
SUMMARY

Reorganization of the Air Force after the Cold War has been challenging. Since 1991, the mission capable rates of the 13 weapon systems the leadership of the Air Force watches most closely have fallen. Unit costs of supporting these systems have risen. Difficulty predicting actual annual support costs and developing annual funding levels adequate to cover these costs have introduced turbulence into Air Force planning and operations. These difficulties appear to result from a new, less certain external environment; the challenges of downsizing to accommodate lower defense budgets; and problems caused by the process of change itself, which has continued at an unprecedented rate over a long period.

The Air Force logistics community is looking for systemic ways to deal with these changes. The Chief's Logistics Review, Logistics Transformation Program, Air Force Materiel Command (AFMC) Constraints Assessment Program, the Spares Requirements Review Board (SRRB), the Spares Campaign, and the Depot Maintenance Review Team (DMRT) all represent ongoing efforts to find and implement effective answers.

As part of this effort, the Air Force Director of Supply in the Office of the Deputy Chief of Staff for Installations and Logistics (AF/ILS), asked RAND's Project AIR FORCE (PAF) to look for ways to improve how the Air Force logistics community participates in the Air Force Planning, Programming, and Budgeting System (PPBS) process. As the Air Force Spares Campaign got under way, under AF/ILS's leadership, AF/ILS also asked PAF to support that campaign and, where possible, to link its ongoing analysis of the PPBS process to the Air

Force's needs in the Spares Campaign. This report documents the findings of PAF's work for AF/ILS on the PPBS process.

This report proceeds in four steps:

- It starts by explaining how the Air Force's treatment of depot-level-reparable (DLR) spares² in its PPBS process today aggravates problems that degrade Air Force-wide performance and cost levels.
- It identifies seven policy changes relevant to the Air Force PPBS process that, taken together, should improve Air Force management of DLR spares.
- It identifies three basic changes in policy, which the Air Force is already considering, that should make it easier to implement our proposed changes.
- It identifies fundamental elements of the Air Force culture that will complicate any effort to make the changes we suggest and that could easily defeat these changes unless the Air Force confronts these cultural issues directly.

HOW THE PPBS PROCESS ADDRESSES RESOURCE QUESTIONS RELEVANT TO DLR SPARES: POLICY ISSUES

Air Force treatment of DLR spares in its PPBS process today aggravates problems that degrade Air Force-wide performance and cost levels. The Air Force faces difficult challenges both in how it supports DLRs used in major end items (MEIs) and in how it plans, programs, and budgets for such support in its PPBS process.

The Air Force supply chain relevant to DLRs is extremely complex.³ It provides spare parts to multiple customers with varying require-

²DLRs are spare parts most cost-effectively repaired in depot-level facilities inside or outside the Air Force.

³A supply chain links a particular activity, such as DLR support, to all the activities, goods, and services that contribute to the execution of that activity. In effect, it comprises all the processes relevant to cost-effective provision of that activity. It can include logistics and nonlogistics activities, goods, and services inside and outside the Air Force.

ments. It delivers services to each of these customers associated with many different MEIs, from fighters and cruise missiles to ground radars and satellite ground stations. It buys or provides maintenance, supply, transportation, and planning services through multiple major commands (MAJCOMs), to support these MEIs. It does this at many locations in many organizations around the world. It is designed to support peacetime and wartime requirements as they arise.

Although the Air Force often does not understand how changes in one part of its DLR supply chain—say, base maintenance—affect performance elsewhere—say, in wholesale supply—the Air Force must maintain an accountability system good enough to manage the supply chain in uncertain times. It does this by breaking the supply chain into segments and developing well-defined ways to manage each segment. This segmentation makes it hard to develop and sustain a systemwide view of the supply chain. Segments, typically defined by functional (e.g., supply and transportation, maintenance) communities within MAJCOMs, identify their own goals and metrics and manage their performance against these various goals and metrics. For example, the operating commands emphasize weapon system mission capable rates, while the wholesale supply system emphasizes percentage of requests met within a day or the net operating result of the supply management working capital fund. The Air Force currently has no well-defined way to align these goals and metrics to serve the interests of the Air Force as a whole or of its individual customers.

The Air Force uses its PPBS process to define requirements for resources associated with spare parts (for example, maintenance of existing spares, purchases of new spares, and development efforts to improve the reliability of spares), develop funded programs relevant to spare parts, and then develop budgets to tell Congress what appropriations the Air Force needs to realize these programs.

The current Air Force approach to PPBS complicates problems that already exist in the DLR supply chain. It decentralizes decisionmaking on DLR issues that would often benefit from an integrated view. For example, inventory management displays large-scale economies that no single player in the PPBS process can recognize and optimize. These scale economies result from effective management of safety

stock and of shortfalls as they occur, among other steps. Centralized maintenance displays similar scale economies beyond the effective oversight and management of any party to the PPBS process. This is true despite the fact that any one PPBS cycle lasts at least three years and requires extensive interaction to build a budget. The length and complexity of the process make it difficult for the Air Force to shape its programs and budgets to the ever-changing contours of an increasingly uncertain external environment.

