



AIR WAR COLLEGE



RESEARCH REPORT

No. AU-AWC-86-186

LOGISTICS AND TACTICAL READINESS
--ARE THEY COMPATIBLE?

By COLONEL DAVID O. SCHEIDING

DTIC
ELECTE
MAR 17 1987
S D



AIR UNIVERSITY
UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

APPROVED FOR PUBLIC
RELEASE; DISTRIBUTION
UNLIMITED

87 3 16 030

AD-A177 894

WING FILE COPY

AIR WAR COLLEGE
AIR UNIVERSITY

LOGISTICS AND TACTICAL READINESS
--ARE THEY COMPATIBLE?

by

David O. Scheiding
Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE RESEARCH
REQUIREMENT

Research Advisor: Colonel Allen E. Dodson Jr

MAXWELL AIR FORCE BASE, ALABAMA

March 1986

DISCLAIMER-ABSTAINER

This research report represents the views of the author and does not necessarily reflect the official opinion of the Air War College or the Department of the Air Force.

This document is the property of the United States government and is not to be reproduced in whole or in part without permission of the Commandant, Air War College, Maxwell Air Force Base, Alabama.



Accession For	
NTIS CRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By _____	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

ABSTRACT

TITLE: Logistics and Tactical Readiness--Are They Compatible?

AUTHOR: David O. Scheiding, Colonel, USAF

Working level frustrations with the current logistical system fosters the subject question of, "Is the current logistical support system compatible with the Tactical Air Command's concept of readiness?" A noted difference of opinion exists between the users and the supporters as to the answer to this question. A historical perspective has been provided to establish the importance of logistics to war fighting capability. The author then develops the basic concepts of the current logistical system and tactical readiness. By looking at the governing regulations and applying real world dynamics through a specific example, the source of frustration is established. The author views the true cause of the situation that manifests itself as a difference of perceptions between users and supporters as not necessarily one of incompatibility but rather one of a lack of reliability in our advanced weapons system. Recommendations to address this problem are provided.

BIOGRAPHICAL SKETCH

Colonel David O. Scheiding (B.S., Aerospace Engineering, Iowa State University; M.S., Engineering, University of Denver; MBA, University of Utah) has been interested in logistical support of Air Force weapons systems since 1974 when he was stationed at Kelly AFB and performed duties as the Lead Structural Engineer on the C5A. Prior to this, Colonel Scheiding served as an Instructor Pilot with the Air Training Command and as a Forward Air Controller in Vietnam. After graduating from Air Command and Staff College in 1978, Colonel Scheiding's interest in logistical support of Air Force weapons systems was further challenged while assigned to Cannon AFB, NM. During a seven-year period, Colonel Scheiding served as an F-111D Assistant Operations Officer, Operations Officer and Commander of an F-111D Tactical Fighter Squadron. He also served as an Assistant Deputy Commander for Operations and as an Assistant Deputy Commander for Maintenance. Colonel Scheiding is currently a member of the Air War College, class of 1986.

TABLE OF CONTENTS

SECTION	PAGE
	DISCLAIMER-ABSTAINER. 11
	ABSTRACT. iii
	BIOGRAPHICAL SKETCH iv
I	INTRODUCTION. 1
	The Problem 1
	The Question. 1
	Purpose 2
	Overview. 2
II	THE CONCEPTS. 3
	A Historical Perspective. 3
	The Current Logistical Concept. 4
	The Concept of Tactical Readiness 5
III	ANALYSIS AND DISCUSSION 7
	The Key Words 7
	MICAP Handling Under AFM 67-1 10
	Tactical Real World Dynamics. 13
	An Example. 15
IV	CONCLUSIONS 21
V	RECOMMENDATIONS 23
	BIBLIOGRAPHY. 26
	GLOSSARY. 28

SECTION I

INTRODUCTION

The Problem

For those of us who have spent a significant amount of time on a tactical fighter wing flight line, it is not uncommon to hear disgruntling rhetorical questions such as, "I wonder just whose side supply is really on?" or "How can they really expect us to do our job if supply can't provide us the parts when we need them?" These types of comments are often heard during an Operational Readiness Inspection (ORI) or a similar type of local exercise that is simulating a combat condition. These types of statements are usually voiced by a frustrated crew chief or maintenance flight line production supervisor who has just received word that the part needed to fix an aircraft for the next sortie just went zero balance.

Frustration builds due to a feeling of helplessness resulting in the situation that the crew chief and the maintenance flight line production supervisor feel somewhat powerless to fix the problem at hand. Maintenance personnel have to rely on the supply system to provide the part, or they will be forced to cannibalize the part from another aircraft. Cannibalization represents a doubling of the maintenance work load. It is easy to see why flight line maintenance personnel feel they are at the mercy of the logistical support system and why they may have the distinct perception that logistics and tactical readiness are not compatible.

