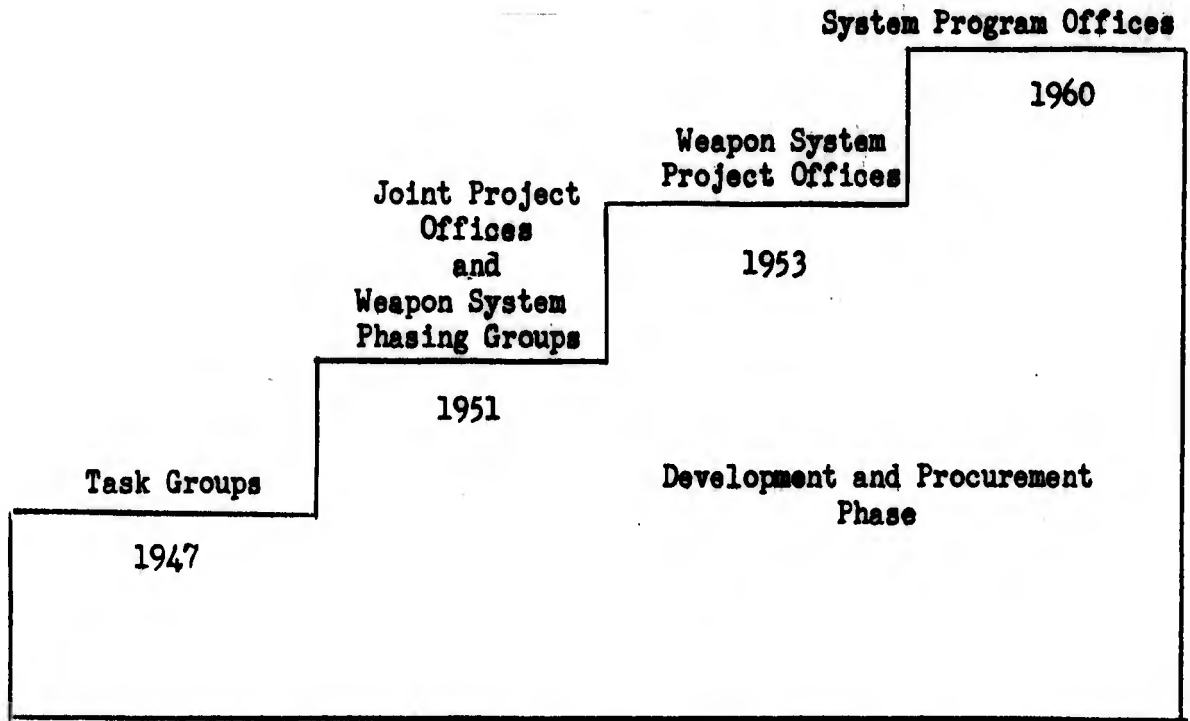


FIGURE 7a (Management Offices)

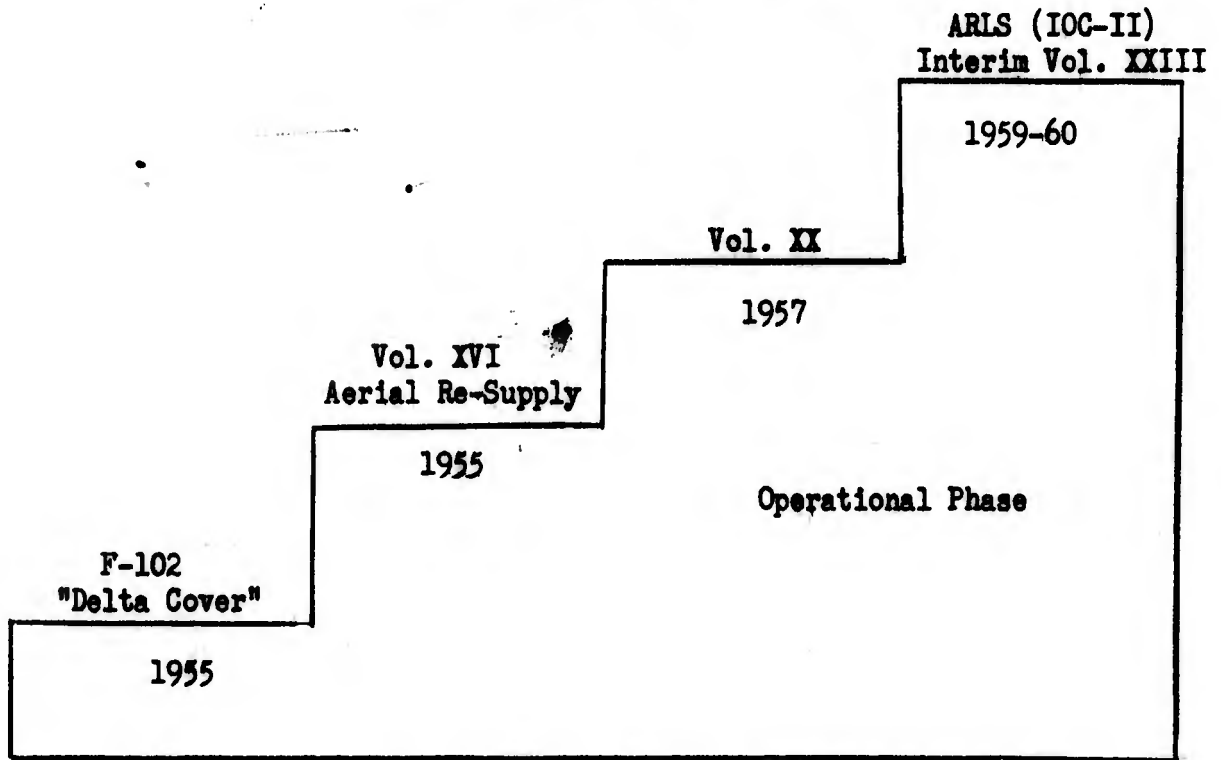


FIGURE 7b (Management Procedures)

This history has been furnished as background information for the definitions of "systems management" and "non-systems management" used in this report.

### III. DEFINITIONS

The following definitions apply to the terms as used in this research report:

A. ACQUISITION PHASE - "That period starting with publication of Specific Operational Requirement or designation of a system for special management procedures and termination with the delivery of the last article from the Development-Production Program. This phase often overlaps the operational phase."<sup>15</sup>

B. CONCEPTUAL PHASE - "That period which terminates not later than publication of a Specific Operational Requirement. Termination of this phase is normally accompanied by the appointment of a System Staff Officer, the formation of the Hq USAF SYSTO, the appointment of a System Program Director, and formation of a SPO."<sup>16</sup>

C. OPERATIONAL PHASE - "That period starting with delivery of the first inventory unit or installation to the using command or Chief of Staff designation that the system has attained operational capability acceptable to the USAF for the intended mission. This phase terminates with disposition of the system from the Air Force inventory."<sup>17</sup>

D. SYSTEM PACKAGE PROGRAM - "A group of interrelated programming documents which are kept up to date, describe the over-all system program, and are the detailed documentation of the approved program for acquiring and operating the system."<sup>18</sup>

E. PARTIAL PACKAGE PROGRAM - "This consists of a correlated but partial system package containing the management plan, programming, and funding data for development, test and engineering, production, initial spares, peculiar GSE, and training devices. It may not contain certain elements such as funds or programming data for construction, common GSE, Component Improvement, industrial facilities, replenishment spares, war consumables, depot level maintenance, in-service modification, and training and personnel services."<sup>19</sup>

F. SYSTEMS MANAGEMENT - "Systems Management is the process of organizing and employing functional agencies to accomplish approved systems program objectives. Systems Management affords formal recognition of the

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<sup>15</sup>AFR 375-1, para. 2C(2).

<sup>16</sup>Ibid, para. 2C(1).

<sup>17</sup>Ibid, para. 2C(3).

<sup>18</sup>Ibid, para. 2e.

<sup>19</sup>Ibid, para. 2f.

character of today's complicated and long lead time systems.<sup>20</sup> The method of management applied to all systems (weapon, support or command and control) during the Development-Production program under either the System Package Program or Partial Package Program and those selected systems provided central point materiel support during the operational phase. Examples of systems presently receiving this type of management are the B-52, SM-65 and SM-80.

G. NON-SYSTEM MANAGEMENT - The method of management applied to those systems which have completed the Acquisition Phase and are not being provided central point materiel support in the Operational Phase. Examples of systems presently receiving this type of management are the B-47, C-97 and F-89.

With the above terms defined as they apply to this report, the next chapter will state the assumptions and justification for these assumptions as established by the Team.

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<sup>20</sup>Ibid, para. 1.

## CHAPTER THREE

### ASSUMPTIONS

The subject of management by its nature denotes complexity, and when dealing with an organization the size and scope of the Air Force having a multitude of interdependent actions, the complexity assumes confusing proportions. The success of any endeavor operating in such an involved environment therefore must consider some worthwhile assumptions as a point of departure. In developing assumptions, cognizance was given to two primary sources of material, namely the 375- series of Air Force regulations and opinions and beliefs of Team members which are based on background and experience.

The management structure of the Air Force parallels the hardware composite of the weapon itself, i.e. - components, subsystems, and complete weapons versus management by item, functional, or system. It must be a premise therefore that the three concepts of management - item, functional, and system - are essential to the WSM concept. The whole can not exist without all elements of its nature.

Though one might accept the fact that adoption of the systems concept by the Air Force is proof of the validity of the idea, experience with subsystem incompatibilities and non-concurrencies of component deliveries prior to systems management, leaves no doubt that this concept is necessary.<sup>1</sup>

What can be assumed about the results and costs of system management as compared with non-system management? In order to compare two things by statistics, the methodologies must have been applied under similar conditions to the subject in question. Thus to compare a system such as the B-52 under system management and under non-system management it would be necessary to develop, produce, and support the system under both the system concept and the non-system concept either simultaneously or successively. Since no system has ever been or will ever be acquired and supported under such identical ideal circumstances, and the management atmosphere varies with the concept employed at various phases in the management cycle, it is not feasible to produce comparative data. One therefore is compelled to accept this idea of the superiority of systems management but with added resources without the security of statistics. However, one is not alone since all interviewees in discussion with the research Team expressed the opinion without hesitation that systems management costs more in terms of manpower and other respects in order to

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<sup>1</sup>Keeling, Gerald F., Colonel USAF, "The Weapon Systems Concept and its Application to the USAF" (Air War College Thesis No. 808, Maxwell AFB, Alabama, April 1954), p. 39.

produce the added effort. It is readily accepted that satisfaction of a full defense capability cannot be measured in terms of dollars and cents.

With the foregoing in mind the following assumptions were established to pave the way for a solution to the problem:

1. THE AIR FORCE REQUIRES "SYSTEMS MANAGEMENT" FOR SELECTED SYSTEMS.
2. SYSTEMS MANAGEMENT PROVIDES BETTER SUPPORT THAN NON-SYSTEM MANAGEMENT.
3. SYSTEMS MANAGEMENT REQUIRES MORE RESOURCES.
4. SYSTEMS MANAGEMENT INCLUDES CENTRAL POINT CONTROL OR THE FOCAL POINT TECHNIQUE.

The next chapter will discuss findings and present information which will point out the need for formalized, selective system management.

## CHAPTER FOUR

### FINDINGS

#### I. GENERAL

The previous chapters presented the problem, reviewed the history of systems management and listed the definitions and assumptions. This chapter covers the research findings and includes data to point out the need for formalized policy relative to Selective Systems Management through the life cycle of the system.

In order to aid the reader in orienting himself with the problem presented it might be well to point out the fact that the term "Systems Management" usually conveys one of two rather distinct ideas depending on the background of the individual. If the background is in the field of development or procurement, the term is associated with the "SPO" functions and the delivery of a system into the operational inventory. On the other hand, if the background is materiel support, the term is normally associated with one of the special support procedures such as Volume XX or Automatic Resupply Logistic System (IOC II) used to support a system after it enters the operational inventory. Since the problem deals with the phase-out of systems from special management techniques, this report will be concerned primarily with the material support aspect of systems management.