Air Force logistics organizations and personnel are not currently well prepared to participate effectively in the Air Force PPBS process. For example, officials responsible for managing logistics policy and resources have only limited training and experience in the PPBS process. Air Force analytic methods also offer only limited help to Air Force planners to deal with these challenges.

The SRRB is the principal improvement that the Air Force is pursuing in treating spares in the PPBS process. The SRRB uses a new, consensus-based process to identify spares requirements that the traditional requirements process has underestimated. Advocates hope that simply identifying requirements more completely will lead to better funding for spares. The observations above suggest that the SRRB will likely fail to provide the positive effects anticipated unless other enabling changes support it. The Spares Campaign, begun in early 2001 under Air Staff leadership to reengineer Air Force supply, takes a broader approach that touches on many issues raised here.

PROPOSED CHANGES IN STRATEGY AND POLICY

The segmentation of the DLR supply chain and the lack of coordination in the PPBS process, then, create systemwide problems in the Air Force. These problems help explain persistent low mission-capable rates. They point to the need for a broad set of changes in how the Air Force programs and budgets for DLR spares. The report identifies seven policy changes relevant to the Air Force PPBS process that, taken together, we think would improve Air Force management of DLR spares:

- Explicitly reframe all logistics issues relevant to DLRs in the PPBS process to represent a realistic level of readiness achievable within designated resource constraints.

- Have logisticians participate more actively in the planning segment of the Air Force PPBS process to promote the approach above and to ensure that logistics is assessed fairly in higher-level PPBS considerations.
- Define an Air Force Planning and Programming Guidance (APPG) process that uses a resource-constrained version of high-level strategic goals to provide effective oversight of MAJCOM program objective memorandum (POM) submissions.
- Define a Headquarters, Air Force (HAF), closed-loop process⁴ that monitors disconnects within the PPBS process itself and between logistics budgets and actual logistics needs relevant to DLRs identified during the year of execution.
- Strengthen the responsibility and authority of the AF/IL to integrate horizontally *all* logistics requirements associated with DLRs and represent these requirements in the PPBS process.
- Rebuild the human capital capability within the Air Force logistics community to participate effectively in the PPBS process.
- Build and sustain a credible analytic capability to support the efforts above.

The changes proposed in Figure S.1 comprise an integrated package similar in character to the logistics package proposed in the Air Force Spares Campaign. A logistics “proponent” would provide a single point within the Air Force that can integrate input from the many parties relevant to planning, programming, and budgeting to reflect Air Force-wide strategic goals.

The changes begin by seeking a way to think about logistics routinely as a force-multiplier rather than as a bill-payer in the PPBS process. They seek to bring logistics into a top-down Air Force strategic plan-

⁴A closed-loop system proposes an action, expecting the action to yield a particular result. It then takes the action and monitors the result. If the result is different from what is anticipated, the system assesses the shortfall and proposes a second action likely to achieve the result, takes the second action, and monitors the result. It continues this cycle until it achieves the desired result or determines why the result cannot be achieved.

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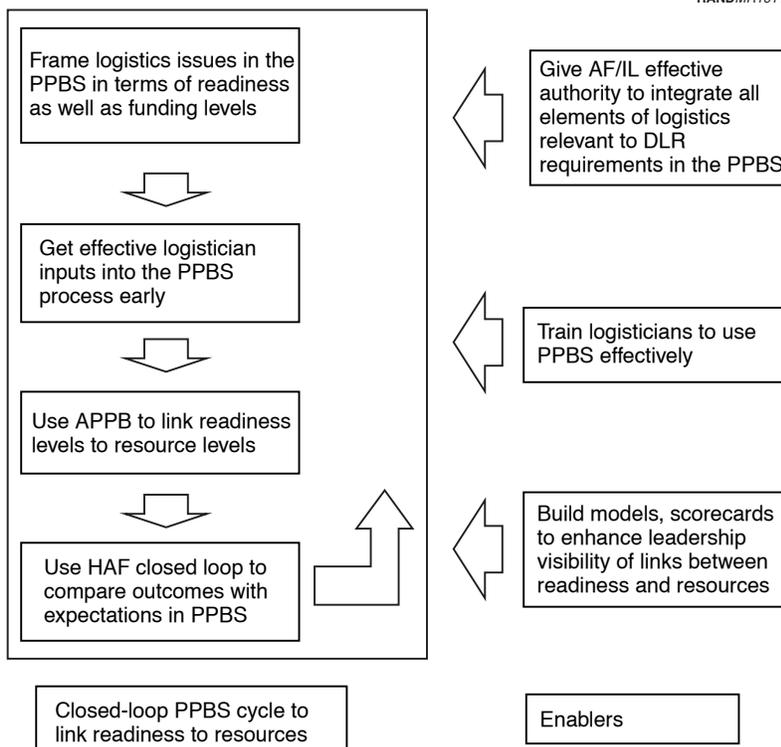