The Question

If the question, "Is the current logistical support system

compatible with the Tactical Air Command's (TAC) concept of readiness?" were asked of the above crew chief, the above maintenance flight line production supervisor, or even the Wing's Deputy Commander for Maintenance (DCM), the answer received may be an emphatic, "No!" However, if this same question were asked of the maintenance supply liaison supervisor, the chief of supply, or even the depot that is responsible for supporting the particular weapons system, the answer received may be an emphatic, "Yes!" Hence, we have two opposing perceptions of the same situation.

Purpose

The purpose of this paper is to discuss the effect of the current logistics system on the readiness of our Tactical Air Forces. The question of compatibility of the current logistics system with the concept of tactical readiness will be addressed.

Overview

The importance of logistics and its effect on capability will be discussed by a brief historical review followed by the United States Air Force's current concept of logistics. Then the current concept of tactical readiness will be presented followed by a discussion that attempts to answer the question of compatibility. The discussion will consider the specific example of the F-111D aircraft. Conclusions and recommendations will then be provided as "food for thought" as the Air Force continues to struggle with continuing discussion between maintenance and the system that supports it.

SECTION II

THE CONCEPTS

A Historical Perspective

Throughout the history of armed conflict, the importance of logistics has been documented and described. Unfortunately for many great leaders, however, the importance of logistics has been expressed in terms of an epitaph that reflects upon failures in battle which seem to emphasize the point that maybe a complete and full understanding of logistics was not evident. Carl Von Clausewitz, when commenting on Napoleon Bonaparte's disastrous defeat in Russia in 1812, expressed this idea in the following manner:

We are not suggesting that as the only reason why the campaign came to grief--that must be a matter of opinion. But it is undeniable that the lack of care over supplies was responsible for the unprecedented wastage of his army on the advance, and for its wholly calamitous retreat.(5:339)

This possible lack of understanding of logistics was also evident from analysis of Germany's defeat during World War II. Dr. Williamson Murray in his research on the defeat of the German Air Force said,

The eventual failure of the Luftwaffe in the Second World War reflected not so much the failure of German doctrine but ironically German organization. The defeat in the battle of Britain as well as in Russia resulted to a large extent from the failure of the Luftwaffe's support services to meet adequately the extensive demands of operational commitments. Goring refused to follow recommendations that the German aircraft industry devote 20 to 30 percent of production to the establishment of adequate inventories of spare parts.(9:219)

Even our own initial efforts during World War II would suggest that the United States may not have paid sufficient attention to logistics. Commander Thomas B. Buell, U.S. Navy (Retired), expressed it in this manner:

American long-range strategic planning was erratic throughout the spring and early summer of 1942. There were many reasons, starting with logistics. The shortages of men and materiel would not be alleviated until the United States was fully mobilized. That would take months.(4:315)

The question is, "Are we doing any better today when it comes to logistical planning?" Looking at the Grenada invasion of 25 October 1983, the lesson to be learned from the past may have been ignored. Rear Admiral Niel Ferraro, Deputy Chief of Staff for Logistics of the Atlantic Fleet, was told at a meeting 22 hours before the invasion was to begin that the United States was going to move on the strife-torn island. At this meeting, "Ferraro recalls that only one other logistician, an Air Force airlift specialist, attended the hour-long session, and that few logistical issues were raised."(7:70)

As it happened, our leaders decided they could afford to ignore logistics in Grenada probably because of the scale and length of time envisioned for the operation. In retrospect, however, Vice Admiral William Cowhill, the Joint Chief of Staff (JCS) Director of Logistics, stated that once again the importance of logistics cannot be ignored for any operation:

That's one of the lessons of Grenada. You've got to get the logistics in early. You get different forces from different services and it causes overlaps and shortages. Unless you get the staffs together early, you can't do the proper coordinating.(7:72)

The lesson that most definitely needs to be learned and remembered from the past is that although success in armed conflict is not necessarily guaranteed, it will most assuredly be elusive if insufficient attention is given to logistics.

The Current Logistical Concept

Let us now consider just what the current Air Force concept

of logistics is. AFM 1-1 considers it a "principle" of war and defines it in the following manner:

Logistics: is the principle of sustaining both men and machine in combat by obtaining, moving, and maintaining warfighting potential. Success in warfare depends on getting sufficient men and machines in the right position at the right time. This requires that a simple, secure, and flexible logistics system be an integral part of an air operation.(3:2-9)

AFM 1-1 further defines the concept of logistics by explaining the type of flexible logistics system that is envisioned by the above definition. "Effective logistics also requires a flexible system that can function in all combat environments and that can respond to abrupt and sudden change."(3:2-9). In addition, direction concerning logistics is also provided to the air commanders by AFM 1-1.