From October 1955, when the central point of support for the F-102 was implemented, until July 1960, twenty-eight different systems were phased into the Vol. XX procedures for support (Note Appendix 2).<sup>1</sup> Four additional systems were phased-in to the Automatic Resupply Logistic System (IOC-II) and one under a modified version of the Vol. XXIII concept. Up to this time everything had been on the phase-in side, and there seemed to be little thought of phase-out once a system entered this special type of management. However, as indicated under the discussion of the problem and shown on the phase-out chart in Appendix 2, systems remained in the inventory long after they have passed the status of a first line weapon. Therefore, the coverage of systems management in the operational phase reached such proportions as to result in the 19 August 1960 letter from General LeMay directing that Vol. XX of AFM 67-1 be rescinded.<sup>2</sup> Just prior to this letter, on 18 July 1960, Hq AMC had directed that the Q-2/Q-4 Drone Systems be withdrawn from Vol. XX support by 1 October 1960.<sup>3</sup> This was the first phase-out of a system since the

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<sup>1</sup>AFM 67-1, Vol. XX, Amendment 4, 16 November 1959.

<sup>2</sup>LeMay, Curtis E., Gen USAF, Vice Chief of Staff, Hq USAF, letter 19 August 1960, "Management of USAF Assets," to General Anderson, Hq AMC.

<sup>3</sup>Anderson, Samuel E., Gen USAF, Commander AMC, letter 29 August 1960, "Management of Air Force Assets," to Hq USAF (AFCCS), para. 3a.

concept had been implemented. The problem had, however, been recognized and General Anderson's letter, 29 August 1960, to Hq USAF stated:

"We are currently coordinating plans with the using commands for withdrawal of the B-66 and B-57 from Volume XX.

"Studies are currently underway to determine the advisability of deleting additional weapon systems with low priorities from the Vol. XX concept."<sup>4</sup>

Another aspect of the problem was highlighted by Hq USAF message AFMSS-86149, 15 February 1961, directing that the new jet cargo C-135 be supported under the procedures of Volume XX, AFM 67-1, "as long as the KC-135 aircraft are supported by this procedure."

The lack of an integrated program is obvious when:

1. Selected systems are designated by the Chief of Staff, USAF, for special management procedures.<sup>5</sup>
2. A subordinate command negotiates with the using commands for withdrawal of systems from special management procedures.
3. The Vice Chief of Staff directs that the special management procedures of Volume XX be rescinded and out of operation by 31 December 1960.<sup>6</sup>
4. AFMSS-86149 of 15 February 1961 directs that when the Cargo Jet C-135 enters the inventory it will be supported by the Vol. XX procedures along with the KC-135.

If one office were designated as the focal point within Hq USAF for the control and direction of system management then all action could be integrated into a common program.

## II. REVIEW OF CRITERIA FOR PHASE-IN

This part of the research effort is directed toward review of the criteria used to phase systems into systems management. Air Force Regulation 375-1 was reviewed to determine policies, responsibilities, and relationships for conducting systems management within the Air Force.

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<sup>4</sup>Ibid.

<sup>5</sup>AFR 375-1, para. 1.

<sup>6</sup>LeMay, op. cit.

The following statements quoted from AFR 375-1 suggest a selection process by which high priority weapons will receive this type of management:

"To insure the best possible operational results, selected systems are designated by the Chief of Staff for special management procedures across functional Air Force management lines."<sup>7</sup>

"The purpose for installing systems management procedures across the Air Force functional management organization and within the Hq USAF Weapons Board management system is to insure that specially selected high priority systems receive continuous attention over and above the specialized interests of any one functional organization."<sup>8</sup>

"To acquire and use systems which are qualitatively superior, complete, economical, operable, and timely, certain selected high priority systems will be managed as complete, integrated packaged programs."<sup>9</sup>

It was felt that the most logical place to start in determining criteria for phase-out of systems from the systems management concept would be to discuss the phase-in aspect with those individuals in Hq USAF involved with the AFR 375-1 series regulations. If there existed reasons for the phase-in of systems to the systems management concept, it seemed logical that the Team should first consider these reasons and perhaps reverse the procedures. However, it was found that the AFR 375-series regulations had not been implemented long enough for a phase-in criteria to have been formalized. The initial selection of systems to be managed under the system package or partial package included systems in various stages of the acquisition phase as test selections to determine what specific problems would be encountered in developing the documentation required by the systems management concept. After this experience has been gained, most of the systems in the acquisition phase will be identified for "partial package program" while new systems developed in the future will be selected for "package program." Thus the selection process becomes one of decisions between a package program or a partial package program. This is emphasized by the following statement from AFR 375-1:

"Those systems not selected for package programming will be managed in consonance with these concepts and principles to the maximum degree practicable."<sup>10</sup>

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<sup>7</sup>AFR 375-1, para. 1.

<sup>8</sup>AFR 375-1, para. 3a.

<sup>9</sup>Ibid, para. 3c.

<sup>10</sup>Ibid, para. 3c.

Unless properly controlled, it is easy to see that the above statement could result in many systems being designated for special management procedures during the operational phase.

This possibility has many ramifications. As an example: It was noticed that some organizations tend to go overboard by establishing a separate division for each system managed. For example the proposed organization structure for the Electronic System Center had 21 offices reporting directly to the Commander (Appendix 3). It appears that a more practical and efficient organization structure would be to group similar systems, such as "Interceptor", "Cargo", or "Support" in one division with a reasonable span of control. This would facilitate one system phasing-in simultaneously with another system phasing-out of the same group. For example, the Directorate of Support Systems, ASC, consisted of four Branches (Trainers, Transport, Drones, and Helicopters/Liaison) rather than a WSPO for each system. This concept should be followed throughout the Air Force to the extent possible which would not jeopardize the management of the higher priority systems.

### III. WHAT DOES SYSTEM MANAGEMENT REQUIRE IN THE WAY OF RESOURCES?

This part of the chapter will be devoted to giving the reader an idea of some of the resources currently used within the AFLC depots to provide systems management. It is emphasized that this is not a comparison between systems management and non-systems management nor is it a comparison of the different support procedures within the scope of systems management. The information is restricted to the Logistics Command depots due to the fact that the new AFSC had not completed consolidation and realignment of systems management functions at the time this research was being conducted. Essentially all personnel in the AFSC are involved in systems management. However, the earlier comment regarding the tendency to organize strictly by individual system is also applicable to the AFSC. There should be no need to set up a separate "SPO" for every system -- in fact, better personnel utilization and flexibility will be realized without loss of effectiveness by organizing as much as possible around weapon application functions such as "Interceptor", "Cargo", or "Bombardment."

#### A. Personnel

The data shown in Figure 8 reflects the number of personnel, indicated on the Unit Manning Document (UND) dated January 1961, that are assigned to the Weapon Systems Management Divisions in the Directorate of Materiel Management at the depot where Logistic Support Management responsibility is assigned.

Figure 9 reflects the manpower build-up pattern for three of the above divisions, namely the B-52, SM-65 (ATLAS), and SM-80 (MINUTEMAN). It illustrates the manpower trend at the depot level required to manage a system under one of the special management procedures.

PERSONNEL ASSIGNED TO THE WEAPON SYSTEM MANAGEMENT DIVISION  
DIRECTORATE OF MATERIEL MANAGEMENT

<u>SYSTEM</u>	<u>LSM/AMA</u>	<u>NO. PERSONNEL</u>
B-52	OCAMA	327
F-105	MOAMA	179
GAM-72	OCAMA	( )
GAM-77	OCAMA	(123)
GAM-87	OOAMA	( )
IM-99	OOAMA	75
KC-135	OCAMA	128
SM-65	OCAMA	170
SM-68	SBAMA	234
SM-75	SBAMA	141
SM-78	SBAMA	114
SM-80	MOAMA	147
TM-61	OOAMA	69
TM-76	WRAMA	( )
	WRAMA	(161)
		( )
	<b>TOTAL</b>	<b>1868</b>

FIGURE 8

**WEAPON SYSTEM MANNING PATTERN  
DIRECTORATE OF MATERIEL MANAGEMENT  
LOGISTICS COMMAND DEPOTS**

<u>SYSTEM</u>	<u>JULY 1957</u>	<u>OCT 1957</u>	<u>JAN 1958</u>	<u>APR 1958</u>	<u>JULY 1958</u>	<u>OCT 1958</u>	<u>JAN 1959</u>	<u>APR 1959</u>	<u>JULY 1959</u>	<u>OCT 1959</u>	<u>JAN 1960</u>	<u>APR 1960</u>	<u>JULY 1960</u>	<u>OCT 1960</u>	<u>JAN 1961</u>	<u>APR 1961</u>
B-52 OKLAHOMA AMA	173	174	175	194	189	189	214	213	224	258	300	309	306	325	327	327
SM-65 (ATLAS) SAN BERNARDINO AMA								173	175	258	278	288	387	357	234	223
SM-80 (MINUTEMAN) OSDEN AMA							12	12	28	36	84	103	70	67	69	95

X REDUCTIONS RESULTED FROM REORGANIZATION TO COMPLY WITH AFLCR 400-1. AT THIS TIME THE INVENTORY MANAGEMENT DIVISION WAS ESTABLISHED WHICH CAUSED FUNCTIONS AND PERSONNEL TO BE REASSIGNED FROM THE WEAPON SYSTEM DIVISION.

FIGURE 9

Figure 10 reflects the manpower build-up trend for the B-52 with the acceptance of these aircraft into the operational inventory. It indicates the relationship that existed for this system between personnel required and number of weapons supported.

The information presented in Figures 8, 9 and 10 reflects the number of personnel presently identified with a specific system and performing some of the management functions for that system. Since system managers and functional or inventory managers simultaneously perform related functions for a system, it should not be assumed that the information on personnel represents a possible reduction if any of these systems were phased-out of systems management. As pointed out in the assumptions, an actual comparison of the requirements for personnel or other resources for system management as compared with non-system management, is not feasible since the same system is never completely managed at the same time under the two different concepts.

#### B. Electronic Data Processing Equipment.

The electronic data processing equipment is also used simultaneously by the system manager and the inventory manager. The data in Figure 11 provide the percent of machine time utilized by the Logistics Command depots for system management and inventory management. This information was obtained from the AF-E6, Part 8 (AMC-1) Reports. A detailed breakout of the machine time for large and medium frame computers for a period of 5 months by depot, is contained in Appendix 4 for those who are interested. In addition to the machine time reflected in Figure 11, OCAMA utilizes, on the average, 356 hours per month on the RAMAC 305 machine for systems management. This is 100% of the utilization time of this particular type of machine by the AFLC depots.

