

THE OPERATIONAL IMPACT OF MOBILITY READINESS SPARES PACKAGE CONFIGURATION DURING OPERATIONS IRAQI FREEDOM

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ABSTRACT

This research assessed the effectiveness of mobility readiness spares packages (MRSPs) utilized for Operation IRAQI FREEDOM (OIF). This was accomplished by selecting a representative array of MRSPs for weapon systems actively involved in OIF, and obtaining relevant support effectiveness measures. Measures selected for analysis were MRSP fill rate, stockage effectiveness, issue effectiveness, mission capable spares rate, and total requirements variance. An analysis of MRSPs for the E-3B, F-16C, and HC-130P aircraft revealed varying levels of effectiveness when compared with overall contingency and supply chain metrics.

INTRODUCTION

The objective of the readiness spares package (RSP) program is “to support national strategy in consonance with the guidance issued by the Office of the Secretary of Defense. Specifically, the Air Force objective is to authorize, acquire on time, preposition, prestock, and maintain in a serviceable condition ready for use, all RSP needed to support the wartime activities specified in the War and Mobilization Plan (WMP)” [1]. Each MRSP is designed for a “worst case scenario”, to support a weapon system in a contingency environment for 30 days with no resupply. Utilizing the Aircraft Sustainability Model (ASM), Air Force logisticians must determine the best possible number and mix of spares and repair parts for each deployable readiness spares package (RSP), better known as a (MRSP).

BACKGROUND

Although Air Force leadership has responded to the changes in operational environment, the support structure of the MRSP has remained the same. The current method of MRSP development and administration, as required by the WMP-5, has changed little from the Cold War threat assessment policy. A 2000 Department of Defense report to Congress on challenges faced during Operation ALLIED FORCE in Kosovo indicated a disconnect between the way MRSPs are configured and the way contingency operations actually unfold [2]. Recent wartime operations in support of Operation IRAQI FREEDOM (OIF) provided an excellent opportunity to examine the current operational effectiveness of MRSPs. Air Force leadership should know whether the theoretical models they rely on to provide accurate assessments of wartime scenario requirements are providing information and inputs that lead to mission success.

The main focus of this study is to answer the research question, “What was the effect of MRSP configuration on current Air Force contingency operations support?”. By understanding the impact of MRSPs on weapon system availability during Operation IRAQI FREEDOM, the Air Force may wish to explore alternatives to the current method of contingency support that more closely reflect current operational environment requirements.

Scope

The Air Force used 863 aircraft and 29 weapon systems, either deployed to or in support of OIF [4]. This research was limited to examining the spares support provided by three different MRSPs for three different deployed weapon systems, the E-3B, F-16C, and HC-130P. MRSP selection was further limited to single units of each weapon system and one location for each weapon system.

Methodology

The methodology of this research focused on three main objectives. The first was to determine the configuration of MRSPs for OIF and whether they mirrored the actual authorizations as dictated by the WMP, Volume 5 (WMP-5). The second objective was to select for analysis a representative array of MRSPs and supported weapon systems actively involved in supporting Operation IRAQI FREEDOM from contingency locations. The last objective was to obtain and analyze relevant support effectiveness data for the first 30 days of OIF (19 March – 17 April 2003). This data came from three sources: the Requirements Execution Availability Logistics Module (D087G), the Standard Base Supply System (SBSS), and the MICAP Requisition Status Reporting System (D165B).

RESULTS AND CONCLUSIONS

Investigative Questions

How were MRSPs configured for OIF? Research showed that MRSP configuration for OIF was accomplished using the WMP-5 flying hour scenario. The D087G was the tool used to stock the MRSPs with the reparables calculated by the ASM. Although the Air Force deployed its personnel under the AEF schedule, the MRSPs were still configured to support a different operational scenario.

Did MRSPs effectively support the weapon systems during the first 30 days of operations?

Although Air Force leadership has mandated that the ultimate measure of supply chain success is aircraft availability, there are other factors that determine effectiveness. The measures selected to determine the effectiveness of the three MRSPs studied in this research—fill rate, MICAP rates, issue effectiveness, stockage effectiveness, and total requirements variance— show that the MRSPs were effective in some respects and ineffective in others. Specifically, the MRSPs for the E-3B and HC-130P were considerably more effective than the F-16C MRSP.