Therefore, in preparing for war, air commanders must establish and integrate a logistic system that can keep pace with the requirements of air operations in combat. This requires a flexible logistics system that is not fixed, and one that can provide warfighting potential when and where it is needed.(3:2-9)

The above explains the Air Force's current concept of logistics and would seem to consider the lessons of the past. Let us now examine the concept of tactical readiness.

The Concept of Tactical Readiness

TAC has as its motto, "Readiness is our profession." General Robert J. Dixon, a former TAC commander, expressed the concept of tactical readiness in the following manner:

Our professional business in Tactical Air Command is readiness--readiness to deploy and readiness to fight.

Readiness today is the product of past force acquisition, present doctrine, concepts, procedures, and realistic combat training.

Acquiring weapons systems--however capable and in whatever numbers--is only the first essential step to readiness. Realistic preparation to deploy and employ adequate forces can deter war and, if deterrence fails, can provide the margin of excellence to win.

Readiness is our profession. We must insure that it rules the cockpits of our aircraft, that it inspires our maintenance shops, our flight lines, our support areas, and drives our professional knowledge, understanding and leadership. (10:Foreward)

The above discussion of both concepts of logistics and readiness seems to be perfectly clear and addresses the lesson from the past. The question that arises is, "If this is indeed the case, then why is there a difference of opinion between the users and the supporters as to the compatibility of these two concepts?" The answer lies in the key words contained in each concept. The next section addresses these key words.

SECTION III
ANALYSIS AND DISCUSSION

The Key Words

The key words from each of the above definitions are the following:

- (a) "simple, secure and flexible logistics system" and
- (b) "professional knowledge, understanding and leadership."

The most "simple, secure and flexible logistics system" would be a system that is able to provide 100 percent of every conceivable spare part and support item for each weapons system in the inventory. In addition, all of this materiel would be located at wing or unit level where each weapons system was being operated. This would indeed be a "simple, secure and flexible logistics system" in that each unit would have total control over all of its spare part inventory. This type of system would essentially relegate the Air Force Logistics Command's (AFLC) mission to one of procuring replacement parts resulting from normal attrition rates. There really would be no need for a depot to maintain any inventory as the entire inventory would be kept at each wing or unit. This would indeed make that crew chief or the maintenance flight line production supervisor's job extremely easy as there would essentially be no such thing as a zero balance or a MICAP (Mission Capable) status for his aircraft. The DCM would also be extremely happy with this type of supply system.

It is not too difficult to see that a supply system that provided 100 percent of all needed supplies and spare parts at field level is simply out of the question due to the astronomical cost involved in such a system. Cost has to be and is a governing

consideration for any type system that is used. One of the major concepts behind a depot is to provide efficiency in the utilization and distribution of limited resources to support a weapons system throughout the Air Force. This is simply a realization of the fiscal restraint which results in limited resources due to the basic fact that there just are not sufficient dollars to procure everything. Even Carl Von Clausewitz was conscious of this natural fiscal restraint on governments. He expressed it in this manner: "One has to remember that since no state ever has more money than it needs, the high cost of maintaining depots will necessarily cut into expenditures on the armament and the size of the army.(5:337)

One of the governing laws is that a balance has to be reached between the limited amount of inventory procured and available versus the acceptable cost of not having a 100 percent inventory on hand. This is a natural law that essentially governs all of our logistics activities.

Turning to the thoughts embodied in the words "professional knowledge, understanding and leadership" contained in the concept of readiness, it was suggested that readiness should "rule the cockpits, inspire our maintenance shops, our flight lines and our support areas."(10:Foreward) It is easy to see why the users may encounter considerable frustration during an ORI or a local exercise when the crew chief or flight line production supervisor cannot fix an aircraft needed for the next sortie because the local supply system does not have the part. Even though readiness may be inspiring the maintenance shops and the flight lines,

they can easily feel that the supply support area is not attuned to the idea of readiness.

The situation in which a zero balance for a part results in a MICAP condition becomes a source of irritation if the speed at which the MICAP is resolved takes three or four days or even more. This, of course, does not resolve the immediate problem of the next sortie. The local supply and even the depot personnel would probably be completely happy if they were indeed able to satisfy the MICAP condition in three or four days. From their perspective and "professional knowledge and understanding" of the system, this is well within their regulatory guidelines for support of a MICAP condition. Hence, two completely different perceptions of the same situation exist. The above speed of support for the MICAP condition did not address the users' direct problem and, consequently, the reason they may answer an emphatic, "No!" to the subject question. While, on the other hand, the supply side would answer an emphatic, "Yes!" to the same question because they "beat" the standard guidelines.