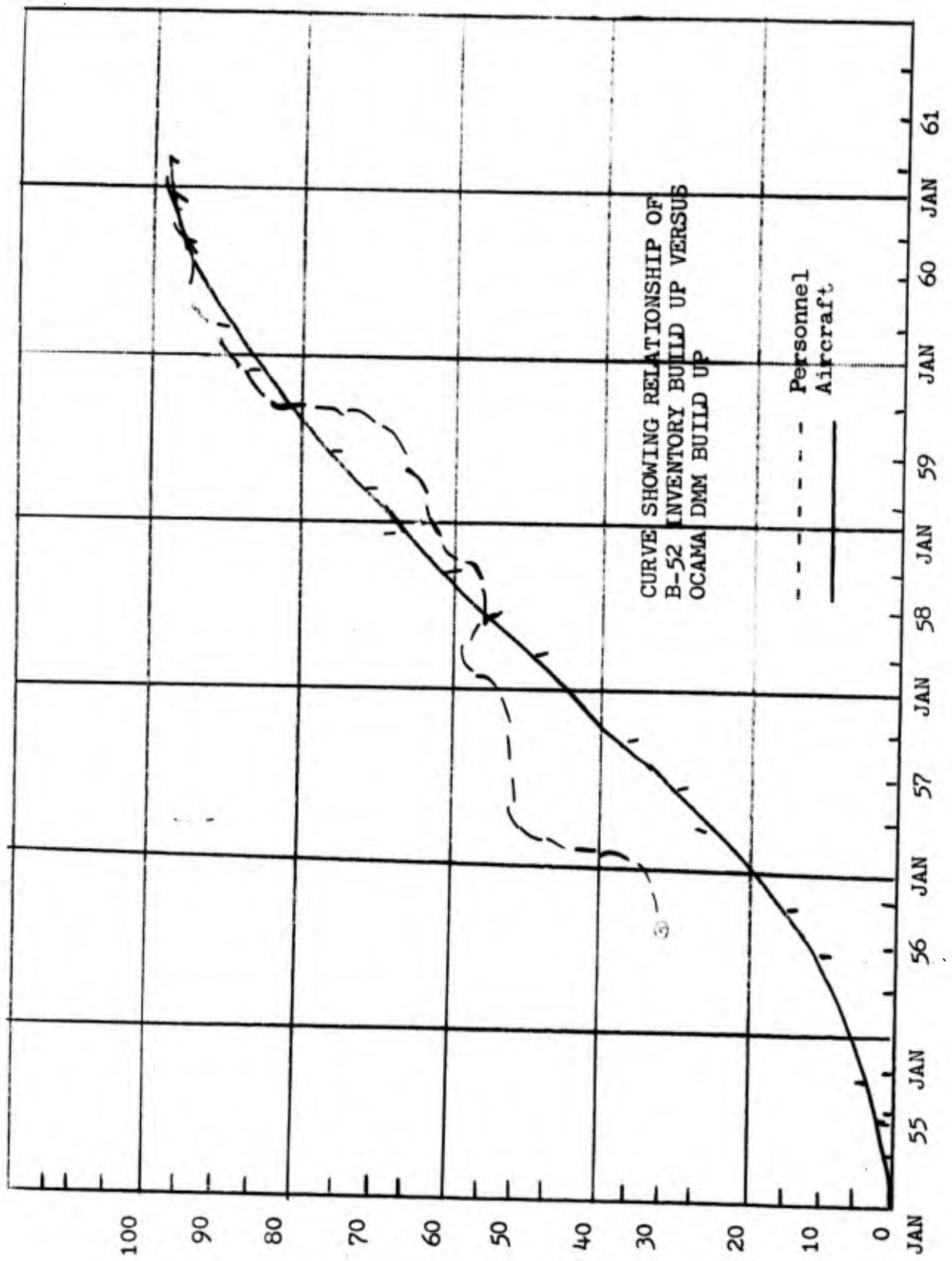
The back-up information for data presented in Figure 11 is shown in Appendices 4, 5, 6 and 7 for those who are interested.

#### C. Storage Space

A review was made of the storage space occupied,<sup>11</sup> Appendix 8, for supporting materials for the B-52, KC-135, B-57, B-66, F-100, F-101, F-102, F-104, F-105, F-106, IM-99, SM-62, SM-65, SM-68, SM-75, GAM-72,77, GAR-1, C-118, C-130, C-133, TM-61, and TM-76A. Particular note was made of the data showing space used for Weapon System Storage Sites in the hope that this information might throw some light on the cost of management in terms of space for this special treatment. The data collected in Appendix 9 are submitted to show that this area has been studied. No conclusions or recommendations are presented here, because the data cannot be compared against a standard in making an unbiased judgment.

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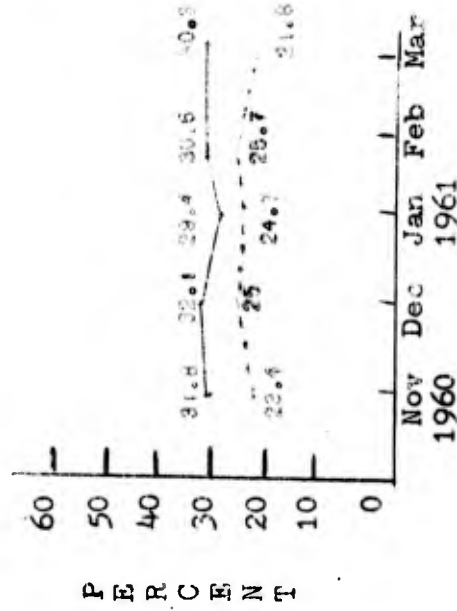
<sup>11</sup> Hq AMC Report, AMC-S148, "Storage Space Utilization and Occupancy Report," Form 384B, 31 December 1960.



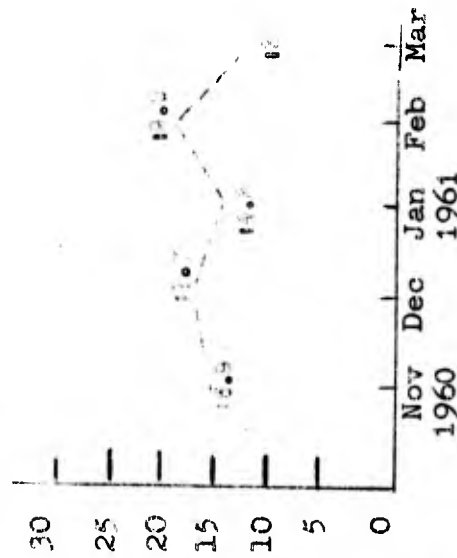
P E R C E N T

FIGURE 10

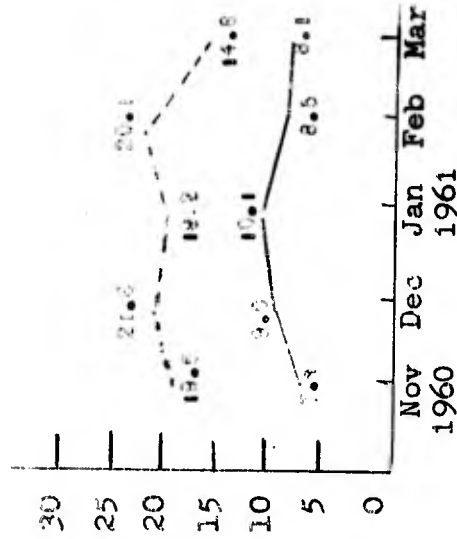
Large Frame Computer  
(705 - 1105 - UNIVAC)



Medium Frame Computer  
650 Tape



Medium Frame Computer  
650 Card



— System Management

- - - - - Inventory Management

FIGURE 11

At first one could jump to the conclusion that the material in a Weapon System Storage Site may be duplicated in other AMA's or by other accounts within a particular depot. It is not intended to deny or confirm this statement, but merely to comment that it could be possible. It is realized that perhaps some storage space could be better utilized, but an over-all savings to the Air Force may not have been made if in the meantime supply effectiveness is reduced. The theory of storing like items together to save space may be valid, but it is pointed out that any given volume will displace only a given amount of space regardless of where the material is located. Therefore the data on storage space shown in Appendix 9 are for information only and no conclusions should be made from them.

This information should not be considered as evidence that Weapon System Storage Sites require additional material. Since it was such a popular impression that additional material was bought to support these sites, one hundred Hi-Valu items applicable to the B-52 aircraft were selected from OO-35F1 technical orders published by depots at Middletown, Mobile, Oklahoma, Ogden, San Antonio and Warner Robins. Letters were sent to the above depots asking them to indicate the additional quantity reflected on the current Buyers Guide computation to support the pipeline between the commodity depot and the B-52 storage sites. In the answers received from the depots there was no instance where the requirement had been increased because of Weapon System Storage Sites. The following paragraph from the Middletown AMA letter is clear on this point.

"Quantitative or additive requirements are not inserted in Buyers' Guide computations to specifically support pipelines between the commodity depot and weapon system storage sites. The additional costs involved in the operation of "storage sites," therefore cannot be directly related to acquisition of additional procurement of material."<sup>12</sup>

Duplication of storage, handling, and transportation of materials seems possible but this subject is not analyzed as a part of this research effort.

#### IV. RECOMMENDED CRITERIA FOR PHASE-OUT

The next part of the research effort involved interviews with personnel from Hq USAF, Hq SAC and Hq OCAMA, which provided a good cross section of personal opinions on the question of phase-out criteria. The consensus of those interviewed was that an established phase-out criteria would be beneficial to the Air Force. The only exception to this opinion

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<sup>12</sup>Hq Middletown AMA, 1st Ind., "Data for Research Project," 13 April 1961, para. 1.

came from personnel who could be personally affected at a later date if his particular system were phased-out from this special management procedure. In the opinion of the Team, this emphasizes the need for a selective system management to be practiced by the Air Force. Invariably a system will remain under special procedures longer than is necessary if not controlled at a level high enough to eliminate the individual job security aspect from the management decision.

Criteria most frequently suggested were:

A. Military Value

Three-fourths of the people contacted recommended military value as a factor which should be used to determine the need for special management techniques. Sometimes military value of a system was referred to as striking capability, mission, deterrent power, first-line weapons, but all were a form of value or importance to the military. This factor definitely was considered the most important single factor. The USAF Hq representatives were unanimous in recommending this factor. One-fourth of the individuals contacted felt this was the only factor that should be considered.

The consensus that military value was the most important factor was in agreement with the thinking of the Team. The problem then becomes one of measuring relative military value of the different systems. Several possible means for this measurement were found in existing reports or directives. For example, AFR 80-11 provides that Hq USAF will assign and publish semi-annually a list of Importance Categories for the application of research-development effort. However, it is obvious that this listing is tailored to the research and development segments of the acquisition phase. New systems in the early stages of development would probably be given a higher importance category than a system already in the operational inventory. The system in the operational inventory would obviously have more immediate military value than one on the drawing board.

Another possible source of relative system priority was found in the Class Category listing contained in AMCR 400-1.<sup>13</sup> This listing is furnished as a guide in determining the scope and degree of logistic support management to be provided each system. This listing is practically tailor made for the operational phase and at first appears to be the logical solution. However, additional consideration reveals two problems with this document. First, there is not an established review period and up-dating of the listing. Second, and more important, is the fact that this regulation is published by the AFLC, rather than Hq USAF. It does not

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<sup>13</sup>Hq Air Materiel Command Regulation 400-1, 10 November 1959, "Logistics, Logistic Support Management Policy," WPAFB, Ohio.

appear a good management practice to have a subordinate command deciding which systems will be phased-out from special management procedures when the Chief of Staff is deciding which systems will be phased-in to this special management procedure.<sup>14</sup>

Still another possibility for the type of information needed would be the Master Urgency List.<sup>15</sup> However, this list is based more on "projects" than "systems" and is not inclusive enough to meet the needs. The USAF Program -- Bases, Units and Priorities Document (PD) was considered as another possibility. But this document does not contain a section for the relative priority by system. The priority assigned to bases and units cannot be readily converted to different systems.

In summary, there are several different documents in existence which reflect value ratings but none are completely adequate. The Team believes that modification of one of the present priority documents reflecting the necessary data would be more appropriate than implementing a new report. This matter will be discussed further in Chapter Five.

#### B. Cost.

The cost factor was recommended by one-half of the individuals interviewed. However, cost can have many different meanings, and it was obvious that this is true here. Some intended for the cost to include past and future acquisition of property, training of personnel, operating expenses, pay of personnel, etc., while others in their comments on "cost" had reference to some systems being fully funded for the cost of annual requirements as opposed to those systems which were not fully funded. The Team considers cost an extremely important factor. In the Hi-Valu program for "item management" cost is the only factor used for selective items for Hi-Valu management. However, for "systems management" it is felt that cost should be considered but never given greater importance than military value. Cost is a readily recognized and accepted criteria from a management aspect and would be very beneficial if accurate costs were available by system.

The following statements from a speech given by Mr. Charles J. Hitch, Assistant Secretary of Defense (Comptroller) before the Annual National Conference of the Armed Forces Management Association on March 1, 1961 emphasizes the need for precise and comprehensive cost data in this area:

"Yet, it is precisely in this area that our present financial management system shows its greatest weakness. It does not facilitate the relating of costs to weapon systems, tasks, and missions. It does not disclose the full time-phased costs of proposed programs. And, it does not provide the data needed to assess properly the cost and effectiveness of

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<sup>14</sup>AFR 375-1, para. 1.

<sup>15</sup>AFR 80-11, para. 2b.

alternative programs. These weaknesses have been a matter of increasing concern to the Congress and particularly to the House Appropriations Committee, as evident from the Committee's report on the 1961 Defense Appropriation Bill.

"Admittedly, the financial management systems must serve many other purposes. Certainly, it must produce a budget in a form acceptable to the Congress. It must account for funds in the same manner in which they are appropriated. It must provide to managers at all levels in the Defense establishment the financial information they need to do their particular jobs in an efficient and economical manner. It must produce the financial information required by other agencies of the Government--the Bureau of the Budget, the Treasury, and the General Accounting Office.