Figure S.1—Integrated Package of Proposed Changes

ning process that develops clear guidance on logistics resource decisions to the MAJCOMs. The APPG translates this guidance into specific, resource-constrained terms that the HAF can use to review MAJCOM inputs to the PPBS process and maintain an Air Force-wide view of logistics resource issues that places MAJCOM submissions in perspective as they move through the Corporate Structure. As an integral part of the PPBS process, the HAF monitors a set of closed-loop processes that compare plans with execution and help accelerate the Air Force’s learning about how to adapt logistics resource policy to the dynamic threat and sourcing environments that it faces. AF/IL is the most logical focal point for these changes. The Chief of Staff and Secretary of the Air Force should clearly

endorse AF/IL as the champion for these changes, with the responsibility and authority required to implement them. To take on this responsibility, AF/IL will need logisticians better prepared to work in a PPBS environment and analytic methods, models, and data that link logistics resources as clearly as possible to high-level Air Force system metrics—readiness and total ownership costs. Such analytic methods will allow AF/IL to close the loop by demonstrating in the PPBS process exactly how logistics resources act as force-multipliers.

COMPLEMENTARY INITIATIVES THAT COULD FACILITATE EFFECTIVE CHANGE

The Air Force is already considering three basic changes in policy that should make it easier to implement our proposed changes.

The Spares Campaign is considering a way to centralize funding of spares to some degree. Its multipart pricing proposal would shift responsibility for about half the funding of DLR spares in the Air Force from the operating commands to AFMC. The DLR spares are those that benefit most from integrated management. This approach could reduce the problems caused by the current decentralized PPBS process. Properly implemented and integrated, it could enhance the value of the changes proposed above.

The Air Force Resource Allocation Process (AFRAP) could define a new capability construct to frame strategic decisions addressed throughout the Air Force resource-planning process. This construct seeks explicitly to link specific capabilities relevant to the senior leadership of the Air Force to the resources required to produce these capabilities. These resources would include relevant logistics resources. Such an approach could heighten the leadership's understanding of how logistics resources affect readiness, thereby increasing the priority given to these resources. Such an approach must be implemented carefully to ensure that it reflects the scale economies relevant to logistics resources. Implemented properly, it would complement the changes proposed above.

A balanced scorecard is a proven commercial method used to

- develop a clear consensus among senior leaders about strategic goals and how their organization works,

- develop metrics relevant to these views on goals and organizational behavior that the leadership can monitor on a regular basis, and
- employ these metrics to drive continuous improvement and effective response to surprises in the external environment.

The Air Force Logistics Transformation Team is developing a prototype balanced scorecard for the operation and support of the F-16 fleet. Such a scorecard necessarily captures relationships important to the supply chain for F-16 DLRs. Properly extended and implemented, such a scorecard could complement the changes proposed above.

The more effectively such changes as these are coordinated with the changes proposed above, the more value all of these changes, taken together, can bring the Air Force.

GENERAL ORGANIZATIONAL BARRIERS TO EFFECTIVE CHANGE

Fundamental elements of the Air Force culture will complicate any effort to make the changes we suggest and could easily defeat these changes unless the Air Force confronts these cultural issues directly. How the Air Force treats logistics resources in its PPBS process today is not an accident. It reflects deep-rooted traditions that color the Air Force's treatment of many issues, not just those addressed here. The Air Force tends not to follow up policy changes to verify that they have proceeded as planned. The Air Force prefers to organize itself around functions, such as supply and maintenance, and MAJCOMs, not integrated processes, such as supply chains. Although the Air Force has initiated many changes over the past 15 years, it has not made systematic and continuing change an integral part of how it manages its decisionmaking. Each policy or process change occurs in an isolated manner, not as part of a long-term, integrated strategy. The leadership of the Air Force has traditionally focused more on issues of modernization than on those of support.

The changes proposed here challenge many of these traditions fairly directly. The changes proposed here must occur within the bounds of the existing Department of Defense (DoD) PPBS process, which, as

flexible as it is, imposes significant requirements that absorb significant Air Force resources and management focus, simply to comply with the procedural requirements.

So the changes proposed here face significant barriers. In all likelihood, these barriers will slow the rate at which effective changes can occur. The kinds of changes proposed here will probably take time for the Air Force leadership to implement. In all likelihood, the Air Force leadership will need to see evidence that changes of this kind are worthwhile. Those promoting such change should be prepared to implement the changes incrementally to allow them to demonstrate improvement over time. Each improvement needs to build on the prior case for change, thereby implementing a series of interrelated, incremental changes over a period of several years. This type of change management is difficult because it typically requires a stable, long-term leadership team to maintain, over the long term, a strategic perspective of how the pieces are interrelated and build on one another. The Air Force leadership changes approximately every two years with the Air Force Chief of Staff changing every four years. The changes proposed here could easily take longer than Air Force senior leaders stay in particular positions.

The proposed general approach to resource management emphasizes the importance of using a monitoring cycle that is empirically well informed to proceed systematically against realistic, clearly stated goals. So it is natural to understand that this report would recommend a similarly realistic, systematic approach to change itself.