A very key word in the readiness concept is that readiness should "drive" our "professional knowledge, understanding and leadership." Therefore, part of the answer to the question of compatibility is based on the extent of our professional knowledge and understanding of the current logistics system. To expand our professional knowledge and understanding, it is necessary to study the current logistics system and determine how it is expected to handle a MICAP situation. This requires research into AFM 67-1, the USAF Supply Manual.

MICAP Handling Under AFM 67-1

The guidelines for the supply system to satisfy a MICAP situation are based on time standards specified by the Uniform Material Movement and Issue Priority System (UMMIPS). For a Continental United States (CONUS) delivery of a MICAP part, the time standard can vary anywhere from eight to 46 days, depending on the priority designators such as the urgency of need designator (UND) and the force/activity designator (FAD) assigned to the specific tactical weapon system.(11:24-20) AFM 67-1 states, "The overall objective of the UMMIPS time standards is to provide guidelines in satisfying a customer's demand within the cumulative time prescribed for the assigned designator."(11-24-3) It is easy to see why the supply side would feel they had done a superior job if a MICAP was satisfied in three or four days and, hence, explain why they would answer, "Yes!" to the question.

It is important to note that the UMMIPS is prescribed by DOD Directive 4410.6 dated 30 October 1980 and that it will be used in peacetime as well as in wartime. This is the system that the controlling civilian leadership has established for us to operate under. This fact needs to be completely understood by all personnel at all levels through the logistics side as well as the users' side of the equation.

However, it also is only natural for the maintenance crew chief or flight line production supervisor to feel that his or her mission and aircraft are the most important tactical resource in the inventory. It is easy for him or her to feel that he or she should have the highest priority when it comes to getting

parts from the supply system during such activity as an ORI or a locally generated exercise. This attitude should not be discouraged and is, in fact, highly desirable. However, it must be understood that the FAD for each weapons system is assigned by the JCS. This is accomplished based on JCS's perspective of how the particular weapons system fits into the overall force structure of our national defense. In other words, the JCS has the responsibility of deciding the priority listing of our forces. This is as it should be since this is the level at which the entire spectrum of national defense is being considered. The JCS categorize each weapons system by one of five different FADs, designated by FAD I, II, III, IV, or V.

The other designator that governs the speed at which a MICAP condition is handled is the UND. Again, it is not difficult to understand why the crew chief or production supervisor feels that his MICAP situation in the middle of an ORI is indeed urgent. Since there are three categories of UNDs assigned (A, B, and C), this crew chief or production supervisor thinks that an "A" UND is very appropriate to solve his or her problem. However, again if we look at what AFM 67-1 says about UNDs, we find the following:

Not every mission capable (MICAP) condition should be assigned UND "A." The fact that a given weapons system is inoperative due to the lack of an item is not sufficient in itself to justify the use of UND "A." Qualification for UND "A" can be justified only when materiel shortages required for immediate end use preclude a force/activity from performing assigned operational mission. When the mission capability of a force/activity is impaired due to materiel nonavailability, the deficiency is identified with UND "B."(11:24-6)

The last aspect that determines just how fast a MICAP condition

is handled is the requisition priority designator that is assigned to each MICAP condition. There are 1-15 different categories that are associated with each of the three UND categories and each of the five FAD categories. As an example of what is expected, if a priority designator of 3 is assigned to a MICAP situation, AFM 67-1 states,

Priority designator 3 will be used by all activities regardless of FAD assignments, for medical or disaster supplies or equipment required immediately for

- (a) Prolonging life, relieving avoidable suffering, or expediting recovery in case of injury, illness, or disease.
- (b) Avoiding or reducing the impact of epidemics or similar potential mass illness or diseases when in professional opinion the probability is imminent.
- (c) 3 is used for emergency supplies or equipment required immediately for controlling civil disturbance, disorder or rioting.(11:24-13)

This chart depicts the requisition priority designators relating urgency of need to force/activity designators.(11:Attachment A-1)

Urgency of Need Designator	Force/Activity Designator	Requisition Priority Designator
A	I	01
	II	02
	III	03
	IV	07
	V	08
B	I	04
	II	05
	III	06
	IV	09
	V	10
C	I	11
	II	12
	III	13
	IV	14
	V	15

From the above it is easy to see where the disconnect occurs between the perception of the users and the perception of the supporters. During an ORI, the tactical flight line personnel's frame of reference is probably based in the feeling that their particular MICAP condition should be a priority 1 MICAP for their FAD I aircraft and carry an "A" UND. In reality, the supporting system may very well view this particular MICAP situation as a priority 5 for a FAD II aircraft with a "B" UND. Hence, the difference of individual perceptions versus the real world dynamics becomes obvious.