"But all this is not enough. The financial management system must also be made to provide the data needed by top Defense management to make the really crucial decisions, particularly on the major forces and weapons systems needed to carry out the principal missions of the Defense establishment. These decisions cannot be made rationally without an adequate knowledge of the available alternatives, in terms of their military worth in relation to their cost.

"Let us consider first those aspects of the problem which are the special province of the Comptroller--namely, costs. What we need are more precise and comprehensive estimates of total costs of major weapon systems, other programs, and activities, related to each of the principal missions of the Defense Department. These estimates should include both initial investment and annual operating costs.

"In the case of a major weapon system, for example, the estimate should include all the costs of the system beginning with the original research and extending through development, production, deployment, and actual operation of the system. In terms of the existing budget structure, these estimates would include all costs under the research, development, test and evaluation title, procurement, construction, operation and maintenance, and military personnel--to the extent that these costs can be identified and associated with a particular system. Furthermore, the time horizon of the estimate should extend over the entire life of the system, or at least well into the operating phase. Finally, the estimate should be made available to

top management early enough in the life cycle of the system to be of maximum value in the planning and decision-making process.<sup>16</sup>

Perhaps financial reports will some day be developed to the degree that cost can be the single factor on which the need for selective system management can be determined. In the meantime, it is felt that present cost systems and reports must be utilized as they have been in the past in making management decisions. They should supplement the factor of military value in reaching a judgment decision on which systems should be managed under a special management procedure.

### C. Stable Configuration

One-third of those who recommended various criteria suggested that the stability of configuration might be considered. The need for a central point of control during the time that numerous design changes on the system were taking place was pointed out by one-third of those interviewed.

Several approaches were considered for measuring this factor. The possibility of using the dollar value of program authorizations for Class IV and Class V modifications was considered. The problem with this method is that these data are reflected on an "as needed" basis and are extremely difficult to accurately project. The possibility of utilizing the quantity or number of design changes which had been approved for a system was also considered. This too, is on an "as required" basis and would involve consolidation of data from several sources, such as production, testing and operation. Also the number of design changes is not a sound value since all changes are not of equal importance and do not reflect the complexity of effort related to a design change or modification. The Team was unable to find a reliable source for evaluation of this factor of stable configuration. It would be covered to a large degree by the two preceding factors.

In the preliminary phase of research and prior to any interviews, the Team had associated the stable configuration factor with complexity of technological advancement. With respect to the subject of complexity as a criteria necessitating application of the systems management concept, the Team feels that it is time that complexity be put into its proper perspective. Complexity, as a complicating factor in military systems actually came into being with the introduction of radar and like

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<sup>16</sup>Hitch, Charles J., Asst. Secy. of Defense (Comptroller), "The Defense Budget as a Management Tool," A Dept. of Defense, Office of Public Affairs News Release, 1 March 1961, of Address before the Annual National Conference of the Armed Forces Management Association, Shorham Hotel, Washington 25, D. C.

electronic equipment during WW II. A crash program of education together with the induction of civilian skills having the basic training enabled the military to cope with this problem adequately during the emergency; however, subsequent to the separation of these skills the services were forced to rely upon industry to supplement their support capabilities. Complexity is a function of familiarity and though a problem did exist in this respect at one time there has been little in way of new technologies introduced in the past decade which compares with the introduction of complex equipment during the 1940's. What was once complex, relatively speaking, is no longer complex since training and support capabilities are better able to cope with the demands of this technical age even though some development interests are dubious. The term "complexity" has been exploited beyond its tenure of popularity and it is time to get down to the business of meeting new systems with a confidence rather than to stand in awe. Complexity does have a new meaning in that it effectively describes the multi-element make-up of a weapon which must be managed to obtain an integrated and unitized system. This then should be the understanding of complexity. Its importance will, in determining the need for systems management, have to be by individual judgment based upon facts available when the decision is made.

#### D. Planned Replacement

One-third of those who were interviewed also recommended that the replacement of a system, by the phase-in of a more modern system, might automatically be reflected in the factor of military value. It most likely would also reflect itself in the factor of cost. It is felt that this factor should warrant minor consideration. It should not be used as a reason to retain systems under special systems management procedures simply because there is not a direct replacement of one system with a more modern system. Use of this factor should be the exception rather than the rule.

#### E. Deployment

One-sixth of those who recommended criteria for the phase-out of a system mentioned deployment as a factor. It was felt that systems with a large inventory and a wide range of deployment were in more need of special management emphasis than those with limited deployment. The matter of deployment seemed to influence the demand of systems management, particularly at SAC and OCAMA, for manpower to carry out the coordinating, monitoring, and personal attention functions mentioned previously as characteristics of systems management. However, since deployment is subject to considerable change and is recognized to a great extent within military value and cost, it also should receive minor consideration.

In summary, Figure 12 reflects the criteria factors recommended by personnel from USAF, SAC, and OCAMA showing the percent favoring each factor.

CRITERIA FACTORS RECOMMENDED BY PERSONNEL INTERVIEWED FOR  
 PHASE-OUT OF SYSTEMS FROM SYSTEMS MANAGEMENT CONCEPT

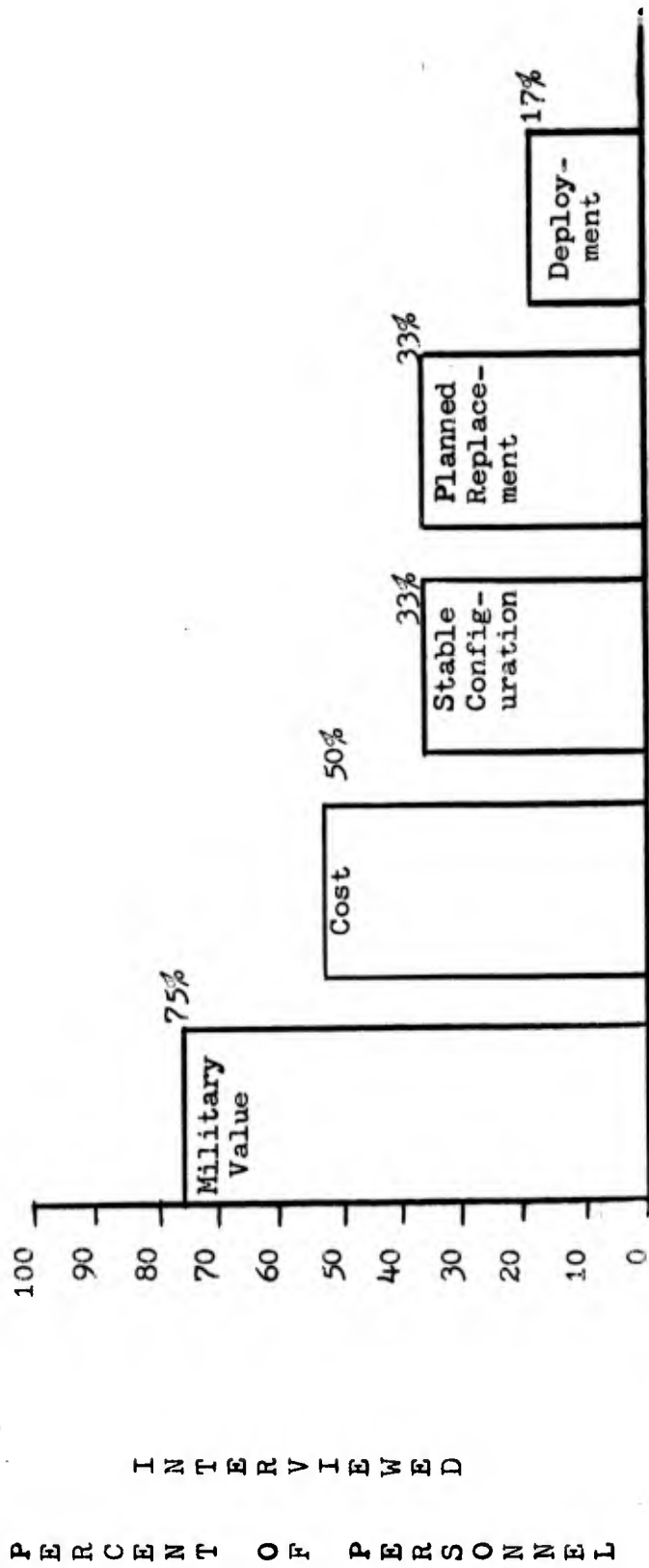


FIGURE 12

## V. CRITERIA OF ACTUAL NEED

Up to this point nothing has been mentioned about the actual need for special management for the particular system involved. Regardless of the criteria factors suggested, the actual need for special management, based on the environment then existing, should take precedence over all other criteria. If a system does not require any special management effort, such as contractor support, or if the special effort is already provided by some other means, then certainly such systems should not be placed under the type of systems management being discussed in this report.

## VI. SUMMARY

This chapter has covered the research findings of the group and has furnished some statistics on the resources devoted to systems management. It is emphasized that the statistics on personnel, machine utilization, and warehouse space are included for the purpose of showing the reader that substantial resources are involved -- they are not a comparison between different procedures or concepts. It has also shown that systems management is operating in an environment of considerable confusion. The popularity of systems management resulted in an over-emphasis on phase-in and a lack of emphasis on phase-out. Thus systems management, over extended, lost some of its vitality and advantages. Conclusions derived by the Team from its study and recommendations to provide selective systems management will be presented in the next chapter. Chapter Six will be devoted to some of the peripheral findings which were encountered while conducting research on the basic problem.

## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### I. GENERAL

Briefly to summarize the main points of this report, the Air Force was originally organized along functional lines such as development, procurement, supply, maintenance, etc. This concept provided specialists in a given field and assured uniform procedures and methods for economy of operation. As modern systems were developed, it was found that the composite of a system such as site construction, production schedules, training, spares, compatibility of related equipment, all had to be integrated and managed as a package otherwise delays in one area could disrupt the entire program. This brought about the systems management concept which was superimposed on the functional management concept in order to maintain an acceptable degree of uniformity and economy. These two different concepts of management naturally produced strong advocates and equally strong critics of one concept over the other. For a period of time the system concept became the "Mode of the Air Force" with each manager clamoring to phase his particular system into this modern way of management. As a result, thirty-three different systems were phased in to this concept of management in a period of four years, (Appendix 2). With so many systems receiving preferred treatment, the critics of systems management soon found many areas where criticism was justified. The glamor of systems management began to dim and some critics were advocating that it be completely eliminated in the operational phase of the system life cycle. By July of this year, nineteen of the original thirty-three systems (See footnote in Appendix 2) will have been phased-out of systems management. The question now is how far should the pendulum swing toward phase-out of systems? To answer this question it is well to look back on history and see why systems management over extended beyond the development and production phases. The following quotation pertaining to the initial introduction of the F-102 into this type of management lists four specific reasons:

"In rendering logistical support to the F-102 weapons system, it was found that existing supply procedures were unsatisfactory to afford prompt and effective support required for multiple site testing. The following problems were experienced: (1) delays in replenishing test agency stocks from diversified AMC distribution points, (2) control of dispersed initial spares for modification, (3) processing of design change notices and Engineering Change Proposals, (4) no assurance that common items applicable to various aircraft would be available for F-102 support."<sup>1</sup>

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<sup>1</sup>San Antonio AMA, "History Narrative," 1 January through 30 June 1955, pp. 34,35.

If the WSM concept were eliminated these same problems would probably return, therefore, the Team supports system management on a selective basis for those systems vital to the defense of the nation. It is, in the Team's opinion, just as important to ration management's efforts as it is to ration spare parts to assure operational capability for priority bases or units.

The Team was unable to accomplish some of the original goals of this research project. For example, data for the value curve and for the cost curve simulated by the first figure of this report were not available. These data would provide the manager with a mathematical model for determining the exact time when a system should be phased-out from systems management. The problem of cost data is receiving much emphasis as indicated by the following statement by Mr. Charles J. Hitch, Assistant Secretary of Defense (Comptroller) quoted from the address previously mentioned in Chapter Four.

"Economic choice in military affairs is a way of looking at problems and does not necessarily depend upon the use of analytical aids or computational devices. These aids and devices are often very helpful in analyzing complex military problems. Even where they may not contribute directly to the solution, they may assist in thinking the problem through in terms of objectives and costs. In any case, mathematical models and computations are in no sense substitutes for, or rivals of, good intuitive judgment; they supplement and complement it.