Did the MRSPs have *enough* spares for the maintainers to keep aircraft mission capable? The two effectiveness measures that best show whether the MRSPs contained enough of what was needed to

TABLE 1. FILL RATE AND STOCKAGE EFFECTIVENESS SUMMARY

	Fill Rate	Stockage Effectiveness
E-3B	96.0%	97.1%
F-16C	92.5%	54.2%
HC-130P	92.6%	83.3%

All three MRSPs maintained high fill rates equivalent to overall weapon system MRSP fill rates during the contingency. Requirements for this MRSP did not appear to be driven by the need to fill holes that existed prior to the deployment. Unmet demands were either for assets not authorized to be in the MRSPs or for assets that had multiple requirements above the number of authorized MRSP assets.

When compared to MAJCOM standards and annual rates, two of the three MRSPs contained an above average amount of reparable for maintenance personnel to repair the aircraft, as reflected by the stockage effectiveness rate. Stockage effectiveness was driven by the number of authorized part MICAPs for the weapon system. A MRSP that did not contain enough spares to cover multiple requirements for the same spare would experience low stockage effectiveness.

Both the E-3B and the HC-130P MRSPs had low authorized part MICAP occurrences when compared to total requests against the MRSP. For the E-3B MRSP, authorized spare MICAPs represented less than 3% of total MRSP requests. For the HC-130P MRSP, authorized spare MICAPs represented less than 17% of total MRSP requests. Asset requirements above MRSP authorizations resulted in a below average performance from the F16C MRSP. For the F-16C MRSP, authorized part MICAPs accounted for almost 31% of the total requests against the MRSP. At the end of the first 30 days of OIF, the MRSPs for the E-3B and HC-130P had enough spares to satisfy the majority of authorized reparable requests. The F-16C MRSP did not have enough spares to satisfy almost half of the authorized reparable requests.

Did the MRSPs have the *right* spares for the maintainers to keep aircraft mission capable? The two effectiveness measures that best show whether maintenance personnel needed what was in the MRSPs to support weapon system repairs are issue effectiveness and total requirements variance (TRV). Table 2 summarizes these two measurements for each weapon system MRSP.

TABLE 2. ISSUE EFFECTIVENESS AND TRV SUMMARY

	Issue Effectiveness	Line Item TRV	Cost TRV
E-3B	89.5%	811	\$ 38,974,668.43
F-16C	36.1%	161	\$ 11,906,142.80
HC-130P	83.3%	251	\$ 4,641,616.85

The first recommendation is that the Air Force should establish and maintain an official contingency demand database for MRSPs. The Air Force Logistics Management Agency reported in March 2000 that “there are *no* programs or procedures in AFMAN 23-110 to describe collecting and transferring reparable demand data from the contingency site to the home base” [3]. A contingency demand database would accomplish several important goals, including having a true picture of MRSP performance during wartime as opposed to one provided by aggregated wartime and peacetime data.

The second recommendation is that the Air Force consider whether MRSPs should still be required to maintain assets to satisfy 30 days without resupply in today’s contingency environment. The real ability for reach back and resupply, as accomplished to satisfy MICAPs, might make the 30-day requirement an unnecessary condition of MRSP spares configuration.

The third recommendation is that the Air Force review the contingency MICAPs that were not predicted on the MESL as grounding spares. The F-16C MRSP in particular experienced a high number of demands for

reparable items that were not authorized to be in the MRSP. Contingency MICAP data would help show whether there are new reparable items that should be considered for inclusion on the MESL.

The final recommendation is that the Air Force consider whether the War and Mobilization Plan, Volume 5 (WMP-5) still provides the best guidelines for establishing MRSP inventory.

Other research to be done relating to MRSPs could include overcoming the marginal analysis based problem of buying too many low cost items, possibly at the expense of needed higher cost items. Another overlooked aspect is the size and weight of spares that are deployed. With limited aircraft, airlift assets are in high demand at the onset of operations, and characteristics of spares and equipment determine what type and how many aircraft must be used to deploy these items. The bulk of assets deployed, also known as the deployment footprint, has been studied before, but more integrated models are needed that combine the concepts of cost, footprint, and operational impact.

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