It is also easy to see a situation where the DCM may want to try to influence the supply system to artificially raise the requisition priority of a MICAP in order to accomplish the mission. However, AFM 67-1 directs caution to ensure that this does not happen. AFM 67-1 states,

All echelons of logistics management will share the responsibility for maintenance of an effective and credible system and will exercise intensive surveillance to insure accurate operating level application of UMMIPS criteria established in paragraph 7. Since UMMIPS is designed for selecting use of priorities based upon predetermined factors, the automatic assignment of a given priority is abusive and must not be condoned.(11:24-6)

This is extremely important since this system is the one that will be used during wartime.

Tactical Real World Dynamics

Before the question of, "Is the current Air Force logistics system compatible with tactical readiness?" can be answered, it is necessary to address what is happening in the real world of tactical operations. It is interesting to note that TAC has published a regulation, TACR 65-3, dated 12 July 1985, entitled

"Combat Oriented Supply Organization (COSO)." The foreward to this regulation states that,

This regulation prescribes the authorization, organization, and implementation of the Combat Oriented Supply Organization (COSO). COSO is implemented to complement the Combat Oriented Maintenance Organization (COMO) and promote a more efficient Aircraft Maintenance Unit (AMU) operation in both peace and war. It incorporates a decentralized concept of (Base Level) Supply operations. Conceptually, COSO incorporates in peacetime the same basic parts ordering and delivery system and repair cycle management program that are vital in wartime....(6:Foreward)

The specific purpose of COSO as defined by TACR 65-3 is

COSO procedures promote maximum responsiveness in issuing on-hand parts, customer visibility of base level assets, expeditious parts processing and a decentralized supply organization which operates in peace as we intend to operate in war.(6:1-1)

The concept and intent of COSO is to enhance maintenance efficiency by getting spare parts into the hands of maintenance personnel as fast as possible. This involves locating the Peacetime Operating Stocks (POS) and War Readiness Spares Kit (WRSK) aircraft spare parts adjacent to the on and off equipment repair activities and as close to the flight line as possible. It also permits withdrawal of assets from the WRSK when POS has been exhausted without MICAP verification. It also requires the AMUs to pick up a part that has been ordered within 15 minutes and requires that repairable parts be processed into the repair facility within two hours and MICAPs immediately. A status on the turn-ins to the repair shop is one hour, and a processing time for serviceable assets is two hours.(6:1-1,1-2) The whole concept is to reduce the response time to an absolute minimum in putting a spare part into the hands of maintenance personnel in order to fix an aircraft. This system shapes the attitudes and perceptions of

the flight line maintenance personnel on the type of response expected from the base level supply system. They are trained to think in terms of minutes with two hours being a considerable length of time. The AFM 67-1 system tends to think in terms of days when responding to a request for a part, even a MICAP part. This helps explain the disconnect between the users and the supporters as to the responsiveness of the logistics system as far as TAC is concerned.

It is also interesting to note that the United States Air Forces in Europe (USAFE) have also found it necessary to develop an additional logistics system to augment the AFM 67-1 system. The system is called the European Distribution System (EDS) and was "designed to give greater combat readiness and sustainability to U.S. Air Forces in Europe (USAFE) through in-theater stockage and lateral resupply of critical items." (1:3) The concept of support of the EDS is to transfer critical spares in 12 to 36 hours despite combat conditions. The EDS consists of a command, control, and communication system dedicated specifically to logistics. The system is comprised of a squadron of small cargo aircraft (11 C-23A Sherpa aircraft) and the stockage of wholesale spare parts in-theater for movement of materiel in USAFE. The transit time of delivery of spare parts has been reduced from three to seven days to one to three days. An average of 40 percent of USAFE mission-impaired requirements are currently being supported in-theater. (1:3) Again, the intent is to reduce the response time required to obtain a part to fix an aircraft.

An Example

The F-111D weapon system will be used as an example for this

report. This system was chosen since it has been in the Air Force's inventory since 1968 and contains a state-of-the-art avionics system. Being in the inventory since 1968 should tend to cancel out any maintenance learning curve for maintenance support. By selecting this system, it is hoped that conclusions drawn will be representative of the effects of the logistics system but will not necessarily be influenced by maintenance performance of learning how to maintain a new weapons system. However, since the F-111D does have an advanced avionics package in the form of the Mark II avionics system, it should be somewhat representative of our current weapons systems that contain a high level of technology.