"Before we can place ourselves in a position to do the type of analysis I have described, it seems to me that we must bridge the gap which now exists between military planning and budgeting. To that end I have proposed and Secretary McNamara has approved, the establishment in my office of a new Deputy Assistant Secretary for Programming.

"Briefly, his function will be to:

"1. Assemble, consolidate, and present the physical programs of the services and all other agencies of the Department of Defense. By 'program' I mean any budget-generating activity.

"2. Translate these physical programs into financial summaries and present them in several ways; i.e., by time period; by initial investment and annual operating costs; by new obligational authority, obligations, and expenditures; by mission or task; by weapon system; and by appropriation category. This task is of such complexity that the use of

electronic data processing machines will no doubt be required."<sup>2</sup>

Obviously it will take a long time to develop and refine the type of value and cost data needed for decision-making in systems management. Therefore, good periodic judgment decisions should be applied to the program of systems management.

Paragraph II below lists the deficiencies that exist in the AFR 375-1, the relative priority of systems and the lack of an integrated selective systems management program. Paragraph III lists the steps that are required to implement a selective management program for the required life cycle of a system.

## II. DEFICIENCIES

A summary of those deficiencies that presently exist follows:

1. AFR 375-1 governs the phase-in of new systems into the systems management concept. It deals primarily with the acquisition phase of the life cycle. Since several years overlap normally exists between the acquisition phase and the operational phase, this regulation should also designate the responsibility for selecting certain high priority systems for support, during the operational phase, under one of the special materiel support procedures such as Vol. XX or ARLS. The present method of specifying the support procedure in each Materiel Support Plan developed as part of the Package Program or the Partial Package Program by each "SPO" will not result in selective management. Naturally each "SPO" feels that his particular system is extremely important and would normally recommend that special support procedures be utilized. The authority to select systems for special materiel support procedures must be centralized at a level where the relative importance of all systems can be evaluated.

2. The designation of relative importance of the different systems in the Air Force is not complete. AFR 80-11 establishes Importance Categories by systems and projects for official guidance for the distribution of research and development resources. The USAF Program--Bases, Units and Priorities (PD) establishes relative priority for organizations and provides official guidance for the distribution of materiel. However, official Air Force guidance does not exist to determine the degree of logistic support effort to be provided different systems or projects.

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<sup>2</sup>Hitch, Charles J., Asst. Secy. of Defense (Comptroller), "The Defense Budget as a Management Tool," A Department of Defense, Office of Public Affairs, News Release, 1 March 1961, of Address before the Annual National Conference of the Armed Forces Management Association, Shoreham Hotel, Washington, 25, D. C.

3. An integrated program has not been established by the Air Force to provide the guidance and surveillance necessary to direct the efforts of the different commands and organizations involved in systems management.

### III. CORRECTIVE ACTIONS

The steps necessary to eliminate the discrepancies cited above and to implement an integrated selective systems management program are as follows:

1. AFR 375-1 should be amended to include Headquarters USAF responsibility for selection of those high priority systems which will be supported by special materiel management procedures.

2. Headquarters USAF should develop a single source document as the official declaration for all Air Force activities of the relative importance of organizations, systems and projects. If the present USAF Program--Bases, Units and Priorities (PD) document were expanded to include a section for the relative priority of each system or project in the Conceptual, Acquisition and Operational phases, this one source could satisfy the requirements of all commands. It is recognized that the same system or project could be listed under both the Acquisition and Operational phases with a different precedence rating. For example, the B-52 may have a low precedence rating in the Acquisition phase and a high precedence rating in the Operational phase. This should be an advantage as the relative effort that should be expended by any Air Force organization would be easily recognized.

3. Headquarters USAF should publish a regulation in the 375- series designating responsibilities for the phase-out of systems from special materiel management procedures. This regulation should cover the following points:

a. Designate the Hq USAF office of responsibility for approval of phase-out of systems from the systems management concept.

b. Require a semi-annual review of all systems being managed or designated for management under special management procedures. Recommendations from AFSC, AFLC and using commands concerned should be required for these reviews.

c. Any deviation from the numerical precedence rating in the USAF Program Document should be recorded and approved by the Chief of Staff.

4. Hq AFLC should delete the Class Categories defined in Section E and Attachment 2 of AFLCR 400-1.

5. Hq AFLC should modify the Volume XX and ARLS procedures to reduce the accumulation of material at single point storage sites. Where the

activity of reparable generation justifies the establishment of a system account at the overhaul depot, this should be done to reduce duplicate handling and shipment of material. The system manager would still control the item but shipments would be direct from the overhaul location to the using activity.

#### IV. CONCLUSIONS

It is concluded that:

1. The Air Force needs a formal, integrated program for selective systems management. The present gap caused by individual actions for selection of systems for the package or partial package program or the selection on withdrawal of systems from special materiel support procedures should be bridged by focal point guidance and decision approval from Hq USAF level.

2. The Air Force needs a procedure for the periodic review and phase-out of systems from the systems management concept.

3. The phase-out criteria should consist of the following factors, applied with the emphasis indicated:

<u>FACTOR</u>	<u>EMPHASIS</u>
Military Value	Major Importance
Cost	Major Importance
Stable Configuration	Minor Importance
Planned Replacement	Minor Importance
Deployment	Minor Importance

Success in applying the factor of military value depends largely on USAF publication of the relative priority of systems in the Acquisition and Operational phases. Application of the other factors would depend largely on the requirement for a periodic (not more than semi-annual) judgment review of all systems receiving special management attention.

4. The above factors must be evaluated by means of judgment decisions at the present time since financial and management evaluation reports lack data for a mathematical model.

#### V. RECOMMENDATIONS

It is recommended that:

1. An integrated, selective systems management program be published in Air Force regulations.

2. Headquarters USAF publish an official document reflecting relative importance of all systems and projects in the Conceptual, Acquisition and Operational phases of their life cycle.

3. The Air Force continue to develop financial and management evaluation reports which will reflect cost and performance by system.

4. The factors outlined in this report, namely Military Value, Cost, Stable Configuration, Planned Replacement and Deployment with their varying degrees of importance be recognized as the criteria factors for selection for phase-in or phase-out of systems under the systems management concept.

#### VI. SUMMARY

This chapter covers the conclusions and recommendations of the Team. Chapter Six contains the peripheral findings of the Team.

CHAPTER SIX  
PERIPHERAL FINDINGS

I. GENERAL

In order to reach an acceptable solution to the problem confronting the Team and to satisfy the curiosity of the Team members, it was decided to explore many open channels in order to learn more about the factors which were directly or indirectly related to the problem. The Team felt that the majority of the information needed to establish criteria for the phase-out of systems from the USAF inventory was available. However, it is the Team's opinion, as a result of the research, that in view of the Vice Chief of Staff letter<sup>1</sup> and the reorganization of 1 April 1961<sup>2</sup> many individuals were reluctant to provide information. Nonetheless, from its discussions of various facets of the problem area the Team was left with impressions concerning certain situations related to, but not directly a part of, the problem under study. These impressions follow.

II. REORGANIZATION

While gathering facts to determine criteria for the phase-out of systems from the systems management concept, it became apparent to the Team that under the reorganization plan effective 1 April 1961, there would be considerable overlap in functions and a possible duplication of efforts between the AFSC and AFLC.<sup>3</sup> In the new organization it appears that there will be an overlap of interest and responsibility which is shown in Figure 13 as a "grey area". This "grey area" represents that period of time when both the AFSC and AFLC have interest in the development, production or operation of a particular system. During this period of dual interest actions occur which have latent impacts in that supply and maintenance methodologies become victims to deficiencies created during the development and production function. During this period AFLC has little or no control over the state of development or timely availability of items that they are responsible for supporting. Under the reorganization of 1 April 1961 this "grey area" tends to increase rather than decrease because AFSC's responsibilities now extend into the operational phase. It should be the USAF's objective to create an organization which would be to the best interest of the national defense efforts by reducing this "grey area" as in Figure 14 to the absolute minimum.

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<sup>1</sup>LeMay, Curtis E., Gen. USAF, Vice Chief of Staff, Hq USAF, letter 19 August 1960, "Management of USAF Assets," to General Anderson, Hq AMC.

<sup>2</sup>Secretary of Defense, Press Release, 17 March 1960, announced a reorganization of ARDC and AMC to form the AFSC and AFLC.

<sup>3</sup>Ibid.

<sup>4</sup>Keeling, Gerald F., Colonel USAF, "The Weapon Systems Concept and its Application of the USAF," (Air War College Thesis No. 808, Maxwell AFB, Alabama, April 1954), p. 37.

AS REORGANIZED ON 1 APRIL 1961

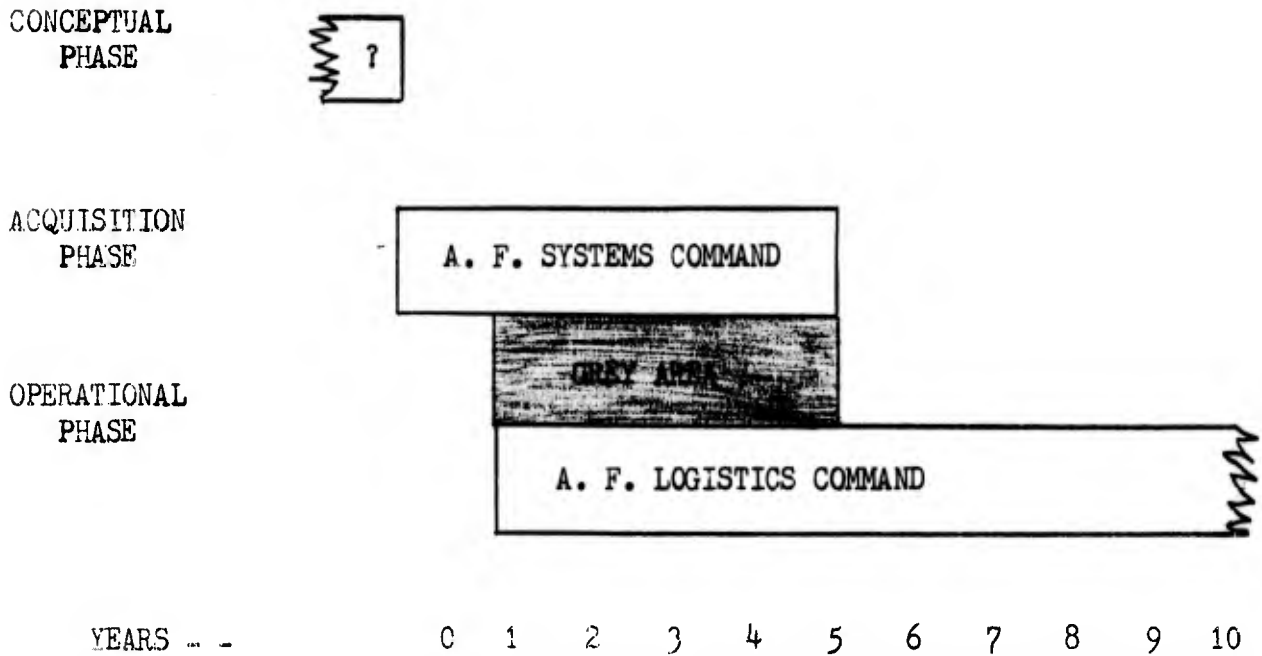
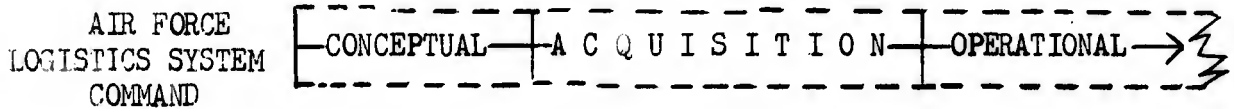


FIGURE 13

PROPOSED REORGANIZATION



ADVANTAGES

- NO GREY AREA
- SINGLE COMMAND RESPONSIBILITY (STRAIGHT LINE)
- OPERATION UNDER ONE COMMAND WITH ONE SET OF RULES
- IDEALISM AND ECONOMICAL VIEWS MARRIED
- MAXIMUM COORDINATION WITH LEAST EFFORT, PROBABILITY OF ERRORS REDUCED

FIGURE 14

When two major organizations have an interest in the same weapon, one or the other could easily "drop the ball," especially when only one of the two has been assigned primary responsibility. To hurdle this "grey area" would require the maximum coordination between two very strong major commands and the least uncoordinated matter could be extremely costly in time and materiel. The overlap in the functions of the two commands exists because it is imperative, under the "Cook-Craigie" philosophy<sup>5</sup> of operations which are being employed for purposes of time compression, that an input from supply and maintenance be injected into a program simultaneously with development and production. Thus the basic functions of development, production, supply, and maintenance are so closely related that any attempt to separate them results in a "Grey Area." Following the creation of ARDC in 1951 the split of these functions developed the "grey area" and numerous reorganizations since that time have been ineffective in minimizing the problem.<sup>6</sup> It is believed that a single command should be given the responsibility for development, procurement and support of vital weapons in order to pinpoint the responsibility for accomplishing the many logistic tasks. Further, the Team believes that the objective of eliminating the "grey area" could best be accomplished by the merger of AFSC and AFLC into a single command such as that shown in Figure. 15.