To look at this system, the maintenance indicators will be used for the time period of February 1985-December 1985. Since the Mission Capable Rate (MC) is used as a prime management tool by higher levels of authority to determine the health of a system, the indicators of Total Not Mission Capable for Maintenance (TNMCM) reasons, Total Not Mission Capable for Supply (TNMCS) reasons, and the Not Mission Capable for Both Maintenance and Supply (NMCB) reasons will be used. All of these factors determine what the overall MC rate is.

For the entire 11-month period used for this example, the overall TNMCM and NMCB rates were outside of the standards established by TAC Headquarters for the F-111D weapons system. However, during this same 11-month period, the TNMCS rate was only outside of the TAC standard during three months.(12) At first glance this would indicate that the problem was on the maintenance side of the house and that the supply system was indeed doing a

fairly good job of supplying parts. However, if a closer look at the individual elements that make up the TNMCM and NMCB rates is accomplished, and if one considers another factor such as cannibalization rate, a different perspective can be seen.

The cannibalization rate for any system is determined by dividing the number of cannibalization acts required by the number of sorties flown. For example, if 204 cannibalizations were required to fly 215 sorties in a month, the cannibalization rate for that month would be 94.9.

The cannibalization rate for the F-111D during this period varied from 70.6 percent to a high of 109.8 percent with the average being 90.9 percent.(12) One has to ask, "Why is the cannibalization rate so high?" The answer is that when there is a zero balance for a needed spare part in the POS and a zero balance in the WRSK, the needed part is cannibalized from another aircraft.

The next question is, "What does a high cannibalization rate do to the maintenance work load?" It is easy to see that a cannibalization action essentially doubles the amount of work required to address the problem of fixing an aircraft. If this rate is too high, i.e. 90.9 percent, the amount of work that is required by the maintenance personnel is almost double that of what it would be if sufficient spare parts were available. If this additional work load is spread evenly throughout the maintenance complex, it probably would not be a real problem. However, if the cannibalization happens to occur in one or two specific areas, such as in the avionics side of the house, this can be a real problem.

Looking at this aspect for the F-111D during one quarter of the 11-month period, two-thirds of all the cannibalization occurred in the bomb/nav system. During this same quarter, the Wing expended sufficient man-hours on cannibalization activities to keep 15 people employed full time.(12:Nov 85) This translates to the bomb/nav specialists having to accomplish the work load of ten additional full time people plus their own. The only way this can be done is with extensive overtime for these maintenance specialists.

The next question is, "Why don't the management indicators reflect the problem of a shortage of parts?" We noted that the TNMCS for the F-111D during this time period were only out of standards for three months of the 11-month period. The answer takes us back to AFM 67-1 and how MICAPs are handled under this system and how required stock levels are determined. One of the factors that is used to determine required stock levels considers the frequency of MICAP condition for that part. Since stock levels are influenced by demand requests for a part, it is important to have a true picture of what the actual MICAP rate for a part really is. As noted earlier in this section, a MICAP condition under AFM 67-1 has actually been determined by higher authority to be a condition that can be satisfied normally in the time frame of eight to 46 days, depending on the criticality of the weapons system to national security. In addition, a MICAP condition under AFM 67-1 requires a verification that there is indeed a zero balance in POS and a zero balance in the WRSK and that there is no part in the repair cycle. If there is a part in

the repair cycle, the MICAP condition is killed. However, for the flight line crew chief or production supervisor, having a broken part in the repair cycle and zero balances in POS and WRSK does not address the question, "From where does the part that he or she needs to fix the aircraft come?" The answer is cannibalization.

Under TACR 65-3, the spare part obtained through cannibalization when a spare part is still in the repair cycle is carried as a "memo" MICAP. This type of MICAP condition is not recognized as a "hard" AFM 67-1 MICAP because it cannot be verified due to the system having a part in the repair cycle. Hence, these types of "memo" MICAPs are charged against TNMCM or NMCB and are not included in TNMCS. Therefore, we have the situation that maintenance is buying down time on aircraft for a condition of no spare parts. For the F-111D example, this accounted for as much as 42.9 percent of the TNMCM time during the time period addressed.(12:Jun85) The situation of not having sufficient spare parts is masked by the MICAP accounting process required by AFM 67-1. This explains why logistical support of the F-111D looks favorable when indeed the overall weapons system may be experiencing inadequate logistics support as defined by AFM 1-1.

The extent of cannibalization required for the F-111D can be seen by looking at the numbers. For the example Wing, as a policy, each of the three aircraft maintenance units designated at least one aircraft for cannibalization at any one time. The actual numbers of aircraft placed in this status varied as the need for spare parts varied. One case during the time period studied

revealed that 22 aircraft had been cannibalized to support the other 44 aircraft.(12:Oct 85) This indicates a serious problem for this particular weapons system.