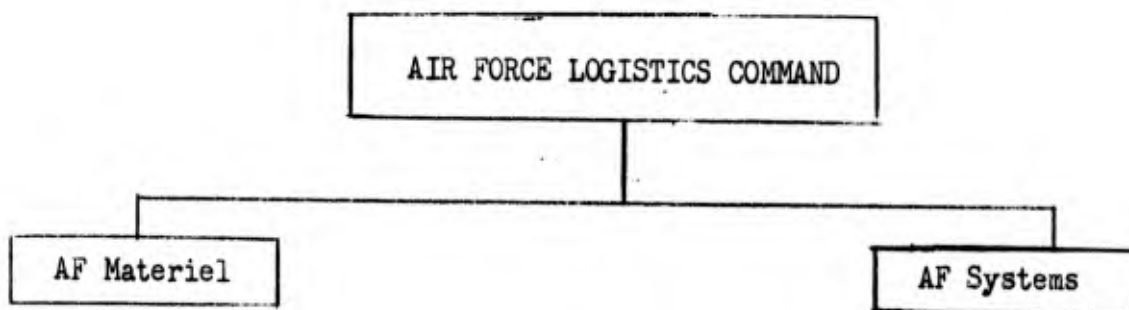


FIGURE 15

A reorganization within Hq USAF combining DCS/Development and DCS/Materiel into DCS/Logistics and Systems should reduce the necessity for passing the responsibility for the SYSTO between various staff agencies. The channels for the dissemination of guidance would then be from DCS/Logistics and Systems direct to the single AFLC, for implementation.

<sup>5</sup>Ibid, p. 39.

<sup>6</sup>Davis, Paul M., Chief, Historical Division, Hq AMC, "The Problem of Organizing for Weapon System Management - An Historical Analysis," 18 February 1960.

### III. AUTOMATIC RESUPPLY LOGISTIC SYSTEM

Since the basic problem dealt with the materiel support procedures associated with systems management, several interviews included discussion of the ARLS used to provide support for some of the missile systems. During these discussions extreme criticism was expressed against this procedure. Several individuals mentioned that they had been opposed to it for more than two years but the only reason they could give was that "the procedure just did not work." They stated the theory was ideal-- but that it just did not furnish the support necessary. It is suggested that further study be made in this particular area to determine if the strong criticism is from deficiencies in the procedure or from deficiencies in the manning authorization. It is pointed out that the supply officer at a missile site supported by the ARLS procedure is a Captain-- while the supply officer for a comparable squadron of aircraft at a location supported by the Volume XX procedure is a Lt. Colonel. It appears that military ratings may be governed more by the number of personnel assigned to an organization than by the responsibilities assigned the position.

### IV. RESPONSIBILITIES OF AIR MATERIEL AREAS FOR LOGISTIC SUPPORT MANAGEMENT vs. INVENTORY MANAGEMENT

AFLC (AMC) Regulation 400-1, 10 November 1959, outlines the responsibilities and relationships for the Weapon System Management Divisions and the Inventory Management Divisions at the Air Materiel Area Depots. In the case of missile items the functions are separated in accordance with the following:

"Special groupings of aircraft (FSC 1560) and missile (FSG 14) items will be assigned, for IM purposes, to the LSM AMA for the weapon/support system to which the special grouping is related, thus making the LSM AMA responsible for both system management and item management. When this is done, IM functions for items in missile special groupings (FSG 14) will be separated from the functions of LSM for the related weapon system as provided for in paragraph 41b(2) section J. Likewise, at the option of each aircraft LSM AMA commander, the functions of IM for items in aircraft special groupings (FSC 1560) will be separated from the functions of LSM for the related weapon system."<sup>7</sup>

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<sup>7</sup>Hq AFLC (AMC), Regulation 400-1, "Logistic Support Management Policy," 10 November 1959, para. 2b(3) (d).

This separation of functions appears to have been a last minute change since the opposite position is stated in a presentation made to the School of Logistics, 6 November 1959:

"Special groupings of aircraft (FSC 1560) and missile (FSG 14) items will be assigned for IM purposes, to the LSM AMA for the weapon system to which the special grouping is related, thus making that LSM AMA responsible for both system management and item management of certain components of that system. When this is done, IM functions for items in missile special groupings (FSG 14) will not be separated from the functions of LSM for the related weapon system; however, the functions of IM for items in aircraft special groupings (FSC 1560) may be separated from the functions of LSM for the related weapon system at the option of each aircraft LSM AMA Commander."<sup>8</sup>

This separation of functions means that the same item is being managed by two divisions at the same depot. The Inventory Manager determines requirements<sup>9</sup> and acquires materiel<sup>10</sup> while the Weapon System Manager determines consumption rates and stock levels for the weapon system storage site,<sup>11</sup> controls distribution of these items to the using activities<sup>12</sup> and provides requirements schedules to the Inventory Manager to maintain stock levels at the storage sites and bases.<sup>13</sup> This appears to be an unnecessary duplication of effort due to the extremely limited number of these items that have application to more than one system. The following data showing the limited multiple application was obtained from letters from Oklahoma,<sup>14</sup> Ogden<sup>15</sup> and San Bernardino<sup>16</sup> AMA's:

<u>CLASS</u>	<u>SYSTEM</u>	<u>NO. LINE ITEMS</u>	<u>NO. LINE ITEMS WITH MULTIPLE APPLICATION</u>
MAHB-(FSG 14)	GAM-72	1360	0
MAHB-4935	GAM-72	525	0
MAHC-(FSG 14)	GAM-77	1921	0
MAHC-4935	GAM-77	2167	0

<sup>8</sup>Hq AFLC(AMC), Presentation "AMC Regulation 400-1," to School of Logistics, 6 November 1959, Part III, C(6).

<sup>9</sup>Hq AFLC(AMC), Regulation 400-1, op. cit., para. 24c.

<sup>10</sup>Ibid, para. 24d.

<sup>11</sup>Ibid, para. 11b (15).

<sup>12</sup>Ibid, para. 11b (16).

<sup>13</sup>Ibid, para. 11b (17).

<sup>14</sup>Hq OCAMA, letter, "Data for Research Project," 11 April 1961.

<sup>15</sup>Hq OOAMA, letter, "Data for Research Project," 20 April 1961.

<sup>16</sup>Hq SBAMA, letter, "Data for Research Project," 10 May 1961.

<u>CLASS</u>	<u>SYSTEM</u>	<u>NO. LINE ITEMS</u>	<u>NO. LINE ITEMS WITH MULTIPLE APPLICATION</u>
MBAC-(FSG 14)	SM-65	22579	0
MBAC-4935	SM-65	1404	26
MBAD-(FSG 14)	SM-75	6039	0
MBAD-4935	SM-75	1236	43
MBAE-(FSG 14)	SM-68	1261	0
MBAE-4935	SM-68	547	68
MBAH-(FSG 14)	SM-80*	10000	0
MBAH-4935	SM-80*	9000	0
MSFB-(FSG 14)	IM-99	5528	4
MSFB-4935	IM-99	<u>4429</u>	<u>0</u>
Totals (Less SM-80)		43696	141
Percent of items with multiple application			.0033

\* The SM-80 line items are estimated because the program has not reached the point of identification and cataloging being firm.

Further study is recommended in this area to eliminate the duplication that presently exists.

#### V. AOCPP and ANFE

In addition to the peripheral findings already discussed the AOCPP and ANFE rates for several aircraft covering a period of 14 months beginning 1 January 1960 through February 1961 were reviewed. It was hoped that information might be uncovered which would lead to the establishment of criteria upon which to base a decision for the phase-out of weapon systems from the systems management concept. Based upon the information obtained from AFIC S-52 Reports, a summary of Team's findings for certain aircraft is shown in Appendix 9. The Team could not use this information for the purpose of establishing a criterion because reports reflecting "in commission rates" and "equipment status" are tinted by circumventing techniques which inject an element of distrust in their validity as shown in the following:

"The AF-S96 Report contains the type of information that was employed by 8th AF (SAC) to conduct an analysis of the situation. This analysis covered a 6 month period at 15 bases and revealed that there had been over 1800 cannibalizations at a manhour cost of over 5500 hours, or the equivalent of 5 complete periodic inspections and 3 post flight inspections. Further, 8th AF (SAC analysis revealed:

"1. 70% of cannibalizations were performed to prevent AOCPS."<sup>17</sup>

The Team recommends concerted action to purify data reported for management purposes.

## VI. SUMMARY

This chapter on peripheral findings included a recommendation for reorganization and consolidation of AFSC and AFLC, discussion of a possible reason for such strong opposition to ARLS, comments on the apparent duplication of item management in the missile divisions at the AMA depots, and observations on reported AOCPS/ANFE rates. These areas are considered worthy of more detailed study and further evaluation.

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<sup>17</sup>Research report, "The Criteria and System for Evaluating Logistics Effectiveness," Brose, Herbert E., Lt. Col USAF; Collington, Frederick, Major USAF; Howe, Franklin E., School of Logistics, IT, AU, WPAFB, Ohio, 1 November 1959, p. 39.

APPENDICES

APPENDIX NO. 1  
WEAPON SYSTEM PHASE-IN AND PHASE-OUT DATES

WEAPON SYSTEM  
PHASE-IN AND PHASE-OUT  
DATES

<u>TYPE</u>	<u>PHASED-IN</u>	<u>PHASED-OUT</u>	<u>TYPE</u>	<u>PHASED-IN</u>	<u>PHASED-OUT</u>
B-17	1937	1960	GAM-63	1957	1959
B-26	1943		GAM-72	1958	
B-29	1943		GAM-77	1958	
B-36	1947	1958	GAM-79		
B-45	1948		GAM-83	1959	
B-47	1950		GAM-87		
B-50	1947		IM-99	1957	
B-52	1954		RM-81	1958	
B-57	1953		SM-62	1957	
B-58	1959		SM-65	1957	
B-66	1954		SM-68	1958	
C-46	1942		SM-73	1957	1959
C-47	1942		SM-75	1957	
C-54	1942		SM-78	1959	
C-82	1945	1954	SM-80		
C-97	1949		TM-61	1957	
C-117	1945		TM-76	1958	
C-118	1952				
C-119	1948				
C-121	1948				
C-123	1953				
C-124	1950				
C-130	1955				
C-131	1954				
C-133	1955				
KC-97	1950				
KC-135	1957				
F-47	1944	1954			
F-51	1942	1957			
F-59	1944	1948			
F-61	1944	1949			
F-63	1943	1950			
F-80	1945				
F-82	1945	1949			
F-84	1947				
F-86	1948				
F-89	1950				
F-94	1949	1960			
F-100	1953				
F-101	1954				
F-102	1955				
F-104	1956				
F-105	1956				
F-106	1956				
T-29	1949				
T-33	1948				
T-37	1955				

APPENDIX NO. 2

SPECIAL MANAGEMENT PROCEDURES  
HAVE APPLIED TO THE FOLLOWING SYSTEMS

SPECIAL MANAGEMENT PROCEDURES  
HAVE APPLIED TO THE FOLLOWING SYSTEMS

VOLUME XX, AFM 67-1

*B-52	F-104	GAR-1	*GAM-77
B-57	*F-105	GAR-2	GAM-83
B-58	F-106	GAR-3	SM-62
B-66	C-118	GAR-4	* TM-61
F-100	C-130	GAR-8	* TM-76
F-101	C-133	GAM-63	Q-2
F-102	*KC-135	*GAM-72	Q-4