SECTION IV

CONCLUSIONS

The question, "Is the current logistical support system compatible with TAC's concept of readiness?" can now be answered. Even if the F-111D is not a true representative of current tactical weapons systems, if this similar situation requiring extensive cannibalization exists, then the answer has to be, "No."

There seems to be more than adequate support for this conclusion since both TAC and USAFE have had to develop additional systems of COSO and EDS respectively in order to be more responsive in getting the needed parts in the hands of those who need them for mission accomplishment. It is obvious that the time frame of minutes and up to two hours for responsiveness by the tactical maintenance personnel is at a different level than that envisioned by AFM 67-1 and its time standards expressed in days. This is not to say that the system directed by AFM 67-1 is not adequate for other commands within the Air Force. The system may be quite adequate for the Strategic Air Command (SAC), the Military Air Command (MAC), or the Air Training Command (ATC). The scope of this report did not address these commands.

Tactical readiness to deploy and conduct combat operations under the national policy of flexible response dictates the type of responsiveness envisioned by COSO for base level stock supplies. This would suggest that possibly the overall logistics system may not be responsive enough for the tactical forces in providing the "flexible system" to "keep pace with the requirement of air operations in combat" as defined by AFM-1-1. If the current system is

not able to identify a parts shortage problem for a weapons system that has been around for 17 years, then we once again may not be paying attention to the lessons of the past. We must not fall into the trap of being governed by a supply system that controls our capability to conduct military operations. We must develop a system that is responsive to the idea that logistics is a "principle" of war.

This same idea was expressed by General Leo Marquez, Deputy Chief of Staff, Logistics and Engineering, in a message he delivered recently at the Air National Guard Senior Commanders' Conference:

Aerospace forces have always been able to exploit the characteristics of speed, range and flexibility to a degree far greater than any surface force. But, unfortunately, we are in the process of losing flexibility. Today's weapons systems are too dependent upon a large, less flexible support structure.(2:1)

SECTION V

RECOMMENDATIONS

Fiscal constraints will always be with us. Merely to recommend buying more spare parts would not be realistic but would be somewhat meaningless especially in light of the recent Gramm-Rudman-Hollings legislation signed into law on 12 December 1985 calling for a balanced budget by 1990. In addition, this may not be addressing the true cause of the problem but may be attacking only a symptom of a larger problem. That problem may be one of reliability.

The first step in any logistics system begins during the acquisition phase of a weapons system. This concept is set forth in the AFM 1-1 definition of logistics as a principle of war, as well as the concept of tactical readiness. AFM 1-1 states it this way, "Logistics is the principle of sustaining both men and machine in combat by obtaining, moving, and maintaining war-fighting capability."(3:2-9) The tactical readiness concept expresses it in the following manner, "Acquiring weapon systems--however capable and in whatever numbers--is only the first essential step to readiness."(10:Foreward)

If weapons systems are procured with a reasonable amount of reliability and maintainability designed into them, the current logistics system may then be quite adequate. The problem of the "memo" MICAP/cannibalization situation described in the F-111D example may not be a problem if the bomb/nav system had greater reliability.

For example, a current line replaceable unit (LRU) in the bomb/nav system is the inertial reference unit (IRU). It currently

has a mean time between failure (MTBF) of approximately 30 hours. If this IRU was modified with a new ring laser gyro (RLG), similar to the one on the F-20 aircraft which has a MTBF of 10,000 hours, the payoff in reliability improvements would be such that the need for cannibalization would be greatly reduced.(12:Sep85) Having the current level of spare parts with increased reliability would address the problem without requiring a change in the AFM 67-1 system. The demand for IRUs would be less; and, therefore, when an IRU did fail, the average of three days for repair of each IRU would not be as significant. POS and WRSK stock levels could be kept at proper levels without relying on repair cycle time. The "memo" MICAP was generated because even though there was a zero balance in POS and WRSK, there was a part in the repair cycle. This difference in "memo" vs "hard" MICAPs between AFM 67-1 and TACR 65-3 would no longer be a problem.

This whole idea is what former Air Force Secretary Orr and Chief of Staff General Charles A. Gabriel had in mind when they introduced the Reliability and Maintainability (R&M) 2000 Program in 1985. The basic concept is that each new system procured will have R&M designed into it such that these weapons systems will require as little maintenance in the battle zone as possible.(2:49) In addition, General Earl T. O'Loughlin, Commander of the Air Force Logistics Command (AFLC), has applied this concept to modifications of current weapons systems and related equipment around the world. General O'Loughlin stated, "The new AFLC policy will support Air Force efforts to increase the number of aircraft sorties and reduce overall reliance on airlift and pre-positioning

of parts and supplies in possible combat areas.(8:49)

If the Air Force Systems Command (AFSC) applies this concept to systems acquisition and if AFLC pursues it on our current weapons systems, the problem will be addressed. In view of the current situation of fiscal constraints and those expected in the future, there really is no other option available to Air Force leadership. It is this type of concept that must "drive" our thoughts in terms of "our professional knowledge, understanding and leadership." We simply cannot afford not to. We owe it to our people and to the country that we are all dedicated to defend. General F. M. Rogers expressed this idea in the following manner. In 1976, he said, "When the enemy assesses our forces, he values only those forces which the logistics community has ready for combat, or can get ready in time, and then sustain for a requisite period of combat."(3:4-9)

BIBLIOGRAPHY

1. Air Force Policy Letter for Commanders, From the Office of the Secretary of the Air Force, Washington, D.C., AFSINC/11A, Kelly AFB, TX, 1 October 1985.
2. Air Force Policy Letter for Commanders, From the Office of the Air Force, Washington, D.C., AFSINC/11A, Kelly AFB, TX, 1 January 1986.
3. Basic Aerospace Doctrine of the United States Air Force, Air Force Manual 1-1, Washington, D.C., Department of the Air Force, 16 March 1984.
4. Buell, Thomas B., Commander U.S. Navy (Retired), "Guadalcanal: Neither Side Would Quit," reprinted with permission from the U.S. Naval Institute Proceedings, (April 1980), pp. 60-65. In Air War College Instructional Circular Course I, Phase 1. Military Strategy, AY 1985-86, pp. 315-320.
5. Clausewitz, Carl Von, On War, Indexed ed., Princeton, NJ: Princeton University Press, 1984.
6. Combat Oriented Supply Organization (COSO), Tactical Air Command Regulation 65-3, Langley Air Force Base, VA, Headquarters Tactical Air Command, 12 July 1985.
7. Duffy, Michael, "Grenada: Rampant Confusion," reprinted with permission from Military Logistics Forum, July/August 1985, Vol. 2, pp. 20-28. In a case study accomplished for the Air War College. Case Study: The Grenada Operation--A Case For Crisis Planning, AY 1985-86, pp. 70-76.
8. Famiglietti, Leonard, "AFLC Chief: Weapons Must Be Supportable," Air Force Times, November 18, 1985, Army Times Publishing Co., Springfield, VA.
9. Murray, Williamson Dr., "British and German Air Doctrine Between the Wars," reprinted courtesy of Air University Review, (March-April 1980), pp. 39-58. In Air War College Instructional Circular Course I, Phase 1. Military Strategy, AY 1985-86, pp. 202-221.
10. Tactical Air Operations, Tactical Air Command Manual 2-1, Langley Air Force Base, VA, Headquarters Tactical Air Command, 15 April 1978.
11. USAF Supply Manual, Air Force Manual 67-1, Vol. 1, Part One, Washington, D.C., Headquarters United States Air Force, 16 Jun 1975.

12. Wohnsigl, John R. Col USAF, "DCM Comments," February 1985-
December 1985, for Maintenance Recap TAC/LGY 7301 Part I and
Part II, 27th Tactical Fighter Wing, Cannon AFB, NM.

GLOSSARY

AFLC	Air Force Logistics Command
AFSC	Air Force Systems Command
AMU	Aircraft Maintenance Unit
ATC	Air Training Command
COMO	Combat Oriented Maintenance Organization
CONUS	Continental United States
COSO	Combat Oriented Supply Organization
DCM	Deputy Commander for Maintenance
EDS	European Distribution System
FAD	Force/Activity Designator
IRU	Inertial Reference Unit
JCS	Joint Chiefs of Staff
LRU	Line Replaceable Unit
MAC	Military Airlift Command
MC	Mission Capable rate
MICAP	Mission Capable status
MTBF	Mean Time Between Failures
NMCB	Not Mission Capable for Both Maintenance and Supply reasons
ORI	Operational Readiness Inspection
POS	Peacetime Operating Stocks
RLG	Ring Laser Gyro
R&M	Reliability and Maintainability
SAC	Strategic Air Command
TAC	Tactical Air Command
TNMCM	Total Not Mission Capable for Maintenance reasons

TNMCS	Total Not Mission Capable for Supply reasons
UMMIPS	Uniform Materiel Movement and Issue Priority System
UND	Urgency of Need Designator
USAFE	United States Air Forces Europe
WRSK	War Readiness Spares Kit