VOLUME XXIII (Modified),  
AFM 67-1

SM-78

AUTOMATIC RESUPPLY LOGISTICS SYSTEM (IOC-II)

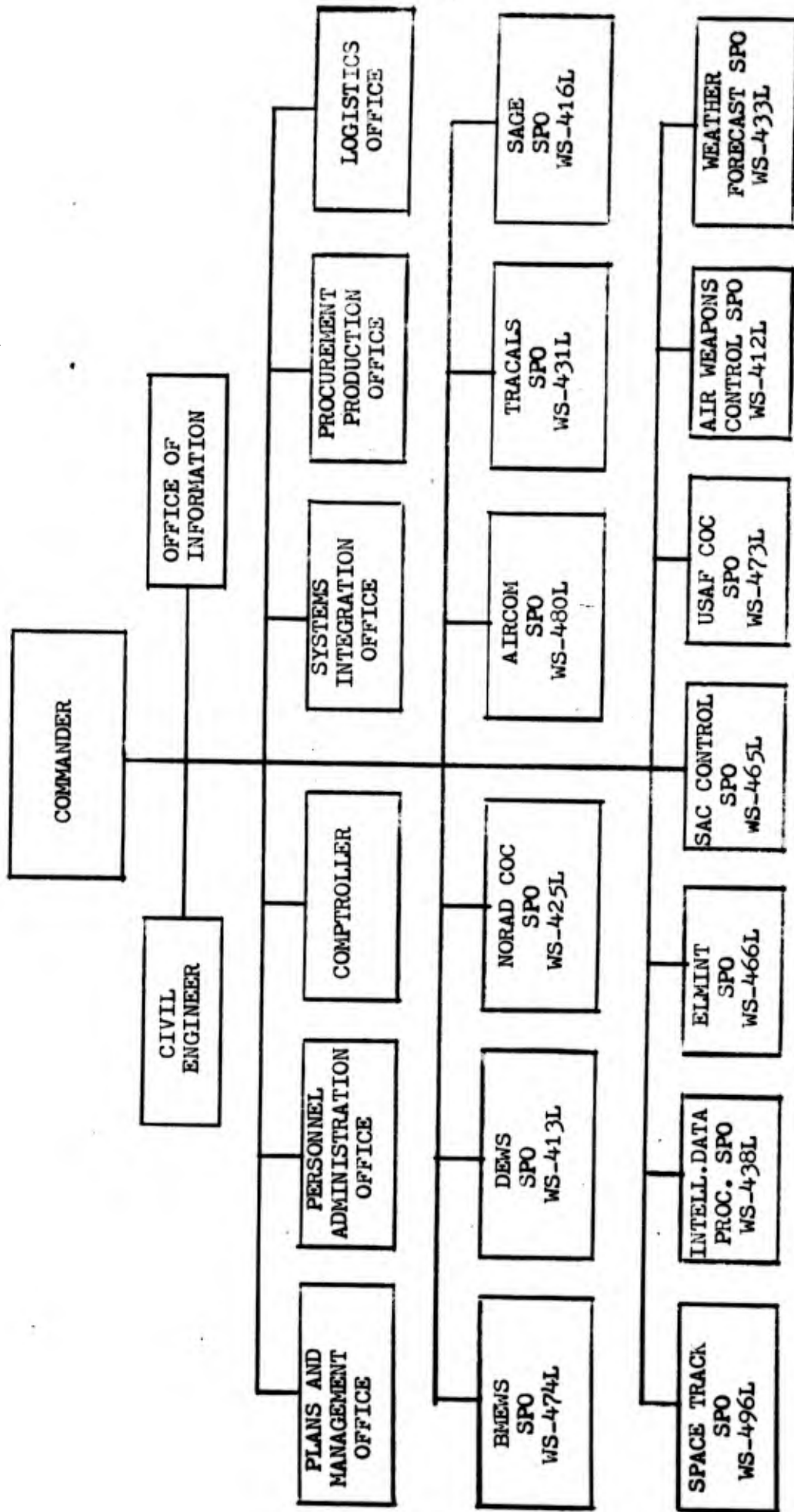
IM-99	SM-65	SM-68	SM-75
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\* Denotes those systems remaining under Vol. XX after September 1961.

APPENDIX 2

APPENDIX NO. 3  
ELECTRONIC SYSTEM CENTER ORGANIZATION

APPROVED ELECTRONIC SYSTEM CENTER ORGANIZATION



APPENDIX NO. 4

COMPUTATION OF MACHINE USAGE  
FOR LARGE AND MEDIUM FRAME COMPUTERS

COMPUTATION OF MACHINE USAGE  
FOR LARGE AND MEDIUM FRAME COMPUTERS

For the period from  
Nov 1961 through Mar 1961

TITLE OF USE CODES	ADV LOG SYSTEM IOC-II		ADV WEAPON SUPPLY (VOL-23)		STOCK CON- TROL & DISTR WS		STOCK CONTROL & DISTR INV MGMT		STOCK CONTROL & DISTR WS RAMAC		TOTALS	
	1		2		4		7		18			
	L	M	L	M	L	M	L	M	L	M		
SBAMA	1145			23		18		15			1287	296
WRAMA					162		141	181			315	1043
DAAFD							348	296			828	556
SAAMA			19		140		315	78			994	790
MAAMA			55				272	120			524	1095
OOAMA	339	51					161	44			1057	1014
ROAMA								179			265	336
OCAMA							9	435	627		1256	1786
MOAMA			19	25	72		942				1231	929
SMAMA				29	488			157			550	1135
MEMPHIS								150			600	231
TOTAL	1484	51	19	77	562	392	2188	1655	627	627	8907	92111

L = Large frame computer (705, 1105 and UNIVAC) %  
 Weapon System = 2692 30.2  
 Inventory Mgmt = 2188 24.5  
 Total = 8907

M = Medium frame computer (650 Band 650 Tape) %  
 Weapon System = 520 5.6  
 Inventory Mgmt = 1655 18.  
 Total = 9211

APPENDIX NO. 5

COMPUTATION OF MACHINE USAGE BY MONTH FOR THE WEAPON SYSTEMS  
MANAGEMENT AND INVENTORY MANAGEMENT FOR LARGE FRAME COMPUTERS

COMPUTATION OF MACHINE USAGE BY MONTH FOR THE WEAPON SYSTEM  
MANAGEMENT AND INVENTORY MANAGEMENT FOR LARGE FRAME COMPUTERS

LOCATION		NOV	DEC	JAN	FEB	MAR
SBAMA	WS	1056	1139	1110	1098	1324
	IM					
	T	1206	1398	1329	1147	1353
WRAMA	WS					
	IM	91	206	177	118	115
	T	249	335	334	298	360
DAAFD	WS					
	IM	319	361	339	373	
	T	789	863	805	856	
SAAMA	WS	46	42	8		
	IM	120	258	379	362	447
	T	806	1003	894	1008	1259
MAAMA	WS	64	59	51	49	52
	IM	208	214	234	358	348
	T	540	420	491	585	586
OOAMA	WS	311	306	267	492	317
	IM	147	143	172	186	155
	T	871	872	921	1232	1387
SAAMA	WS					
	IM					
	T	232	248	302	161	381
OCAMA	WS	598	701	637	628	571
	IM		4	20	23	0
	T	1246	1249	1260	1202	1321
MOAMA	WS	13	38	11	11	21
	IM	1056	982	913	826	934
	T	1156	1238	1284	1174	1304
SMAMA	WS	545	502	510	394	488
	IM					
	T	562	545	564	495	585
MEMPHIS	WS					
	IM					
	T	619	598	612	566	608
TOTAL	WS	(31.8)2633	(32.1)2787	(29.4)2594	(30.6)2672	(30.3)2773
	IM	(23.4)1941	(25.) 2168	(24.7)2174	(25.7)2246	(21.8)19999
	T	8276	8670	8794	8724	9144

APPENDIX 6

COMPUTATION OF MACHINE USAGE FOR MEDIUM FRAME COMPUTERS (650T)

COMPUTATION OF MACHINE USAGE FOR MEDIUM FRAME COMPUTERS (650T)  
from Nov. 1960 through Mar. 1961

LOCATION		NOV	DEC	JAN	FEB	MAR	AVR.
SBAMA	WS						
	IM						
	T						
WRAMA	WS						
	IM						
	T						
DAAFD	WS						
	IM						
	T						
SAAMA	WS						
	IM						
	T						
MAAMA	WS						
	IM	154	163	118	23	2	92
	T	982	1048	895	722	674	871
OOAMA	WS						
	IM						
	T	643	593	630	584	632	616
ROAMA	WS						
	IM						
	T						
OCAMA	WS						
	IM	390	495	418	421	451	435
	T	1384	1534	1586	1522	1571	1519
MOAMA	WS						
	IM						
	T	411	526	619	511	606	534
SMAMA	WS						
	IM						
	T						
MEMPHIS	WS						
	IM						
	T						
TOTAL	WS						
	IM	(15.9) 544	(17.7) 658	(14.3) 536	(19.0) 444	(13.0) 453	527
	T	3420	3701	3730	2339	3483	3540

APPENDIX 6

APPENDIX NO. 7

COMPUTATION OF MACHINE USAGE FOR MEDIUM FRAME COMPUTERS (650B)

COMPUTATION OF MACHINE USAGE FOR MEDIUM FRAME COMPUTERS (650B)  
from Nov. 1960 through Mar. 1961

LOCATION		NOV	DEC	JAN	FEB	MAR	AVR.
SBAMA	WS	27	28	45	40	68	41
	IM	13	14	16	13	18	15
	T	237	246	333	255	409	296
WRAMA	WS	130	185	165	155	177	162
	IM	140	191	205	174	198	181
	T	959	1119	973	843	1324	1043
DAAFD	WS						
	IM	320	283	301	282		296
	T	513	537	534	642		556
SAAMA	WS	130	131	171	128		140
	IM	150	112	43	8		78
	T	900	816	756	691		790
MAAMA	WS						
	IM	24	125	23	8	11	38
	T	131	326	217	116	332	224
OOAMA	WS	29	28	63	21	70	51
	IM	27	27	22	65	23	44
	T	370	370	420	370	459	398
ROAMA	WS						
	IM	164	188	193	149	201	179
	T	321	338	354	297	371	336
OCAMA	WS						
	IM						
	T	236	271	306	213	308	267
MOAMA	WS	84	90	106	99	110	97
	IM						
	T	366	307	327	393	584	395
SMAMA	WS		43	16			29
	IM	150	182	168	146	140	157
	T	1197	1070	1182	1101	1129	1135
MEMPHIS	WS						
	IM	67	90	108	200	188	150
	T	170	186	198	284	317	231
TOTAL	WS	400	505	566	443	425	
	IM	1055	1212	1079	1045	779	
	T	5400	5586	5600		5233	
PERCENT	WS	7.4	9.0	10.1	8.5	8.1	
	IM	19.5	21.6	19.2	20.1	14.8	
	T						

APPENDIX 7

APPENDIX NO. 8

STORAGE SPACE

SPACE UTILIZATION BY  
WEAPON SYSTEM STORAGE SITE

SOURCE: REPORT AMC-S148  
Form 384B as of 31 Dec 1960

SERVICEABLE

REPARABLE

COVERED

OPEN

COVERED

OPEN

TYPE AND MODEL AND LOCATION	<u>COVERED</u>			<u>OPEN</u>			<u>COVERED</u>			<u>OPEN</u>		
	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS
B-52 TINKER AFB	29,179	439,436	1,494	720	8,640	29	676	5,344	18			
B-52 OOAMA	174,244	2,112,526	7,182									
B-52 OOAMA CLEARFIELD NB	59,108	827,512	2,813									
B-52 ROAMA	5,982	51,667	21,991	23,276	279,312	1,285	13,568	148,328	683			
B-52 SAN ANTONIO AFS	377,479	4,780,704	3,210	9,000	86,150	2,013	1,664	19,152	64			45
B-52 WRAMA	111,847	1,036,642	4,448	78,905	600,770	2,013	1,664	19,152	64			45
KC-135 TINKER AFB	128,319	1,327,850	4,448									
KC-135 ROAMA	7,629	76,010	255									
KC-135 SAN ANTONIO AFS	18,284	181,688	854									
B-57 OOAMA	7,910	102,830	252									
B-57 ROAMA	1,314	12,168	58									
B-57 WRAMA	59,340	445,561	1,389	20,843	187,587	586	160	1,728	5			659
B-66 MOAMA	20,977	221,683	743	17,127	171,120	573	148	1,764	6			37
B-66 MIRA LOMA (COMMON)	55,638	790,213	3,223	1,188	4,732	16						
F-100 SMAMA	269,937	3,638,370	17,101	13,460	137,100	644	28,786	431,630	229			529
F-101 OOAMA	136,110	1,789,496	14,853	28,108	224,864	1,866	5,847	81,858	679			
F-101 ROAMA	4,454	41,452	344									
F-102 MARIETTA AFS	29,133	252,338	713	3,200	16,000	45						
F-102 MARIETTA, PA	28,428	454,848	3,775									
F-102 OOAMA	187,109	2,267,479	8,655									
F-102 SAAMA	77,639	947,868	5,355	2,944	35,328	200						
F-104 SMAMA	29,883	430,568	1,421	16,784	167,840	554	321	3,822	13			14
F-105 MOAMA												
F-106 MARIETTA AFS	2,871	24,040	68	440	2,580	7						
F-106 MARIETTA, PA	1,309	17,017	64	2,131	17,056	65						
F-106 OOAMA	156,516	1,904,203	7,269									

REPARABLE

SERVICEABLE

COVERED

OPEN

COVERED

OPEN

TYPE AND MODEL AND LOCATION	COVERED			OPEN			COVERED			OPEN		
	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS	Sq Ft	Cu Ft	TONS
IM-99 OOAMA	33,117	410,576	3,482	3,531	28,248	235	1,336	17,368	144			
SM-62 OOAMA	8,432	118,048	960	3,552	28,416	236	1,512	21,268	175			
SM-65 NORTON SBAMA	29,285	321,179	1,140	5,787	41,657	206	420	2,100	16	18,200	65	
SM-68 MOAMA	35,805	280,675	2,854	74,420	655,705	4,900						
SM-68 NORTON SBAMA	5,108	49,509	178									
SM-75 NORTON SBAMA	33,110	349,388	1,258	2,200	11,240	40	176	1,408	5			
GAM-72 TINKER AFB	1,616	15,724	97	1,050	2,750	18	10	30				
GAM-77 TINKER AFB	13,376	120,320	770	5,635	23,580	151	10	30				
GAM-77 ROAMA	379	2,274	11									
GAR-1 ROAMA	189	1,044	6									
C-118 NORTON SBAMA	15,190	143,520	509	720	7,200	26	360	1,800	6	5,625	20	
C-118 WRAMA	15,106	75,121	268	62	620	2	3,314	11,092	39			
C-130 WRAMA	95,134	912,000	3,678	21,808	194,068	782	1,158	12,258	49	16,720	67	
C-133 NORTON SBAMA	50,059	516,048	1,921	5,600	28,000	105	1,200	11,200	42			
TH-6: WRAMA	6,593	33,072	329				376	1,230	12	1,120	5	
TH-76A WRAMA	11,262	67,524	668	4,109	19,139	80	60	180	1			

APPENDIX NO. 9

MONTHLY AOC/ANFE RATES BY AIRCRAFT TYPES

MONTHLY AACP/ANFE RATES BY AIRCRAFT TYPES

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
B-52	4.5	4.0	3.9	2.9	1.6	2.6	1.8	1.6	1.0	0.7	0.7	0.7	0.6	0.7
KC-135	2.7	2.0	2.0	1.1	0.8	1.3	1.3	0.8	0.6	0.4	0.5	0.4	0.3	0.5
F-105	<u>6.6</u>	<u>4.5</u>	<u>7.6</u>	<u>3.3</u>	<u>8.0</u>	<u>3.4</u>	<u>6.7</u>	<u>12.8</u>	<u>17.3</u>	<u>22.8</u>	<u>14.6</u>	<u>24.2</u>	<u>22.4</u>	<u>16.5</u>
Total	<u>13.8</u>	<u>10.5</u>	<u>13.5</u>	<u>7.3</u>	<u>10.4</u>	<u>7.3</u>	<u>9.8</u>	<u>15.2</u>	<u>18.9</u>	<u>23.9</u>	<u>15.8</u>	<u>25.3</u>	<u>23.3</u>	<u>17.7</u>
Avr.	4.6	3.5	4.5	2.4	3.4	2.4	3.2	5.0	6.3	7.9	5.2	8.4	7.7	5.9
B-57	4.9	4.8	6.3	6.3	4.3	3.4	4.3	2.8	3.5	2.6	3.6	3.0	3.1	1.8
B-66	6.0	6.3	6.5	4.1	3.5	3.0	3.5	4.2	2.2	2.3	5.0	4.7	2.0	1.9
C-130	4.4	4.7	2.6	2.3	2.0	2.6	2.7	4.3	3.6	4.5	2.7	2.1	1.2	0.9
C-133	8.2	17.6	7.8	3.5	2.1	3.5	5.3	4.8	10.5	7.2	6.5	8.5	10.4	9.6
F-100	3.3	3.7	3.5	2.4	2.5	2.2	2.4	3.0	2.7	2.6	3.0	2.9	3.2	2.7
F-101	4.0	4.4	3.2	4.6	3.3	3.5	3.4	3.8	4.2	4.5	3.8	3.5	2.6	2.6
F-102	2.1	2.0	1.7	2.0	1.6	1.7	1.9	2.7	2.1	2.3	2.3	2.7	3.0	2.0
F-106	<u>7.2</u>	<u>6.4</u>	<u>12.1</u>	<u>8.6</u>	<u>9.3</u>	<u>12.2</u>	<u>10.5</u>	<u>12.5</u>	<u>9.3</u>	<u>8.9</u>	<u>7.1</u>	<u>9.9</u>	<u>7.6</u>	<u>8.0</u>
Total	<u>40.1</u>	<u>49.9</u>	<u>43.7</u>	<u>33.8</u>	<u>28.6</u>	<u>32.1</u>	<u>34.0</u>	<u>38.1</u>	<u>38.1</u>	<u>34.9</u>	<u>34.0</u>	<u>37.3</u>	<u>33.1</u>	<u>29.5</u>
Avr.	5.0	6.2	5.4	4.2	3.5	4.0	4.2	4.7	4.7	4.3	4.2	4.6	4.1	3.6

Group A  
Vol XX

Group C  
Vol XX  
Phasing  
Out

BIBLIOGRAPHY

## SELECTED BIBLIOGRAPHY

### AUTHORS

- Anderson, Samuel E., General USAF, Commander Air Materiel Command, letter 29 August 1960, "Management of Air Force Assets," to Hq USAF (AFCCS).
- Cook, Orval R. General USAF (Ret.), President Aircraft Industries Assn. of America, Inc., "Concept of Weapon System Management," Proceedings of the National Midwestern Mtg. Weapon System Management, N. Y., Institute of the Aeronautical Sciences, 7-8 November 1957.
- Davis, Paul M., Chief, Historical Division, Hq AFLC, "The Problem of Organizing for Weapon System Management -- an Historical Analysis," 18 February 1960.
- Hitch, Charles J., Asst. Secy. of Defense (Comptroller), "The Defense Budget as a Management Tool," A Department of Defense, Office of Public Affairs, News Release, 1 March 1961, of Address before the Annual National Conference of the Armed Forces Management Assn., Shoreham Hotel, Washington 25, D. C.
- Irvine, C. S., Lt. General USAF, Deputy Chief of Staff/Materiel, Hq USAF, letter 3 April 1960, to General Samuel E. Anderson, Hq AMC.
- Keeling, Gerald F., Colonel USAF, "The Weapon Systems Concept and its Application to the USAF," (Air War College Thesis No. 808, Maxwell AFB, Alabama, April 1954), pp. 6, 7, 25.
- LeMay, Curtis E., General USAF, Vice Chief of Staff, Hq USAF, letter 19 August 1960, "Management of USAF Assets," to General Anderson, Hq AMC.
- Margenstern, Oskar, "The Question of National Defense," New York, Random House, 1959.
- Marx, Howard F., Chief, Engineering Research Temco Aircraft Corporation, "The Role of Operational Research," Proceedings of the National Midwestern Mtg. Weapons System Management, New York: Institute of the Aeronautical Sciences, 7-8 November 1957.
- McDowell, M. S., Lt. Colonel USAF, Hq AMC (MCFL), "Preliminary Staff Study on Logistics Management Center," 27 October 1960.
- Witze, Claude, "Organizing for the Space Age," Air Force, April 1961.

BIBLIOGRAPHY (Contd.)

DEPARTMENT OF THE AIR FORCE, HQ USAF REGULATIONS AND HOI's  
Washington 25, D. C.

AFM 67-1, Vol XX, Amendment 4, 16 November 1959  
AFR 20-1, 15 April 1953  
AFR 20-1A, 28 April 1953  
AFR 23-2, 21 November 1956  
AFR 23-2A, 10 November 1960  
AFR 80-9, 27 July 1959  
AFR 80-11, 6 April 1961  
AFR 80-30, 27 March 1956  
AFR 375-1, 23 January 1961  
AFR 375-2, 31 August 1960  
AFR 375-3, 23 January 1961  
AFR 375-4, 20 January 1961  
AFR 375-5, 17 October 1960  
HOI 21-18, 30 November 1959  
HOI 80-9, 20 February 1961  
HOI 375-1, 17 January 1961

AFLC, Regulations, Wright-Patterson AFB, Ohio

AFLC 375-4, 31 August 1960  
AFLC Supplement No. 1 to AFR 375-5, 15 February 1961  
AFLC 400-1, 10 November 1959

BIBLIOGRAPHY (Contd.)

BOOKLETS

ARDC - AMC Booklet, "Weapon System Management and the Weapon System Project Office," 17 August 1959.

Your Guide To Wright-Patterson AFB, unofficial publication, Office of Information, EWK, WPAFB, Ohio

RESEARCH STUDIES, SCHOOL OF LOGISTICS  
INSTITUTE OF TECHNOLOGY, AIR UNIVERSITY, WPAFB, Ohio

Brose, Herbert E., Lt. Colonel USAF; Collington, Frederick, Major USAF; Howe, Franklin E., "The Criteria and System for Evaluating Logistics Effectiveness," 1 November 1959.

Haddock, W. N., Cdr USN; Bahr, G. L., Major USAF; Finch, R. L., Hq AMC, "Vertical Integration in Weapon System Management," 1 December 1960.

MISCELLANEOUS

CG, SBAMA, letter 17 April 1961, "Reprogramming to Support Ballistic Missiles," to CG, Hq AMC (MCF), and Hq AMC letter 30 April 1961, Subject, "Same" to SBAMA.

Hq AMC, Report, AMC-S148, "Storage Space Utilization and Occupancy Report," Form 384B, 31 December 1960.

Hq San Antonio Air Materiel Area, Historical Monograph Nr. 1, "Conclusion of B-36 Aircraft Phase-out," July 1957 - May 1959, RCS AU-05, Kelly AFB, San Antonio, Texas.

Hq AMC, "The Air Force Logistic System, Concept, Methods, Procedures," WPAFB, Ohio, October 1960.

Hq San Antonio Air Materiel Area, History Narrative, 1 January through 30 June 1955, pp. 34-35, and Hq AMC msg MCSYOM-11-74-E, 30 November 1955.

Secretary of Defense, Press Release, 17 March 1961, announced a reorganization of ARDC and AMC to form the AFSC and AFLC.

Hq Middletown Air Materiel Area, 1st Ind., "Data for Research Project," 13 April 1961, para. 1.

This report represents the work of students of the School of Logistics. Material included in the report has been developed by the students as a portion of their educational program during attendance at the School.

These students have considerable experience in various areas of the logistics field. Consequently, the opportunity, during this course, for them to concentrate this experience on the study of certain Air Force problems offers a potential not readily found elsewhere in the Air Force. The conclusions, and any recommendations, reached by the students may well be of significance throughout the Air Force logistics mission. It is with this thought in mind that the individual studies are published.

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